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Project: Support to SE4ALL Country Actions processes in Ghana, Kenya and Tanzania

-Ghana-

Monitoring, Evaluation and Reporting System for Ghana's SE4ALL Initiative – Consultancy Report

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Project: "Support to SE4ALL Country Actions processes in Ghana, Kenya and Tanzania"

Report: "Monitoring, Evaluation and Reporting System for Ghana's SE4ALL Initiative – Consultancy Report"

Authors: Consortium formed by IT Power (UK) and AETS (France).

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Monitoring, Evaluation and Reporting System for Ghana's SE4ALL Initiative

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EXECUTIVE SUMMARY

This report was written as part of the consultancy work carried out by the consultants under the project "Support to SE4ALL Country Actions processes in Ghana, Kenya and Tanzania", which is financed by the African Climate Technology Finance Centre and Network (ACTFCN) as part of a UNFCCC/GEF initiative conducted with regional multilateral development banks, in this case, the African Development Bank (AfDB). The objective of ACTFCN is to support Sub-Saharan African (SSA) member countries in scaling-up the deployment of low-carbon and climate resilient technologies for climate change mitigation and adaptation. On the mitigation side, the project supports the implementation of the Sustainable Energy for All (SE4ALL) initiative in Africa. The project contributes to advancing the SE4ALL initiative in three countries, and this report specifically addresses the design of a Monitoring, Evaluation and Reporting (MER) system to track Ghana's progress towards the achievement of its SE4ALL goals.

This report is formed of two sections: the first introduces the Monitoring, Evaluation and Reporting (MER) system specifically developed for the Energy Commission (EC), host of Ghana's Sustainable Energy for all (SE4ALL) Secretariat, to track progress on the implementation of Ghana's activities under its SE4ALL initiative; the second section contains the MER system itself, which is the document that will be used to monitor the initiative and to report the results.

Ghana is the first country that opted for the SE4ALL initiative launched in September 2011 by the United Nations Secretary-General and which aims at reaching three main goals by year 2030: universal access to energy services, in particular electricity services and clean cooking solutions; doubling the share of renewable energy in the global energy mix; and doubling the global rate of improvement in energy efficiency. In line with these three goals, Ghana has developed and published its Country Action Plan (CAP) in June 2012 which presents the country's goals and priority intervention areas under the SE4ALL initiative. The country is now developing its Action Agenda (AA) with support from ECREEE[1]. Ghana's AA should be released in the course of 2015 and will complement the CAP 2012 by providing the strategic framework towards achieving the country's SE4ALL goals.

In order to monitor the progress towards the achievement of the country goals, the EC, in its role of hosting the SE4ALL Secretariat, will apply the MER system contained in the second section of this document. The objective is to provide a way to track how the country is evolving and use the MER system as a tool to communicate the results and identify any deviations, bottlenecks, needs for modifying or designing new activities while implementing the activities as set under the CAP and, in the near future, under the AA.

Ghana's SE4ALL MER system is designed to fit current Ghanaian context and needs. In line with the recommendations of the SE4ALL initiative, it builds on current monitoring and evaluation exercises already in place in Ghana including the Government's own monitoring and evaluation activities. It also links to the SE4ALL Global Tracking Framework (GTF), which proposes a holistic approach for tracking progress on all three SE4ALL global goals.

The MER system is composed of a Logical Framework (Logframe), a Monitoring Plan, an Evaluation Plan, a Reporting Plan and a Performance Assessment Framework (PAF) summarising the most relevant aspects of each stage. The PAF contains the list of the 22 indicators that the country will monitor, and provides information on information and data sources, entities and GoG agencies involved, etc. The MER also includes guidelines on how to sustain the system and incorporate new indicators according to new developments of the initiative - whether at the country level, with the future release of the AA, or at the global level with the publication of new versions of the GTF[2].

The MER system, in its version presented in this report, has been developed to track Ghana SE4ALL CAP implementation and its contribution to the three SE4ALL universal goals. The relationship

[1] ECOWAS Centre for Renewable Energy and Energy Efficiency
[2] The second edition of SE4ALL GTF is expected to be publicly released soon (current 2015). For now, only the key findings, summary and infographic are publicly available.

between Ghana SE4ALL CAP implementation and the three stages of the MER system is represented in the following figure:

Figure 1 Relationship between Ghana's SE4ALL MER system and CAP implementation

While Ghana is progressing in the implementation of its SE4ALL initiative (i.e. development of Ghana's AA and corresponding IPs) and new monitoring tools and guidelines are developed at the international level, the MER system will need to be updated and will include indicators that are not directly linked to the CAP implementation, but reflect the evolution of the country SE4ALL strategy.

Section I, i.e. the consultancy report, presents, in the first part, the background to the development of the SE4ALL MER system for Ghana, the status of the SE4ALL initiative in the country and the rationale for a MER system. A brief description of the content and structure of the MER system is given in a second part along with the monitoring and evaluation activities currently in place in the country that could feed into the system to ease its implementation. Finally, challenges pertaining to such a system are identified and potential actions to be put in place to mitigate them are proposed.

The second section, **Section II**, is the MER system itself, which is the document that will be applied by the EC to track progress of the implementation of Ghana's CAP, and in the future, Ghana's AA. This section is organised in 7 parts describing each of the three stages of the system from monitoring to reporting, and including a Logframe and a Performance Assessment Framework as well as recommendations on how to sustain the MER system in the future to include updates derived from the GTF and the AA.

Undertaking an MER initiative poses potential challenges and risks that have to be taken into consideration beforehand in order to preview potential mitigation actions and be ready to act if any of them appear in the future. These potential challenges and risks are evaluated in terms of probability and impact (in Section 4) and mitigation actions are also proposed. The identified challenges are related to:

- Low data availability, in terms of difficulties for collecting them
- Lack of baseline information for indicators' evaluation of progress made
- Limited resources (human, material, financial) for carrying out monitoring activities
- Excessive number of indicators, which may generate higher monitoring costs
- Low stakeholders' engagement (e.g. to provide data, participate in activities)
- Insufficient commitment from GoG entities/agencies to support the SE4ALL Initiative
- Institutional, operational and technical capacity constraints
- Difficulty in data collection and reporting processes due to confidentiality issues

ABBREVIATIONS

AA	Action Agenda
ACTFCN	African Climate Technology Finance Centre and Network
AfDB	African Development Bank
CAP	Country Action Plan
CFP	Country Focal Point
CIF	Climate Investment Funds
EA	Energy Access
EC	Energy Commission
ECOWAS	Economic Community Of West African States
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
EE	Energy Efficiency
EPRAP	Energy for Poverty Reduction Action Plan
GDP	Gross Domestic Product
GEAR	GIS-based Energy Access Review
GEDAP	Ghana Energy Development and Access Project
GFT	Global Facilitation Team
GHACCO	Ghana Alliance for Clean Cookstoves
GIS	Geographical Information Systems
GLSS	Ghana Living Standard Survey
GSS	Ghana Statistical Service
GTF	Global Tracking Framework
ICT	Information and Communication Technology
KNUST	Kwame Nkrumah University of Science and Technology
LPG	Liquefied Petroleum Gas
M&E	Monitoring and Evaluation
MCC	Millennium Challenge Corporation
MDA	Ministries, Departments and Agencies
MDB	Multilateral Development Bank
M&E	Monitoring & Evaluation
MER	Monitoring Evaluation Reporting
MiDA	Millennium Development Authority
MMDA	Metropolitan, Municipal and District Assemblies
MoEP	Ministry of Energy and Petroleum
MoP	Ministry of Power
PHC	Population and Housing Census
PUE	Productive Use of Energy
RE	Renewable Energy
SE4ALL	Sustainable Energy for All
SEAAF	Sustainable Energy for All Acceleration Framework
SHS	Solar Home System
SL	Solar Lantern
SREP	Scaling up Renewable Energy Program in Low Income Countries
UNDP	United Nations Development Programme

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SECTION I – INTRODUCTION TO THE SE4ALL MER SYSTEM FOR GHANA

1 BACKGROUND

1.1 The SE4ALL initiative in Ghana

Ghana is the first country to commit to the Sustainable Energy for All (SE4ALL) initiative since its inception by the United Nation Secretary-General in September 2011. The SE4ALL initiative is a multi-stakeholder partnership between governments, the private sector and civil society organisations. The initiative focuses on achieving three interlinked objectives by the year 2030:

- Ensure universal access to modern energy services;
- Double the global rate of improvement in energy efficiency (EE);
- Double the share of renewable energy (RE) in the global energy mix.

Ghana has received support from the United Nations Development Programme (UNDP), the African Development Bank (AfDB) and other partner agencies, to implement the SE4ALL initiative. It adopted Sustainable Energy for All Acceleration Framework (SEAAF) to identify barriers and opportunities, and initiate concrete actions towards the achievement of the three SE4ALL objectives.

The SEAAF carried out a Rapid Assessment and Gap Analysis and subsequently rolled out a SE4ALL Country Action Plan (CAP) in June 2012 under the leadership of the Energy Commission (EC) and the former Ministry of Energy and Petroleum (MoEP)[3], and with the engagement of multiple stakeholders. The CAP 2012 prioritised the key interventions Ghana seeks to pursue where the removal of binding constraints will have the highest impact on people's living standards and socio-economic conditions, especially in underserved rural and peri-urban areas. A detailed bottleneck analysis was carried out and cost-effective solutions for their removal have been proposed to accelerate the progress towards SE4ALL goals. Based on impact and feasibility, Ghana has identified four priority intervention areas under each of the three SE4ALL objectives: Productive Use of Energy (PUE), Modern Energy for Cooking – LPG, Modern Energy for Cooking - Improved Cookstoves, and Off-Grid Electrification using renewable energy interventions.

In December 2013, an Investment Prospectus Framework was developed with support from the U.S. Department of State in order to identify potential investment opportunities and bankable opportunities in the priority areas. A Financing Working Group including representatives of the MoEP, EC, Ghana's SE4ALL Secretariat, ECREEE, U.S. Department of State, UNDP, AfDB, European Commission and the World Bank, has also been established with the mission to identify, develop and secure funds and investment to implement off-grid electricity access interventions as part of Ghana's SE4ALL initiative. The pertaining Investment Prospectus (IP) is currently being prepared and a draft version should be made available in the course of 2015.

In the meantime, Ghana is also developing its SE4ALL Action Agenda (AA) with support from ECREEE. Ghana's AA is expected to be released by end of 2015. A summary is already available which presents the strategic decision of Ghana to focus on specific interventions that are likely to produce tangible benefits for a controlled cost, instead of embracing a wide-angle strategy developing a more diverse set of activities. Therefore, Ghana is opting for a strategy focusing mainly in the area of energy

[3] In late 2014, the MoEP has been replaced by two ministries: the Ministry of Power (MoP) and the Ministry of Petroleum.

access, but with significant impact on renewable energy and energy efficiency to a certain extent.

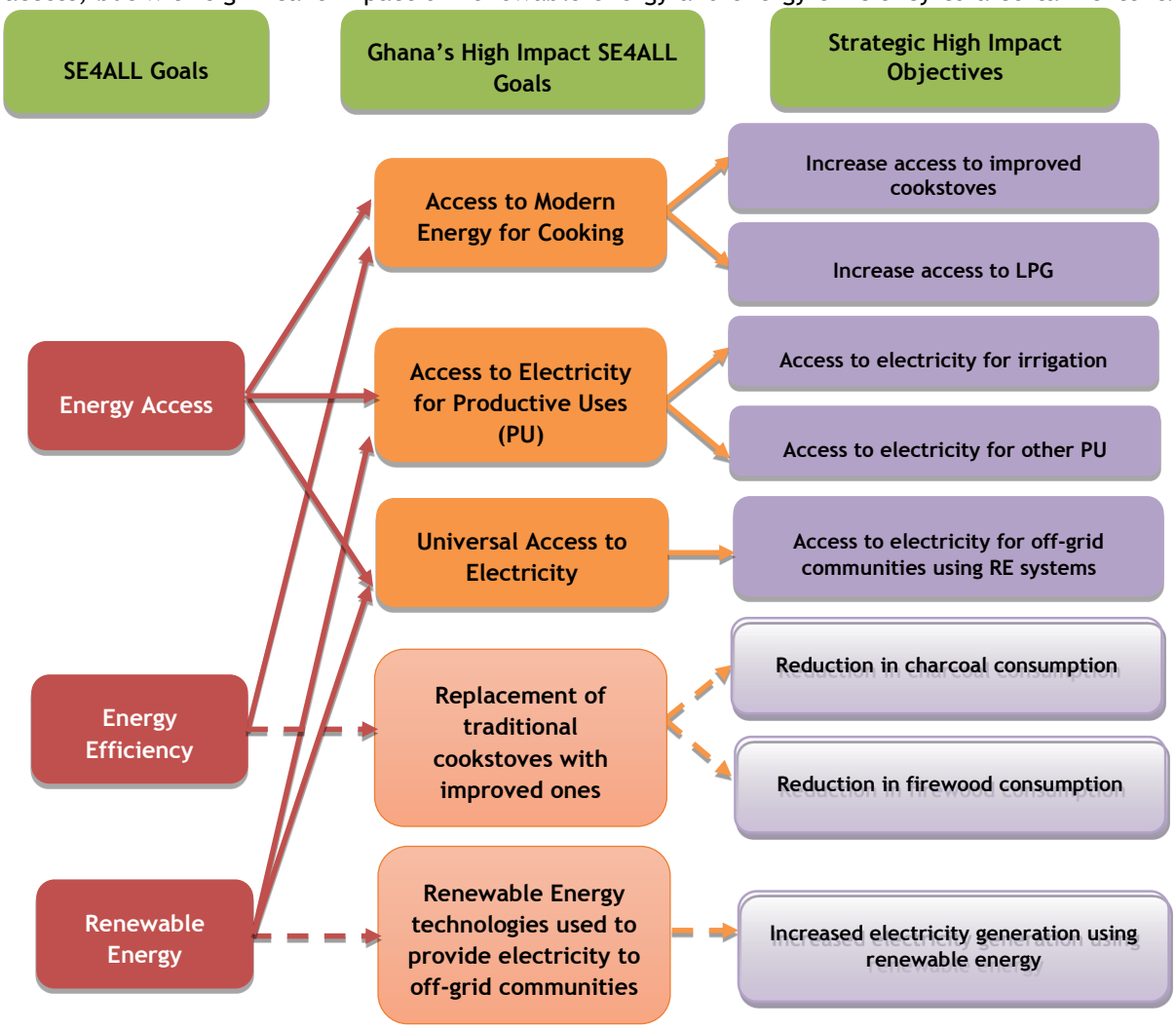

Figure 2 illustrates the goals and objectives of Ghana's SE4ALL initiative as per the CAP 2012 and the summary of Ghana's AA. Ghana has identified high impact country goals under each SE4ALL global goal, and for each country goal, strategic high impact objectives were defined. As seen in that figure, several country goals may have an indirect relationship with the global goal, e.g. in the case of universal access to electricity, RE systems will be used thus contributing directly to increasing universal electricity access but, simultaneously, indirectly contributing to increasing the share of RE in the energy mix.

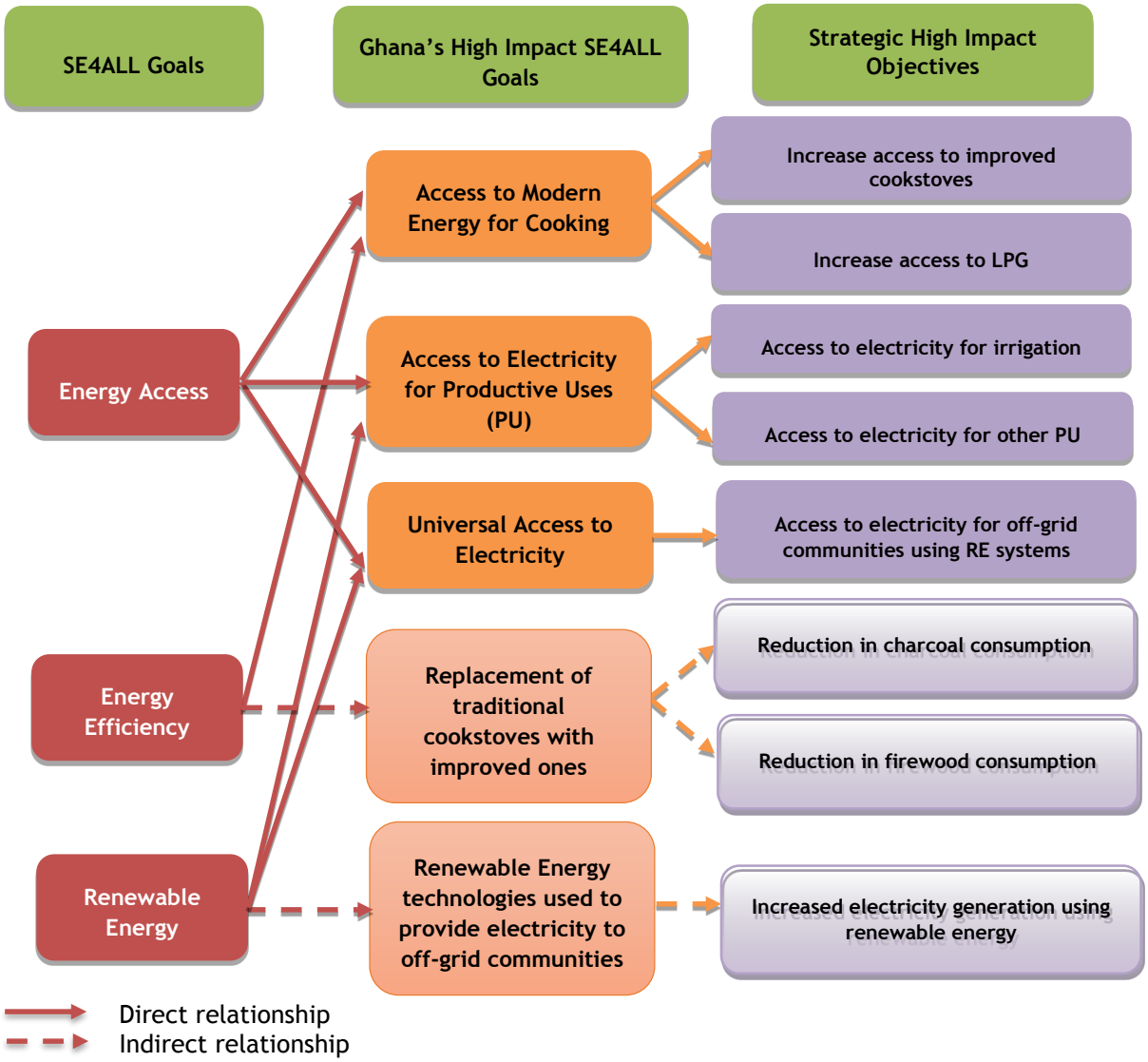

Figure 2 Ghana's priority areas and strategic objectives vis-à-vis SE4ALL goals[4]

1.2 Monitoring the implementation of Ghana's SE4ALL initiative

It is important to establish a robust monitoring, evaluation and reporting (MER) system for Ghana in order to monitor the implementation of the SE4ALL initiative at national level, which is framed and materialized in its CAP (and future AA and IPs). The MER will aid the EC to track progress towards the achievement of Ghana's SE4ALL goals and objectives, and identify any deviation or bottlenecks associated with the implementation for early resolution.

Such system would provide a framework for frequent review and update of Ghana's CAP/AA implementation; help informing national development planning and decision making; support sector policy development and programme design; help establish trends over time; as well as encourage policy dialogue within the Government and with Development Partners. It would also aid the reporting of results of Ghana's SE4ALL initiative at country level as well as among the SE4ALL Community.

In this regard, an efficient MER system is presented in this report with the following key elements:

[4] Authors' interpretation based on the scope of Ghana's CAP 2012 and summary of Ghana AA.

- Suggesting institutional arrangements (such as need for additional resources, specific capacity development) that can support sustainable monitoring, evaluation and reporting processes;
- Selection of a specific set of indicators to track Ghana's SE4ALL activities implementation and progress towards the achievement of Ghana's SE4ALL objectives;
- Building a robust data platform related to Ghana's SE4ALL initiative;
- Ensuring a holistic and participatory approach in monitoring activities vis-a-vis collaborative participation of stakeholders;
- Defining standardized procedures for data collection to ensure data quality, if necessary;
- Suggesting evaluation activities for assessing the implementation of Ghana's SE4ALL initiative;
- Ensuring relevant reporting of the results arising from the evaluation of the CAP/AA implementation to the different stakeholders, including the Global Facilitation Team (GFT) and the SE4ALL Hub.

Ghana's SE4ALL MER system is designed to fit Ghanaian context and needs. In line with the recommendations of the SE4ALL initiative, it builds on current monitoring and evaluation exercises already in place in Ghana including the Government's own monitoring and evaluation activities. It also links to the SE4ALL Global Tracking Framework (GTF), which proposes a holistic approach for tracking progress on all three SE4ALL goals, hence ensuring the provision of the most accurate data possible.

1.3 Monitoring global progress of SE4ALL: the Global Tracking Framework

More than 85 governments from developing countries have joined the SE4ALL initiative and have expressed an interest in advancing Sustainable Energy for All. To sustain momentum for the achievement of the three SE4ALL objectives, a means of charting global progress over the years leading to 2030 is necessary. The Global Tracking Framework (GTF) has been developed for this purpose. It establishes a methodology and data platform for regular global reporting against the three SE4ALL objectives by 2030.

Note: The first version of the GTF, which the following sections are referring to, has been released in 2013. A second version is currently under development and few information is already publicly available such as the key findings. The full report of GTF version 2 will however be published later in 2015, and presumably after this report and the MER system for Ghana have been completed.

1.3.1 Energy Access

One of the three objectives of the SE4ALL initiative is to ensure universal access to modern energy services by 2030. The SE4ALL initiative accepts different definitions for energy access. Therefore, it is challenging to determine the best way to capture quantitative and qualitative data. This is especially true when focusing on topics like the quantity of energy consumed, the quality and reliability of the service, as well as complementary issues such as the ability to pay (affordability) and the informality of the service. This is challenged by the way data is currently collected as stated in the following GTF quote:

"Because currently available global databases only support binary global tracking of energy access (that is, a household either has or does not have access, with no middle ground), this is the approach that will be used to determine the starting point for the SE4ALL Global Tracking Framework. Based on an exhaustive analysis of existing global household survey questionnaires, the following binary measures will be used:

- *Electricity access is defined as availability of an electricity connection at home or the use of electricity as the primary source for lighting.*

- *Access to modern cooking solutions is defined as relying primarily on non-solid fuels for cooking*[5].

An important limitation of these binary measures is that they do not capture improvements in cookstoves that burn solid fuels, nor are they able to register progress in electrification through off-grid lighting products. In the case of electricity, the binary measure fails to take into account whether the connection provides an adequate and reliable service, which it may often fail to do."

While there are a number of data sources that can collect global data (World Bank, IEA and WHO), GTF puts the challenge of creating country level data in the medium term. Basically the proposal is to develop systems based on the multi-tier metric established for Access. Based on the idea of using a multi-tier methodology for tracking progress towards achieving modern energy, the GTF encourages countries to set their own targets, but choosing any tier above tier 0: *"such targets will depend on the current access situation in the country, the evolution of the energy needs of users, the availability of energy supply for income-generating activities, and the affordability of different energy solutions in the country*". Countries have the flexibility of choosing whether they will improve access on a tier by tier basis or jump across tiers[6].

Table 1: Tracking access in the medium term[7]

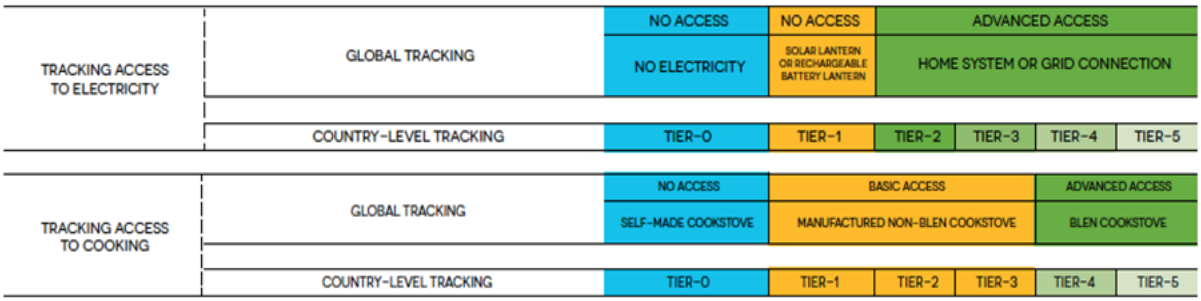

Table 2: Challenges to energy access tracking[8]

Challenge	Proposed approach to global tracking	Proposed approach to country tracking
Off-grid, mini-grid, and grid solutions	Two-threshold measurement to reflect access to electricity for lighting and for more advanced applications on a technology-neutral basis.	Technology-neutral multi-tier measurement based on attributes of supply and covering grid and off-grid solutions.
Quality of supply	Not reflected. Quality of supply cannot be measured without detailed household surveys or reliable utility data.	Qualities of supply aspects are reflected through detailed household surveys using the multi-tier framework.

[5] In case of Ghana, access to modern cooking is focused on the use of improved cookstoves (with solid fuels) and LPG.
[6] Table 1 and Table 2 are extracted from the Global Tracking Framework
[7] BLEN: Biogas-LPG-Electricity-Natural gas
[8] In the case of "productive community uses" and "heating applications", draft multi-tier approach methodologies exist and are in the process of review and validation within ESMAP, World Bank. These approaches may or may not be fully incorporated in the version 2 of the GTF. However, they could be taken into consideration for updating the MER system for Ghana when publicly released.

Challenge	Proposed approach to global tracking	Proposed approach to country tracking
Access to electricity supply versus electricity services	Electricity supply and services overlap across the two-threshold measurement.	Both electricity services and electricity supply are measured through separate multi-tier frameworks.
Productive and community uses	New methodologies to be developed.	New methodologies to be developed.
Heating	New methodologies to be developed.	New methodologies to be developed.
Improved solid fuel cookstoves	Two-threshold measurement to reflect the use of manufactured non-BLEN cookstoves and BLEN cookstoves (based on direct observation).	Technology-neutral multi-tier framework reflects the wide range of technical performance of non-BLEN cookstoves, along with the associated CCA attributes.
Stacking of stoves and fuels	Only the primary cooking solution is reflected.	Multi-tier framework reflects fuel stacking through the adequacy attribute.
Convenience and conformity	Not reflected. BLEN cookstoves may be assumed to be convenient and conforming.	Multi-tier framework reflects all actual use attributes.

1.3.2 Renewable Energy

Renewable energy is defined in different ways depending if the concept is approached from the resource perspective or the conversion technology that can convert such resource into either fuel or energy. While indicators on renewable energy consumption exist, data collection and formulation of same or similar indicators may vary. Therefore, the GTF proposes a "broad" definition for Renewable Energy that states:

"Renewable energy is energy from natural sources that are replenished at a faster rate than they are consumed, including hydro, bioenergy, geothermal, aerothermal[9], solar, wind, and ocean."

The GTF concludes that the best way to track this is as final energy consumed because: *"Since renewable energy sources do not have fuel inputs, they are only reported in final energy terms; expressing them in primary terms would require the use of somewhat arbitrary conversion factors."*

Like with many other global energy indicators, the GTF focuses in reaching *"high aggregation levels"* when at low aggregation, and mostly at country level, data gaps are significant. This is true not only for renewable energy resources, but for the associated technologies and non-grid solutions too. Another issue identified by the GTF is the challenge of measuring "heat output" from certain technologies.

So far, the GTF has adopted the baseline for 181 countries, based on IEA's review of energy balances for 20 years (1990 – 2010), and proposes to complement these balances with the following indicators:

(i) "Policy targets for renewable energy and adoption of relevant policy measures";

(ii) "Technology costs for each of the renewable energy technologies";

[9] Aerothermal energy involves utilising the calories present in the air, thanks to solar radiation, to generate heat and use it to air-conditioning a house (see http://www.repsol.com/es_en/energia-inteligente/informate/aerotermia.aspx).

(iii) "Total investment in renewable energy from the Renewable Energy Network 21, the International Renewable Energy Agency, and Bloomberg New Energy Finance, respectively."

Table 3: Challenges on renewable energy monitoring[10]

Challenge	Proposed Approach
Definition of renewable energy	Energy from natural sources that are replenished at a faster rate than they are consumed, including hydro, bioenergy, geothermal, aerothermal, solar, wind and ocean
Sustainability of renewable energy	Develop sustainability protocols for different forms of renewable energy over time, so that sustainability considerations can be incorporated to the definition in the medium term
Primary versus final energy accounting	Track renewable energy as a share of total final energy consumption, and as a subsidiary indicator the share of renewable energy in electricity generation
Measuring additional indicators	Track complementary indicators such as deployment diversification, renewable energy policy, technology cost and diversification

1.3.3 Energy Efficiency

Energy efficiency's definition under the GTF is:

"Energy efficiency is defined as the ratio between useful outputs and associated energy inputs. Rigorous measurement of this relationship is possible only at the level of individual technologies and processes, and the data needed for such measures are available only for a handful of countries. Even where data are available, they result in hundreds of indicators that cannot be readily used to summarize the situation at the national level."

Given the complexity of measuring energy efficiency, energy intensity (energy consumed per dollar of gross domestic product) has been used as a proxy. While this approach may create some concerns, some refinements and corrections can be made to reduce the distortions from the composition of the GDP to correlate them better with energy sector indicators. Energy intensity will:

- *"Rely primarily on energy intensity indicators*
- *Use PPP measures for GDP and sectoral value-added*
- *Use primary energy supply for national indicators and final energy consumption for sectoral indicators*
- *Complement those indicators with energy intensity of supply and of the major demand sectors*
- *Provide a decomposition analysis to at least partially strip out confounding effects on energy intensity*
- *Use a five-year moving average for energy intensity trends to smooth out extraneous fluctuations"*

Table 4 shows a summary of the challenges on energy efficiency, as identified in the GTF.

[10] Table copied from the Global Tracking Framework

Table 4: Challenges on energy efficiency monitoring[11]

Challenge	Proposed Approach
Multidimensionality of energy efficiency	Track global performance on energy intensity while also tracking the energy intensity of major economic sectors and the efficiency of the energy industry. Move toward better tracking of targets, policies, institutions, and investments.
Intensity versus efficiency	Track energy intensity for countries and major regions and blocks. Where feasible, complement that tracking with decomposition of changes in energy demand to strip out structural effects.
Market exchange rate versus purchasing power parity	Track energy intensity using the purchasing power parity measure to capture the value-added of economic output.
Primary versus final energy	Track global energy intensity in terms of total primary energy supply and sectoral energy intensity in terms of final energy consumption.
Volatility of efficiency measures	Track a five-year moving average trend.

1.4 Global tracking vs. country tracking

The GTF provides an adequate system for basic global tracking and reporting, however this can only help to portray the big picture. In this regard, a list of considerations is[12]:

- The GTF has no short-term focus on country tracking systems. All is concentrated at the global level.
- The GTF has a series of recommendations on what should be the country efforts in the *"medium term"*, some of them will take time to properly develop.
- There is a big concern on data gaps and mechanisms to measure thermal power across technologies. The GTF expects that new methodologies and mechanisms will be developed to close the gaps.

Appropriate country tracking is an essential complement to global tracking and will allow for a much richer portrait of energy sector developments. The SE4ALL initiative expressively states that *"… a mechanism should be put in place to track progress that should link to the Government's own monitoring and evaluation instruments and, where relevant, build on existing monitoring exercises by the different partners, facilitate the collaborative participation of stakeholders in monitoring, and make the monitoring information accessible to the public. This work should also link to the Global Tracking Framework ensuring the provision of the most accurate data. It will also be important to make provisions for regular reporting on Action Agenda implementation to the GFT and Regional Hub"*.

Ghana SE4ALL MER system has been specifically designed to answer this need taking into account the Ghanaian context, the country SE4ALL strategy (CAP) and the MER activities already in place in the country.

[11] Table 4 is extracted for the Global Tracking Framework
[12] This list is based on the GTF version one, a new version is to be presented during the third quarter of 2015.

2 CONSIDERATIONS FOR DEVELOPING A SE4ALL MER SYSTEM FOR GHANA

2.1 Approach for developing Ghana's MER system

The MER system for Ghana is developed taking into consideration:

- Ghana's SE4ALL goals and targets set in Ghana's CAP from 2012, and confirmed in the summary of SE4ALL Ghana's AA;
- The GTF guidelines - as set in the first version of the GTF, the second version still not being available to the public;
- Current monitoring or tracking systems applied in Ghana - which will enable the identification of existing indicators, current practices and standards to facilitate the implementation of the SE4ALL MER activities;
- The need to fit the Ghanaian context and environment and therefore to develop a MER system which allows for some flexibility (i.e. having the capability to respond to changing circumstances and new information);
- The possibility of using a multi-tier approaches derived from the GTF for indicators related to energy access;
- The identification of appropriate indicators under each goal that the country has set, which will enable the country to evaluate progress toward the accomplishment of those goals.

Key Concepts

Monitoring refers to the continuous process of collecting data on the agreed indicators to provide indications of the extent of progress and achievements made. It involves the systemic collection of information and data as well as calculating specific indicators to evaluate the effectiveness of the activities implemented. Monitoring will be conducted following specific procedures to collect information, data, and variables that are set for each indicator. Procedures that are already in place in the country to track variables will be taken into consideration. Monitoring also contributes to the creation of a robust data platform related to SE4ALL which can be useful for other future activities or projects.

Evaluation refers to the action of assessing the current scenario (at any given moment during implementation) in comparison to the baseline scenario and the expected targets or objectives set for the period under evaluation and for the subsequent periods. This comparison enables the country to identify delays or deviations in the achievement of targets and to take corrective actions accordingly (e.g. modify targets or implementation strategies). Proper monitoring is vital for conducting a successful evaluation, which will aid to keep the initiative on track. A proper evaluation frequency should be selected in accordance with the type of activity under execution and targets.

Reporting refers to the systematic and timely provision of essential and useful information showing how Ghana is progressing toward the achievement of its SE4ALL goals. It should take place at periodic intervals and should result in the publication of a performance report, or similar document. Reporting will provide a regular feedback on Ghana's SE4ALL initiative evolution to stakeholders and the public indicating progress made, problems found, successes achieved and lessons learnt during the initiative's implementation.

An **indicator** is a quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor.

A **logical framework (or Logframe)** is a management tool used to improve the understanding of the planned interventions, most often at the project level. It involves identifying strategic elements (goals, objectives, outputs) and their causal relationships, indicators, and the

assumptions or risks that may influence success and failure. It thus facilitates planning, execution and evaluation of a development intervention.

The relationship among the three steps of the system, i.e. Monitoring, Evaluation and Reporting, with the CAP/future AA implementation is shown in Figure 3. Monitoring the selected indicators for each SE4ALL country goal is vital for conducting an evaluation of how the implementation of the SE4ALL CAP/future AA, is progressing throughout time. The evaluation allows for reporting the results of this implementation, which can eventually be shared with the general public, stakeholders and other countries committed to follow the SE4ALL global initiative.

Evaluating results and progress enables the country to take corrective actions, modify strategies and activities, and identify opportunities for the future improvement of its action plan or corresponding action agenda.

The SE4ALL MER system is the key management tool to be used by the EC in its role of hosting SE4ALL Secretariat for Ghana, to manage data collection, analysis of results and report on the performance of the accomplishments made under the country's SE4ALL goals. It captures those key elements of the expected results from the initiative's implementation at country level, by outlining proposed performance indicators for each strategic objective and targets, baselines, frequency of data collection, data sources and methods, as well as responsibilities of the different entities involved.

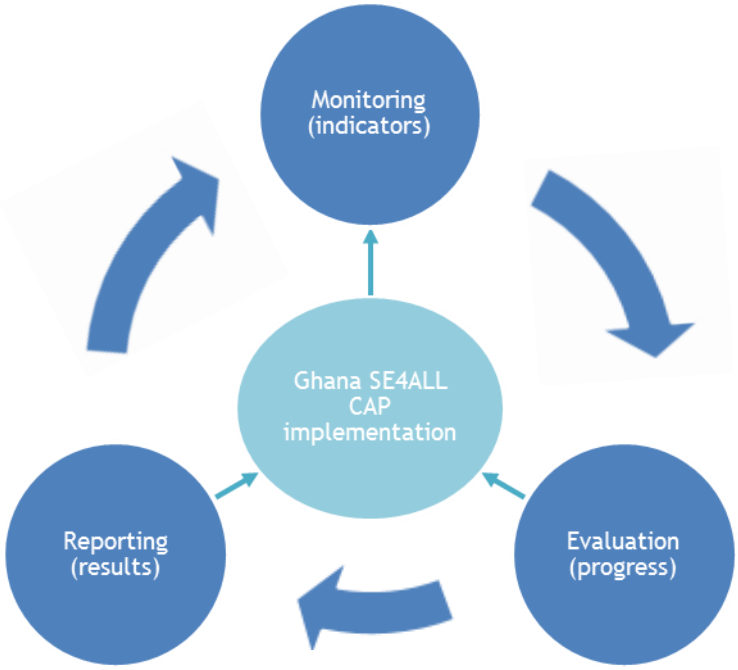

Figure 3 Relationship between Ghana's SE4ALL MER system and CAP implementation

2.2 Objective of Ghana's MER system

The objective of having a MER system for Ghana is to track and evaluate how the country progresses toward the achievement of the SE4ALL goals and targets that are set in the CAP and upcoming AA, and which are defined to be achieved by 2020.

2.3 MER system description

The MER system developed for Ghana consists of five main components which are:

- Logical Framework ("Logframe")
- Monitoring Plan

- Evaluation Plan
- Reporting Plan
- Performance Assessment Framework

All those components are described in the following paragraphs within this section. They were designed to be applied in the Ghanaian context and were developed with support from the EC. The EC will be the entity responsible for ensuring that the MER system is applied correctly and that all the involved entities and stakeholders provide the necessary information and data in a timely and proper manner.

MER activities must be participatory and transparent, but the confidentiality of data reported by the various partners and stakeholders should be protected if deemed necessary. Stakeholder engagement (e.g. country institutions, national NGOs, etc.) and understanding of the implications of applying such a system in Ghana is essential for ensuring a proper data "flow" that will feed the MER. Moreover, robust governance is vital to ensure the successful conduction of monitoring activities and data quality control procedures.

2.3.1 Logical Framework

The proposed logical framework provides a strategic overview of Ghana's SE4ALL activities. It is presented in the form of a table and aims at providing information about the key components of Ghana's SE4ALL initiative implementation in a clear, concise and systemic way. It contains the proposed indicators qualified by baseline and targets, along with sources of data, means of verification and assumptions for each indicator. The Logical Framework for Ghana's initiative is show in Section II, as part of the MER system, and it intends to present an overview of the SE4ALL initiative including a wide set of potential indicators that could be used. Since the SE4ALL initiative in Ghana is focused on specific goals and aspects that the country wants to advance to improve the population's socioeconomic development, the MER system was designed to fit that Ghanaian context and thus contains a selected set of indicators that will be tracked, some of which are included in the Logframe of Table 7. Some others, mentioned in the Logframe, will not be tracked because they are directly related to the country's SE4ALL goals and objectives.

2.3.2 Monitoring Plan

1) Selection of indicators

The design of the Monitoring Plan implied, as a first step, the identification of the SE4ALL country goals and objectives that the country aims at achieving as well as the activities to be implemented to do so. This allowed continuing with the second step of the process, which is to identify and select the appropriate indicators that will enable the country to track progress toward the achievement of its goals. The resulting list of indicators was a combination of inputs from the EC, suggestions from the Consultant and information collected from stakeholders interviewed during the missions conducted in Accra.

The selected indicators are listed in Section II (MER System). Different levels of indicators were identified: at *"goal level"*, and at *"objective level"* under each SE4ALL goal.

The monitoring of the *"objective level"* indicators will be conducted using data monitored during the implementation of Ghana's CAP activities. These data will be collected by ministries or agencies dealing with the specific activities, and reported to the EC in order to estimate the corresponding objective level indicators.

Two aspects related to indicators are essential to reduce the demand of resources associated to monitoring activities: diversity and number of indicators. It is necessary to assess those indicators that, although they are more difficult to monitor, capture the substance of the change that is occurring in a better way. Moreover, having fewer indicators would reduce associated monitoring costs but it is important to analyse the relevance of each indicator and that there are enough ones to cover everything that needs to be tracked.

2) Identification of baselines and targets

The general country goals as well as the objectives under those goals are set by Ghana in its CAP, or AA in the near future. A goal can have one or more targets, which is what the country aims at achieving in terms of results in a certain period of time, derived from the actions taken.

In terms of baselines, it is essential to determine what the starting point (i.e. the baseline) is in order to provide something to compare with after the actions are taken and their results are evaluated. It is suggested to identify the most appropriate baseline for those indicators where currently there is no information on baselines. This should be carried out during the first year of MER implementation. Without a baseline it will not be possible to evaluate progress.

3) Indicators' monitoring protocols

A proper protocol to monitor each of the indicators is to be developed taking into consideration several aspects, such as: method and frequency of calculation, sources of data and information, frequency of data collection, responsible entities involved in the monitoring process and data collection activities, risks and assumptions associated to the indicator, amongst other. These protocols are taken from current monitoring activities carried out in the country where available.

4) Availability of data

In order to save costs, time and efforts, data sources which are already available should be identified and analysed before deciding to create new data sources.

2.3.3 Evaluation Plan

The evaluation process consists of annual reviews of the progress made through the activities conducted and performance achieved towards the targets that are set under Ghana's SE4ALL CAP, or in the future, Ghana's SE4ALL AA.

The evaluation will ensure a broad and representative perspective on the achievements and challenges in the implementation of Ghana's SE4ALL activities, and will allow to assess the adequacy of the adopted strategy to meet the targets as planned and take any corrective action if needed. The evaluation should include the provision of recommendations for future monitoring periods and it is also intended to inform the stakeholders participating in the implementation of the CAP for follow-up actions required to further strengthen the CAP's performance and strategic activities. It will also be of interest for the SE4ALL Hubs, the GFT, Development Partners and other stakeholders, with respect to lessons learnt from implementation of the CAP.

In general terms, the purpose of the evaluation activities is twofold:

(i) To contribute to improving program effectiveness and delivery towards Ghana's SE4ALL goals by 2020 by using knowledge and lessons learnt from the CAP's implementation back into the country initiative;
(ii) To contribute to overall alignment of strategic activities of the CAP and ensure that it remains relevant to addressing country level objectives whilst also aligned to the global SE4ALL initiative.

During the annual SE4ALL evaluation, the EC will review the results achieved in the current monitoring period in comparison to the baseline and the previous year: progress on actions and targets met as planned in Ghana's CAP using the agreed indicators. It will also help identify the actions needed for the following year.

2.3.4 Reporting Plan

Using the results of the evaluation phase, the EC will report on an annual basis on the progress and performance towards the implementation of Ghana's SE4ALL CAP. The yearly progress will be presented in a Performance Assessment Report, or similar reporting document. This report must clearly show the baseline scenario and the progress made against the targets set where this is required and available.

The annual report would be prepared in time for sharing the results during the annual SE4ALL Forums or any other forums that the country may consider attending or hosting.

2.3.5 Performance Assessment Framework

The Performance Assessment Framework, which was developed taking the Logframe as a basis, is the key instrument to facilitate understanding of indicators, showing in a clear way a summarised plan for monitoring (including frequency, data collection methodology, roles and responsibilities, etc.), analysing and reporting on the outcomes of Ghana's SE4ALL CAP/AA implementation. It also captures the expected results of the implementation of Ghana's CAP/AA implementation by outlining targets and baselines.

3 MER ACTIVITIES IN PLACE IN GHANA

A number of monitoring and evaluation activities are currently in place in Ghana (or under development), and would be tapped into as source of information in order to feed into the different elements of the SE4ALL MER system for Ghana.

3.1 Population and Housing Census (PHC)

The Population and Housing Census is produced every ten years by Ghana Statistical Service (GSS). The last PHC has been published in 2012 and presents information on population and housing characteristics for the entire country, the ten administrative regions and the 170 districts for the year of 2010. The sections covered by the 2010 PHC are: geographical location of the population, household and non-household population, literacy and education, emigration, demographic and economic characteristics, disability, information and communication technology (ICT), fertility, mortality, agricultural activity and housing conditions.

The 2010 PHC monitors several indicators including energy indicators. Data monitored by the PHC which will be useful for the SE4ALL MER system are:

- Number of households in the country;
- Percentage of households using electricity (mains[13]) as the main source of lighting;
- Percentage of households using solar energy as the main source of lighting;
- Percentage of households using LPG as the main fuel for cooking.
- Percentage of households using firewood or charcoal as the main cooking fuel.

3.2 Ghana Living Standard Survey (GLSS)

The Ghana Living Standard Survey (GLSS) is a nation-wide household survey produced every 5-6 years by the GSS and designed to generate information on living conditions in the country. The survey collects detailed information on topics, including demographic characteristics of the population, education, health, employment and time use, migration and tourism, housing conditions, household agriculture, access to financial services and asset ownership, as well as the perception of governance, peace and security in the country.

The GLSS was initiated to provide a more comprehensive, reliable and up-to-date statistics and indicators to monitor and evaluate the effects of development policies and programmes on living standards. It completes the statistical data of the PHC and many indicators are common to the two exercises.

The last round of GLSS (GLSS 6) covered a period of twelve months from 18th October 2012 to 17th October 2013 and had the following objectives:

- To provide information on patterns of households consumption and expenditure at a greater level of disaggregation.

[13] Mains refers to a connection to the national electricity grid.

- Serve as the basis for the construction of a new basket for the next re-basing of the Consumer Price Index.
- Provide information for up-dating the country's National Accounts.
- Provide information on household access to and use of financial services.
- Estimate the number of persons in the labour force (employed, under-employed and unemployed) and their distribution by sex, major age-groups, educational level, disability status, geographical and rural/urban spread, as well as the ecological manifestations of these.
- Estimate the number of child workers (or children in employment) aged 5-17 years, and its distribution by sex, major age-groups, educational status, geographical, ecological and rural/urban spread, etc.

GLSS usually covers a nationally representative sample of households in selected enumeration areas. However, the magnitude remains such that it requires substantial human, material and financial resources to successfully implement it, like for the PHC. To collect the data required for the GLSS, GSS receives substantial support and cooperation from various stakeholders including regional and district administrators, traditional rulers and community leaders. Detailed information is collected in-the-field using a set of questionnaires developed for the survey. Then, it is compiled, processed and reported by GSS staff.

The GLSS monitors the same data that will be useful for the MER system than the PHC:

- Number of households in the country;
- Percentage of households connected to the national electricity grid and using electricity as the main source of lighting;
- Percentage of households using solar energy as the main source of lighting;
- Percentage of households using LPG as the main fuel for cooking;
- Percentage of households using firewood or charcoal as primary cooking fuel.

3.3 Energy Outlook by the Energy Commission

Every year, the Energy Commission presents an "Energy Outlook" summarizing the national scenario including supply and demand forecasts for electricity, crude oil, petroleum products, natural gas and charcoal, as well as factors that could influence the demand and supply. It provides information on fields that are relevant for tracking the SE4ALL initiative evolution, such as:

- The power subsector: grid-connected RE installed capacity (plus thermal plants, etc.), transmission losses as percentage of gross transmission.
- The petroleum subsector: consumption of LPG and other derivatives, household fuel use split in LPG, charcoal, firewood, kerosene and electricity (based on PHC).
- The woodfuel subsector: charcoal demand.

The report also provides information on forecasts, prices, opportunities and recommendations for each sector.

3.4 GHACCO

The Ghana Alliance for Clean Cookstoves (GHACCO) has been established to serve as a strong stakeholder platform to lead and catalyse a revolution in the cookstoves sector. In line with Ghana's SE4ALL CAP and the country strategic objectives for clean cooking, GHACCO aims at creating a platform to foster the adoption of clean cookstoves and fuels by 4 million households in Ghana and distributing 5 million cookstoves by 2020. Its mission is to promote partnerships among members of the alliance and other actors to ensure synergy in influencing policies and stimulating actions that contribute to the cookstove industry and sustainable utilization of clean energy and fuels.

GHACCO has created a specific working group which focuses on Monitoring and Evaluation (M&E) activities and which is currently developing a country M&E framework and the associated toolkit for evaluating the progress in the national clean cooking sector. The country M&E framework would track progress and performance on:

- Adoption of clean cooking in Ghana;
- Impact of adoption of clean cooking on lives of adopters including on lives saved, livelihoods, empowered women, and the environment;
- Impacts on lives of participants in clean cooking value chains particularly their livelihoods and gender empowerment;
- Changes in the clean cooking sector resulting from GHACCO activities and those of its members;
- Changes in the Ghanaian clean cooking sector as a whole.

It is in line with Ghana's SE4ALL CAP and the data resulting from the GHACCO M&E activities would be useful for tracking of SE4ALL progress (besides informing actions of GHACCO, development partners, NGOs, private sector, financial services providers and communities).

Due to its mission in the clean cooking sector, GHACCO could act as a focal point for Ghana for monitoring and evaluating clean cooking related actions and impacts, and reporting these to the EC besides its report to the Alliance Secretariat and other relevant stakeholders of the sector.

3.5 Scaling-Up Renewable Energy Program in Low Income Countries (SREP)

The Scaling-Up Renewable Energy Program in Low Income Countries (SREP) is supported by the Strategic Climate Fund of the Climate Investment Funds (CIF). The program aims "*to pilot and demonstrate the economic, social and environmental viability of low carbon development pathways in the energy sector by creating new economic opportunities and increasing energy access through the use of renewable energy*". The main output of a SREP is the development and implementation of an investment plan to increase energy access through the use of renewable energy.

Currently, ten countries have an endorsed SREP Investment Plan and three countries are developing theirs. Ghana is part of the fourteen new pilot countries selected to benefit from the SREP. SREP mission in Ghana started in September 2014 and lead to the publication of the draft SREP Investment Plan for Ghana which given its focus on increasing energy access through the use of renewable energy is considered as one of the implementation tools of the coming Ghana's SE4ALL Investment Prospectus.

CIF monitoring and reporting is of critical importance to track performance and ensure accountability. The goal is to be able to generate, aggregate, synthesize and report data across countries and programs to demonstrate results. The objectives are (i) to create a functioning monitoring and reporting system, (ii) to help generate and analyse high quality data, and (iii) to achieve this by placing learning at the heart of all its activities.

As stated in the draft SREP Investment Plan for Ghana, the SREP Monitoring and Evaluation (M&E) system is a key tool to plan and monitor the SREP-funded activities, and essentially aimed at:

- *Defining how transformational impacts will be measured before, during and after the life of the program,*
- *Ensuring that data collected, processed and analysed at the level of the three investment projects harmoniously feed into the programmatic M&E system,*
- *Supporting the knowledge management and sharing initiatives of the Programme, by highlighting successful outcomes and lessons learnt and recommending ways to improve programme implementation and its transformational impact.*

It is based on a set of SREP core indicators, and will, to the extent possible, be integrated into Ghana's existing M&E system of the energy sector - while solving some of its main constraints and

bottlenecks, through capacity building initiatives. Its design should therefore avoid the development of parallel structures or processes for monitoring and evaluation.

The SREP indicator that will be useful for the SE4ALL MER system is the annual electricity output from renewables in GWh per year, which is monitored by national utilities and the Ministry of Power.

3.6 GIS-based Energy Access Review (GEAR) Toolkit

Between 2009 and 2011, the EUEI PDF, upon request of the Ghana Ministry of Energy, supported The Energy Center of Kwame Nkrumah University of Science and Technology (KNUST) in the implementation of a project aiming at employing and complementing existing policies, strategies, plans and recommendations from the Energy for Poverty Reduction Action Plan (EPRAP) and the Ghana Energy Development and Access Project (GEDAP) to achieve national goals and the Millennium Development Goals.

The program pursued five objectives of which:

- To use Geographical Information Systems (GIS) to collate and analyse national level data and provide timely information on population distribution, services, economic activities, and status of energy access programmes; and,
- To facilitate project identification, planning, implementation and impact assessment for the EC, the Ghana Ministry of Energy and the ECOWAS Commission for timely development, implementation and monitoring of energy access strategies.

The GEAR Toolkit has been developed as a result of this programme. It focuses on the development of a digital platform that can enable users get information pertaining to electrified and non-electrified communities in Ghana (e.g. type of electricity generation, population connected, capacity installed, etc.). The Toolkit is intended to display energy access as well as LPG data and show electrification trends in order to facilitate Energy planning and management. It includes the production of a digital map and a functional geo-database of the energy facilities including access to electricity in schools, access to electricity in hospitals, access to electricity in security posts, access to biogas, as well as street lighting.

The energy access mapping of Ghana is currently still on-going, and a particular focus is set on off-grid communities (mainly lakeside and riverbank communities).

3.7 Past M&E exercise: Millennium Development Authority M&E Plan

In August 2006, the Government of Ghana signed a 5-year Compact with the Millennium Challenge Corporation (MCC) of the United States of America to reduce poverty through economic growth led by agricultural transformation. The Compact consisted of a series of investments in agriculture, transportation and rural development activities in 30 targeted districts across Ghana. The implementation of Ghana Compact was left to the Millennium Development Authority (MiDA), a government corporation specifically established by the Ghanaian Parliament for that purpose.
M&E activities were an important component of the programme design as it allows to:

- Monitor the various components of the Ghana Compact to determine whether investments were achieving intended results.
- Highlight the M&E requirements that must be met in order to allow disbursements.
- Guide program implementation and management so that stakeholders understood what results were expected, by when the results should be achieved and who was responsible for achieving and reporting them.
- Provide a framework that would alert stakeholders to performance problems so that adjustments could be made as needed.

Throughout the Compact period, i.e. 2006 to end-2011, MiDA monitored and evaluated a set of performance indicators linked to the specific activities implemented under the programme. Amongst these indicators, three were related to energy:

- Number of agricultural facilities in target districts with electricity due to rural electrification sub-activity;
- Number of electricity projects identified and diligenced;
- Kilometres of electricity lines identified and diligenced.

The monitoring of these indicators stopped with the Compact and therefore the information collected are no longer relevant to populate the SE4ALL MER system. However, some methodologies for data collection of the MER system could build on the methodologies set in the Compact, especially those related to PUE in the agricultural sector.

4 CHALLENGES TO THE SE4ALL MER ACTIVITIES AND RECOMMENDATIONS

4.1 Challenges and risks

As in any initiative or project, there are challenges and risks that should be taken into consideration by the EC. Doing this provides the country with the opportunity to preview mitigation actions if any constraint arises. Table 5 provides a list of potential risks that may show up during the implementation of the MER system, and the mitigation actions that could be taken into consideration for their speedy resolution.

Table 5: Potential risks and mitigation actions

Potential risk or challenge	Probability[14]	Impact	Potential mitigation action
Low data availability and accuracy	H	H	Some indicators will need to be estimated from specific data which might be hard to collect in the field or at the required frequency. The estimation of these indicators will therefore involve assumptions which could affect the accuracy of the reported information. This risk is could be mitigated through simple, clear and unambiguous methods of calculation of suggested indicators, as well as the use of data that are likely already tracked in the country and available, where possible or international data sources that can complement country data. Specific capacity building to train the implementing partners to the SE4ALL MER activities will also be provided to ensure the consistency of the system. Also, devise new data collection mechanisms for future monitoring periods, if possible. Finally specific data quality controls could be defined and implemented to further mitigate this risk.
Lack of baseline information for indicators monitoring	H	H	Several indicators have no baseline information that will serve as "starting point" against which future measures should be compared. This implies that it will be difficult to understand the actual progress made after the first monitoring period because the new results will not be able to be compared to any previous data, because data was not measured before.

[14] L, M, H stand for Low, Medium and High.

Potential risk or challenge	Probability[14]	Impact	Potential mitigation action
			A mitigation action could be to establish a plan to determine those baselines currently lacking during the first monitoring period using available information, if possible.
Limited resources: human, material and financial	H	M	The magnitude of the SE4ALL monitoring activities, nation-wide, will require a large mobilisation and utilization of human and material resources to collect and process the data. Therefore, dedicated resources should be made available through adequate planning and budget to support monitoring and evaluation, as it is an essential requirement for implementing a MER. Find synergies with ongoing monitoring activities (e.g. PHC, GLSS, GHACCO, etc.).
Excessive number of indicators	M	H	Tracking a large number of indicators increases the complexity of the MER system. This could challenge the capabilities of the implementing stakeholders in efficiently collecting and processing the data, and therefore affect the sustainability of the system. Frequent assessments of the effectiveness of the MER system and its revision accordingly will help mitigate this risk. Feedback will be collected from the stakeholders to assess the difficulties and barriers met when collecting and processing data. Data quality and usage will also be assessed to avoid pile-up of collected information. According to the results of this assessment, the set of indicators would be refined and the indicators protocols simplified.
Low stakeholders engagement	M	M	The effectiveness of the MER system implementation is linked to the engagement of all stakeholders involved in the implementation of the SE4ALL initiative. Partnerships will need to be created and strengthened to support the MER activities. This could be achieved by various means such as organising workshops and conferences, as well as maintaining frequent communication on results of the MER activities. A robust governance from the SE4ALL Secretariat will also be vital to ensure the sustainability of stakeholders' commitment and the timely delivery of results.

Potential risk or challenge	Probability[14]	Impact	Potential mitigation action
Insufficient commitment from other GoG entities to support the SE4ALL initiative	L	H	The SE4ALL initiative is country-driven. The Government and all the involved institutional entities should therefore show a strong commitment towards the achievement of the SE4ALL country goals. This will create an enabling environment for the implementation of the SE4ALL activities and will strengthen the partners' engagement. The continued and long term resource support and pro-active participation and promotion from the SE4ALL CFP, the Government of Ghana, development partners and other SE4ALL stakeholders will contribute to the sustainability of the system.
Institutional, operational and technical capacity constraints	L	H	The MER system involves specific procedures and methodologies which might not be familiar to the implementing stakeholders. To ensure that all stakeholders are capable of implementing the MER process, a tailored capacity building programme will be developed and specific training workshops organised. This will also contribute to mitigate data quality risks.
Difficulty in data collection and reporting processes due to confidentiality issues	L	L	Due to confidentiality issues, some partners and stakeholders might be reluctant to share information which will affect the implementation of the MER system. Adequate protocols should be put in place to ensure the protection of confidential data in the MER activities.

4.2 Capacity building to ensure efficient use of the SE4ALL MER system in Ghana

The SE4ALL MER activities will involve numerous stakeholders on various tasks such as data collection, calculation of indicators, evaluation, and reporting. In order to ensure the efficiency of these activities and that the results correspond effectively to what is expected, it is necessary to ensure that all the stakeholders involved clearly understand the purpose of such activities and how to implement them.

The SE4ALL MER system especially includes clear methodologies for data collection and indicator calculation. The stakeholders responsible for applying the system would need to be trained and experienced in the application of these methodologies to ensure the consistency of the process as well as the accuracy of the results.

The tables below identify the capacities needed and the possible capacity building activities for:

- The Energy Commission, host of SE4ALL Secretariat for Ghana, responsible for implementing the MER system; and,

- The stakeholders which will be involved in providing and collecting data associated to monitoring activities, such as GHACCO, community based organisations, district assemblies, amongst others.

Table 6: Capacities needed and capacity building activities proposed to implement the MER system

MER actor	SE4ALL Secretariat: Energy Commission	
MER tasks: Monitoring, Evaluation and Reporting	Capacities needed	Possible capacity building measure
• Analysing and compiling information received from implementing partners. • Maintenance of MER database. • Preparing annual reports on progress and performance. • Quality control of evaluation and reporting. • Updating the MER system according to the update of the CAP or AA.	• Human resources with sound MER experience. • Dedicated experience staff at peak moments of annual evaluation and reporting.	• Review along with the Energy Commission, their capacity needs to manage the MER system. • Design a training workshop and invite EC members to participate to be trained on how to implement the MER system.
MER actor	Stakeholders involved in the monitoring activities	
MER tasks: Monitoring	Capacities needed	Possible capacity building measure
• Compilation of data and information that will be used to calculate the indicators. • Internal quality control on monitoring activities.	• Human resources. • Understanding of monitoring activities and data quality control procedures. • Knowledge of governance.	• Participation at a training workshop on the MER system implementation. • Potential coaching on specific monitoring procedures by the EC.

Tailored capacity building activities would be developed and implemented to strengthen the capacities of the stakeholders involved in the SE4ALL MER system implementation.

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SECTION II – SE4ALL MER SYSTEM FOR GHANA

Sustainable Energy for All (SE4ALL)

GHANA

MONITORING, EVALUATION AND REPORTING SYSTEM TO TRACK PROGRESS TOWARDS THE ACHIEVEMENT OF THE SE4ALL COUNTRY GOALS

July 2015

EXECUTIVE SUMMARY

This document presents the Monitoring, Evaluation and Reporting (MER) system which will be applied to track progress towards the achievement of Ghana SE4ALL goals as set in the country SE4ALL initiative, and reflected in the Country Action Plan (CAP) and upcoming Action Agenda (AA). This version of the MER system is based on targets, objectives and activities set in the CAP 2012, some of which are updated in the AA Summary (2015). The MER system will need to be updated following the publication of Ghana's SE4ALL AA to reflect any addition or change to the CAP 2012.The MER system is comprised of a Logical Framework ("Logframe"), a Monitoring Plan, an Evaluation Plan, a Reporting Plan and a Performance Assessment Framework. The Logframe provides a strategic overview of the activities under the SE4ALL initiative that Ghana pursues, outlining the main results to be achieved at various levels, and their associated key performance indicators. It provides a general frame to focus the monitoring, evaluation and reporting efforts.

The Monitoring Plan provides a guide on how to monitor data that will show how Ghana is progressing toward the achievement of its SE4ALL goals. It includes a list of specific indicators which will enable tracking all relevant aspects of the implementation of Ghana's activities under the initiative. A monitoring protocol is associated to each indicator with specific indication on the frequency of the data collection as well as the responsible monitoring entities.

The indicators currently included in the MER system under each goal and objective are:

SE4ALL Global Goal 1: Universal Energy Access by 2030	
SE4ALL Ghana Goal 1: Ensure universal access to modern energy services by 2020	
1	***National electricity access percentage (%) -*** *measure based on number of hh connected*
2	***National access percentage to modern energy for cooking (%)*** *- measure based on number of hh using LPG or non-BLEN manufactured biomass coockstoves as primary solution for cooking*
1.1) SE4ALL Ghana Objective 1: Provide access to electricity in remote communities using decentralised renewable energy systems	
3	*Number of households using RE as primary source of energy for lighting and very low power appliances (≤30 kW)*
4	*Number of households using RE as primary source of energy for lighting and low power appliances (31 - 150 kW)*
5	*Number of households using RE as primary source of energy for lighting and medium to high power appliances (>150 kW)*
6	*Number of communal facilities with access to electricity through a decentralised RE system*
7	*Number of solar lanterns distributed in off-grid communities*
1.2) SE4ALL Ghana Objective 2. Improve access to modern energy for productive uses	
8	*Number of water pumps for irrigation (as PUE):* *8a): grid-connected* *8b): solar PV connected*
9	*Number of businesses with access to energy through decentralised RE systems, in urban, peri-urban and rural areas - focus on solar dryers*
1.3) SEALL Ghana Objective 3. Improve access to LPG as a clean cooking fuel	
10	*Percentage of households using LPG as primary fuel for cooking (%)*
11	*Number of distributed LPG cylinders in rural areas*
1.4) SE4ALL Ghana Objective 4. Improve access to energy efficient and improved cookstoves by woodfuel/charcoal users	

12	*Number of public institutions, commercial cooking and agro-processing activities using improved woodfuel cookstoves as primary device for cooking*
13	*Number of households using improved woodfuel cookstoves as primary cooking device*
14	*Number of households using improved charcoal cookstoves as primary cooking device*
15	*Percentage of hh using non-BLEN manufactured biomass cookstoves*
SE4ALL Global Goal 2: Double the share of renewable energy (RE) in the global energy mix by 2030	
SE4ALL Ghana Goal 2: Increase the proportion of RE in the total national electricity mix to 10% by 2020	
16	***Percentage of RE in the national electricity mix (%)***
16a	*On-grid RE capacity (MW)*
16b	*Off-grid RE capacity (MW)*
2.1) SE4ALL Ghana Objective 1: Provide access to electricity in remote communities using decentralised renewable energy systems	
17	*Installed capacity of RE mini grids in off-grid communities (MW)*
18	*Total capacity of Solar Community Lighting Systems (Solar Street lights) installed in off-grid communities (MW)*
19	*Total capacity of solar lanterns distributed in off-grid communities (MW)*
20	*Total capacity of Solar Home Systems installed in off-grid communities (MW)*
SEALL Global Goal 3: Double the global rate of improvement in energy efficiency by 2030	
SE4ALL Ghana Goal 3: to ensure that all households using charcoal or firewood for cooking will use improved energy saving cookstoves by 2020.	
3.1) SE4ALL Ghana Objective: At least a 30% increase in the efficiency of woodfuel stoves in the country	
21	*Annual average woodfuel consumption for cooking per household (kg/hh*year)*
22	*Annual average charcoal consumption for cooking per household (kg/hh*year)*

Carrying out an objective and frequent evaluation of the progress made is important in order to identify potential hurdles during activities' implementation and take corrective actions if needed. Therefore, the evaluation basically consists of analysing the calculation of the indicators and compare the results against the baseline and the interim and final targets that were set in Ghana's CAP. This will provide the necessary information to take corrective actions if needed.

The reporting process implies producing a performance assessment report where the results from the evaluation are described. This report will be produced annually and shared in forums or by other means in order to inform the public and all relevant organisations of the results of Ghana SE4ALL initiative.

The Performance Assessment Framework, which is based on the Logframe, is the key instrument for managing the collection, analysis and reporting on the performance data that must nourish the MER activities. It captures key elements of expected results of Ghana's CAP implementation, by outlining proposed key performance indicators for each results level, targets, baselines, frequency of data collection, data sources and methods, as well as responsibilities for this data collection and consolidation.

Finally, the MER is flexible enough to capture additional indicators, to be added to the system when and if is considered appropriate, in accordance with any change made to Ghana's CAP during its implementation and those associated with Ghana's priority High Impact Opportunities, Action Agenda and Investment Prospectuses. For this, section 7 presents a guideline for updating the MER system.

ABBREVIATIONS AND ACRONYMS

AA	Action Agenda
AESD	Agricultural Engineering Services Directorate
BLEN	Biogas-LPG-Electricity-Natural gas
CAP	Country Action Plan
DPs	Development Partners
DRF	Data Request Form
EC	Energy Commission
EE	Energy Efficiency
GEDAP	Ghana Energy Development and Access Project
GHACCO	Ghana Alliance for Clean Cookstoves
GIDA	Ghana Irrigation Development Authority
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Society for International Cooperation)
GLSS	Ghana Living Standard Survey
GoG	Government of Ghana
GSS	Ghana Statistical Service
GTF	Global Tracking Framework
HH	Household
HIO	High Impact Objectives
ICT	Information and Communication Technologies
JICA	Japan International Cooperation Agency
LPG	Liquefied Petroleum Gas
MER	Monitoring, Evaluation and Reporting
MoFA	Ministry of Food and Agriculture
MoP	Ministry of Power
NPA	National Petroleum Authority
PAF	Performance Assessment Framework
PCU	Power conditioning unit
PDN	Power distribution network
PHC	Population and Housing Census
PPP	Purchasing Power Parity
PUE	Productive Use of Energy
PV	Photovoltaics
QA	Quality Assurance
RE	Renewable Energy
SE4ALL	Sustainable Energy for All
SHS	Solar Home System
UN	United Nations

GLOSSARY

Access to electricity	Access to electricity is defined in two levels: number or percentage of communities with an electricity access point running through, and number or percentage of households connected to the national grid or to an off-grid system.
Access to modern energy for cooking	Access to modern energy for cooking is defined as the availability of modern cooking solutions, which include clean/efficient/improved cookstoves (i.e. manufactured non-BLEN cookstoves or BLEN cookstoves).
Community	A community is defined as a group of people living in the same locality with a population of 500 and above.
Decentralised RE system	It is a renewable energy system that is generally used in villages and rural areas that are not connected to the national grid. Decentralised RE systems may include, for example: • Family-size biogas plants; • Solar street lighting systems; • Solar lanterns and solar home systems; • Solar water heating systems; • Solar cookers; • Standalone renewable energy based power generators (solar, wind, biomass); • Wind pumps; • Micro-hydro plants.
Household	A household (hh) is defined as a person or a group of persons, who live together in the same house or compound and share the same house-keeping arrangements. In general, a household consists of a man, his wife, children and some other relatives or a house help who may be living with them. However, it is important to remember that members of a household are not necessarily related (by blood or marriage) because non-relatives (e.g. house helps) may form part of a household[15]. According to the latest Census (2010), the average household size is of 4.4 people.
Improved cookstove	According to the GTF, an improved cookstove is a manufactured non-BLEN cookstove or a BLEN cookstove. Improved cookstoves have advantages of fuel savings and reduced indoor air pollution.
Information and Communication Technologies (ICT)	ICT includes any communication device encompassing: mobile phone, radio, television, and computer.
Mini-grid	Single or various power systems (installed capacity of 10 kW to 10 MW) feeding electricity into a small distribution grid designed to generate electricity centrally and providing it for various applications to establishments spread within a designated geographical area. Mini-grids essentially have centralised electricity generating capacity mainly consisting of renewable energy generator, a battery bank to store the electricity, power conditioning unit (PCU) consisting of junction boxes, charge controllers, inverters, distribution boards and necessary wiring/cabling, etc., all located within an appropriately constructed building and power distribution network (PDN).
Mini-utility	Isolated power system supplying one communal facility without distribution grid ranging in capacity from 1 kW to 100 kW. Mini-utilities are typically installed on rooftop or on ground within the premise of communal facilities such as church, school and clinic. Mini-utilities can also be used as a mini-enterprise to provide services for multiple applications such as to charge

[15] Source: Ghana Statistical Service. (May, 2012). 2010, Population & Housing Census, Summary Report of Final Results.

	battery and run small machines, which can be used by the community members and where users would typically pay for services on an hourly basis. Technically, mini-utilities are larger in capacity than SHS for communal use while functioning without power distribution network unlike mini-grids.
Peri-urban	Peri-urban characterises rural-urban transition zones that are proximate to an urban area and benefit from the urbanisation process. A peri-urban area is neither entirely urban nor purely rural in the traditional sense. It is at most a partly urbanized rural area.
Productive Use of Energy (PUE)	PUE refers to the use of energy in micro-small-medium enterprises, agriculture, artisans, handicraft, food processing and all other income-generating activities. In accordance to the CAP2012, productive uses of energy involve the utilization of energy – both electric and non-electric energy in the form of heat and mechanical energy - for activities that enhance income and welfare. These activities are typically in the sectors of agriculture, rural enterprise, health and education. Examples of such activities include pumping water for agriculture, agro-processing, lighting, information and communications, and vaccine refrigeration.
Rural	All localities with less than 5,000 persons are classified as rural[15].
Solar Home System (SHS)	Isolated power system (up to 1 kW) supplying one individual establishment (e.g. household) without distribution grid. SHS will also include solar lanterns since various innovative solutions are being developed in this market, which blurs the boundary between SHS and solar lanterns.
Traditional cookstove	Unimproved self-made stoves. It refers to traditional open fire, mud stove or coal pot cooking methods[16].
Urban	Localities with 5,000 or more persons were classified as urban[15].

[16] Source: Global Alliance for Clean Cookstoves, Accenture. (2012). Ghana Market Assessment Executive Summary.

TABLE OF CONTENTS

1 INTRODUCTION

Ghana sets its own SE4ALL country goals and targets in its Country Action Plan (CAP) from 2012, which are also incorporated in the future Action Agenda (AA) to be released during the course of 2015. These will contribute to achieving the overall SE4ALL global initiative launched in 2011 by the United Nations (UN).

Ghana's SE4ALL goals are:

- Under **Universal Energy Access**: To ensure universal access to electricity and universal access to modern energy for cooking (clean cooking solutions) by 2020;
- Under **Renewable Energy**: To increase the proportion of RE in the total national electricity mix by 2020[17];
- Under **Energy Efficiency**: to ensure that all households using charcoal or firewood for cooking will use improved energy saving cookstoves by 2020.

Specifically, Ghana seeks to achieve the following four strategic high impact objectives (HIO):[18]

- Provide access to electricity in remote communities using decentralised renewable energy systems;
- Increase the productive use of electricity in both on and off-grid electrified communities through targeted interventions;
- Increase the use of LPG as primary fuel for cooking; and,
- Improve access to energy efficient and improved cookstoves by woodfuel/charcoal users.

As stated in the SE4ALL initiative *"Accountability and transparency are essential for tracking Sustainable Energy for All's global progress"*. This is true from both the global and the national perspective. Therefore, Ghana presents and describes in this document the Monitoring, Evaluation and Reporting (MER) system that will be applied in order to track its progress towards the achievement of its SE4ALL country goals and objectives, which will contribute to achieving the global goals of the initiative.

The MER system is composed of the following parts:

- A Logical Framework (the "Logframe")
- A Monitoring Plan
- An Evaluation Plan
- A Reporting Plan
- A Performance Assessment Framework
- A Guideline for updating the MER system in the future.

Each part is described in Sections 2 to 6. The Performance Assessment Framework presented in Section 6 summarises the main information of Sections 3 to 5.

2 LOGICAL FRAMEWORK

The Logical Framework presented below outlines the main characteristics of Ghana's SE4ALL initiative. The purpose of this Logframe is to show how the main objectives and country goals relate and contribute to the global goals. It briefly shows the operational planning, monitoring and evaluation considerations for tracking progress of Ghana's CAP implementation, towards the achievement of the SE4ALL goals.

The Logframe is organised on various levels which correspond to the SE4ALL global goals, Ghana's SE4ALL specific goals and Ghana's SE4ALL objectives. It contains relevant performance indicators at goal level that intend to monitor the overall contribution of the country initiative to the global initiative. There are, in addition, more specific indicators related to the specific objectives to be achieved.

[17] This goal excludes large hydroelectric plants as RE source

[18] Ghana's CAP 2012 and SE4ALL Ghana's Action Agenda Summary (2015).

The logical framework intends to present an overview of the SE4ALL initiative with a wide set of indicators. A selection of indicators is made (see Section 3) to show progress of the initiative as per the CAP2012, which is focused on specific country objectives and therefore indicators to be tracked are selected based on that focus.

Table 7: Logical Framework

Results	Indicators	Definitions	Sources and Means of Verification	Assumptions and Comments	Related indicator number in PAF (Table 11) and Figure 4, Figure 5, Figure 6, and Figure 7
SE4ALL Global Goal 1: Universal energy access by 2030					
1. Increase access to electricity	*National electricity access percentage (%)*	Definition: Access to an electricity service in terms of households. The electricity services may be of any kind: traditional, renewable, on-grid, off-grid.	Responsible entities: Ministry of Power (MoP) Sources of information: Ministry of Power annual reports, Population and Housing Census (PHC), Ghana Living Standard Survey (GLSS).	Assumption: Ghana will continue to monitor this indicator at least in terms of households connected to an electricity service (on-grid or off-grid, with renewable or traditional source of energy). Comment: results can additionally be expressed in terms of communities.	1
	*Electricity consumption per capita (kWh/person*year)*	Definition: As defined by the country.	Responsible entities: Energy Commission (EC) Sources of information: Energy Outlook, PHC, GLSS, World Bank country data sheets.	Assumption: Ghana will continue to monitor this indicator. Baseline and targets will be identified or calculated for this indicator, by the Energy Commission.	Not included in PAF
1.1. SE4ALL Ghana Objective 1: Provide access to electricity in remote communities using decentralised renewable energy systems	*Number of households using RE as primary source of electricity per year (households/year)*	Definition: Households located in remote communities using any RE source (solar, wind, hydro, etc.) as main source of electricity for domestic use (lighting, ICT, phone charging, fans, refrigerator, etc.). Excludes commercial or productive use applications.	Responsible entity: Ministry of Power Sources of information: PHC and GLSS collect number of households using solar energy as main source for lighting but no reference to other RE sources is made or any other domestic applications other than lighting, Ministry of Power project reports.	Assumption: baseline will be identified or calculated for this indicator, by the Energy Commission. Comment: the indicator can be disaggregated according to the end use and level of power needed.	3, 4, 5, 7

	Number of communal facilities with access to electricity through a decentralised RE system (communal facilities/year)	Definition: Any communal facility (hospital, clinic, school, or facility collectively used by the community and accessible to any member of the community) that uses a RE system as main source of electricity for their operation. This indicator excludes households.	Responsible entity: Ministry of Power. Sources of information: national off-grid electrification programmes information, Ministry of Power.	Assumption: Ghana will specifically focus on communal facilities located in remote communities. Baseline and targets will be identified or calculated for this indicator, by the Ministry of Power.	6
1.2. SE4ALL Ghana Objective 2. Improve access to modern energy for productive uses	*Number of businesses with access to energy, in urban, peri-urban and rural areas for productive uses applications (businesses/year)*	Definition: Businesses that use electricity or heat for productive uses, such as irrigation (water pumps), agricultural activities (e.g. solar dryers), in urban, rural and peri-urban areas. Business is defined as any commercial, industrial or artisanal venture with an identifiable income-generation goal. Electricity may be originated by any means (on-grid, off-grid, traditional or renewable sources).	Responsible entity: Energy Commission Sources of information: SE4ALL projects reports (resulting from Donor/GoG supported SE4ALL projects that will be coordinated by the EC or other government ministries and agencies)	Assumption: Baseline and targets will be identified or calculated for this indicator by the Energy Commission. Comment: this indicator can be disaggregated by type of businesses, by type of energy sources (renewable and traditional).	8, 9
2. Increase access to modern cooking solutions	*National access percentage to modern energy for cooking (%)*	Definition: Percentage of the population that is using a modern solution for cooking purposes. Modern cooking solutions, as per GTF, encompass manufactured non-BLEN cookstoves and BLEN cookstoves.	Responsible entities: GHACCO, Ministry of Power, Energy Commission Sources of information: GHACCO, PHC, and GLSS. Energy Outlook informs the percentage of penetration of LPG, charcoal, firewood, kerosene and electricity at national, urban and rural level for household cooking, based on the PHCs, but does not break down the information by type of device.	Assumptions: Ghana will focus on the promotion of two cooking solutions: LPG and biomass (woodfuel) improved cookstoves, for which baseline and targets are to be defined. Comment: the indicator can be disaggregated in LPG usage, non-BLEN manufactured biomass cookstoves, and BLEN cookstoves, as deemed necessary within the local scenario.	2, 10, 15

1.3. SE4ALL Ghana Objective 3. Improve access to LPG as a clean cooking fuel	*Number of distributed LPG cylinders in rural areas per year (new LPG cylinders/year)*	Definition: Number of new LPG cylinders sold in rural areas. This indicator should focus on new cylinders added to the ones already in circulation.	Responsible entity: Ministry of Petroleum Sources of information: PHC, GLSS, Rural LPG Promotion Programme report and National Petroleum Authority (NPA)	Assumptions: a different indicator should focus on the energy consumed per capita that is derived for the new and recirculated (existing) cylinders, in rural areas. Target to be identified by Energy Commission.	11
	Percentage of households using LPG as primary fuel for cooking (%)	Definition: Access to LPG for cooking as percentage of total households.	Responsible entity: Ministry of Petroleum Sources of information: PHC, GLSS, Rural LPG Promotion Programme report and National Petroleum Authority	Assumption: same as above.	10
1.4. SE4ALL Ghana Objective 4. Improve access to energy efficient cookstoves by woodfuel/charcoal users	*Number of public institutions, commercial cooking and agro-processing activities using improved cookstoves as primary cooking device (number of facilities/year)*	Definition: Number of public institutions, commercial cooking facilities and agro-processing activities using improved cookstoves as their main cooking device. This excludes households (domestic cooking).	Responsible entity: GHACCO, Ministry of Power, Energy Commission. Sources of information: PHC, GLSS, GHACCO, reports from SE4ALL development partners	Assumption: baseline and targets to be identified by Energy Commission.	12
	Number of households using improved cookstoves as primary cooking device (number of hh/year)	Definition: Number of households which use an improved cookstove for cooking purposes, as main cooking device. This excludes commercial cooking or any cooking device used to run a business (i.e. non-domestic use).	Responsible entity: GHACCO, Ministry of Power, Energy Commission. Sources of information: PHC, GLSS, GHACCO, reports from SE4ALL development partners	Assumption: baseline and targets to be identified by Energy Commission.	13, 14, 15
SE4ALL Global Goal 2: Double the share of renewable energy (RE) in the global energy mix by 2030					

3. Increase the share of RE in the national electricity mix	*Percentage of RE in the national electricity mix (%)*	Definition: Contribution of RE generation to the national electricity mix. Ghana currently monitors on-grid RE capacity separately from off-grid RE capacity.	Responsible entities: Energy Commission for on-grid RE capacity, Ministry of Power for off-grid RE capacity. Sources of information: Energy Outlook, national off-grid electrification programmes.	Assumption: Ghana will include the percentage of off-grid capacity in the calculation of the indicator to show the overall contribution of both on- and off-grid capacity to the national electricity mix.	16, 16a, 16b
3.1. SE4ALL Ghana Objective 1: Provide access to electricity in remote communities using decentralised renewable energy systems	*Installed capacity of RE mini grids in off-grid communities (MW/year)*	Definition: Capacity which is added using RE sources to feed a mini-grid installation for remote communities.	Responsible entity: Ministry of Power, Energy Commission Source of information: National off-grid electrification programmes.	Assumption: target to be identified by Energy Commission.	17
	Total capacity of Solar Community Lighting Systems (Solar Street lights) installed in off-grid communities (MW/year)	Definition: Installed capacity of all installed solar streets lights in remote communities.	Responsible entity: Ministry of Power, Energy Commission Source of information: National off-grid electrification programmes.	Assumption: target to be identified by Energy Commission.	18
	Total capacity of solar lanterns distributed in off-grid communities (MW/year)	Definition: Capacity of all distributed solar lanterns in remote communities.	Responsible entity: Ministry of Power Source of information: National off-grid electrification programmes.	Assumption: baseline and target in MW to be identified by Ministry of Power. Comment: the information collected to estimate this indicator can be collected along with the number of solar lanterns distributed in off-grid communities which is currently being tracked by the country.	19
	Total capacity of Solar Home Systems installed in off-grid communities (MW/year)	Definition: Capacity of SHS installed in remote communities.	Responsible entity: Ministry of Power Source of information: National off-grid electrification programmes.	Assumption: baseline in MW and target to be identified by the Ministry of Power.	20
SE4ALL Global Goal 3: Double the global rate of improvement in energy efficiency by 2030					

	Rate of improvement in energy intensity (%) (energy consumed per dollar of gross domestic product, GDP)	Definition: Energy intensity is a ratio between energy supply and gross domestic product measured at purchasing power parity (MJ/$2005 PPP). Energy intensity is an indication of how much energy is used to produce one unit of economic output. Lower ratio indicates that less energy is used to produce one unit of output. Energy intensity level is only an imperfect proxy to energy efficiency indicator and it can be affected by a number of factors not necessarily linked to pure efficiency such as climate.	Responsible entity: Energy Commission Source of information: WB data.	Assumptions: Ghana will not monitor this indicator in the first monitoring period, therefore no baseline and targets will be identified by Energy Commission. Comment: this indicator is relevant to monitor Ghana's contribution to the EE SE4ALL universal goal and it is suggested in the GTF.	Not included in PAF.
	Average energy losses in the transmission and distribution grids (%)	Definition: Quantity of energy that has been lost during transmission and distribution in the national grid, from generation to end-user, as percentage of total energy generated.	Responsible entity: Energy Commission Sources of information: Energy Outlook.	Assumptions: target to be set by Energy Commission/ GridCo.	Not included in PAF.
4. To increase energy efficiency in cooking with firewood and charcoal	*Annual average woodfuel consumption for cooking per household (kg/hh*year)*	Definition: Quantity of woodfuel being consumed in each household per year for cooking purposes, at national level. This excludes commercial, industrial or any business-related woodfuel consumption.	Responsible entity: Energy Commission Sources of information: PHC, GLSS	Assumptions: baseline and targets to be identified by Energy Commission.	21
	*Annual average charcoal consumption for cooking per household (kg/hh*year)*	Definition: Quantity of charcoal being consumed in each household per year for cooking purposes, at national level. This excludes commercial, industrial or any business-related charcoal consumption.	Responsible entity: Energy Commission Sources of information: PHC, GLSS	Assumptions: baseline and targets to be identified by Energy Commission.	22

3 MONITORING PLAN

The monitoring plan provides a guide on how to monitor the indicators that will show how Ghana is progressing toward the achievement of its SE4ALL objectives. It is composed of monitoring protocols, one per indicator, which includes the following information:

- Description/definition of the indicator – i.e. what Ghana intends to measure with it;
- Method of calculation, if applicable;
- Source of information/data and responsible entity for providing it;
- Frequency of calculation or data acquisition;
- Baseline.

There are two levels of indicators: i) goal level indicators; and ii) objective level indicators. Goal level indicators intend to track the overall contribution to the initiative. They directly correspond to the three SE4ALL global goals: access to modern energy – electricity and modern energy for cooking; Renewable energy and energy efficiency. Those indicators have a broad definition to ease the comparison between all countries participating to the SE4ALL initiative at a global level.

The objective level indicators intend to track the performance of specific activities to be carried out in Ghana according to the country objectives as defined in the CAP and future AAs. Those indicators track in more detail the implementation of the CAP and future AAs.

The four following charts illustrate how indicators are related to each goal. A colour code is applied to highlight those indicators that will be monitored during the first monitoring period because they are linked to the strategic activities that Ghana pursues in the short-term as part of its CAP2012. The highlighted indicators are detailed in chapter 3.1 and summarized in the Performance Assessment Framework in Section 6. This list of indicators will be completed at each update of the CAP into a new AA, in order to take into account any new activities included to Ghana SE4ALL initiative. The methodology of adding new indicators to the MER system is developed in section 7 Recommendations for future updates of the MER System.

The numbers shown in each of the next figures are the ones corresponding to the indicators shown in the PAF from Section 6 and the Logframe in Table 7.

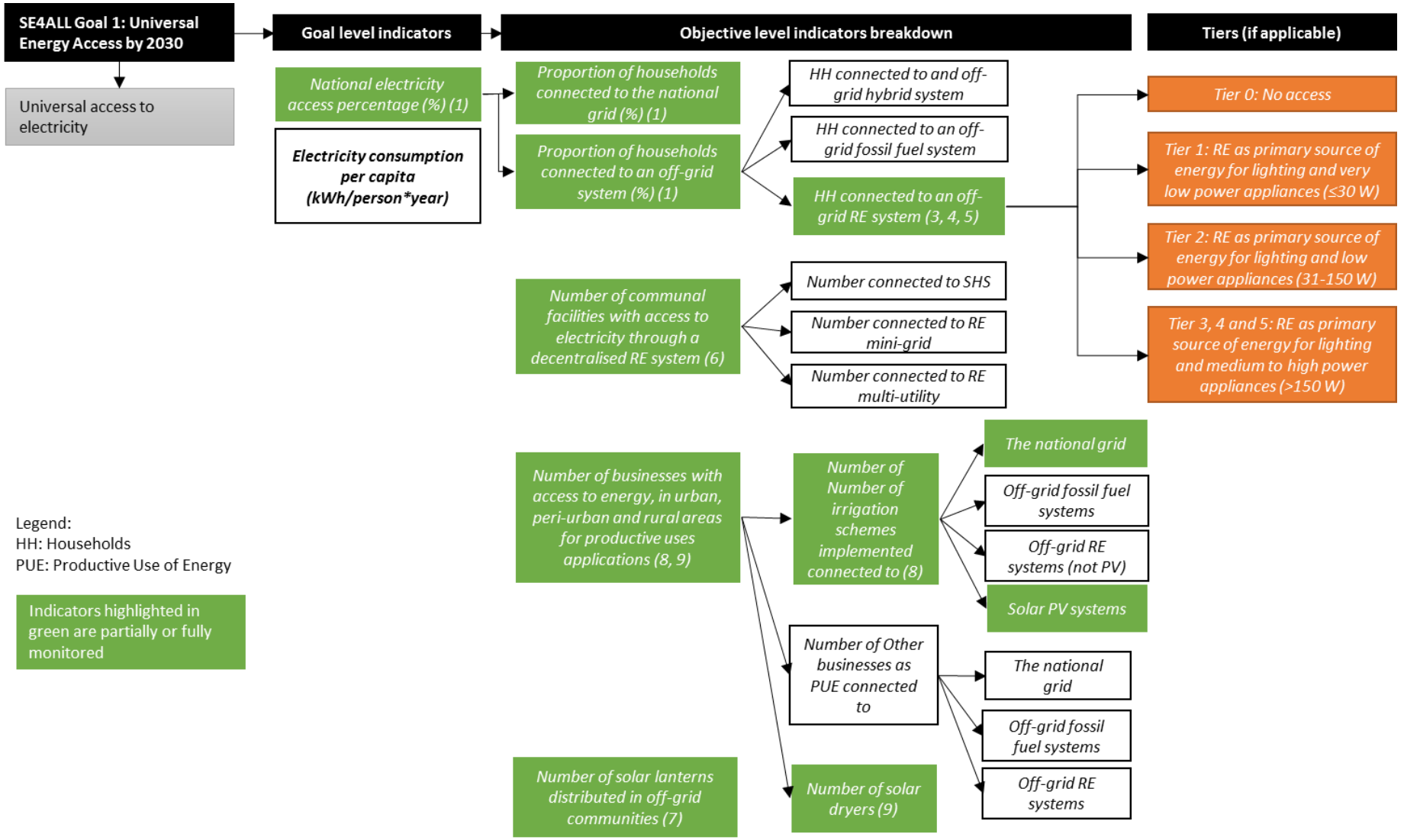

Figure 4: Electricity Access Indicators

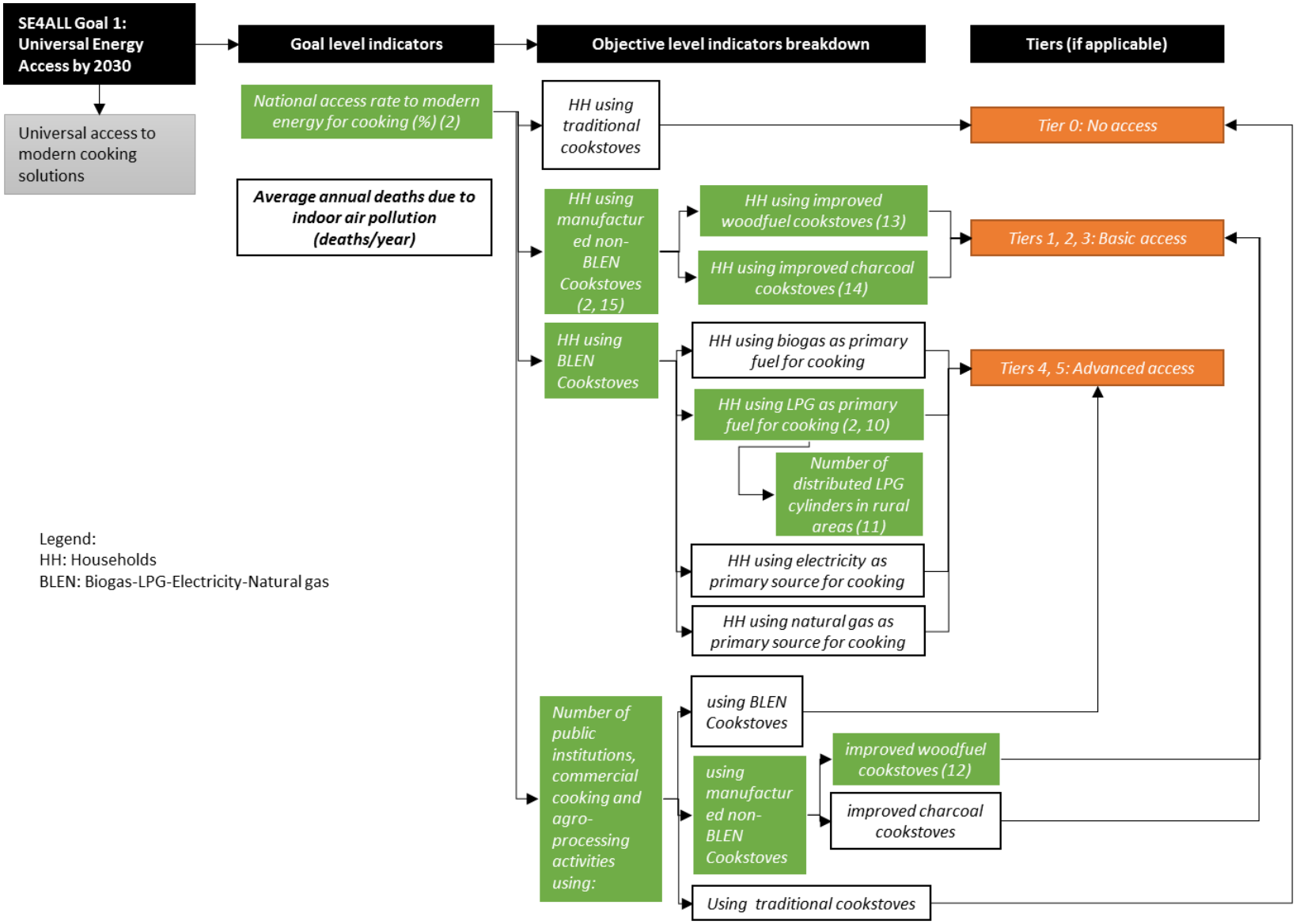

Figure 5: Access to Modern Energy for Cooking Indicators

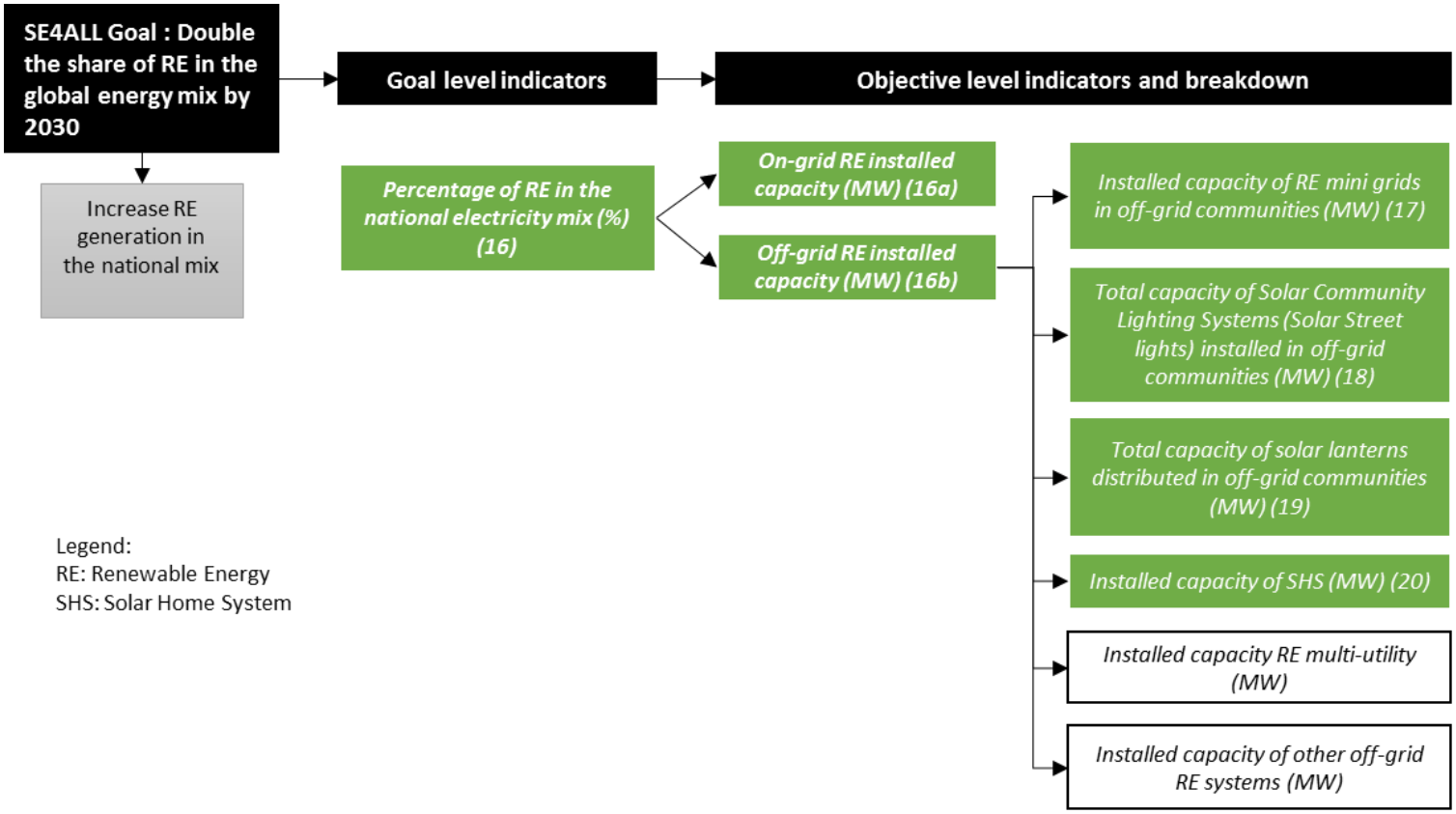

Figure 6: Renewable Energy Indicators

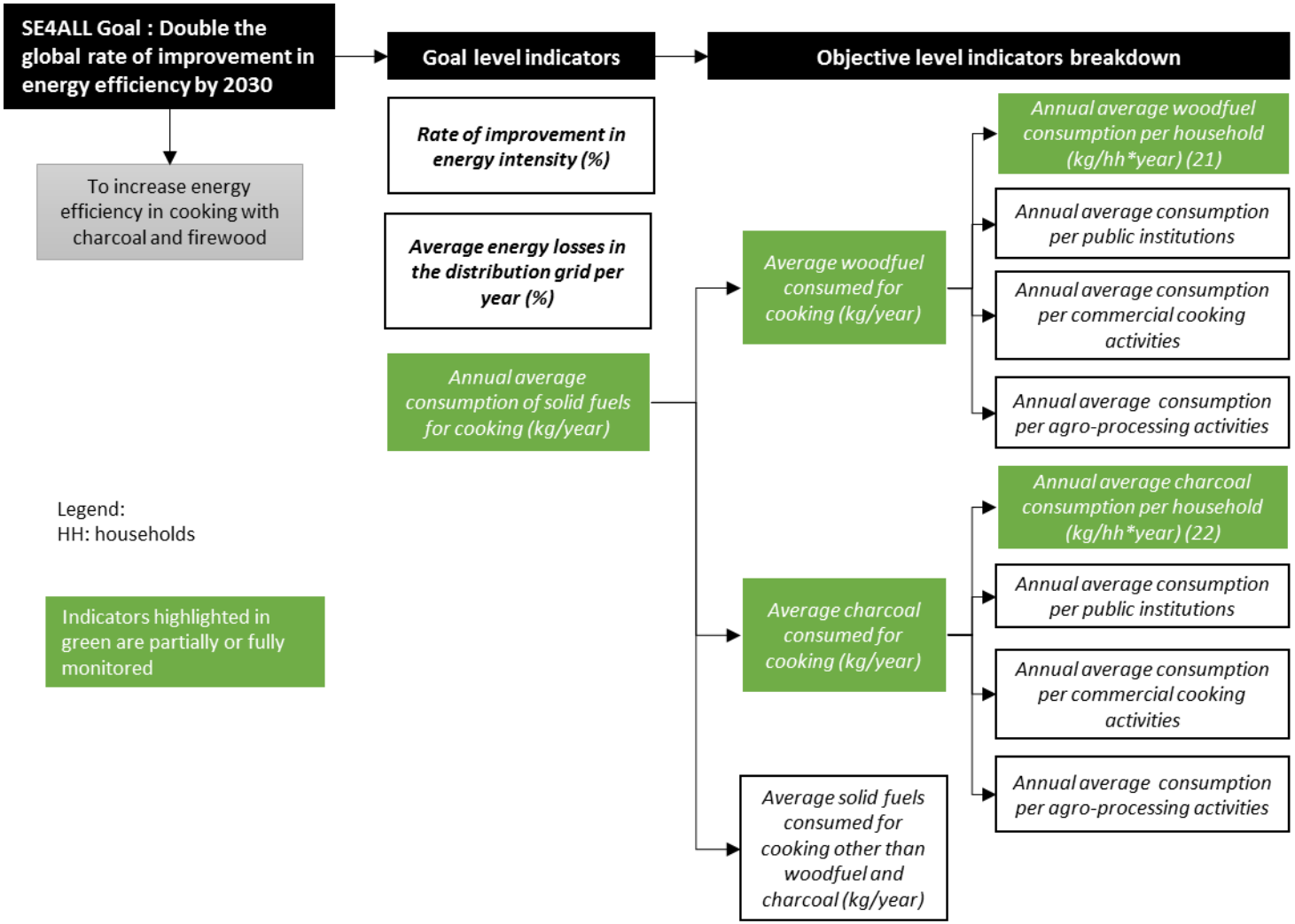

Figure 7: Energy Efficiency Indicators

Quality Assurance (QA):

Quality control procedures should be taken into consideration during indicators' monitoring activities. The purpose of having a QA plan is to identify and manage potential risks to the quality of collected data and information that will be used to calculate indicators, which will later be evaluated and reported. During data acquisition/collection, five criteria should be considered for data quality assessment: validity, reliability, integrity, precision, and timeliness.

Since several entities (e.g. Ministry of Power, GSS, GHACCO) are responsible for supplying data to the Energy Commission (EC), the EC should approach them in order to find out what QA procedures they apply, if any. If no QA procedure is applied, then provisions should be made to find the best applicable solution to assure the quality of data and information obtained.

3.1 Monitoring Protocols

The following sections present the different procedures for monitoring each indicator as selected in the previous flow-charts. They are organised by goal and then by objective level under each goal.

3.1.1 SE4ALL Global Goal 1: Universal Energy Access by 2030

Under this goal, Ghana aims at ensuring universal access to modern energy services by 2020, which includes ensuring universal access to electricity as well as to modern solutions for cooking.

Goal level indicators:

1	NATIONAL ELECTRICITY ACCESS PERCENTAGE (%)
Date created: May-2015	Last update:

Definition/description:

This indicator measures the degree of access that Ghana's population has to an electricity service. In Ghana, access to electricity is defined in two levels:

- At community level: number or percentage of communities with an electricity access point running through, and
- At household level: number or percentage of households connected to the national grid or to an off-grid system (number of connections).

For the purpose of estimating the contribution of Ghana to the SE4ALL global goal, this indicator will be tracked as per the second definition (i.e. at household level – number of connections). The electricity services may be of any kind: traditional, renewable, on-grid, off-grid.

Source of information/data:

This indicator is currently calculated by GSS and reported every ten years in the National PHC as well as in the GLSS. It is also monitored by the Ministry of Power (MoP).

Frequency of monitoring/data acquisition:

This indicator will be monitored every year and data will be provided by the MoP to the EC.

Baseline:

The baseline figure for this indicator is the 2015 access percentage, which is estimated at 75.6% of households currently connected to the national grid. It does not currently include off-grid connections. Additional information on this figure is:

- ECG No. of residence connected: 2.53m; Customers (non-residents): 3.04m
- NEDCO No. of residence connected: 2,136,009; Customers (non-residents): 1270

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

Multi-tier approach for electricity access:

In accordance to the GTF, this type of indicator can be broken down in several Tiers, to have a richer analysis that contemplates not only the access/no access feature, but also other attributes of an electricity service. This type of approach will help Ghana understand the quality of the electricity service that is being provided to the population in order to make improvements in the future country strategies related to electricity access promotion/development.

The proposed multi-tier approach splits the level of access to electricity in five different Tiers, as follows in Table 8:

Table 8: Candidate framework for multi-tier measurement of household electricity access as per Figure 2.3 of Global Tracking Framework

ACCESS TO ELECTRICITY SUPPLY

ATTRIBUTES	TIER 0	TIER 1	TIER 2	TIER 3	TIER 4	TIER 5
Peak available capacity (W)	-	>1	>500	>200	>2,000	>2,000
Duration (hours)	-	≥4	≥4	≥8	≥16	≥22
Evening supply (hrs)	-	≥2	≥2	≥2	≥4	≥4
Affordability	-	-	√	√	√	√
Legality	-	-	-	√	√	√
Quality (voltage)	-	-	-	√	√	√

- Five-tier framework.
- Based on six attributes of electricity supply.
- As electricity supply improves, an increasing number of electricity services become possible.

Index of access to electricity supply = $\sum(P_T \times T)$

with P_T = Proportion of households at tier T

T = tier number {0,1,2,3,4,5}

USE OF ELECTRICITY SERVICES

TIER 0	TIER 1	TIER 2	TIER 3	TIER 4	TIER 5
–	Task lighting **AND** phone charging (OR radio)	General lighting **AND** television **AND** fan (if needed)	Tier 2 **AND** any low-power appliances	Tier 3 **AND** any medium-power appliances	Tier 4 **AND** any high-power appliances

- Five-tier framework.
- Based on of appliances.

Index of access to electricity supply = $\sum(P_T \times T)$

with P_T = Proportion of households at tier T

T = tier number {0,1,2,3,4,5}

Tiers to be tracked under the MER in the Ghanaian context:

- Tier 0 will be indirectly tracked when tracking the rest,
- Tier 1, 2, 3, 4, 5 are currently being tracked under a single figure with no specific breakdown in levels of access.

2	NATIONAL ACCESS PERCENTAGE TO MODERN ENERGY FOR COOKING (%)
Date created: May-2015	Last update:

Definition/description:

This indicator measures the level of access that the population has to a modern cooking solutions which are more energy efficient and less polluting than the traditional cooking solutions. This indicator tracks the percentage of the population (encompassing both domestic and commercial cooking) that is using a modern solution for cooking purposes. Modern cooking solutions, as per GTF, encompass manufactured non-BLEN cookstoves and BLEN cookstoves. In Ghana, this would include improved biomass cookstoves, i.e. manufactured non-BLEN cookstoves, and LPG usage.

Source of information/data:

Ghana will monitor this indicator by focusing on the use of two cooking solutions:

- Manufactured non-BLEN biomass (woodfuel) cookstoves, and
- LPG use for cooking.

Part of the information needed to estimate this indicator will be taken from GHACCO reports, PHC, GLSS and Energy Outlook. The use of LPG for cooking is currently estimated by the Ghana Statistical Service and reported every ten years in the National Population and Housing Census.

Frequency of monitoring/data acquisition:

The EC will monitor this indicator once a year. GHACCO, GSS will supply data to EC and EC will also use its own reports.

Baseline:

LPG use for cooking was 18.2% in 2010[19]. Baseline figure for non-BLEN manufactured cookstoves is to be defined by the EC with the first round of implementation of the MER system.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

Multi-tier approach for access to modern energy for cooking:

Similarly to the national electricity access and in line with the GTF recommendations, this indicator can be disaggregated into Tiers as follows in Table 9:

[19] 2010 Population &Housing Census, Table 36, page 103 and Energy Outlook 2014, table 17.

Table 9: Candidate framework for multi-tier measurement of household cooking solutions as per Figure 2.4 of Global Tracking Framework

STEP 1: TECHNICAL PERFORMANCE

- Multi-tier technical measurement of the primary cooking solution in two steps:
  1. Three-level measurement based on the direct observation of the cookstove and fuel.
  2. Manufactured non-BLEN cookstoves (medium grade) are further categorized into four grades based on technical attributes. This grade categorization would only be possible for cookstoves that have undergone third-party testing. Non-BLEN manufactured cookstoves that have not been tested are assumed to be Grade D.

LOW GRADE	MEDIUM GRADE	HIGH GRADE
Self-made[1] cookstove	Manufactured[2] non-BLEN cookstove	BLEN[3] cookstove

	LOW GRADE	MEDIUM GRADE			HIGH GRADE
Attributes	Grade-E	Grade-D	Grade-C	Grade-B	Grade-A
Efficiency	Self-made cookstoves or equivalent	Certified Non-BLEN manufactured Cookstoves			BLEN cookstoves or equivalentt
Indoor pollution					
Overall pollution		Uncertified Non-BLEN manufac-tured cookstoves			
Safety					

[1] A self-made cookstove refers to a three-stone fire or equivalent, typically made by an untrained person without the use of premanufactured parts.

[2] A manufactured cookstove refers to any cookstove available in the market (including cookstoves from artisans and small local producers trained under a cookstove program)

[3] BLEN cookstove refers to stove-independent fuels (such as biogas, LPG, electricity, natural gas). BLEN equivalence of more fuels (such as ethanol) would be examined going forward. Non-BLEN cookstoves include most solid and liquid fuels for which performance is stove dependent.

STEP 2: ACTUAL USE

- Measurement of additional aspects of access beyond technical performance.
- Three types of attributes, as listed below:

Conformity	• Chimney/hood/pot skirt used (as required). • Stove regularly cleaned and maintained (as required).
Convenience	• Household spends less than 12 hrs/week on fuel collection/preparation. • Household spends less than 15 min/meal for stove preparation. • Ease of cooking is satisfactory.
Adequacy	• Primary stove fulfills most cooking needs of the household, and it is not constrained by availability or affordability of fuel, cultural fit, or number of burners. • If multiple cooking solutions are used (stacking), other stoves are not of a lower technical grade.

- Multi-tier measurement is based on technical performance adjusted for the above attributes.

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
				Grade-A w/o CCA	Grade-A w/ CCA
			Grade-B w/o CCA	Grade-B w/ CCA	
		Grade-C w/o CCA	Grade-C w/ CCA		
	Grade-D w/o CCA	Grade-D w/ CCA			
Grade-E w/o CCA	Grade-E w/ CCA				

$$\text{Index of access to electricity supply} = \sum(P_T \times T)$$

with P_T = Proportion of households at tier T

T = tier number {0,1,2,3,4,5}

- Tier 0 is no access
- Tiers 1, 2 and 3 include non-BLEN cookstoves
- Tiers 4 and 5 include BLEN-cookstoves

Ghana will track woodfuel improved cookstoves and LPG use for cooking, therefore contributing to tracking all the Tiers but with no specific breakdown applying an analysis of attributes to identify the different grades.

Objective level indicators:

1.1) SE4ALL Ghana Objective 1: Provide access to electricity in remote communities using decentralised renewable energy systems

Explanatory note: Indicators contribute to collecting information if the multi-tier approach for electricity access is applied but they only focus on those households that use RE as primary source of energy, leaving out those who receive energy from other sources (e.g. grid).

3	**Number of households using RE as primary source of energy for lighting and very low power appliances (≤30 W) - contributes to Tier 1**
Date created: May-2015	Last update:

Definition/description:

This indicator measures the number of households which regularly use electricity produced by a renewable energy system (solar, wind, hydro, etc.) for lighting purposes and to power appliances of 30 W or less capacity. These appliances may include phone charging and radio. This indicator contributes to collecting part of the information needed to estimate Tier 1 under the goal level indicator Electricity Access Percentage (#1) described earlier.

Source of information/data:

Information will be collected through GLSS, PHC and MoP's reports. PHC and GLSS collect number of households using solar energy as main source for lighting but no reference to other RE sources is made or any other domestic applications other than lighting.

Frequency of monitoring/data acquisition:

This indicator will be monitored by the EC on a yearly basis. MoP will supply data to EC for this indicator.

Baseline:

No baseline figure is currently available for this indicator. It should be defined with the first round of implementation of the MER system.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

4	Number of households using RE as primary source of energy for lighting and low power appliances (31-150 W) – contributes to Tier 2
Date created: May-2015	Last update:

Definition/description:

This indicator measures the number of households which regularly use electricity produced by a renewable energy system (solar, wind, hydro, etc.) for lighting purposes and to power appliances of 31 to 150 W. It contributes to collecting part of the information needed to estimate Tier 2 under the goal level indicator Electricity Access Percentage (#1) described earlier.

Source of information/data:

Information will be collected through GLSS, PHC and MoP's reports. PHC and GLSS collect number of households using solar energy as main source for lighting but no reference to other RE sources is made or any other domestic applications other than lighting.

Frequency of monitoring/data acquisition:

This indicator will be monitored by the EC on a yearly basis. MoP will supply data to EC for this indicator.

Baseline:

No baseline figure is currently available for this indicator. It should be defined with the first round of implementation of the MER system.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

5	Number of households using RE as primary source of energy for lighting and medium to high power appliances (>150 W) – contributes to Tiers 3, 4 and 5
Date created: May-2015	Last update:

Definition/description:

This indicator measures the number of households which regularly use electricity produced by a renewable energy system (solar, wind, hydro, etc.) for lighting purposes and to power appliances of 150 kW and above. This indicator contributes to collecting part of the information needed to estimate Tiers 4 and 5 under the goal indicator Electricity Access Percentage (#1) described earlier.

Source of information:

Information will be collected through GLSS, PHC and MoP's reports. PHC and GLSS collect number of households using solar energy as main source for lighting but no reference to other RE sources is made or any other domestic applications other than lighting.

Frequency of monitoring/data acquisition:

This indicator will be monitored by the EC on a yearly basis. MoP will supply data to EC for this indicator.

Baseline:

No baseline figure is currently available for this indicator. It should be defined with the first round of implementation of the MER system.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

6	**Number of communal facilities with access to electricity through a decentralised RE system**
Date created: May-2015	Last update:

Definition/description:

This indicator covers any communal facility (hospital, clinic, school, or facility collectively used by the community and accessible to any member of the community) that uses a RE system as main source of electricity for their operation. This indicator excludes households.

Source of information:

Information will be collected by the MoP through the implementation of National off-grid electrification programmes.

Frequency of monitoring/data acquisition:

This indicator will be monitored by the EC on a yearly basis. Data will be supplied by MoP.

Baseline:

Currently, there are several communal facilities receiving an electricity service through a decentralized RE system. The total number of facilities is 881, broken down as follows: 754 (Elecnor), 106 (GEDAP1) and 21 (JICA).

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

7	**Number of solar lanterns distributed in off-grid communities**
Date created: May-2015	Last update:

Definition/description:

This indicator measures the number of solar lanterns sold or distributed to isolated (off-grid) communities.

Source of information/data:

This indicator is currently monitored by the Ministry of Power, therefore information will be provided by it.

Frequency of monitoring/data acquisition:

This indicator is monitored every year by MoP and thus EC will ask the MoP for the data on yearly basis.

Baseline:

The baseline figure for this indicator is the number of solar lanterns provided/sold in off-grid communities in 2015, i.e. 32,616 units sold.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

1.2) SE4ALL Ghana Objective 2. Improve access to modern energy for productive uses

8	**Number of irrigation schemes implemented (grid-connected and decentralised systems/solar)**
Date created: May-2015	Last update:

Definition/description:

This indicator measures the number of irrigation schemes (water-pumps) used for irrigation purposes (as PUE) that are connected to the national grid or to a PV system (decentralised). This indicator excludes water pumps used for domestic applications.

Source of information/data:

Information will be collected through GIDA (MoFA), GIZ and other development partners' programme reports.

Frequency of monitoring/data acquisition:

This indicator will be monitored every year by the EC with inputs from the mentioned entities.

Baseline:

Currently, the baseline figure for this indicator, as of 2015, is 32 for grid-connected water pumps and 5 for Solar PV connected water pumps, therefore adding up 37 irrigation schemes.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

9	**Number of businesses with access to energy through decentralised RE systems, in urban, peri-urban and rural areas (focus on solar dryers)**
Date created: May-2015	Last update:

Definition/description:

This indicator covers those businesses that use energy (heat or power) for productive uses, such as agri-cultural activities, in rural, peri-urban and urban areas. Business is defined as any commercial, industrial or artisanal venture with an identifiable income-generation goal. For the moment, this indicator will measure the number of solar dryers (used as business) in use.

Source of information/data:

Information will be collected through the SE4ALL Projects reports resulting from the Agricultural Engineering Services Directorate (AESD).

Frequency of calculation:

This indicator will be monitored every year by the EC with information supplied by the AESD.

Baseline:

Currently, the baseline figure for this indicator, as of 2015, is 21 solar dryers.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

1.3) SE4ALL Ghana Objective 3. Improve access to LPG as a clean cooking fuel

10	**Percentage of households using LPG as primary fuel for cooking (%)**
Date created: May-2015	Last update:

Definition/description:

This indicator measures the proportion of households that use LPG as primary fuel for cooking over the total number of households.

Source of information/data:

This indicator is currently calculated by GSS and reported every ten years in the PHC as well as in the GLSS. Information will also be collected by the EC from the Rural LPG Promotion Programme report.

Frequency of monitoring/data acquisition:

This indicator will be monitored once a year by the EC. Data will be supplied by MoP and EC itself.

Baseline:

Year 2015: 22.3% of Ghanaian households use LPG (at national level) as primary fuel for cooking.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

11	**Number of distributed LPG cylinders in rural areas**
Date created: May-2015	Last update:

Definition/description:

This indicator measures how many LPG cylinders are sold in rural areas. It should focus in new cylinders added to the ones already in circulation. It focuses on those use exclusively for cooking purposes.

Source of information/data:

Information will mainly be collected through Rural LPG Promoting Programme, PHC and GLSS.

Frequency of monitoring/data acquisition:

This indicator will be monitored every year by EC. Data will be supplied by MoP.

Baseline:

Currently, the number of cylinders for the year 2015 is estimated at 22,000.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

1.4) SE4ALL Ghana Objective 4. Improve access to energy efficient and improved cookstoves by woodfuel/charcoal users

12	Number of public institutions, commercial cooking and agro-processing activities using improved woodfuel cookstoves as primary device for cooking
Date created: May-2015	Last update:

Definition/description:

This indicator tracks how many public institutions, commercial cooking facilities and agro-processing activities use improved cookstoves fed with woodfuel as their main cooking device. This excludes households (domestic cooking).

Source of information/data:

Information will be collected through PHC, GLSS, as well as with the contribution of GHACCO and other SE4ALL development partners.

Frequency of monitoring/data acquisition:

This indicator will be monitored on yearly basis by EC. Data will be supplied to EC directly by the entities involved in their collection (GSS, GHACCO, MoP, others).

Baseline:

No specific baseline has been identified for this indicator and it will be defined with the first round of implementation of the MER system.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

13	Number of households using improved woodfuel cookstoves as primary cooking device
Date created: May-2015	Last update:

Definition/description:

This indicator tracks how many households use an improved cookstove fed by woodfuel as primary cooking device. This excludes commercial cooking or any cooking device used to run a business (i.e. non-domestic use). Contributes to the calculation of the National access percentage to modern energy for cooking. Falls under Tiers 1, 2, 3 “Basic Access”.

Source of information/data:

Information will be collected through PHC, GLSS, as well as with the contribution of GHACCO and other SE4ALL development partners.

Frequency of monitoring/data acquisition:

This indicator will be monitored on yearly basis by EC. Data will be supplied to EC directly by the entities involved in their collection (GSS, GHACCO, MoP, others).

Baseline:

No specific baseline has been identified for this indicator and it will be defined with the first round of implementation of the MER system.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

14	Number of households using improved charcoal cookstoves as primary cooking device
Date created: May-2015	Last update:

Definition/description:

This indicator measures the number of households that use improved charcoal cookstoves as primary cooking device. This excludes commercial cooking or any cooking device used to run a business (i.e. non-domestic use). Contributes to the calculation of the National access percentage to modern energy for cooking. Falls under Tiers 1, 2, 3 "Basic Access".

Source of information/data:

Information will be collected through PHC, GLSS, as well as with the contribution of GHACCO and other SE4ALL development partners.

Frequency of monitoring/data acquisition:

This indicator will be monitored on yearly basis by EC. Data will be supplied to EC directly by the entities involved in their collection (GSS, GHACCO, MoP, others).

Baseline:

No specific baseline has been identified for this indicator and it will be defined with the first round of implementation of the MER system.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

15	Percentage of hh using non-BLEN manufactured biomass cookstoves (%)
Date created: May-2015	Last update:

Definition/description:

This indicator measures the number of households that use improved biomass cookstoves as primary cooking device (non-BLEN manufactured cookstoves). This excludes commercial cooking or any cooking device used to run a business (i.e. non-domestic use). Contributes to the calculation of the National access percentage to modern energy for cooking. Falls under Tiers 1, 2, 3 "Basic Access".

Source of information/data:

Information will be collected with the contribution of GHACCO and other SE4ALL development partners.

Frequency of monitoring/data acquisition:

This indicator will be monitored on yearly basis by EC. Data will be supplied to EC by GHACCO.

Baseline:

No specific baseline has been identified for this indicator and it will be defined with the first round of implementation of the MER system.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

3.1.2 SE4ALL Global Goal 2: Double the share of renewable energy (RE) in the global energy mix by 2030

As per the National Energy Policy (2010), Ghana intends to achieve a 10% contribution of RE in its national energy mix by promoting the exploitation and productive use of biomass, mini hydro, solar, tidal, waste-to-energy and wind energy resources.

Goal level indicator:

16	PERCENTAGE OF RE IN THE NATIONAL ELECTRICITY MIX (%)
Date created: May-2015	Last update:

Definition/description:

This indicator measures the contribution of both grid-connected (16a) and off-grid RE systems (16b) in the national electricity mix. It is presented as a percentage of the total national installed capacity (MW) for electricity generation.

Source of information/data:

The data involved in the calculation of this indicator is the on-grid and off-grid capacity. For grid-connected capacity (16a) it accounts for the installed capacity (MW) available for grid supply of the different generation plants split by fuel type: hydropower plants, thermal power plants (fossil fuel based), renewable energy plants and embedded generation (LPG), from where the RE percentage is considered. This is calculated by the EC and reported in the annual Energy Outlook. The share of each source is informed as a percentage (%) of the total capacity installed.

In the case of the off-grid capacity (16b), this includes RE systems installed in remote areas. In this first monitoring period, the off-grid installed capacity to be included covers RE mini-grids, Solar Community Lighting Systems (Solar Street lights), Solar Home Systems, and solar lanterns distributed in remote communities. Other future off-grid systems should be included in the calculation (e.g. wind energy, micro-hydro, etc.). The MoP is the entity responsible for monitoring off-grid capacity and therefore MoP reports on national electrification programmes will be used.

Frequency of monitoring/data acquisition:

This indicator will be monitored every year by the EC taking information from the Energy Outlook and receiving data on off-grid capacity by MoP.

Baseline:

The baseline figure for RE on-grid capacity is, as of 2015, 5.25 MW which represents 0.3% of total on-grid capacity. For off-grid capacity, the baseline figure is 236.9 kW (0.24 MW), broken down as follows: 60 kW (GEDAP 1), 4.9 kW (JICA) and 172 kW (Elecnor).

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

Objective level indicators:

2.1) SE4ALL Ghana Objective 1: Provide access to electricity in remote communities using decentralised renewable energy systems

17	Installed capacity of RE mini grids in off-grid communities (MW)
Date created: May-2015	Last update:

Definition/description:

This indicator measures the total installed capacity from mini-grids supplied with RE, installed to power off-grid communities. This indicator adds to the total RE off-grid capacity that is part of the RE national energy mix.

Source of information/data:

Information to estimate this indicator will be collected by MoP through the implementation of National off-grid electrification programmes.

Frequency of monitoring/data acquisition:

This indicator will be monitored once a year by the EC. Data to be supplied by MoP.

Baseline:

The baseline figure is 0 MW, as of 2015.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

18	Total capacity of Solar Community Lighting Systems (Solar Street lights) installed in isolated communities (MW)
Date created: May-2015	Last update:

Definition/description:

This indicator measures the total installed capacity from Solar Community Lighting Systems installed in off-grid communities, in MW. This indicator adds to the total RE off-grid capacity that is part of the RE national energy mix.

Source of information/data:

Information to estimate this indicator will be collected by MoP through the implementation of National off-grid electrification programmes.

Frequency of monitoring/data acquisition:

This indicator will be monitored once a year by the EC. Data to be supplied by MoP.

Baseline:

The selected baseline for this indicator is 24.5 kW, 0.02 MW, broken down in 21 kW (Elecnor) and 3.5 kW (GEDAP 1).

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

19	Total capacity of solar lanterns distributed in off-grid communities (MW)
Date created: May-2015	Last update:

Definition/description:

This indicator measures the total capacity of the solar lanterns distributed in off-grid communities. This indicator adds to the total RE off-grid capacity that is part of the RE national energy mix.

Source of information/data:

Information to estimate this indicator will be collected by MoP through the implementation of National off-grid electrification programmes.

Frequency of monitoring/data acquisition:

This indicator will be monitored once a year by the EC. Data to be supplied by MoP.

Baseline:

Currently, the baseline capacity derived from solar lanterns, as of 2015, is 0.1 MW.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

20	Total capacity of solar home systems (SHS) installed in off-grid communities (MW)
Date created: May-2015	Last update:

Definition/description:

This indicator measures the total capacity of SHS installed in remote off-grid communities. It includes SHS installed in households as well as SHS installed for communal or public applications in schools, clinics or health centres.

Source of information/data:

Information to estimate this indicator will be collected by MoP Ministry of Power, through the implementation of National off-grid electrification programmes.

Frequency of monitoring/data acquisition:

This indicator will be monitored once a year by the EC. Data to be supplied by MoP

Baseline:

Currently, the baseline figure for this indicator, as of 2015, is 48 kW (Elecnor), equal to approximately 0.05 MW.

Internal data quality assessment:

The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.

3.1.3 SE4ALL Global Goal 3: Double the global rate of improvement in energy efficiency

Concerning energy efficiency, Ghana is currently mainly focusing at increasing the rate of improvement in the consumption of woodfuel and charcoal for cooking through the use of energy efficient (improved) end-use devices.

Objective level indicators:

21	Annual average woodfuel consumption for cooking per household (kg/hh*year)
Date created: May-2015	Last update:
Definition/description: This indicator tracks how much woodfuel is being consumed in each household per year for cooking purposes, at national level. This excludes commercial, industrial or any business-related woodfuel consumption. Source of information/data: This information will be collected by GSS through PHC and GLSS. Frequency of monitoring/data acquisition: This indicator will be monitored once a year by EC. Data to be supplied by GSS. Baseline: No specific baseline has been identified for this indicator under CAP2012 and will be defined with the first round of MER system implementation. Internal data quality assessment: The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.	

22	Annual average charcoal consumption for cooking per household (kg/hh*year)
Date created: May-2015	Last update:
Definition/description: This indicator tracks how much charcoal is being consumed in each hh per year for cooking purposes, at national level. This excludes commercial, industrial or any business-related charcoal consumption. Source of information/data: This information will be collected by GSS through PHC and GLSS. Frequency of monitoring/data acquisition: This indicator will be monitored once a year by EC. Data to be supplied by GSS. Baseline: No specific baseline has been identified for this indicator under CAP2012 and will be defined with the first round of MER system implementation. Internal data quality assessment: The data quality will be assured following the procedures currently applied by the Energy Commission and/or by the entities supplying the data. If no procedure is in place then provisions should be made to assure quality of data/information used.	

3.2 Monitoring Database

Depending on the frequency of the data collection, which may vary from one indicator to the other, the EC, in its role of hosting Ghana's SE4ALL Secretariat, will populate a database which will gather all the necessary information to estimate each indicator. The database will be populated every year

or each time data are generated, and new information adding up to the information collected in the previous years.

The database will be in the form of computer folders containing different types of file as provided by the information sources. When information is not available in digital format, provisions should be made to scan the information in order to have it stored in digital format too.

There should be a Masterfile consolidating all tracked indicators and their results for each monitoring period. This Masterfile will be used to evaluate the obtained results in the evaluation phase and also report them accordingly.

3.2.1 Data collection form

In order to request information from the different sources to populate the monitoring database and to complete the indicators information sheets, the EC will contact the entities that will provide data and information, such as the MoP, GHACCO, etc.

The following table will be the tool to be used by the EC to request specific information from each source:

Table 10: Data Request Form (DRF)

ENERGY COMMISSION			
SE4ALL Monitoring, Evaluation and Reporting System			
DATA REQUEST FORM (DRF)			
To (entity)		Date (dd/mm/yyyy)	
DRF sent to:		**DRF requested by:**	
Name:		Name:	
E-mail:		E-mail:	
Tel:		Tel:	
DATA CORRESPONDING TO INDICATOR:			
Indicator name:		Indicator number:	
Description/definition of indicator:			
Specific data requested *(describe the data/information that you intend to collect with as much detail as possible)*:			
Specific data supplied *(supply the data/information requested to you with as much detail as possible. Attach files if needed)*:			

4 EVALUATION PLAN

4.1 Generalities

The evaluation process will consist of two steps: i) a mid-term quick review, and ii) a complete annual review of the evolution made on activities conducted under the implementation of Ghana SE4ALL CAP or future AA, in order to understand and analyse the progress towards the targets set. The first review has as main objective to briefly analyse how the SE4ALL initiative is progressing, basically by means of verifying if the monitoring activities are being implemented, if the SE4ALL programmes and plans are up to schedule and if the necessary efforts are being made toward achieving the country goals. The goal is to preview any potential deviations or delays beforehand, prior to reaching the end of the year and prior to conducting the overall complete annual review where baselines, targets and monitored indicators' results will be evaluated.

Both reviews will be conducted by the EC in its role of Ghana SE4ALL Secretariat.

The complete annual evaluation will ensure a broad and representative perspective on the achievements and challenges in the implementation of Ghana SE4ALL CAP, and will allow the EC to assess the adequacy of the adopted strategy to meet the targets as planned, and take any corrective action if needed. In general terms, the purpose of the evaluation is twofold:

(i) To contribute to improving Ghana's initiative effectiveness and targets' achievement planned for 2020. This will be done by means of feeding real time learning from Ghana's CAP implementation back into the country initiative, and modify strategic activities as needed for the following year;
(ii) To contribute to the overall alignment of the strategic activities of Ghana's CAP and ensure that it remains relevant for addressing country level objectives and also aligned to the global SE4ALL initiative.
(iii) To contribute to the identification of possible changes to be made to the monitoring plan.

4.2 Guidelines for carrying out the complete annual review

The evaluation will basically consist of analysing the estimate of each indicator and compare the result against the baseline, the interim targets (if any) and final targets as well as the respective expected trajectory in order to decide if modifications are needed on the targets or the strategies implemented for the next monitoring periods. Figure 8 schematically represents this process.

Every year, reference will also be made to the results of previous rounds of evaluation as well as to the mid-term review previously conducted, to show annual progress. When estimates are in line with the target, no action will need to be implemented. For those indicators where the estimations are showing delay toward the achievement of the target, corrective actions will need to be defined. It could be for example: to refine the target set, or to identify new activities to be included in the CAP to increase progress. These new actions will be identified by the EC in consultation with the implementing stakeholders if applicable.

The evaluation process will also be the opportunity to assess the data collection activities and the engagement of the partners involved in the monitoring activities. Note will be made on missing and inconsistent data and arrangements proposed to estimate the corresponding indicators.

This procedure should be applied for the result obtained for each indicator to be able to evaluate it independently.

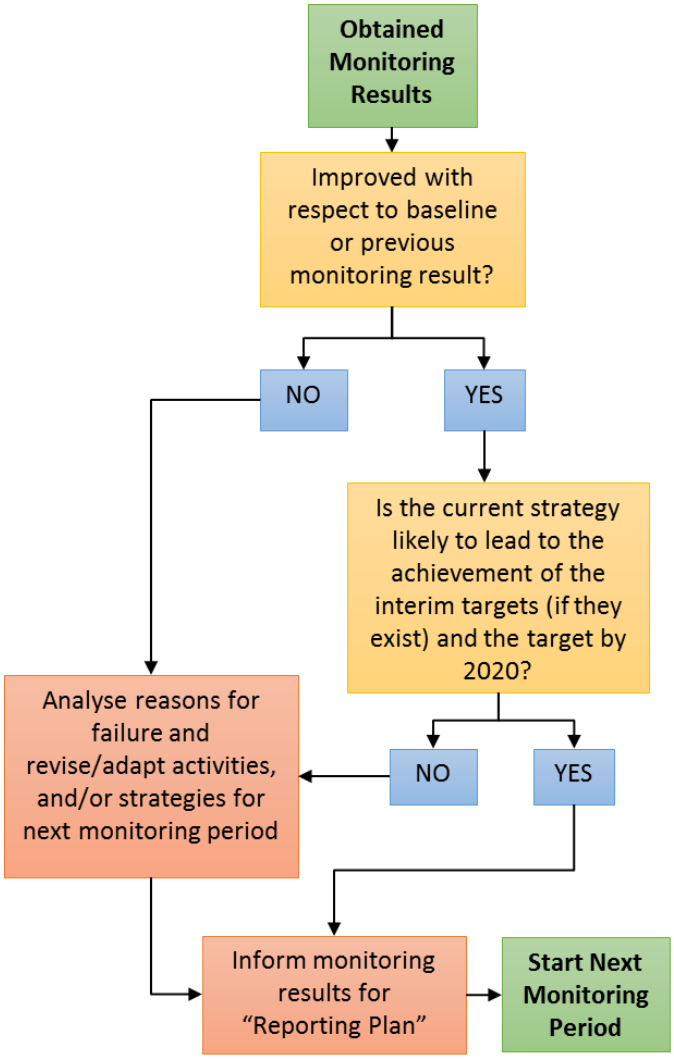

Figure 8: Evaluation process

5 REPORTING PLAN

Following the evaluation phase, the EC will report every year on the progress made under the implementation of Ghana SE4ALL CAP or future AA in a written performance assessment report. This report will provide an annual overview of the status of the country SE4ALL initiative, describing the main progress achieved, drifts if any and the corresponding corrective actions, lessons learned and actions for the future.

The annual performance assessment report would include the following sections:

1) Executive summary;
2) Overall progress made to date in achieving Ghana SE4ALL objectives;
3) Progress report: report of all indicators results to show the progress made under each goal and each specific objective against the baseline and targets set; comments on the trajectory; presentation of corrective or future actions to be implemented if any;
4) Data quality: identification and correction of missing and inconsistent data in the MER system;
5) Stakeholders engagement: report on the enrolment/participation of the different stakeholders in the MER system; report of any issues encountered and proposed corrective actions;
6) Lessons learned;
7) Expectations for the next years under the SE4ALL initiative.

Once completed, the report will be made available to all relevant stakeholders by the EC. Some results would also be communicated in the *Ghana SE4ALL Newsletter*.

The annual report would be prepared in time for the annual National SE4ALL Forums organised by the Ministry of Power. The progress made toward the targets set will be presented to all stakeholders at these occasions.

The results reported in the annual report could also be used by other optional means of communication, such as:

- Presented in any other forums that the country may consider attending or hosting to advertise on the status of the country SE4ALL initiative;
- Shown in newsletters currently being issued or new ones;
- Used for dissemination activities of SE4ALL initiative in Ghana;
- Shared in GoG's websites;
- Presented by other means of communication.

In all the cases, the use of information should be approved by the EC.

6 PERFORMANCE ASSESSMENT FRAMEWORK

The Performance Assessment Framework (Table 11), or PAF, is the key instrument for monitoring, analysing and reporting on the outcomes of Ghana SE4ALL CAP implementation. It captures key elements of expected results from the CAP implementation, by outlining indicators for each results level, as well as all the information associated to each of the indicators. The key performance indicators together with the baseline and target columns are what will be used to measure expected results. The targets and baseline are currently available only for a limited number of indicators. The gaps will be filled in with the implementation of the MER activities.

In Table 11, the column "Data collection to calculate indicator" provides information on data required to estimate the indicator, the frequency of collection, the source of data and the responsible entities. The column "Indicator reporting" provides information on the reporting activities for each indicator (frequency and responsible entity). The means of verification briefly outline how the entity responsible for collecting information verifies it. Finally, the last column summarizes some assumptions related to specific actions that are assumed to be carried out and necessary to do the monitoring of the indicators and the difficulties operations might face when addressing these. The Performance Assessment Framework will be updated as necessary, every time changes are made in the country SE4ALL strategy, and especially after the publication of the AA and corresponding IPs. The update of the Performance Framework will follow the methodology described in Section 7.

Table 11: Performance Assessment Framework

	Key performance indicators	Baseline (year & figure)	Targets (year & figure)		Data collection to calculate indicator				Indicator Reporting (entity and format)	Means of Verification	Immediate Actions and Risks (if any)
					Frequency of collection	Data sources	Data source format	Responsible entity for providing data			
	SE4ALL Global Goal 1: Universal Energy Access by 2030										
	SE4ALL Ghana Goal 1: Ensure universal access to modern energy services by 2020										
1	***National electricity access percentage (%)*** *- measure based on number of hh connected*	**2015** 75.60%		**2020** 100%	Once a year	Reports by MoP, PHC, GLSS	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with Ministry of Power.	IA: Communicate with MoP to inform data to be supplied to EC
2	***National access percentage to modern energy for cooking (%)*** *- measure based on number of hh using LPG or non-BLEN manufactured biomass coockstoves as primary solution for cooking*	**2015** see below indicator #10 for LPG and indicator #15 for cookstoves		**2020** 50.00%	Once a year	Reports by MoP, GHACCO, PHC/GLSS	Report, excel spreadsheet	MoP / GHACCO	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with GSS, MoP and GHACCO.	IA: Communicate with MoP/GHACCO to inform data to be supplied to EC
	1.1) SE4ALL Ghana Objective 1: Provide access to electricity in remote communities using decentralised renewable energy systems										
3	*Number of households using RE as primary source of energy for lighting and very low power appliances (≤30 kW)*	**2015** Not available		**2020** 60,333.33 (362,000 population)	Once a year	MoP's reports on National off-grid electrification programmes.	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with MoP	IA: Communicate with MoP to inform data to be supplied to EC
4	*Number of households using RE as primary source of energy for lighting and low power appliances (31 -150 kW)*	**2015** Not available		**2020** Not available	Once a year	MoP's reports on National off-grid electrification programmes.	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with MoP	IA: Communicate with MoP to inform data to be supplied to EC

5	*Number of households using RE as primary source of energy for lighting and medium to high power appliances (>150 kW)*	**2015** Not available		**2020** Not available	Once a year	MoP's reports on National off-grid electrification programmes.	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with MoP	IA: Communicate with MoP to inform data to be supplied to EC
6	*Number of communal facilities with access to electricity through a decentralised RE system*	**2015** 881		**2020** Not available	Once a year	MoP's reports on National off-grid electrification programmes.	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with MoP	IA: Communicate with MoP to inform data to be supplied to EC
7	*Number of solar lanterns distributed in off-grid communities*	**2015** 32,616		**2020** 2,000,000	Once a year	MoP's reports on National off-grid electrification programmes.	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with MoP	IA: Communicate with MoP to inform data to be supplied to EC
	1.2) SE4ALL Ghana Objective 2. Improve access to modern energy for productive uses										
8	*Number of irrigation schemes implemented (grid-connected and decentralised systems/solar)*	**2015** 37		**2020** 750	Once a year	SE4ALL Project Reports, GIDA/MoFA, GIZ and other development partners programmes reports	Report, excel spreadsheet	GIDA (MoFA)/ GIZ/DPs	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with SE4ALL DPs/GIDA /MoFA	IA: Communicate with SE4ALL DPs/GIDA/ MoFA to inform data to be supplied to EC
9	*Number of businesses with access to energy through decentralised RE systems, in urban, peri-urban and rural areas (focus on solar dryers)*	**2015** 21		**2020** 250	Once a year	SE4ALL Project Reports, GIZ and other development partners programmes reports	Report, excel spreadsheet	Agric. Engineering Services Directorate	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with AESD	IA: Communicate with AESD to inform data to be supplied to EC
	1.3) SEALL Ghana Objective 3. Improve access to LPG as a clean cooking fuel										
10	*Percentage of households using LPG*	**2015**		**2020**	Once a year	PHC, GLSS, Rural LPG		MoP	Energy Commission.		IA: Communicate with MoP to inform

	as primary fuel for cooking (%)	22.30%		50%		Promotion Programme report	Report, excel spreadsheet		Annual report on SE4ALL initiative progress.	Communications with the MoP, NPA	data to be supplied to EC
11	*Number of distributed LPG cylinders in rural areas*	**2015**		**2020**	Once a year	PHC, GLSS, Rural LPG Promotion Programme report	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with the MoP, NPA	IA: Communicate with MoP to inform data to be supplied to EC
		22,000		Not available							
	1.4) SE4ALL Ghana Objective 4. Improve access to energy efficient and improved cookstoves by woodfuel/charcoal users										
12	*Number of public institutions, commercial cooking and agro-processing activities using improved woodfuel cookstoves as primary device for cooking*	**2015**		**2020**	Once a year	PHC, GLSS, GHACCO, reports from SE4ALL development partners	Report, excel spreadsheet	GHACCO	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with GSS, GHACCO, SE4ALL development partners	IA: Communicate with GSS, GHACCO and SE4ALL development partners to inform data to be supplied to EC
		Not available		Not available							
13	*Number of households using improved woodfuel cookstoves as primary cooking device*	**2015**		**2020**	Once a year	PHC, GLSS, GHACCO, reports from SE4ALL development partners	Report, excel spreadsheet	GHACCO	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with GSS, GHACCO, SE4ALL development partners	IA: Communicate with GSS, GHACCO and SE4ALL development partners to inform data to be supplied to EC
		Not available		Not available							
14	*Number of households using improved charcoal cookstoves as primary cooking device*	**2015**		**2020**	Once a year	PHC, GLSS, GHACCO, reports from SE4ALL development partners	Report, excel spreadsheet	GHACCO	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with GSS, GHACCO, SE4ALL development partners	IA: Communicate with GSS, GHACCO and SE4ALL development partners to inform data to be supplied to EC
		Not available		Not available							

15	*Percentage of hh using non-BLEN manufactured biomass cookstoves*	Not available		50%	Once a year	GHACCO reports	Report, excel spreadsheet	GHACCO	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with GHACCO.	IA: Communicate with GHACCO to inform data to be supplied to EC R: currently no breakdown of information by type of device used is available, only by fuel type (kerosene, woodfuel, LPG, etc.)
	SE4ALL Global Goal 2: Double the share of renewable energy (RE) in the global energy mix by 2030										
	SE4ALL Ghana Goal 2: Increase the proportion of RE in the total national electricity mix to 10% by 2020										
16	***Percentage of RE in the national electricity mix (%)***	**2015** 0.30%		**2020** 10.0%	Once a year	Energy Outlook, MoP reports on national electrification programmes	Report, excel spreadsheet	EC for on-grid RE capacity, MoP for off-grid RE capacity.	Energy Commission. Annual report on SE4ALL initiative progress.	EC Reports, MoP Reports	IA: Currently off-grid capacity is not included in the figure. Provisions should be made in order to include off-grid RE capacity in the calculation. Communicate with MoP to indicate data to be supplied to EC.
16a	*On-grid RE capacity (MW)*	5.25		50.00	Once a year	Energy Outlook	Report, excel spreadsheet	EC	Energy Commission. Annual report on SE4ALL initiative progress.	EC Reports	
16b	*Off-grid RE capacity (MW)*	0.24		Not available	Once a year	MoP reports on national electrification programmes	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	MoP Reports	IA: Currently off-grid capacity is not included in the figure. Provisions should be made in order to include off-grid RE capacity in the calculation. Communicate with MoP to indicate data to be supplied to EC.

	2.1) SE4ALL Ghana Objective 1: Provide access to electricity in remote communities using decentralised renewable energy systems										
17	*Installed capacity of RE mini grids in off-grid communities (MW)*	**2015** 0.00		**2020** 5 (62 minigrids)	Once a year	National off-grid electrification programmes.	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with MoP	IA: Communicate with MoP to inform data to be supplied to EC
18	*Total capacity of Solar Community Lighting Systems (Solar Street lights) installed in off-grid communities (MW)*	**2015** 0.02		**2020** Not available	Once a year	National off-grid electrification programmes.	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with MoP	IA: Communicate with MoP to inform data to be supplied to EC
19	*Total capacity of solar lanterns distributed in off-grid communities (MW)*	**2015** 0.1		**2020** Not available	Once a year	National off-grid electrification programmes.	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with MoP	IA: Communicate with MoP to inform data to be supplied to EC
20	*Total capacity of Solar Home Systems installed in off-grid communities (MW)*	**2015** 0.05		**2020** Not available	Once a year	National off-grid electrification programmes.	Report, excel spreadsheet	MoP	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with MoP	IA: Communicate with MoP to inform data to be supplied to EC
	SEALL Global Goal 3: Double the global rate of improvement in energy efficiency by 2030										
	SE4ALL Ghana Goal 3: to ensure that all households using charcoal or firewood for cooking will use improved energy saving cookstoves by 2020.										
	3.1) SE4ALL Ghana Objective: At least a 30% increase in the efficiency of woodfuel stoves in the country										
21	*Annual average woodfuel consumption for cooking per household (kg/hh*year)*	**2015** Not available		**2020** Not available	Once a year	GLSS, PHC	Report, excel spreadsheet	GSS	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with GSS	IA: Communicate with GSS to inform data to be supplied to EC
22	*Annual average charcoal consumption for cooking per household (kg/hh*year)*	**2015** Not available		**2020** Not available	Once a year	GLSS, PHC	Report, excel spreadsheet	GSS	Energy Commission. Annual report on SE4ALL initiative progress.	Communications with GSS	IA: Communicate with GSS to inform data to be supplied to EC

7 GUIDELINES FOR UPDATING THE MONITORING, EVALUATION AND REPORTING SYSTEM

The MER system is not a static blueprint for implementation but a living document that can be adjusted as progress is made and lessons are learned, as activities are completed and new ones arise. It will evolve in accordance with Ghana's SE4ALL strategy, integrating any change made to it and reflected in the future AAs.

This section is meant as a tool for updating the MER system upon validation of the AA, and for the case that additional indicators are to be incorporated. Evolution in the MER system will mainly result in new sets of indicators being tracked: whenever a new objective or activity is included to the strategy, new indicators will need to be defined. These indicators will be chosen wisely to best represent the expected results. Others will be eliminated as activities are completed and targets achieved.

The EC, in its role of SE4ALL Secretariat, will be the only entity responsible for adding/deleting indicators to the MER system. However, feedback and need for new indicators from relevant stakeholders will be taken into account in the update process of the MER system.

7.1 Updating the Logical Framework

In case there is a need to review the complete structure of the MER system upon validation of the Action Agenda[20], there will be a need to update the logical framework. In order to develop the new logical framework it will be necessary to identify the goals and objectives associated with the Action Agenda.

- *Goal*: What is the intended goal of the Action Agenda? This is the main goal that drives all of the activities and related sub-activities.
- *Objective*: What are the planned objectives designed to achieve the desired goal?

The logical framework will be constructed as follows:

Results	Indicators	Definition	Sources and Means of Verification	Assumptions
SE4ALL Global Goal 1, 2 or 3, namely: Universal Energy Access by 2030, Double the share of renewable energy in the global energy mix by 2030, Double the global rate of improvement in energy efficiency by 2030				
Country Goal	*Goal indicator*	Definition	Responsible entities for data collection	Assumptions
SE4ALL Ghana Objective	*Objective indicator*	Definition	Responsible entities for data collection	Assumption

Note: The logframe will include as many rows as identified goals' and objectives' indicators exist, without taking into account possible disaggregation.

[20] i.e. if the country goals and objectives are revised in such a way that the proposed indicators are not yet relevant to track the progress of the country SE4ALL initiative.

7.2 Identification of new indicators

Whenever a new goal, objective or activity is included in the country SE4ALL strategy, questions should be raised on what indicators need to be measured in order to track progress toward the expected results. Indicators are how we measure progress towards a specific objective or goal. After the level of the activities is defined (goal or objective), the next step is to define the indicator(s) that will measure progress towards achieving objectives and goals.

The definition of new indicators will be oriented by the following criteria:

- Significant: the indicator closely tracks the result it is intended to measure;
- Practical: data can be collected on a timely basis and at reasonable cost;
- Measurable: the indicator can be quantified and measured by some scale (unit);
- Consistent: the measure is operationally precise and remains consistent over the time;
- Reliable: can be measured repeatedly with precision by different people;

The selection of new indicators will be made carefully to avoid overloading the MER system with too much information that might result in data pile-up and will not sustain the MER activities. In addition, two aspects related to indicators are essential to reduce the demand of resources associated to monitoring activities: diversity and number of indicators. It is necessary to assess those indicators that, although they are more difficult to monitor, capture the substance of the change that is occurring, in a better way. Moreover, having fewer indicators would reduce associated monitoring costs but it is important to analyse the relevance of each indicator and that there are enough ones to cover everything that needs to be tracked.

7.3 Definition of the indicators' information and monitoring requirements

For each new selected indicator, an "Indicator information sheet" should be completed. This sheet contains the indicator's information. Its purpose is to act as a comprehensive guideline for everything that is related to data: collection, quality, and use. This is also a communication tool so that stakeholders can understand some of the critical components of this sheet. Every indicator (information collected) should have some form of indicator information sheet. The following is a template of "Indicator information sheet" which should be used as guideline:

Table 12: Indicator information sheet

(Add indicator number)	***(ADD INDICATOR'S NAME AND UNIT OF MEASUREMENT BETWEEN BRACKETS)***
Date created: *DD-Month-YYYY*	Last update: *DD-Month-YYYY*
Definition/description: *Add the specific definition of the indicator describing what it intends to measure, spelling out what it is so all stakeholders have the same understanding of what this indicator is and what it intends to track.* *Indicate in what unit this indicator will be captured and, when/if necessary, any required disaggregation.* Source of information/data: *How data are collected, where data are coming from e.g. institution, survey, other source.* *Indicate if data are already being collected by any current activity, e.g. national census.* Frequency of monitoring/data acquisition: *How often and when data are collected, (who is responsible, what position within the Secretariat or which institution, for collecting the data).* Baseline: *Initial known value (year and corresponding figure) which is used for comparison with later data measure.*	

Internal data quality assessment:
How the data quality assessment is performed for this indicator, and when necessary and if applicable also describe the review process that this indicator may be subject to before dissemination to stakeholders.

Interim and final targets to be achieved in terms of year and figure will also be set for each new indicator in the Performance Assessment Framework. This will be done in consultation with the relevant implementing stakeholders if applicable.

7.4 Data Flow and Data Quality Assurance

7.4.1 Data Flow

The following figure maps the flow of data from collection to use and examines areas where data processes can be consolidated or uses can be enhanced. Differentiates between data elements and indicators (transformed data).

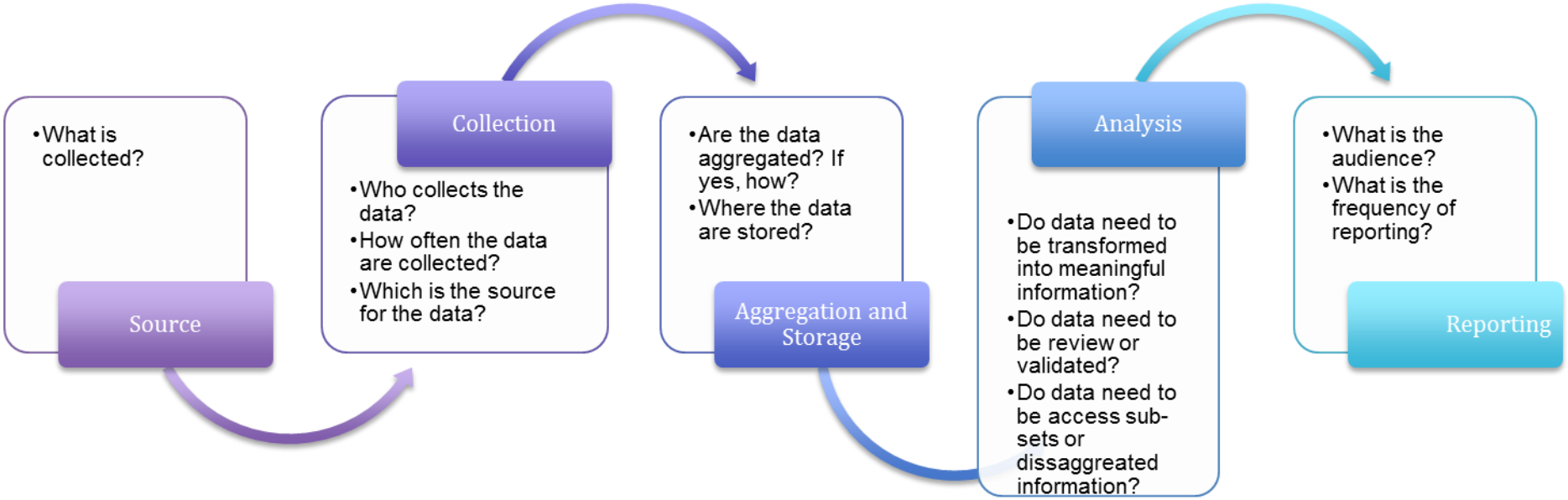

Figure 9: data flow from collection to reporting

7.4.2 Data Use

It will be necessary to summarize planned uses for the collected data. Think about how the collected information can be utilized to make informed programme decisions and what steps can help ensure that collected data gets to the right person, in the right time, and in the right format. The following set of questions helps identify the uses planned for the data collected:

- Uses: What are the multiple uses for the information generated from this indicator?
- Stakeholders: Who is the audience for this indicator?
- Mechanism: How will the information be disseminated?
- Format: How should this information be formatted to best reach the intended users?
- Next steps: What steps must be taken to ensure that this information is used? Any follow up needed? Feedback?

7.4.3 Data Quality Assurance

Data quality control procedures should also be taken into account when updating the MER system, particularly if new indicators require new data not previously collected or if new data quality control procedures are introduced by the entities involved in the monitoring, evaluation and reporting plans.

Always have in mind that the objective of assuring data quality shall consider five criteria: validity, reliability, integrity, precision, and timeliness; and remember that the purpose of having a QA plan is to identify and manage potential risks to the quality of collected data and information that will be used.

If not QA procedures are currently being applied by the EC or any other entity involved, then provisions should be made in order to include activities that contribute to controlling data quality and traceability.

7.5 Addition to the monitoring database and MER system

An evaluation will be carried out in order to assess the new indicators to be part of the MER system. These new indicators will be inserted in the monitoring database with their corresponding “Indicator Information sheet” and in the Performance Assessment Framework with their pertaining information (baseline, targets, data collection information, data reporting, etc.). They all should have their monitoring protocols also included as part of the MER system.

These new indicators will be monitored, evaluated and reported. If the nature of an indicator or set of indicators requires to have a different evaluation or reporting mechanism, the plans should describe how it will be evaluated, who will do the evaluation, what will be reported, to whom, and when.

In addition, it would be useful to indicate what information products based on data translated into strategic information (e.g., reports, bulletins, graphics, and newsletters) will be fed back to stakeholders who have reported data to the SE4ALL Secretariat.

7.6 Updating the Evaluation Plan

Updating the evaluation plan may entail:

- Changes coming from new AAs: for example need to compare with new targets (figures and years) that are set in future AAs
- Adding/deleting stages if new mandatory stages are needed (e.g. new quality assurance stage is to be applied as part of the evaluation process)
- Changing evaluation frequency

7.7 Updating the Reporting Plan

The reporting plan was conceived as a dynamic tool to avoid the need for updating it continuously. Changes to the reporting plan should only be made if a new mandatory report/means of communication is selected to be used throughout the duration of the SE4ALL initiative. Currently the proposal is to have a "Performance Assessment Report" to be issued once a year. If a new report will replace this one or if an additional report is necessary to be issued ever year (or with an alternative frequency), then the reporting plan should be updated to include it.

As mentioned in section 5, there are different means of communication that can be used to share information about the SE4ALL initiative results. Since these are dynamic then they are considered as optional, meaning that they are not mandatory, and that can be or not be used depending on the needs of the moment.
