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African Biomass Data Initiative: REALIZING SCIENCE BASED RESOURCE MANAGEMENT

INTRODUCTION

The challenge posed by SDG 7 of achieving universal access to affordable, reliable, sustainable and modern energy services by 2030 is significant. According to IEA, more than 600 million people in Africa live without access to electricity and 848 million people lack access to clean fuels and technologies as a primary source for cooking. For countries to achieve SDG7, they must optimize the use of all their sources of energy, including biomass, geothermal, hydropower, solar and wind energy.

Biomass represents a significant share of energy use in SSA. More than 700 million people use it as a primary energy source. However, the current and potential contribution of biomass to the energy mix is not clear, because current data do not adequately assess bioenergy consumption at the household, commercial or institutional level. The lack of robust data, analysis and dissemination hinders efforts to

- Raise awareness of the relevance and importance of bioenergy to sustainable development;
- Facilitate the transition away from the use of traditional biomass and towards modern bioenergy;
- Develop practical solutions to manage bioenergy production and use in a sustainable way.

Current traditional use of biomass is having negative environmental and human health impacts. Therefore, there is an urgent need to develop and implement effective policies to drive the transition away from the use of traditional biomass and towards clean, sustainable modern bioenergy. A prerequisite to these policies are practical methodologies for gathering, archiving and disseminating data on bioenergy production and use specific to the SSA context. In Sub-Saharan Africa data on the use of biomass for energy is inadequate to regulate this resource, which results in a failure to:

- Prevent de-forestation and land degradation.
- Drive rural economic development through improved forestry and agriculture.
- Optimize biomass use for energy access and climate change mitigation.

Optimizing the use of biomass in Africa helps to meet the objectives of SDG7 and requires collaboration between national, regional and international stakeholders. The ***Sustainable Energy for All (SE4All) proposes to create a new partnership***

to coordinate data collection on biomass use, data analysis and dissemination among multilateral development agencies, pan-African agencies and national institutions. Subsequently, this partnership builds institutional capacity high impact African countries for biomass data collection, knowledge management and subsequent resource management.

This initiative is part of the countries' Action Agendas (AAs), which define the national SE4All objectives and determines how the three goals of SE4All can be achieved. The AAs provide the long-term vision which ensures the overall sector-wide coherence and synergy of the accumulated efforts towards the three goals of SE4All in the country, also including the nexus angles (food security, gender, health, water etc.). Appraisal of biomass is crucial in countries achieving objectives as set in their agendas. This work will therefore be undertaken as integral part of the countries' development of their renewable energy plans and actions.

VISION

Improve the sustainability of bioenergy production and use in Africa through data quality on biomass resource use and availability.

OBJECTIVE

Establish a high-functioning international Initiative to coordinate the collection, analysis and dissemination of data on the use of biomass for energy in Africa among multilateral development agencies, pan-African agencies and national institutions. This Initiative will:

- Identify and rigorously assess data sources for the use of biomass for energy at the international and national level, including international organizations, non-governmental organizations and academia.
- Provide an assessment of the institutional and human capacity needed to reliably assess bioenergy use at the national level.
- Communicate the biomass data gathering needs of these countries to SE4ALL partners and provide recommendations on how to combine data sources from multilateral technical agencies (e.g. FAOSTAT) with national efforts to better understand biomass resource use and availability.
- Develop a consistent, robust and transparent picture of biomass use for energy in a set of Sub-Saharan African countries (in terms of industrial use, heat and traditional cooking) that can be updated on a regular basis.
- Within three years the Initiative will build institutional capacity in at least three high impact African countries for biomass data collection, knowledge

management and subsequent resource management to serve as models for additional countries.

IMPLEMENTATION

WORK TO DATE

The SE4ALL Global Facilitation Team, SE4ALL Bioenergy Accelerator and ECA have collaborated to develop this initiative. Over the past year, this core working group engaged the SE4ALL community and International Technical Agencies that collect, analyse and disseminate data on renewable energy, including AFREC, FAO, IEA, IRENA, REN21 and the Global Tracking Framework. All of these agencies would like to see improved data collection and analysis of biomass data use for energy.

Many of these agencies publish reports of renewable energy use in Africa that include *estimates* of biomass use as an energy source. In addition to data specific to the use of biomass for energy, more general data on agriculture, forestry and land use will be relevant for this work. Bioenergy use is reported as part of the renewable energy indicator as a percent of TFEC. The bioenergy data are disaggregated into modern and traditional uses. Data sources in the 2017 Global Tracking Framework report (IEA and World Bank, 2017) included AFREC (2012), IEA (2017) and IRENA (2017).

IMMEDIATE NEXT STEPS

The next phase is to properly engage regional and national actors in Africa, such as the regional Centres of Renewable Energy and Energy Efficiency. ECA will coordinate outreach through their regional offices in order to communicate the intent of the initiative to national agencies and stakeholders. Ideally, the Initiative will identify parties interested in working to advance the Initiative. Subsequently, interested parties would assist in inventorying African biomass data sources and specify gaps in data and statistics. The subsequent phase will be to recruit resources so as to build capacity in High Impact countries, as described below. The goal is to raise USD 2 million per annum for a three-year work program.

OUTPUTS

The African Biomass Data Initiative will be a results-based coalition committed to improving the availability and quality of data on the use of biomass for energy in

SSA, to improve policy making and development of this important resource. In its first 3 years, ABDI will:

- Year 1: Create a new partnership that coordinates biomass use data collection, analysis and dissemination among multilateral development agencies, pan-African agencies and national institutions. This partnership will set the stage for in-country work by:
  - Conducting a detailed ***inventory of African biomass data sources*** at the national, regional and international level, including the work of academics and non-governmental organizations.
  - Developing a ***roadmap for capacity building*** to guide subsequent efforts for creating national capacity for collecting, analysing and disseminating data on the use of biomass for energy.
  - ***Selecting pilot countries***, based on criteria agreed with partners, for subsequent roll out of ABDI.
  - ***Sharing data and knowledge*** with countries beyond the selected pilot countries.
- Year 2: ***Build institutional capacity in High Impact African countries*** for biomass data collection, knowledge management and subsequent resource management. Share experience with broader group of countries across SSA.
- Year 3: ***Empower more countries to replicate capacity building*** in additional countries.

INVENTORY OF AFRICAN BIOMASS DATA SOURCES

The Core Working Group identified data sources provided by international organizations and technical agencies on the use of biomass for energy. Numerous additional data sources exist in the academic literature and among non-governmental organizations that work on forestry and agricultural issues.

The first task of ABDI will be to explore - in detail - the various existing data sets on Agriculture and Forestry in Sub-Saharan Africa. ABDI will undertake the difficult task of cataloguing data sources within the Ministries of Agriculture, Energy, Environment and Forestry for countries of SSA. In addition, ABDI will perform desk studies of the academic literature to determine if relevant data exists therein. After its first year, ABDI will have inventoried *all* existing data sources and identified data gaps in sufficient detail to specify the work needed to address said data gaps.

ROADMAP FOR CAPACITY BUILDING

ABDI will create a roadmap the institutional and financial resources necessary for a country to routinely and robustly collect, analyse and disseminate data on the use of biomass for energy.

SELECTING PILOT COUNTRIES

ABDI will develop objective criteria together with partners to help identify at least 3 pilot countries for capacity building with biomass data collection, analysis and dissemination. The criteria will be developed to select a diverse group of countries that reflect various experience with biomass data across Africa and thus test a model for broader scale-up over time. ABDI will develop these criteria in consultation with regional and national agencies. In the course of these consultations candidate countries will be identified for developing their national capacity for monitoring their use of biomass for energy.

SHARING DATA AND KNOWLEDGE

ABDI will develop a process to share collected data and knowledge during the ABDI program with countries beyond the selected pilot countries. This will be implemented in years 2-3 of the ABDI program.

BUILD INSTITUTIONAL CAPACITY HIGH IMPACT AFRICAN COUNTRIES

During years 2–3 ABDI will work in concert with the Ministries of Agriculture, Energy, Environment and Forestry, as well as relevant community and non-governmental stakeholders, to build capacity in three pilot countries in SSA to monitor and regulate their use of biomass for energy.

EMPOWER MORE COUNTRIES TO REPLICATE CAPACITY BUILDING

Learnings from the pilot countries can guide the development of analogous tools across the continent. ABDI will leverage global platforms and African platforms to communicate the learnings from the first few implementing countries. To support this ABDI will lay out an approach, based on experience gained at the country level, on how to scale-up ABDI across countries in Africa. This will include an analysis of what worked well and what didn't in the pilot countries. The long-term goal is for most African countries to monitor and regulate their use of biomass for

energy to optimize the productivity of their agricultural and forestry sectors for food, land management and energy in accordance with the SDGs.

TARGET AUDIENCE

This work will assist African governments with increased awareness of biomass use in their countries to facilitate better resource management for improved human health and environmental outcomes. This work will improve international awareness of the use of biomass for energy adding incentive to optimizing the use of biomass resources.

WHAT ABDI WON'T DO

The inventory of biomass use for energy will not delve into how this use relates to Nationally Determined Contributions under the Paris Agreement, the implied-carbon intensity of bioenergy, and emissions avoided, nor will it provide an assessment of or recommendations on the policies and enabling environment for increasing (or decreasing) the use of biomass for energy. While these are of course important issues in closing the energy gap and meeting the SDGs, these are beyond the scope of this initiative.

This work will assist bioenergy project developers in sourcing feedstock, project site selection and project sustainability. Concomitantly, this work will assist the donor community in better understanding the role of biomass in energy access and clean cooking and encourage support for sustainable bioenergy projects in SSA.

TECHNICAL CHALLENGES TO OVERCOME

Based on discussions with stakeholders, better data and statistics on the use of biomass for energy in Sub-Saharan Africa requires improved:

- Definitions and terminology of biomass.
- Data collection, archiving and dissemination.
- Assessment and assurance of biomass sustainability.

DEFINITIONS AND TERMINOLOGY OF BIOMASS

Unlike solar and wind energy whose output can be measured in watts of electricity, bioenergy can be produced from diverse inputs and can produce diverse forms of energy, including electricity, heat and fuels, like biodiesel, biogas and ethanol. Likewise, users of bioenergy can vary from small scale household use for cooking to industrial scale heat and power production. To ensure that data collected by

diverse sources in various countries can be used in global and regional reporting, such as the SE4ALL Global Tracking Framework, IEA World Energy Outlook and REN21 Global Status Report there must be agreement on terminology and definition of biomass. Typical differentiation of biomass in the sustainable development context has been “traditional” versus “modern” and “unsustainable” versus “sustainable”. To aid in policy development, biomass demand should be disaggregated into “rural” versus “urban” use. Clarity in these definitions will be needed to ensure effective reporting across sectors and geographies.

BIOMASS DATA COLLECTION, ARCHIVING AND DISSEMINATION

Traditional use of fuelwood and charcoal for cooking is the dominant source of biomass demand in SSA. Collecting data on fuelwood use faces two challenges:

- The informal means of collecting and selling these fuels.
- The inability of forestry ministries to collect the data.

Forestry sector records of wood fuel production exist in most countries, but they are typically incomplete because only a minor fraction of the wood fuel produced goes through the formal recording system, either as sale records or felling permits. Instead fuelwood consumption estimates are typically based on fuel preferences and per capita consumption averages. The reliability and detail of these estimates, however, vary enormously, from statistically sound surveys, to elaboration and modelling of secondary data sources. The consequences of such lack of attention on wood energy in both energy and forestry sectors, is a chronic weakness of wood energy data and wide discrepancies among sources.

In addition, apart from ethanol, little attention has been paid to modern bioenergy use in SSA. As the capacity is developed to monitor fuelwood use, bioenergy production and use from other feedstocks, such as agricultural residues, will need to be developed in parallel. There are diverse databases on topics related to bioenergy, such as FAOSTAT, the FAO Forest Land Use Explorer and the FAO Global Strategy to Improve Agricultural and Rural Statistics, but few databases dedicated to bioenergy. Ideally, it will be possible to collaborate with these databases so as to extract data relevant to bioenergy where possible.

Further, Ministries of Agriculture, Energy and Forestry rarely collaborate on monitoring the use of biomass for energy. To achieve robust statistics on the use of biomass for energy, these diverse ministries will need to work together. The overall lack of data means that little or no capacity has been developed for the archiving and disseminating of data.

ASSESSMENT AND ASSURANCE OF SUSTAINABILITY

For biomass to contribute to sustainable development, its production and use must be sustainable. Assessing bioenergy sustainability requires collecting data on a range of social, environmental, and economic impacts. The global bioenergy community is particularly keen to ensure that the use of biomass for energy reduces greenhouse gas emissions, does not negatively impact food security and respects land tenure. The Food and Agriculture Organization of the UN and the Global Bioenergy Partnership (GBEP) have developed tools to assess bioenergy sustainability at the local and national levels, including FAO's sustainable bioenergy support package and the GBEP indicators of sustainable bioenergy production and use. As of today, SSA countries lack the capacity to collect the relevant data for evaluating the sustainability of their biomass production and use. As such, when building capacity to monitor the use of biomass for energy, national governments and international organizations should concomitantly develop capacity for monitoring the sustainability of the biomass used.

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