

# GBEP Ethiopia presentation

**Project:** BUILDING CAPACITY FOR ENHANCING BIOENERGY SUSTAINABILITY THROUGH THE USE OF GLOBAL BIOENERGY PARTNERSHIP (GBEP) INDICATORS PROJECT

**Berhane Kidane**

**Senior Researcher**

**(Assistant coordinator of the project)**

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Ethiopian Environment and Forest Research Institute (EEFRI)

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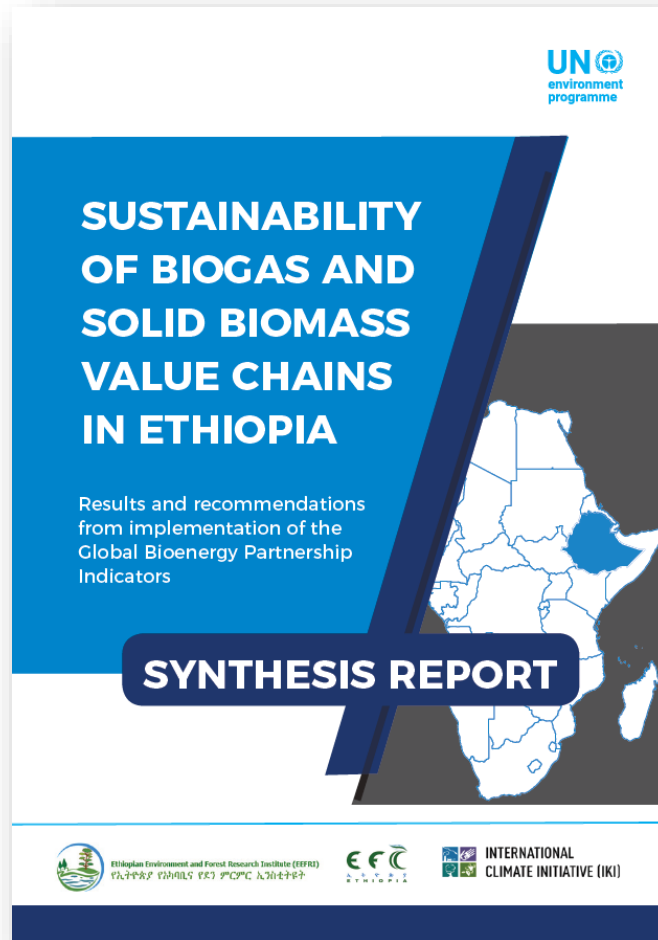
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# Presentation outline

- 1. Why is this project important?**
- 2. What is the process**
- 3. Two priority bio-energy pathways**
- 4. Examples of results**
- 5. Recommendations, future monitoring and general feedback**

# Let's start by the end...

Available (very) soon!



# 1. Why is the project important for us?

## When we started

- To support decision makers in Ethiopia in developing effective integrated policies for sustainable bio-energy production and use.
- The project also provides technical assistance to government officials and experts in Ethiopia to assess the sustainability of their bioenergy sector and
- Build their capacity including researchers for its long-term periodic monitoring

## After one year of work!

- Developed the multidisciplinary capacities of the team (knowledge of the researchers beyond the usual fields)
- Built / reinforced the relationships with stakeholders
- Used new sources of information
- Produced a report using sustainability indicators for the two pathways

## 2. What is the process

<b>April 2018</b>	Inception meeting
<b>Apr to Oct. 2018</b>	Selection of EEFRI and of the researchers. Mix of the researchers across the indicators to facilitate the exchange of information. Selection of the two priority pathways.
<b>Oct. 2018</b>	Training by Maryse Labriet.
<b>Feb. 2019</b>	Training by Horst Fehrenbach (indicators 1 and 4).
<b>Feb-March 2019</b>	Description of the pathways. First round of indicators and feedback. Special week of work with all the researchers, out of Addis.
<b>May-June 2019</b>	Second round of indicators and feedback.
<b>June 2019</b>	Validation workshop.
<b>July-Aug. 2019</b>	Third round of indicators and feedback. Special week of work with all the researchers, out of Addis. Preparation of the main messages and conclusions.
<b>Sept-Oct. 2019</b>	Finalization of the report, preparation of the synthesis, review, design, printing.
<b>4 Nov. 2019</b>	Final meeting to come!

# 3. Two priority bio-energy pathways

**Biogas for households and institutions** from organic waste (animal dung and human excrement).

**Bioethanol from sugar industry** (molasses) for **transportation** (mixed with fossil fuels) and, possibly, **electricity generation**.

**Solid biomass** (charcoal, firewood) produced with advanced technologies, such as improved carbonisation, and used in **improved cookstoves** for cooking and heating.

**Briquette** production from **waste** and use in **improved cookstoves** for cooking and heating.

# Current situation of biogas in Ethiopia

- National Biogas Programme of Ethiopia (NBPE)
  - Launched in 2008.
  - 22,166 biodigesters installed, 77 per cent of which are functioning.
  - Four sized; the predominantly used digester is the 6 m<sup>3</sup> (89% of all biodigesters).
  - The fixed dome digesters (68% functioning) are better than the floating drum digesters (16% functioning) from the operational perspective.
  - Objective of 35,000 biodigesters installed by 2020 (new biogas programme NBPE+).

# Current situation of biogas in Ethiopia

- Challenges

- The dissemination of a domestic biogas programme is not simple.
- SNV-Ethiopia has identified the following constraints:
  - (1) low income of most rural households
  - (2) scarce (availability) of water
  - (3) scattered population pattern
  - (4) gender imbalance in decision making at the household level
  - (5) low awareness in domestic biogas technology



# Current situation of solid biomass in Ethiopia

- Solid biomass is used in 90 to 92% of Ethiopian households to obtain energy for cooking and heating.
- National Improved Cookstoves Program
  - Launched in 2013. Scheduled to run to 2030, with five-year phases aligned with the government's Growth and Transformation Plan.
  - 11 million improved cookstoves distributed by 2017.
  - Most common stove models: Mirt and Gonzie (for injera baking) and Tikikil and Lakech (for non-baking services).
  - The first two are common but have a low efficiency (less than 20 percent).



## **4. Examples of results**

**(all results available in the report!)**

# Biogas

- The produced biogas has been mainly used for cooking (>90%) and lighting (~3.2%)
- This replaces firewood used for cooking and kerosene used for lighting and increases the energy flexibility and security of the household.
- The amount of energy produced is estimated to 17.6 million m<sup>3</sup> biogas/year. This is equivalent to:
  - 338,500 liters of kerosene for lighting, and it could represent 204,074 USD annual saving from purchase of kerosene;
  - 412.5 thousands tons of firewood per year that can be saved upon the use of biogas.

# Solid biomass

- **Fire wood:**
- About 65% of the fuel wood is freely harvested from wet and dryland forests. About 35% comes from trees on-farm, private woodlots, community forests and some from industrial plantations.
- Most of the freely harvested woody biomass originates from forest resources which are fragile shrublands, parklands and wildlife sanctuaries.
- The GHG emission per unit of useful energy produced by the traditional biomass is higher by 60 % than that of the biomass ICS showing a strong evidence for the need to enhance the government's improved cookstove program .

# Solid biomass

- Charcoal is manufactured using the inefficient (10-15%) earth mound kilns from freely harvested acacia timber species .
- The bulk of charcoal comes from either acacia species and/or the invasive species *Prosopis juliflora* through the eastern gate to Addis Ababa.
- The traditional and inefficient conversion process of woody biomass into charcoal generate high rate of GHG and non-GHG toxic emission.
- Charcoal is prevailingly produced, transported and marketed illegally.
- Illegality hampered and diminished the contribution of charcoal in the creation of competent rural job opportunity and strong rural income generation for many pastoral, agro-pastoral and mixed farming households living in impoverished dry lowlands.
- It has further hampered the development of cost effective and safe logistics for charcoal transport and distribution

# **5. Recommendations, future monitoring and general feedback**

# Recommendations and future monitoring

- Biogas may be a competitive option to replace the traditional energy sources for cooking. However, the use of biogas technology is challenged by critical factors. Therefore, revising the biogas implementation strategy and crafting inclusive biogas policy is quite important
- Adopting different types of biogas digesters with reduced implementation cost, developing integrated strategy on fodder and dung productivity, practicing stationary cattle rearing and awareness creation on diverse biogas feedstock are essential

# Recommendations ....

- In effect the shift from traditional energy source of cooking to biogas technology helps to implement the key pillars set in the Sustainable Development Goals (SDGs)
- The current state of the solid biomass sector in Ethiopia is unsustainable, the high dependency on solid biomass might be an Indicator to focus on this resource as potential energy and economic sector.



# Recommendations ....

- Most of the biomass is coming from areas which are either with low biomass productivity or classified as nationally conserved forest areas and protected wildlife sanctuaries.
- Henceforth, the afforestation programs should work aggressively and narrow the supply and demand of the solid biomass. Moreover, developing an integrated strategy that focus on the controlled use of exotic invasive species such as *Prosopis juliflora* and other potential woody biomass is also essential

# Recommendations ....

- Capacity development of both humans and institutions for sustainable biomass cultivation, management and utilization should be at the heart of the bioenergy program of Ethiopia.
- Currently, in Ethiopia there is no institution collecting the bioenergy data for the implementation of indicators GBEP Sustainability Program and hence, strengthening coordination among regional and national government's institutions will play a great for the improvement of indicators implementations.

# General feedback

- Sustainability indicators are a key tools that helps for better the analysais of the pathway
- Currently, in Ethiopia there is no institution collecting the bioenergy data for the implementation of indicators GBEP in cordinated manner??
- Coordination among regional and national government's institutions will play a great for the improvement of indicators implementations

Thank you