Clean Cooking Sector in Ethiopia

Hiwote Teshome
Project Manager, SEECCS project
August, 2019
I. Overview of SNV
II. Historical Development of Cook stoves Interventions
III. Why the SEECCS Project?
IV. Project at a Glance
V. Achievement and planned/upcoming activities
VI. Overview of the National Biogas program
SNV Netherlands Development Organisation

We were founded in 1965

SNV works in 30 countries:
28 program countries

We employ over 1,300 people, of whom more than 33% are women

90% of our professionals are nationals of the country in which they work

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SNV’s 3 sectors and products

Agriculture
- Inclusive Value Chains
- Sustainable Nutrition 4 All

Climate & Business

Energy
- Sustainable energy markets (biogas, off-grid solar & cookstoves)

WASH
- Sustainable Sanitation & Hygiene for All (Rural)
- Urban Sanitation & Hygiene for Health and Development
- Functionality of Rural Water Supply Services

Opportunities for Youth Employment
1.3 SNV Ethiopia

Started operation in 1974

We have full fledged 3+ satellite offices

Currently, we implement 17 projects

Target Beneficiaries 4.2 million People

We focus on 3 sectors which are fundamental to human development:

- Agriculture
- Energy
- Water

Active in 639 Woredas

SNV started working in Ethiopia Energy Sector from 2006

215 national /global staff

97% national staff

27% female staff
SNV Ethiopia Energy Sector Overview 2019

Working in 8 Regions

- 25,250 Bio-digesters installed by June 2019 in 392+ Woredas (districts)

- Full time staff: 20
- International staff: 1
- Female full time staff: 2

- Budget for 2019: € 3.008 Million
- Pipeline projects: € 1.2 Million

Started biogas feasibility study in 2006

Currently, we implement 3 Projects (2 on bio-digester + 1 on enabling environment)

Current energy portfolio in Ethiopia: 21.27 Million EURO

Target Beneficiaries in 2019: 39,840 People
History of Cookstoves Interventions in Ethiopia

- The motives behind
  - Protection of Natural Resources (mainly deforestation)
  - To respond to the then energy crisis
  - Introduction of improved household technologies

Health Impact of solid fuel use was not taken as the major factor for promotion of ICS
“The impact of being exposed to household air pollution is worse than smoking 400 packs of cigarettes per year.”

Dr. Sola Olopade, physician at the University of Chicago
Is Clean Cooking is Getting Due Global Attention?

<table>
<thead>
<tr>
<th></th>
<th>World Wide Deaths in 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV/AIDS</td>
<td>1.6 million</td>
</tr>
<tr>
<td>Malaria</td>
<td>0.8 million</td>
</tr>
<tr>
<td>TB</td>
<td>1.3 million</td>
</tr>
<tr>
<td>Total of 3</td>
<td>3.7 million</td>
</tr>
<tr>
<td>Indoor air pollution total</td>
<td>4.2 million</td>
</tr>
</tbody>
</table>

- Yes, indoor air pollution kills more than HIV/AIDS, malaria and TB combined.
- Additionally, there is huge socio-economic cost of illness.
Clean cooking is about SDG 7.
It also has direct link with SDGs 1, 3, 5, and 13.
And rather indirect links with SDGs 2, 4, 10 and 15.
Recent Trend (globally)

- Better understanding of the burden of disease & cause of death attributable to HAP has become a driver of technology development for cleaner and higher-quality stoves & fuels

**ISO-19867 Tiers**

<table>
<thead>
<tr>
<th>Tier</th>
<th>Thermal efficiency</th>
<th>Emissions</th>
<th>Safety (score)</th>
<th>Durability (score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>≥50</td>
<td>≤3,0</td>
<td>≥95</td>
<td>&lt;10</td>
</tr>
<tr>
<td>4</td>
<td>≥40</td>
<td>≤4,4</td>
<td>≥86</td>
<td>&lt;15</td>
</tr>
<tr>
<td>3</td>
<td>≥30</td>
<td>≤7,2</td>
<td>≥77</td>
<td>&lt;20</td>
</tr>
<tr>
<td>2</td>
<td>≥20</td>
<td>≤11,5</td>
<td>≥68</td>
<td>&lt;25</td>
</tr>
<tr>
<td>1</td>
<td>≥10</td>
<td>≤18,3</td>
<td>≥60</td>
<td>&lt;35</td>
</tr>
<tr>
<td>0</td>
<td>&lt;10</td>
<td>&gt;18,3</td>
<td>&lt;60</td>
<td>&gt;35</td>
</tr>
</tbody>
</table>
Barriers to Achieving Health Impacts

ICS are Tier 1 stoves do not have much impact in reducing health impact due to HAP.

Citation: LISAID/ TRAction and Global Alliance for Clean Cookstoves Ghana CPD Training, June 2016
Indoor emissions performances for Key stove/fuels

Stove Performance Inventory Report (Berkeley Air Monitoring Group)

♫ - ICSs in Ethiopia
Thermal efficiency performances for Key stove/fuels

Stove Performance Inventory Report (Berkeley Air Monitoring Group)

- ICSs in Ethiopia
Why the SEECCS Project?

- So far interventions were mainly focused on ICS
- A lot to be done in promoting clean cooking beyond the ICS
- Need to boost stakeholders coordinated effort to champion the sector
- Needs to have conducive environment to promote the sector
Project at a Glance

Project:  SEECCS
Duration: 2017-2019 (with a go-no-go decision after 6 months of Inception Phase)
  Inception Phase: Dec 2017-May 2018
  Implementation Phase: June 2018-November 2019
Donor:  RVO (Netherlands Enterprise Agency), Dutch Government
Partners: EFCCC, MoWIE, MoMP, ESA, EEA GIZ-EnDev, World Vision, Gaia Clean Energy, Private Sector, Financial institutions, etc
Scope of the project

Objective

- To strengthen the enabling environment of clean cooking sector of Ethiopia with interventions around support for organisational and institutional capacity development and sector facilitation, including for improved cook stoves, biogas and bio-fuel

Specific Objectives

I. Ethiopian National Forum for Clean Cooking (ENFCC)
II. Reviewing the Existing Policies and Strategies, and Support their implementation
III. To support fine-tuning and getting approval of national standards for ICS/CCS in line with the ISO IWA tier definition
IV. To support strengthening of the national energy lab to become a state-of-the-art facility for testing and certification for ICS/CCS
Project Inception phase

Key Activities

• Bilateral discussion with key stakeholders
• Signing of MoU with MEFCC on the implementation of the SEECCS project and to further support the sector sustainably via joint resource mobilization
• Official launching of the project
• To respond to the 2nd specific objective of SEECCS- Reviewing of the Existing Policies and Strategies has been conducted
• Project got ‘GO’ decision to its implementation phase
Reviewing of the Existing Policies and Strategies Assignment Focused on

- Policies/strategies/investment plans/proclamations etc. that are linked with the clean cooking sector
- The roles and responsibilities of different actors related to clean cooking sector
- Projects/programme - level of synergy/coordination, etc.
Building blocks of an enabling environment for energy/Clean Cooking Sector

1. **Policies and regulations** - are they well targeted and have commitments (in institutional and other resources), are there clean cooking specific (dedicated) policies

2. **Institutions and programs** - is the institutional framework clearly articulated and implemented

3. **Technology and innovation** - are the clean cooking technologies in the market fit consumer requirements, are innovations being promoted

4. **Business models and financing** - are the business/promotion strategies and models sustainable and replicable, is there sufficient financing of consumers and producers of clean cooking stoves?
### II. Reviewing Existing Policies and Strategies, and Support their implementation

#### Policies & Strategies for CCS

<table>
<thead>
<tr>
<th>Energy</th>
<th>Environment, forestry and climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Biofuel Strategy (2009)</td>
<td>- Ethiopia’s Programme of Adaptation on Climate Change (EPACC)</td>
</tr>
<tr>
<td>- Draft new energy policy (2013)</td>
<td>- National REDD+ strategy (final draft, 2016)</td>
</tr>
<tr>
<td>- Biomass energy strategy (BEST) (2014)</td>
<td>- Climate Resilience Strategy for Water and Energy</td>
</tr>
<tr>
<td>- National electrification strategy (2016)</td>
<td>Agriculture, livestock and natural resources</td>
</tr>
<tr>
<td>- National Electrification Program (2017)</td>
<td>- Sustainable Land Management Project II (SLMP-2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health and gender</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Health Policy (1993)</td>
<td></td>
</tr>
<tr>
<td>- GTP II plans for the sectors (2015-2020)</td>
<td></td>
</tr>
</tbody>
</table>
II. Reviewing Existing Policies and Strategies, and Support their implementation

Policies & Strategies for CCS

CRGE

- **four initiatives** for fast-track implementation
  - exploiting the vast hydropower potential;
  - **large-scale promotion of advanced rural cooking technologies**;
  - efficiency improvements to the livestock value chain;
  - **and Reducing Emissions from Deforestation and Forest Degradation (REDD)**

**Why...**

- best chances of promoting growth immediately
- capturing large abatement potentials
- attracting climate finance for their implementation
II. Reviewing Existing Policies and Strategies, and Support their implementation

Key findings

Table 3.1: Renewable Energy and Cookstoves Sector Institutions Trajectory:

<table>
<thead>
<tr>
<th>Birth</th>
<th>Formative</th>
<th>Growth</th>
<th>Struggle</th>
<th>Stagnation</th>
<th>Decline</th>
<th>Fragmentation</th>
<th>Renewal</th>
</tr>
</thead>
<tbody>
<tr>
<td>MoCD</td>
<td>MME</td>
<td>MME</td>
<td>MME</td>
<td>MoAR/MME</td>
<td>MoWE</td>
<td>MoWIE/MEFCC</td>
<td>MEFCC</td>
</tr>
</tbody>
</table>

Note: Years are only indicative, not exact
II. Reviewing Existing Policies and Strategies, and Support their implementation

Schematic Representation of Existing Complex Web of Institutional Arrangements
Formulation of Plan of Operation-SEECCS Implementation phase

SEECCS Project Document

MoU signed with MEFCC

Policies and Strategies Review Findings

Bilateral Discussions with Key stakeholders
Achievement and planned/upcoming activities
## I. Ethiopian National Forum for Clean Cooking (ENFCC)

- **Learning** from similar alliances (country, regional and international level)
- **Bilateral discussion** with key stakeholders
- **Formation of Core Consultative Group** (public, private sector and other development partners)
- **Engaging legal consultant**

<table>
<thead>
<tr>
<th><strong>Developing concept note of the Alliance</strong> with sections of:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background, Justification, Complementarity, Vision, Mission</strong></td>
</tr>
<tr>
<td><strong>Statement, Objective, Specific Objectives,</strong></td>
</tr>
<tr>
<td><strong>Name and format, Phases of realization, Scope of the</strong></td>
</tr>
<tr>
<td><strong>alliance, Responsibilities of the alliance,</strong></td>
</tr>
<tr>
<td><strong>Potential members of the alliance,</strong></td>
</tr>
<tr>
<td><strong>Mode of operation of the alliance,</strong></td>
</tr>
<tr>
<td><strong>Governance structure of the alliance</strong></td>
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</table>
I. Ethiopian National Forum for Clean Cooking (ENFCC)

Current Status of the Ethiopia Clean Cooking Alliance (ECCA)

- The first founders’ meeting conducted
- Alliance establishment bylaw (Article of Association) finalised
- Finalizing formalities for the Registration of the Alliance
- ECCA is legally registered
I. Upcoming activities in relation to ECCA

- Conduct general assembly meeting of the ECCA
- Establish **Board of Directors**
- Launching of the Alliance
- Put in place the functional ECCA office (with the manager and office admin)
- Develop the five years strategic plan of the Alliance
II. Reviewing the Existing Policies and Strategies, and Support their implementation

- Policy and strategy review study conducted
- The findings of the study validated through validation workshop and shared with all partners
- Policy brief/Strategy brief prepared
- Discussion started with EFCCC on the process of reviewing BEST & endorsement process
## II. Upcoming activities in relation to policies and strategies and implementation support

- **BEST review and endorsement**
  - Support the establishment of strategy working group lead by EFCCC
  - Support the organisation of discussion sessions to enrich the draft BEST
  - Present the enriched version of BEST with the relevant stakeholders in a workshop
  - Inputs from the workshop incorporated and final version of BEST is prepared
  - Support the endorsement process/mechanism

- **Contribute to the finalization of the draft National Energy Policy**
  - Conduct bilateral discussion with MoWIE (Energy Study and Development Follow-up Directorate)
  - Support the establishment of policy working group lead by MOWIE
  - Support the organization of discussion sessions to enrich the draft energy policy
  - Present the enriched version of the policy with the relevant stakeholders in a workshop
  - Inputs from the workshop incorporated and final version is prepared

- **Support the effectiveness of the clean cooking institutional structure**
  - Organize workshop/panel discussion on challenges and opportunities of the existing clean cooking institutional setup
III. Development & enforcement of national CCS/ICS standards

Supported the revision and development of the “Clean Cook Stove and Clean Cooking Solution, Performance Requirements and Test Methods” (ES 6085: 2019) via:


**Table: Performance Requirements and Test Methods**

<table>
<thead>
<tr>
<th>Type of stove</th>
<th>Thermal ( ^a ) efficiency</th>
<th>Emissions ( ^a )</th>
<th>Safety ( ^b )</th>
<th>Durability ( ^a )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural draft solid biomass stove</td>
<td>( \geq 20 )</td>
<td>( \leq 7.2 )</td>
<td>( \leq 321 )</td>
<td>( \geq 77 )</td>
</tr>
<tr>
<td>Forced draft solid biomass stove</td>
<td>( \geq 30 )</td>
<td>( \leq 4.4 )</td>
<td>( \leq 218 )</td>
<td>( \geq 77 )</td>
</tr>
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<td>Charcoal</td>
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<td>Biogas</td>
<td>( \geq 40 )</td>
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<td>( \leq 62 )</td>
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<td>( \leq 62 )</td>
<td>( \geq 86 )</td>
</tr>
<tr>
<td>LPG</td>
<td>( \geq 50 )</td>
<td>( &lt; 3.3 )</td>
<td>( \leq 5 )</td>
<td>( \geq 95 )</td>
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\( ^a \): The performance test (thermal and emission) and Durability of clean stove shall be tested in accordance with ES ISO 19867-1.

\( ^b \): For safety test ES ISO 19867 – 1 is applicable for solid fuel stoves and for gaseous, liquid and alcohol fuel stoves ES ISO 23550 and 23551 all parts shall be applicable.
III- Upcoming activities in relation to development & enforcement of the national CCS/ICS standards

- Support enforcement of the national standards for ICS/CCS
  - Conduct focused discussion with key stakeholders on (how to popularize, who to involve, what mechanisms to use, etc)
  - Preparation of panel discussion
  - Mobilize key stakeholders for the implementation of the enforcement mechanism
  - Popularise the standard through creation of linkage to associations, public and private entities, media, R&D, etc. as required
III. Explore funding opportunities and develop proposal to mobilize resource for ICS testing facility

- Conduct gap assessment on the existing testing facilities
- Devise interventions plan as per the identified gaps
- Joint fund raising

<table>
<thead>
<tr>
<th>Type of stove</th>
<th>Thermal efficiency (%)</th>
<th>Emissions CO₂g/MJd</th>
<th>Emissions PM₂.₅ mg/MJd</th>
<th>Safety</th>
<th>Durability</th>
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Overview of National Biogas Program
## National Biogas Programme of Ethiopia (NBPE), Phase I and Phase II

### Part of Multi-country Africa Biogas Partnership Programme (ABPP)

<table>
<thead>
<tr>
<th>Geo/Coverage:</th>
<th>4 large regions (Amhara, Oromia, SNNPR and Tigray)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-funded by:</td>
<td>DGIS/Hivos and GoE</td>
</tr>
<tr>
<td>Donor &amp; GoE Budget:</td>
<td>€ 15.95 M</td>
</tr>
<tr>
<td>Role of MoWIE:</td>
<td>Programme hosting and overall management from government side.</td>
</tr>
<tr>
<td>Role of SNV:</td>
<td>Technical Assistance [Note: small budget in 2019 for biogas injera stoves market development]</td>
</tr>
<tr>
<td>Role of Hivos:</td>
<td>Overall programme and fund management</td>
</tr>
<tr>
<td>Role of BoWIE/MEA:</td>
<td>Programme implementation on the ground in partnership with Woredas, private sector and others.</td>
</tr>
</tbody>
</table>

\[\text{Achievement} = 8,161 + 12,538 = 20,699 \text{ bio-digesters (original target of 34,000)}\]
New Programme: NBPE+ Summary

<table>
<thead>
<tr>
<th>Biogas Dissemination Scale-Up Programme (NBPE+)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Geographical Coverage:</strong></td>
</tr>
<tr>
<td>4 large regions (Amhara, Oromia, SNNPR and Tigray) +</td>
</tr>
<tr>
<td>4 new regions (Afar, Benishangul-Gumuz, Gambella &amp; Somali)</td>
</tr>
<tr>
<td><strong>Target:</strong></td>
</tr>
<tr>
<td>1) 36,000 domestic bio-digesters</td>
</tr>
<tr>
<td>2) 40 larger size bio-digesters as pilots</td>
</tr>
<tr>
<td><strong>Period:</strong></td>
</tr>
<tr>
<td>63 months (Apr 12, 2017 to Jul 11, 2022)</td>
</tr>
<tr>
<td><strong>Co-funded by:</strong></td>
</tr>
<tr>
<td>EU = € 20.85M and GoE = € 2 M; Regional Governments also funding</td>
</tr>
<tr>
<td><strong>Role of SNV:</strong></td>
</tr>
<tr>
<td>Overall Programme Management, Quality Assurance, Technical Assistance &amp; Implementation Support.</td>
</tr>
<tr>
<td><strong>Role of MoWIE:</strong></td>
</tr>
<tr>
<td>Programme hosting and overall management from government side.</td>
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<tr>
<td>Programme implementation on the ground in partnership with Woredas, private sector and others.</td>
</tr>
<tr>
<td><strong>Achievement</strong></td>
</tr>
<tr>
<td>4,551 bio-digesters, until June 2019</td>
</tr>
</tbody>
</table>
Market Development Trend (NBPE I, NBPE II and NBPE+)

Cumulative installations till June 2019

- 25,250 in some 392 Districts (over 51% of 760)
  - Amhara = 8,808; Oromia = 6,160; SNNPR = 4,463; Tigray = 5,700
  - Afar = 12; Benishangul-Gumuz = 51; Gambella = 4; Somali = 52

SNV
Other Overall Achievements

- **Biodigester Designs & Biogas Injera Baking Stove**
  - Main Bio-digester Designs: SINIDU → SINIDU 2010 → SINIDU 2011
    - Options: 1. Black-cotton Soil Digester (BSD); 2. Solid State Digester (SSD); 3. Pre-fabricated Fibre Glass Design
  - Injera Baking Stove: GM Energy (rolled out); (B)energy (still being improved)

- **Systems (frameworks, manuals, guidelines, tools, strategies)**
  - Private sector development framework (2016), bio-slurry promotion and mainstreaming guidelines, etc.
  - Guidelines/manuals for training, promotion, after-sale service, QA, etc.

- **Customer Service Centre (CSC)**
  - Call Centre for outgoing and incoming calls
Other Overall Achievements (continued …)

- **Basic Capacities in Place**
  - MoWIE/NBPCU and 8 Regions/RBPCU have a total of 111 programme staff
  - Zones/Woredas/Kebeles engaged through a Partner Engagement Guidelines

- **Piloting Larger Size Bio-digesters**
  - Preparatory work completed and 2 bio-digesters installed

- **Carbon Finance (through DBE and with the World Bank CI-Dev)**
  - All bio-digesters installed from January 2015 are included in the Carbon Finance Project
  - First payment in few months for first 2 Credit Periods (April 2016 to March 2018) for some 35,000 tons of Carbon Credit.
Promotes sustainable development of clean cooking sector to benefit Ethiopian families and the environment.

Strengthening Enabling Environment For Clean Cooking Sector (SEECCS)
Thank you for your attention!

hteshome@snv.org