Production and Marketing of Energy-Efficient Wood Stoves

Experience from Tajikistan

Dr. Gabriele Walz - Team Leader IG and EE Projects
Daler Domullodzhanov - EE Project Manager

Geneva – October 6-7, 2015
Background

- Forests are reduced to 3 % of Tajikistan‘s surface;
- **Wood** continues to be the most important fuel in rural areas;
- Deforestation leads to mudslides and floods;
- **Cow dung cakes** that would be needed as fertilizer are also widely used as fuel;
- Reduced agricultural yields are the consequence.
Objective of the Project

Sustainable production and marketing of new heating and cooking technologies in Muminobod district
Development of Prototype

- Conducted survey and stove users demands identification
- 15 models were tested in the field according to criteria such as
  - Energy-efficiency,
  - Multi-functionality,
  - User friendliness,
  - Enhancement of living comfort,
  - Affordability.

On the basis of the findings, a prototype was developed.
Characteristics of Prototype

- Prototype has a truncated form of a cuboid.
- The stove has 2 burners with a diameter of 17 cm and 26 cm.
- The mesh around the stove has a double spiral shape.
- To heat water and steam, a metallic pipe that is 15 mm in diameter is connected to the stove.
- The burning chamber's door has draft regulation; the smaller door at the bottom serves to remove the ash.

With the support of

REPUBLIC ET CANTON DE GENEVE

POST TEREBRAS LUX

5
Innovations in Prototype

- Water heating pipe, double circulated, heat up to 40 L for household purpose or possibility to run house heating system
- Draft control
- Bigger size of the burners with size adjusting rings
- Mesh around stove
Advantages of modified stove

- Saves 30% of fire material for cooking only;
- Duration of cooking decreases by 10%;
- Reduces work of women;
- No smoke in the room and reduction of healthcare expenditure;
- Reduces carbon dioxide emissions;
- Simultaneous cooking, heating, baking and boiling of water;
- Saved cow dung can fertile 0.1 - 0.2 ha
- Contributing to improve hygiene;
- Hand tools for easy handling;
- Relatively short payback period.
Further impact through use of accessories

Available accessories are

- Heat exchanger;
- Water tank;
- Water radiator;
- Water heater was not efficient in tests.
Accessories, cont.

increase of multifunctionality:

- Heat exchanger allows baking;
- It allows heating of 2 rooms to comfortable temperature;
- Water boiler provides hot water;
- Water radiators function like a central heating for the house.

An additional **30 % of energy** can be saved through the combination of the stove with the accessories.
Production

- Modern machinery increases efficiency of work and allows mass production;
- A blacksmith workshop currently produces the stove and the accessories;
- A stove manual explains the stove production step by step thus enabling other blacksmiths to take up the production.
Marketing of the modified stove

► Stove will be sold to market conditions;
► Price is competitive as it could be kept below the price of the traditional stove;
► The marketing will be done via retailers, markets or directly by blacksmith workshop.
Promotion of the modified stove

- A promotion campaign will introduce the stove in the market;
- Environmental aspects will be part of the promotion;
- 100 selected multiplicators receive a stove for free;
- The first 100 buyers receive the accessories for free as incentive.
A new project plans to

- Make available a variety of EE and RE options for dwellings;
- Identify the best option(s) according to the building, priorities and financial capacities of the owner;
- Substitute part of the fuel by biofuel where the plants have grown on degraded lands thus rehabilitating them;
Perspectives, cont

- Capacitating the manufacturers and providers of the required goods and services;
- Great emphasis will be put on the monitoring of the environmental impact of the measures;
- A cooperation with the CDE, university Bern, allows to do this according to scientific standards.
Thank you for your attention!