

HYBRID SOLAR OVEN: SAVING WOOD RESOURCES BY USING SOLAR-POWER OVENS

1. Executive Summary

The “Solar bread oven” is a large hybrid solar/gas-fired oven usable for all kinds of baking and roasting. Developed by a clean-tech company – ISOMET - in Burkina Faso, with support from international non-governmental organisations, the oven is distributed through local women cooperatives via a franchising network. The aim is to create income for the rural population by promoting the benefits of switching from wood to solar power for baking and roasting. The ovens are heated by a 16 m² solar dish and, if supplementary power is required, by a gas burner. ISOMET trains the women and is responsible for installing the ovens, providing technical assistance and supplying raw materials to franchisees. This solution won the SEED award, which is a component of the SEED Initiative, a global partnership for action on sustainable development and the green economy. Founded by UNEP, UNDP and IUCN at the 2002 World Summit on Sustainable Development in Johannesburg, SEED supports innovative small-scale and locally-driven entrepreneurs around the globe who integrate social and environmental benefits into their business model from the outset.

2. List of actors and their role in developing the solution

- **ISOMET** a clean-tech company, is lead partner and initiator of the project, responsible for management of the initiative
- **Solarfood Network** an international NGO, promotes the initiative through its worldwide network, as well as providing financial support
- **The SNV Netherlands Development Cooperation** provides technical assistance

3. Description of the project, Impacts and South-South Cooperation Aspects

The “Hybrid Solar Oven” is a large capacity hybrid oven that uses solar and gas-fired power. It works following the principle of the greenhouse effect: the sun’s short-wave rays cross the two glass walls without losing energy. In touching the internal walls of the oven which are covered with a non-toxic paint, they are transformed into heat rays that can no longer cross the glass walls. This creates an energy trap that allows us to cook or heat meals. This saves valuable wood resources and reduces emissions of greenhouse gases.

The apparatus used in solar heating does not require complicated assembly. For the most part, the necessary materials are already found in the Sahel. This construction could therefore call to a large portion of the local population. Contrary to the photovoltaic idea, which uses complicated technology and materials that must be imported, the solar heaters produce a valuable market that keeps money in Burkina’s economy and helps in the fight against poverty.

The following are some of its impacts:

Social impact: The franchise network creates jobs and generates income for women in rural areas. These women also benefit from technical and management training. One oven provides income for at least three people in one village. Furthermore, households enjoy greater purchasing power thanks to the reduction in the price of bread, and improved living conditions due to the more hygienic method of food processing.

Environmental impact: The innovative technology is environmentally friendly, reducing the level of CO₂ emissions (by substituting wood burning) and also the consumption of fossil fuels. One hybrid solar oven can save up to 40 kg of wood being burnt per hour. In addition, bread which was previously transported to the village is now produced locally, thus reducing emissions from transportation.

Economic impact: The initiative aids local economic development. It also creates further opportunities for income-generating activities related to food processing. For example, using the hybrid solar oven conserves shea trees, which in turn increases the harvest of shea fruit that can be sold.

4. Way forward

By utilising the potential energy of the sun as an alternative to fuel wood, this initiative is making strides in combating desertification in the Sahel. Some of the plans for scaling up for wider impact include:

- Improve the design of the product and explore possibilities for linking it to biogas digesters to ensure a continuous supply of power.
- Design and develop special new food products that can be produced using the ovens.
- Establish two to three pilot bakeries in Burkina Faso.
- Define the terms and conditions of the franchise concept and initiate negotiations with women's associations.

5. Contact Information of the persons developing and implementing the Solution

Implementing Entity	Contact	Address
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