

# UNDP Results

Developing a pro-poor Biogas model  
for dairy farmers in East Java  
Switch to BIOGAS



## Approach

Switch to BIOGAS (2009-2011) is a pilot project on integrated biogas technology in Lumajang District, East Java Province, implemented by UNDP in collaboration with the Lumajang district government with support from the Korean Energy Management Corporation (KEMCO). The implementation of an integrated energy-environment-economy approach has resulted in access to biogas energy for low-income farmers, better environmental and sanitation conditions, an increase in farmer's income and the promotion of local investment in the fish feed and organic fertilizer sectors.

Through a micro-credit scheme, the project installed fifteen 10m<sup>3</sup>-concrete biogas digesters producing biogas from cow manure, sufficient for cooking with a gas stove for 10 hours. Each biogas digester provided energy to fuel stoves and lamps and is shared between two to three farm households. Following the provisions of drying equipment and training on biogas waste processing, dry biogas waste was sold to a local fish feed and organic fertilizer manufacturer. In addition to private investment from entrepreneurs, financial support was provided by UNDP to a pioneering fish feed pellets manufacturer. This demonstrates the economic viability of the business, while promoting employment and inspiring other farmers to install biogas digesters in their backyards.

UNDP encourages all stakeholders, including the Government of Indonesia, business community, financing institutions and development agencies to apply a similar approach to ensure energy, environmental and economic sustainability that benefits marginal communities. UNDP plans to scale up the project, targeting around 400 households in Java, and 200 households each in Sulawesi and Sumatra. Policy advocacy to the Ministry of Energy and Ministry of Small-Medium Enterprises is also needed to ensure linkage between access to energy with productive economy and to engage wider commercial banks to establish micro-financing for biogas.

The success of the project has prompted interest from the

private sector. Some have expressed the wish to replicate this type of project as part of their corporate social responsibility activities.

## Results

The success of the Switch to BIOGAS initiative consists in the **manifold benefits** to local communities generated by achieving the **large-scale environmental objective of emission** reduction. UNDP not only gave access to a clean and free source of energy, but **empowered these communities** by demonstrating to them the positive side-effects of using biogas.

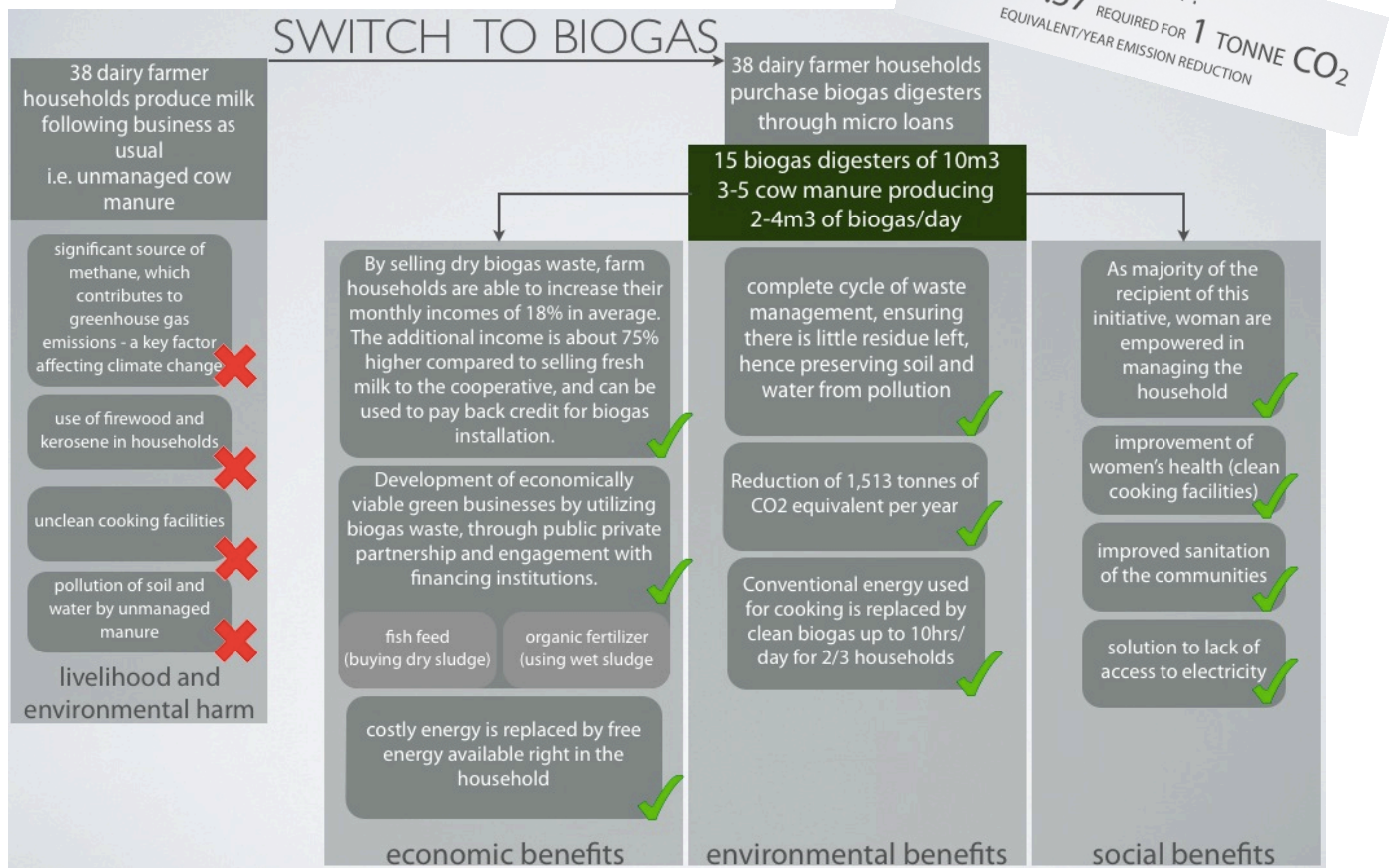


*Sukaningoyo, in the East Java town of Lumajang, proudly shows how biogas now powers light bulbs inside his barn, located behind his house and at the same time reduce his environmental impact*  
(Source: UNDP)



*Smoke-free cooking facilities*  
(Source: UNDP)

## Access to a socially, economically and environmentally acceptable source of energy



### Measuring the potential for emission reduction

- Feasibility study and **calculation of emission following the UNFCCC methodology** on methane recovery in farming activities was conducted to demonstrate the benefit of proper manure management and utilization of the biogas combined;
- The estimated reduction of 15 digesters only represents **1,513 tonnes Co<sub>2</sub> equivalent per year**, which is equivalent to the CO<sub>2</sub> emission of 127 average world citizens; and
- Evidence drawn from calculation of emission and experience in the field proved the potential of the project to become a **Clean Development Mechanism (CDM)** if the number of biogas digesters is significantly multiplied.

### Climate change impact assessment for policy advice

- A **study highlighting the climate impact on dairy farming in East Java** province was produced, based on 18 years of climate data in 78 weather stations for the three districts of Lumajang, Probolinggo and Malang. The study demonstrated that climate variability affects the livelihood of poor farmers, both directly and indirectly;

- **Results of the study were conveyed to policy-makers** so that they could proactively protect the dairy farming industry from future climate stresses. Farmers themselves, local government, local businesses and multinational corporations such as Nestlé (the main buyer of milk in the districts) were involved;
- Efforts to **mainstream longer-term strategies** of climate adaptation in provincial development plans were initiated; and
- The discussion to **mainstream biogas as a mitigation effort**, as well as an attempt to ensure the sustainability of the dairy farming sector, was facilitated through multi-stakeholder round tables.

We would like to recognize the many partners who have contributed to the project outlined in this publication, and thank the Korean Center for Energy (KEMCO) for their financial contribution to this project.



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