

### Turn Waste into Benefit: Credit Access for Dairy Farmers in East Java, Indonesia to Use Biogas

*The Partnership of Nestlé Indonesia and Hivos*

#### Biogas Use and the Impact on Millennium Development Goals

Conversion of animal waste to biogas can reduce environmental problems associated with animal waste and add value to manure as an energy resource. A study in five provinces of Indonesia including West Java, Central Java, East Java, Bali, and West Nusa Tenggara shows that use of biogas has effectively reduced the use of wood, kerosene, and liquefied petroleum gas (LPG) as fuels.<sup>1</sup> Thirty-one percent of households are no longer using wood; 25% are no longer using kerosene; and 49% are no longer using LPG. The increase of biogas use has led to a decrease in smoke-related illness to women and children. The study shows a decrease in incidence of eye irritations by 22%, eye infections by 10%, coughs by 21%, and breathing difficulties by 21%.

The study also showed a significant decline in tree cutting. Firewood collected from state forests decreased from 12% to 3% and firewood collected from yards and farms decreased from 78% to 55%. These results are in line with the Indonesian Government commitment to Millennium Development Goal (MDG) 7, which calls for an increase in forest cover, elimination of illegal logging, and reduction by at least 26% of carbon dioxide emissions over the next 20 years.<sup>2</sup>



A group of dairy farmers heading to the cooperative to deliver fresh milk as part of their daily activities to earn income for their families. Photo by Nestlé Indonesia, 2011

#### EXECUTIVE SUMMARY

Nestlé Indonesia and the Humanist Institute for Development Cooperation (Hivos), a Dutch non-governmental organization (NGO), have partnered since May 2010 to implement the domestic biogas program known as “BIRU” that distributes biogas units to households as a sustainable energy source through the use of micro financing. The program aims to improve living conditions of households by using biogas.<sup>1</sup>

The two partners agreed to collaborate based on the following objectives: (1) increase access to affordable energy by using biogas, and; (2) reduce negative environmental and health impacts of dairy farming activities.

The partnership operates in East Java and is mutually beneficial. Each biogas unit costs the equivalent of USD 765. Hivos, with funds from its donor, provides cash subsidies of USD 235 for each biogas unit successfully completed, trains dairy cooperatives on how to build biogas units, and conducts quality control and monitoring. Nestlé provides on average USD 530 as a zero-interest loan for every biogas unit. By providing zero-interest loans, farmers will have a greater sense of ownership and responsibility in maintaining the biogas units. Nestlé also identifies cooperatives and encourages board members of the cooperatives to build pilot units in their areas. The three-year partnership will end in December 2012 with a possibility of extending the collaboration.

As of October 2011, 11 cooperatives had been trained on how to build biogas units and provide maintenance. They have built 3,121 units. The program has created 250 new jobs. More than 50% of households that have built biogas units are now using biogas waste as organic fertilizer to replace chemical fertilizer. Nestlé Indonesia and Hivos hope to increase their target of 4,000 to 8,000 units (including the 3,121 units) before the program ends in December 2012. The partners also hope to continue to reach as many dairy farmers as possible in East Java and to overcome challenges that emerged during the partnership. These include strengthening cooperatives’ ability to manage the building and maintenance of biogas units.

THE PARTNERS



**Creating Shared Value**  
Nutrition | Water | Rural Development

**Nestlé Indonesia, [www.nestle.co.id](http://www.nestle.co.id)**

Nestlé Indonesia is a subsidiary of Nestlé S.A., headquartered in Vevey, Switzerland. Nestlé Indonesia was established in 1971 and employs more than 2,800 people. It operates three factories in Indonesia, one each in Lampung, (Lampung Province), Cikupa, (Banten Province), and Kejayan (East Java Province), that produce milk, food, and beverage products. An additional factory will be built in Karawang (West Java).

Nestlé believes that for a company to be successful over the long term and create value for its shareholders, it must also create value for society. Nestlé calls this “Creating Shared Value” that is based on strong foundations of compliance and sustainable business practices. It means that to create long-term business success, a company must create value for the consumers, business partners, employees, and the government and communities while creating value for the shareholders. Under its Creating Shared Value initiative Nestlé focuses on nutrition, water, and rural development.

Nestlé Indonesia began to buy fresh milk from dairy farmers in 1975. Since 1985, the company’s rural development initiatives have provided technical and financial assistance to 33,000 dairy farmers through 31 cooperatives in East Java. The farmers supply about 650,000 liters daily of fresh milk as raw materials for the Kejayan factory.



**Hivos, [www.biru.or.id](http://www.biru.or.id)**

Hivos works with more than 800 partner organizations in over 30 countries with a staff of 170 and 13 offices worldwide, including two offices in Indonesia. Hivos seeks to

contribute to sustainable communities in which each individual has equal access to resources, opportunities, and knowledge to become healthy and to be empowered to achieve a decent standard of living. Founded in 1968, Hivos is a Dutch development organization inspired by humanist values.

Hivos promotes access for poor people to modern forms of renewable energy as it believes that energy is indispensable to social and economic development. Hivos concentrates on small-scale hydro power, biogas plants, and brick stoves. More information about Hivos can be found at [www.hivos.nl/eng/About-Hivos/Introduction](http://www.hivos.nl/eng/About-Hivos/Introduction).

In Indonesia, Hivos manages the Indonesia Domestic Biogas Program known as BIRU, which receives technical assistance from SNV Netherlands Development Organization.<sup>ii</sup> BIRU is funded by the Embassy of the Kingdom of the Netherlands in Jakarta. Hivos works in close collaboration with the Indonesian Ministry of Energy and Mineral Resources.<sup>3</sup> The program started in May 2009, in eight provinces: West Java; Yogyakarta; Central Java; East Java; Bali; West Nusa Tenggara; East Nusa Tenggara; and South Sulawesi. It aims to maximize the number of households using biogas in these provinces by the end of 2012.

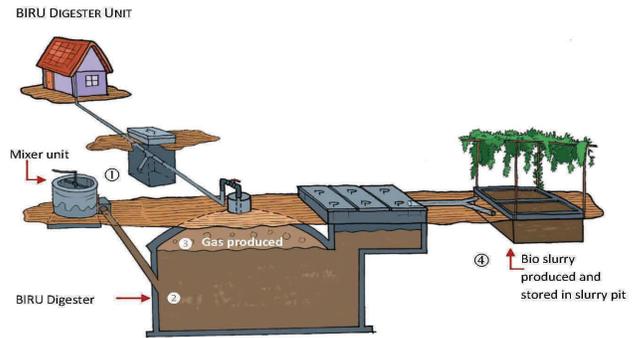


Illustration of BIRU Digester Unit © 2012 Hivos

INITIATING THE PARTNERSHIP

The partners were introduced in Jakarta by Rabo Bank, a privately-owned bank, because of their shared interest in biogas development. Nestlé Indonesia and Hivos each originally intended to seek loans from the bank to develop and build biogas units in rural areas. However after being introduced by the bank, Nestlé and Hivos decided to collaborate without involving the bank. They agreed to work in the East Java region.

At the first meeting, Senior Vice President of Legal and Corporate Affairs of Nestlé Indonesia and BIRU’s Program Director from Hivos concluded that Nestlé was able to provide a considerable amount of affordable credit to dairy farmers and help Hivos reach the dairy farmer cooperatives, while Hivos could provide high standard biogas technology and implementation capacity. Nestlé provides revolving funds from its operating budget for a period of two to three years without any interest to farmers of eligible cooperatives. Funds are provided by its Milk Procurement and Dairy Development Division.

In 2010, Hivos selected two dairy cooperatives that have worked with Nestlé, Agro Niaga Jabung in the Malang District and Setia Kawan in the Pasuruan District as pioneers to begin activities in biogas development.

IMPLEMENTING THE PARTNERSHIP

Three months after their first meeting, Nestlé and Hivos began implementing the program. At the beginning, Nestlé identified potential cooperatives that would become the major suppliers and distributors of biogas units. Nestlé then encouraged one board member of each cooperative to personally be involved in building a pilot unit for his/her household. After the pilot unit was completed, the Board invited other members to build biogas units for their homes. Nestlé also helps promote biogas to its other cooperatives and has regular discussions with the Hivos team to set targets.

The mandate of Hivos is to set a target for the number of biogas units to be completed and achieve this target by supporting the following activities:

- Introduce high quality biogas technology;
- Select and train suitable partner organizations/cooperatives;
- Create awareness and promote biogas among potential

users;

- Train cooperatives as suppliers and create a self-reliant biogas sector that includes manufacture of biogas parts;
- Ensure that cooperatives know how to maintain the units and how to provide after-sales services;
- Ensure quality and provide a one-year guarantee on parts and construction
- Endorse dairy farmers that use bio-slurry as organic fertilizer for their fields.<sup>iii</sup>

The total cost of a biogas unit is Rp. 6.5 million or approximately USD 765. It takes about two weeks to build one biogas unit and one to two months to promote the benefits of biogas and educate farmers how to use it. For a farmer to receive credit from Nestlé and a subsidy from Hivos for a biogas unit, she or he needs to complete and submit an application form. This form also acts as a survey of the farmer's home to see if conditions are suitable to construct a biogas unit. If conditions are met, Hivos will then approve the application and inform Nestlé to disburse a loan to the farmer's cooperative so that it can build the biogas unit.

For each unit, Nestle provides a zero interest loan of Rp. 4.5 million (USD 530). From this total, a cooperative keeps Rp. 650,000 (USD 70) as profit for building one biogas unit and Rp. 100,000 (USD 12) to provide service and repairs. The remainder of the total cost, Rp. 2 million (USD 235), will be paid by Hivos directly to the cooperative as a subsidy if it successfully builds the biogas unit according to standards set by Hivos. The subsidy from Hivos serves as an incentive for the cooperative to build high-quality biogas units and to provide maintenance services for the period of the loan. Farmers repay their loans to Nestlé through their milk deliveries every two weeks with a portion of each delivery used to pay off the loan. The repayment period of the loan is two to three years.

Nestlé and Hivos conduct periodic joint monitoring to oversee the construction of biogas units. Monitoring and evaluation activities are also conducted jointly with local governments every three months through field visits. In East Java, Hivos manages eleven staff members who are responsible for disseminating information about the benefits of biogas, conducts training of trainers for the cooperatives on how to build and solve technical problems of biogas units, maintains quality of the units, and monitors progress of all activities. Nestlé conducts monitoring through field visits and reports prepared by cooperatives on installment/payment activities.

## RESULTS

As of October 2011, 11 cooperatives had been trained on how to build units and provide maintenance, and 3,121 biogas units had been built. Nestlé had disbursed about Rp. 9 billion or one million USD of a total of Rp. 30 billion or 3.3 million USD set aside for the loans.

The program has created 250 jobs. More than 50% of households that have built biogas units are now using biogas waste as organic fertilizer to replace chemical fertilizer. According to research conducted by the University of Indonesia, each household with a biogas unit can save up to Rp.

### Biogas, for a better life



Fathiyah lights the biogas lamp in her living room.  
©2011 Josh, Estey/Hivos

It has been eleven years since 32 year-old Fathiyah and her husband, Yusuf, age 35, began a business as dairy farmers. Starting with two cows, they saved money and now have four cows. The family lives in Nongkojajar, Pasuruan District, which is approximately 60 km south of Surabaya, Indonesia's second largest city and the provincial capital of East Java.

The couple faced a problem common to dairy farmers in the village where they live, i.e., a high cost of cooking fuel. "The cost for fuel is high. If we use firewood, the pots used to boil the water turns black in no time because of the soot. We spend almost 1/3 of our monthly income to buy fuel," says Fathiyah.

Traditional fuel such as firewood is not only a waste of natural resources and harmful to the environment, it is also time consuming to collect. Users of firewood are also exposed to smoke that make them susceptible to respiratory tract infection and eye disease.

Fathiyah first learned about biogas from the cooperative in which she is a member. "We were encouraged by the cooperative to participate in the program. We were offered zero interest credit and an Rp two million subsidy for the total cost," the woman eagerly explains. "We were very interested, so we applied."

"I hope our family economics will get better and better. Someday we want to buy a pick-up truck to support the business," says the mother of 2-years old Shala and 8-year-old M. Rifkan, smiling widely.<sup>4</sup>

2,000,000, or USD 235 in expenses for wood fuel and Rp. 1,000,000, or USD 118 for gas fuel every year.<sup>5</sup> The study also reported the potential for farmers who own at least four to five cows to use biogas as a source of additional income by supplying biogas for household energy to surrounding households.

The research also found that the use of biogas has reduced the incidence of smoke-related illness among women who are working at home and their children who are still at home. It also found improved hygiene in and around homes using biogas.

Nestlé, Hivos, and dairy farmers, individually and as members of cooperatives, and the cooperatives all benefit from the partnership. Nestlé benefits from improved quality of fresh milk (its raw material), reduced environmental pollution, and improved farmers' welfare. Hivos benefits from increased numbers of biogas units that can be sustained. Dairy farmers benefit from reduced fuel and electricity costs and improved family health and welfare (see Box). Cooperatives benefit from improving and expanding their biogas business. Given the benefits to all involved, the program can be described as a 'win-win' partnership.

## CHALLENGES

The major challenge facing the partnership is how to increase the number of biogas units without compromising the quality of construction of the units. Nestlé and Hivos are improving cooperatives' capacity in construction to help increase the number of units built for farmers. Other challenges include:

- How to help farmers who produce fewer than 25 liters of milk per day afford biogas units
- How to further extend usage of biogas not only for cooking but also for electricity
- How to educate farmers to make use of the biogas waste i.e. convert bio-slurry into organic fertilizer
- How to convince farmers that using bio-slurry, if applied properly, will create higher yields/crops and improve farmers' incomes, and
- How to convince farmers that investing in biogas is an investment for a healthier and better life in the future.



A housewife from Malang, East Java, uses biogas as daily cooking fuel as a result of the Nestlé and Hivos partnerships. ©2011 Josh Estey/Hivos.

There are also difficulties in finding animal food supplies during the dry season. Also, fresh milk supplies from farmers decline during the fasting month, which can also make it difficult for them to pay off their loans. A lack of cow manure to power biogas units is also a problem during dry and fasting months.

The partnership has been going well because each partner contributes equally and responsibilities are specified in their memorandum of understanding. There is also mutual respect between partners when implementing the activities.

### FUTURE PLANS AND EXPECTATIONS

Nestlé Indonesia and Hivos hope to increase the target of 4,000 to 8,000 units (including the 3,121 units) before the

program ends in December 2012. Nestlé and Hivos are willing to continue the collaboration in the future especially to strengthen cooperatives' biogas management to improve the overall quality of building and maintaining biogas units. Both partners will continue to collaborate to increase the number of individuals and groups of farmers using biogas units and bio-slurry to improve their health and welfare.

### About this Case Study

This is one in a series of case studies based on presentations by partners at sessions of the Health and Business Roundtable Indonesia (HBRI). HBRI is an activity of Company-Community Partnerships for Health in Indonesia (CCPHI), a project of the Public Health Institute funded by the Ford Foundation. This case study is based on presentations made by Ita S. Mucharam (Corporate Communications Manager-Nestlé Indonesia), Pariatmoko (Dairy Development Section Head-Nestlé East Java), and Robert de Groot (Programme Manager, Indonesia Domestic Biogas Programme - Hivos) at the 15<sup>th</sup> session of the Health and Business Roundtable Indonesia (HBRI). Dian Rosdiana prepared the study in consultation with Nestlé Indonesia and Hivos.

### Footnotes

- Biogas is a gas produced from cow waste fermentation.
- SNV was previously known as Stichting Nederlandse Vrijwilligers or Foundation of Netherlands Volunteers. Since the 1990s the organization has been known as the SNV Netherlands Development Organization.
- Bio-slurry is the biogas waste that becomes organic fertilizer.

### References

- Hivos, December 2011. *Report on Biogas User Survey*. Unpublished.
- Ministry of National Development Planning/National Development Planning Agency (BAPPENAS), 2011. *Report on the Achievement of the Millennium Development Goals Indonesia 2010*. Jakarta, Indonesia.
- Hivos, 2010. *The Indonesia Domestic Biogas Program, Hivos and the SNV Netherlands Development Organization*. Jakarta, Indonesia.
- BIRU, 2011. A summary from *Biogas, for a better family's life*. <http://www.biru.or.id/en/index.php/news/2011/04/30/69/biogas-for-a-better-family-s-life.html>.
- Djainal Simantjuntak and Margareth Gfrerer. *Contribution of Dairy Farmers in Rural Sustainable Development in East Java, 2011*. Demographic Institution, Faculty of Economic - University of Indonesia. Unpublished.

For further information on CCPHI and the Health & Business Roundtable Indonesia please contact **Kemal Soeriawidjaja**, CCPHI Executive Director, at [kemal.soeriawidjaja@ccphi.org](mailto:kemal.soeriawidjaja@ccphi.org) or **Dian Rosdiana**, CCPHI Communication Officer, at [dian.rosdiana@ccphi.org](mailto:dian.rosdiana@ccphi.org), or **Dr. Alene H. Gelbard**, ACCESS-HW Director, at [alene@ACCESShealthworldwide.org](mailto:alene@ACCESShealthworldwide.org) or visit [www.ACCESShealthworldwide.org](http://www.ACCESShealthworldwide.org)