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Volunteers from Merapi Landcare construct a biogas digester.

Biogas – a Landcare solution

Imagine walking high up into the mountains for eight hours to chop wood and then carrying 40–60 kilograms of it home on your back just to do the cooking. This was a daily chore for villagers in Selo in Central Java before the Merapi Landcare biogas project got underway.



Women carry firewood to use as fuel for daily cooking.

The farming land between the Mount Merapi and Mount Merbabu National Parks represents one of the most severe forms of land degradation on Java Island. The area has lost more than 90 percent of its primary vegetation cover since the 1980s due to clearing land for agriculture and firewood harvesting, which supplies more than 80 per cent of the energy needs of the local people.

The two national parks serve vital watershed functions in Central Java. They are the source of many rivers that provide water for irrigation, industry and domestic use to millions of people across the region. Lack of vegetation cover on steep slopes has accelerated erosion and increased the incidence of landslides in the uplands. This also contributes to seasonal flooding downstream.

Water quality and quantity has been affected. The local water reservoir is depleted, there are several dry springs and women queue for long hours at water collection points.

Merapi Landcare got underway in 2009 after a visit from Australian Landcarers from the Secretariat for International Landcare. After much consultation and testing the group decided that a major Landcare project would be the production of biogas from cow manure for cooking. The biogas would replace the use of firewood, which in turn would reduce encroachment on the local forest reserve and nearby national parks.

The biogas solution

Most people who live in the Merapi Landcare area are intensive farmers who house their cattle in barns, providing a ready supply



The steep slopes of the Merapi farming region in Central Java.

for Indonesia

By Victoria Mack and Sue Marriott

of manure. Biogas systems use a large tank, or digester, filled with cattle manure. Inside this tank, the bacteria from the waste (cattle manure) convert the manure into methane gas through the process of anaerobic digestion. Methane from one and half cows is enough to produce gas for cooking on one or two burners each day.

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Merapi Landcare has now built more than 30 domestic biogas digesters since the project started in 2011. Each biogas unit costs approximately \$300. Early trials show that it takes 15 to 17 months to repay the cost of the unit. A revolving credit fund has been established by the community to enable each household to build a biogas digester and repay its loan through the savings made in energy costs.

The Merapi communities have strong social networks and a history of voluntary participation. The digesters are constructed by a group of volunteers on a roster basis. Community interest is growing due to the low cost, the simplicity of the digesters and

the reduction in energy costs. More than 130 new digesters are planned in the next year.

Huge reductions in firewood consumption

Without a digester each household uses approximately six bundles of firewood per month, equal to one medium-sized tree. This means each household needs the equivalent of twelve trees to fulfil its domestic energy demands each year. In the two sub villages where the biogas project has been running there are more than 1500 households. These households would need more than 6000 trees per year and there are more than 50 villages in the surrounding area with similar firewood demands.

Merapi Landcare group members are also actively involved in propagating and replanting trees and understorey to restore the ecological integrity of the forest reserve.

The biogas project is generating interest from people in surrounding villages. Merapi Landcare facilitators have been asked to provide training to other villages in the region on how to develop a biogas program.

The Merapi Landcare Biogas Project is a great example of how Landcare can reach out to people around the world and adapt ideas and practices from many sources.

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