



# Hivos Biogas Carbon Credits CAMBODIA

Hivos believes in the power of people everywhere to improve their situation and control their lives. Most poor people live in rural areas and their basic livelihoods depend on the state of their natural environment, which is coming under increasing threat from climate change. Using renewable energy sources and climate-smart agricultural methods both improve their living conditions and help to mitigate climate change. Carbon finance makes these new technologies more affordable. Hivos supports access to carbon finance for the rural poor by implementing domestic biogas programmes and selling carbon credits.

## Cambodian National Biodigester Programme

Most people living in rural areas of developing countries have not got access to electricity and gas. Before small-scale biogas plants were installed, families would cook their meals over an open wood fire. It is expensive, unhealthy and time consuming. Usage of firewood and charcoal contributes significantly to deforestation – a major cause of climate change. Slowing deforestation yields wide environmental benefits, such as biodiversity protection, reduced soil erosion and climate change mitigation. Cooking with biogas is a 100% clean solution.

In 2006, the Cambodian Ministry of Agriculture, Forestry and Fisheries (MAFF) and SNV Netherlands Development Organization joined to establish the Cambodian National Biogas Programme (NBP) to create an indigenous, sustainable energy source in Cambodia by utilizing biogas. Domestic biodigesters provide a way for individual households with livestock to reduce their dependence on polluting firewood and expensive fossil fuels for cooking and lighting.

*“Before we had biogas our home was often **full of smoke**. We would cough and get sore throats. I am **happy** we do not have to spend hours collecting firewood anymore.”*

*Kalianne Jarani, biodigester owner*

The benefits of biogas are two-fold: it provides a source of clean renewable fuel and an organic fertilizer (bioslurry) to be used to improve crop yields, thus leading to greater produce income. Selling more vegetables and fruits, as well as leftover slurry, provides families with extra income. Cooking on biogas is fast and smokeless. It improves public health drastically, as indoor air pollution is a major cause of premature deaths and serious illnesses, such as lung cancer, child pneumonia and heart disease.

The NBP programme develops a self-sustaining, market driven national domestic biodigester sector. It establishes independent enterprises in rural areas and builds their capacity on promotion, construction, internal quality control and aftersales services. Masons are trained together with local vocational institutions, and the programme offers variable employment opportunities across the supply chain.

By the end of 2017, over 26.500 biodigesters have been constructed in fourteen different provinces. An important success factor is a special biogas loan made available through three nationally operating microfinance institutions. Over 70% of households take up this loan to finance their biodigesters. They generally pay it back within two years. Since having a biodigester reduces time spent on kitchen activities, such as collecting fuel wood, cooking and cleaning pans, over a third of biogas families have been able to engage in new income generating activities.

## Facts & Figures (till December 2017)

- 26.585 biodigesters constructed between March 2006 and December 2017
- 98.976 direct beneficiaries
- 79,4% of biodigesters still operational / i.e. 21.000 smoke-free kitchens
- 5,05 tCO<sub>2</sub> reduced on average per digester per year
- 656.000 tCO<sub>2</sub> reduced between May 2009 and December 2017
- Biogas kitchen air pollution reduced with 88% (Particulate Matter 2.5), exposure levels down with 36%
- 29,5 averted deaths and 1,442 averted Disability Adjusted Life Years (ADALYs) realized from 2006 to 2014, with projection of 51 averted deaths and 2,519 ADALYs up to 2020
- 229.600 ton of wood saved since the start of the project
- 20.289 households use bioslurry as fertilizer as of December 2017
- 3.023 biodigester-connected toilets as of December 2017
- \$143,52 USD saved per household per year in cooking fuel expenditures
- 117 minutes daily time saving per household
- 106 private enterprises (BCCs) established of which 52 active
- 799 trained masons (2006-2017) of whom 77 active
- 149 trained supervisors / 229 sales agents

## Interested?

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Ministry of Foreign Affairs of the  
Netherlands

