



Rural household biogas, China

This project involves the installation of household biogas systems in rural households to reduce harmful methane emissions and at the same time provide a clean and free source of energy to farmers.

Location



The project is located in Anhua County in central China's Hunan province. The region is known for its agricultural production of rice and cotton, and for its expanding manufacturing industry that is growing as the area's economy develops.

Project



The project involved the installation of household bio-digesters to improve families' living conditions. In total, 4,000 biogas digesters have been installed in three different towns. Families in the project area typically own around five pigs per household. The new systems involve the construction of new pens for pigs, which capture the manure and feed it into the new digester tank. The digester system then converts the manure into clean biogas fuel, leaving a slurry which can be used as fertilizer. The biogas is routed to a burner stove in the kitchen, where it replaces the traditional use of coal for cooking and heating.

The system reduces greenhouse gas emissions in two ways: firstly by reducing the consumption of emission-intensive coal and replacing it with renewable fuel; and secondly by avoiding methane emissions from the traditional practice of storing and treating animal manure in open pits.

Living conditions of the farmers and their families have been improved as for each digester installed kitchens and toilets have been upgraded, and new animal pens have been built.



Achievements



Socio-economic impact:

- The project greatly reduces household expenditure on coal, freeing up income for other needs.
- The use of the by-product as organic fertilizer improves farmers' crop yields and/or reduces expenditure on fertilizer
- The project makes household chores easier, primarily through less labour-intensive cooking and reducing the amount of cleaning needed due to the cleaner fuel. It is therefore particularly beneficial to women who traditionally bear most of this burden.
- By replacing traditional coal-burning stoves for household cooking and heating, indoor air pollution from smoke, soot and other noxious emissions is significantly reduced. This in turn reduces the occurrence of respiratory diseases and eye ailments, particularly in women and children who spend the most time in the kitchens.
- The project also improves general sanitary and hygiene conditions through the associated upgrades to toilet and kitchen facilities, and better management of livestock waste.
- 60 specialized technicians were trained and employed over a period of two years to build the 4,000 biogas units. In subsequent years there has been ongoing employment in maintenance of the systems.

Environmental impact:

- This project reduces CO₂ emissions due to the replacement of traditional fossil fuel consumption for cooking with the clean renewable energy biogas
- The project also avoid methane emissions (which are 21 times more harmful to our climate than CO₂) by replacing the traditional deep-pit manure management systems with digesters
- Air quality is improved thanks to the reduction of both cooking smoke and noxious odours from manure management
- The environment is improved as human and animal waste is collected instead of being directly emitted into surrounding area where existing waste-management systems are very weak.

Checklist Project 301 519



✓ Additionality and permanence:	according to the rules of the Gold Standard
✓ 3 rd party verified:	by the Gold Standard
✓ Transparency:	provided by the Markit Environmental Registry
✓ Annual CO ₂ -reduction:	9,000 tCO ₂ e
✓ Social and environmental benefits:	as documented in our database
✓ Marketing material:	high resolution pictures available

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