

Demonstration of Appropriate Energy for Floating Communities

Project Objective

The objective of the project is to develop and demonstrate appropriate and sustainable energy solutions for floating communities, particularly waste-to-energy biodigesters and micro-solar power. Particular focus will be on achieving sanitation benefits through biodigesters that treat human waste and other community wastes.

Sustainable methods of distribution, maintenance, and operation will be established through community and/or market based approaches to ensure ongoing success and further benefits to local businesses and livelihoods. This demonstration will lay the groundwork for reaching further communities, and be a useful example for a neglected and marginalised type of community.

Description

Around 1.5 million people live in floating and flood affected communities on the Tonle Sap and around the Mekong River in Cambodia, and have limited access to affordable, sustainable, and appropriate energy sources. Poverty is a day-to-day concern and opportunities for income generation are limited. The accelerating use of vulnerable forests for fuel wood threatens the ecosystem viability. Improved access to affordable energy can address these issues, yet physical constraints limit the possibilities for energy provision, making standard centralised electrical connections impossible.

In addition, sanitation is severely lacking with access to toilets and waste management nearly non-existent. This project will innovate biodigester technology that converts waste to energy – producing both biogas for cooking, as well as fertiliser. The project will demonstrate the suitability of small-scale floating biodigesters and their sustainable implementation in floating communities. Other suitable technologies, such as low-cost micro-solar power for households and floating battery recharging stations will also be demonstrated.

Project Highlights

Project ID	: 2-C-083
Country	: Cambodia
Lead Partner	: Live & Learn Environmental Education
Partners	: Engineers without Borders Australia, Lund University
Total Project Cost	: € 66,000
EEP Financing	: € 23,000 (34.85%)
Technical Focus	: Waste-to-Energy
Activity	: Demonstration and Capacity Building
Duration	: 20 months

Developing local markets, and training of entrepreneurs and community members to build, sell, and maintain solutions will ensure sustainable local ownership and additional local economic benefits. The project will consolidate the experiences and relationships built from the successful 'floating toilet' project undertaken by Live & Learn Environmental Education and Engineers Without Borders Australia.



Isolated Floating House - Cambodia

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Relevance to Country's Energy and Environment Policies

Demonstrating appropriate energy for floating communities will support the Royal Government of Cambodia's energy and environment policies in a number of ways. The ambitious goals for rural electrification will be reached faster by encouraging greater coverage, and a diversity of possible energy sources, in the significant number of floating and flood-affected communities.

Capturing and burning biogas will replace existing anaerobic decomposition of waste, supporting Cambodia's commitment to actively tackle climate change. Replacing fuel wood with biogas will also assist efforts to reduce emissions from deforestation, as well as further encouraging protection of biodiversity and ecosystems that underpin the productivity of the region. The project will work with communities and rangers to help reduce their impact on nearby Protected Areas.

Further environmental and health benefits will stem from the waste management and sanitation components of the project, in particular supporting water quality outcomes. Anticipated reduced energy costs and increased income possibilities also further support poverty reduction policies.

Innovation and Knowledge Transfer

Developing floating and small-scale biodigesters is an innovation of particular use for floating communities. Addressing sanitation in these communities is also significant as there are no existing solutions to this problem. Micro-solar for additional energy sources contributes a new approach to energy. The project will involve the transfer of knowledge to the community in a number of ways, including training local entrepreneurs in production, sales, and operation/maintenance of the systems, as well as their products like biogas and fertiliser. The knowledge gained from the demonstration about appropriateness of solutions will also be shared and transferred locally and internationally for further replication in similar contexts.



Phat Sanday Community and floating toilets on the Community Waste Management Station



Investigating Preliminary Floating Biodigester Design
Photo courtesy: Anna Gillies, Hong Sodaneath and Robert Hughes

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