2010

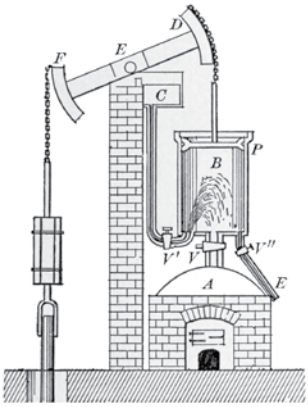
Green Earth Concepts - Barrett Steam Pump

Lien Centre for Social Innovation

GREEN EARTH CONCEPTS
Barrett Steam Pump

Beneficiary country: Cambodia

Yvan Perrin with villagers in Kampong Speu province, Cambodia, discussing which parts of the village harvest only one crop per year due to lack of water accessibility from rivers, ponds and underground water resources.



Green Earth Concepts hopes to alleviate the perennial problems of farming in countries such as Cambodia by introducing the Barrett Steam Pump System, which will enable farmers to control irrigation and water supply at a low cost through the solar generation of hot water, in a cooperative setting that will encourage farmers to pay for services and products by supplying harvested crops instead of financial payment.

Organisation Bio

Green Earth Concepts is an NGO that incorporates environmental innovation with management based on social and economic sustainability. The organisation's goal is to assist communities to obtain funds for projects based on a vision shared and understood by all members. GEC's work is currently in Cambodia, where it hopes to improve the environment and bring about positive social impact by employing marginalised peoples in farming and paddy rice cultivation.

THE THEORY/PROBLEM

Lack of water supply for irrigation perpetuates poverty in rural areas.

THE INNOVATIVE IDEA

Offer a green and financially sustainable alternative to the fossil-fuel operated pumps that farmers currently use. Community water-management on 3 levels of the social chain, namely: in agriculture irrigation, in handling the business side of agricultural goods and sterilisation of drinking water.

HOW IT WORKS

The system enables farmers in 4 selected communities to control irrigation and water supply at a low cost through solar generation of hot water. The system will be maintained in a cooperative set-up in which farmers will be encouraged to pay for services and products by supplying harvested crops instead of financial payment. Farming costs will be reduced by 5 to 10% and up to 40-60% of water will be saved compared to current usage.

STEPS TAKEN TO IMPLEMENT PROJECT

Green Earth Concepts has:

- Registered its non-governmental organisation;
- Met with Walt Barrett, the inventor of the Barrett Steam Pump, to determine what steps need to be taken to implement the research and development phase of the project;
- Tested four prototypes using various renewable sources in northern United States;
- Arrived at a consensus with Mr Barrett that a detailed instructional video will be sent to Green Earth Concepts, demonstrating how to replicate pump manufacturing and testing based on Mr Barrett's specifications;
- Identified a suitable location in Cambodia to establish a mechanical workshop to manufacture and assemble the pump.
- Begin independent R&D and testing of the Steam Pump before unveiling it in Cambodia.

CHALLENGES THAT HAVE ARISEN, WHICH WERE NOT ANTICIPATED WHEN DRAFTING PROJECT PROPOSAL

- However, time spent on securing the grant and conducting R&D poses challenges with regard to introducing the pump as a solution for irrigation needs during the dry season in Cambodia (January to June).
- Paddy rice farming takes 3½ months to be floated progressively. "Floated progressively" means that water is pumped progressively to the paddy field within a particular period of time. Typically water in the paddy field has to be maintained at a certain level during a period of 3½ months. Pumping delivers water in cycles to maintain the appropriate water level for the rice to grow. As an example, it is reported that water is pumped at least 10 times when rice is being grown to maintain water at the right level. Currently, most of water is leaking into the ground and has evaporated. So it has to be re-filled progressively in cycles. While solar energy remains a prime energy source, we believe that other renewable energy sources should be explored to offer farmers pumping solutions throughout the 24-hour cycle.

PLANS FOR ENGAGING WITH COMMUNITY

GEC's long-term goals are:

- To manufacture the pump for project implementation in the villages;
- Train women as entrepreneurs tasked with promoting the pumps that will be in operation, from home villages to farming communities;
- Women will also be trained at the village level to act as intermediaries in developing water management solutions, such as irrigation and safe water production, with input from the farmers.

COMMUNITY RESPONSE TO THE PROJECT

- Farmers were provided with data from a survey on the following:
  - pumps available in the market;
  - what it costs to operate the pump;
  - water flow needed for paddy rice farming;
- Based on the survey data, the farmers are amenable to the project's implementation.

COMMUNITY CONTRIBUTION OR PARTICIPATION IN PROJECT

- The Pump is not physically present in the community yet.
- GEC will do demonstrations for farmers in order to get their input on how the project can be improved and how community needs can be met.

Perrin and villagers collecting information on the quality of water supplied to villagers for cooking and drinking. - *All Photos by Green Earth Concepts*