



International Energy Initiative

-Asian Regional Energy Initiative

News from IEI's Asian Regional Initiative in Bangalore (India) – March 2016

New e-mail addresses:

IEI-Asia's electronic mailing address is now:

ieiblr@iei-asia.org

Additional: iei_asia@bsnl.in

Please note that the previous e-mail address (ieiblr@vsnl.com)
will no longer be accessible from the 31st March 2016.

Office location:

The office of the International Energy Initiative (IEI) - Asian Regional Initiative continues to be situated at:

80-B Spencer Road, 2nd Cross,
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Bangalore 560005,
India

Tel: 91 80 25553563

“IEI-Asia” can be located through
Google Maps - - -



Field project:

Value-addition to food crop processing: converting banana plant-waste to cooking fuel – up-scaling strategy

IEI-Asia continues to work on issues concerning the sustainable access to better energy services. These include cost-benefit analyses of alternatives and field demonstration of selected options.

In this project, cultivation of bananas (for food and income) is integrated with the delivery of clean cook-stove fuel, through the generation of biogas from the plantation waste. The emphasis is on efficient and conservative use of resources and inter-linkages between activities, to increase the net returns, and ensure sustainability of the activities and the benefits derived.

The initial demonstration was for one selected community (described in newsletters during 2012-14).

The present “up-scaling” efforts consist of:

- Demonstrating the operation of small-scale systems in different villages, to prove viability in scattered locations and with an “entrepreneur” farmer interacting with the group around (instead of a large co-operative/community endeavour and the active involvement of the promoters);
- assessment of funding and financing options for implementation;
- preparation of a handbook that provides pertinent information on the banana-biogas system to facilitate replication.

Demonstrations:



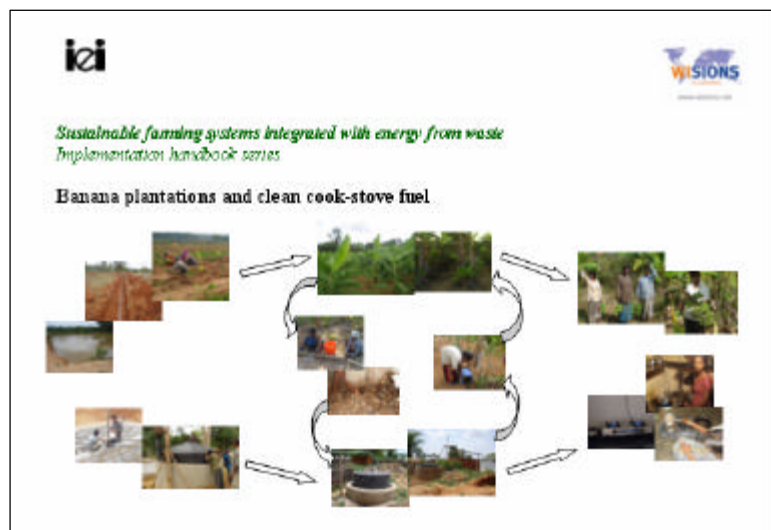
Four small banana-plantation cum biogas-generation systems have been established – one each in four villages within Ramanagara district, Karnataka state. A banana plantation of 0.5 acres has been developed for one small farmer in each case, with efficient practices (particularly conservative water use through drip-networks). A floating-drum biogas plant has been constructed adjacent to that farmer’s cottage/homestead and as conveniently close to (3-4) other potential-user cottages, with a capacity planned to suit the availability of residues (biogas-feedstock), and the fuel-requirement of the families choosing to share the source. The floating-drum plant has the advantages of maintaining uniform gas pressure (as the gas-holder rises and falls along with the gas accumulation within), and avoiding scum formation and consequent blockage.

The banana-plantation-waste – the main stalk after harvest and the other stems that develop around each fruit-bearing stalk – is used as digester feedstock. The stems are actually compacted leaf-sheaths and therefore not difficult to chop; the pieces are mixed with measured amounts of water and inserted into the input tanks for digestion. Currently, gas is drawn by each set of users during mutually-agreed-upon periods, for cooking. The digester

effluents are used as (and sold for) crop-field manure. Gas is currently being “paid” for with a labour contribution by each of the neighbouring families sharing the biogas as stove-fuel. The income from the sale of bananas and effluents is expected to contribute to the payback of the capital costs. The success of the system depends on these feedback effects.

Funding and financing: Assessment of the current situation reveals some payment assistance options. Partial funding of the costs of the integrated system is available from the government, through reimbursement (depending on the state/region) of at least 50% of the drip system, and a smaller proportion of the constructed biogas plant. But financing (through loans) of the initial expenditure (and of course, the non-refundable component) would be required by small farmers. Options (particularly for groups) include “soft” bank loans, and focused rural development schemes (e.g. through NABARD).

Handbook: An information booklet is being drawn up (with the draft being edited) to assist in the implementation of banana plantations linked with clean cook-stove fuel. (This is the



first of an intended *Implementation handbook series*). It includes explanation of the system and its basic features, and a step-wise set of details -- of the pre-requisites, the construction/installation, precautions, and operation and maintenance. Actions required in the field are focused on, with references for additional data. A summary of the funding and financing aspects is also included.

The final report on this up-scaling phase of the project is being prepared.

Both phases of this project -- the initial single-village-based demonstration and this “up-scaling” -- have been financially supported by the Wuppertal Institute for Climate, Environment, and Energy, Germany, through their WISIONS-SEPS programme.