



News from IEI's Asian Regional Initiative in Bangalore (India) – December 2014

Value-addition to food crop processing: converting banana plant-waste to cooking fuel



We have been demonstrating the effective provision of clean energy services in villages, through the integration of sustainable farm activities with the conversion of their waste to fuel.

The second phase of the demonstration of the “efficient banana cultivation -> waste used as renewable energy source -> clean fuel for homes” model is in progress. In this case, banana cultivation with efficient resource use is combined with the generation of biogas for

stove-fuel in homes. Both phases of this project -- the initial village-based demonstration and this extension -- have been financially supported by the Wuppertal Institute for Climate, Environment, and Energy, Germany, through their Wisions-SEPS programme.

As with the initial phase, banana cultivation has been initiated with efficient water and fertilizer use. Drip irrigation has been provided on 0.5 acre each at four small farms in Ramanagara district, Karnataka state. Plantation-waste -- chiefly the additional (“pseudo”) stems around the main fruit-bearing stalk of each plant -- when suitable chopped, will be used as digester-substrate for biogas generation. Benefits include sustainable production of a nutritious food source, enhanced local income from banana sales, replacement of solid-biomass-burning with clean (gaseous) fuel and the consequent impacts on local health and the quality of life, and availability of organic manure from digester effluents. *The photographs show banana plants at two plantations.*



Simultaneously with the crop cultivation, biogas-generation facilities are being developed. Five months into the project, the construction of one digester is nearing completion, and that of two more is under way. The digester capacities have been planned to suit the number and size of families likely to be involved and their cooking fuel requirements. *The photograph shows a digester of 10m³ at Hulikal village.*



The construction of each biogas digester includes a masonry-lined cylindrical pit, metal guide-frame and gas-holder (dome) and two tanks (one each for input of dung-water slurry mixture and outflow of spent effluents, respectively). Fabrication of the guide-frame and gas-holder are carried out elsewhere, followed by transportation to the site and installation there. Construction standards are being monitored by IEI-Asia staff and adequate precautions are taken at every step, so that problems do not occur later.