



Biomass village systems in rural India

The case of Mavinakere

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Access to Energy: work in progress

World Energy Outlook 2010:

- > 1,4 billion people lack access to electricity
- 85% of these people live in rural areas
- Without additional policies, in 2030 still 1,2 billion people lack access to electricity

“decentralised options have an important role to play when grid extension is too expensive and will provide the bulk of the additional connections” (p.19)

The fairytale of village biomass systems

- **Feedstock**: vegetable oil, biogas (manure digestion), wood gas (gasification)
- **Services**: electricity, biogas for cooking, water pumping, mechanical services (milling etc), ...
- **Ownership, operation and maintenance**: local management, local operator
- **Impact**: economic development, health improvements, wellbeing, gender equality, GHG emission savings, ...

...happily ever after

- A local energy source, under local management, with such broad local benefits...
- No wonder this has been tried before!
- Many attempts since the 70's...
- ...unfortunately; many failures since the 70's











Programme IEI in India

Successful village biogas project in Pura (IISc)

→ **Replication in 9 villages**

Village	Utility in operation
Singonahalli	Never completed
Sunkadahalli	Never completed
Nayakanahulikatti	Unknown
Milanahatti	Unknown
Yeladahalli	3 months
Doddagollahalli	3 months
Basavanahalli	3 years
Kalgudi	4 years
Mavinakere	9 years

Project data: Mavinakere

- International Energy Initiative Asia, Rockefeller Foundation, BIRD
- Implementation of 9 projects simultaneously
- Mavinakere village utility, (partially) operational 1997-2006
- Technology/setup from similar project in Pura village

Biogas in Mavinakere



Biogas in Mavinakere



Actors

- **Financier:**
 - Rockefeller Foundation
- **Implementation:**
 - International Energy Initiative (IEI): INGO
 - BIAF Institute of Rural Development (BIRD): NGO
- **Government:**
 - State Electricity Board (SEB)
 - Karnataka State Centre for Science and Technology (KSCST)
 - Zilla Parishad (local government)

Activities NGO's

- IEI:
 - Knowledge transfer from other systems
 - Selection of villages
 - Cooperation with local NGOs
 - Planning
 - Materials, hardware supply
 - Guidance and technical assistance
- BIRD
 - Construction and implementation

Operation

- Construction: 1997
- domestic lighting: 1997-2000
 - Termination due to connection to national grid
- Household drinking water: 1997-2006
 - Governmental water village supply since 2006
- Involvement of IEI in management
- High fee collection rate, satisfactorily service

Operational problems

- Delay in construction
- Technical problems during operation
- Problematic transfer of responsibilities
(international NGO, local NGO and population)
- Financial feasibility

Termination of operation

- Introduction of government sponsored water supply
 - Lower service level
 - Lower costs (practice)
- Fees did not cover operational costs
 - Low load factors
 - Low diesel replacement factors

Nine village systems: bottlenecks

- Financial feasibility and low willingness to pay
- Competition from government programmes
- Inadequate local implementing NGO's
- Social problems, village conflicts
- Technical problems (due to not following instructions)

Recommendations

commencement

- there must be a felt need among villagers
- resources must be available in the village,
- clear communications of obligations of the villagers,
- villagers should be willing to contribute resources,
- women should be involved in the decision to start the project

- local and state officials should be completely aware of the project goals and should provide official support for its implementation,
- they should ensure that the utility will be placed officially on par with government sponsored schemes.

construction

- high quality construction and clear guidelines on operation and reporting are essential,
- expenses should be monitored closely,
- promoters should be sensitive to signs of distrust among the villagers.

operation

- there should be sufficient revenues to meet expenditures, including a buffer for contingencies,
- government bodies should be kept aware of the implementation of the utility.

- villagers should have confidence in the role and functioning of the village committee,
- women should be represented in the committee, and their voice should be heard.

financial sustainability

- revenues should suffice long term operation,
- proper record keeping should be emphasized,
- particular persons should be concerned with the long term sustainability of the system.

- the possibility of selling excess power to the grid should be explored to raise revenues.

Thank you



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