



## National Bank for Agriculture and Rural Development (NABARD)



### Green Energy Initiative for Rural Households - Impact of Biogas Plant in the Achalpur Watershed

#### CASE STUDY



Figure 1 A Biogas Plant under Construction

#### Summary

Biogas plants, solar systems and improved chulhas are being promoted among rural households under Indo German Watershed Development Programme of NABARD being implemented in 34,601 ha area spread over 180 villages in five districts of Southern Rajasthan. A case study of biogas plants installed in Achalpur watershed reveals annual savings of INR 13,680 for a family on cooking fuel besides 3–4 h savings on fuel wood collection/ cooking. The units have helped in clean and smoke-free house resulting in minimizing medical expenses. The payback period of INR 28,000–INR 35000 investment on a 2–3 cu m biogas plant could be 2–3 years.



## Objective of Intervention

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To assess the impact of biogas plants on rural households in watershed area.

## Description of Intervention

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Smt Jamna Bai was the first to go for a 3 cu m Deenbandhu biogas plant in 2010. Annual expenses on fuel for cooking by her 7-member family used to be INR13,680/- approx. Today, saving of this amount significantly contributes to the annual family income. It saves her around 3 h of time on collection of fuel wood. The house is clean, smoke free and healthy; utensils have no deposit of carbon soot. Her mawa (a milk product) fetches 10 per cent higher price due to whitish look. Smt Jamna Bai says "I am using the time saved (by not having to fetch wood and clean the kitchen) to guide and take care of my children's education and financial benefits to my family". Now there are 15 units in the 15 sq km watershed area -all operational. The brick model plant costs approx. INR 28000– INR 35000 for 2–3 cu m capacity.

## Intangible or Tangible Benefit

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A conventional chulha uses crop residues, dung cake, wood, etc. With a thermal efficiency of 8~10 per cent, it consumes high amount of biomass and causes a lot of smoke resulting in drudgery and health hazards. A biogas unit was installed for Smt Jamna Bai w/o Shri Govind Ji in Achalpur village considering inter alia socio-economic status, living space, availability of dung and water, use of slurry in field as manure and willingness to maintain the unit.



## Financial benefit from Biogas Unit

Component	Saving*
Savings on fuel	INR 1140/- per month
Time saving	3-4 h per day
Investment	INR 28000 – INR 35000 for 2–3 cu m
Payback period	2–3 years

Type of Fuel	per month			
	Use	Savings, Qty	Rate (₹)	Value (₹)
Fuelwood (kg)	180	180	3	540
Dung cake (kg)	30	30	15	450
Kerosene (l) – market price	6	6	25	150
Total value of fuel use by family (₹)				1,140 per month