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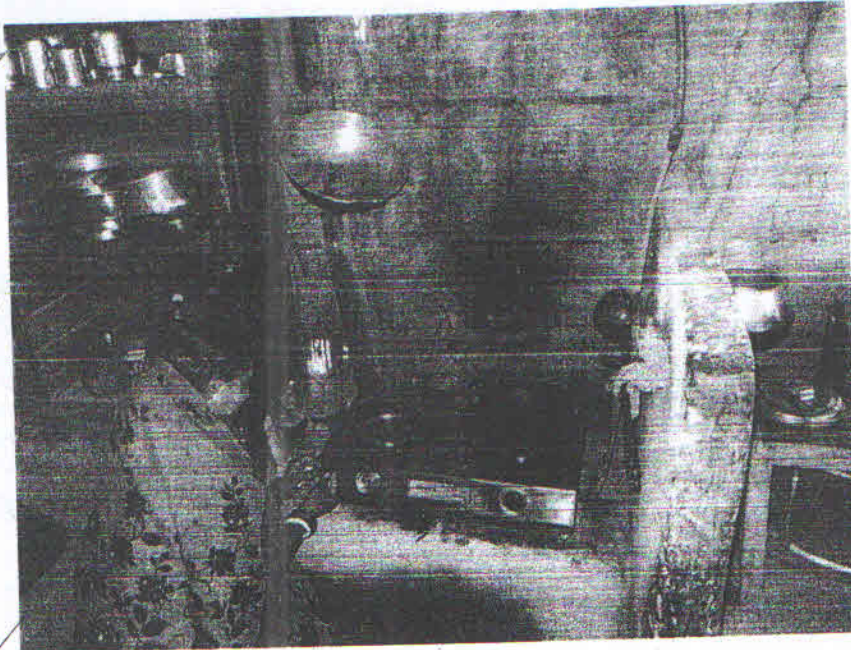
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# Evaluation of National Biogas and Manure Management Programme (NBMMP)

## Family Type Biogas Plants Programme

Prepared for  
Department of Rural Development and Panchayath Raj  
Government of Karnataka



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## Executive Summary

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The National Biogas and Manure Management Programme, is a centrally sponsored scheme implemented by the Ministry of New and Renewable Energy (MNRE), Government of India through State Governments since the year 1981. It mainly caters to the setting up of family type biogas plants across the country. The main aim of the programme is to provide the lifeline energy needs for household cooking as envisaged in the Integrated Energy Policy. It provides for Central subsidy and State subsidies in fixed amounts, turn-key job fee linked with five years' free maintenance warranty; financial support for repair of old non-functional plants; training of users, masons, entrepreneurs, publicity and extension activities.

The Department of Rural Development and Panchayath Raj is one of the implementing agencies in the State of Karnataka. As on 31st March 2011, a total of 4,33,223 plants have been installed by the Department, of which 14,464 have been completed during the year 2010-11, a 90% target achievement.

The scope of the present study included biogas plants that have received subsidy during the year 2010-11. The study sample comprised of 417 biogas plants, i.e. 100% of the plants implemented in four selected districts namely Davangere, Mandya, Raichur and Uttara Kannada. User feedback and opinions of 389 individual beneficiaries and 100 non-beneficiaries were collected through semi-structured questionnaire survey and focus group discussions on various aspects of implementation and benefits perceived and reasons for not opting for a biogas plant. Site observations were carried out to verify the quality of implementation and technical aspects of functioning of the plants. Interviews were carried out with turnkey agents, project engineers and officials of the implementing agency to understand the implementing mechanism, problems faced and suggestions for improvement in future programmes.

In analysing the findings of the study, it may be inferred that the project is in the right direction in terms of the objectives set. The study brought out the fact that most users benefitted from smoke free cooking, which reduces the drudgery of rural women in collecting and using conventional firewood. Various social benefits such as considerable reduction in indoor air pollution, very less expenditure on cooking energy and improvement in the health of the women have been realised by users. However, it was noticed that most of the beneficiaries do not seem to be aware of the use of biogas slurry as organic manure; hence awareness needs to be carried out in this regard. The most common reason for not adopting biogas technology by non-users is lack of awareness on the scheme.

In conclusion, it may be said that the success of the programme depends on large scale awareness, proper selection of beneficiaries and turnkey agents, capacity building of all stakeholders, timely release of subsidy amount, streamlining procedures of implementation, involving NGOs/ SHGs and convergent efforts of various agencies, departments and organisations engaged in promoting biogas technologies in the State.

## 4. Recommendations

As mentioned earlier, the present study is quite early to make concrete observations on the sustainability of the scheme. Since the present scope of the study included only plants that received subsidy in 2010-11, a more comprehensive evaluation for the plants installed throughout the 11<sup>th</sup> plan period may be more appropriate to give long term recommendations. However, within the scope of the present study, the following recommendations are being made to improve the reach, quality and effectiveness of the NBMMP:

### 1. Awareness to the community

In all the districts studied, lack of awareness among the community seems to be the main reason for people who own cattle and have appropriate logistics not installing biogas plants. The non-beneficiaries showed keen interest to adopt biogas technology. This situation is despite the fact that the scheme has budgetary provision for awareness creation among the rural community. It is imperative to conduct large scale awareness campaigns to improve the reach of the scheme among potential beneficiaries. The campaign could focus on the benefits of using a biogas plant, smoke free cooking experience and importance of adopting a biogas in view of the reducing availability of LPG, firewood and other fossil fuels. The awareness will also ensure some equity in selecting beneficiaries.

A satellite based training about the NBMMP programme could be conducted through Abdul Nasir Sab State Institute for Rural Development (ANSSIRD) for functionaries of Grama Panchayat and Taluk Panchayat.

### 2. Appropriateness in selection of beneficiaries

In most locations studied, the beneficiaries are marginal farmers, which is a good selection. However, some of the beneficiary households own about 1-2 cattle, which in the long run will not provide adequate feed materials for a 2 m<sup>3</sup> plant. Hence case must be taken to select households which have atleast three cross breed cows or three buffaloes and atleast a minimum of 4-5 indigenous cows. The aim is to obtain atleast 40-50 kgs of dung per day for a 2 m<sup>3</sup> plant.

### 3. Implementation in accordance with guidelines

The scheme is mostly being implemented as per the guidelines of the central and state. However, the process of giving subsidy to the beneficiaries is not being followed uniformly in most the locations studied. Hence this needs to be streamlined. A common problem expressed during the course of the study is the long delay in the release of central subsidy amount. Timely release of subsidy amount will motivate the beneficiaries and turnkey agents.

#### 4. Role of NGOs, SHGs in the implementation

Currently there is no involvement of NGOs and SHGs in the scheme. The NGOs have expertise in social mobilisation, have a good rapport with the rural communities and also work with women closely. At the same time the SHGs are a good platform to promote the benefits of using a clean cooking fuel like biogas. Also most SHG members take up cattle rearing as an income generation activity. Hence it only becomes logical to involve the NGOs and SHGs to create awareness through jathas, campaigns, street plays etc and extend the outreach of the scheme. They could also be involved in selecting potential beneficiaries, small repairs, selling spare parts etc.

In another instance, NGOs who have expertise in biogas technology can be roped in to train beneficiaries.

#### 5. Training for Project Engineers and Turnkey agents

The Project Engineers and turnkey agents need orientation and exposure to the new biogas technologies such as kitchen waste based biogas plants, possibility of waste management through biogas plant. The Project Engineers and Turnkey agents must be involved in regular follow-up and monitoring the biogas plants during and after construction and commissioning.

#### 6. Training to beneficiaries and production of an implementation cum user Manual

As per the scheme, there is a provision to conduct a one-day formal training programme to beneficiaries, but this has not been done in most locations, which was inferred during the survey. This is a crucial step in proper operation and maintenance of the biogas plants, which affects functionality in the long term. Hence a formal training program with practical exposure, sharing of experience by other beneficiaries, use of multiple feed materials (e.g. cow dung and kitchen waste) has to be made mandatory. Orienting the beneficiaries on the details of the scheme including warranty and subsidy must also be part of the programme.

An illustrative user manual in the local language including implementation process, warranty, subsidy eligibility, time duration of release of subsidy, commitments of turnkey agents, operation, maintenance, type and quantity of feed materials, trouble shooting, use of slurry, must be given to every beneficiary after commissioning of the biogas plant.

#### 7. Qualitative construction as per technical specifications

The materials used for the biogas construction seem to be satisfactory. However, some components like alignment of pipe, non-installation of water trap, absence of gas valve, absence cover for the outlet tank, improper/ lack of slurry pits need to be focused upon. It should also be made mandatory to inscribe the month and year of installation, name of the scheme and capacity on the inlet tank.

Stoves made of mild steel perform best using biogas and hence these could be given along with the biogas plant.

### Fees to Turnkey agents

It may be appropriate to enhance the fees (both installation and maintenance) paid to turnkey agents in view of the overall escalation in the material and labour costs.

### Data at the Gram Panchayath level

A year-wise record of all the beneficiaries, subsidy provided, turnkey agents involved should be maintained at each Gram Panchayath. Details of the scheme in any form understandable by neo-literate citizens or illiterates (e.g. illustrated poster or wall painting) must be made available at the Gram Panchayath level. Contact details of the project engineers and turnkey agents should also be made available at the Panchayath office.

### Rejuvenation of old plants

It was observed that many old plants are non-functional. The Gram Panchayath, with the support of the turnkey agents, could identify, physically verify and recommend for rejuvenation of old non-functional plants.

### Service support

Though the scheme provides for a five-year warranty, in some cases the turnkey agents do not provide adequate and timely service support. The year-wise turnkey fees paid to turnkey agents against warranty can be released after obtaining a service attended log by the turnkey agents. The agents must also visit the plant once every year and check for any defects to ensure functionality of the plant and report on the same. There could be a fine fixed for submission of this log and report to ensure timely release of the turnkey agents' fees. Selection of local turnkey agents is a key factor in ensuring sustained service support. Hence local agents must be given priority.

### Periodic monitoring and evaluation

Periodic random verification of the biogas plants installed could be done by a designated person appointed on behalf of the Department of Rural Development and Panchayath Raj. In addition, a comprehensive study on the plants installed in the 11<sup>th</sup> five year plan may be carried out to gain an in-depth insight into the nuances of the NBMMP.

### Convergence

Beyond RDPR, many other departments, agencies and organisations are promoting biogas under various programmes and schemes. This leads to duplication of efforts. Convergence between these agencies will lead to a more coordinated effort and improve the impact and effectiveness of the overall purpose of promoting biogas technology as a clean energy source. One of the agencies could become a nodal agency to maintain data on the biogas units promoted.

## Conclusion

Analysing the findings of the study, the achievements of the programme in terms of the objectives set may be concluded as mostly being in the right direction.

Biogas obtained is mainly being used as a cooking fuel by the beneficiary households. The year-around usage of biogas is dependent on the dung yield of cattle owned by the households, which is subject to various external parameters. However, the biogas has reduced the usage of conventional fuels like firewood to some extent.

The beneficiaries do not seem to be aware of the use of the biogas slurry as organic manure; awareness needs to be carried out in this regard. The study revealed that none of the biogas plants are connected to toilets, since this is not culturally acceptable in most rural areas.

The study brought out the fact that most beneficiaries experienced smoke free cooking, which reduces the drudgery of rural women in collecting and using conventional firewood. Thus social benefits such as considerable reduction in indoor air pollution, very less expenditure on cooking energy and improvement in the health of the women have accrued. When viewed in a larger context, wide dissemination of the biogas plants can considerably reduce black carbon and methane emissions, while reducing the pressure on forests for firewood.

In conclusion, it may be said that the success of the programme depends on large scale awareness, proper selection of beneficiaries, sites for installation and turnkey agents, capacity building of all stakeholders, timely release of subsidy, streamlining procedures, involving NGOs/ SHGs and convergent efforts of various agencies, departments and organisations engaged in promoting biogas technologies.