

National Biogas and Manure Management Programme

1. Introduction

The Central Sector Scheme on National Biogas and Manure Management Programme (NBMMP) mainly catered to setting up of family type biogas plants. It has been under implementation since 1981-82. The programme was implemented by State Nodal Agencies (SNAs)/State Nodal Departments (SNDs) like Agriculture Department, District Rural Development Agencies (DRDAs) and Khadi and Village Industry Commission (KVIC) centres.

The main objectives of the scheme were to provide clean bio-gaseous fuel mainly for cooking purposes; for reducing use of Liquefied Petroleum Gas (LPG) and other conventional fuels; and to provide bio-fertilizer/ organic manure to reduce use of chemical fertilizers.

1.1. NBMMP policy

NBMMP provides for grant of central subsidy to the plant; turn-key job¹ fee linked with five years free maintenance warranty; financial support for repair of old non-functional plants; training of users, staff, entrepreneurs, etc. and publicity and communication.

CFA was being released to the concerned SNA/ SND and other implementing agencies at the rate of ₹ 16,700 per plant for North Eastern Region (NER) States and ₹ 8,000 to ₹ 10,000 per plant for other States.

2. Potential, target and achievements

2.1. Shortfall in achievement of targets

The targets and achievements under the 11th Five Year Plan (FYP) and 12th FYP upto 2014 are given in Table 32 below:

Table 32: Targets and achievement under 11th and 12th FYP

(Number in lakh)

S. No.	Year	Target	Achievement	(Shortfall)/excess	Percentage of shortfall
11th Five Year Plan Period (2007-12)					
1	2007-08	1.04	0.89	(0.15)	14.42
2	2008-09	1.24	1.08	(0.16)	12.91
3	2009-10	1.50	1.20	(0.30)	20.00
4	2010-11	1.50	1.51	0.01	-

¹ A job or contract in which the contractor agrees to complete the work of building and installation to the point of readiness for operation or occupancy.

S. No.	Year	Target	Achievement	(Shortfall)/excess	Percentage of shortfall
5	2011-12	1.52	1.40	(0.12)	7.89
	Total	6.80	6.08	(0.72)	10.58
12th Five Year Plan Period (upto 2014)					
6	2012-13	1.30	1.25	(0.05)	3.85
7	2013-14	1.06	0.84	(0.22)	20.75
	Total	2.36	2.09	(0.27)	11.44
	Grand Total	9.16	8.17	(0.99)	10.81

Source: MNRE

From the above table it can be seen that against the target of 9.16 lakh biogas plants, 8.17 lakh (89 *per cent*) biogas plants were installed during the period 2007-14. Except in the year 2010-11, targets were not achieved in any of the years covered in audit.

MNRE stated (May 2015) that the shortfall of only 11 *per cent* over the period of seven years was not a major shortfall and was attributable to reasons such as - (i) Poor economic conditions of the beneficiaries/farmers; (ii) Increased cost of construction and appliances; (iii) Increasing infiltration of domestic LPG as well as free LPG connections on first registration of most potential beneficiaries of biogas plants; (iv) Some of the States are high in potential but low priority is given for the scheme by the State Governments; and (v) Increasing wages of labourer and trained biogas masons and also due to lack of labourer availability, particularly after launching of the MGNREGA in the States. It also stated that on an average MNRE subsidy was only about 32 to 35 *per cent* of the costs of a biogas plant except in the North Eastern States where this was about 50 *per cent* and remaining amount was invested by the beneficiary from his pocket. A biogas plant cannot be subsidised 100 *per cent* to achieve the target because of limitation of budgetary allocations.

The reply is not tenable because as per guidelines, the State Governments had to constitute Unit Cost Committees at the State Level to examine all issues relating to fixation of unit cost of installation of various models and sizes of biogas plants. But the same was not done and MNRE did not revise the subsidy amount for the biogas plants.

2.2. State wise potential, target and achievement

State-wise target, potential, achievement and the total number of plants installed since 1981-82 are given in **Annexure XIV**. The estimated potential of biogas plants was 1.23 crore plants of which 47.52 lakh plants (39 *per cent*) had been installed upto March 2014. From the annexure it was observed that:

- (i) There was high potential exploitation in Mizoram, Maharashtra (95 *per cent* each) and in Kerala (94 *per cent*).
- (ii) The potential exploitation was lowest in Jammu & Kashmir, Jharkhand, Chhattisgarh and Bihar where it ranged between 2.37 *per cent* to 17.71 *per cent*.
- (iii) In Nagaland and Sikkim the reported achievement exceeded the potential which appeared to be anomalous.

(iv) All States except Meghalaya fell short of achieving their targets.

Some of the audit findings that illustrate the reasons for shortfall in achieving targets are given below:

Bihar

Bihar Renewable Energy Development Agency (BREDA) retained unspent balance of ₹ 52.82 lakh sanctioned for NBMMP during 1984-87 for more than 27 years. It was also observed that MNRE stopped further funding from 2001-02 onwards as the final settlement of accounts was a pre-requisite condition for implementation of the scheme. After the year 2009-10 neither BREDA nor MNRE provided any fund under this scheme.

Nagaland

Department of New and Renewable Energy (DNRE) reported that 3,371 biogas plants had been commissioned, but actually 1,416 plants had been commissioned, leading to inflated reporting of 1,955 plants being commissioned for a value of ₹ 1.82 crore.

Punjab

During 2007-11 Punjab Energy Development Agency (PEDA) was able to achieve the targets fixed for installation of biogas plants. There was shortfall of 8,372 units during 2011-14 and shortfall was highest during 2011-12 (32.65 per cent). The targets for 2012-13 and 2013-14 included targets of 2,000 and 500 units respectively for Scheduled Caste (SC) beneficiaries, against which only five units (0.25 per cent) and 'nil' units were installed leaving a shortfall of 1,995 (99.75 per cent) and 500 units (100 per cent) during these years.

MNRE stated (July 2015) that the estimated potential of family type biogas plant is based on cattle census of 1981-82 and the households having cattle holding of four and above. This may have varied from State to State in the following period of 30 years. Hence, the achievements made so far cannot be compared exactly with the tentatively estimated potential of 1981-82. It further stated that the farmers/villagers cannot afford the balance cost of plant in Jammu & Kashmir.

3. Implementation

3.1. Irregularities with respect to distribution of beneficiary share

- i. As per guidelines, Central Financial Assistance (CFA) for construction of biogas plant² was to be directly released to the beneficiary on completion of work. In Gujarat, Audit found that Gujarat Agro Industrial Corporation Limited (GAICL) in its books of accounts of 2012-13 had shown ₹ 2.06 crore as subsidy payable to beneficiaries for installation of biogas plant up to 2008-09. This amount

² CFA for North Eastern Region was fixed by MNRE at ₹ 16,700 and for other States it was ₹ 10,000. Rest of cost was to be borne by the beneficiary.

included subsidy given by MNRE as well as State Government for NBMMP programme which was unpaid due to the same being unclaimed by the beneficiary. GAICL should have either made efforts to identify the beneficiary or refund the amount. MNRE stated (May 2015) that the concerned implementing agency in Gujarat have been asked to give the factual position regarding non-payment of subsidy in Gujarat.

- ii. MNRE enhanced (November 2009) the additional CFA for toilet linked biogas plants from ₹ 500 to ₹ 1,000 per plant for implementation of NBMMP during the 11th Five Year Plan, effective from 1 November 2009. In Karnataka, it was observed that the Zilla Panchayat (ZP), Belgaum did not comply with this, leading to short payment of additional CFA of ₹ 0.66 crore in respect of 13,287 toilet linked biogas plants constructed during 2010-14. The State Government stated (October 2014) that ZP Belgaum utilised an amount of ₹ 0.47 crore towards additional CFA for sanitary linked biogas plants. The documents, however, indicated that the payment was made only at the rate of ₹ 500 per beneficiary.

3.2. Non adherence to the scheme guidelines regarding payment to Turn key Job Workers (TKJWs)

As per MNRE guidelines, each TKJW would be paid an amount of ₹ 700 in the first year and ₹ 200 for next four years per plant for regular maintenance, after completing the inspection and providing satisfactory services. As per the scheme guidelines, the TKJW were to visit the plant twice a year, at least during the warranty period. However, Audit found that the SNAs/SNDs did not have complete records relating to the visit of TKJWs. The State specific findings are given below.

Himachal Pradesh

Audit noticed (July-August 2014) that in eight³ districts turn key job fee of ₹ 0.70 crore was paid during 2012-14 to the *mistries* in one installment at the rate of ₹ 1,500 per biogas plant, instead of in five installments spread over five years and linked with visits as per MNRE guidelines.

Jharkhand

JREDA allotted construction of biogas plants to Non Governmental Organisations (NGOs) and technicians on turn key basis with the condition to maintain the plants for five years after commencement of the projects. For all 1,683 plants, no report regarding maintenance was available but payment of ₹ 0.26 lakh at the rate of ₹ 500 per plant for 52 plants installed in 2007-08 and of ₹ 0.28 lakh at the rate of ₹ 350 (50 per cent of admissible rate of ₹ 700) for 80 plants installed during 2008-09 and 2010-11 were made to the NGOs that had installed the plants.

³ Bilaspur, Chamba, Hamirpur, Kangra, Mandi, Sirmour, Solan and Una.

Karnataka

- i. Annual payment of ₹ 200 per completed biogas plant was not being made to TKJWs but retained as caution money deposit. Karnataka Renewable Energy Development Agency (KREDA) stated (October 2014) that KVIC had informed them that it had not received any claims for the refund and the amount would be refunded on receipt of claims.
- ii. In three⁴ Zilla Panchayats, CFA of ₹ 4.20 crore was not released by MNRE and payment of ₹ 0.49 crore was pending to the turnkey agents for installation of 8,118 biogas plants. KREDA stated (October 2014) that it had now made available the funds to clear the pending bills.

Odisha

During 2007-14, Odisha Renewable Energy Development Agency (OREDA) executed 33,244 family type biogas plants. Out of 33,244, 8,387 plants were executed departmentally by OREDA in deviation of guidelines for which OREDA claimed ₹ 1.02 crore during the period 2007-12, which was also released by MNRE.

16,081 plants were executed through deployment of TKJWs for which payment of ₹ 2.13 crore was made during 2007-12 but the payment was not linked to five years warranty condition.

OREDA stated that in order to generate revenue for its sustainability, it had been executing biogas projects on turn key basis through its staff. The fact however remained that turn key fees was not admissible for the departmentally executed projects as per MNRE's guidelines.

3.3. Irregular payment of CFA

Given below is a Case Study from Karnataka where overall non-compliance with the MNRE guidelines was noticed.

Case Study II**Payment for incomplete Biogas plants and records in Karnataka**

There was irregular payment of CFA and State Financial Assistance of ₹ 4.37 lakh and ₹ 10.98 lakh in Udupi and Shimoga ZPs respectively as the biogas plants were incomplete and the payment was irregularly made without any details of date of construction and commissioning recorded on the completion report.

These apart, deficiencies like only photocopies of beneficiary records being produced to Audit, the beneficiary not signing in his/her application for biogas plant, claim form of beneficiary not being signed by the Executive Officer (EO) of Taluk Panchayat (2010-11 onwards), not obtaining the signature of beneficiary on the advance stamp receipt and issuing inspection certificate without recording the date of installation and commissioning of the biogas plant were noticed at Shimoga ZP.

⁴ Udupi, Shimoga and Tumkur.

4. Monitoring

4.1. Monitoring and physical verification of biogas plants

As per the guidelines, the SNA had to send a quarterly report to MNRE regarding the number of plants installed in the State and how many of them were functional/ non-functional. The SNA had to select at least two villages in each month for determining the status of biogas plant earlier set up. Some State specific audit findings are given below.

Arunachal Pradesh

- i. APEDA did not select two villages each month to determine the status of the biogas plant set up earlier as required in MNRE guidelines. Quarterly progress reports were not sent to MNRE after physical verification. As a result, details of the number of biogas plants in working condition, etc; were not available on record.
- ii. APEDA did not conduct training/user courses for beneficiaries, masons, technicians, etc. under this scheme. However, it was stated that beneficiaries were explained how to use biogas plants at the time of installation.

Bihar

Audit observed that SNA had not carried out any district wise assessment of the performance of the installed biogas plants except in Nalanda district where nine plants remained non-functional out of 70 plants installed during 2010-11.

Gujarat

GAICL had also not selected two villages for physical verification.

Haryana

Data base of functional and non-functional plants was not maintained by the Agriculture Department.

Jammu & Kashmir

Jammu & Kashmir Energy Development Agency (JAKEDA) did not carry out assessment of the number of non-functional plants and details of cost of repairs on these plants. At least two villages in each month were to be selected for determining the status of biogas plant earlier set up and quarterly reports thereof needed to be sent to MNRE. It was seen in audit that these agencies had not devised any such mechanism to ascertain the performance of plants.

Karnataka

Since quarterly progress reports were not submitted, the information on functioning and non-functioning biogas plants could not be assessed. Audit noticed during physical verification of 35 biogas plants of selected districts (RDPR) that 10 biogas plants were found to be non-functional.

KREDA stated (October 2014) that the project engineer working in the programme had brought to its knowledge that cracks had developed in the plants due to quality of sand, black soil etc.; the cost of repair worked out to ₹ 10,000 and beneficiaries were not coming forward to set right the defects but were evincing interest for new plants.

Uttar Pradesh

Uttar Pradesh New and Renewable Energy Limited (UPNEDA) was to select at least two villages each month for determining the status of biogas plants but this was done only once in 2012. Inter district inspection was carried out by the project officers to verify the status of the plants. Once in May 2010 field inspection and evaluation was carried out by MNRE.

Uttarakhand

Uttarakhand Renewable Energy Development Agency (UREDAA) monitored the biogas programme through turnkey agents. The Biogas Development and Training Centres (BDTCs) also carried out inspections of the installed plants. However, SNA did not maintain any records for functioning of the systems.

MNRE stated (July 2015) that SNAs are monitoring the biogas programme through turn key agents, biogas development and training centres and carried out inspections of installed plants from time to time by visiting the biogas plants for physical verifications before the release of subsidy, TKJW fees etc. and the record related to visits and verification of biogas plants were maintained by SNAs and the completion certificate are issued after 100 *per cent* inspection of the plants. It further stated that it was getting evaluation studies carried out by independent organizations from time to time as part of monitoring and evaluation of the programme. As per the last two independent evaluation studies carried out for implementation of the programme during the 10th and 11th FYP Period, the study reports have brought out a functionality rate of 95.80 *per cent* for the plants installed in six States during the 10th FYP Period and 95.45 *per cent* for the biogas plants installed in eight States during the 11th FYP.

However, the fact remained that audit examination on a test check basis in selected States threw up instances of non-compliance with programme guidelines in this regard. The physical verification conducted by Audit revealed that 26 *per cent* plants test checked were not working (Refer to para 4.3).

4.2. Independent evaluation

As per the guidelines, the SNA could involve independent organizations and reputed NGOs in the monitoring and evaluation of the programme. State specific audit findings with regard to third party evaluations are given below.

Gujarat

GAICL carried out evaluation of the plants implemented in Gujarat during last 13 years (i.e. from 2001-02 to 2012-13) by Gujarat Industrial and Technical Consultancy Organisation Limited (GITCO) in July 2013. GITCO in its inspection/study reported that 219 Sintex make, 1,429 Deenbadhu make and two KVIC floating dome biogas plants were not working out of 3,559 Sintex plants, 66,472 Deenbandhu plants and 128 KVIC plants respectively.

Jharkhand

A third party evaluation was done by Gram Vikas Abhiyan Kendra, Ranchi for 270 units out of 1,683 units in 2009-10. Out of 270 units 200 (74 *per cent*) were found non-functional due to reasons of insufficient dung, water logging and pipe leakage. No action was taken by Jharkhand Renewable Energy Development Agency (JREDA) against the NGO for non-functional units. However, no further work was allotted in subsequent years (2010-13).

4.3. Physical Verification by Audit

Audit conducted a physical verification of the biogas systems on a test check basis in the 24 sampled States to gauge the condition of the systems installed and the problems faced by the users. The Audit findings are given in Table 33. Details may be seen in **Annexure XV**.

Table 33: Summary of physical verification of NBMMP systems

System	No. of systems inspected	No. of systems not in working condition (in <i>per cent</i>)	Observations
Biogas	429	112 (26)	<p>A large number of systems were found to be in non-working conditions due to following reasons:</p> <ul style="list-style-type: none"> • Non availability of raw material • Use of alternate fuels like LPG and firewood • Damaged plants • Lack of maintenance

Physical verification of sampled systems by Audit revealed that 26 *per cent* of the biogas plants were not working.

5. Awareness/training

As per guidelines, the SNA had to prepare standard publicity materials such as Do's and Don'ts, leaflets, booklets, posters, etc. for wider dissemination in the State availing the financial assistance. Audit findings based on test check, with regard to awareness and training are given below.

Gujarat

Except during 2010-11 (beneficiaries meeting at Surat) no training was imparted to beneficiaries for biogas plant. Moreover, training was imparted to masons in the year 2007-08 only.

Karnataka

Mass media has been utilized extensively to bring about awareness regarding the policies and incentives available but there was lack of community participation due to non-involvement of local bodies. KVIC creates awareness about biogas plants through booklets and leaflets.

Rajasthan

Biogas Development and Training Centre (BDTC) and KVIC were creating awareness about the biogas projects in the State. Publicity was done through distribution of printed material like posters, pamphlet and other manuals by BDTC on a large scale. Information regarding incentives and subsidy were also advertised through these materials. However, it was noticed that there was no proper participation of local bodies like Panchayats in this scheme and the same was not provisioned in the scheme also.

MNRE stated (July 2015) that it is supporting the SNAs /SNDs and KVIC as well as BDTCs across the country for taking up promotional activities through communication and publicity component. Targets for various training courses including for awareness / promotional activities are allocated annually to all the designated SNAs /SNDs and KVIC and BDTCs. They all conduct regular training programmes besides preparation of publicity material for wider dissemination of the NBMMP in the States. However, the reply is silent on the adequacy of number of training programmes and participation of local bodies.

6. Conclusion

The total estimated national potential for biogas plants was 1.23 crore, of which 47.52 lakh biogas plants (39 *per cent*) had been achieved as of March 2014. During 2007-14, against a target of 9.16 lakh biogas plants, 8.17 lakh (89 *per cent*) biogas plants were installed. None of the States except Meghalaya were able to achieve their targets during the period 2007-14. However, the planning was done based on the potential assessment done on the cattle census of 1981-82.

Audit observed that several States did not follow the guidelines with respect to timing and amounts released to turn key workers and complete records of visits of turn key workers were not maintained. In some States, implementing agencies did not conduct physical verification as required under the programme guidelines.

Physical verification of sampled systems by Audit revealed that 26 *per cent* of the biogas plants were not working.

7. Recommendation

- *MNRE may ensure better compliance with guidelines, particularly with regard to successful functioning of the biogas plants constructed under the programme.*