

## ***31. National bio gas plant installation programme (1996-97)***

### ***1. Background***

Taking into consideration the increasing scarcity of the conventional fuel, the large scale felling being done for fuel wood and the deficiency of dung manure for farming, biogas generated by effecting bio-chemical reaction on cattle dung can be well utilised as household fuel. Also high quality dung manure becomes available in the form of the remainder. In order to fulfil the needs of energy of the rural households, the programme of installation of biogas plants as substitute is being implemented by the Central Government. In Maharashtra, this scheme is being implemented since 1979-80. Under this scheme, subsidy is given to beneficiaries also.

### ***Objectives of the Programme :***

1. To make available energy to the rural households for cooking and household utilisation.
2. To get rid of smoke, to preserve forests and to maintain balance of environment.
3. To save the women from smoke, to protect their health and save time.
4. To keep cleanliness and to create employment opportunities

### ***Procedure of the scheme***

2. In order to install biogas plants under the National Bio Gas Installation Programme, the rural households possessing cattle are made aware of the importance of the scheme. Applications are obtained from them and are sent for sanction to the Panchayat Samities through Village Panchayats. Scrutiny of the applications is made by the Agricultural Extension Officer, qualifying applications are sanctioned and such applications are sent to bank for financial assistance. The banks sanction the applications of the beneficiaries and also disburse subsidy as per the prescribed rates. The plants are installed through the institutions to whom the training of construction is imparted or through the self-employed turn key workers. The cost of installation of the plant changes depending upon the type and size of the plant. In general, the expenditure required for installation of plant is minimum at Rs.2,650 and maximum at Rs.14,300 and the cost of the plant is minimum at Rs.2,900 and maximum at Rs.26,790. The maximum amount of subsidy given to the beneficiaries of the plant is Rs.2,860 (depending upon type) and Rs.2,610 for other beneficiaries.

### ***Objectives of evaluation***

3. The objectives of the evaluation survey conducted by the Directorate of Economics and Statistics were as follows :

- 1) To collect information regarding the availability of aspects required for installation of and repairs to the biogas plants, expenditure required to be made for that, inclination of the beneficiaries and utilisation and benefits of the plants.
- 2) To study the proportion of beneficiaries belonging to the weaker sections and backward classes among the total beneficiaries.
- 3) To study the saving in fuel, felling of the forests and the aspects regarding environment.
- 4) To collect information regarding the benefit received by women, their health and social benefits.
- 5) To study the utility of dung manure, employment generation and lacunas in implementation.

#### ***Procedure of sample selection for the study***

4. This survey was conducted in all the 29 districts in the State except Greater Mumbai. Two development blocks from each district, thus in all 58 development blocks were selected throughout the State. Two villages were selected from each of the selected development blocks. Thus four villages were selected from each district. From each of the selected villages, four beneficiaries of the functioning plants and two beneficiaries of plants which are not functioning, thus in all six beneficiaries were selected by random sampling method.

#### ***Period of the Field Work***

5. The field work in the survey was conducted during December, 1996 to January, 1997.

#### ***6. Conclusions***

1. During the period 1985-86 to 1995-96, in all 4,25,637 biogas plants were installed in the State and subsidy of Rs. 120.67 crore was given towards the same. The maximum share in the installation of plants was that of Pune regions with 29 per cent. 45 per cent of the plants were installed by taking loan and the rest 55 per cent were installed by not taking loan.

2. During the period 1991-92 to 1995-96, the National Biogas Installation Programme was implemented in 28,301 (70 per cent) villages out of the 40,280 villages in almost all of the district selected for the study, while in Amravati region, this programme was implemented in 90 per cent villages with the maximum extent of implementation amongst the regions. During this period, 1,12,871 plants were installed and the average number of plants per village was 4.

3. The target set for installation of biogas plants in the State during the period 1991-92 to 1995-96 was 99,799 plants and the achievement was 113 per cent against the target. Also the actual expenditure incurred was 101 per cent against the provision of Rs. 3,763.66 lakh made available. However, districtwise picture shows that the achievement was more than 100 per cent in 20 districts and in the rest of 9 districts, the achievement could not be fulfilled according to the set target.
4. During the period 1991-92 to 1995-96, 112 training courses were organized in the State to impart training pertaining to installation of plants and in all 3,043 beneficiaries took benefit of the same. Expenditure of Rs. 4.16 lakh was incurred on the training. The number of training courses arranged regarding repairs to the plants was 40 and 1,763 beneficiaries took benefit of the same. The expenditure of Rs. 0.61 lakh was incurred on the same.
5. The number of beneficiaries having taken benefit of the scheme during the period 1991-92 to 1995-96 was 96,013. Out of them, 33 per cent beneficiaries were below poverty line and 67 per cent were above poverty line. Out of the total beneficiaries, those belonging to Scheduled Caste and Scheduled Tribe were 6,804 (7 per cent) and 8,175 (9 per cent) and the remaining 81,034 (84 per cent) beneficiaries belonged to other categories.
6. The target set for installation of plants in the development blocks selected for the study for the period of 1991-92 to 1995-96 was 21,257 plants, against which the actual achievement was installation of 23,835 (112 per cent) plants. Provision of Rs.735.26 lakh was made available for the same, out of which Rs.725.99 lakh (98.74 per cent) were incurred.
7. Out of the total plants installed, 59 per cent plants were installed through Institutions and 41 per cent plants were installed through self-employed turn key workers. Out of the total plants installed, latrines were connected to only 18 per cent plants. The average honorarium given per plant was Rs. 217 to institutions and Rs. 140 to self-employed turn key workers.
8. 98 per cent of the Block Development Officers informed that due to availability of biogas plants, eye troubles and respiratory troubles faced by the women were much reduced and there was saving in the time required for collecting fuel. 88 per cent Block Development Officers mentioned that cleanliness of the surroundings was increased and 97 per cent Block Development Officers mentioned that good manure was obtained for agriculture due to the scheme.
9. There were in all 68,679 households in the 116 villages selected for the study. Out of them, 6,826 (10 per cent) households possessed biogas plants. 29 per cent of the total households possessed 5 or more cattle. Out of the households for which the biogas plants were not installed, 51 per cent households were having desire to get installed the plant while 49 per cent households did not express such desire. The Village Panchayat Officers opined that for implementing the scheme more effectively, 1) the amount of

subsidy and loan should be enhanced and 2) the Government should make separate arrangement for repairing the plants not in working condition.

10. Village Panchayat Officers mentioned that due to the implementation of the National Biogas Installation Programme in the rural areas, felling the forests was reduced to some extent. If latrines are connected to the plants, surrounding will become clean and also the gas from the plants will be available in more quantity. But 73 per cent beneficiaries did not connect latrines to the plants and the main reason therefore is their mentality. 89 per cent beneficiaries reported increase in the quantity of manure.

11. Out of the 68,679 households dwelling in the 116 villages, 696 (1 per cent) households were selected for the survey. The occupation of 78 per cent of these beneficiaries was cultivation, 10 per cent beneficiaries were agricultural labourers, one per cent were rural artisans, two per cent were self-employed, six per cent were in service and three per cent beneficiaries were having 'other' occupations. Social categorywise classification shows that nine per cent beneficiaries belonged to Scheduled Caste, 12 per cent to Scheduled Tribes and 79 per cent households belonged to 'Others' category.

12. The classification of the plants according to their capacity shows that out of the total 696 plants, 320 (46 per cent) plants were of capacity of two cubic meters, 277 (40 per cent) were of capacity three cubic meters, 71 (10 per cent) were of capacity four cubic meters, while 24 (4 per cent) plants were having capacity other than these.

13. For 95 per cent of the beneficiaries, the time duration required for receiving subsidy and loan after they applied was on an average three to six months, while for the remaining five per cent beneficiaries, it was more than that. Also the extent of beneficiaries in whose case the construction of plant had in general started within one month was 85 per cent.

14. Out of the 696 plants selected, for the survey, 228 (33 per cent) plants were not in operation and the reasons therefor were 1) technical fault 152 (67 per cent), 2) insufficiency of dung 36 (16 per cent) and 3) other reasons 40 (17 per cent).

15. Out of the total beneficiaries selected for the survey, 94 per cent beneficiaries were land holders. So also, all the beneficiaries were possessing cattle and the average number of cattle possessed by them was 6.

16. The average market price of the manure received from the remainder of the plant was Rs. 975 per beneficiary and the average amount received by the beneficiaries through manure who sold such manure was Rs. 755 per beneficiary.

17. Out of the total beneficiaries of the plants, 241 beneficiaries were having latrine in their house and only 180 (75 per cent) of them had connected the latrines to the plants. 61 (25 per cent) beneficiaries connected latrines to the plants and the reasons therefor were as follows: 1) 48 (79 per cent) beneficiaries were not mentally prepared, 2)

connecting latrines to plant was difficult – four (7 per cent ) beneficiaries and 3) 9 (14 per cent) beneficiaries mentioned ‘other reasons’.

18. 450 (65 per cent) of the beneficiaries had gas stove with ISI mark.

19. Plants with 594 beneficiaries had started functioning. 334 (56 per cent) of these beneficiaries mentioned that due to the facility of plant, they had got rid of the troubles of collecting wood fuel. So also 401 (68 per cent) beneficiaries informed that all the cooking which was done on chulhas prior to getting the benefit were now done on gas stove of the plant. So also, 340 (57 per cent) beneficiaries mentioned that there was improvement in their health due to use of the plants.

20. 41 per cent beneficiaries informed that due to the fear that the functioning of the biogas plant may stop at any time, they have to make prior arrangements of fuel for rainy season. 44 per cent beneficiaries informed that the cattle in the cattle shed in the house is kept in the farms in summer for the purpose of manure resulting deficiency in the dung required for the plant in the house. While expressing the difficulties in using the plants, 49 per cent beneficiaries mentioned that keeping cattle is not economically affordable as the availability of fodder for the cattle is getting reduced.

21. For installation of the plants, it required on an average 8 mandays per plant. During a year, these workers in general had got on an average work for 115 days in the programme of installation of biogas plants and had received average remuneration of Rs. 670 per plant.

22. 141 (82 per cent) institutions mentioned that due to the installation of plants, there was 26 per cent to 51 per cent saving in the consumption of fuel wood.

## **7. Recommendations**

- i) Taking into consideration the utility of the plants and the demand therefor from the rural areas, the National Biogas Installation Programme may be implemented on a large scale in all the villages.
- ii) If it is made compulsory to keep the record of development blockwise lists of details of installation of plants in a district at district level, it would be useful for effective implementation of the schemes for the district.
- iii) The Rural Development Department should ensure the uniformity in the remuneration received per plant by the institutions or the turn key workers installing the plants.
- iv) It is necessary to implement the scheme effectively so that districtwise targets are achieved.
- v) It is necessary to give stress on the installation of plants of those types for which the average life span is more.
- vi) It was observed that the expenditure on installation of plants and the repairs thereof was different in different districts. Therefore the Rural Development Department should ensure uniformity in the same among all the revenue divisions.
- vii) In most of the districts it was suggested to enhance the amount of subsidy being given for the installation of the plants and the repairs thereof. The Rural Development Department should take a review in this regard and take decision accordingly.
- viii) As the number of non –functioning plants is sizable, it is felt necessary to make efforts for creating permanent local machinery for doing the repairs.
- ix) If training is imparted locally to the beneficiaries of the plants to repair the plants in the case of temporary faults, the beneficiaries themselves will be able to repair their own plants.
- x) The extent of plants whose life had exhausted was the maximum at 48 per cent in Aurangabad division. Therefore, the reasons for exhaustion of life of the plants on such a large scale in that region may be found out.
- xi) The performance of installation of plants is continuously decreasing during the period 1991-92 to 1995-96. The Department should take a review in this regard and make efforts to enhance the performance accordingly.
- xii) Special attention may be given so that the households possessing cow-bred cattle more than five in number should install the biogas plants.

xiii) The gas capacity of the plant should be decided only after taking into consideration the number of persons in the family, number of cattle possessed by the family and per day availability of cow dung and standing orders for sanctioning the plants accordingly should be given upto village level.

xiv) The extent of stopping the functioning of the plant due to technical fault is much more. The department should appoint quality control flying squad for checking quality of construction of the plants.

xv) The remuneration given to the institutes or self-employed turn key workers for installation of the plants should be enhanced after taking review after a specified time interval and responsibility of starting functioning of the plants immediately should be fixed upon them.

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