CHAPTER X

SUMMARY OF FINDINGS, CONCLUSION AND SUGGESTIONS

The shortage of firewood and kerosene pose a great problem to the people in rural India. Similarly, the farmers in rural area face the problem of shortage of fertilizers. Moreover, there is a need to supply the soil with organic manure along with fertilizers. The growing environmental concerns and the need to reduce drudgery of rural women places the need to develop an alternative source of energy, which is renewable, free of environmental repercussions and provides adequate organic manure to the farmers. In this context, development of gobar gas as a renewable source of energy has assumed great importance.

Gobar gas as an alternative to the traditional energy resources seems to be the ideal choice for a developing country like India. But those adoptions depend upon the extent of economy provided by these plants to the individuals in their different socio-economic conditions. In this context, the present post-evaluation exercise has been undertaken in Avinashi block with the aim of providing the basis for improved planning and implementation of new and ongoing programme of popularisation of gobar gas plants.

10.1 FINDINGS OF THE STUDY

The analysis of the capital cost structure of biogas plants has led to the following findings.
1. The rural households on an average incur Rs.45569.23 investment towards the installation of KVIC type gobar gas plants and of these, Rs.3717.77 is met by the Government through its subsidy and the rest of Rs.41851.46 is spent by the rural household on the installation of gobar gas plants from their own packet and through bank loans.

2. The capital cost incurred on an average per cubic meter Capacity in the installation of KVIC type gobar gas plant is Rs.6553.18 of which 502.19 is met by the Government through its subsidy.

3. The capital incurred on an average per cubic meter capacity in the installation of KVIC type gobar gas plants declines with the increase in the size of the gobar gas plants.

4. In the case of KVIC type of gobar gas plant, drum cost accounts for a major proportion (39.19 per cent) in the total capital cost incurred towards its installation and the material cost of civil construction accounts for 30.56 per cent. The other cost emerges as third important cost with their share of 14.10 per cent.

5. The capital cost structure of KVIC type of gobar gas plants has not varied significantly across the size of gobar gas plants and across the different socio-economic characteristics of the gobar gas adopters.

The determination of unit cost of gobar gas plants and the pollution abatement cost has brought out the following findings.
7. The unit cost of producing gobar gas decreased with the increase in the size of the plant revealing scale economy in the production of gobar gas. The unit cost of producing gobar gas works out to Rs.1.99, 1.19, 0.79 and 0.59 for 4, 6, 8, and 10 cubic metre size plants respectively. On average, the unit cost of producing gobar gas works out to Rs.1.06.

8. On an average the pollution abatement benefit per cubic metre of gobar gas used works out to Rs.0.34, 0.17, 0.19 and 0.18 in the case of 4, 6, 8, and 10 cubic metre size plants. On an average the estimated pollution abatement benefit per cubic metre gobar gas is Rs.0.18.

Analysis of social cost and benefit and benefit cost ratio of KVIC type of gobar gas plant has brought out the following findings.

9. On an average the total economic benefits from the KVIC type of gobar gas are estimated to the extent of Rs.14563.55 and costs to the tune of Rs.7389.49. The benefits per plant over and above their operational costs are to the extents of Rs.7174.06 and hence the KVIC type gobar gas plants are economical to adopt.

10. The total benefits including the social benefits from the KVIC of gobar gas plants worked out to Rs.17028.68 per plant and costs to the tune of Rs.7389.49. The social benefits derived per annum from gobar gas plant on an average works out to 2465.13. Therefore, the benefits over and above the operational costs are Rs.9639.19 and hence the gobar gas plants of KVIC type are economical to adopt.
11. The Benefit cost ratio is decreasing with the inclusion of social costs such as cost of unused potential of gobar gas plant, cost of unutilised capacity of gobar gas plant and cost of gas wasted.

12. On an average the gobar gas plants are found to be economically non viable when social costs and social benefits are excluded from their economic evaluation. However they turn out to be economically feasible if social benefits are considered. However when social costs are also taken into account, the investment in gobar gas plants turn out to be economically a non-viable proposition.

13. Among all sizes 6 cubic metre size is more economical to adopt. With the inclusion of social costs and benefits, only the smaller sizes such as 4, 6 and 8 are viable. Only the plants installed in the 90’s are economically viable.

14. The plants installed by households with agricultural occupation, with small family, belonging to non-gounder caste and possessing small size of livestock are found to be economical.

The economic evaluation of gobar gas plants by internal rate of return, pay back period and break-even analysis has brought out the following findings.

15. The rate of return on the investment in KVIC type of gobar gas plant is 16.73 per cent when social costs and social benefits are not taken into consideration in the economic evaluation of gobar gas plants. It increased to 22.93 percent when social benefits are considered and fallen to 12.82 per cent when unused potential of gobar gas plant is taken as social cost and included in the economic evaluation along with
social benefits. However, it increased to 6.91 and 15.52 per cent respectively when the cost of unutilised capacity and the cost of gas wasted are taken as social costs.

15. The pay back period of KVIC gobar gas plant is 8 years, 7 months and 18 days when social costs and social benefits are not considered in the economic evaluation. The pay back period increases with the inclusion of social costs and social benefits.

16. Net present value turned out to be negative when social costs and social benefits are considered in the evaluation of KVIC type gobar gas plants.

17. The KVIC gobar gas plants attain break-even at the production volume of 961.28 cubic metres of gas which is less than the actual production level of 1069.68 cubic metres. It decreased to around 810 cubic metres when social costs and social benefits are considered.

18. The economic viability analysis shows that among different sizes of KVIC plants, the smaller plant sizes such as 4 and 6 cubic metre sizes are economically viable to adopt.

10.2 CONCLUSION

From the above findings it can be concluded that the adoption of KVIC type gobar plant entails greater capital investment. The capital cost of gobar gas plant decreases with the increase in the size of gobar gas plants. Drum cost accounts about 40% of the cost incurred towards installation of KVIC gobar gas plants. The gobar gas plants
are economically feasible to adopt, if the social benefits are considered. But it is not an economic consideration when social costs are also taken into account. The non-viability of gobar as plant is mainly due to the adoption of inappropriate large size of plants and its consequent under utilisation.

10.3 SUGGESTIONS

The results obtained in the present study have some significant policy implications. The following are some of the suggestions emanating from the results of the study.

1. Free technical advice at the time of installation of gobar gas plant and periodic inspection by the extension workers afterwards must be imparted to the gobar gas adopters. This will help the individuals in choosing appropriate size for them. Government subsidy must be given only after assessing the size requirements of the gobar gas adopters by employing technical staff.

2. Liberal bank finance may be given to the individuals at a lower rate of interest for the installation of gobar gas plants.

3. The gobar gas adopters must be given special training with regard to selection of size, operation of the plant and economic use of the gas produced.