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In the earlier chapters of this study various parameters of energy conservation awareness in different sectors in urban area of Parbhani district have been discussed. The summary of conclusions drawn in previous chapters and relevant suggestions are incorporated in this chapter. Similarly, other related suggestions to overcome the problem drawn from literatures are also appended.

Conclusions:

1. The present standard of living as measured by Gross National Product, largely depends on the measure of effective and massive use of energy. The per capita consumption of energy in India was 515 kgs. of oil equivalent (kgos) as compared to 729 kgs in Indonesia 737 kgs in Egypt, 3982 kgs in U.K., 4099 kgs in Japan and 7996 kgs in U.S.A.

Per capita consumption of energy in India is only 12.56 per cent as compared to Japan and only 6.44 per cent to that of United State of America (USA). Due to the lower consumption of energy, per capita income in India is only 10 per cent as compared to Japan and only 7.68 per cent to that of U.S.A.
As a result of this abundant energy consumption, Gross National Product per capita in developed countries i.e. Japan and U.S.A. is 10 times and 13 times more than India.

2. Proved coal reserve in India as on 1st Jan. 2005 was 92960 million tonnes only. Its estimated demand would be 620 million tonnes in 2011-12 the coal reserve will finish in 100 to 125 years.

Moreover, the quality of Indian coal is not so good therefore we have to import about 25 million tonnes of coal by spending valuable foreign exchange.

3. In the case of petroleum, the country had 786 million tonnes of crude oil reserves in India on 1st Jan. 2005. Considering the current rate of crude oil exploration 33981 Thousand tonnes the oil reserves will be available for 23 years only. Moreover, the import dependency is over 75 percent. If the same trend persists, the International Energy Agency has projected that India's import dependency may increase to as high as 94 percent by 2030. Further we are spending massive foreign exchange of about 1168.06 billion Rupees for the import of petroleum.

4. Natural gas reserves have 1101 billion cubic meters and its present rate of production is 31777 million cubic meters. It means our natural gas reserves will finish within next 34 years.
5. On power (electricity) front it is observed that there has been always a shortage of 7 percent to 8 percent between demand and supply. Due to the high demand of electricity there has been shortage of 11 to 12 per cent during recent years.

6. In various five years plans that more and more amount has been spent for the development of energy sector which was always more than 25 percent of total plan allocation.

Following are the observation and suggestions regarding different sectors:

Household Sector

1. As regard to energy savers 89 percent respondents belong to the age group above 60 years who are more aware, followed by the age group of 50 to 60 years and 40 to 50 years about 82 percent and 68 percent in the age group of 30 to 40 years. There is low percentage of awareness in the age group of below 30 years.

2. About encouragement by respondents to others, it is found highest i.e. 91 percent in case of above 60 years 89 percent in case of 50-60 years.

3. In case of age group below 30 years 64 percent respondents are satisfied with the role of media about energy conservation followed by the age group 30 to 40 years 53 percent. It is 51 percent in the ages between 40 to 50 years.

4. Education upto HSC and onwards are found to be more aware of energy conservation. Their percentage is more than 82 percent.
The level of awareness in case of matriculates and below matriculates is in the range of 25 to 76 percent. Thus, it can be inferred that higher educated respondents are more cautious about energy conservation.

5. Higher educated people are found more active for encouraging others in energy conservation. About the role played by media in creation of energy conservation awareness more uneducated respondents i.e. 87.50 percent expressed their satisfaction, followed by less than matriculates 64 percent and matriculates 60 percent (out of 89). In case of high educated respondents about role of media level of satisfaction is found less than 44 percent.

6. Rationing of energy sources may be a useful measure for energy saving. In this regard majority (56 to 87 percent) respondents having education upto HSC and above were in favour of energy rationing. Respondents below HSC are less (19 to 43 percent) in favour of this measure. Considering the favourable views of high educated respondents, it can be inferred that rationing will be effective for energy conservation.

7. The highest percentage (90) of energy savers belong to open caste category, followed by OBC category (69 percent) and finally 35 percent in case of SC/ST group. Open caste category people are more careful about energy conservation. This can be
attributed to high level of education in Open category and relatively low level of education in backward class category.

8. As far as encouragement to others, is concerned highest 94 percent respondents from Open category are found as encouragers. The percentage is observed to be 82 in case of OBC group and 35 percent in SC/ST category respondents. Open category respondents are more active in encouraging energy conservation as compared to other category respondents. This may be also high and low levels of education in this categories.

9. About the role of media in creation of awareness 55 percent respondents from SC/ST category are satisfied, while 54 percent respondents from Open category felt satisfied and only 41 percent respondents from OBC category were satisfied about the role of media. The overall percentage of respondents is 48 percent in this regard. Therefore, it may be inferred that role of media in creating energy conservation awareness is not up to the mark.

10. As far as type of families and conservation is concerned it is observed that 83 percent joint families are aware of energy conservation and save energy. While 75 percent nuclear families are observed as energy savers. In short almost all types of families were aware about encourage energy saving.
11. It has been observed that 92 percent respondents from service group adopted the encouraging practice, followed by 90 percent respondents from the other category, professionals and farmers 83 percent. The percentage is found to be lowest in case of labour group respondents i.e. 75. It may thus, be inferred that respondents from service and other groups are more interested in encouraging others.

12. About role played by media in energy conservation except service sector around 50 percent respondents have expressed their satisfaction. This again indicates that there is much scope for the media in creation of awareness in this field.

13. As in the case of the encouragement to others for energy conservation 95 percent respondents in the income group of Rs. 5000 to 10000 encouraged others for energy saving. 90 percent respondents in the income group of Rs. 10000 to 25000 encouraged others for energy conservation. In the income group of Rs. 50000 to 100000 is 87 percent encouraged to others. The percentage is 80 percent in the groups of Rs. 100000 to 150000.

14. In case rationing of energy resources there is a lot of variation in different groups of respondents. Middle income group people are found in favour of rationing i.e. having income of Rs. 25000 to 100000 in the range of 66 to 69 percent. The percentage of respondents belonging to other income group i.e. of Rs. 5000 to 25000 and 150000 to 200000 range between 41 to 57 percent.
In a nutshell it can be said that majority of respondents from various income groups are in favour of rationing of energy resources.

15. In case of house structure little ventilation or no ventilation is 80 percent. The percentage of medium ventilation houses is 17 percent. The percentage of highly ventilated house is only 3 percent. Regarding energy saving through ventilation majority respondents were unaware. This indicates insufficient knowledge of the householders regarding ventilation which leads to more consumption of energy. Among the respondents 74 percent of the people lived in single storey houses. About 11 percent and 12 percent respondents lived in two and three storeyed houses. This indicate making use of natural light practice.

16. Regarding the use of cooking equipments, majority respondents used kerosene stoves i.e. 28 percent, followed by Gas stove users 27.84 percent. Number of respondents who used electric shegdies is sizable in number 299 (25 percent). The percentage of chulhas users is 17 percent. Obviously it can be stated that being urban people, they make use of sophisticated equipments. Use of these equipments is helpful for energy conservation. However about 28 percent respondents used kerosene stoves which tends to some sort of wastage of energy resource.
17. Regarding the types of fuels used, maximum respondents used gas and kerosene and their percentage is 24 in both cases, followed by electricity 22 percent, firewood 12 percent, Agro-waste 9.43 percent and dung cakes 6.34 percent is also utilized to some extent. Use of coal, biogas and solar energy is very negligible. In nutshell it can be concluded that electricity, LPG, Kerosene, firewood and agro-waste are the main resources of energy used in this sector.

18. In case of electricity, users 18 percent respondents used it for 4 to 6 hours, 34 percent people used for 6 to 8 hours, and majority of people used electricity for 8 to 10 hours. The average hours of consumption has been observed as 6.6 hours.

19. The use of coal and solar energy is very negligible. However in case of firewood, dung cakes and agro-waste the number and percentage of users of these is found to be sizable. The average hours of use of these resources is calculated as 3, 2.27 and 4.16 respectively.

20. In case of agro waste consumption maximum number of respondents (65) 13 percent used 1 to 10 kgs and another 10 percent used to 10 to 30 kgs per month. Thus consumption of agro-waste still prevails in the urban area of Parbhani district. Therefore, it is equally important to give attention towards the conservation of this type of resource also.
21. Regarding the use of solar energy, only 2 percent respondents used solar energy. Thus there is a full scope for propagation and promotion of solar energy.

22. In case LPG user respondents having 20 years of experience had more awareness up to 85 percent, followed by 16 to 20 years experience. The awareness was 82 percent in 11 to 15 years experience. Relatively less experienced such as 1 to 5 years and 6 to 10 years are found less aware as 74 and 81 percent. Thus, it can be concluded that fuel using experience and awareness are inter related i.e. more experienced consumers are more aware. In case of kerosene also 83 percent, 81 percent and 79 percent aware respondent belong to above 20 years, 16 to 20 years and 11 to 15 years experienced category respectively. The aware respondents having experience of 1 to 5 years and 6 to 10 years were found to be 74 and 76 percent respectively. Regarding electricity in the group of above 20 years users awareness was found to be 98 percent. In case of 16 to 20 years and 11 to 15 years experience category awareness percentage has been observed as 97 and 96 percent respectively. Relatively the low percentage is found as 86 and 95 in case of 1 to 5 years and 6 to 10 years using experience categories respectively.
Therefore, it can be said that in case of electricity also users having more experience are more aware.

23. In case of coal relatively very few respondents used coal as fuel. In case of coal experienced consumers are found to be more aware and belong to the range of 50 to 80 percent. Firewood is a cheap fuel as compared with above stated fuels. It may be a general presumption that there may not be energy conservation awareness regarding this fuel. The researcher has observed that more experienced firewood users (68 percent) are aware about fuel conservation. Regarding the zero cost fuels like Dung cakes 75 percent and Agro waste 72 percent the similar trend has been observed as other fuels. In a nutshell, it may be concluded that majority of respondents used electricity for lighting and cooling purpose. Naturally it may be attributed to modern living practice and use of sophisticated home electrical appliances. It can be suggested that Government/association / Maharashtra State Electricity Board must concentrate on household for electricity conservation is order to gain higher results.

24. Out of total respondents only 30 percent respondents make use of refrigerators. Medium size single door users were maximum (104) 21 percent, followed by big size single doors 3.40 percent. Number and percentage of multi-door refrigerator users is very
small. Thus in case of use electricity conservation awareness did not found among the respondents who use refrigerator.

25. About 35 percent respondents are found as they soak the gains before cooking 63 out of 152 refrigerators users about 13 percent were aware of warming the food items kept in refrigerator. Regarding the adoption of the practice of reducing gas/stove flame at boiling point about 73 percent respondents practiced this habit. In case of having meals, about 73 percent respondents followed the practice of taking meals together. About heating the food items frequently 21 percent respondents followed the practice and other 79 percent respondents do not do so. The above cited two indicators show that, householders are aware of the waste of energy.

26. It is observed that television, newspapers and radio play a vital role in creation of energy awareness. It can be suggested that Govt. should make more and more use of these medias for creation of energy conservation awareness.

27. Inclusion of the matter in the educational syllabus, conduct of practical demonstrations, organization of exhibitions and arrangement of training facilities are the crucial activities for energy conservation for households. About regulation for energy conservation 74 percent respondents have expressed their favourable views.
28. Maximum respondents made use of pressure cookers. It is, therefore, necessary to propagate and promote the use of other modern energy appliances like solar energy, energy saving burners and small gas burners etc.

TRANSPORT SECTOR:

1. It is observed that about 90 percent respondents belonging to the age group above 40 years do encourage others for energy conservation. Relatively low age grouped respondents are found to be less encouragers. On an average 86 percent respondents encourage others in energy conservation. On the basis of survey it is observed that open caste respondents are more active encouragers as compared to other categories.

2. Highly educated peoples are found encouragers others for energy conservation. Its proportion in HSC and onward qualification holders it is observed to be over 91 percent. In case of illiterates 64 percent respondents are found to be encouragers. In case of less than matriculate respondents 72 percent were encouragers of energy conservation. Though the number of three wheelers and more than three wheelers user respondents are less as compared to two wheelers users. The awareness of energy conservation is observed quite good among them.

3. Irrespective of different road vehicle users have reported energy conservation awareness i.e. users of different types of roads are equally aware about fuel saving. Researcher observe that, road
transport respondents can play an active role in encouraging energy saving.

4. It is observed that awareness of energy conservation in petroleum users was found to be 91 percent. Diesel user occupied second rank as 87 percent. Finally, power petrol user respondents were found to be 86 percent aware of energy saving. Thus, relatively high priced fuel users are more careful about fuel savings.

5. Regarding weight of vehicles about 90 percent respondents are observed to be aware of fuel saving i.e. they care about weight of vehicles.

6. Above consideration of H.P. it has been observed that out of total 433 (79 percent) respondents were found to be aware about H.P. capacity at the time of purchase, and out of these 398 (92 percent) were aware about energy conservation. Respondents in transport sector are more aware about H.P. capacity of vehicles.

7. Regarding the awareness of officials are found more aware as 94 percent were aware followed by marketing purpose users 93 percent. Awareness in public transporters was observed as 83 percent. Relatively business men due to high income (82 percent), agriculturists due to low level of education (64 percent) were less aware of fuel saving.
8. Regarding to daily travelling more aware respondents (93 percent) belong to 1 to 20 kms travellers. Among people who travelled more than 200 kms, the awareness was more than 92 percent. People who travel 20 to 200 kms were found to be relatively less aware for fuel saving as 86 percent. It can be clearly observed that more quantity fuel users are more aware i.e. 91 to 92 percent as compared to less fuel users.

9. In case of awareness about energy conservation, highest percentage (92) was found in 80 to 100 kms speed keepers, followed by the group of 60 to 80 kms and below 40 kms. In other groups awareness has been observed below 90 percent. Overall, maximum vehicle owner respondents are observed to be aware of energy conservation.

10. Very limited consumers reported about filling of fuel tanks completely. Obviously, their awareness about fuel saving is found higher. Consumers who filled their tanks partially were 21 percent and their awareness about energy conservation is calculated as 90 percent. Maximum number of respondents 377 (69 percent) filled their tanks as per need and regarding awareness 89 percent are found aware. Thus, full and partial fuel tank fillers are more aware about energy conservation.

11. In case of three wheeler owners, very positive results were available regarding radial tyres use i.e. 91 percent. In case of four wheeler users majority 63 percent respondents had
expressed their views about usefulness of radial tyres. It can be said that radial tyres are very useful for vehicles.

Respondents from three wheelers, four wheelers and more than four wheelers made a good use of radial tyres as compared to two wheelers respondents.

Regarding vehicle starting systems, automatic vehicle starting system was found in three, four and more than four wheelers vehicles. In case of two wheelers very few (only 14 percent) had automatic starting system.

In order to achieve fuel savings Govt. should make it mandatory to introduce automatic starting systems in all types of vehicles.

About 71 percent respondents used company spare parts. In this regard two wheeler users and four wheeler users were more cautious of using original spare parts who are 79 percent. About the percentage of original spare part users that there is a lot of scope for achieving fuel economy through the use of original company spare parts. Therefore, Govt. should motivate vehicle owners for making use of the company spare parts only.

Majority preference of awareness programme goes to pamphlets i.e. 390 (71 percent) out of total respondents. About 86 percent (out of 250) felt the usefulness of pamphlets. In case of three wheeler users, 87 percent respondents favoured this medium. Four wheeler users also felt the effectiveness 62 percent and
more then four wheeler users 60 percent were also encouraged by pamphlets.

15. Maximum 90 percent vehicle users follow the practice of leakage checking. Another 10 percent respondents were careful about avoiding wastage. Spillage reducers and pilferage checkers were found to be negligible. Respondents belonging to two wheelers category, were also careful as about 82 percent for checking of leakage. The percentage of avoiding wastage was found to be 18 percent.

Respondents belonging to three, four and more than four wheelers category adopt the practice of checking leakage. Very few respondents practiced other practices of fuel saving. Therefore, it can be suggested that it is necessary to popularize other practices also for fuel saving.

16. As per ranking of factors which adversely affect fuel efficiency, bad roads rank first. The second rank goes to road dividers, followed by defective road repairing as third. Lower or bad quality of fuel occupies fourth rank while toll and check points hold the fifth rank. Lack of good human resource also affects fuel economy it occupies the sixth rank.

Speed control, lack of proper traffic rules, lack of training facilities to drivers and lack of perfect knowledge about energy conservation cause inadequate fuel economy which rank seventh, eighth, ninth and tenth respectively.
17. According to the percentage of usefulness for energy conservation, obviously the first rank goes to good roads (98 percent), proper and timely maintenance is also equally important and ranks second. Use of improved and modern type of tubes and tyres ranks third in fuel economy. Improvement in vehicle engines and use of proper gear box ranked as fourth (27 percent) and fifth (20 percent) respectively. Consideration of the above factors is also equally important for the sources of energy conservation movement.

18. Stoppage of started vehicle badly contributes in fuel waste and ranks first (60.73 percent), followed by sudden braking practice as second one (57.82 percent). Over speeding of vehicle ranks third (48.36 percent) and jerky starting and fast raising are equally bad practices ranking as fourth and fifth. Sudden acceleration and clutch riding occupy occupies sixth and seventh rank.

Removal of above cited bad driving practices is equally important as a part of energy conservation programme. Wide and frequent propagation is necessary in this regard.

19. On the basis of the experiences of vehicle users it may be suggested that govt. should make it mandatory to the producers of additional facility equipment to produce energy economical equipments. A technical group should be appointed for advice and consultation.
20. Regarding the expectation of other relevant activities about energy conservation, inclusion of the subject matter in school syllabus ranks first. Second rank belongs to arranging practical demonstration. Third rank is occupied by organizing exhibition. Providing training facilities and other activities got fourth and fifth rank.

Following practices are adopted by vehicle users for energy conservation:

— Appointing a qualified driver.
— Organizing of training campus for drivers.
— Appointment of a team of expert technicians.
— Classification of vehicles according to fuel efficiency.

Positive views about the role of driving school and colleges.

— Drivers participation in apprentice orientation course.
— Exchange of views for energy conservation.
— Contribution of drivers and mechanics in energy conservation.
— Technicians awareness about improving the fuel savings.
— Suggestions of technician for adoption of modern energy conservation equipment and innovation.

21. Regarding one way traffic system, about 69 percent two wheeler users, 68 percent three wheeler owners, 79 percent four
wheelers owners and 88 percent more than four wheeler owners felt its utility in energy conservation.

22. Relatively two and three wheelers were aware about the speed of vehicles for energy conservation as compared to four and more than four wheeler owners. It is obvious to say that four and more than four wheelers appointed drivers and therefore they didn't care about the speed and owners were not aware of the effect of over speeding on fuel economy.

23. Driving carefully tends to fuel saving and vice-versa. Regarding this aspect 75 percent two wheeler users, 69 percent three wheeler owners, 92 percent four wheeler owners and 94 percent more than four wheeler owners experiences that good driving habits are very useful in getting fuel economy. It can be said that four and more than four wheeler owners are more experienced about usefulness of good driving habits.

24. In case of the effect of signaling, 78 percent two wheeler users 28 percent three wheeler owners, 13 percent four wheeler owners and only 9 percent of more than four wheelers are found its adverse effect.

25. It is obvious to state that two wheeler and three wheelers are used in cities where signaling is applied and heavy vehicles are diverted from outside the city in which signalling is very limited.
26. Regular monitoring and record keeping of mileage per liter is also a good practice. This helps to control the excessive fuel consumption's by vehicles. It may be observed that, in case of adoption this practice maximum respondents (93 percent) were found in more than four wheeler users (92 percent). Relatively this practice was low in case of two wheeler owners and three wheeler owners as 79 percent and 89 percent respectively. It is obvious to state that four and more than four wheelers fuel consumption was very sizable and therefore following of this practice is natural. It can be concluded that more fuel users are aware about the monitoring practice which is a good indicator for energy conservation.

27. Regarding infractructural tolls, about 80 percent two wheeler owners, 87 percent three wheeler owners, 91 percent four wheeler and 94 percent more than four wheeler owners faced the problem in energy conservation . It is natural that four and more than four wheelers make use of highways and hence their percentages were found to be higher.

INDUSTRIAL SECTOR :

1. Regarding energy savers maximum number of energy saver respondents belong to the age group above 60 (92 percent) were found more aware about energy conservation followed by the age group 30 to 40 years (90 percent), and 88 percent belong to the
age group of 40 to 50 years. On an average out of 200, 88 percent respondents were found aware of energy saving.

2. Regarding the implementation measures in industry for full efficiency again the respondents below 30 years were observed to be aware of energy conservation (88 percent), followed by the age groups 30 to 40 years (43 percent), 50 to 60 years (43 percent) and 40 to 50 years (41 percent).

3. In case of analysis of energy used in processing, overall 16 percent respondents reported the following practice. Higher percentage was observed in the age group below 30 years (50 percent). This percentage was found below 20 percent in case of other groups.

4. Regarding the knowledge of energy crisis in India cent percent respondents belonging the age below 30 were found aware. In other age groups the respective percentage has been found more than 92 percent. Thus, in this regard the awareness was found to be maximum in almost all age groups of respondents.

5. In case of creation of awareness among others, overall percentage of encouragers was found to be 82 percent. Age group wise distribution of the respondents was found as 87.5 percent in the age group below 30 years. Lower percentage was observed in the age group over 60 years as 69 percent. In other groups the percentage of awareness varies between 81 to 83
percent. Tendency of respondents in creation of awareness among others was observed to be sizable and satisfactory.

6. On analysis of energy consumption in production process is useful to control energy use. This practice was not adopted by majority of respondents except business established in 2002-03. Therefore, it can be suggested that agencies working in the field of energy conservation should take care of such mentality and motivate them to conserve the energy through analysis and monitoring.

7. Regarding awareness about shortage of energy resources respondent belonging to all groups were found to be aware and the percentage varies between 89 to 100 percent. This is a positive sign towards energy conservation awareness.

8. It is expected that businessmen should share their experiences and encourage others for energy conservation. As expected, it was found that more respondents belonging to different age categories were found positive. The proportion of encouragers ranges between 75 to 100 percent. On the basis of this observation it can be suggested that there is a further scope for motivation to industrialists for sharing their experiences with each other. Media should also initiate action in this regard.
9. Regarding the views of role of business organizations role in encouraging and helping respondents for energy conservation in all 77 percent respondents found to be satisfied and their percentage of satisfaction varies between 43 to 100 percent. Relatively many respondents belong to the category of business established before 1999 to 2005. It is the responsibility of old businessmen and associations to involve the new comer businessman in their organization and gide them for in energy conservation.

10. About conservation awareness on caste basis percentage in O.B.C. category was found to be 91 percent. Comparatively in open and SC/ST category castes it was 86 percent. Low awareness in the Open, SC/ST category was due to their high and low level of education income. However, for the sake of energy conservation these categories must be promoted by concerned authorities.

11. Improvements in machinery for fuel efficiency, a dismal picture was found in all caste categories. The positive respondents were 47 percent from Open category, 36 percent of SC/ST category and 43 percent from OBC category. This tendency should be averted by applying necessary propagation measures by government and respective agencies and associations.
12. Regarding the knowledge of scarcity of energy resources all caste category business respondents were aware of the fact. Among the respondents i.e. 95 percent belong to Open category, 98 percent belong to SC, ST and 96 percent belong to OBC category. This is a good sign towards energy conservation awareness.

13. As far as level of education is concerned maximum respondents are found to be aware about energy conservation who belong to highly educated category, followed by educated upto HSC category and then professional and technically educated. Regarding illiterates the awareness percentage was only 50 percent which is obvious due their level of knowledge. There is a further scope for creating awareness among the lower educated respondents about energy conservation.

14. Improvement in the industrial machinery plays a vital role in energy conservation. A disappointing picture has been observed because none of the uneducated group and only 42 percent from educated upto HSC group 44 percent from highly educated group were found to be followers of this practice. Professional and technically educated businessmen were cautious to the extent of 60 percent. In this regard it is suggested that creation of awareness for improvement in machinery is the need of the hour and respective authorities/bodies and association should take care of it for promotion.
15. As cited earlier, measurement and analysis of use of energy in various process/stages is useful for pinpointing the misuse and overuse of energy. There is absence of this practice. None of the uneducated category, only 19 percent from educated upto HSC category, only 11 percent from highly educated category respondents were found to be followers of the practice. However, 60 percent respondents having professional and technical education satisfactorily followed the practice. In this case also more motivation is necessary for adopting this practice and a common recommendation has made in this chapter.

16. Regarding encouragement to others for energy conservation 50 percent uneducated category respondents followed the practice. Highest percentage belonged to those having professional and technical education (i.e. 100 percent), followed by educated upto HSC level 85 percent and 77 percent from highly educated group. High, educated respondents were more interested in encouraging others for energy conservation.

17. Energy conservation also depend on daily supervision of owners himself or others in this regard. Business supervision energy savers highest 92 percentage was observed, in business supervised by owners themselves followed by 88 percent in business supervised by staff and finally family members (i.e. 79 percent). This can be attributed to the reason of carefulness of
the owners and assignment of responsibilities to the staff for energy conservation.

18. Where employees strength is moderate, awareness is higher as in the case of 31 to 150 employee group where we find 100 percent awareness. Relatively employees having low strength upto 10, 11 to 20 and 21 to 30, 151 to 200 were found less aware of energy saving, where the percentage was 89 percent, 91 percent, 67 percent and 50 percent respectively. Therefore, it can be recommended that owners and business associations should take care of this situation for encouraging their employees for energy conservation.

19. Knowledge of the shortage of energy resources is also important in energy saving. It is observed that there is 100 percent awareness about this fact. Where employee strength ranges between 21 to 200. This awareness is less in the first two groups their percentage is 95 percent and 91 percent respectively.

20. Big business groups are expected to encourage for energy conservation. In case of energy savers 91 percent respondents received encouragement from such groups. Regarding the role of big industrial organizations and chamber of commerce their contribution was only 86 percent and 92 percent respectively.

In case of improvements in industry also, maximum 68 percent respondents have been benefited by chamber of commerce. In
this regard big business group and industrial organization rank second and third.

22. Regarding the analysis of production processes of energy used and saving a similar position was found as stated earlier.

23. Source wise energy used and conservation 1st rank (79 percent) goes to electricity. Second rank has been occupied by furnace oil 19 percent, diesel 2 percent occupied third rank, kerosene and petrol users were very few.

24. About the criteria adopted while purchase of machinery a maximum 168 (84 percent) respondents reported that machinery requiring less fuel was always preferred, followed by less electricity requiring machinery. Only 2 (4 percent) respondents preferred fuel recycling machineries and 7 percent respondents were careless about the criteria.

25. About the practices applied for energy conservation, maintenance of machinery ranks first. Providing training to workers for energy saving ranks second. Encouragement to workers occupies third rank. Time to time encouragement and training to workers is necessary for getting better results in energy saving.

26. In case of encouragement by medias for energy conservation, most respondents preferred television which ranks first. Second rank belongs to newspapers. The third rank goes to knowledge
of the limited availability of energy resources. Role of radio was effective to some extent which ranked fourth. Increase in energy expenditure insist for energy conservation which ranks fifth. Role of pamphlets seminars, magazines and hoarding was not so effective in this regard as compared with others.

27. According to the preferences of the respondents inclusion of energy conservation in educational curriculum, providing training facilities and giving practical demonstrations are the popular measures for encouraging energy conservation. Accordingly government should stress on these measures.

28. Respondents with 39 percent weighted score expect grant aids from government for making improvements and implementation of energy conservation measures and obviously it ranks first. Pdequate training facilities ranks second. Providing energy conservation equipment ranks third. Majority of respondents expect government intervention in promotion of energy conservation.

29. Regarding the financial assistance it should be provided at a low interest rate for the purchase of energy saving machinery. About the provision of government grants 24 percent industry respondents felt it necessary, followed by 21 percent respondents who expect supply of energy efficient equipments from the agencies. Needs of consumers are financing at low rate of interest and grants, from agencies and implementation of
various awareness programmes and establishment of task force groups in order to encourage energy conservation.

Thus, industrial sector in the district needs much help from the agencies. Therefore, Govt. and agencies should take positive steps in this regard.

31. The problems faced by the industrialists, 38 percent respondents faced the problem of lack of expert employees, followed by the reason of lack of availability of instruments 25 percent, lack of energy saving machinaries ranked third with 20 percent and lack of proper guidance and information ranked fourth having a percentage of 13.

32. Electricity user respondents belonging to higher expenditure group were more aware i.e. 89 to 100. In case of furnace oil a similar trend has been observed as in the case of electrical expenditure. Thus, level of expenditure is an important factor in creation of energy conservation awareness.

33. In case of optimum utilization of energy, it is observed that maximum no of consumers adopt this practice i.e. 82 percent. In this regard of the aspect industry should assign job of the energy conservation to responsible people for getting better results. However, only 26 percent respondents adopted this practice. Regarding energy conservation committee / cell also very few industrialists (6 percent) made such arrangements. This was due to presence of Small Scale Industries in the district.
34. Making a provision of separate budget is equally important for energy conservation. In this regard it is found that this practice was almost absent and only 1.5 percent industrial consumers were found aware of this aspect.

35. About following the instructions by the owners about optimum utilization and energy conservation about 64 percent respondents were satisfied and 36 percent respondents had no answers. On the basis of this it can be inferred that there is further scope for energy conservation by encouraging the employees.

36. It has been widely suggested to create a separate department for energy conservation. In this regard it is observed that only 30 percent respondents do follow this practice. Again this can be attributed to industrial units belonging to Small Scale Industries sector and they can't afford the experts.

37. Regarding the appointment of energy conservation managers as per energy conservation laws very nominal respondents followed the practice (i.e. only 3 percent). The same picture has been observed in case of energy audit practice. This indicates the scope for creation of awareness in this respect.

38. In order to get the expected results in energy conservation 29 percent respondents followed the practice of rewarding the employees while 73 percent respondents organized training programmes for employees for energy conservation.
39. About 48 percent respondents invited technicians for energy conservation consultation. This proportion is very low. So technical consultancies should came forward for consultation at reasonal fees in this regard.

40. Regarding submission of separate proposals to funding agencies for energy conservation 52 percent respondents were found to be followers of the practice. This may be due to the negative approach of funding agencies and partially due to carelessness of industrial consumers. Funding agencies should be more and more positive in this regard.

**HOTELS AND LODGINGS :**

1. In the case of adoption of conservation measures out of total 150 respondents about 85 (84.67%) respondents were energy savers and only 15.33 per cent were not energy savers. The highest percentage 91.18 per cent of energy savers belongs to 40 to 50 years age group, followed by the age group of above 60 years 83.3 per cent, 50 to 60 years and 30 to 40 years 80.00 per cent respectively. Thus respondents relatively having higher age were energy savers.

2. Regarding the encouragement to employees, percentage of respondents was 91 to first group and 91 in second group in third group it was 93 percent and in other two groups
percentage was less than 87. Thus younger businessmen were more particular about encouragement of employees for energy conservation. This is found contrary to the findings of earlier.

3. While answering the questions on measurement of energy saving corresponding to investment 83 to 100 per cent businessmen from different age group had given negative answers. This may be attributed to the non-availability of technical knowledge.

4. In case of knowledge about energy shortages in India 100 per cent businessman from the age group below 30 years, 40 to 50 years and above 60 years were aware. The percentage of age group 30 to 40 comes to 94 and in the age group 50 to 60 about 97 percent were aware of the energy shortage. Thus no particular relationship is found between knowledge of energy shortage and age.

5. Regarding encouragement to others for energy conservation more than 90 percent respondents were found active except from the age group 40 to 50 years (82 per cent). In this case in general maximum number of respondents encouraged others for energy saving.

6. Owners of old and new business were cautious about energy saving. Highest per cent of energy savers (100) belong to business established in 2002-03 and lowest percentage (50) belonged to business which was established in 2001-02.
7. In case of knowledge of energy conservation, among employees, more than 90 percent employees were aware of energy conservation except in the business established in 2002-03. This is good indicator for energy conservation.

8. Regarding the practice of setting objectives and measuring the energy savings corresponding to investments more than 90 percent respondents belonging to different groups have given negative answer except those who had established business in 2001-02 in which 25 percent respondents answered positively. Thus, popularization of the above stated practice is necessary for the promotion of energy conservation.

9. As regards caste, category and energy conservation awareness, out of total 110 (73 percent) respondents belong to Open category, 12 (8 percent) are from SC & ST group and 28 (19 percent) are from OBC category. Regarding energy savers highest 87 percentage belong to Open category followed by SC/ST category (i.e. 83 percent) and 75 percent in case of OBC category. Open category and SC/ST category are more aware about energy conservation due to their high level of education and low income level respectively.

10. Regarding the knowledge of energy conservation among the employees of respondents the percentage was found to be highest 96 percent in Open caste category and OBC category and lowest in case of SC/ST category respondents.
11. In case of encouragement by respondents to their employees the highest percentage (95 percent) is observed in Open category followed by OBC category 86 per cent. It is moderate in case of SC/ST category.

12. Regarding monitoring and measurement of saving of energy only 5 percent respondents from Open category followed the practice while only 14 percent respondents from OBC category followed the practice. This practice was not adopted by SC/ST category respondents. This position is due to commercial mind of respondents of this sub sector.

13. About encouragement to others for energy saving 1st rank goes to Open category (92 percent). The percentage found in SC/ST and OBC category was 75 in both categories. In nutshell it can be concluded that Open category respondents are more aware about various parameters discussed above.

14. Regarding adoption of energy saving practice, higher percentage was found i.e. 100 in post-graduate degree holders followed by matriculates 90 percent, below matriculation the percentage was 86, graduates ranked IV (with 80 percent) followed by HSC educated respondents, 77 percent and finally 67 percent of illiterates.

15. In case of knowledge of employees regarding energy conservation the highest awareness was observed in post-graduate business owners and illiterate business owners as 100 percent. The
percentage was 98 in matriculate owners, followed by graduates 95 percent. The respondents educated upto HSC rank IV i.e. 94 percent and below matriculation rank V with 89 percent.

16. Encouragement to employees by employers, highest percentage was found in illiterate and post-graduate 100 percent owners followed by graduates 95 percent. Matriculates rank III with 94 percent, HSC holders ranks IV with 89 percent and less than matriculates rank V with 84 percent. In nutshell, no particular relationship between level of education and awareness has been observed, but highly educated and illiterate employers are more careful about energy conservation.

17. Regarding the measurement of energy saving in relation to targets, it was 15 percent in graduate owners, followed by below matriculates (8 percent), 6 percent in HSC holders and 4 percent among matriculates.

Thus, there is very limited awareness about measurement of energy saving among the respondents below matriculates and graduates.

18. Percentage of energy savers was highest about 85 percent in sole trading and in joint Hindu family type of organization. The percentage was 67 in partnership type organization. Thus sole traders and joint Hindu families were more careful about energy conservation.
19. In case of knowledge of employees regarding energy conservation also more than 90 percent employees from sole trading and joint Hindu family type of organizations had the knowledge of conservation. Level of this knowledge in partnership type organization was very low i.e. 33 percent. Thus, partnership firms should create awareness among their employees.

20. Similarly, in case of encouragement by employer to their employees it was highest 92 percent in sole trading and joint Hindu family type of organization 91 percent. It was found very low 33 percent in case of partnership type organization.

21. Fuel wise knowledge of employees about conservation awareness, variations are found. It was highest in case of electricity 93 percent followed by firewood. LPG about 82 percent, petrol 79 percent, kerosene 77 percent, diesel 76 percent and coal 65 percent. Thus no particular tendency was found in this parameter. This may be due to different levels of education, age etc of the employees.

22. About the fuel wise practice of setting objectives and measuring the energy savings in relation to investments about 90 percent respondents in all did not follow the practice. This can be attributed to the lack of adequate technical knowledge of employers and employees.

23. About the shortage of energy resources in India, 97 percent of electricity users from the district were aware of the fact, followed by 92 percent in case of Gas, 91 percent in case of kerosene,
about 87 percent in case of firewood and diesel 82 percent in case of coal and finally 75 percent in case of petrol users. It is obvious to state that electricity consumption can be easily curtailed and hence energy conservation awareness is found to be more in its users.

24. In case of energy savers where the business was run by the owner himself the percentage was 88 percent, followed by business run by staff (85 percent) and about 77 percent in business run by the members of family. Thus we notice that energy saving is more in business run by owners himself.

25. Practice of setting objectives and measure the savings achieved corresponding to investment it was found to be 7.69 percent in the business run family members followed by 7.48 percent in the business run by workers. It was only 2.74 percent in the self run business respondents. Thus we realize that all business categories do not favour energy saving measure.

26. About encouraging others for conservation, about 85 percent owners were active, 87 percent from business run by family members. Others group about 88 percent were active.

27. Role of Television, radio and newspaper is very important one in creation of energy conservation awareness in this sub sector.

28. Energy conservation programmes/activities, first rank goes to inclusion of the subject in educational curriculum with 23.20 percent weighted score, 17.93 weighted score for organizing
exhibitions got second rank, third rank has been occupied by launching of trainings facilities with 16.93 percent weighted score for arrangement of practical demonstrations got the fourth rank, fifth rank was occupied by establishment of separate department with 11.87 percent weighted score, whereas energy management and programs and energy auditing for energy saving with 9.47 percent and 5.93 percent weighted score rank as sixth and seventh respectively.

29. About the role of semi-government and charitable organizations in creation of energy conservation awareness 44 percent respondents felt it positive while other 56 percent respondents felt that these agencies were ineffective. Therefore, these agencies should be more careful in this regard.

30. Regarding the role played by media in creation of energy conservation awareness only 29 percent respondents reported satisfactory views and others 71 percent respondents were not satisfied. Taking the views into account the media should play an effective role for promoting energy conservation.

31. There is a vast scope for use of solar energy in this sector but only 2 percent respondents used solar energy. Therefore it is necessary to propagate the use of solar energy.

32. In case of promotion for energy conservation by business association only 28 percent respondents experienced a positive role. Thus associations must be so active for promotion of energy conservation. Therefore, positive role of associations in
regard is very important in creation of energy conservation awareness.

33. Regarding LPG conservation awareness and expenditure of LPG, it was observed that highest number of respondents belonged to the expenditure group of Rs. upto 100000 to Rs. 150000 followed by 90 percent in the expenditure group of Rs. 30000 to 40000, 87.50 percent in the expenditure group of Rs. 50000 to 100000 about 85 percent in the group up to Rs. 10000, Rs. 10000 to 20000 (84 percent) and Rs. 20000 to 30000 (85 percent). It was low in the expenditure group of Rs. 40000 to 50000 and above Rs. 150000. No particular relationship is found in regarding the level of expenditure on kerosene and number of respondents.

34. Firewood is concerned awareness of energy conservation was found to be 100 percent in the range of expenditure above Rs. 30000, followed by 89 in the range of Rs. 10000 to 20000, 77 percent in range of upto Rs. 10000 and 75 percent in the range of Rs. 20000 to 30000. Lower percentage may be due to higher absolute figures in the respective groups.

It can be said that respondent belonging to different expenditure groups and using different type of energy sources are highly aware about energy conservation awareness.
CLOTH SHOP:

1. Employees of the respondents belonging to the age group above 50 years are 100 percent aware about the shortage of energy sources, followed by 97 per cent in the age group 40 to 50 years, 95 percent in the age group 30 to 40 years. The low percentage (83) is found in the age group of below 30 years. Thus, it can be concluded that higher aged cloth shop owners have created awareness among their employees about energy conservation. Aged respondents encourage others for energy conservation. In general about 97 percent respondents employers are aware of electricity shortage.

2. In case of caste category encouragement to others for energy conservation, cent percent respondents are from SC/ST and OBC category and 96 percent respondents are from Open category who took initiative in promotion of energy conservation. The overall percentage of this parameter comes to 97 which is satisfactory.

3. In case of level of education, matriculates 96 percent respondents were aware, and lower than matriculates the percentage was 89 percent. It was negligible in case of illiterate.

4. Regarding shortage of electricity, about 99 percent employees were found to be aware in business operated by owners, followed by 94 percent in case of business run by servants and 93 percent in business operated by family members. High
awareness is observed in the business carried out by owners themselves and servants. Cloth owners are judicious about the use low electricity consuming instruments in shops.

5. The measures adopted for reducing electricity bill, first rank goes to switching off electrical equipment at unnecessary time with 37 percent weighted score,

6. On the basis of views of the respondents that newspapers, television and radio play a crucial role in creation of energy conservation.

7. Effectiveness of advertisement in promotion of energy conservation is found between 5 to 25 percent in this sub sector.

8. The effectiveness of energy conservation programmes, first rank goes to inclusion of subject in educational curriculum organizing exhibitions got the second rank. Respondents stated providing training facilities which is third rank. Arrangement of practical demonstration got fourth rank with 16.33 percent weighted score, whereas establishment of separate department and energy management and fuel efficiency programmes for energy saving ranks as fifth and sixth respectively.

9. It may be concluded that low and high expenditure groups of respondents are found to be aware of energy conservation.
Banking, Insurance and Hospitals

1. Cautiousness about energy conservation, it is observed to be 100 percent in case of strength of employees more than 50, followed by 93 percent in case of group 25 to 50 and 90 percent in case of the group of employees below 25.

2. It is observed that the cautiousness level is high in places where there are limited employees are working. Whereas the cautiousness level is low in case of large number of employees. This may be due to persistent attitude and understandings of employees.

3. Newspaper ranks first in creating awareness with 18 weighted score followed by television with 17 percent. Weighted score, awareness about limited availability of energy sources got third rank.

4. The role of newspaper, televisions, radio, seminars, meetings and awareness about limited source are ranking in importance in creation of energy conservation awareness.

5. Effectiveness of advertising by media in promotion of energy conservation is found to be between 5 to 25 percent.

6. For energy conservation awareness inclusion in educational syllabus rank first, followed by providing training facilities and arrangement of practical demonstrations. Fourth rank goes to organizing exhibitions. Fifth rank is occupied by implementing a
programme for energy management and efficiency. Whereas establishment of separate department and energy auditing for energy saving rank sixth and seventh respectively.

Suggestion:

1. It is observed that in general the role of various media is not so satisfactory in creation of energy conservation awareness in this district of different sectors. Therefore, it is necessary that media should take more initiatives for promotion in creation of energy awareness.

2. It is observed that all categories respondents reported the inclusion of the matter in educational curriculum for better result in energy conservation. Therefore, government should positively consider their expectations and initiate appropriate measures for inclusion in educational curriculum.

3. About measurement and monitoring of energy conservation practice very few respondents are observed as followers of this practice. Therefore, it can be suggested that government should make it compulsory to adopt the above cited practices on its own or through associations.

4. On the basis of survey it is widely observed that government and funding agencies should provide grants at low interest rate simplifying the loan sanctioning process. Therefore, government
and funding agencies should make the procedure for funding easier and quicker.

5. Training programmes for energy conservation are observed as useful in energy conservation. Therefore, government, associations and organization should take more initiative in organizing self programme for the benefit of consumers and nation.

6. In this district about all the industries are small scale industries. As they cannot offered the expenditure on training programmes for employees on energy conservation. Therefore, it is necessary to make adequate provisions for training of the employees about energy conservation by the association/government at reasonable cost.

7. In this district almost all industries are small scale industries but there is no provision for compulsory audit of energy due to very less energy consumption. However, a pool of energy audit may suggest many measures for energy conservation through energy audit. It may be strongly suggested that PCRA should appoint a permanent or team of energy auditors on adhoc basis.

8. In case of transportation a general observation is made that no specific mileage is made compulsory due to this petroleum product are not utilized judiciously. Therefore, excessive petroleum products are utilized. Henceforth, it is necessary to
make it compulsion of mileage / km for conservation of these resources.

9. About rationing of energy resources it is observed that except household sector, it is not practicable in other sectors because they are businessminded. Therefore, rationing can be applied in household sector only.

10. In case of driving habits two and three wheeler owners are found more aware because they drive the vehicle themselves. More than three wheeler vehicle are operated by private drivers and therefore, fuel efficiency in this category is observed low. It is needless to say that four wheeler owners must take care and promote the drivers regarding driving habits and energy conservation.

11. In case of cooking appliances there is further scope for energy conservation through the use of pressure cookers.

12. It is found that very limited incentives are provided in the various sectors. There is lot of scope is for energy conservation by offering incentives, such as fiscal, tax and subsidy etc.

13. Energy issue, according to majority, is not a serious one. Less effective measures like 'education', popularization of solar cookers and voluntary conservation, rather than more effective ones like high pricing and rationing are recommended as measures to be undertaken to effect energy conservation in the
domestic sector.

14. In the household sector, energy conservation measures may include development of more efficient heating methods and appliances, such as high efficiency wood burning stoves, smokeless chulas, biogas stoves etc. laying down efficiency standards for domestic appliances. Inter-fuel utilization for replacement of kerosene, and development of suitable biofuels for domestic use.

15. One needs fiscal incentives/disincentives for such a reversal of past trends. One needs better road planning, better town planning-putting different office and residential complexes adjacent to each other a better and more thoughtful plan for urban development for the coming generations. Staggering of working hours with better public transport (which would be more easily possible with staggered working hours) are small measures but can help to both improve the quality of life for commuters and save on fuel.

16. More than ever it is therefore necessary for us to recognize that all citizens must share the cost of proper environment management, that we cannot ignore the social costs imposed on a section of society by our development programmes. And these costs the cost of rehabilitation of the outset, the cost of restoration of environmental.
17. Looking to the limited reserves of oil, it is felt that production of private automobiles should be discouraged and positively stopped over a period of time, say by 1990. Public transport system including taxies should be increased. Few automobiles required for public taxis can be imported. Performance measures in terms of kilometer / liter should be laid down for buses and trucks.

18. The vehicle body change over to radial tyres are some of the measures which could result in better fuel utilization.

19. In the transportation sector, fuel economy measures are necessary through improvements in existing designs and evolution of new designs. Alternative fuels and battery powered vehicles show some promise.

20. The transport sector is essential to development of our nation's economy. However, this sector is also conspicuous in terms of its being a guzzler of fuel. Transport sector accounts for consumption of over 50 percent of petroleum products in the country. While some efforts are on to go in for interfuel substitution with compressed natural gas and Methanol, the same however, cannot be realized in significant terms till the end of the century. Hence, the inevitable dependence on petroleum fuels in this sector till the turn of the century and even beyond.

21. More than 50 per cent of petroleum products are consumed in the unorganized sector by million of housewives, scooterists,
motorists, bus/truck operators, etc. It is difficult to reach them individually and so various media like Press, Television, Radio, Hoardings, Vans, etc. are used to communicate our message to them. Also various consumer meets, seminars are conducted where experience on successful conservation of forts as also new ideas for the conservation are exchanged.

22 There is a strong need to develop this energy consciousness at every level, starting from an individual to the nation. In this, industrial for organization can play a very crucial role not only of advocating the cause and increasing general awareness about need for energy conservation but also by demonstrating ways of achieving efficient methods of using energy.

23. The need to have energy audit and energy measurement. There are standard well-established techniques for this.

24. Energy audit by competent professionals be made compulsory. If required, the law may be suitably amended to make attachment of such audit reports compulsory. This curtails qualitative/perfunctory reporting and ensures full and fair disclosures.

25 Organizing an energy conservation plan, programme, measures, energy consumption is reported reviewed every month.

26. Industries generally shy away from making investments in energy conservation. The Inter Ministerial Working Group on
energy conservation had recommended the setting up of a Rs. 1 billion revolving fund with concessional interest rates.

27. Some kind of norms for energy consumption for different processes / units of any organization would need to be devised so that the actual consumption can be compared with these norms. These norms can be estimated on the basis of a large number of trial runs for any process and then selecting the figures corresponding to the most efficiently operated trial run as a norm.

28. Industries by and large have not responded to developments taking place in the energy conservation technologies. Lack of enthusiasm is due to:

a) The risks associated with the adoption of new techniques or equipment.

b) Lack of information on performance, reliability and economics of new equipment.

c) Relative weakness of energy conservation schemes compared to energy supply augmentation projects.

d) Further obstacles to the penetration of capital intensive measures accentuated by:

i) Lack of awareness or documentation of energy conservation schemes. Often demonstration projects go a long way in promoting energy efficiency.
ii) Rational policies for pricing of energy and reduction in customs duty on equipment or devices that are not being currently manufactured in the country.

iii) Investments in energy conservation is subject to extremely stringent profitability criteria. Mobilizing equity capital for implementing the energy conservation projects is also constraints.

The main barriers to improvement appear to lie in management attitudes, practices and policies. There is often a lack of knowledge of what can be done to improve energy management.

Monitoring and Target Setting Overcomes the barriers by:

Controlling energy use

Reducing costs

Optimizing use under varying conditions

Providing useful and timely information

Setting targets

Assessing and maintaining improvements

Monitoring and Target Setting is a management technique to control energy costs by integrating energy management into the existing site management structure with the following objectives:

To allocate responsibility for energy use to managers.

To identify standards
To identify standards
To set realistic targets
To improve information on performance
To optimize operating practices
To improve general awareness

It becomes all the more significant in the light of increasing competitiveness in industry due to the recent economic liberalization. Energy conservation, thus, is a crucial issue today, especially for the industry, since it consume about 50 percent of the commercial energy among the major sectors of the Indian economy. The scope for energy conservation is substantial in industries. Various studies have estimated the energy conservation potential of 25 - 30 % in Indian industries. Keeping in view the imperative need to conserve energy and a substantial potential for it, various energy conservation policies and programmes have been initiated by the government and other agencies, from time to time. These include energy pricing policy, fiscal incentives, setting standards, educational and training programmes, research and development etc. Undoubtedly, timely action by the government through policy intervention have created a conducive environment to foster rational use of energy.

Fiscal Incentives - The government shall have to provide fiscal
incentives linked to energy savings and tax concessions, rather
than subsidies.

Legislative Measures- the government shall have to develop an
Energy Conservation Act to enforce punitive action under the
law and ensure strict implementation.

There is without doubt, considerable scope for energy
conservation. This has to be achieved through a combination of
appropriate pricing policy of fuels, fiscal and financial incentives
for improvement in the efficiency of fuel burning equipment and
technological improvements. Encouragement of co-generation,
provision of technical advisory services and expansion of design
and testing facilities have been the major measures taken in
respect of manufacturing industry. In long distance road
transport, which is the single largest user of petroleum products
in India improvement in the efficiency of diesel consumption is
sought to be achieved through the introduction of multi-axes
vehicles and turbo charged engine. But there are limitation.

Energy conservation alone is not viable, one needs to look into
quality, productivity, efficiency, and working conditions.

Hardware solutions alone are not effective concentration on
human resources is essential.

Short payback solutions with reasonable investment.

Financing of energy saving actions.
Confidence in the market, legal conditions, competition from large-scale industries, environmental regulations, all must lead to willingness to invest.

Energy conservation in SSI very recent, there is a pressing and need for awareness, and bringing out the best in employees by participative training, optimization of plants, retrofits by heat recovery etc.

Need for training, both in-house and through institutions, interaction between owners, employees, and non-permanent staff. Need to look into the implementation frame, which are the institutions that need to be approached.

Pricing is an essential instrument of energy demand management not only because of its direct effect on the level of energy consumption, but also because it indirectly affects consumption by influencing the choice of energy using technology. If energy prices are set below the economic cost of supply, the working priorities may be set for investments that will consume energy and technologies may be chosen whose use is not in the nations economic interest.

It is seen that there is huge potential for conservation of the electrical energy being generated and put to use in various sectors, about 20 to 30 percent of the energy may be conserved. This can go long way in meeting the shortage between the demand and supply which is a serious problem in country. The
programme of conservation of energy should be launched by the government in a big way. With the cooperation of big business houses, technical institutions, financial institutions, other non-governmental organization the media and the consumers we may achieve good results in this practically non-existent field of importance. Besides, measures suggested in the paper, a national campaign to educate and create awareness amongst the consumers at all levels about the importance of conservation of energy through media is the need of the hour.

37 It is essential that a high degree of awareness about the need and scope of energy conservation is created both among the general public as also among all categories of users of energy. For this purpose, while the fullest possible use must be made of the mass media for spreading the message to the general public, special target groups must be educated through seminars, workshops and exhibitions etc. as well as through the publication of studies and success stories based on the actual experience of those organizations which have already benefited by introducing energy conservation in their plants and undertakings.

38 While the pace of adoption of energy conservation methods in India falls far short of the needs of the country, the basic causes are partly lack of information and partly attitudinal factors. Despite the apparently negligible savings at energy
consumption points controlled by individual consumers, the overall picture on the national scale is sufficiently large to call for effective measures to deal with this sector. The exploitation of mass communication electronic media - television and video cassettes - is the best possible way to achieve significant energy savings.

Various market research studies have shown awareness about PCRA messages amongst 10 to 30 per cent of the various target groups. So we have stepped up our activities in this area by distributing about 20 lac copies of our pamphlets this year against about 3 lacs two years back. Also, efforts are made to improve the pamphlets. For example our messages on Good Cooking Habits for housewives are included in the recipe book for which we received about 60000 requests this year. Similarly, our messages for scooterists have been included in a newly designed booklet for which we have already received more than 25000 requests in last one month.

Although the potential of energy conservation in the Indian economy is large, most of this potential remains unrealized. Efforts for energy conservation were initiated after the first oil crisis in the early 1970's. The emphasis then was on reducing dependence on imported oil through substitution or through efficient utilization of oil rather than on energy conservation per se. While these efforts continued, the basic energy policy was
still oriented towards increasing the availability of commercial energy, including oil, through accelerated expansion of energy supply base.

41 Improving the efficiency with which expanding energy services are provided will be of growing importance to developing countries in the years ahead. Such a strategy minimizes capital diversion, environmental degradation, and oil dependency, while enabling economics to continue to prosper. Two sectors with great potential for improving energy efficiency, the power sector and the transportation sector, stand to gain substantially from such investments.

**Further Scope:**

It can be stated that areas neglected on our part such as energy conservation in agriculture sector, households in rural sector as well as vehicular transporters in rural areas and use of solar energy.