

in the Eighth Five Year Plan was recognized as an impediment in augmenting power supply through additional projects and thus the importance of energy conservation applications is being stressed. The seminar in particular highlighted the urgent need for efficient use of coal in thermal plants. In making its recommendations the seminar emphasised the role of consultancy services as well as import of energy saving equipment at concessional import duties. The seminar also identified reduction of the present 20% transmission losses by at least half in the Eight Plan period as well as reducing distribution losses. Canadian experience in public utilities management, time-of-day metering, peak-load management and retrofitting, renovation and modernization of equipment and other areas is well placed to assist in India's energy conservation program.

6. RENEWABLE/NON-CONVENTIONAL ENERGY

a) Renewable & Non-conventional Sources of Energy

In view of the continued demand pressure on conventional sources of energy and its limitation to serve growing energy needs, it is now generally accepted that renewable energy sources have to play a larger role. In recognition of the importance of renewable and non-conventional energy, the Department of Non-Conventional Energy Sources was set up in 1982.

Considerable R&D work has been continuing in the area of Renewable & Non-conventional Sources of Energy. The programmes currently under way envisaged an investment of Rs. 100 crores in 1988-89 of which a little more than half was allocated to the development of biogas equipment. Other areas of continuing research include solar thermal energy, solar photovoltaics, wind energy, improved wood burning stoves (chulhas), etc.

A significant degree of wide-ranging international cooperation has emerged in this field. For example, an agreement with USSR includes development of direct coal-fired combustors/gasifiers, fluidized bed-gasifiers for gasifying different quality coals and development of pulsed MHD generator. A major project under the agreement envisages retrofitting of one of the existing large thermal power plants with MHD power generator. An agreement with the US related to biomass production and conversion and coal conversion projects. A study on Co-gen systems in the U.S. and their integration into the main power systems is presently on. Under an agreement with USAID, funds are provided for R & D work in commercially attractive technologies for conversion of biomass and solar energy.

Under World Bank auspices, pre-investment/project preparation activities have been initiated in the areas of bagasse cogeneration systems, irrigation based mini-hydro systems, commercial scale windfarm development, solar water heating in industrial/commercial residential sectors and the dissemination of improved wood burning stoves. A follow-up action calls for the development of two or three wind farms of aggregate capacity upto 100 MW based on wind turbines of 200-300 KW unit size. A variety of R&D work is in progress in collaboration with France, Canada, Denmark, Netherlands and the EEC, which include such projects as solar thermal chilling plants and ice pack freezers, refrigeration system, etc.

b) Development of Micro, Mini and Small Hydro-Electric Projects

The development of micro, mini and small hydro-electric projects has been engaging the attention of the Department of Power in the context of supply of electricity to remote areas.

Micro, mini and small hydro-electric projects are at present being executed under the State plans. State Governments have been empowered to undertake the implementation of the schemes, the total cost of