ENERGY PLANNING AND MANAGEMENT FOR DISTRICT DEVELOPMENT

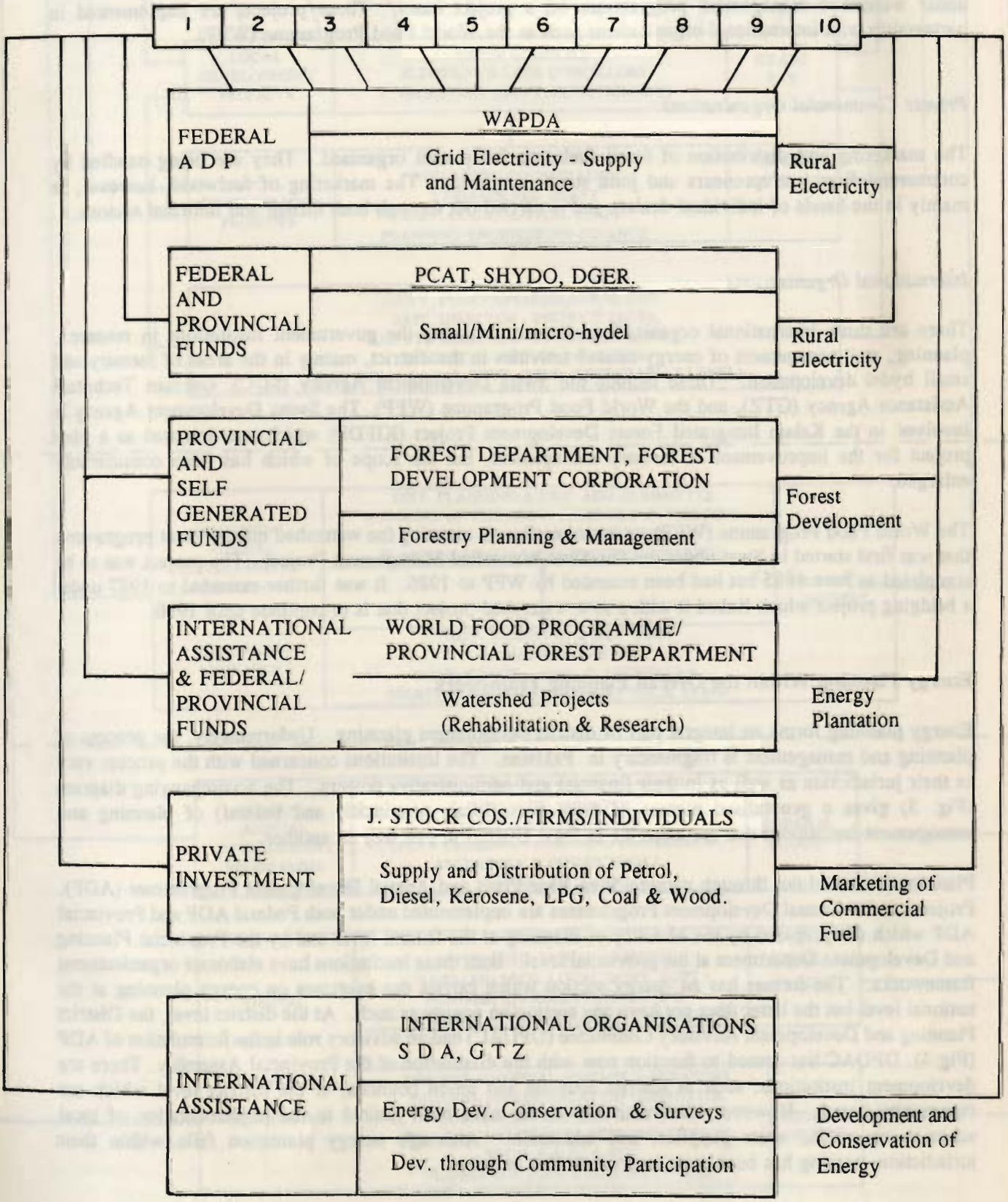
Energy Institutions

Currently, there are three types of institution in the district that play important roles in energy planning and development (Fig 2). These include government institutions, commercial organisations, and international organisations.

Government Institutions

The government institutions are concerned with the planning and management of two forms of energy, i.e., electricity and biomass. The Water and Power Development Authority (WAPDA) deals with rural electrification through the grid. However, efforts have also been made in recent years to reinforce grid electrification through the provision of micro-hydels. Two solar energy plants and about a dozen biogas plants have also been installed in the area.

FIG. 2 : INSTITUTIONS CONCERNED WITH ENERGY PLANNING AND MANAGEMENT IN DISTRICT SWAT



The Pakistan Council for Appropriate Technology (PCAT), Islamabad, the Small Hydel Development Organisation (SHYDO), and the Directorate General of Energy Resources (DGER) have been active in this sector. The biomass energy (forestry sector) is under the control of the Forest Department for planning and management purposes. The research and rehabilitation work in forestry is being undertaken under watershed management programmes on a project basis. These projects are implemented in partnership with international organisations such as the World Food Programme (WFP).

Private Commercial Organisations

The marketing and distribution of fossil fuels are fairly well organised. They are being handled by commercial firms/entrepreneurs and joint stock companies. The marketing of fuelwood, however, is mainly in the hands of individual dealers and is carried out through both formal and informal sectors.

International Organisations

There are three international organisations that are assisting the government institutions in research, planning, and management of energy-related activities in the district, mainly in the areas of forestry and small hydel development. These include the Swiss Development Agency (SDC), German Technical Assistance Agency (GTZ), and the World Food Programme (WFP). The Swiss Development Agency is involved in the Kalam Integrated Forest Development Project (KIFDP) which was initiated as a pilot project for the improvement of forestry management, but the scope of which has been considerably enlarged.

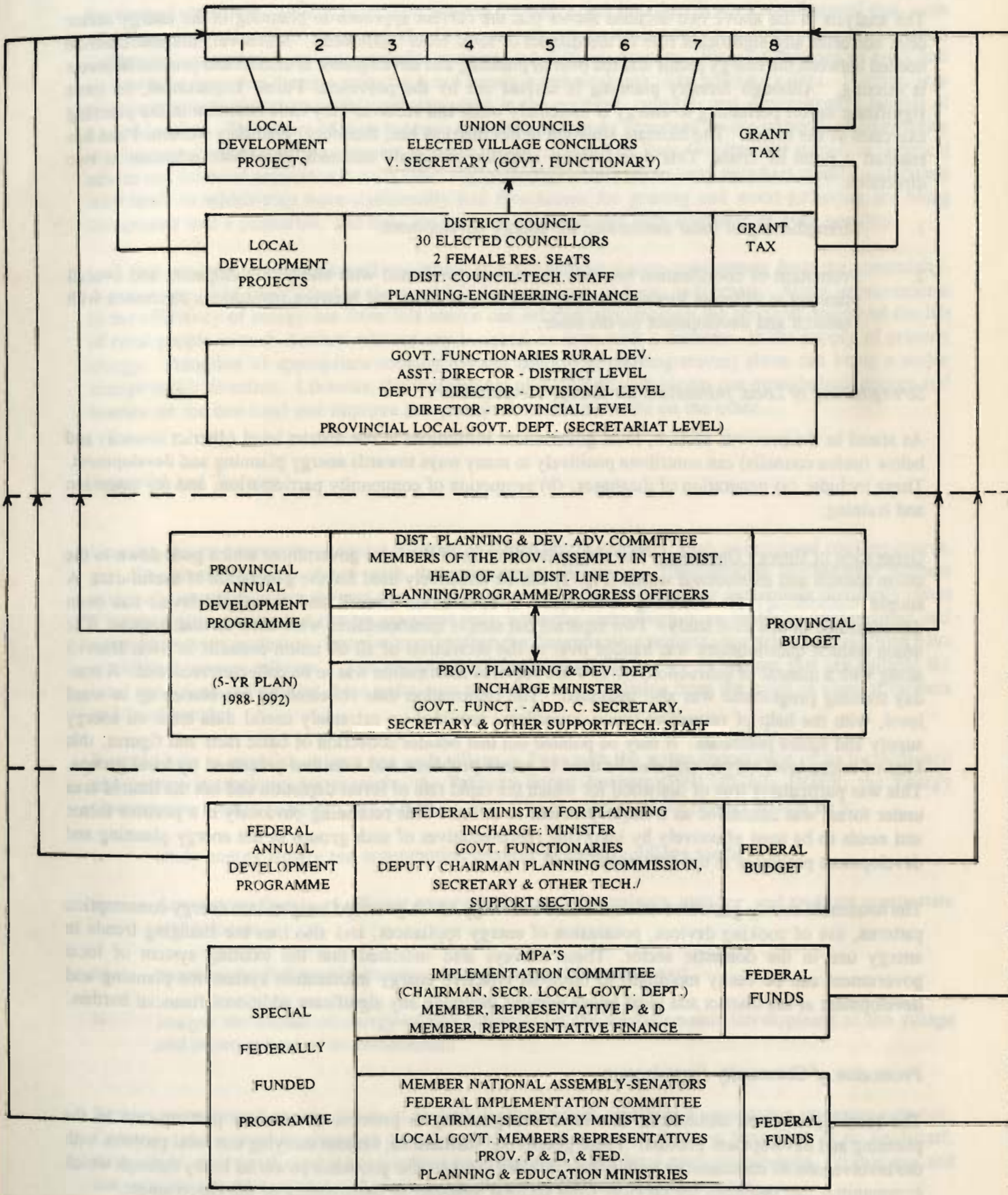
The World Food Programme (WFP), as stated earlier, is assisting the watershed management programme that was first started in Swat under the Dir-Swat Watershed Management Project. The project was to be completed in June 1985 but had been extended by WFP to 1986. It was further extended to 1987 under a bridging project which linked it with a new watershed project that is to continue until 1990.

Energy Planning Within the Overall Planning Framework

Energy planning forms an integral part of district development planning. Unfortunately, the process of planning and management is fragmentary in Pakistan. The institutions concerned with the process vary in their jurisdiction as well as in their financial and administrative powers. The accompanying diagram (Fig. 3) gives a generalised picture of three tiers (local, provincial, and federal) of planning and management institutions that are effective in Swat District in one way or another.

Planning is carried out through national Five Year Plans and Annual Development Programmes (ADP). Projects under Annual Development Programmes are implemented under both Federal ADP and Provincial ADP which are prepared by the Ministry of Planning at the federal level and by the Provincial Planning and Development Department at the provincial level. Both these institutions have elaborate organisational frameworks. The former has an energy section which carries out exercises on energy planning at the national level but the latter does not have any section on energy as such. At the district level, the District Planning and Development Advisory Committee (DPDAC) had an advisory role in the formulation of ADP (Fig 3). DPDAC has ceased to function now with the dissolution of the Provincial Assembly. There are development institutions, such as district councils and union councils, at the district level which are community based. However, their activities so far have been limited to the implementation of local schemes on roads, water supplies, and education. Although energy plantation falls within their jurisdiction, nothing has been done to promote this activity.

FIG. 3 : INSTITUTIONS INFLUENCING OVERALL PLANNING PROCESS AT DISTRICT LEVEL



Crucial Aspects of Energy Planning

The analysis in the above two sections shows that the current approach to planning in the energy sector does not offer any significant role to the district or local level institutions. Moreover, the coordination needed between the energy sector and the overall planning and development at district and provincial levels is missing. Although forestry planning is carried out by the provincial Forest Department, its most significant aspect pertaining to energy is extremely weak and receives very little attention in the planning exercises of the sector. The biomass situation in hill districts has, therefore, gradually worsened and has reached a point of crisis. This deteriorating situation obviously demands immediate attention in two directions.

1. Strengthening of local institutions for energy development.

2. Promotion of coordination between institutions concerned with energy development and overall planning at different hierarchical levels on the one hand and between institutions concerned with research and development on the other.

Strengthening of Local Institutions for Energy Development

As stated in the previous section, local government institutions at the district level (district council) and below (union councils) can contribute positively in many ways towards energy planning and development. These include: (a) generation of databases, (b) promotion of community participation, and (c) extension and training.

Generation of Energy Databases. The elaborate structure of the local government which goes down to the union council and its electoral wards (Fig. 3) can be effectively used for the generation of useful data. A simple methodology for obtaining information at both union council and household levels has been demonstrated in this case study. Two separate but simple questionnaires were used for the purpose. The union council questionnaire was handed over to the secretaries of all 69 union councils in Swat District along with a manual of instructions on how the required information was to be collected/recorded. A one-day training programme was also instituted. The information thus collected by secretaries up to ward level, with the help of respective union councilors, provided an extremely useful data bank on energy supply and future potentials. It may be pointed out that besides collection of basic facts and figures, this kind of micro-level survey can also be used to assess problems and solutions perceived by local groups. This was particularly true of fuelwood for which the rapid rate of forest depletion and not the limited area under forest was conceived as a major problem or stress. This reckoning obviously is a positive factor and needs to be used effectively by involving representatives of such groups in the energy planning and development processes at the grassroots' level.

The household survey generated extensive data on energy which provided insights into energy consumption patterns, use of cooking devices, possession of energy appliances, and also into the changing trends in energy use in the domestic sector. These surveys also indicated that the existing system of local government can be easily mobilised to build an effective energy information system for planning and development at the district and local levels without incurring any significant additional financial burden.

Promotion of Community Participation

The local government institutions also need strengthening to promote community participation in the planning and development process. These grassroots' institutions, besides carrying out local projects with the involvement of communities within their jurisdiction, can also provide a powerful lobby through which communities can negotiate for services from sectoral agencies or departments of the Government.

Unfortunately, the role of Local Councils in development efforts has mostly been underrated by planners, and is quite often overlooked in the implementation of energy projects, resulting in their failure to achieve the desired objectives. Energy plantation projects provide a case in point. It has been observed that, even when the political will is there and the funds are allocated, implementing a large-scale afforestation (plantation) campaign is an unexpectedly complex and difficult process. Planting millions of trees and successfully nurturing them to maturity is not purely a technical task, like building a dam. Further, tree planting projects almost invariably get enmeshed in the political, cultural, and administrative tangles of a rural locality. The nature of their success, therefore, is largely governed by the intensity of community involvement through local government or other means. Central or State Government stimuli in technical advice and financial assistance in such cases are ineffective unless community members clearly understand why lands to which they have traditionally had free access for grazing and wood-gathering are being demarcated into a plantation, and they are apt to view the project with suspicion or even hostility.

Last, but not least, conservation efforts cannot succeed without strong commitment from the community. A major source of energy fuel in the rural hill districts, such as Swat, is biomass. Slight improvements in the efficiency of energy use from this source can substantially improve the physical quality of the life of rural people in such districts without any increase, or even with a decrease, in the supply of primary energy. Adoption of appropriate cooking devices (improved cooking-stoves) alone can bring a major change in this direction. Likewise, the replacement of dung fuel with biogas can provide both energy and manure on the one hand and improve the quality of the environment on the other.

Extension and Training

Usually, energy programmes require a system by which end use devices, such as improved cooking-stoves, are disseminated in accordance with the programme objectives. Dissemination mechanisms become extremely important when the end use device is new to the user. Unfamiliar technology obviously raises a number of questions that can be answered only when the technology is successfully implemented and comprehensively evaluated. In order to strengthen the dissemination process, countries such as China have established 'energy villages'. The purpose is to demonstrate the energy techniques that are suitable for local conditions and see that these techniques are practical and reliable from the point of view of farmers and local people.

It would help to establish at least one such village in Swat with the active cooperation of its local council and energy institutions, for example, the Pakistan Forest Institute (PFI), PCAT, DGER, the Energy Conservation Centre (ENERCON), SHYDO, etc. The objectives of the project should be to:

i. study energy supply and consumption patterns to identify village needs;

ii. demonstrate the use of efficient energy devices and disseminate, monitor, and evaluate appropriate technologies;

iii. augment the fuel supply situation through energy plantation; and

iv. analyse the impact of energy-related activities on the socioeconomic development of the village and improvement of its environment.

Besides promotion of energy, the local councils by themselves constitute a very strong extension network. Currently, the energy development agencies at the federal or provincial level have little or no field staff. As a result, their rural energy programmes have suffered. The local councils can help fill this gap and can provide valuable assistance through quick dissemination and extension work.

Institutional Coordination and Energy Development Strategy

The implementation of rural energy programmes requires the involvement of a large number of official agencies working under different departments, private and public manufacturers, voluntary agencies, artisans, R&D institutions, village communities, social organisations, and private individuals. This requires a considerable degree of coordination at the federal, provincial, and district levels. At the federal and provincial levels this coordination should be maintained by the Federal Planning Commission and the Provincial Planning and Development Department respectively.

The Federal Planning Commission has an energy wing for this purpose, but the provincial Planning and Development Department needs strengthening in this respect by creating an energy planning section within it. At the district level, this function should be performed by the District Planning Officer who can also assist as a district level project implementation officer. Besides coordination among the different tiers of planning institutions, there is a great need for networking R&D institutions, manufacturers and other concerned groups, e.g., community organisations and NGOs involved in rural energy planning and implementation.

Finally, the success or failure of rural energy programmes/projects in a district will also be determined by strategies adopted and logistics provided. After a rural energy technology has been field-tested and found suitable for large-scale implementation in a district, the major task for its implementation will involve formulation of strategies on the following:

i. speed or pace of programme implementation;

ii. provision of funds and procedures for disbursing loans and subsidies;

iii. making raw materials available for installation of energy transmitting devices;

iv. creation of infrastructure for manufacturing energy equipment (it has also to be decided whether the public organisations should manufacture it or whether private entrepreneurs should be encouraged by providing incentives);

v. R & D and maintenance network to promote the design of energy equipment, training of artisans and mechanics for fabrication, and installation as well as maintenance; and

vi. monitoring and evaluation to facilitate timely feedback and to assess the success of the programme.