

The idea of using PV technology to improve productivity of market gardening and farming was finally abandoned, hence the prospects of PV technology in Sahel were found in meeting specific domestic electrical needs (lighting, radios and TV sets), in pumping drinking water and in telecommunications.

23.5 TOWARD A NEW PARADIGM FOR RURAL ELECTRIFICATION

The problem of rural electrification has been traditionally handled by conventional means in a process of successive approximations. In this process, the most remote and dispersed population is attracted to larger population centers, which are then served by a mini electrical local grid, fed by diesel gen-sets or small hydroelectric generators. As the load increases, a point is reached at which extensions of the main grid become economically viable. This process is known as *pre-electrification* among electric companies and has been the basic growth mechanism of the interconnected system in rural areas. Although effective from a purely technical-economic point of view, this pre-electrification process has several downsides. From the social point of view, it forces people to leave their place of origin to create larger population centers, which in turn induces the need for the central provision of other services and puts a larger stress on the environment.

The term pre-electrification is being used nowadays by some authors in reference to PV rural electrification and, in some cases such as the CEMIG example above, the operational scheme is also being transported. However, there are a number of reasons to think that using the term pre-electrification in the context of photovoltaics is not appropriate. Furthermore, transporting the concept is bound to cancel the advantages offered by photovoltaics to create a new path for rural electrification. First, from the purely technical point of view, photovoltaics offers the possibility of supplying high quality electrical services even to the most remote sites, without the need for relocating people or eventually having to resort to grid extensions. Because of its modular nature PV systems can grow in pace with the load. Furthermore, this vision is compatible with current trends in the electrical sector toward distributed generation systems, and is supported by the development of more efficient electrical appliances, the miniaturization of electrical technologies and the progress being made in electronic devices for system supervision and load management. There are also environmental reasons that lead the notion that the local generation of electricity using renewable and nonpolluting energy resources is more convenient than building kilometers of electricity lines across ecologically sensitive areas. Local generation of electricity also offers the possibility for local management and, hence, for active community participation in the process of self-development.

On the other hand, there is evidence that the traditional electrification process based on the old paradigm of *Delivering electricity to rural people* has frequently lent itself mainly to fulfill the political need to improve the electrification statistics rather than to serve the real needs of people. Thus, it is not uncommon to observe rural communities with access to the grid, where a good portion of the households are not connected, usually because of lack of money to pay for the connection fee, or because the secondary distribution network only reaches the center of the community, leaving the rest of the population unserved. Therefore, if electricity supply is to be used as a tool for development, that is understood as increased life expectancy, more knowledge and a better