(for a detailed discussion on charge controllers, see [22]). Two schools of thought seem to underline the issue: simple, sturdy, low-tech, low-purchase-cost devices against high-tech, sometimes a bit complex and perhaps lower life cycle–cost devices. The issue is not easy to resolve, especially with so little systematic information coming from the field on the performance of such devices. Taking into consideration that rural areas in developing countries are far from being mature markets for photovoltaics (and for many other goods) and accounting for the illiteracy of the rural population, consumer choice will hardly be a useful parameter to resolve the issue, especially if one considers that a large number of PV rural electrification projects are still being carried out in the "technology push" mode.

The suitability of photovoltaics as a solution to the rural electrification problem is being taken for granted by many advocates of the technology. Unfortunately, few studies seem to have been carried out to assess the performance of SHS now in the field, in a systematic and comprehensive manner. At this stage of technology implementation, information from the field is vital as a feedback mechanism to gauge the efficacy of the PV solution, to improve the chances of overall success and to assure long-term sustainability. Field surveys, however, tend to be expensive, especially where the most remote and isolated communities are concerned, and availability of funds for monitoring and evaluating SHS projects in the field is not obvious.

A 35-man-month field study was recently completed in Mexico, in which 1740 SHS installations (out of around 60 000 installed with government financing) in most regions and communities included in government programmes were evaluated. The study had a three-fold purpose: to assess the physical and operative condition of the systems, to probe the degree of satisfaction of the users and to evaluate the efficacy of measures previously implemented to make the projects sustainable. Preliminary analysis of the information gathered in the study shows that from the technical point of view things look good with most SHS samples performing well (for more details on these results, see [23]). But there are reasons to believe that as systems age, the results may change, unless corrective measures are taken.

Introducing photovoltaics in rural areas of developing countries is an innovative exercise in society, with the particularity that a space-age technology is being adapted for operation in a sector of society living, in many cases, at least five hundred years in the past. From this perspective, it is hard (and even dangerous for project sustainability) to ignore the strong connection that must be established between the technology (hardware) and the user. For even the most sophisticated, well-designed and perfectly built piece of PV technology is bound to fail sooner than later, if the ground for seeding it is not properly prepared. This means information, training and local capacity building on the user side, as well as user involvement at every step of the process to make them aware of the important role they play in the solution of their own problems. Similar considerations can be made in connection with the environment (social and physical) in which the PV system is bound to be installed. For instance, anecdotic and written information from the field points to the fact that some PV components designed and built with technical criteria prevailing in advanced, cold countries are not performing well in the tropics where it is most needed. Reasons for this are many, but their discussion is outside the scope of this chapter.