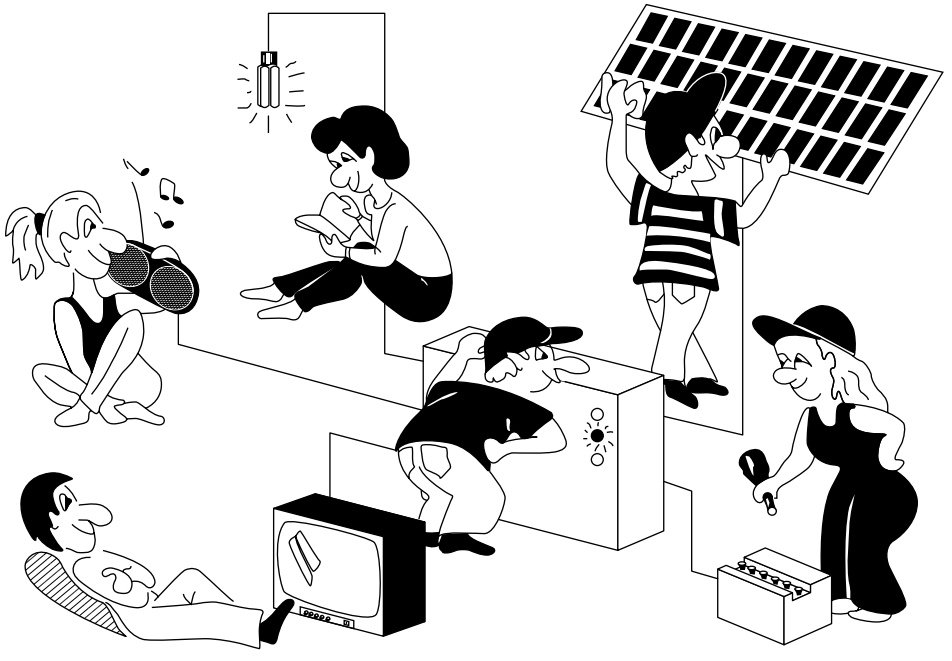

Figure 17.18 A photovoltaic stand-alone system consists not only of technical components but also of the users interacting with the technology on different levels

the particular needs of the intended users, they must be involved from the start in the process of system dimensioning, construction, installation, use and maintenance. The aim of adaptive measures must be to motivate the user to adapt his/her consumption patterns to the electricity generation profile, as one aspect, and at the same time to match the technical system to the demand and usage customs of the users.

17.2.2.8 Economic aspects in off-grid rural electrification

In Figure 17.19(a) the cost breakdown of a solar home system in the first year is presented on the basis of data available in a project on rural electrification carried out by the German Agency for Technological Co-operation GTZ GmbH. As expected, the purchase costs of the different components are the dominating factor. The photovoltaic module typically represents the major single cost component [9].

However, regarding the lifetime costs of such a system after 20 years of operation shows a completely different picture (Figure 17.19b). The proportion for the PV module decreased to about 12% and the costs for new batteries as well as the efforts for maintenance and repair become the most important factors.

The reason for this shift in the cost distribution is the difference in the quality and reliability of the components. PV modules are highly standardised and worldwide-validated certification procedures have been established, both leading to high-quality components. Up to now, no equivalent standards have been available for the balance