Alternative technical schemes to the SHS as a means to provide basic electricity services in rural areas are being tested. Battery-charging stations, where a large central PV array is installed to recharge batteries brought in by the user, who pays a fee for the service, is one such scheme advocated by a number of people. The rationale behind this scheme is that peasants in many parts of the world already use battery-charging points distant from their homes. It is also argued that microbusinesses could develop in remote areas to enhance the chances of sustainability of the electrification process and so, several projects of this kind are underway in various countries. However, recent field studies reveal [24] that this alternative also has several shortcomings, which are forcing project officials and users to switch to SHS as a substitute to the previously used PV battery-charging stations.

The preceding discussion was meant to point out the fact that even though engineers and industries will most likely solve the remaining technical problems facing PV technology for rural applications before this market enters into its mature stage, a number of more complex issues at the technology-user interface remain to be understood and dealt with. The cause–effect diagram of Figure 23.3 is an attempt to show the variety of factors leading to a failed system, and consequently a dissatisfied user. In the long run, the degree of user satisfaction will determine the level of acceptance of PV technology as the solution to the problem of rural electrification.

Technical standards, design guidelines and other elements for quality assurance of PV systems are also important for the sustainability of PV rural electrification projects. A number of these elements are being developed in institutions, professional societies and international organizations around the world. Most of them, however, focus mainly on pure technical (hardware) issues, as is the case of the recommended specifications of the organization Global Approval Program for Photovoltaics (PV GAP) and the standards

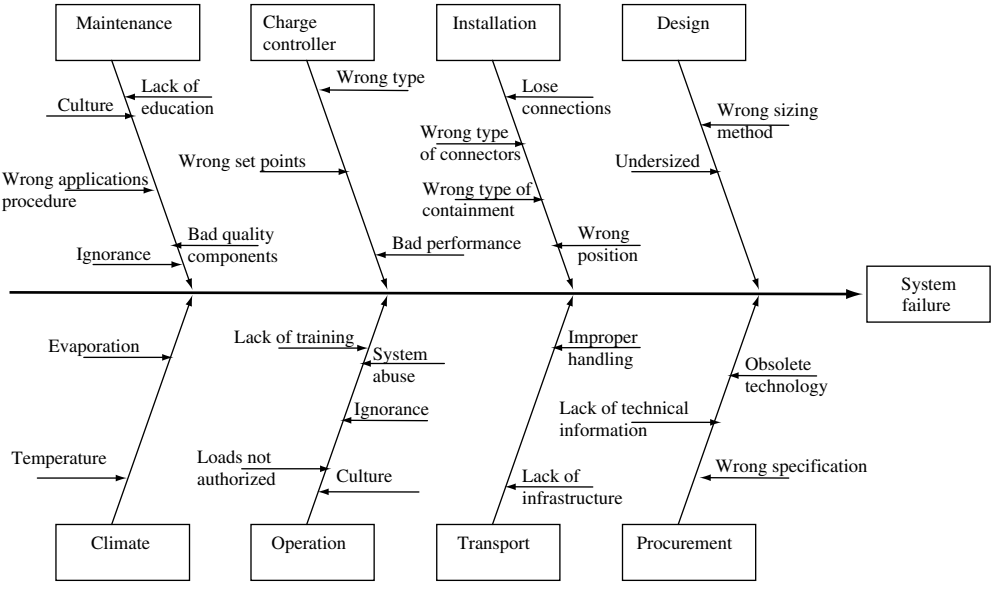

Figure 23.3 Cause–effect diagram showing a variety of factors leading to a failed system