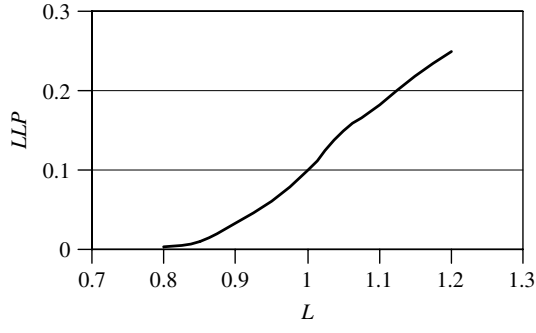

Figure 20.26 Reliability *LLP* as a dependent variable on the consumption *L* for a given PV array and capacity values

LLP value. It is worth mentioning that the same is not true when centralised electricity generators are considered (PV or not), because the total energy consumed by all the families involved shows a much lower standard deviation than that corresponding to the individual consumptions (roughly, the standard deviation becomes reduced by a factor of $1/\sqrt{N}$, N being the number of families), so that it is possible to find single L and *LLP* representative values for the whole served population.

However, even in extremely varying applications, such as SHS, PV-sizing methods based on reliability can be of great help if large-scale programmes become a future reality. This will probably require the development of rigorous engineering: standardisation of different levels of service, technical quality controls and so on. For example, PV-sizing methods based on *LLP* represent an interesting possibility of comparing different alternatives (different offers from various manufactures) on an objective basis, as the *LLP* value respectively associated to each alternative, for the same considered energy service [78].

It is worth considering the question: "How much electricity has to be provided to a rural house in a developing country to be socially and economically acceptable?" Although this question is always at the origin of any PV rural electrification programme, its answer in terms of watthour/day, is far from being clear. Energy consumption data, based on practical experience in developing countries, are scarce in the literature [84], which is paradoxical considering that many thousands of SHS are currently operating in developing countries. Instead, there are a great number of consumption scenarios where, although starting from very different hypothesis concerning the number of appliances and the length of time they are in use, the SHSs finally selected have an installed power of about 40 to 50 Wp. This is because past in-field experience has shown PV designers that such systems are generally well accepted by the rural users, while the same is not always the case when small (20–30 Wp) PV modules are concerned. This way, the SHS scenarios elaborated by PV designers must therefore be interpreted as explanation exercises, rather than as designs for systems starting from an evaluation of actual needs (see Chapter 23 for discussion of rural electrification programmes). So, we must conclude that energy scenarios for rural electrification purposes are still an open question, which need to be explored in-depth.