clearly confirmed by the operating results of ENEL plants, is that the intake power by this type of user . . . is rarely the same on any given day, and it is linked to the particular lifestyle of the people involved, to periods of absence and to the number of occupants of the houses being supplied, and so on". Apart from PV, other types of rural electrification also provide examples. Figure 20.25 shows the distribution of the individual monthly electricity consumption measured along four years in the 63 dwellings of Iferd, a Moroccan village where a small diesel generator set provides 3 h of electricity per day (consumers are metered and pay for their energy use). The large observed spread leads one to question the real meaning of reliability parameters such as *LLP*, and the real usefulness of rigorous PV-sizing methodologies.

It appears that "standard" *LLP* values derived from sizing methodologies are scarcely representative of the realities in the field. The relationship between reliability and load, that is, the function $LLP = LLP(L)$ for a given PV system, can be explored just by extending the previously described simulation procedure to a large number of cases. A certain baseline case has been, first, established by fixing the PV array power and the battery capacity values, C_A and C_S, for a given load, L_{BASE}, and a given reliability, $LLP = 0.1$. Then, the load has been varied from 0.8 L_{BASE} to 1.2 L_{BASE} and the corresponding reliability has been calculated. Figure 20.26 shows the result. Roughly speaking, we can say that an approximately logarithmic relationship exists in such a way that *LLP* decreases one order of magnitude for each 30% of load reduction. This result, together with the observation that real L values are generally found within the range -50% to $+100\%$ of the mean, let us conclude that real individual *LLP* values can vary more than three orders of magnitude (for example, from 10^{-1} to 10^{-4}) in the context of the same SHS project. This nullifies any attempt at finding a single representative

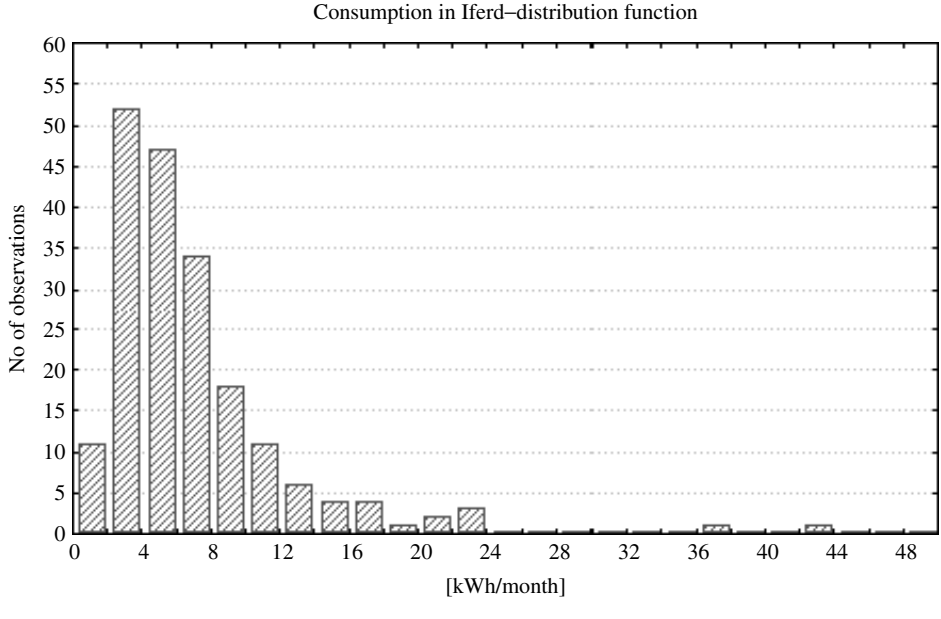

Figure 20.25 Distribution function of monthly electricity consumption in all the Iferd dwellings