At present, the main applications of photovoltaics in rural and remote areas are (1) photovoltaic (car-) battery-charging stations where the charged battery is transported to the electricity consumer, (2) photovoltaic solar home systems for the energy supply of electric lights, radios and simple television sets and (3) photovoltaic powered pumping stations for water supply for human requirements and agricultural irrigation.

In particular, the solar home systems have to be highlighted. As might have become clear from the above discussion, they present today in many cases the technical and economic optimal solution for a basic electrification in the areas under discussion. The market volume is in the order of 400 000 systems a year. System prices show increasingly favourable values (Figure 2.11).

The main barriers to a further accelerated introduction of these technologies into practice are non-technological in character. Appropriate financing schemes, social integration, training of engineers and trade and industry structures have to be developed and efficiently integrated into the societies. Photovoltaics may then become one of the main pillars of rural electrification. A market volume of 15 to 30 GW per year is expected in 10 to 20 years [8].

It has already been mentioned that modularity is one of the important characteristics of photovoltaics. In principle, solar home systems may be upgraded step by step. In suitable cases it will be possible to interconnect the individual systems to form PV village power supplies. Besides the social management of such structures, a prerequisite for their widespread applications is the development and industrial production of appropriate power electronics, load management devices and information schemes. For larger installations, hybrid systems (e.g. diesel/photovoltaic) may dominate the market in the near future. It is also conceivable that village power systems may be interconnected by transmission lines or even connected to the main (possibly weak) grids. All these measures increase the complexity and most probably also the cost of such systems. On the other hand, because of technical redundancies and load levelling effects, the performance of such advanced PV-based electricity supply systems could increase considerably.

	Price (US $)	Price (%)	Lifetime (years)
PV-module (53 W) and support	200	47	>20
Battery (70 Ah)	40	9	4
Battery charge controller	35	8	10
Lamps, wiring, switches	35	8	5
Delivery, installation, retail margins	75	18	-
Duties and taxes	40	10	-
Total	425	100	

Figure 2.11 Cost break down of a typical solar home system