solar electricity is found around 2025; a break even with costs from conventional base-load power plants is not reached in the first half of this century.

The extrapolation of a prize experience curve over several decades bears, of course, a considerable risk. On the other hand, there are good technological arguments that the price-experience curve will continue to decrease in a similar way as in the past for a considerable time span; a strong reduction in the slope of the curve most probably will not be encountered before a further price reduction by a factor of 3 to 5 is reached. It is important (and essential) to mention that most probably this statement is also valid for the balance of system components such as power electronics and so on.

Many conclusions may be drawn from a graph such as that given in Figure 2.5 (based partly on an arbitrary set of parameters). If one aims, for example, at an efficient transformation of today's electricity supply system, one may propose an energy tax on environmentally and socially non-benign energy sources in order to establish competitive market situations at a significantly earlier time. This tax could be based on the internalisation of external costs of the different competing energy supply technologies. In order to allow for a smooth evolution towards sustainability, such a tax should be introduced gradually. If one assumes, for example, a continuous additional tax-induced cost increase of electricity from conventional peak- and base-load power plants of 2% per year, the break even in Figure 2.5 for peak load would occur around 2015 and that for base load around 2030. The public income from such an energy tax could be invested in research and development in the field of renewable energies and in energy efficiency measures. This would support, for example, the continuity of cost reduction of photovoltaics (Figure 2.3) as well as the reduction of the gross energy demand and thus of the energy-related financial burdens.

From an industrial point of view, a strong evolution of PV electricity generation could produce an interesting global market. A long-term price-experience factor $f = 0.82$ (see caption to Figure 2.3) and a market growth rate of 20% per year would generate, for example, the following global markets for PV-modules: 2010 2×10^9 **€**, 2020 9×10^9 **€** and 2030 30×10^9 **€** [8]. The additional market for system components and integration will probably be of the same order. The prospects of such substantial markets are the motivation of today's considerable industrial investments in PV production capacities.

It has been shown so far that if it is possible to maintain a price-experience evolution as shown in Figure 2.3 and if governments adopt a serious energy tax strategy, electricity from photovoltaics may become cost-effective between approximately 2015 (peak power) and 2030 (bulk power). Attractive high-technology markets could develop in the near future. One question still to be answered is 'when will photovoltaics contribute considerably to the global electricity generation?'

In a speculative way, this question may be addressed by stipulating conceivable long-term growth rates for PV electricity generation (Figure 2.6). Rates of 26%/annum results in a growth factor of 10 over one decade. Starting at present-days low level it will – even under these conditions – take at least three to four decades for photovoltaics to contribute in a substantial way to the global electricity demand (for rural electrification see Section 2.3). After this starting period, photovoltaics can become one main supplier of electric energy in the future energy mix. Growth rates of 15% per year on the other hand produce just a growth factor of four over one decade; under such conditions, photovoltaics