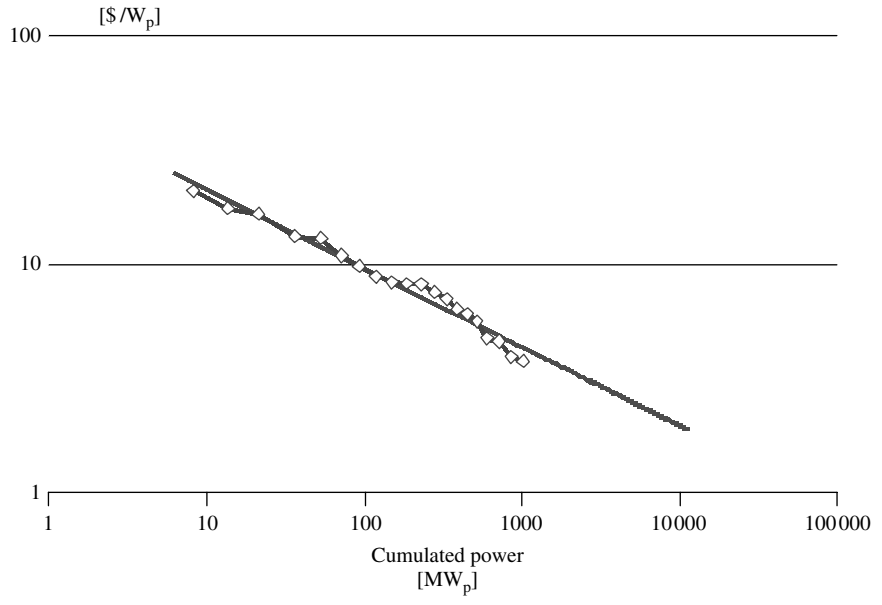

Figure 2.3 Price-experience curve of the photovoltaic market until 2000 [2]. Scale: double logarithmic. The slope of the curve is characterised by a factor $f = 0.8$. This means that a doubling of the photovoltaic shipment resulted in a price reduction down to 80%

chance of at least a break even between PV electricity and conventional electricity prices, given that the external (social) costs of non-sustainable electricity are properly taken into account.

2.2 A LONG-TERM SUBSTITUTE FOR TODAY'S CONVENTIONAL ELECTRICITY PRODUCTION – THE ECOLOGICAL DIMENSION OF PHOTOVOLTAICS

A sustainable development has to respect certain guard rails. With respect to the energy supply system, these are mainly determined by the global warming/CO_2 problem (Figure 2.4). A global warming of more than 2°C (with respect to the pre-industrialised period) and a warming rate of 0.2°C per decade seems to be the upper limits for a development that may be kept under control. These settings are in accordance with the results of recent studies of the International Panel on Climate Change [3].

Since preservation and expansion and especially the transformation of energy systems require important investments, a strategy of large stopping-distances seems reasonable. For example, the German Advisory Council on Global Change proposes a continuous CO_2 reduction rate of 1% per year over the next 150 years [3]. If one strives for a fair and rational distribution of the worldwide reduction obligations, the highly industrialised nations have to reduce their CO_2 emissions until 2050 by almost 80% relative to the 1990 level [3]. This reduction mainly affects the energy sector including fuels for transportation.