

cumulative production over the past 30 years. If the trend continues, the price of $\$1/W_p$ will be reached when the cumulative production reaches 10^5 MW_p.

It should be said that while the annual growth in sales of photovoltaics is quite spectacular, averaging 33% per year from 1995 to 2000, the experience factor of 0.19 is rather mediocre. For example, for semiconductor memories it is about 0.32, although for wind power it is only 0.15. PV technology has not reduced prices very effectively. This supports the idea that R&D must be supported to look for innovative options able to reduce prices beyond the safe path of the experience curve (additional argument for myth 4).

When this cumulative market will be reached can be determined, if we know the demand elasticity S . Technically, this is the logarithmic derivative of the annual market with respect to the price (changed of sign) and shows that one percent of price decrement will produce S percent of market increase. This parameter allows us to determine when in the future a certain level of price is reached [52].

Based on this, the installed PV power is given in Figure 1.7 for reasonable values of the demand elasticity. We can observe a fast initial growth, followed by a period of moderate growth. This second period is determined by the investment that society is willing to invest in this expensive energy technology. Extreme curves of the shaded area correspond to the expenditure for photovoltaics of the case that 0.05% (lower curve) and the 0.2% (upper curve) of the GDP of the industrialized countries is invested every year in PV electricity. As a reference, about 0.3% of the industrialized countries GNP is being given today as aid for development.

In 1992, a study (the RIGES scenario [54]) was presented to the Rio Summit analyzing the possibility of reducing the CO₂ emissions while maintaining a high economic growth rate in the developing countries. The dots represent the amount of photovoltaics to attain the RIGES requirements. In other words, the dots are the amount of installed photovoltaics required to be environmentally relevant and socially advanced. Note that

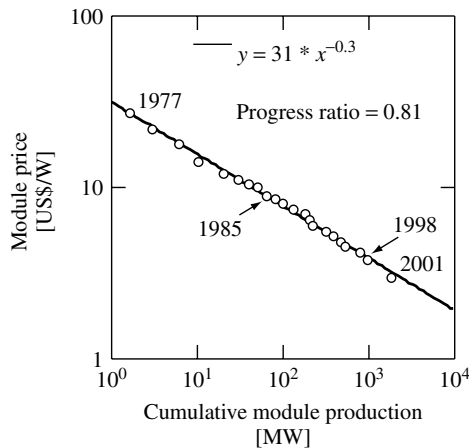


Figure 1.6 Experience curve for photovoltaics from 1976 until 1998 [53]. Straight line is fit indicating an experience factor of $1 - 2^{-0.3} = 0.19$