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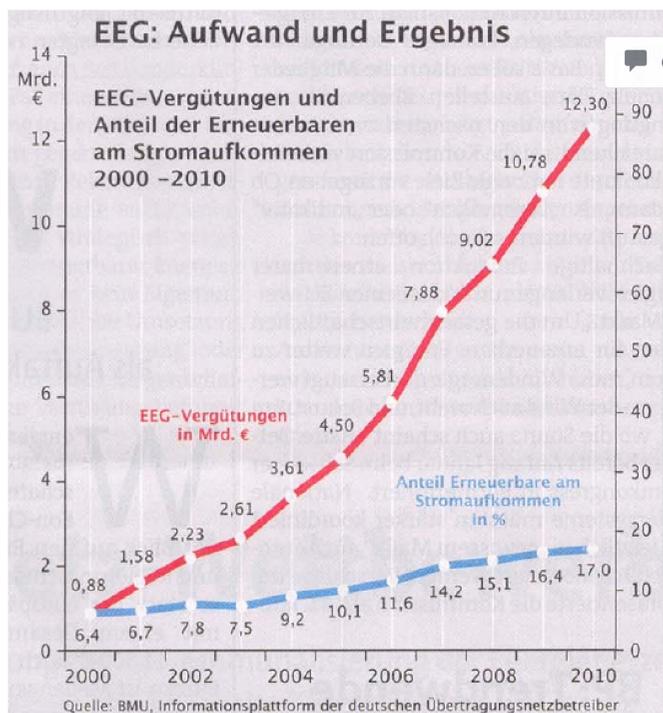
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Germany: feed-in cost versus results

Dr.-Ing Helmut Alt is a professor of the Electromechanical and Informatics department of the FH (Fachhochschule = Technical University) Aachen, and an outspoken realist on climate and energy problems (whose writings I always find very interesting). In a [recent presentation](#) he shows a nice diagram which gives the evolution of the yearly sums spent as feed-in tariff for renewables (red curve, left axis) and the percentage of renewable energy produced in Germany (blue curve, right axis):



A question that comes immediately : is the relationship linear (i.e. is the cost proportional to the result) or is the relationship more complicated ? The usual statistical test to compare different mathematical models is to calculate for each model the goodness of the fit squared (normally called R2, which gives the fraction of the variance explained by the model. R2 = 1 would be a perfect match, R2 = 0 if the model is totally inadequate). I entered the numbers in my Statistica software, and computed 3 different models:

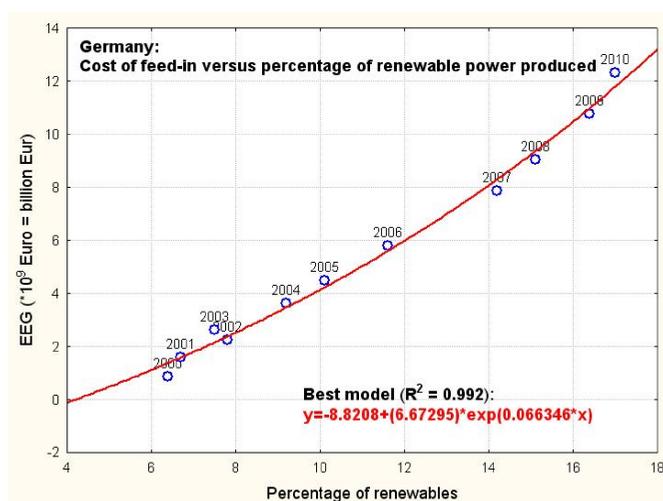
1. an affine model: $\text{cost} = a + b \cdot \text{percentage}$
2. a quadratic model: $\text{cost} = a + b \cdot \text{percentage} + c \cdot \text{percentage}^2$
3. an exponential model: $\text{cost} = a + b \cdot \exp(c \cdot \text{percentage})$

Here are the results, rounded to the 3rd decimal:

linear model:.....R2 = 0.986

quadratic model:.....R2 = 0.991

exponential model:.....R2 = 0.992



All R2's are rather high, but the calculation confirms what eye-balling suggests: the costs seem to rise faster than the result; the exponential model reigns! This comes as a surprise, as the common political wisdom tells that expanding renewables will become cheaper with time. Germany's [BMU*](#) data show that this is not the case, at least for the time period 2000 to 2010.

It will be interesting to follow this rather unwelcome evolution during the coming years; if the exponential model holds, Germany could run into an unbearable cost wall sooner than expected!

*BMU = Bundesumweltministerium

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One Response to “Germany: feed-in cost versus results”

Photomof Says:
February 12, 2012 at 13:43 | [Reply](#)

Costs have been increasing faster than percentages because Photovoltaics are taking up a higher weighting in the pool of technologies contributing to the total EEG assessment. The PV FiTs are falling fast though so we can expect the curves to behave differently going forward.

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