## Four frequently asked Questions about wind Power - and Answers

### 1. Why do we still need feed-in tariffs or renewable-certificates if wind is called a competitive power source?

How come that wind power is competitive when wind lobbies are demanding for feed-in tariffs of Renewables Certificates obligations?

1) To judge financial viability on equal grounds (compare apples with apples) wind farms must to be compared with new power plants from coal, gas or nuclear. When we account for the price surge o coal and gas, wind power is competitive on a life cycle base because the investment cost for turbines (~1 – 1.3 Euro/Watt) is moderate and the fuel cost is zero.

2) There is a structural issue that wind costs (like those of nuclear) are borne upfront and thus market price variations over the next 15 years can seriously damage a project even if the average is higher than the cost of wind electricity. It's like swimming: it does not matter that your average altitude is +10cm if that means spending several minutes at -10cm and the same at +20cm: you die). Gas-fired plants, which tend to have costs that follow (or indeed drive) market prices do not take that risk and are thus seen as less risky to finance. Government support in the form of price stability in the form of feed-in tariffs is therefore something that actually costs the public nothing.

3) Actually, the net effect on consumers of wind is to lower prices for them, as, when wind blows, the marginal price is much lower and applies to all the power generated. The savings to consumers from lower prices when wind blows are already larger than the gross amount of the subsidy given to wind in countries like Denmark, Germany or Spain (and of course, even larger than the net subsidy which is the feed-in tariff minus the market price). So focusing only on the tariff while ignoring the simultaneous effect on market prices would be silly.

4) Ironically, this means that wind will always require a regulated tariff as, the more wind you put in the system, the lower market prices will be (when wind reaches 50-100% of system needs as is already happening in Denmark or Spain, prices come down to almost zero) and wind can never be profitable under "pure" market conditions. So you need wind farms to keep on getting a steady revenue in order to be built; the good thing is that the tariff required can be quite low (in the same range as market prices are today) and never needs to be increased.[1]

***For more information see “wind power in context”, chapter 8, pages 145 and 161 ff.!***

[1] My thanks go to Mr. Jerome Guillet for his valuable hints

## 2. Why are there still coal and nuclear power plants in planning or construction?

*Wind power (with solar) is on the rise worldwide. Market conquest is not to be expected over night, even with cost comparisons increasingly positive for wind power (and solar).*

The main hurdles for market entrance and market conquest are or have been

- a shortage of wind turbines and components – with actual market growth of 30% annually difficult to exceed,
- bureaucratic hurdles such as siting disputes and slow permission procedures
- grid shortages, often caused by grid owners with monopolistic market influence
- defective grid regulations with restricted access and/or prohibitive grid rates for new market entrants

## 3. Why should wind power be cheaper with oil and gas at record lows?

*Why do you think that oil and gas prices play a key role for wind power growth when prices are at a record low?*

The global credit crunch resulted in forced liquidation of global supply chains, as every one liquidated their inventory to raise cash in order to survive. The inventory sales flooded the market to create a false over-supply situation while supply destruction is playing out at in places with high marginal costs such as Alaskan tar sand oil where unprofitable mines are shut down. Some of the world's top oil fields are in production decline. Mexico's Cantarell Oil Field is declining more than 33% a year! Oil prices cannot persist for long at a lower level than the costs of oil from marginal fields to be brought on the market. These costs today are estimated 60-70 $ per barrel in many OECD areas. At this oil price, wind power is a least cost energy source in many regions of the world.

## 4. Where are the “other renewables” beside wind?

*To what extent are “other renewables” integrated in the model?*

The case about solar is integrated within the wind model. Solar is seen as a complement or a substitute for wind, with similar growth expected.

The “other renewables sector” (mainly hydro and some biomass/geothermal) is assumed to grow at an independent rate derived from empirical data. We assume here that mean annual production growth of 2.16 percent over the 1991-2007 period will continue from 2008 to 2040. Derived from the effective capacity concept, this translates into a supposed annual capacity addition of 7.7 GW (CF-100) in 2008, growing to an annual addition of 15.3 GW (CF-100) in 2040. Power production of this sector is supposed to grow from 3134 TWh in 2007 to 6344 TWh by 2040. These numbers are assumed to be identical for all scenarios A-D.