

Funding Wind Energy R&D in Europe The EWI and TPWind

A view from the industry

Henrik Stiesdal
14 March 2011

At the aggregate level we have three main focus areas for R&D



We need to remove three constraints to wind power

1. Eliminate cost constraints

- Develop wind turbines that make customers build projects which produce electricity at competitive prices without subsidies.

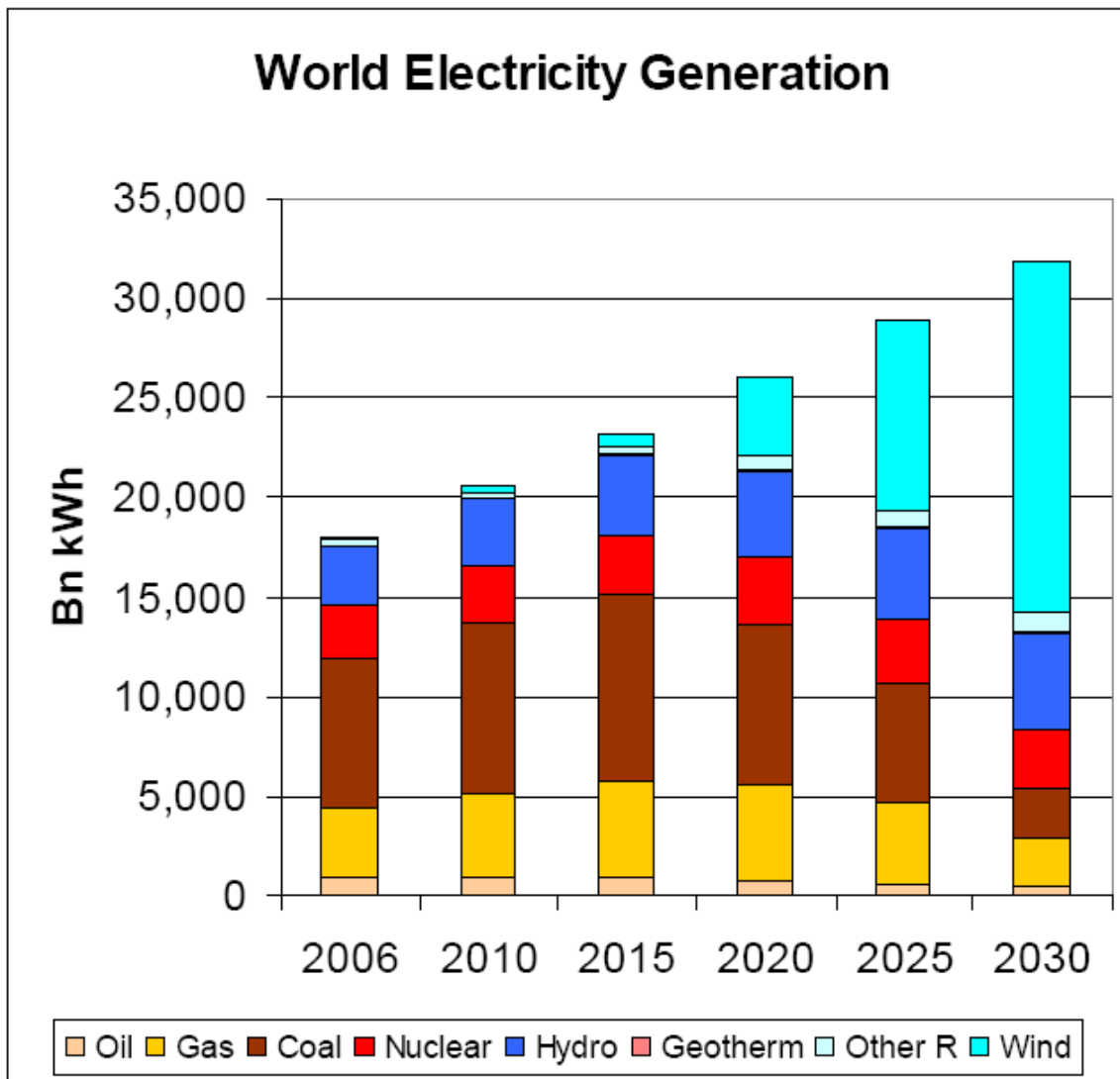
2. Eliminate space constraints

- Create innovative infrastructure and installation solutions to the offshore sector.

3. Eliminate grid integration constraints

- Promote and support grid solutions - Smart Grids, Supergrids, etc.
- Develop solutions to store electricity

In the end, it is all about cost and stability of wind energy



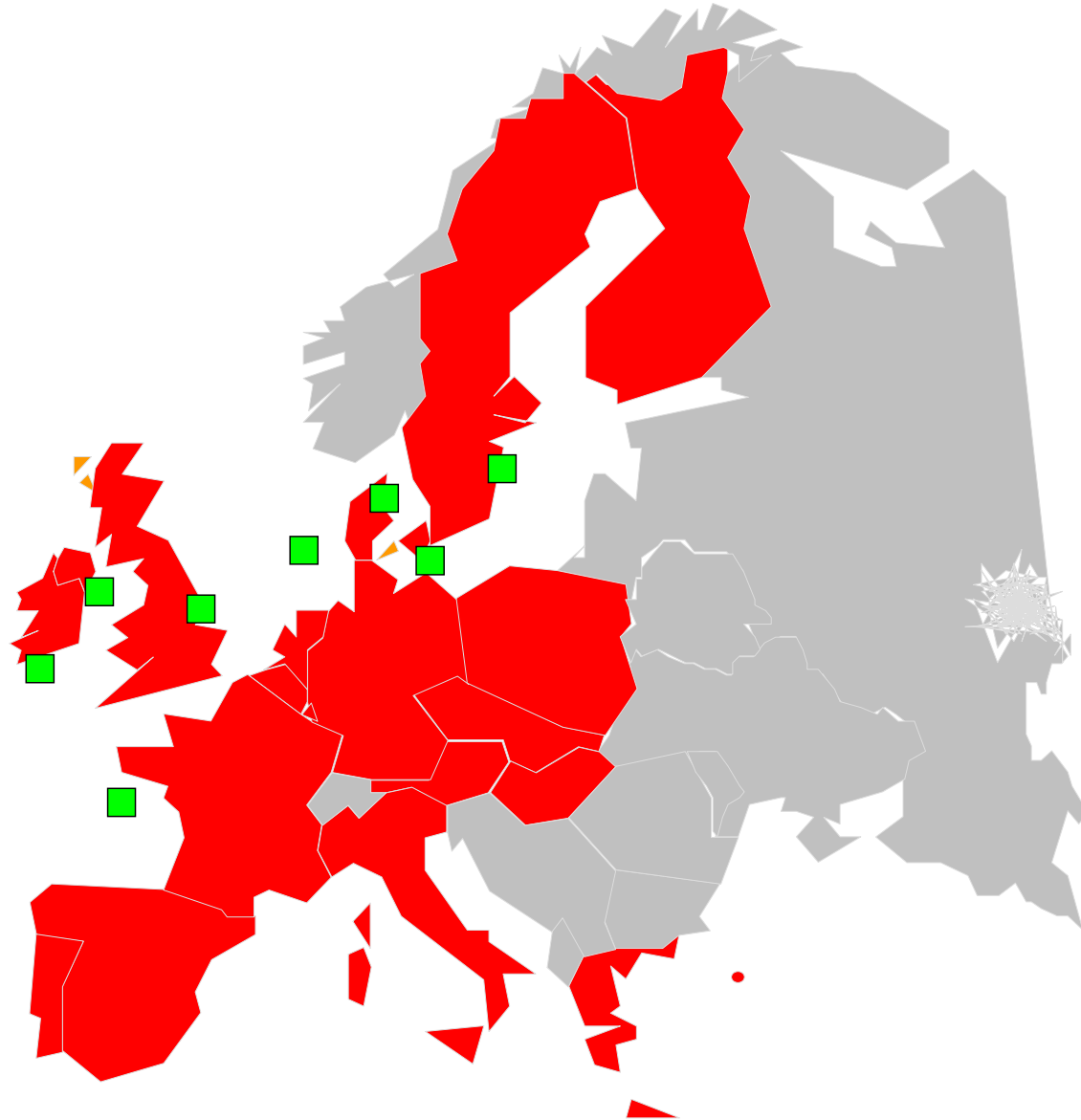
Comments

The “digital” thresholds

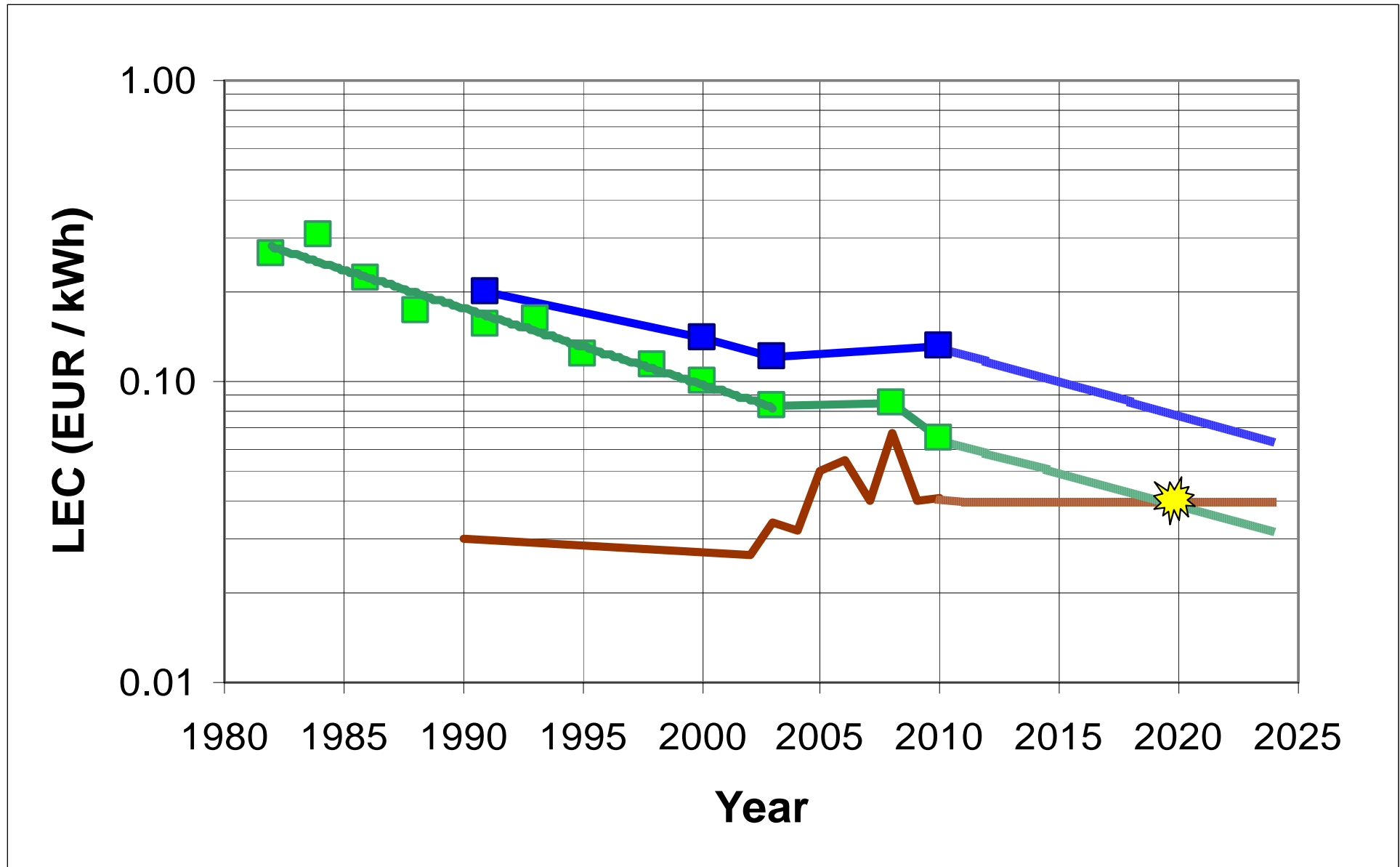
- If wind is more expensive and less stable than other sources, we serve only a politically driven market.
- If we become competitive with other energy sources, we will serve the whole market
- This may completely change the energy world

Eight 100 x 100 km offshore wind farms could produce EU's load (3200 TWh)

SIEMENS



Business as usual will get us there on cost of energy - but it takes its time



Can Industry Deliver the Cost Reductions?

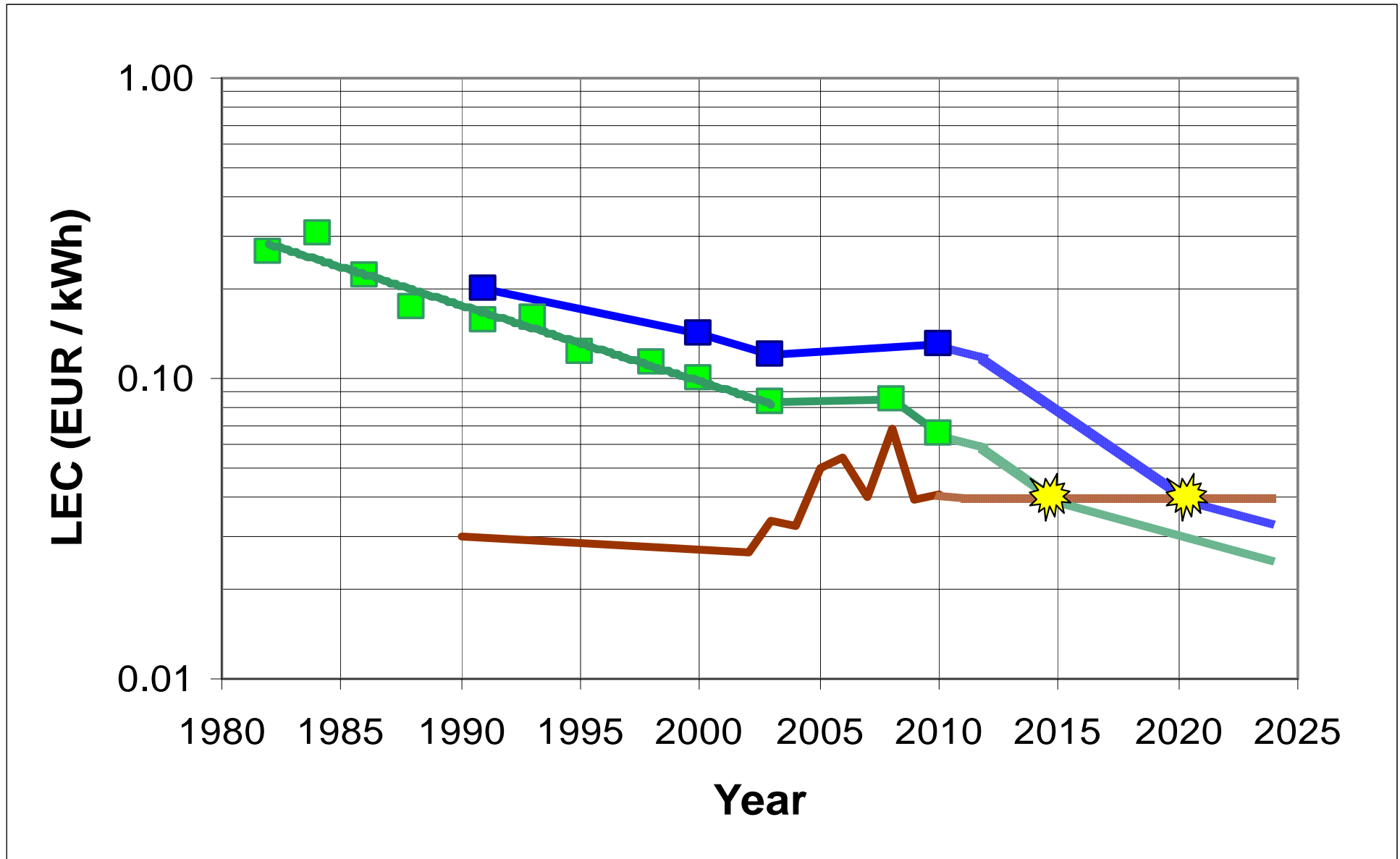
Historically cost reductions have been significant

- Inflation-corrected cost of energy reduced by 40 percent per decade for the first 25 years
- After cost increases during the boom days of 2005-08 costs are now again on a significant downwards trajectory

But with business as usual it will take its time

- Grid parity for onshore wind could take a decade
- Grid parity for offshore wind is not in sight if we stick to business as usual

A time machine could come in handy!



Public support systems for R&D could support the time machine



Is public R&D funding really relevant anymore?

- Several funding schemes have had significant impact
- The EU WEGA programs of the 1990s undoubtedly moved forward the development of larger turbines for several years compared to the predicted development with no funding

But industry is so large and can fend for itself – right?

- Yes, to some extent - industry has grown up and has strong resources for R&D
- Nevertheless, public funding could serve important purposes –
 - Promotion of “major strides” involving “higher-than-normally-though-prudent” risks in R&D
 - Creation of internal visibility and acceptance of R&D investments
 - Creation of long-term sustainable partnerships

Is it then happening?

Is public R&D funding really creating quantum leaps these days?

- Well – not really!
- Or, to be slightly more politically correct, not to the extent that would be possible with the means available

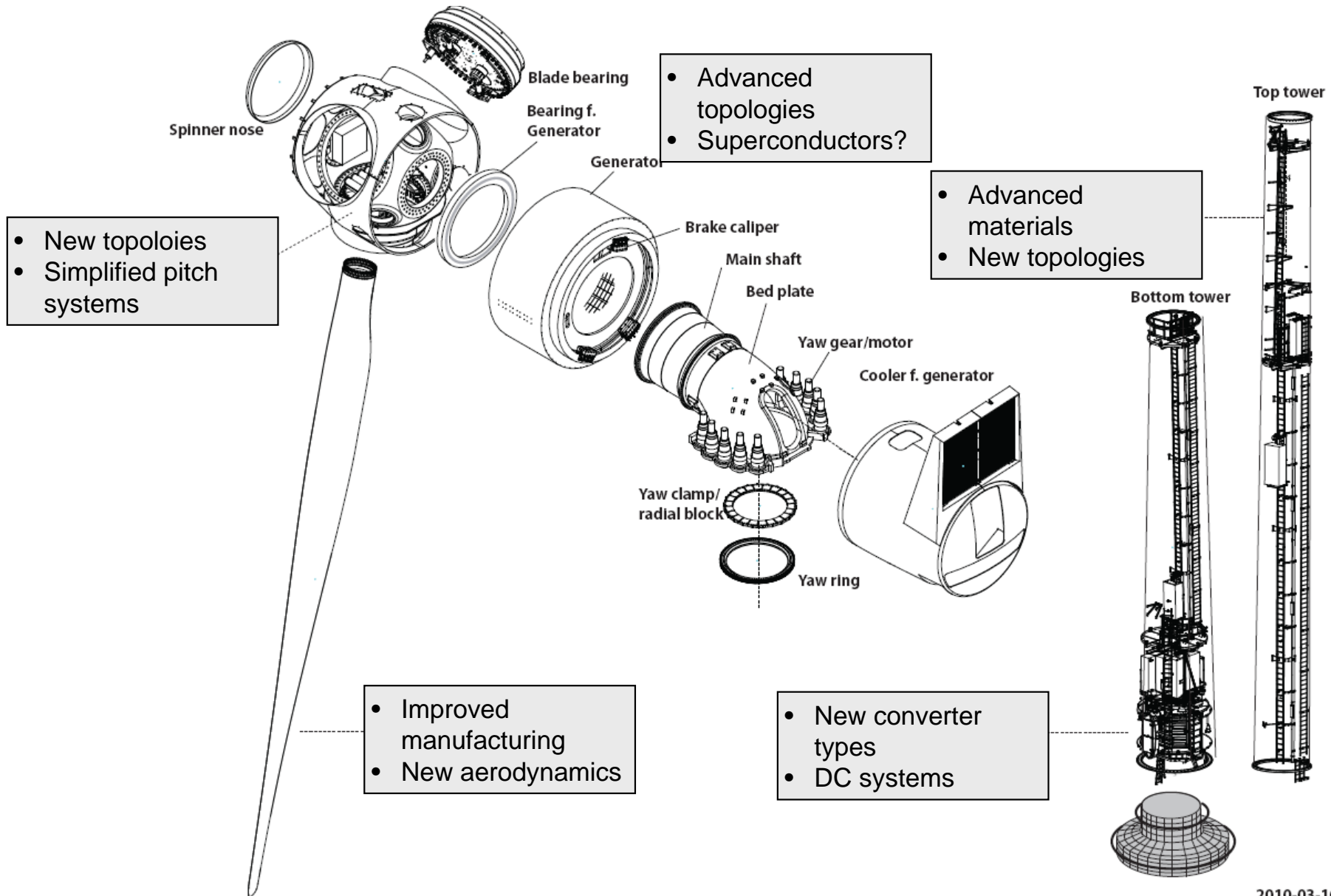
What are key factors limiting the impact of public funding?

- Funding schemes often require the establishment of conglomerates
- Bureaucratic requirements
- Poorly balanced influences from institutionalized research, consultants and industry
- IP issues

Can something be done about it?

- Perhaps ...

For the turbine itself R&D must address all modules

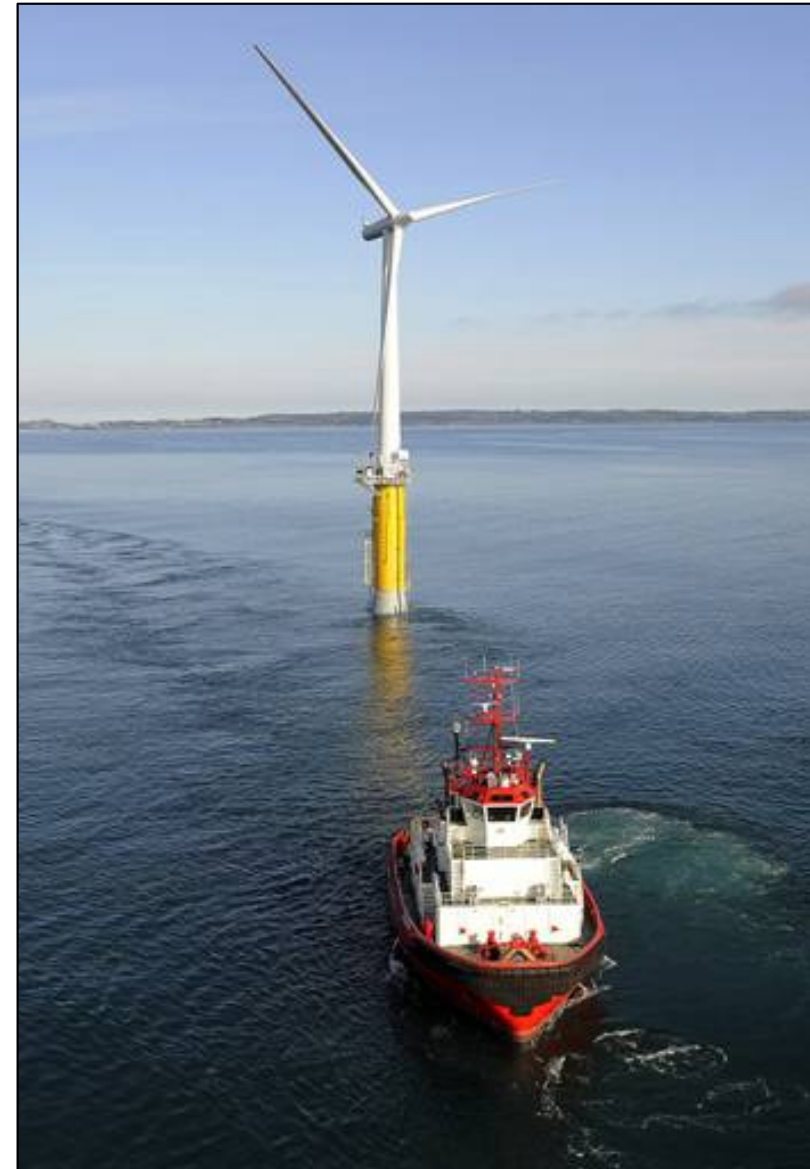


2010-03-1

The reduction of offshore cost of energy requires new infrastructure technologies

The oil and gas legacy is strong

- The higher offshore wind infrastructure costs more than compensate for the higher resource compared with onshore wind
- Grid parity requires a >50% reduction in Cost of Energy – this could seem like a mission impossible
- However, numerous fruits are VERY low-hanging
- The solutions need to be products, not projects
- Close cooperation with customer side required



How could public funding make this happen?

The key points to address are the current roadblocks

- Funding schemes that support few-player arrangements, not requiring the establishment of conglomerates or other forced inclusion of non-value adding partners
- Simplification of bureaucratic requirements
- Funding programs with balanced influences from institutionalized research, consultants and industry
- Solid solutions to IP issues
- Funding topics targeting the “higher-than-normally-though-prudent” risks in R&D
- Allocation of some funds to the industrial partners (not least for internal PR reasons)

Can this be done?



Question:

Can funding schemes be designed to substantially support industry with the technological quantum leaps

Answer:

If the funding parties really want to

- **Of course!**