

„Some forecast data related to the future competition between conventional and renewable energy generation“

prepared by Ivan Hinovski and Rumen Rusev
28.10.2014



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Wind power in the EU

- ◆
- ◆ In 2013, it installed the most capacity out of all energy technologies- 32% of new additions
- ◆ By 2020, wind power installations will nearly double and reach between 215 and 230 GW
- ◆ LCOE in Europe (median values): 60-80 €/Mwh
- ◆ LCOE by 2020: up to 15% lower.



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Premises for future wind plants cost reductions

- ◆ Wind turbines account for 64% to 84% of total installed costs onshore => the most important cost reductions will stem from turbines.
- ◆ Factors contributing to future cost reductions: removal of supply bottlenecks, improved designs of wind farms, wind turbines locations, standardization, economies of scale, learning-by-doing.
- ◆ Do not underestimate measures such as local regulations and planning



PV power in the EU

- ◆ In 2013, it added the most new capacity after wind. New additions in 2013: 11 GW compared to 17.7 GW in 2012 and 22.4 GW in 2011. Why?
=> moderate growth expected by 2020
- ◆ In 2013, LCOE of PV plants ranging on average from 80 to 120 €/Mwh.
- ◆ Projected LCOE in 2020 of as low as 60 €/Mwh in the most competitive markets in the EU



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Premises for future PV plants cost reductions

- ◆ Further development could be partially driven by self-consumption, rather than only FiD tariffs
- ◆ The over-capacity of PV manufacturing industry + supply chain integration + the on-going reduction of financial incentives + improved module efficiency
- ◆ Do not underestimate measures such as public authorities approach, licensing and connection to the grid framework



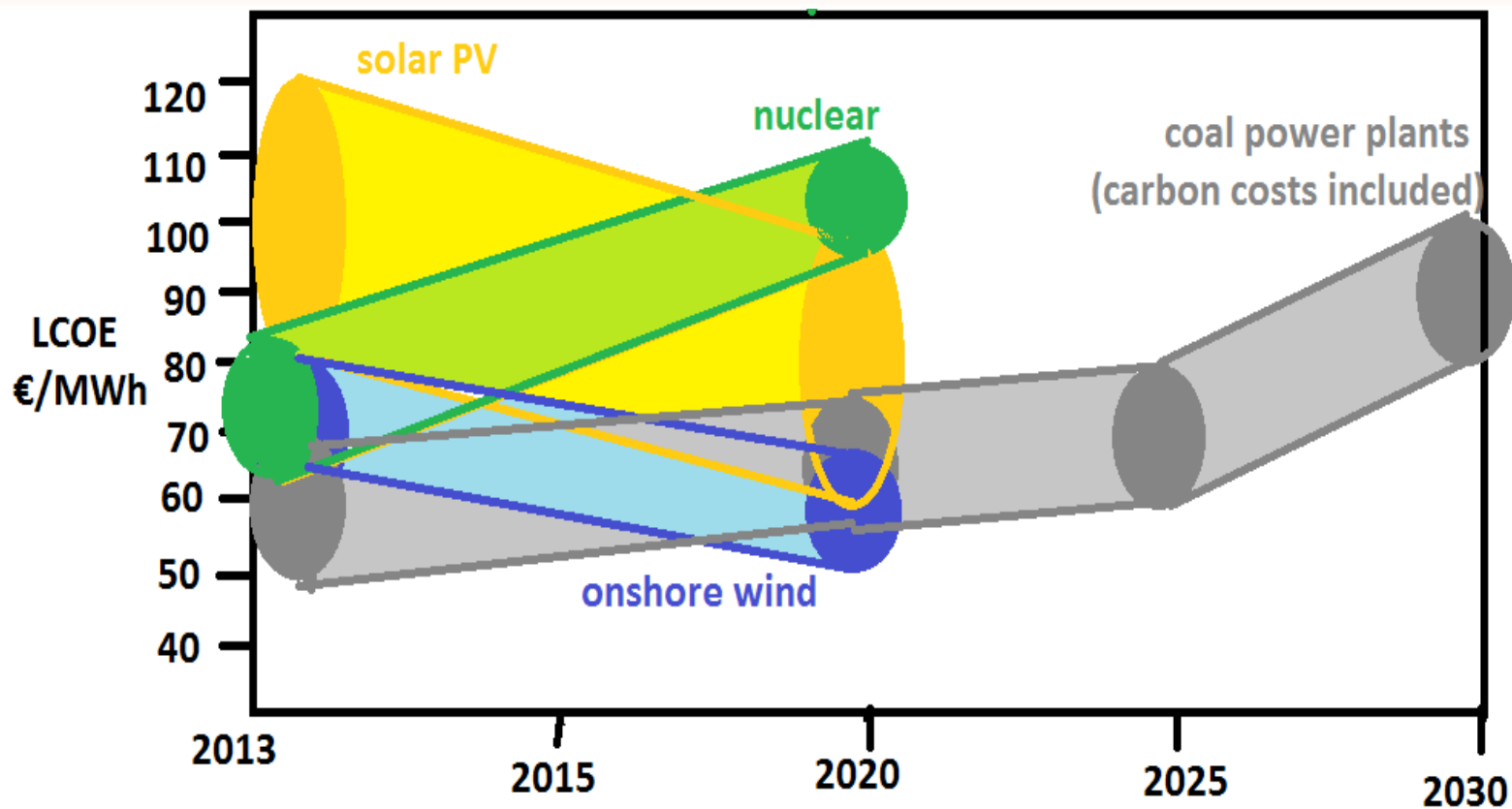
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Carbon price and its impact on the LCOE of coal plants

- ◆ Why carbon price matters:
 - 70% of CO₂ emissions are due to coal;
 - Bulgarian electricity production and its heavy reliance on coal;
 - increased use of coal plants assets in Europe since 2009;
 - CCS are not taking off as once expected;
 - inefficient ETS slows down investments in RE.
- ◆ 09.2014: 1 EUA = 6.12 €/t CO₂
EC forecast: EUA price will follow only a slowly increasing trend until 2025 and stronger increases thereafter:
10€/tCO₂ in 2020, 35€/tCO₂ in 2030 and 100€/tCO₂ in 2050



The overall picture:



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