“Flexibility concepts for the German power supply in 2050”
Position Paper (PP) by German Academies 2016

Comments of the Academia Europaea (AE) Bergen Knowledge Hub

From the Norwegian Code of Conduct for the Public Service : Scientific staff at universities, research colleges and research institutes have implicit in their work an expectation that they contribute to public debate, contribute expert statements, advice etc. Even if employees at these institutions have a loyalty obligation, it is part of their task to contribute to critical debate. Scientific staff have inherent in their positions both research and dissemination duty, thus a right and obligation to make research results known if they contradict approved policy. (Our translation from Norwegian)

1. The PP is primarily meant for German authorities and contains conclusions from a comprehensive study of possibilities for German energy self-sufficiency within given political climate-focused constraints, and no nuclear component, thus a dominating renewable (wind, photo-voltaic) part. The flexibility study is based on having developed a reliable fast practitioners’ computer model.
2. In a footnote only, the omission of nuclear power is attributed to a German political decision, and to the claim of excessive cost, which is not substantiated. Installation cost of wind power for the same TWh/year capacity exceeds that of the nuclear power. Fukushima triggered German policy. This month five years later Japan's prime minister Shinzo Abe emphasized Japan's continued dependence on nuclear power for economic, stable energy supply[(1)].
3. Running a large number of scenarios, a main conclusion of the flexibility study is that a realistic system cannot avoid a substantial component that balances large fluctuations in wind/sun part. The PP forwards natural-gas driven turbines as the preferable, cleanest choice. The amount given in a leading scenario corresponds (our remark) to Norway’s presently installed hydropower capacity, about 30 GW. I. e. that of 30 large nuclear power stations, or the nominal installed capacity of 30 large wind mill farms, (such as that being planned in mid-Norway), with an area of 10 000 square km[(2)], (a quarter of the area of Denmark, but an actual average production of only 10 GW, although the installed capacity is 30 GW).
4. The German study provides useful perspectives for North Sea gas suppliers. Referring to a public opinion banning CCS (carbon capture and storage) in German ground, the PP indicates implicitly a piping to neighbouring territories, possibly to the North Sea floor. The costs of this operation and cost sharing are not considered in the study, neither the likely unobtainable acceptance of this solution by fishing nations.
5. The near absence of an explicit international dimension is noticeable. Thus, this attempt is a self-sufficiency study under given political internal conditions. We find it still that useful lessons are learned: one being that energy diversity cannot easily be avoided, and should be considered a smoke-screen to hide that your dreams do not fully come true.
6. The cost of the recommended solutions is not studied, but it is obviously rather large, for additional natural gas production, as well as energy storage solutions or large-scale distributed energy transfer solutions. This would lead to further increase of German electricity costs. Internationally this might cause an unwanted electricity price increase also in connected neighbouring countries that strive to produce energy from the most affordable and stable sources, such as water or nuclear power.

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7. [(1)] JapanToday, Politics, Mar. 11, 2016.
   [(2)] Paul Denholm, Maureen Hand, Maddalena Jackson, and Sean Ong: Land-Use Requirements of Modern Wind Power Plants in the United States, National Renewable Energy Laboratory (US DoE), Technical Report, NREL/TP-6A2-45834, August 2009