

A Roadmap of how to get to the Energy Supply of the Future

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Abstract

RWE has produced a comprehensive study in order to identify a viable way ahead to the energy supply of the future. This contribution, summarized below, will cover an overview over its results.

The study focuses on the German energy market but also gives an outlook to selected European countries. RWE takes a look at the energy sector's technologies regarding their macro-economic and cost-optimal potentials to avoid CO₂ emissions on the one hand and to gain more security of supply in Germany on the other hand. Its framework conditions can be summarized by a time scope up to 2050 and concerning CO₂-avoidance costs an upper boundary of €/t. It will be shown that these conditions can be met if the subsequent technologies and strategies will be systematically applied:

- *Use of a low-CO₂ electricity mix for power generation:*
Predominately low and zero emission technologies shall be applied. This includes on- and off-shore wind generation but also the expansion of nuclear energy use, the economic application of coal with carbon capture and sequestration as well as natural gas based power stations.
- *Increased use of electricity:*
Becoming more and more climate and environment-friendly the energy mix used for power generation will also become an attractive resource for purposes currently dominated by fossil fuels. By replacing them especially in mobility applications by means of electric vehicles, but also in space heating, etc. a significant contribution to a less CO₂-exhausting energy system is possible.
- *Systematic exploitation of economic-efficiency:*
In all areas addressed above efficiency potentials have to be identified. Provided a foreseeable economic exploitation, possibilities of implementation will be indicated by this road map.

The prerequisite of the steps above is the existence of rational economic framework conditions, suitable to enable or accelerate the breakthrough of cost-optimal and innovative technologies. With regard to the time scope of up to 2050 the targets are rather ambitious. Henceforward it also has to be considered an essential prerequisite, that the steps required will quickly be taken.