Germany's path toward a sustainable energy supply

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II. How is Germany doing it: The energy concept and the “Energiewende” Moving towards renewable energies and energy efficiency

III. What are the consequences? A myth-buster after 1 year of experience: no black-outs, no grid collapse, no net power imports, no rise in GHG emissions, even drastic decrease in CO₂ price and drop in stock market price of electricity.
I. Good reason no.1: Successful economies need a sustainable energy supply – this means:

1. **secure**: sustainable and reliable energy resources (fewer imports → at present Germany imports 70% of total energy used)
2. **economic**: affordable prices over the long term (no/lower external costs → at present high dependency on oil price)
3. **environmentally** friendly: no/less emissions or risks → at present 75% conventional sources used for electricity with high emissions and unsolved storage problems for nuclear waste

**Solutions:**

a. only renewable energy (RE) sources meet these criteria
b. energy efficiency is a giant energy source – and needed to achieve a high share of RE
c. a comprehensive energy concept providing a framework: initializing RE, efficiency, and infrastructure.
I. Good reason no. 2: There is an abundance of renewables – even in Germany

- DemandRE Potential
  - 26% comes from RE!
  - in 1990: 3%
  - in 2000: 6%
  - in 2011: 20%

26% comes from RE!
I. Good reason no.3: The “Energiewende” offers immense BENEFITS

for economy, environment, and energy security

☐ Why?
- efficiency reduces energy demand and costs
- new investments (€30 billion per year only for RE), new jobs (390,000 in 2011 only in RE), more innovation and research
- costs for traditional fuels and power plants rise, those for RE installations fall
- less energy imports worth 7 billion €/year
- drastic reduction in emissions (RE reduce GHG by 130 mio. tonnes CO\textsubscript{2}-eq. in 2012)

☐ The energy future:
- all comprehensive long-term projections show the Energiewende path is clearly advantageous compared with business-as-usual for economy, society, and climate
By achieving Germany’s targets by 2020:

- at least **500,000 additional** jobs will be created
- annual **avoided fossil fuel imports** will be worth approx. **€22 billion** (approx. €38 billion in 2030)
- national **GDP** will annually increase by around **€20 billion per year**
- a **SURPLUS of €34 per reduced CO$_{2}$eq** will be realized
- in 2030 the **national debt would be some 180 billion euro lower** than it would be without climate protection measures
Transformation of the German energy system (the "Energiewende")

- is needed to achieve sustainable energy supply
- is beneficial: → for the economy (costs, energy security), society (jobs), and the climate
- is a complex task, which needs a generation to implement
- needs political will and a program: → the Energy Concept 2050
- Renewables, intelligent grids, and energy efficiency are key!

→ If it happens in Germany, it can happen everywhere!