

2024 International Sow4Future Policy Competition

Select a national policy with environmental and economic implications. Describe what the policy is. Analyze its efficacy. Suggest changes that might encourage sustainability while meeting economic growth objectives set forth by the government.

The German Renewable Energy Act (EEG) stands as a cornerstone of the nation's energy transition, aiming to expand the use of renewable energy resources while advancing their pursuit to reach net-zero carbon emissions by 2050. At its core, the EEG mandates the prioritization of renewable energy in the national electricity grid using various mechanisms such as a feed-in-tariff (FIT) scheme and grid priority access for onshore wind, solar photovoltaic (PV) and biogas. As a result, installed solar PV and wind capacities soared from 6.2 gigawatts to 83.8 gigawatts between 2000 and 2015 and subsequently Germany accounted for 33% of renewable energy build-up within the EU (Pflugmann et al., 2019). Recent amendments have also reduced the renewable energy levy to alleviate consumer costs and help balance environmental goals with economic growth.

The EEG has proven to be an effective policy tool for increasing the share of renewable energies in electricity production within Germany. Studies by Gipe (2006), Mendonca (2007) and Karlynn et al. (2009) show qualitatively that FITs are a major driver of the development of most solar PV markets. They also found that compensating renewable energy producers for their environmental benefits outweighed the external costs of fossil fuel use. Furthermore, since the policy was introduced, a surge in renewable energy capacity was witnessed with the share of renewable energies in gross electricity consumption rising from 6.3% to 46.0% between 2000 and 2022 (Wilke, 2023). Not only has this reduced carbon emissions, but it has also increased innovation and employment opportunities within the energy sector; it was reported that between 2000 and 2021, the number of jobs in the renewable energy sector almost tripled, reaching around 344,100 people in 2021 (Wilke, 2023).

However, critics will point to questions regarding its economic viability, specifically relating to the burden which it places on consumers who face increasing electricity prices. In 2013, the EEG surcharge was raised from 3.5 cents to 5.3 cents per kWh (Dillig et al., 2016), leading to a suggested link between rising prices for electricity and the EEG. Moreover, the intermittence of renewable energy production means significant investment into grid infrastructure and energy storage technologies is needed, disrupting grid stability and further increasing the cost of the project.

To strike a balance between economic growth and sustainability, the current policy could be amended to favour market-based mechanisms over feed-in-tariff schemes. This would be more cost-effective and encourage more market competition. A possibility would be the switch to a quota system, combined with certificates. A quota system would ensure the aspired share of electricity from renewable sources would be obtained, while the market mechanism would promote efficiency in achieving this, as certificates guarantee producers with the lowest marginal costs produce the required electricity. The UK saw the proportion of renewable energy generated peak at 42.67% in 2020 (Gallizzi, 2023) under such a system. Furthermore, increasing investment into grid modernization is essential to enhance grid

stability and reduce costs. In the U.S., it's estimated that investing in transmission could reduce electric sector CO₂ emissions by 65% by 2035 and over 95% by 2050 (Hensley, 2020). Integrating energy, transportation and industrial sectors can also improve efficiency and produce greater synergies.

References

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