A 7 THE EEG FROM AN INNOVATION POLICY PERSPECTIVE

The Renewable Energy Sources Act (EEG): a brief stocktaking

The Renewable Energy Sources Act (EEG) is one of the key instruments of German climate and energy policy. The core elements of the EEG are the system operators' obligation to provide connection to the grid, priority feed-in of electricity from renewable energy sources over electricity from conventional energy sources, as well as technology-specific fixed feed-in tariffs and optional market premiums.[121] The difference between the market price and the compensation paid to the operators of power plants is borne by the electricity consumers via the EEG reallocation charge.

The EEG's policy objective is to achieve a share of renewable energy in gross power production of 35 percent by 2020 and of 80 percent by 2050. The EEG's promotion of renewable energy on the demand side has led to a rapid expansion of renewable energies in Germany – especially in wind power, photovoltaic and biomass.[122] Since the adoption of the EEG in 2000, the share of renewable energy in Germany's gross power production increased from less than 7 percent to approximately 23 percent in 2012.[123]

Since the adoption of the EEG, compensation paid to plant operators increased from EUR 1.6 billion in 2001 to EUR 22.9 billion in 2013 (cf. Table 1).

EEG compensation payments to plant operators and EEG reallocation charge between 2000 and 2013

TAB 01

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EEG compensation payments to plant operators (million EUR)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Hydropower	–	442	477	428	338	364	367	418	379	382	421	231	452	487
Onshore wind energy	–	956	1,435	1,696	2,301	2,441	2,734	3,508	3,561	3,389	3,316	4,165	4,981	5,360
Offshore wind energy	–	–	–	–	–	–	–	–	–	6	26	85	119	471
Photovoltaics	–	39	82	154	283	679	1,177	1,597	2,219	3,157	5,090	7,766	9,202	10,420
Biomass	–	140	232	327	509	795	1,337	2,162	2,699	3,700	4,240	4,476	6,267	6,051
Landfill gas, sewage gas, mine gas	–	0	0	0	182	219	196	193	156	143	83	36	98	108
Geothermal energy	–	–	–	–	0	0	0	0	3	4	6	4	6	18
Total	**883**	**1,577**	**2,226**	**2,604**	**3,612**	**4,498**	**5,810**	**7,879**	**9,016**	**10,780**	**13,182**	**16,763**	**21,125**	**22,914**

EEG reallocation charge (cent/kwh)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Hydropower	–	0.06	0.07	0.05	0.04	0.04	0.04	0.03	0.02	0.01	0.05	0.03	0.06	0.05
Onshore wind energy	–	0.15	0.23	0.24	0.34	0.33	0.32	0.36	0.3	0.18	0.42	0.52	0.79	0.74
Offshore wind energy	–	0	0	0	0	0	0	0	0	0	0	0.02	0.02	0.09
Photovoltaics	–	0.01	0.02	0.03	0.06	0.15	0.25	0.34	0.47	0.67	1.13	1.81	2.06	2.25
Biomass	–	0.02	0.04	0.05	0.08	0.12	0.2	0.32	0.39	0.53	0.78	0.89	1.23	1.13
Landfill gas, sewage gas, mine gas	–	0	0	0	0.02	0.02	0.02	0.01	0.01	0	0.01	0	0.01	0.01
Geothermal energy	–	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0.19**	**0.25**	**0.36**	**0.37**	**0.55**	**0.67**	**0.83**	**1.07**	**1.19**	**1.4**	**2.05**	**3.53**	**3.59**	**5.28**

Source: own depiction based on BMU (2013).

In particular subsidy payments to photovoltaics and biomass exhibited disproportionate annual growth rates of almost 60 and 35 percent, respectively – compared with an already strong average growth rate of 25 percent per year across technologies. The flip side of the coin is the drastic increase in the EEG reallocation charge. Today, more than a fifth of average electricity prices paid by consumers are attributable to the EEG reallocation charge. This considerable additional burden on consumers has led to a critical public debate on the rationalisation of the EEG.[124]

The climate protection argument, which is often cited to legitimise the EEG, does not hold true. The European emissions trading system (EU ETS) defines a fixed EU-wide ceiling for CO_2 emissions across energy-intensive industries. The expansion of renewable energies in Germany's power supply induced by the EEG therefore does not result in additional CO_2 emission reduction at the EU level, but merely shifts emissions to other sectors and other EU countries covered by the EU ETS. Thus, the EEG does not lead to more climate protection, but just induces additional cost.[125]

The EEG's technology-specific innovation effects in Germany are very low

Since the argument of climate protection does not qualify as a justification of the EEG, the question arises whether the EEG does at least stimulate innovation.[126]

A key indicator for a country's or a sector's innovative performance is the number of patent applications per year. Empirical studies based on this indicator do not paint a positive picture as regards the innovation effect of the demand-side promotion of renewable energies in Germany.[127]

According to an empirical study for the period between 1990 to 2005, electricity feed-in tariffs for renewable energy in Germany showed an innovation effect in the wind energy sector only.[128] A recent study which examined the technology-specific innovation effects of the EEG feed-in tariffs between 2000 and 2009 could not identify a positive correlation in any of the technologies.[129]

The EEG's fixed feed-in tariffs do not seem to provide incentives for developing new technologies. Since tariffs are based on average cost, the profits from a new technology innovation do not exceed those from an incumbent technology – despite the fact that investments in new technologies are associated with higher risk.[130]

The EEG primarily works as a demand-side subsidy for electricity from renewable energy sources and thus leads to a policy-induced expansion of markets for renewable energy technologies. For technology suppliers, this means that the pressure to innovate may decline: companies may have a stronger incentive to use their scarce resources for the exploitation of existing market potential rather than for engagement in R&D. Furthermore, a rapid expansion of more mature technologies, which leads to further cost reductions, may create market entry barriers for new technologies.[131]

Thus, also from an innovation policy perspective, the EEG in its current specification can be hardly justified. Precisely those renewable technologies that receive the bulk of EEG subsidies – i.e. photovoltaics, wind energy and biomass (cf. Table 1) – have failed to reveal significant positive innovation impacts to date.

Conclusion

In the view of the Expert Commission, the EEG is neither a cost-effective instrument for climate protection, nor does it exert a measurable innovation impact. Hence, for these two reasons, the continuation of the EEG cannot be justified.