GGBP Case Study Series

Monitoring the German Feed-in Tariff Program

Related Chapter: Monitoring and evaluation

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Germany's feed-in tariff program has been at the heart of its renewable energy policy. Ongoing monitoring and public data and analysis have been crucial for setting the rates for the scheme, and for supporting public debate on the costs and benefits.

Context

Germany has had a proactive renewable energy policy since the early 1990s. Quantitative targets for renewable power production are set at a national level and regularly revised. Under the 20-20-20 goals of the European Union, the current target is for a renewable energy share of electricity in 2020 of 38.6 percent (or 35 percent if power consumption stagnates) (The German Federal Environmental Ministry, 2011).

At the core of the renewable energy policy is the Renewable Energy Sources Act (Erneuerbare Energien Gesetz, EEG), which provides a guaranteed feed-in tariff for independent renewable power producers. The costs are paid for by energy consumers. Critical, therefore, is that the guaranteed prices for different technologies and sizes of producer enable viable investments in renewables, but do not offer excessive margins at the expense of electricity consumers. Projections are very difficult and errors – too high or too low rates – can be costly and reduce the policy's effectiveness.

Approach

Several systems are in place for monitoring whether renewable electricity growth is on track with targets, and what the costs and benefits are.

The Ministry for the Environment produces annual statistics on renewable energy facilities and their energy output, as well as environmental impacts and employment. Each year it conducts a scenario planning exercise to determine whether or not the renewable energy goals are realistic and ambitious.

Grid operators are mandated to produce annual accounts of the payment and investment streams for the past year, calculating the financial burden of the scheme on general power tariffs for the next year.

Every four years a scheduled review and revision is carried out through the production of an EEG experience report). A range of studies are commissioned analyzing all aspects of the scheme's impact, as well as further barriers to the growth of renewable energy. The assessments lead to technology and application-specific recommendations, and adjustment to the tariffs. In addition, ad hoc adjustments may take place, such as in 2012 when a rapid price decrease for solar photovoltaic (PV) power led to tariff reductions.

These data and analysis are put into the public domain and contribute to public debate – most notably in October each year when the scheme costs are published, and around the four-yearly reviews.

Outcomes

The in-depth analysis through the experience report has enabled regular adjustment of feed-in tariff rates, often falling faster than originally envisioned as technology costs have dropped.

A number of the pitfalls that made other countries stop the feed-in tariff have been avoided. For example, the scheme has not been capped quantitatively, and remains financed by consumers, not public budgets. The scheme has thus stayed in place for over 20 years.

Over this time renewable energy has grown by around 10 percent annually. International Energy Agency, Intergovernmental Panel on Climate Change and other authoritative voices on energy policy praise EEG as effective and cost-effective. In addition to triggering this renewable energy growth in Germany and making the country a global leader in renewables use as well as technology, the law has helped to bring down costs of wind and PV technologies globally.

The renewables policy is now incorporated into a wider energy transition, including phase-out of nuclear power, the larger deployment of combined heat and power, electric vehicles, and enhanced efforts for energy efficiency. The energy transition will be monitored in a cross-ministerial working group, which has the potential to complement the existing data services.

Lessons

Impact, Influence, and Change

Without regular and fact-based revision at regular intervals, keeping EEG effective and efficient would not have been possible; significant scientific and technical knowledge and

in-depth market observations are required to set the rates for the electricity purchase by the utilities so that overly high margins for the investors and therefore higher costs for electricity consumers are avoided.

The regular evaluation allowed for constant identification and correction of other barriers to renewable electricity deployment, as well as of challenges that the renewables deployment poses for the conventional energy system. This allowed the law makers to identify what other corrections – outside of the pure rate setting – are necessary to smoothen the infrastructure transition from conventional to renewable electricity generation.

An important aspect is that most of the evaluation documents are in the public domain.[1] In particular the data service of the Ministry is reaching a broad audience that has grown over the years. The availability of quantitative data has deepened and broadened public discussion, making it possible not only to argue about the merits and limits of the scheme, but to involve a wide range of stakeholders.. Around two million homeowners in Germany who have roof-top solar PV systems are now energy producers and public discussion on renewables is probably reaching broader strata of the society than in any other country. The public availability and official character of these data keeps the discussion fact-based. Providing an English version of the data has had some impact in other countries as well.

Robustness

For a long time, the evaluation scheme has been extremely robust. The law requires the evaluation as the basis for the regular revision, and the need for in-depth analysis is obvious to the stakeholders. However, the four-year review cycle has been unable to keep up with recent rapid price changes, and in-depth reviews have not been possible.

The monitoring by the grid operators is also mandatory for the functioning of the system, as it ensures the financial balancing of the EEG account. It is a required element for the determination of the EEG surcharge so that it will remain more or less unchanged over the years.

Finance for the data service of the Ministry will be continued as long as the division of labor between the Ministry for the Environment and the Ministry for Economics and Technology remains as it is; however, any changes might affect the service.

On the other hand, the energy transition has now taken on a much larger role than the EEG (see "Outcomes" above).

Efficiency

Overall, the scheme requires significant resource input in terms of constant studying and monitoring. The annual expenses of the government on the above-mentioned accounting and data services as well as on the regular evaluations are in the order of several million euros per year. However, considering that the annual turnover of the EEG account is more than EUR 20 billion, this is less than the expected >5 percent of the overall programme spent on M&E. In that sense, the M&E systems surrounding the German renewable electricity sector can be considered rather efficient.

Further Information

erneuerbare-energien: http://www.erneuerbare-

[1] With the exception of some proprietary information that might go into the in-depth market analyses for the studies underlying the experience report.

energien.de

References

The German Federal Environmental Ministry (BMU). 2011. *Background information on the expansion of renewable energies in Germany by 2020 (Hintergrundinformationen zum Ausbau der Erneuerbaren Energien in Deutschland bis 2020)*, http://www.wattzweipunktnull.de/fileadmin/content/pdf/Hintergrund_Ausbau_EE.pdf