**25 years of the EEG - A critical appraisal**

The Renewable Energy Sources Act (EEG) came into force on 1 April 2000. Twenty-five years ago, a subsidy instrument was created that has shaped energy policy in Germany and beyond. Reason enough to take stock. I see light - but also shadows.

**The successes of the EEG**

The EEG has made Germany a pioneer in the expansion of renewable energies. Today, more than half of the electricity generated in Germany comes from renewable sources - a proportion that no other large European country can match. This is all the more remarkable as Germany only has limited potential for hydropower and biomass in comparison.

Until the early 2010s in particular, a significant proportion of global PV installations were located in Germany. The EEG thus made a significant contribution to the global spread of photovoltaics, admittedly at the price of considerable subsidy costs. The generous subsidies in Germany have shortened the learning curve and made the technology more cost-effective than would otherwise have been the case - with positive global effects on emissions reductions

Last but not least, the EEG was a comparatively efficient funding instrument, at least in its early days, when it was primarily about promoting technology and the system effects of renewable energies were not decisive. The fixed feed-in tariff created investment security, lowered capital costs and enabled rapid cost reductions, technological progress and the market entry of many pioneers.

**The unresolved tensions**

However, the EEG also had and still has structural weaknesses. The conflict with the European Emissions Trading System (ETS), which caps the amount of emissions in the energy and industrial sectors across the EU and independently of the EEG, has still not been resolved. Is the EEG therefore primarily a climate protection instrument or above all a technology promotion instrument? In any case, emission reductions in the electricity sector cannot be clearly attributed to the EEG - but the subsidies under the EEG with their positive spillover effects for the expansion of renewable energies, not only in Germany, have made $CO_2$ avoidance more favourable and thus enabled a level of ambition in climate protection in the EU that might have been unrealistic without the EEG and the financing responsibility that Germany has assumed as a result.

There are also systemic tendencies towards inertia. As with every major subsidy regime to which strong economic interests are attached, there has been and continues to be resistance to sensible and necessary adjustments to the EEG subsidy regime. However, three central elements of the original EEG - politically set, feed-in-dependent and independent of market value - do not fit in with an electricity system dominated by renewable energies - especially as the support system has so far been largely blind to key cost elements caused by these, in particular grid integration costs.

Of course, significant adjustments have been made to the original concept over the past 25 years, especially for larger installations, albeit often in the face of decisive resistance from the "purists" and the industry, which was used to the existing system - for example, the introduction of direct marketing or the competitive determination of subsidy rates via tenders. However, the

problems have not completely disappeared. Smaller plants in particular still often do not receive effective price signals and the feed-in-dependent subsidisation incentivises the production of electricity even when it has no value. One consequence is the sharp rise in the number of hours with negative exchange prices. According to analyses by Lion Hirth, one third of PV generation in 2024 was attributable to intervals with a negative day-ahead or intraday price, causing additional economic costs. Attempts to remedy this problem by suspending support in certain situations will in turn lead to new difficulties by creating additional risks for renewable energies and thus increasing support costs.

**New challenges and a new focus**

The EU electricity market reform (EMD) introduced a repayment obligation for subsidies in the event of high market prices in 2023 in light of the experiences of the 2022 energy crisis, during which subsidised renewable energy plants were also able to achieve very high revenues. In future, subsidies may only be granted in the form of two-way contracts for difference (CfD) or equivalent mechanisms. Germany must implement this requirement by the end of 2026 and fundamentally revise the EEG for this purpose. The repayment obligation sounds good at first, as it reduces subsidy costs in the long term - but it also creates new challenges. For example, if the system remains feed-in-dependent, operators could potentially optimise their operation to minimise repayments - which would be advantageous from a business perspective, but inefficient and price-driving in economic terms.

This is why feed-in independent elements will presumably play a much greater role in a future support system. The author, Ingmar Schlecht and Lion Hirth have presented a concrete proposal for this.

In the coming years, the focus of the subsidy system must also be placed more on the overall system costs. It is no longer a question of maximising the amount of renewable electricity produced or minimising the average electricity generation costs. The question is rather: Which technologies not only generate cheap but also valuable electricity and how can we minimise the costs of RE expansion while taking system integration costs into account?

This discussion also includes the question of whether we should continue to promote comparatively expensive RE technologies such as small-scale PV (and how we can avoid problematic distribution effects through self-consumption privileges) and what optimisation measures are possible for offshore expansion, where grid connection costs and shading effects are an increasing problem.

**And what about the jobs?**

One more point that has struck me in many articles on 25 years of the EEG: it is often emphasised how many jobs there were and are in the sector as a result of the EEG - at times over 300,000 - and what a failure it is that these record levels are no longer being reached. However, the number of jobs in the sector is not a good criterion for the success of a law. In a country with a shortage of skilled labour, it is all about productivity and the efficient use of employees' resources. The belief that it is a success to use subsidies to channel labour into a specific industry strikes me as not unlike US President Donald Trump's idea that it is a success

in terms of economic policy to use tariffs to revive manufacturing jobs in the USA that are actually unproductive.

**Conclusion**

The EEG was a successful model. Without the EEG, we would probably not have such a clear vision today of how a decarbonised electricity system based largely on renewable energies can be implemented in the near future. But it must be developed further. Not only because the technological and political world has changed. But also because the goal today is no longer to promote a few immature future technologies, but to efficiently incentivise the dominant generation technology in our electricity system.