

## SOCIAL ACCEPTANCE OF RENEWABLE ENERGY

# Cost to consumers

## A fairer cost allocation mechanism of the feed-in tariff is needed

**Social acceptance of renewable energies (RE) is endangered by the current cost allocation to consumers. Consumers see macro-economic benefits of RE, while, at the same time, RE are suspected to be price drivers on the private electricity bill. While the feed-in tariffs secure a cost-effective market introduction, RE have become a victim of their own success on a dysfunctional electricity market.**

The German Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, EEG) is the most important instrument to support electricity generation from RE.<sup>1</sup> Since 1991, when the forerunner of the EEG entered into force, and especially from 2001 on, when the German parliament implemented the EEG, electricity production by RE installations showed an impressive upwards trend. In 2012, electricity generated from RE sources contributed with an overall share of 23.5 percent to the German electricity supply – and this share is further increasing.<sup>2</sup>

### The key pillars of the German feed-in tariffs within the EEG

- **Investment security through guaranteed feed-in tariffs and priority connection to the grid:** Every kilowatt-hour produced from RE installations must be purchased and transported in priority. As a rule, operators of a RE plant receive a feed-in tariff (or a market premium) as a technology-specific guaran-

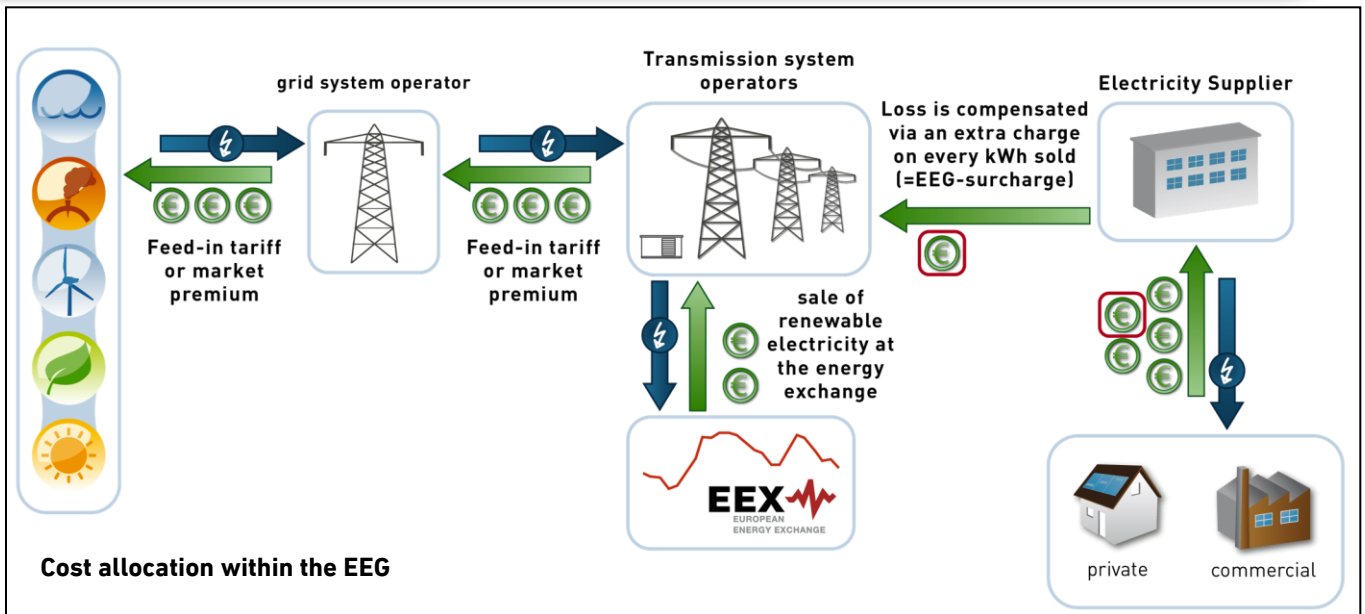
teed remuneration for their produced electricity for a period of 20 years, following the year of installation. Particularly small and medium-sized companies can thus gain access to the electricity market.

- **Cost reduction is encouraged:** A regular reduction in tariffs (degression) for electricity generation from new installations puts cost pressure on the manufacturers. That makes RE technologies ever more efficient and affordable.
- **No burden on the public purse:** RE still need support. However, the EEG tariffs show clearly what electricity from renewable energy sources actually cost. In contrast to fossil fuels, there are no such hidden costs as environmental and health damage. Moreover, support for RE electricity is not a subsidy, for it is not paid by tax revenue. Rather, the additional costs are assigned to the consumers according to the 'user pays' principle: If you use more electricity, you also pay more. With the EEG, macro-economic costs for the market introduction of new RE technologies are kept as low as possible.

To cover the feed-in-tariffs all electricity users in Germany have to pay an EEG surcharge, added by electricity suppliers on their customers' monthly electricity bill. The rate of this allocation is calculated by the difference of the amount of the remuneration (produced RE kilowatt-hours multiplied by the specific feed-in tariff), paid via the grid system operators to the RE electricity producer on the one side – and the revenues generated by selling the RE electricity at the electricity market "European Power Exchange EEX" (produced RE kilowatt-hours multiplied by specific spot market prices at the EEX). The EEX spot market prices are mostly lower than the fixed feed-in tariffs. The loss resulting from this difference is then allocated to – almost – all private and commercial electricity consumers, relative to their consumption.

<sup>1</sup> German Renewable Energies Agency: A Success Story: Twenty Years of Support for Electricity from Renewable Energies in Germany. In: *Renews Spezial* No. 41, September 2010; [http://www.unendlich-viel-energie.de/uploads/media/41\\_Renews\\_Special\\_ENGL.pdf](http://www.unendlich-viel-energie.de/uploads/media/41_Renews_Special_ENGL.pdf); German Renewable Energies Agency: Feed-In Tariffs Guarantee Successful Expansion of Renewable Energy. In: *Renews Kompakt*, 22 June 2012; [http://www.unendlich-viel-energie.de/uploads/media/RenewsKompakt\\_Support-schemes\\_jun12.pdf](http://www.unendlich-viel-energie.de/uploads/media/RenewsKompakt_Support-schemes_jun12.pdf).

<sup>2</sup> For statistical data see <http://www.renewables-in-germany.com> and <http://www.unendlich-viel-energie.de>.



## Disproportionate rise of the EEG surcharge

With private household consumers' electricity prices rising massively since 2008, the EEG surcharge was criticized in the media as the main reason for the increase. In the public debate on electricity prices, the responsibility for the RE electricity boom seems to be self-evident: If more and more expensive RE electricity is fed into the grid, prices automatically have to go up.

In fact, the sheer quantity of RE kilowatt-hours remunerated with (decreasing) feed-in tariffs went up 66 %, from 71.1 bn. kWh in 2008 to 118.3 bn. kWh in 2012. But the five-fold increase of the EEG surcharge from 1.1 cent/kWh added on every kilowatt-hour sold in 2008, to 5.3 cent/kWh in 2013 is caused by a set of various factors:

- The rising share of solar photovoltaic and wind electricity production caused excess supply at the German electricity market, replacing expensive natural gas fired power plants and coal fired power plants at the top of the merit order. Initiated by rising RE electricity production, the economic crisis reinforced overcapacities. Consequently, spot market prices were falling from 6.6 cent/kWh in 2008 to approximately 3.5 to 4.5 cent/kWh in 2013. The more RE electricity was fed into the grid, the more EEX prices fell down.
- While the total amount of the RE electricity producers' remuneration only doubled between 2008 and 2013, the loss resulting from lower spot market prices when selling RE electricity at the EEX, quadrupled from 4.7 bn. Euro in 2008 to 20.4 bn. Euro in 2013.

- The higher differential costs were allocated to a decreasing number of consumers because the energy-intensive industry and a big part of other commercial consumers were exempted from the EEG surcharge in 2012 and 2013.
- Although the merit order effect of RE capacities led to historically low EEX wholesale market prices, electricity suppliers did not transmit their lower procurement costs to their private consumers.

The high EEG surcharge does not reflect the cost of RE electricity but has developed towards a kind of complex allocation mechanism which is subsidising indirectly energy-intensive commercial consumers while obscuring real costs of RE.<sup>3</sup> Only 49 % of the 2013 EEG surcharge of 5.3 cent/kWh is caused by RE electricity production directly, i.e. the surcharge could be at a level of around 2.6 cent/kWh only.

From an economist's point of view, the EEG surcharge level can more be interpreted as an indicator of electricity market failure than a result of the German RE boom. But when talking about electricity prices, media tend to associate rising prices with the rising EEG surcharge. Thus, automatically renewables in general are grabbed as the scapegoat. In a recent representative survey commissioned by the German Renewable Energies Agency, 51 % of Germans declared that the EEG surcharge of 5.3 cent/kWh in 2013 was too high.

<sup>3</sup> IEA: Energy Policies of IEA Countries - Germany 2013 Review. Executive Summary and Key Recommendations, May 2013; <http://www.iea.org/Textbase/npsum/germany2013SUM.pdf>.

Still 44 % say that the EEG surcharge level is adequate. Fortunately, German consumers' willingness to pay more for renewables remains well developed. But it is not sure if explaining the errors in the complex cost allocation mechanism is sufficient to secure social acceptance. A more just cost allocation mechanism needs to change the surcharge calculation.<sup>4</sup>

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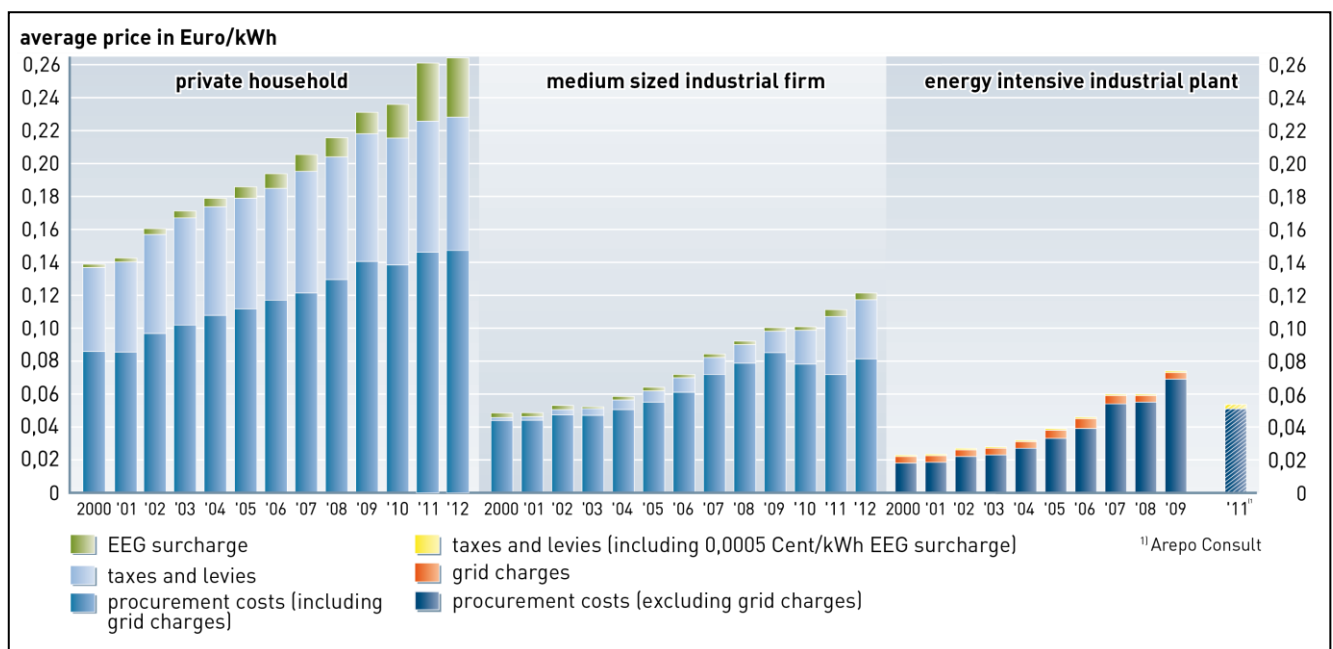
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## Electricity prices in Germany 2000-2012



<sup>4</sup> German Institute for Economic Research (DIW): Rising EEG Surcharge: Undesirable Distribution Effects Can Be Reduced, October 2012; [http://www.diw.de/en/diw\\_01.c.409495.en/themen\\_nachrichten/rising\\_ee\\_g\\_surcharge\\_undesirable\\_distribution\\_effects\\_can\\_be\\_reduced.html](http://www.diw.de/en/diw_01.c.409495.en/themen_nachrichten/rising_ee_g_surcharge_undesirable_distribution_effects_can_be_reduced.html).