

FACT SHEET

„The full costs of power generation”

Fact sheet on the results of a report by Swantje Küchler and Rupert Wronski on behalf of Greenpeace Energy¹

1 The surcharge for conventional energy

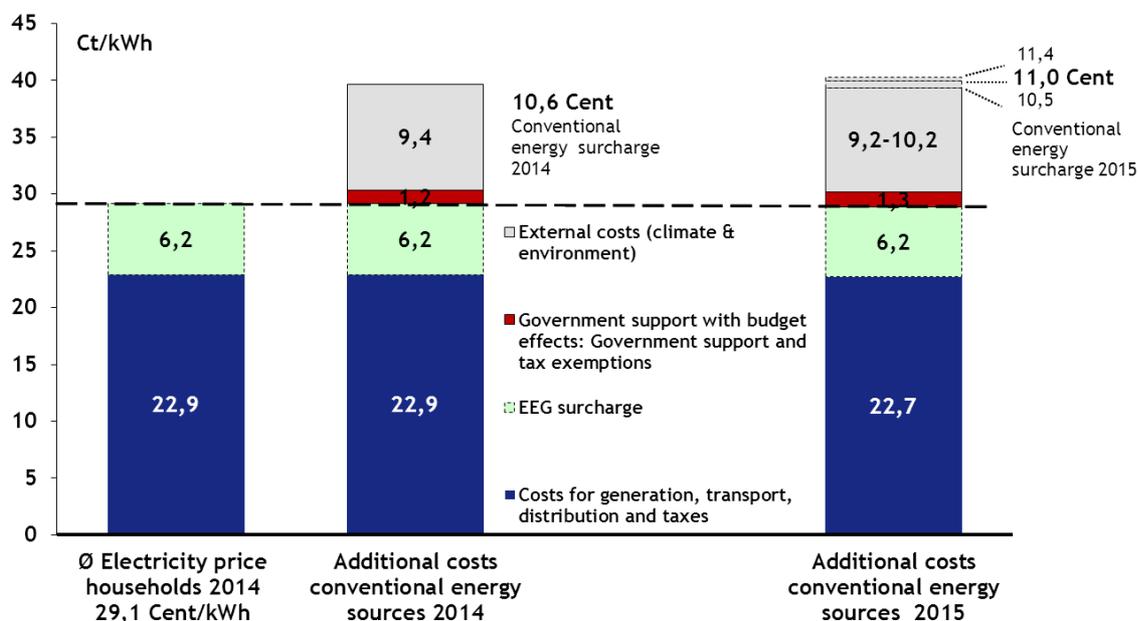
In 2014 and 2015, conventional energy sources cost society an additional 40 billion EUR each year. This is twice the amount paid for renewables funded by consumers within the German system of feed-in tariffs.

A large share of the costs of coal and nuclear power is not contained within electricity prices. These “hidden costs” impose a burden on the government’s budget and the environment alike - and therefore on every tax payer and on society at large due to the environmental damage and subsequent costs of climate change. The renewable energy surcharge (EEG-Umlage), in contrast, passes along the costs for renewable energies transparently and directly to the consumer. In 2015, the surcharge for private households and other consumers without exemptions amounts to 6,17 Cent per kilowatt-hour.

If the burden on the government’s budget and the external costs caused by the conventional energy sources were to be paid by consumers according to the EEG-method, the conventional energy surcharge in 2014 would total around 10,6 Cent per kilowatt-hour.

Moreover: While the EEG surcharge per kilowatt-hour decreases in 2015, a conventional energy surcharge would presumably continue to increase. Totalling 11,0 Cent on average it would almost be twice as high as the EEG surcharge of 6,17 Cent per kilowatt-hour in 2015.

Figure 1 Conventional energy surcharge 2014



¹ FÖS (2015): Was Strom wirklich kostet. Vergleich der staatlichen Förderungen und gesamtgesellschaftlichen Kosten von konventionellen und erneuerbaren Energien; <http://www.foes.de/pdf/2015-01-Was-Strom-wirklich-kostet-kurz.pdf>

2 Total state subsidies in electricity generation 1970-2014

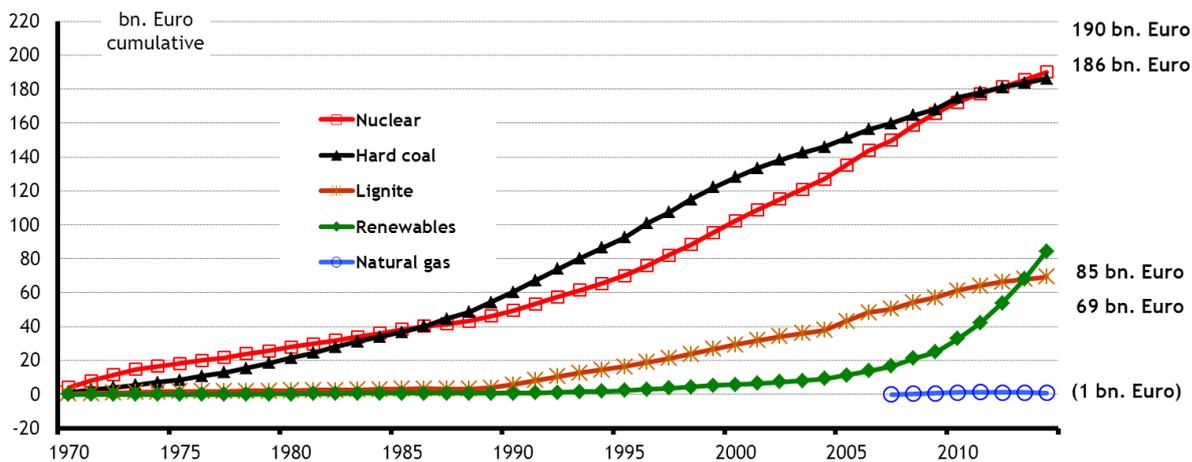
For decades, conventional energy sources including nuclear power, hard coal and lignite have been receiving considerable support by the government - either in the form of direct financial contributions, tax benefits or due to a favorable regulatory framework (e.g. provisions for nuclear power or free allowances within the EU ETS).

Government support for each energy source (as share of power generation) amount to the following values in the period from 1970 to 2014 (real prices in 2014 level):

- Nuclear power 190 bn. Euro
- Hard coal 186 bn. Euro
- Renewables² 85 bn. Euro
- Lignite 69 bn. Euro

This indicates that combined government support for conventional energy sources turn out to be more than five times higher than support for renewables in the past.

Figure 2 Government support and regulation with subsidy character in Germany 1970-2014, favoring electricity production



3 The costs of power generation to society

Fossil and nuclear energy have **high external costs** since they damage the **environment, change our climate and transfer risks** associated with nuclear power production to society. These „external costs“ for air pollution, climate change and the risk of nuclear catastrophes are only to a minor extent paid for by the owner of the respective power plants (“non-internalization of external costs”).

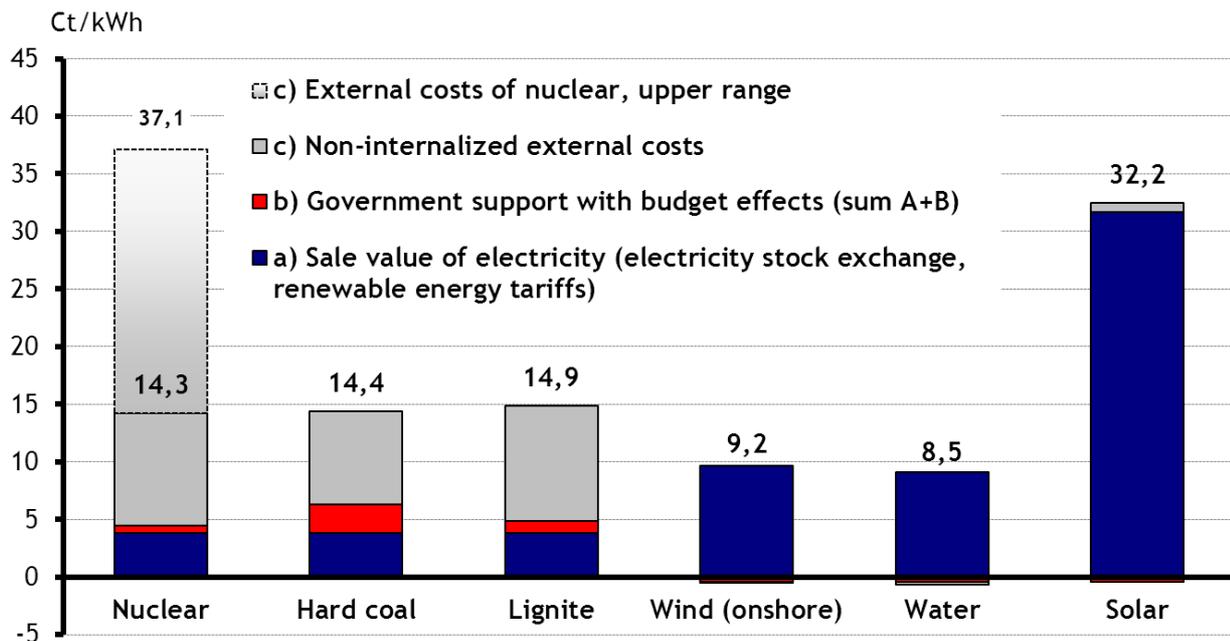
Additionally, coal and nuclear energy cause long-term costs that can hardly be quantified. These costs will only be due after the shutdown of power plants - e.g. for repositories for nuclear waste or for mine drainage in former hard coal mining areas. It is unclear and difficult to estimate how far into the future these costs occur.

² Renewable energies have only benefitted from government support since the mid-90s.

The total costs of power generation to society by direct comparison:

- Water 8,5 Cent per kilowatt-hour
- Wind 9,2 Cent per kilowatt-hour
- Nuclear power 14,3 to 37,1³ Cent per kilowatt-hour
- Hard coal 14,4 Cent per kilowatt-hour
- Lignite 14,9 Cent per kilowatt-hour

Figure 3 Societal costs of electricity in 2014 (market value of electricity, government support and non-internalized external costs)



4 Full costs for new installations 2014

The full cost advantage of renewables becomes clear when comparing the “full costs” of new installations including investment costs.

In 2014, the full costs for each energy source amount to:

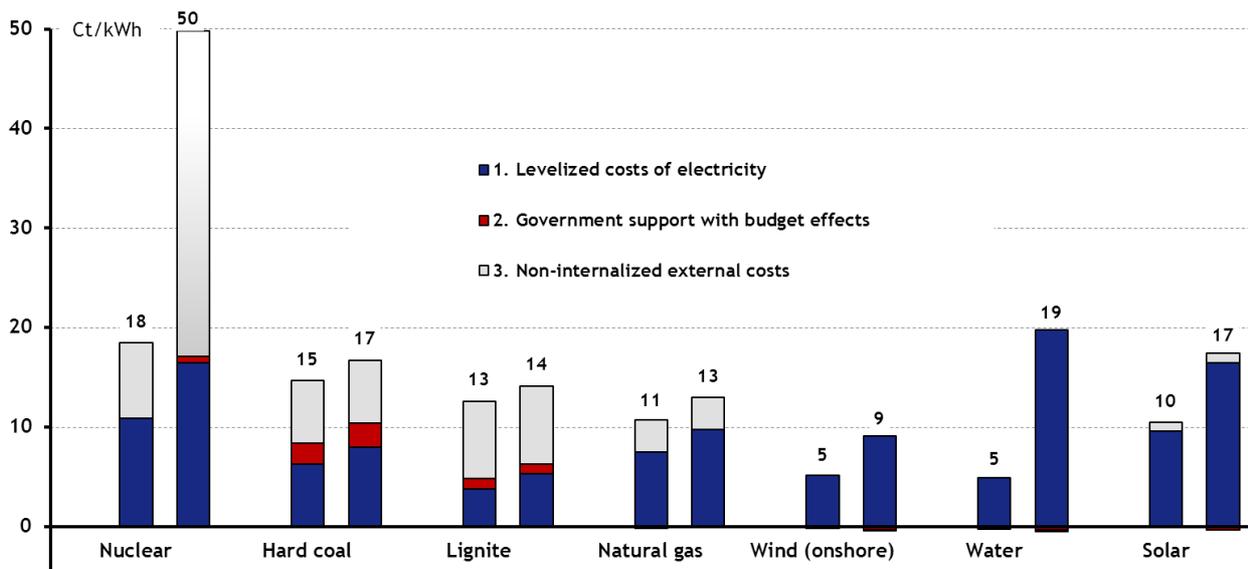
- Water 4,7 to 19,3 Cent per kilowatt-hour
- Wind 5,1 to 8,7 Cent per kilowatt-hour
- Solar 10,4 to 17,1 Cent per kilowatt-hour
- Lignite 12,6 to 14,1 Cent per kilowatt-hour
- Hard coal 14,7 to 16,7 Cent per kilowatt-hour
- Nuclear power 18,5 to 49,8 Cent per kilowatt-hour

This shows that in recent years, power generation from renewables has become cheaper due to learning effects and economies of scale, whereas conventional plants currently struggle to finance themselves at market prices.

³

Upper value of the scope results from considering external costs of nuclear energy.

Figure 4 Full costs of new installations 2014



5 Conclusion

Contrary to popular belief, renewable energy sources are not the “bull” of power generation. They replace energy sources with significantly higher costs to tax payers and society. If power producers were to pay the full costs of conventional energy production, renewable energy would be competitive today.

Source for all numbers:

- FÖS (2015): Was Strom wirklich kostet. Vergleich der staatlichen Förderungen und gesamtgesellschaftlichen Kosten von konventionellen und erneuerbaren Energien (Kurzfassung); <http://www.foes.de/pdf/2015-01-Was-Strom-wirklich-kostet-kurz.pdf>
- FÖS (2015): Was Strom wirklich kostet. Vergleich der staatlichen Förderungen und gesamtgesellschaftlichen Kosten von konventionellen und erneuerbaren Energien (Langfassung); <http://www.foes.de/pdf/2015-01-Was-Strom-wirklich-kostet-lang.pdf>