



Federal Ministry for the
Environment, Nature Conservation
and Nuclear Safety

Background information on the EEG Progress Report 2007

An in-depth presentation of selected aspects of the costs, benefits and developments to 2020/30 based on the EEG Progress Report 2007 (as adopted by the Federal Cabinet on 7 November 2007). Accompanied by information on the potential cost impact of the government's draft amendments to the EEG (as adopted by the Federal Cabinet on 5 December 2007)

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1 Summary

The dynamic growth in renewable energies over the past few years has meant the minimum target for 12.5% of electricity consumption to come from renewables by 2010 was already exceeded in 2007. In that year, renewables are expected to account for well over 13% of electricity consumed.

Of course the Renewable Energy Sources Act (EEG) incurs costs, but it also has a range of positive economic effects which are often overlooked when it is discussed.

The costs mainly consist of the fees payable under the EEG and the resulting differential costs. The strong growth in electricity generated from renewable sources in Germany gave rise to an increase in EEG-related remuneration payments, from €3.6 billion (2004) to €5.8 billion (2006). The differential costs (additional procurement costs for electricity suppliers) rose from €2.5 billion to €3.3 billion over the same period. Thus the proportion of the residential electricity rate calculated to be attributable to the EEG rose from around 3% to around 4% between 2004 and 2006. Additional cost factors involved in the EEG, e.g. the need for additional control and balancing energy and transaction costs, amounted to between €300 and €600 million in 2006.

In terms of **economic benefits** from the EEG, we should first cite turnover in Germany attributable to the Act. In 2006 these came to €4.2 billion, or over 60% of the year's total domestic renewable energy turnover (€22.9 billion). Secondly, the EEG has been causing a clear increase in jobs for several years: in 2006 around 134,000 jobs were attributable to the Act (renewables overall: 236,000 jobs). An additional benefit is the avoidance, due to the EEG, of energy imports totalling approximately €0.9 billion and external costs totalling approximately €3.4 billion in 2006. Equally, EEG electricity lowered prices on the electricity market by up to € – € billion (due to the merit order effect).

Furthermore, the EEG Progress Report contains a new target, much higher than before: it states that, by 2020, EEG electricity should represent 25–30% of all electricity consumed, and that this proportion should continue to rise after 2020. The policy recommendations made in the Progress Report are in line with this new target. These recommendations will initially cause an additional increase in fee payments and differential costs, peaking in the middle of the next decade. In 2015 the fee payments will reach a maximum (at 2007 prices: €₂₀₀₇) of around €₂₀₀₇12.5 billion, and differential costs will be €₂₀₀₇6.2 billion at most. Due to the increased rates of progressive reduction for certain fees and the projected further rise in wholesale electricity prices, both fee payments and differential costs will subsequently fall. This prediction relies on the well-founded assumption that certain EEG facilities will, from a certain point onwards, achieve a higher price on the market for their electricity than they are paid as a minimum fee under the EEG, and will therefore leave the EEG system. The first renewables branch to be affected will be wind power.

The **policy recommendations in the EEG Progress Report** will incur additional costs for a time compared to the current EEG, mainly due to the significant increase in fees payable to offshore wind turbines. The level of costs will depend which actual provision is chosen in the amended Act from among the range of fees for offshore wind cited in the Progress Report. The fee provision we have chosen, which corresponds to that in the EEG draft dated 5 December 2007, would take the additional costs incurred by the policy recommendations to €₂₀₀₇0.2 billion in 2010 and approximately €₂₀₀₇0.7 billion in 2020. However, because of the greater progressive reduction for photovoltaics, a saving of €₂₀₀₇0.5 billion would be made by 2030 as against the EEG version currently in force. As a result, while cumulative additional costs between 2009 and 2020 will be around €₂₀₀₇7 billion, between 2009 and 2030 these will “only” be around €₂₀₀₇6 billion.

After intense debate, the government eventually adopted most of the recommendations in the EEG Progress Report in its **draft amendments to the EEG** dated 5 December 2007. It follows that the impact of these amendments on costs will be similar to that of the recommendations in the Report.

2 Introduction

The **2007 EEG Progress Report**, as agreed by the Federal Government on 7 November 2007 in accordance with Article 20 of the German Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz – EEG), paints a detailed picture of the EEG's influence on the electricity industry in Germany to date, including the immediate impact of the Act on costs. On this basis, it also makes practical recommendations as to the future direction of the EEG.

However, the Progress Report does not state what impact these policy recommendations might have in future from a financial perspective. The Report contains only a relatively limited amount of information on certain macroeconomic costs and benefits arising from the EEG.

The Federal Environment Ministry (BMU) has therefore drafted this background document to take up and document other outcomes of the technical advisory process over the last two years. As a supplement and aid to interpreting the EEG Progress Report, this document contains:

- a full presentation of the costs and benefits of the EEG, and
- an estimate of the projected future costs.

It should be noted that the costs and benefits we outline cannot be offset against one another. Nevertheless, the BMU believes the brief overview given shows that an economic assessment of the EEG based purely on commercial cost parameters would be too narrow – as is also indicated by the objective of the Act stated in Article 1.

Our estimates of the future impact of the EEG on costs are based on the Progress Report's policy recommendations. These are linked to the target-based scenario for the expansion of renewable energies contained in the Lead Study 2007 developed for the BMU. This in turn was also considered in the energy scenarios for the 2007 Energy Summit. The figures stated rely on technical groundwork done by the Zentrum für Sonnenenergie- und Wasserstoff-Forschung (ZSW, Stuttgart) and the Ingenieurbüro für neue Energien (IfnE, Teltow).

At the end of the present document, we provide a brief initial look ahead at the probable cost implications of the government's draft amendments to the EEG.

3 Developments to date

3.1 The cost of the EEG

In considering the cost of the EEG, the focus has been not on the fee payments, but the differential costs as described in Article 15 EEG. “Differential costs” is the name for the difference between the fees paid by the grid system operators to the renewable energy facility operators and average wholesale electricity purchase costs.

For the electricity supplier, differential costs represent additional procurement costs. They can be passed through to the customer via the price of electricity. It is not possible to establish the extent to which this actually occurs against the backdrop of competition on the consumer market. However, if we assume that in practice the costs are passed through in full, an average value per kilowatt-hour (kWh) can be calculated: the “EEG surcharge”. This is restricted to 0.05 cents/kWh in Article 16 EEG (under the special equalisation scheme) for especially energy-intensive companies. All other electricity customers without this privilege must therefore currently bear EEG costs which are around 15% higher than if costs were allocated equally.

Total differential costs have risen nominally from €0.9 in 2000 to around €3.3 billion in 2006, as shown in Table 1 below. Over the same period, the EEG surcharge has increased from 0.2 cents/kWh to around 0.75 cents/kWh.¹

Table 1: Developments in EEG differential costs (nominal) between 2000 and 2006 [4]

	EEG volume	EEG # fee*	# Wholesale electricity price**	Total differential costs	EEG-surcharge***	Costs per person (1,700 kWh/year)	Costs per reverence household (3,500 kWh/year)	EEG share of residential electricity price
	TWh	cents/kWh	cents/kWh	billion €	cents/kWh	€/month	€/month	
2000	13.9	8.5	1.9	0.9	0.20	0.30	0.60	1.4%
2004	38.5	9.3	2.8	2.5	0.55	0.80	1.60	3.0%
2005	44.0	10.0	3.7	2.8	0.63	0.90	1.80	3.4%
2006	51.5	10.9	4.4	3.3	0.75	1.10	2.20	3.9%

Basis for data: Association of German network operators; EEX; lfnE calculations, figures rounded off

* Source VDN, nominal prices taking into account charges for use of the grid avoided

** Calculated for 2004 – 2006 after Wenzel/Diekman (2006), p. 17

*** For non-privileged electricity customers assuming differential costs are passed through fully and uniformly

This clear rise in differential costs and the EEG surcharge is a direct result of the speed of expansion in renewable energy (as described above). Thus for example by the end of 2007 the projected volume of EEG electricity had reached a level which earlier studies, conducted for the BMU [1], had not expected until 2010. The EEG’s minimum target for 2010 (12.5%) will be met easily in 2007. As a result, current payment and differential cost totals are higher than had been anticipated.

However, the EEG only plays a secondary role in determining the annual rise in electricity prices for tariff customers. For years, production, transmission and distribution have regularly constituted between 60 and 80% of that price rise. In contrast, the EEG has so far accounted for a maximum of around 20% of the annual electricity price increase [2].

1 The increase in the EEG surcharge in 2006, associated with the retroactive expansion of the scope of Article 16 on 1 December 2006, will not cause a higher EEG surcharge for the non-privileged sector until 2008, as only then will the energy suppliers be passing through the higher relief of the privileged customers.

Besides the EEG's differential costs (in accordance with Article 15 EEG), particular attention should be paid to **other impacts on macroeconomic costs**:

1. The **demand for additional controlling and balancing energy** arising from the control mechanisms needed to adjust to divergence from the predicted volume of electricity generated; this is a particular issue for wind power.
2. **The provision of the uniform monthly EEG band** and necessary **intra-day equalisation** by the transmission system operator (TSO).
3. The **TSO's transaction costs** for processing EEG-related aspects of its balance sheet.
4. **Additional fuel costs** due to more frequent start-up of generating systems or additional operation at partial capacity.
5. The **expansion and alteration of the electricity grid** which is necessary as wind power generation is concentrated in particular regions, and also due to the growth in electricity trading (although no significant expansion has taken place as yet).
6. **The network operators' costs in fulfilling the transparency requirements of Article 15 EEG** (certification of audit, publication of data on the Internet and making it available to the Federal Network Agency (Bundesnetzagentur – BNetzA)).

Very few, and sometimes widely differing, estimates exist as to the total costs resulting from the items listed above. For 2006, the estimated costs for points 1 to 4 **range from €300 to €600 million** [3].

Additional network expansion costs due to the EEG (point 5) will overwhelmingly be payable in the future. This is true first and foremost of the subterranean and submarine cable connections to offshore wind farms which will be required in the next ten years. The total cost of expansion, offshore as well as onshore, can be estimated at €4 billion as a first approximation². As **the write-off period for electricity grids is 25 years**, these costs are spread both across this period (which, at 8% interest, would be around **€375 million a year**) and across the electricity transmitted during the period [4]. This means that the charges for the use of the grid will only rise slightly as a result of grid expansion.

The cost of fulfilling the transparency requirements has not yet been estimated. The proof of audit which is required on request should be generated in the course of normal audit activity, and as such should scarcely mean substantial additional cost for the company in question. Nor should publishing key EEG figures on a website incur anything more than minimal additional costs.

2 This can be compared with the annual grid maintenance cost of around €2 billion.

3.2 Economic benefit from the EEG

In addition to the cost effects listed in the EEG Progress Report and under 3.1 above, a series of further, mainly macroeconomic factors also affect the assessment of the present and future expansion in renewable energies. It should be noted that the benefits listed below cannot be offset, either against one another or against EEG-related costs. Yet the BMU does believe they show that an economic assessment of the EEG based purely on commercial cost parameters would be too narrow, especially given that the terms of the objective of the Act as stated under Article 1 are broader.

1. The benefits of the EEG include the positive **influence it has on innovation, turnover and added value** in Germany. This is associated with the creation of sustainable **jobs**, as shown in the Progress Report. According to the Report, around **134,000 jobs** (see Figure 1) and **€14.2 billion in domestic turnover** were directly attributable to the EEG. All renewables combined accounted for 236,000 jobs and total turnover of around €3 billion in 2006. It is important to note here that the contribution made by renewables to employment is clearly beneficial, even if considered alongside the negative employment effects associated with its expansion. According to recent studies, the net employment effect of renewable energies in 2006 amounted to between 67,000 and 78,000 jobs [4].

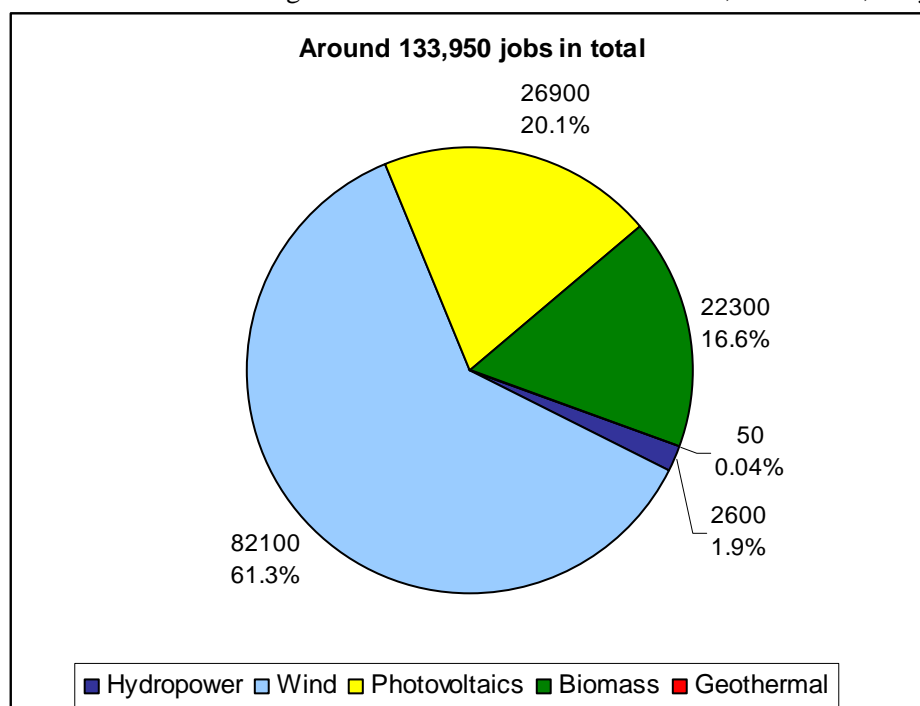


Figure 1 EEG-related gross employment in 2006 [4]

2. The EEG-related **savings on imports of hard coal and gas** into Germany should be viewed in the same light as the above. These savings were around **€0.9 billion** in 2006 [5].
3. An additional macroeconomic benefit from the EEG is the **avoidance of external damage and resulting costs (externalities)**. By substituting renewables for fossil fuel generation, the EEG reduces the climate impacts from CO₂ emissions and (to a lesser extent) the damage from other pollutants (such as SO₂). According to a study conducted

for the BMU [6], in which the external cost of emitting a tonne of CO₂ was assumed to be €70³, savings of around **€3.4 billion** in external costs were made in 2006.⁴

4. Furthermore, the BMU takes the view that the EEG has exercised **a clear price-curbing effect on electricity trading prices in Germany** due to the special price determination mechanisms on the electricity market in recent years. This **merit order effect** has been studied intensively as part of several scientific projects [7, 8, 9, 10, 11, 12].

At a technical talk by nine scientists from six research establishments, the merit order effect for 2005 was calculated as up to €2 to €3 billion, and **the effect for 2006 up to €3 to €5 billion** [3]. If we consider the system as a whole, the BMU believes this effect can be compared to the differential costs cited above, as both the EEG surcharge and the merit order effect have their initial impact at electricity supplier level.

However, it should also be noted that the merit order effect is only suited to estimating the impact of prices in the short term. In order to take a long-term view, as required by the EEG, a model would be required which considered both decisions to operate facilities and decisions to decommission/add capacity [11]. However, since the scale of the merit order effect on short-term price impacts in 2006 has been confirmed by a further, in-depth study, the BMU considers the range stated above to be realistic for the merit order effect in 2006.

Even given the objections raised, the BMU deems the evaluation of the merit order effect on the basis of spot market prices to be justified, as the value of the electricity is not determined by the purchase price in the past, which may have been lower, but instead on the basis of the currently achievable (spot market) electricity price for the year in question. For example, this is the practice the electricity generating industry employs to take account of CO₂ certificate costs – if certificate prices rise, then wholesale electricity prices also rise, and vice versa. However, the price-lowering effect does not occur immediately during the year in question; where it does occur it is deferred, taking effect via lower price expectations for electricity futures.

Overall, the electricity prices established on the power exchange play a guiding role, even for electricity not traded on the exchange.

3 NB the Stern Report assesses the external cost of greenhouse gas emissions as €85/tonne of CO₂.

4 This does not yet take account of other global warming emissions which were reduced along the process chain, e.g., when using biomass to produce electricity, the associated reduction in methane or nitrous oxide emissions.

4 Outlook to 2020/2030

4.1 Basic assumptions

To be able to estimate the financial impact of the policy recommendations in the **EEG Progress Report and in the amended EEG on developments to 2020/30**, a few basic assumptions must be made:

1. The projected developments to 2030 in the amount of electricity receiving EEG payment (quantity structure) are based on the target-based Lead Scenario 2006 [13], which is used in the energy summit scenarios (and elsewhere) [14]. For electricity generation from renewables, the Lead Scenario assumes a certain amount of new build of facilities and the replacement of existing facilities after 20 years' operation. However, experiences gained recently from new build photovoltaic facilities necessitated an upward revision of the figures. Thus the photovoltaic capacity expected to be installed in 2020 rises from 10 GW to 14 GW, and the growth path changes accordingly.
2. The levels of fees used in the calculations come from the recommendations of the 2007 EEG Progress Report. For offshore wind, a whole range is given for fees and their tapering (degression): it was therefore necessary to choose a specific level of fees for the model calculations below. The level chosen was 12 cents/kWh, with a 5% rate of degression from 1 January 2015. An "early-starter bonus" of an additional 2 cents/kWh to 31 December 2013 was also taken into account.
3. However, the amount of electricity to receive EEG payment in future is also dependent on the take-up by facility operators of the relevant provisions. Where more financially attractive sales outlets exist, electricity will be sold outside the EEG framework. The proof that this is already occurring lies in the sale of electricity from wind which is no longer eligible for the higher initial EEG fee.
This trend is very likely to increase in future if individual EEG fees are permanently lower than the wholesale price for electricity. This situation will increasingly affect new facilities, which will sell some of their electricity outside the EEG from the outset. The increasing willingness of consumers to switch electricity supplier is also likely to support this trend (for example if they switch to the growing sector for sales of "green" electricity outside the EEG).
4. The key here will be future developments in wholesale electricity prices, as determined on the power exchange. These will also determine the "applicable value" of EEG electricity, which is set against the fee payments in order to establish the EEG-related additional procurement costs for electricity suppliers. As prices on the exchange are heavily dependent on supply- and demand-side influences and cannot be estimated particularly well over the long term, the long term developments in electricity prices used here are based on developments in electricity production costs for the conventional power generation mix as postulated in the Lead Study 2007 [14], which can be better estimated.
That study presents various options (paths) for energy prices and costs for CO₂ certificates. The estimates below of the financial impact of the policy recommendations follow the "significant increase"⁵ path for energy prices from the Lead Study. We have referred to this path as the "principal variant". Alongside this variant, a second, "macroeconomic" electricity price path is shown. This path considers the external costs of generating electricity from fossil fuels (see above).

5 Production costs 5.9 cents/kWh (2020) or 7.3 cents/kWh (2030), both at today's (real) prices.

- All future costs stated are at today's (real) prices. We have assumed an overall interest rate of 2% p.a.

4.2 Electricity generation within the scope of the EEG

As shown in Figure 2, the effects listed under 4.1 may make a significant contribution in the medium term to curbing EEG costs. In the "primary variant" of the applicable value of renewable-generated electricity, in 2020 only around 75% of all EEG-relevant electricity will stay in the EEG payment system; in 2030 this figure will drop to just 15%.

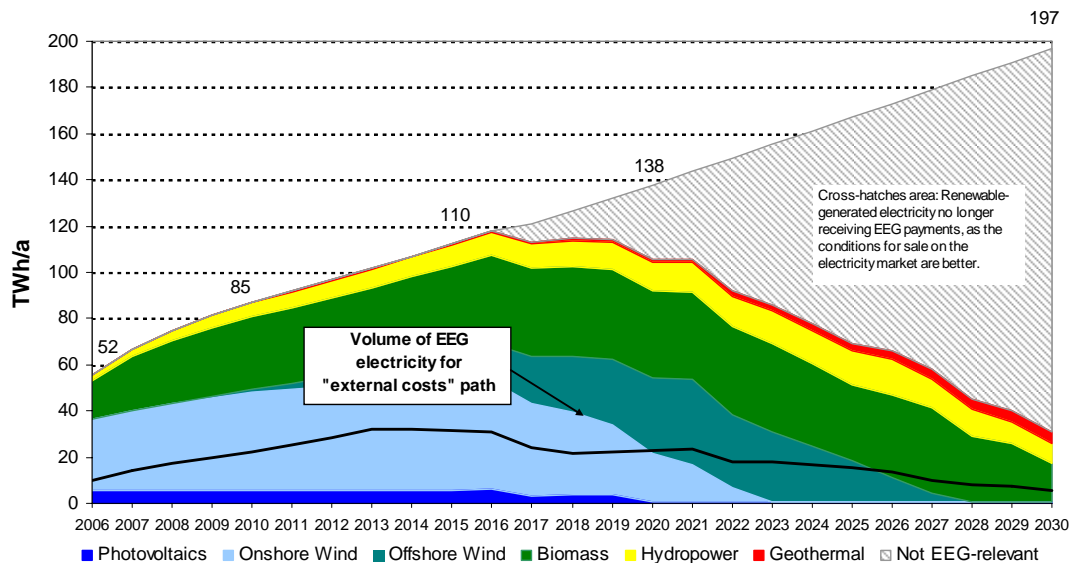


Figure 2 Developments in the volume of electricity receiving EEG payment in relation to the overall volume of electricity generated under the EEG [4]

After 2020, only a few technologies will continue to be dependent on support under the EEG, and only for a limited period. The areas in question include some forms of biomass which, when used for electricity, have a positive impact on agriculture and forestry and rural development, or which employ innovative processes. Also included is photovoltaics: this is seen internationally as one of the key technologies in the energy sector, but must achieve cost degression from a high initial level. The same is true for geothermal, which may in the long term make a significant contribution to the ability to both provide baseload capacity and respond to variations in demand.

Some electricity from offshore wind turbines will also continue to receive support. There have been delays with market development here, and electricity production costs are higher initially than they are for onshore wind. It should be noted that the electricity still receiving EEG payments after 2030 will come mainly from facilities commissioned prior to 2020.

4.3 Developments in EEG payments

The future volume of EEG payments can be derived from the developments shown below. At today's prices, payments according to the principal variant will rise from €5.8 billion (in 2006, excluding avoided charges for use of the grid) to around €12.5 billion in 2016. By 2030, market

conditions will prompt many facilities to leave the EEG scheme, and payments will fall again to around € billion.⁶

Figure 3 below illustrates this, as well as the associated structural changes and the shift towards innovative technologies. It is interesting to note future developments in the average EEG payment. The fact that it is initially relatively expensive to harness potential in the PV, biomass and offshore wind sectors means that the average payment will rise slightly, despite the effect of tapering rates, from 10.9 cents/kWh in 2006 to around 12 cents/kWh (in real terms) by 2013. The upper curve in Figure 3 (assuming no facilities leave the EEG) shows the average EEG fee falling to around 5 cents/kWh by 2020. If we take into account facilities leaving the EEG system, the average fee will remain steady, at around 10-11 cents/kWh.⁷

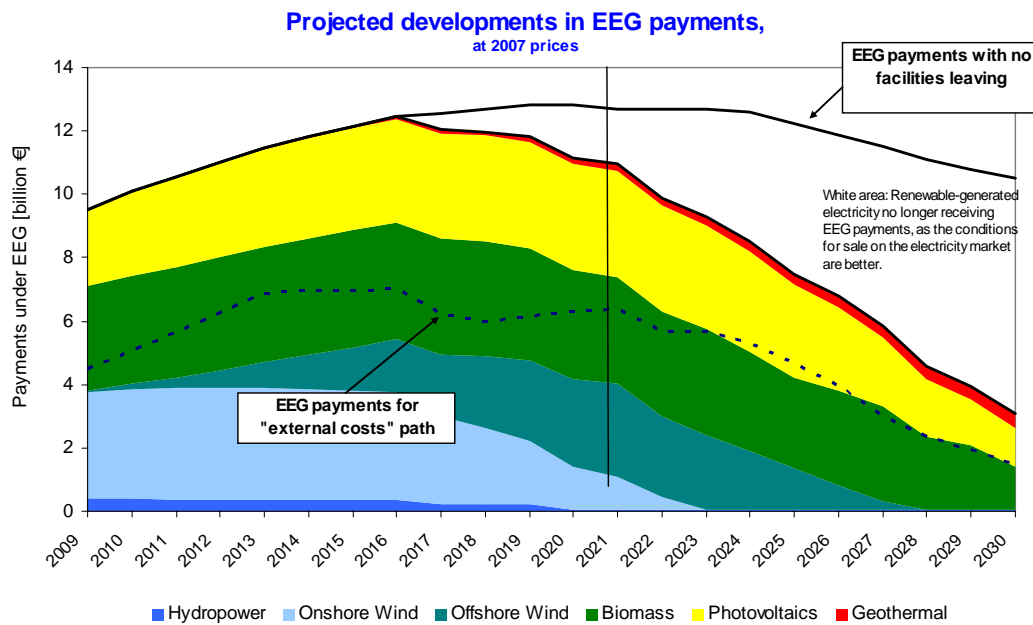


Figure 3 Developments in the volume of EEG payments on the basis of the policy recommendations in the Progress Report (At 2007 prices, growth in renewables updated according to [14])

6 With the higher, "external costs" electricity price path, significantly more facilities leave the EEG payment system during the period under consideration (see Section 4.1, point 3), which means much lower overall payment figures, but also an increase in the average payment made, as it is the more expensive facilities which remain in the EEG system.

7 Developments in the average EEG fee are very sensitive to changes in the path taken by expansion in photovoltaics, i.e. even a small divergence from the assumed PV expansion will have a clear effect on the average EEG fee.

4.4 Developments in EEG-related additional costs to the electricity generating industry and consumers

The volume of EEG payments is less important than the level of differential costs (additional procurement costs to electricity suppliers as against conventional generation) and the resulting EEG surcharge to electricity customers. Assuming that these differential costs are passed through in full, electricity customers will be paying these in their entirety. In order to ascertain the differential costs, any electricity procurement costs on the electricity market that have been avoided for the volume of EEG electricity are deducted from the total EEG payment volume.

In the growth path currently assumed, the EEG surcharge rises from 0.75 cents/kWh (2006) to a maximum of around 1.5 cents/kWh in real terms in 2016. The EEG-related rise in residential electricity prices between 2006 and 2016 (maximum costs) is therefore around 0.8 cents/kWh in real terms. This is only 0.2 cents/kWh more than the rise in the EEG surcharge between 2000 and 2006. However, over this six-year period, other factors had already caused the residential electricity price to rise by 5 cents/kWh. Further significant increases in the residential electricity price are expected in future. This shows clearly just how slight the EEG's influence on electricity prices actually is. The population at large can be expected to accept a further rise in the EEG surcharge (shown below for a person with an electricity requirement of 1,700 kWh a year – see Figure 4) given the high levels of approval for the further expansion of renewable energies.

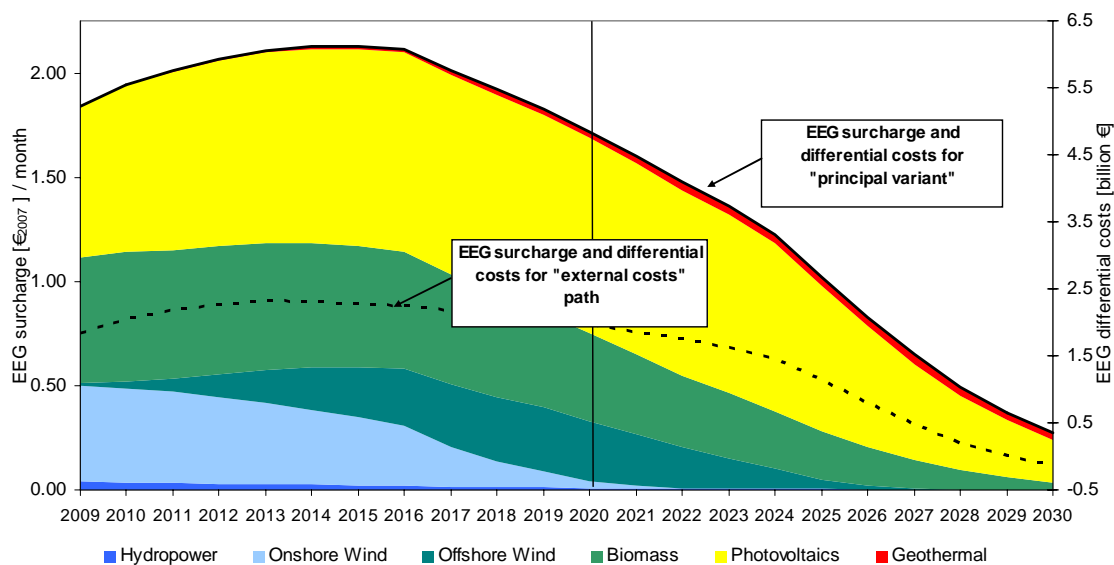


Figure 4 Projected developments in total EEG differential costs and EEG surcharge for a residential customer (1,700 kWh/yr) based on the policy recommendations in the Progress Report (At 2007 prices)

Figure 4 shows that an initial increase is expected in the differential costs for the principal variant, from €3.3 billion (2006) to a maximum of €6.2 billion (2015). This means these costs doubling, whereby growth in the volume of EEG electricity – which is expected to increase from 51.5 to 110 TWh – is greater. Subsequently, differential costs are expected to fall despite further increases in the volume of EEG electricity. For the “external costs” electricity price path, differential costs peak in the middle of the next decade at around €2.7 billion, falling to zero by the end of the period under consideration. In macroeconomic terms, this means that no further costs arise, although on a microeconomic scale around €0.6 billion in differential costs still apply.

As a statistical average, residential (tariff) customers use approximately 1,700 kWh of electricity a year. In the “principal variant”, this means an average EEG surcharge of around €1.10 a month in 2006, peaking at €2.15 a month in 2015. However, this figure varies greatly depending on the energy efficiency of and number of persons in the household. The reference household used by the electricity generating industry, with an annual electricity consumption of around 3,500 kWh, will see a rise in monthly EEG costs from around €2.20 (2006) to a peak of around €4.40 in 2015. Subsequently, costs drop sharply to around €0.60 in 2030.

The EEG surcharge for private customers is therefore around €/person/month higher in 2015 than in 2006. Of this €, around 25 cents are attributable to the recommendations in the Progress Report (see below).

4.5 The cost impact of the policy recommendations

The policy recommendations made in the EEG Progress Report to adapt the level of fees, the degressions and timescales will bring both increases and decreases in costs as against the current EEG provisions on payment. In Figure 5, these sector-specific increases or decreases in costs are shown against the differential costs which would arise from the 2004 EEG as it stands. The quantity structure applied in [14] remains unchanged, as this had already anticipated amendments to the EEG.

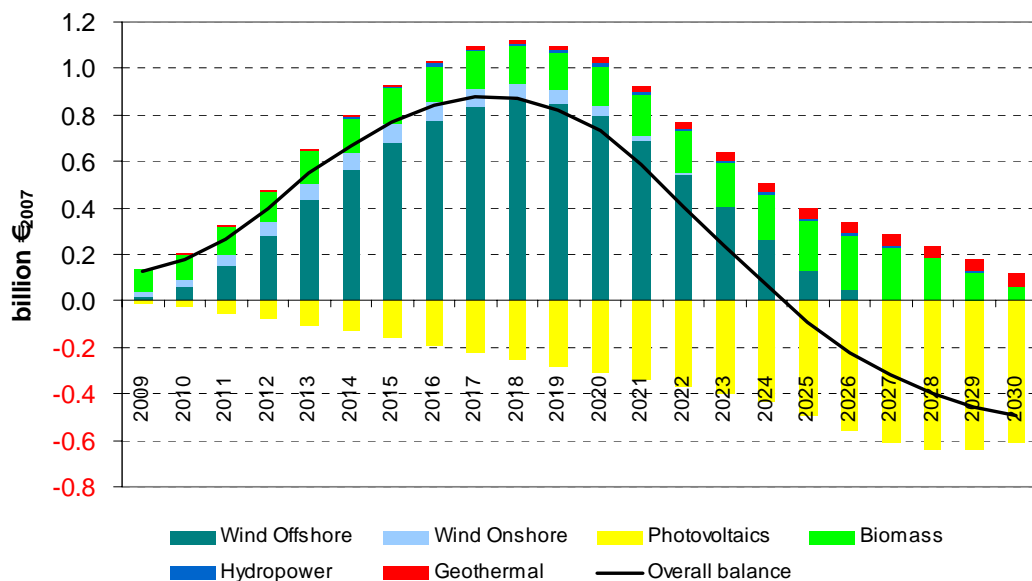


Figure 5 Changes in differential costs due to the policy recommendations in the Progress Report of 7 November 2007 as against the current EEG (quantity structure updated after [14]) [5]

The recommended range for offshore wind (11-15 cents/kWh and 5-7% taper) means an increase of around €500–€1,000 million in differential costs in 2020. As described above, Figure 5 assumes a fee of 12 cents/kWh, with a 5% taper from 1 January 2015 and an “early-starter bonus” of an additional 2 cents/kWh until 31 December 2013. This would initially incur additional costs of a good €800 million compared with the current EEG.

Without the proposed increase in fees payable for offshore wind, the policy recommendations would reduce the overall differential costs by a total of around €70 million in 2020 as against the current EEG. This reduction would comprise:

- A reduction of €10 million for solar electricity;
- An increase of €160 million for biomass, €20 million for geothermal, €10 million for hydro and €50 million for onshore wind.

The overall impact of the policy recommendations in the Progress Report is represented by the black line in Figure 5. The clear drop in payments to the offshore wind sector from the middle of the next decade, coupled with the sustained strong (additional) degression for PV will mean negative differential costs from 2025 onwards. Thus the amendments to the EEG will bring with them a fall in costs compared with the legislation currently in force.

The three tables below show the absolute differential costs for: the current EEG; the policy recommendations in the Progress Report; and the proposals in the government's draft EEG amendments, for selected years. The government's draft amendments make slightly different provisions for biomass and solar electricity generation to the Progress Report. In terms of the cumulative differential costs between 2009 and 2030, the policy recommendations would incur around 7% in total additional costs compared with the current EEG. These costs would be expected to peak in the next decade. Subsequently, the degressions in the levels of fees would begin to take effect, combined with the general rise in wholesale electricity prices. The same is true of the proposals in the government's draft amendments.

Table 2: Developments in differential costs under the current EEG (in billion €₂₀₀₇)

Sector	2010	2015	2020	2030	Cumulative 2009 - 2020	Cumulative 2009 - 2030
Hydropower	0.10	0.06	0.01	0	0.73	0.75
Onshore wind	1.29	0.87	0.05	0	9.63	9.64
Offshore wind	0.04	0.03	0.01	0	0.32	0.33
Solar	2.38	2.91	2.95	1.17	33.12	54.90
Biomass	1.70	1.54	1.02	0.05	17.74	21.89
Geothermal	0.01	0.03	0.06	0.03	0.38	1.06
Total	5.53	5.44	4.10	1.24	61.92	88.56

Table 3 Developments in differential costs given the policy recommendations in the 2007 EEG Progress Report (in billion €₂₀₀₇)

Sector	2010	2015	2020	2030	Cumulative 2009 - 2020	Cumulative 2009 - 2030
Hydropower	0.10	0.07	0.02	0.0	0.81	0.92
Onshore wind	1.33	0.94	0.10	0.0	10.34	10.38
Offshore wind	0.10	0.71	0.81	0.0	6.63	8.73
Solar	2.35	2.75	2.64	0.55	31.30	47.99
Biomass	1.82	1.69	1.18	0.10	19.44	25.15
Geothermal	0.01	0.04	0.08	0.09	0.48	1.58
Total	5.71	6.19	4.82	0.74	69.00	94.74

4.6 Draft amendments to the EEG

The draft amendments to the EEG adopted by the Federal Cabinet on 5 December 2007 differ slightly from the policy recommendations in the Progress Report. The main differences relate to the provisions on payment for the biomass sector. The provisions on payment for wind power have been concretised in line with the initial assumptions used to calculate the Progress Report's policy recommendations.

The quantity structure after [14] remains unchanged, and therefore only the costs for biomass are noticeably different, being slightly higher as shown in Table 4 below. Otherwise, the impact of these amendments on costs is unchanged.

Table 4 Developments in differential costs given the provisions on payment made in the government's draft EEG amendments (in billion €₂₀₀₇)

Sector	2010	2015	2020	2030	Cumulative 2009 - 2020	Cumulative 2009 - 2030
Hydropower	0.10	0.07	0.02	0.0	0.81	0.92
Onshore wind	1.33	0.94	0.10	0.0	10.34	10.38
Offshore wind	0.10	0.71	0.81	0.0	6.63	8.73
Solar	2.35	2.75	2.64	0.55	31.30	47.99
Biomass	1.81	1.70	1.19	0.11	19.44	25.37
Geothermal	0.01	0.04	0.08	0.09	0.48	1.58
Total	5.70	6.20	4.84	0.75	69.00	94.95

With the proposed rises in fees payable for offshore wind, the EEG differential costs would increase as against the current EEG by a total of around €740 million in 2020. This reduction would comprise:

- A €310 million reduction for solar electricity;
- A €10 million increase for hydropower;
- A €800 million increase for offshore wind;
- A €50 million increase for onshore wind;
- A €170 million increase for biomass;
- A €20 million increase for geothermal.

In line with the above, there are very few identifiable differences between the developments in differential costs shown in Figure 6 and those in Figure 5.

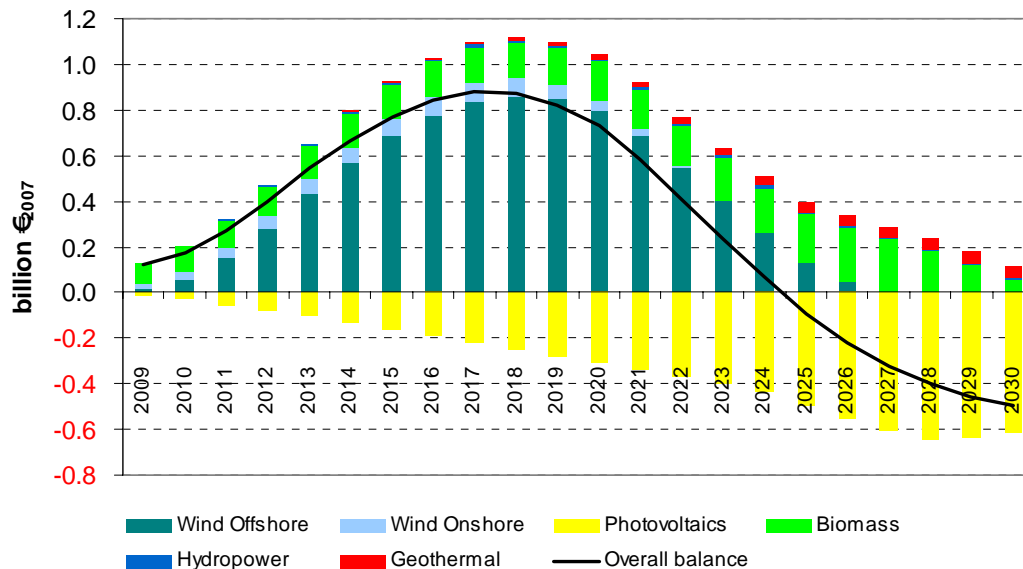


Figure 6 Changes in differential costs due to the draft EEG amendments of 5 December 2007 as against the current EEG (quantity structure updated after [14])

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