



Bird & Bird & A Erneuerbaren Energie Gesetz - EEG e a micro e minigeração de energia elétrica

ANEEL Workshop on Electricity Regulation
Brasilia, 6 November 2019, 15:45 – 17:00

Dr. Matthias Lang, Partner, Bird & Bird LLP, Düsseldorf, Germany

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0. Introduction

What are we talking about?

Micro and Mini Generation

- **Distributed Microgeneration:** Electricity generating plant with an installed capacity of 75 kW or less and using qualified cogeneration, according to ANEEL regulations, or renewable sources of electricity, connected to the distribution network through consumer unit facilities
- **Distributed Mini Generation:** Electricity generation plant with an installed power greater than 75 kW and less than or equal to 5 MW that uses qualified cogeneration, according to ANEEL regulations, or renewable sources of electric power, connected to the distribution network by means of installations of consumer units.

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0. Introduction

What are we talking about?

German Renewable Energy Sources Act - EEG

- Comprehensive statute covering the supply of renewable energy
- Started out very lean in 1991 as Grid Feed-In Law (Stromeinspeisungsgesetz – StromEinspG), with only five sections and did not even cover two pages in the Federal Law Gazette
- By 2000, the Stromeinspeisungsgesetz was replaced by the Renewable Energy Sources Act (EEG 2000), then containing 12 sections on 3.5 pages in the Federal Law Gazette
- EEG 2014 had 104 sections and four annexes, covering 55 pages in the Federal Law Gazette. Its transitional provisions alone are longer than the original EEG
- EEG 2017 came in 2 parts: 100 pages plus 41 pages in Federal Law Gazette
- This is some really serious legislation...

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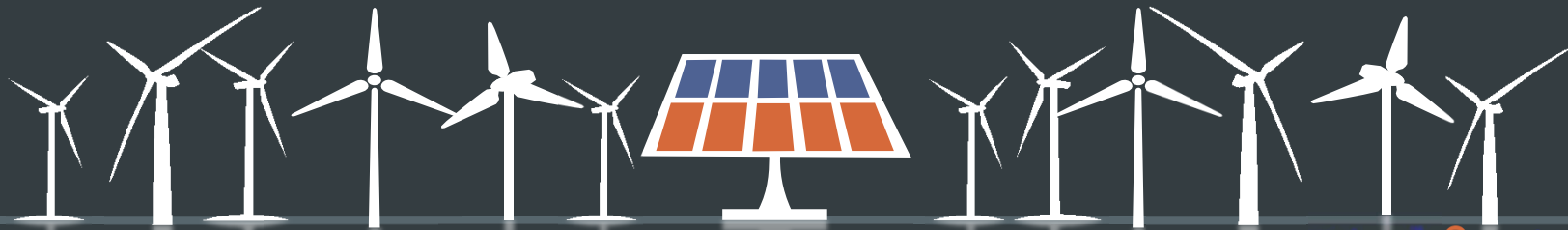


1. Renewable Support Regime Background

Expansion Targets

40 – 45 % by 2025
55 – 60 % by 2035
80 % by 2050

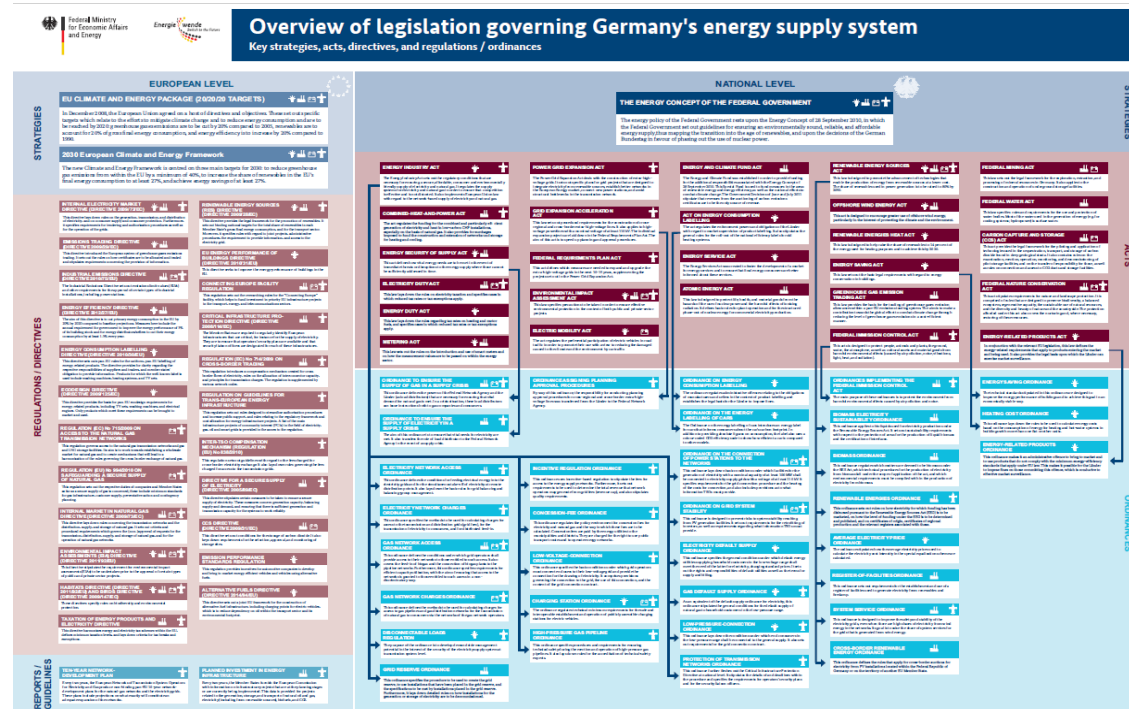
Renewable share in electricity generation



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1. Renewable support regime background

German Energy Laws



Source: [Federal Ministry for Economic Affairs and Energy, Overview of legislation governing Germany's Energy supply system](#) (last visit on 22.10.2019)

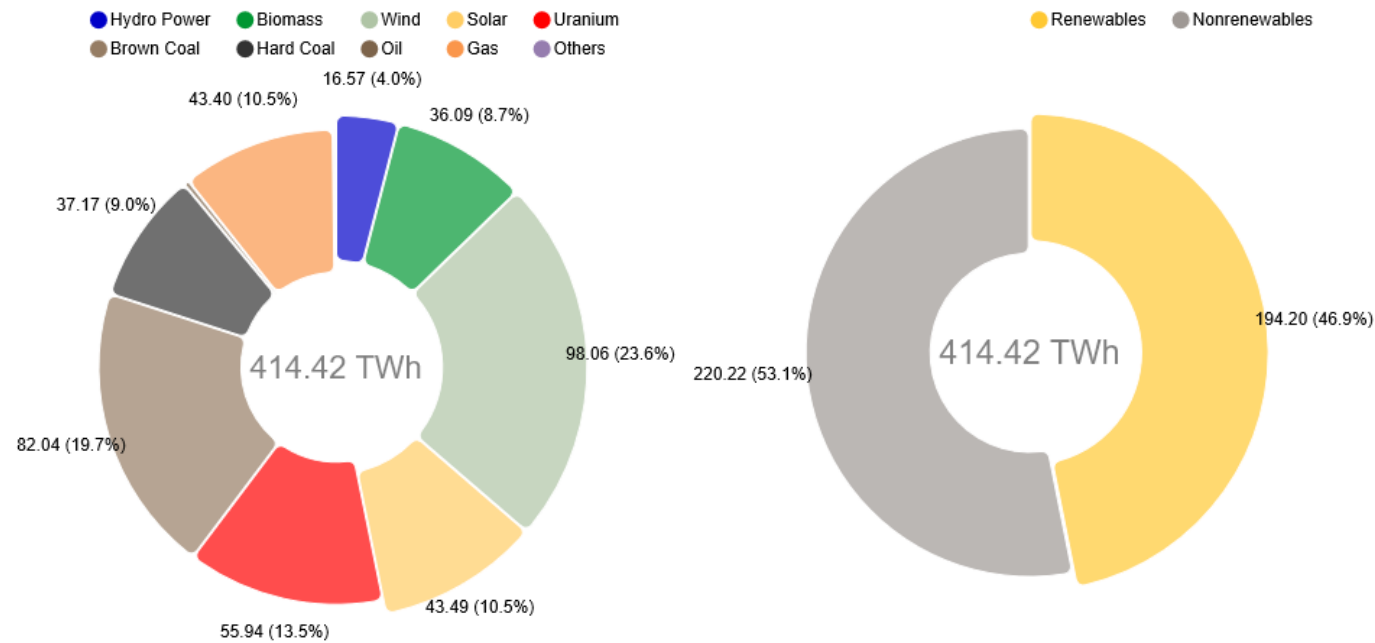
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1. Renewable support regime background

German Energy Mix



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Source: [Fraunhofer ISE](#) (last visit on 22.10.2019)

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1. Renewable support regime background

German Energy Mix Gross Power Generation

Source	2012		2013		2014		2015		2016		2017		2018	
	TWh	%	TWh	%	TWh	%	TWh	%	TWh	%	TWh	%	TWh	%
Lignite	160.7	25.6	160.9	25.2	155.8	24.9	154.5	23.9	150.0	23.1	148.8	22.7	145.5	22.5
Nuclear	99.5	15.8	97.3	15.3	97.1	15.5	91.8	14.2	84.6	13.1	76.3	11.7	76.0	11.8
Hard Coal	116.4	18.5	127.3	20.0	118.6	18.9	117.7	18.2	111.5	17.2	92.9	14.2	83.2	12.9
Natural Gas	76.4	12.2	67.5	10.7	61.1	9.7	62.0	9.6	80.5	12.4	86.7	13.3	83.4	12.9
Oil	7.6	1.2	7.2	1.1	5.7	0.9	6.2	1.0	5.9	0.9	5.6	0.9	5.2	0.8
Renewables	143.8	22.6	151.3	23.7	161.4	25.8	187.4	29.0	188.2	29.0	216.2	33.1	226.4	35.0
Wind	50.7	8.1	51.7	8.1	57.3	9.1	79.2	12.3	78.6	12.1	105.6	16.1	111.5	17.3
Hydro	22.1	3.5	23.0	3.6	19.6	3.1	19.0	2.9	20.5	3.2	20.2	3.1	16.6	2.6
Biomass	38.2	6.1	40.1	6.3	42.2	6.7	44.6	6.9	44.9	6.9	45.0	6.9	45.7	7.1
PV	26.4	4.2	31.0	4.9	36.1	5.7	38.7	6.0	38.1	5.9	39.4	6.0	46.2	7.1
Waste	5.0	0.8	5.4	0.8	6.1	1.0	5.8	0.9	5.9	0.9	6.0	0.9	6.2	1.0
Other	25.7	4.1	26.2	4.1	27.0	4.3	27.3	4.1	27.3	4.3	27.5	4.1	27.0	4.1

Source: [AG Energiebilanzen e.V., Gross power generation by energy carrier](#), status May 2019 (last visit on 22.10.2019)

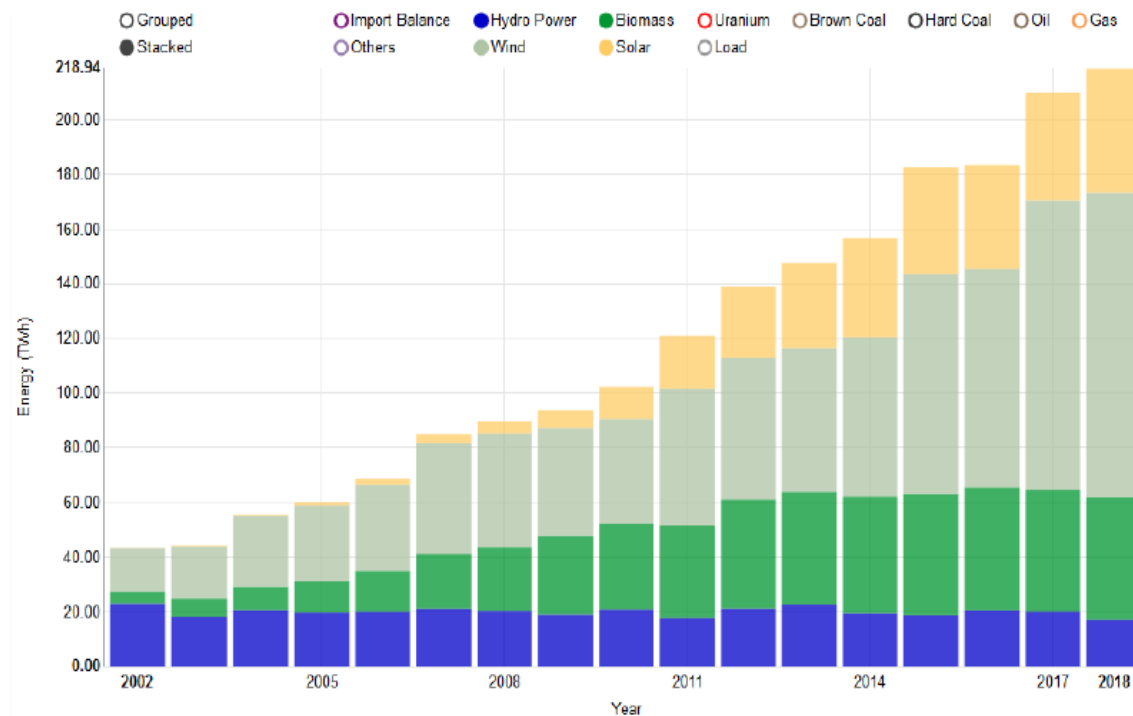
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1. Renewable support regime background

Development of Electricity Generation from renewable sources



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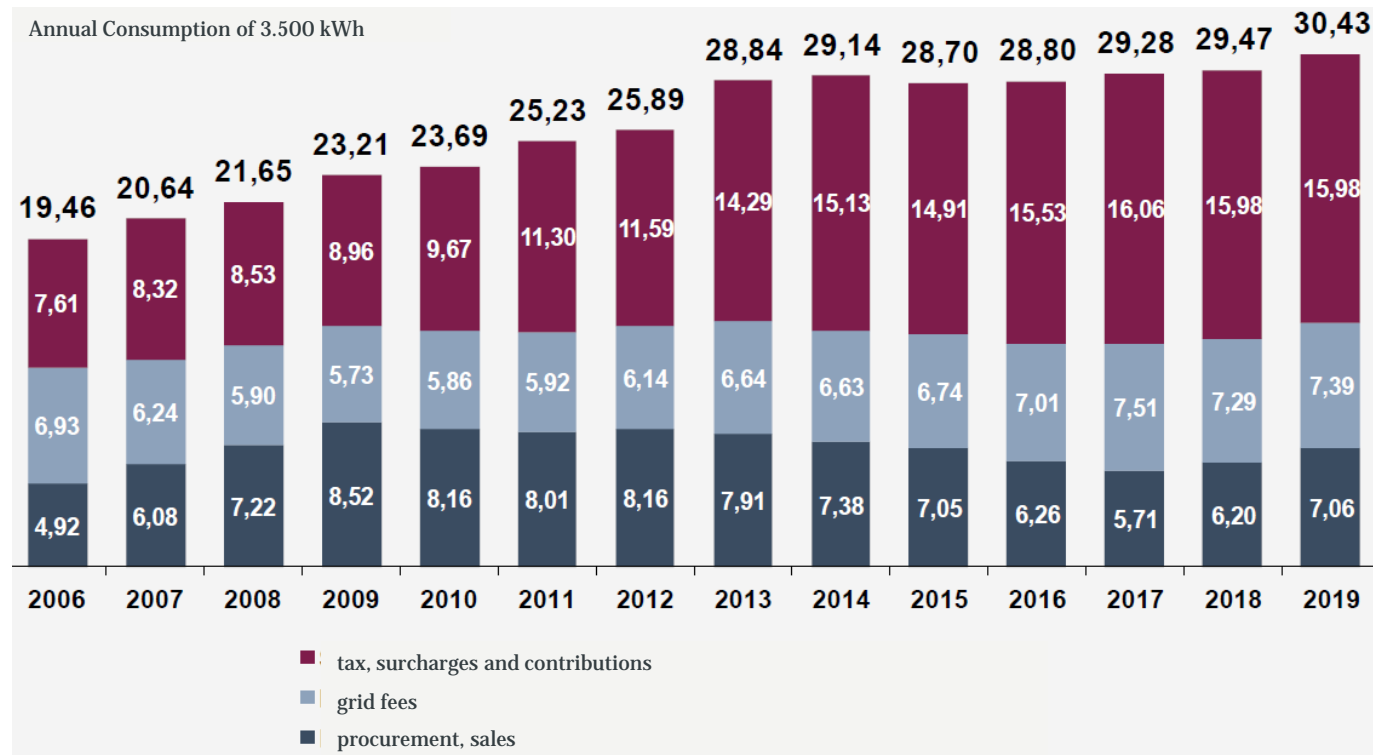
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Source: [Fraunhofer ISE](#) (last visit on 22.10.2019)

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1. Renewable Support Regime Background

Average electricity price per household in ct/kWh



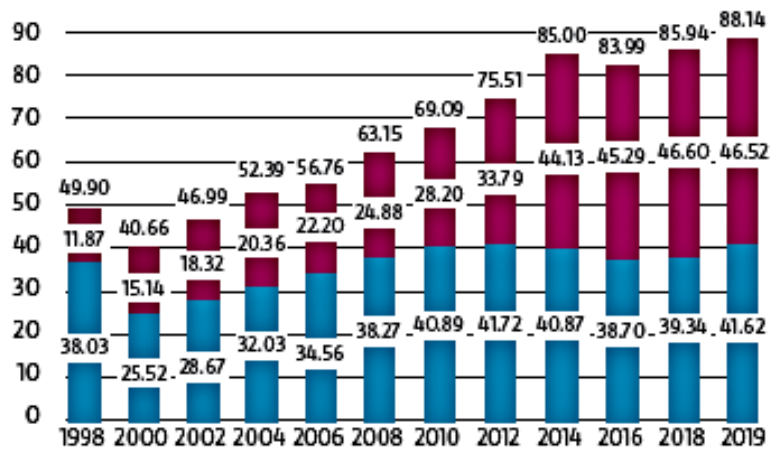
Source: [BDEW Strompreisanalyse, 07/2019](#) (last visit on 02.11.2019)

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1. Renewable Support Regime Background

Electricity bill for households



Average electricity bill for a household with an annual consumption of 3 500 kWh (euros)

- Procurement, network charge, sales
- Taxes, duties and levies: EEG levy, KWKG levy, "Article 19 StromNEV-levy", offshore-liability levy, levy for sheddable loads, electricity tax, concession fees, VAT

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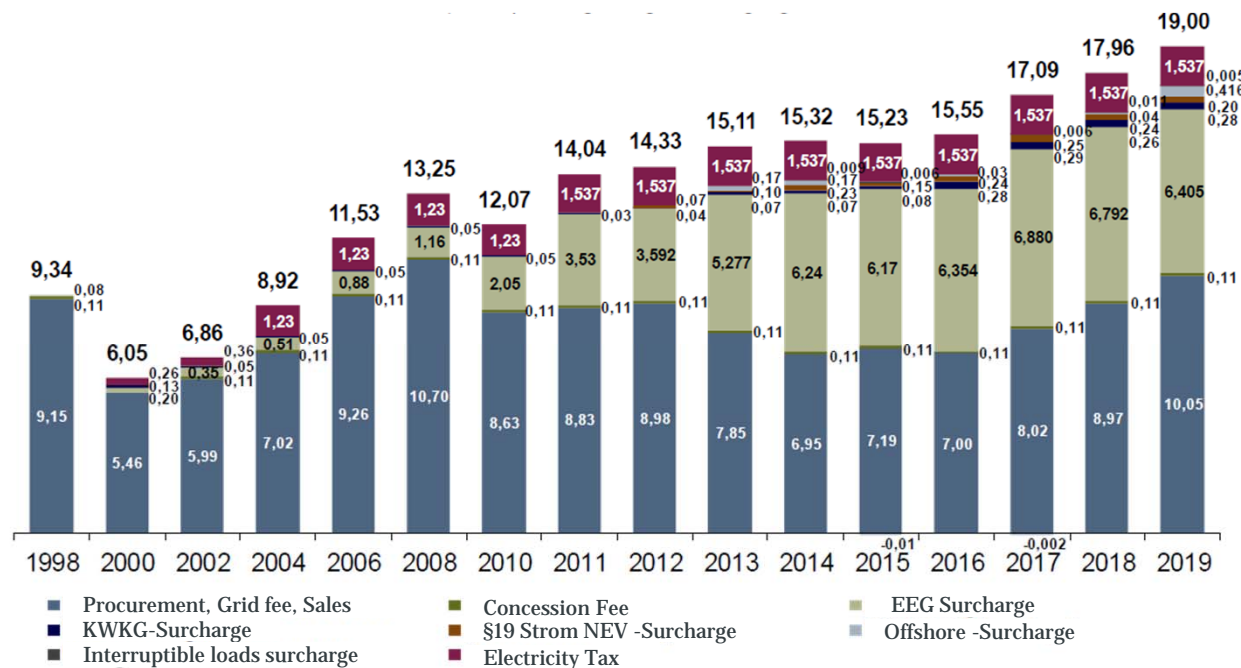
Source: [BDEW-Strompreisanalyse](#) (last visit on 22.10.2019)

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1. Renewable Support regime background

Electricity Price for Industry



Electricity price for industry (including electricity tax)

- Average electricity price for industry in ct/kWh (including electricity tax)
- Annual consumption 160 to 20.000 MWh (medium voltage supply; purchase 100kW/1.600h to 4.000kW/5.000h)

Source: [Bundesverband der Energie- und Wasserwirtschaft e.V., Erneuerbare Energien und das EEG: Zahlen, Fakten, Grafiken \(2019\), status 2019](#) (last visit on 22.10.2019)

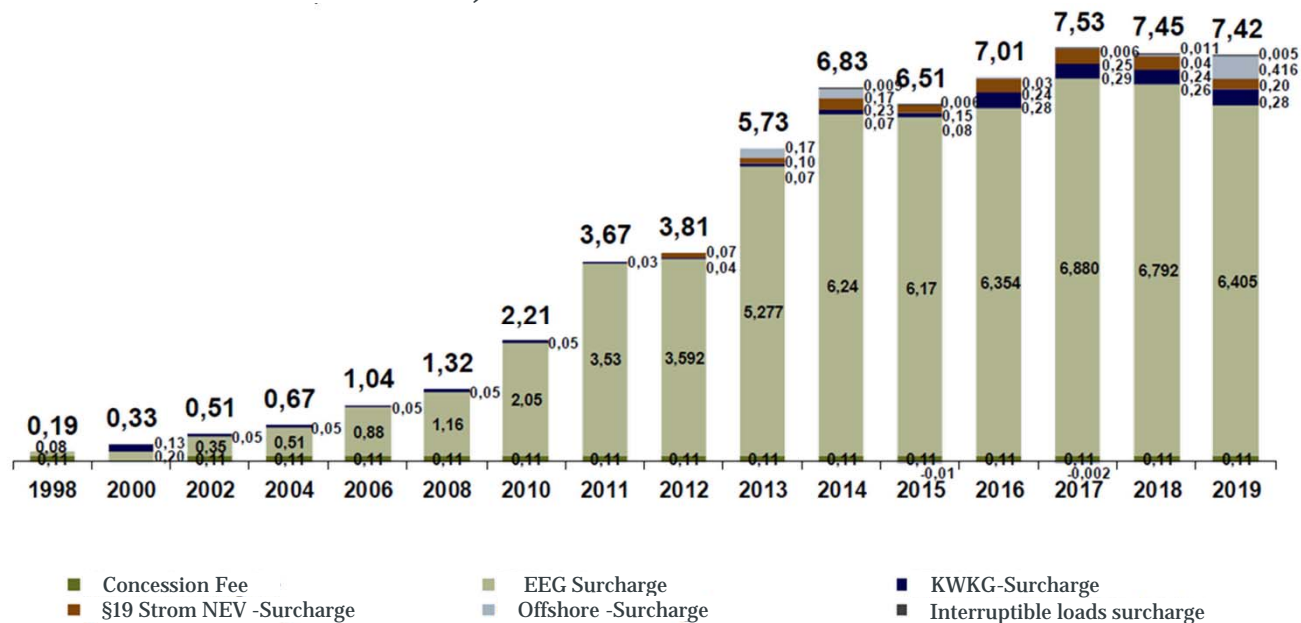
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1. Renewable Support regime background

Tax and Charges for Industry in ct/kWh (without electricity tax)

Annual consumption 160 to 20.000 MWh (medium voltage supply; purchase 100kW/1.600h to 4.000kW/5.000h)



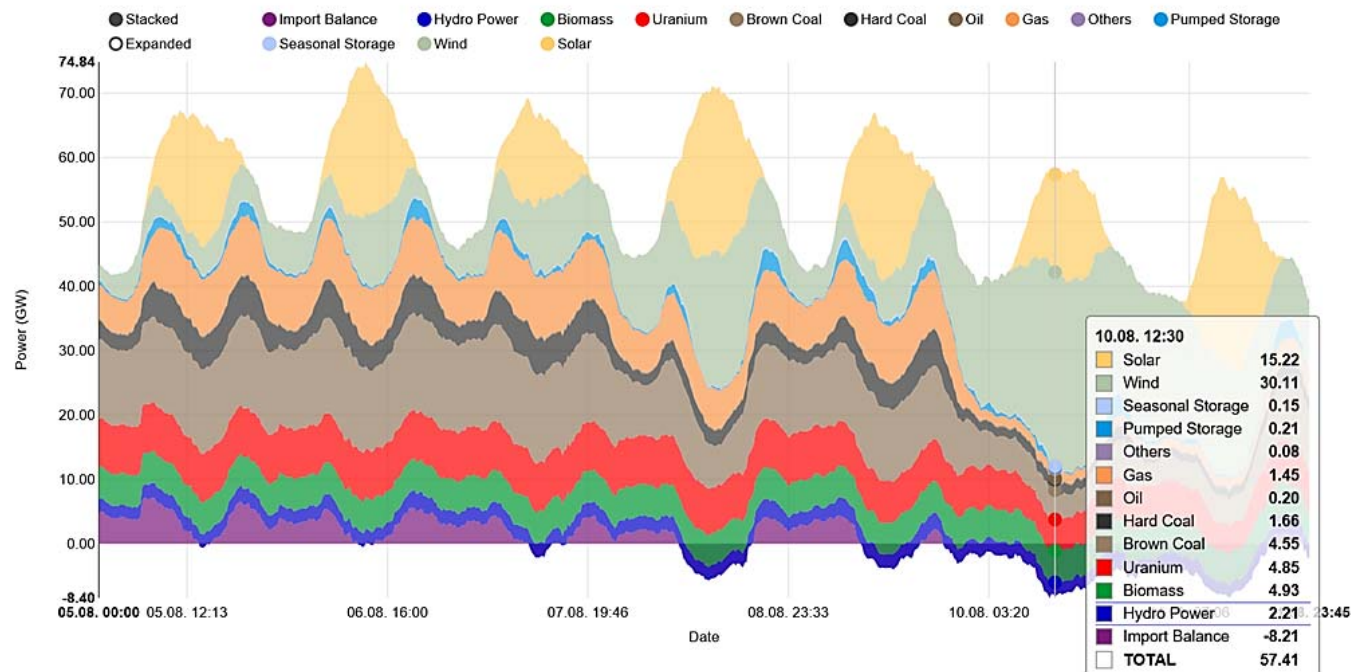
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Source: [BDEW-Strompreisanalyse](https://www.bdew.de/energiepreise/strompreise/strompreise-analyse) (last visit on 22.10.2019)

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1. Renewable Support Regime Background

German Energy Mix 10 August 2019



Renewables:
50.62 GW out of 49.2
GW consumption.
➔ 103%

Source: [Fraunhofer ISE Energy Charts, Electricity production in Germany week 4/2019](#) (last visit on 18.09.2019)

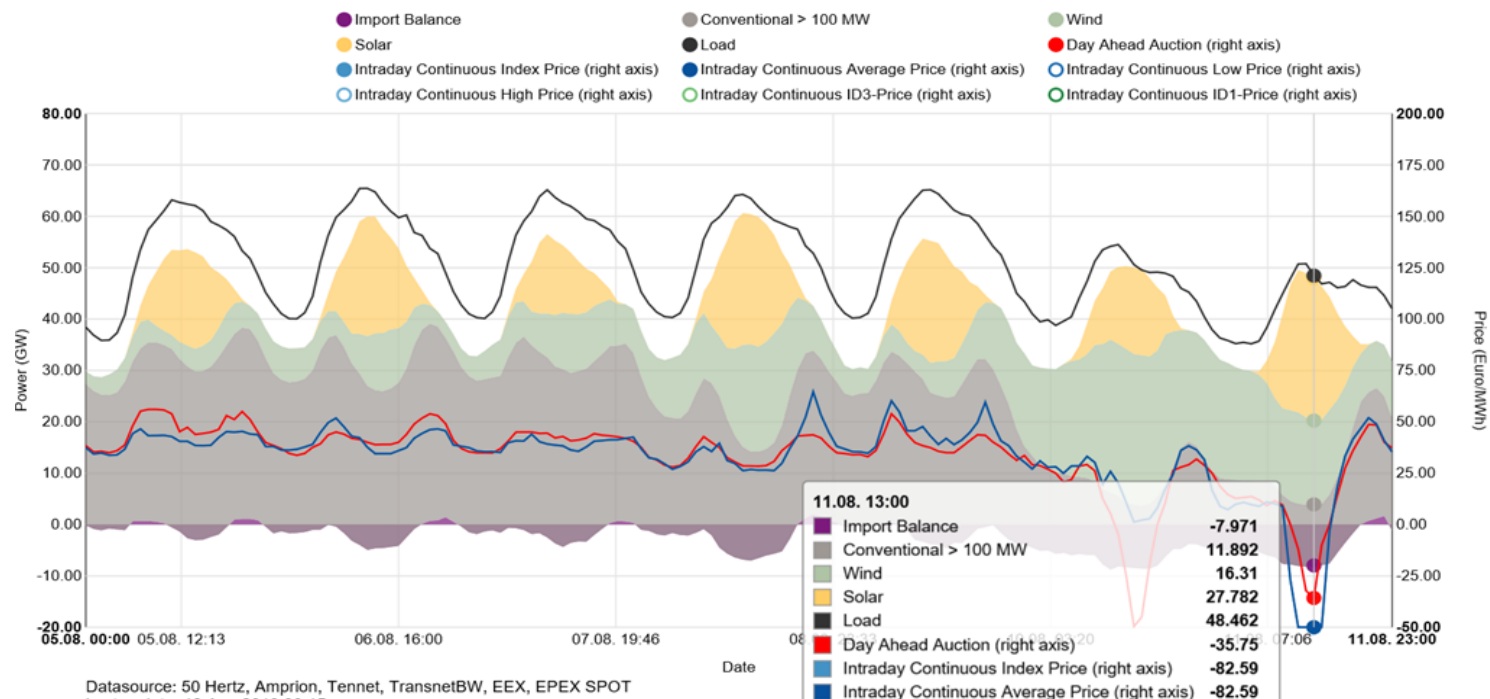
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1. Renewable Support Regime Background

German Electricity Production and Spot Prices 2019 Week 32



Source: [Fraunhofer ISE Energy Charts, Electricity production in Germany week 17/2019](#) (last visit on 13.05.2019)

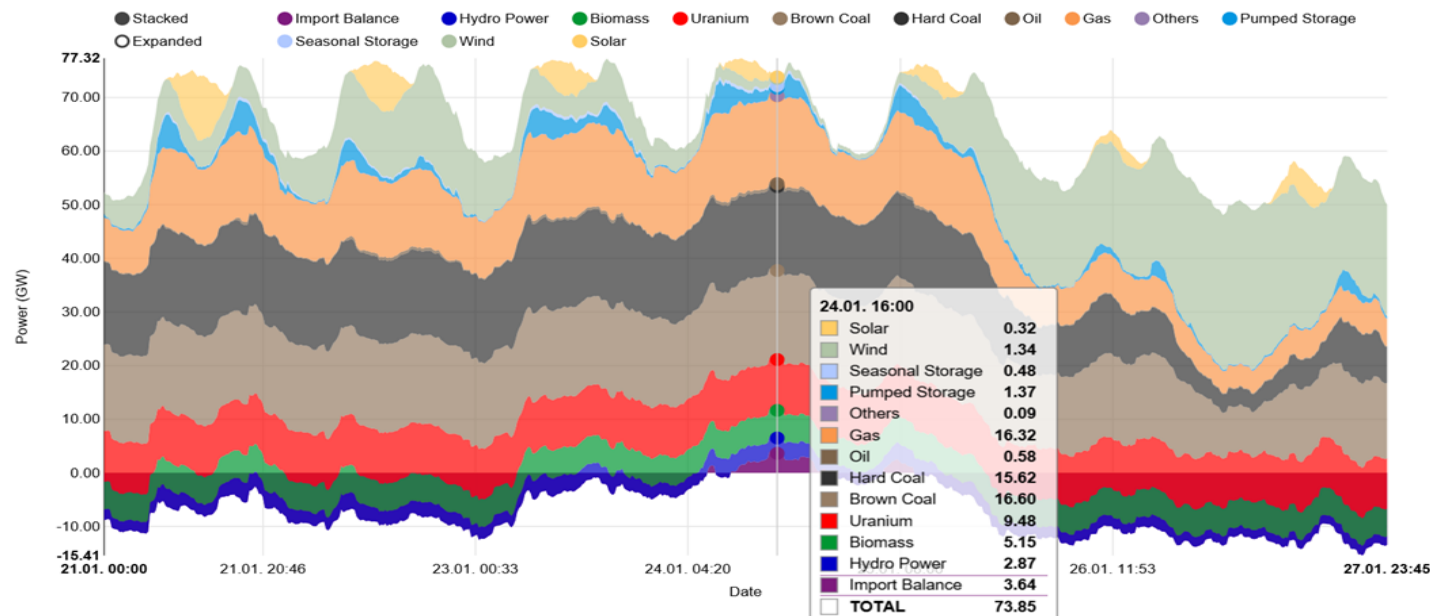
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1. Renewable Support Regime Background

German Electricity Production 2019 Week 4



Renewables:
11.53 GW out of
73.85 GW
consumption.
➔ 16%

Source: [Fraunhofer ISE Energy Charts, Electricity production in Germany week 4/2019](#) (last visit on 18.09.2019)

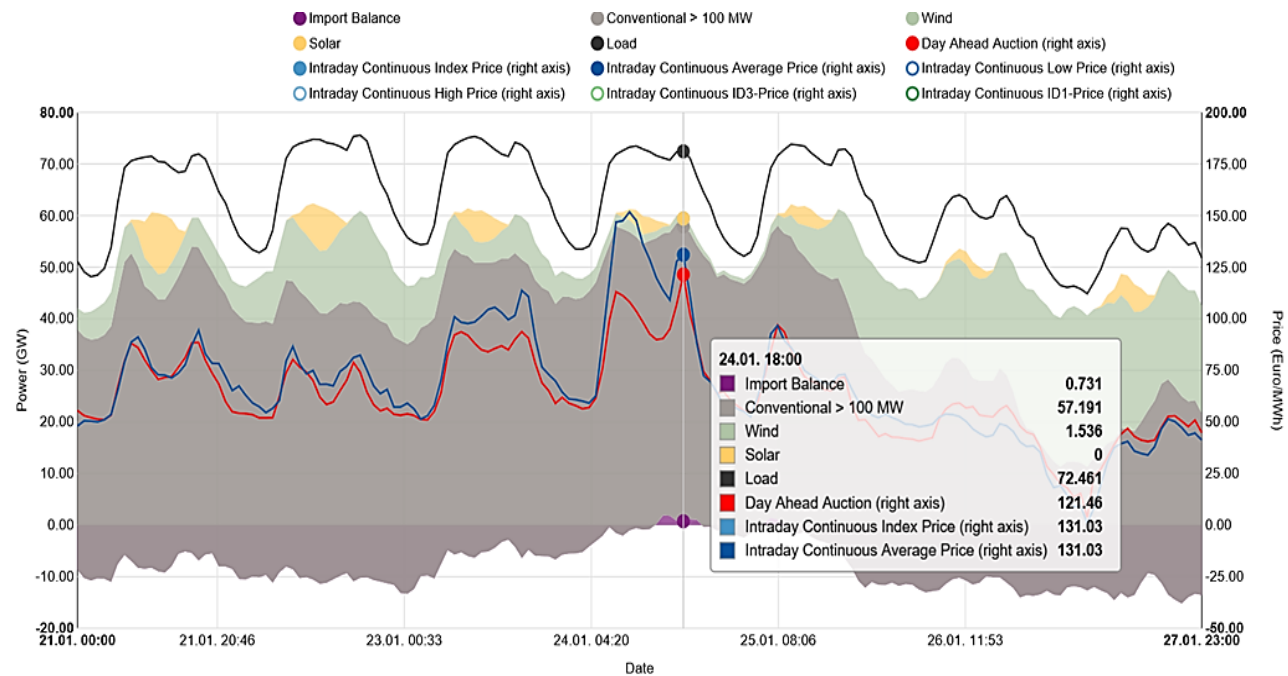
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1. Renewable Support Regime Background

German Electricity Production and Spot prices 2019 Week 17



Source: [Fraunhofer ISE Energy Charts, Electricity production in Germany week 17/2019](https://www.ise.fraunhofer.de/en/energy-charts/energy-charts/germany/germany-week-17-2019) (last visit on 18.09.2019)

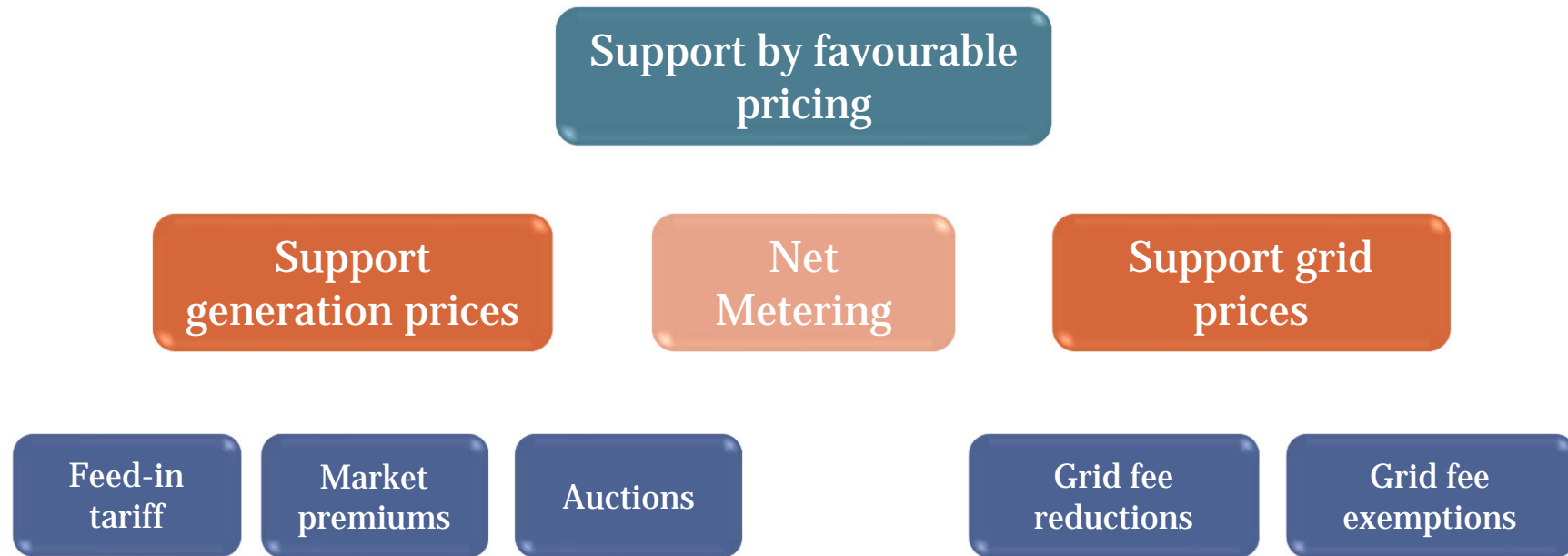
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1. Renewable Support Regime Background

Overview of support regimes



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2. EEG – Renewables Support

2.1 EEG Structure

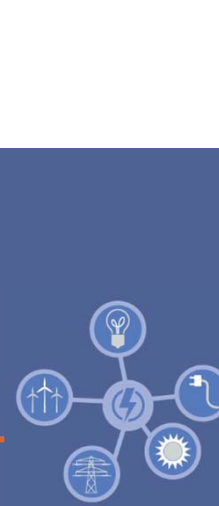
2.2 EEG Cost Reallocation Scheme

2.3 EEG 2017

2.4 Support Reduction

2.5 EEG – Prosumer Support

2.1 EEG Structure



2.1 EEG Structure

Background

EEG as Backbone of German Renewables Support

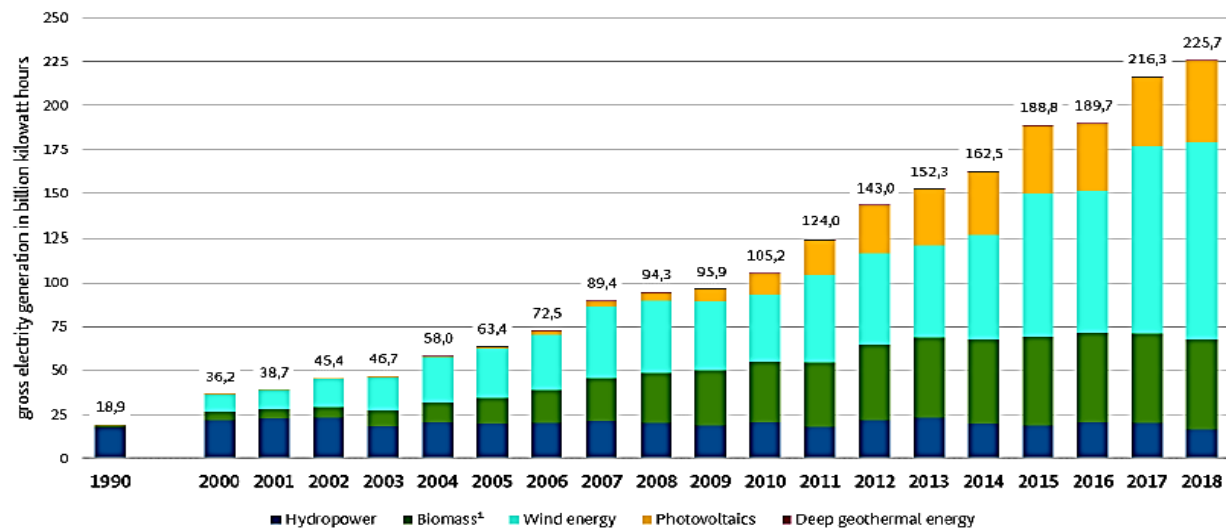
- Purpose of the Renewable Energy Sources Act
 - Enable the energy supply to develop in a sustainable manner
 - Generate electricity from renewable energy sources
- Increase share of electricity generated from renewable energy sources
 - To at least 80% of gross electricity consumption by 2050, with interim steps:
 - 40 to 45% by 2025 and
 - 55 to 60% by 2035
- Proven track record
 - 45.9 GW PV (end of 2018)
 - 59.4 GW wind (end of 2018)



2.1 EEG Structure

Background

Development of renewables-based electricity generation in Germany



¹ incl. solid, liquid and gaseous biomass, sewage sludge and the biologic fraction of waste

BMWi based on Working Group on Renewable Energy-Statistics (AGEE-Stat); as of February 2019; all figures provisional

Source: [Federal Ministry for Economic Affairs and Energy, Development of Renewable Energy Sources in Germany 2019](#). (last visit on 06.05.2019)

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2.1 EEG Structure

Background



Constant Change

- Major revisions and numerous updates
 - EEG 2000, EEG 2004, EEG 2009, EEG 2012, EEG 2014, EEG 2017
 - Numerous revisions of each EEG, sometimes even before another revision entered into force
 - Sometimes quite difficult to determine which provision of the EEG in which version applies to a specific installation
 - In any event: Constant revisions of support regime to adjust to technological development, changing prices, build-up of new capacity, cost considerations, political priorities, and a multitude of other reasons

2.1 EEG Structure

Background

Key Elements EEG (1)

- Sophisticated support scheme for renewables in Act on the Development of Renewable Energy Sources (Renewable Energy Sources Act - EEG 2014)
 - All renewables, all sizes, not only micro and mini generation
 - Statutory provisions designed to enable and facilitate substantial growth for different renewable energy sources
 - Includes protection against "standard lines of defence" of incumbents against renewables, including grid connection, grid capacity expansion, priority feed-in, compensation, data transfers, support types and levels
 - Highly developed and with attention to lots of details
 - additional case law, widely accepted by providers of equity and debt

2.1 EEG Structure

Background

Key Elements EEG (2)

- Differentiated, above-market remuneration, determined by statute
 - Mainly market premiums paid in addition to revenue of self-marketed energy
 - Fixed feed-in tariffs, mainly for new smaller generators or grandfathered older installations
 - Support level depending on renewable source (PV, onshore/offshore wind, geothermal, etc.) and capacity/type of installation
 - Introduction of auctions to determine support level
 - Experience with competition-based pricing gathered initially with electricity from freestanding solar power plants (Freiflächenanlagen)
 - [no net metering]

2.1 EEG Structure

Background

Key Elements EEG (3)

- Financial support continues to be granted for a period of 20 years plus the year of commissioning
 - For new plants, the remuneration depends on the date of installation, existing plants keep their support level
 - Later installation leads to reduced remuneration (so-called degression), reflecting cost cuts due to technological innovation
 - Degression and degression intervals vary, depending on different sources of renewable energies and are reviewed regularly
- Power purchase agreement not necessary
 - Grid system operators do not have to enter into a contract to fulfil their EEG obligations

2.1 EEG Structure

Background

Key Elements EEG (4)

- Grid operators have to pay EEG remuneration for power fed into their grids
- Priority feed-in and obligation for grid operators to connect renewable power plants to grids
- Reallocation of EEG support costs incurred by the transmission system operators (TSOs) using a sophisticated EEG surcharge system that eventually passes costs on to electricity consumers
 - System supplemented by the so-called ‘special equalisation scheme’ (Besondere Ausgleichsregelung) for certain energy intensive consumer groups and railroad operators allowing for reductions of the surcharge

2.1 EEG Structure

Expansion Path (Ausbaupfad) 2014 – 2020

Encourage growth of renewables

- 40% to 45% by 2025
- 55% to 60% by 2035
- in line with previous targets

PV: 2,500 MW/year gross

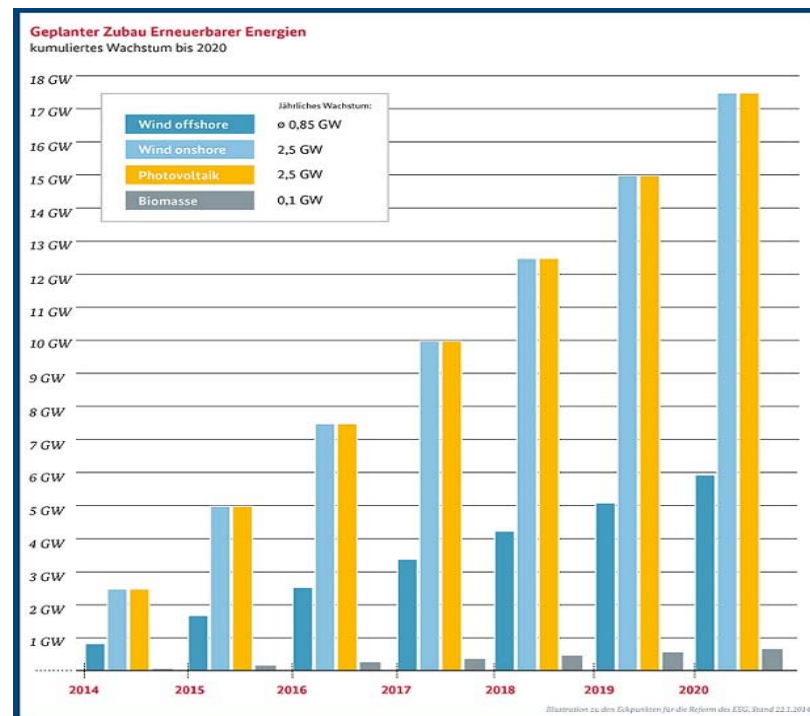
- Reality: 1,899 (2014), 1,498 (2015), 1,524.5 (2016), 1,750 (2017), 2,960 (2018)

Onshore Wind: 2,500 MW/year net

- Reality: 4,750 (2014), 3,730.95 (2015), 4,625.25 (2016), 5,334 (2017), 2,402 (2018)

Offshore Wind: Planned 6,500 MW by 2020; 15,000 MW by 2030

- Reality: 820 MW (2016); 1250 MW (2017); 970 MW (2018)



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Source: [Federal Ministry for Economic Affairs and Energy, Geplanter Zubau Erneuerbare Energien](#) (last visit on 14.05.2019)

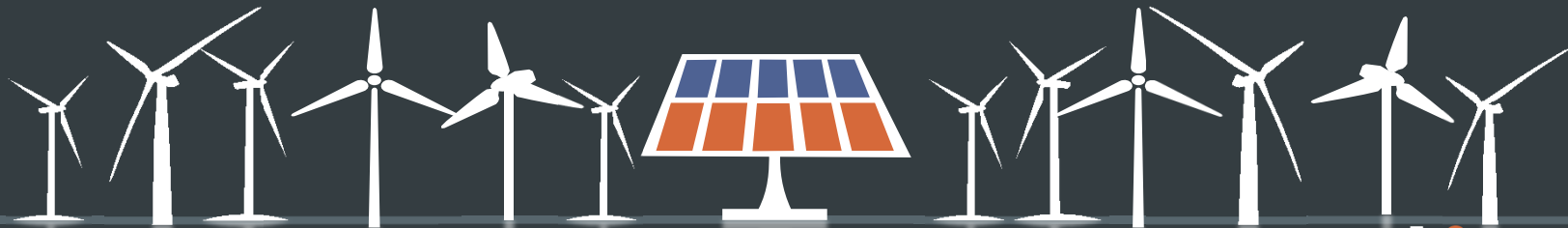
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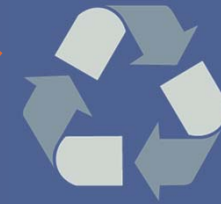
Expansion Targets

40 – 45 % by 2025
55 – 60 % by 2035
80 % by 2050

Renewable share in electricity generation



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2.2 EEG Cost Reallocation Scheme

2.2 EEG Cost Reallocation Scheme

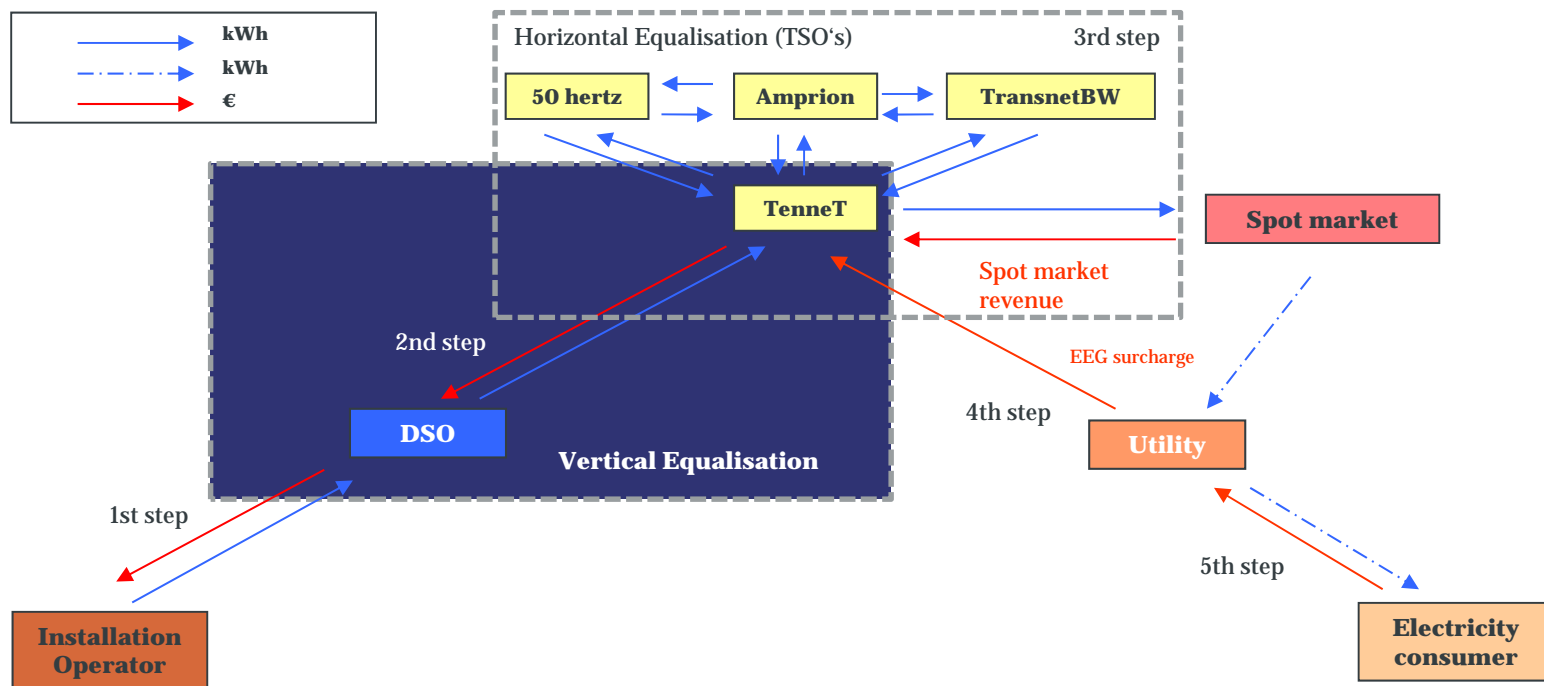
EEG Surcharge Reallocation Scheme

Explanation of EEG Surcharge Reallocation Scheme

- Final consumers pay for feed-in-tariffs/market premiums/other EEG support payments with EEG-surcharge
- Renewable energy operators receive feed-in tariffs/market premiums/remuneration by DSOs
- DSOs pass costs on to TSOs
- TSOs clear support payments/sell renewable energy at the energy exchange
- TSOs pass on costs to utilities who pass costs on to final consumers

2.2 EEG Cost Reallocation Scheme

EEG Surcharge Reallocation Scheme



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2.2 EEG Cost Reallocation Scheme

EEG Surcharge Reallocation Scheme

Aktuelle Angaben der Übertragungsnetzbetreiber zu den Einnahmen- und Ausgabenpostionen nach § 3 (1) EEGV

Einnahmen [€] im jeweiligen Monat in 2018	Jan	Feb	Mär	Apr	Mai	Jun	Juli	Aug	Sept	Ok	Nov	Dez	Gesamtwert
1. Erlöse aus der Vermarktung nach § 3 EEGV	65.367.736,42	106.886.823,95	112.360.406,23	141.940.206,26	172.098.646,46	194.068.999,98	279.562.898,42	262.613.962,50	181.255.278,77	178.704.808,53	116.277.177,26	71.616.464,71	1.866.073.960,06
2. Erlöse aus dem EEG-Umlage	2.307.281.583,89	2.284.696.352,62	2.189.091.528,38	2.229.968.638,91	2.651.739.550,17	1.971.316.416,96	1.861.138.490,84	1.526.888.048,25	1.526.688.020,90	1.597.248.428,84	1.389.828.212,94	2.069.707.054,96	24.577.667.266,87
3. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (1) EEGV	165.928.534,13	162.359.374,07	162.265.867,49	162.369.292,29	162.394.730,99	162.370.709,99	162.370.709,99	162.370.709,99	162.370.709,99	162.370.709,99	162.370.709,99	162.370.709,99	1.928.253,34
4. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (2) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
5. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (3) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
6. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (4) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
7. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (5) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
8. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (6) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
9. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (7) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
10. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (8) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
11. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (9) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
12. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (10) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
13. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (11) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
14. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (12) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
15. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (13) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
16. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (14) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
17. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (15) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
18. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (16) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
19. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (17) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
20. Erlöse aus der Vermarktung von Stromerzeugungsanlagen nach § 7 (18) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Gesamt [€]	2.676.202.890,41	2.634.468.895,73	2.592.268.659,31	2.421.107.666,54	2.881.902.162,63	2.176.291.586,91	2.136.448.728,10	2.297.391.215,20	2.207.326.374,44	2.201.668.184,33	2.145.411.478,13	2.180.248.216,01	27.274.642.228,01



Ausgaben [€] im jeweiligen Monat in 2018	Jan	Feb	Mär	Apr	Mai	Jun	Juli	Aug	Sept	Ok	Nov	Dez	Gesamtwert
1. Zahlungen nach Art. 9, so sowie 10-101 EEGV	1.975.240.116,59	1.828.922.546,63	1.800.876.736,58	2.137.219.988,07	2.558.943.694,94	2.908.586.183,65	2.597.511.942,14	2.449.828.352,16	2.196.512.059,99	2.144.307.487,03	1.915.276.946,93	1.530.678.912,32	26.960.083.336,93
2. Ausgaben auf Grund einer Veranordnung nach § 8a EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
3. Kostenerstattung nach § 7 (2) EEGV (z.B. für Umlage)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
4. Negative Differenzbeträge aus Zinsen nach § 9 (1) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
5. Erlöse aus der Vermarktung nach § 7 (1) EEGV	1.378.044,56	2.475.776,10	401.311,60	3.085.750,07	6.495.692,42	4.586.968,88	8.721.844,48	3.504.172,16	4.586.968,88	1.443.608,27	5.019.317,72	3.524.790,36	62.972.872,98
6. Erlöse aus der Vermarktung nach § 7 (2) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
7. Erlöse aus der Vermarktung nach § 7 (3) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
8. Erlöse aus der Vermarktung nach § 7 (4) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
9. Erlöse aus der Vermarktung nach § 7 (5) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
10. Erlöse aus der Vermarktung nach § 7 (6) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
11. Erlöse aus der Vermarktung nach § 7 (7) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
12. Erlöse aus der Vermarktung nach § 7 (8) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
13. Erlöse aus der Vermarktung nach § 7 (9) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
14. Erlöse aus der Vermarktung nach § 7 (10) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
15. Erlöse aus der Vermarktung nach § 7 (11) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
16. Erlöse aus der Vermarktung nach § 7 (12) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
17. Erlöse aus der Vermarktung nach § 7 (13) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
18. Erlöse aus der Vermarktung nach § 7 (14) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
19. Erlöse aus der Vermarktung nach § 7 (15) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
20. Erlöse aus der Vermarktung nach § 7 (16) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
21. Erlöse aus der Vermarktung nach § 7 (17) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
22. Erlöse aus der Vermarktung nach § 7 (18) EEGV	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Gesamt [€]	1.980.261.319,15	1.828.922.546,63	1.800.876.736,58	2.137.219.988,07	2.558.943.694,94	2.908.586.183,65	2.597.511.942,14	2.449.828.352,16	2.196.512.059,99	2.144.307.487,03	1.915.276.946,93	1.530.678.912,32	26.960.083.336,93

Saldo [€] jeweiligen Monats (Einnahmen - Ausgaben)	400.266.017,82	496.091.119,93	491.771.617,90	277.249.959,16	-299.244.699,52	-744.695.814,67	-419.268.613,37	-178.995.099,31	-412.944.974,47	-2.200.177,13	213.110.669,40	649.262.653,99	417.429.090,41
Kontostand zum 31.12.2017:	3.019.045.592,61												
Kontostand (Monatsende)	4.419.111.849,22	4.966.142.969,60	5.368.019.400,58	5.638.789.359,74	5.657.443.695,64	4.814.174.767,20	4.064.779.719,28	3.651.883.954,72	3.468.882.023,26	3.062.910.200,46	2.849.637.531,06	2.498.979.875,05	2.113.642.020,64

1) Der Umlageanteil 2018 aus der Umlageabgrenzung beträgt nach Folie 14 aus "Prognose der EEG-Umlage 2018 nach EEGV" (s. www.netztransparenz.de) 4,41 ct/kWh. Mit Bezug auf die gesamte EEG-Umlage ergibt sich ein Anteil von 4,41% bzw. 0,000441 auf 0,0022052091€.

Source: [Netztransparenz, Aktuelle Ausgaben der Übertragungsnetzbetreiber, status December 2018](http://www.netztransparenz.de) (last visit on 6.05.2019)

- In 2018:
- 26,657,507,142.58€ costs (for feed-in tariffs, market premiums, system etc.)
- 1,866,073,960.06€ sales proceeds
- 24,068,777,068.82 € had to be reallocated to electricity consumers through the EEG surcharge scheme

2.3 EEG 2017



2.3 EEG 2017

Why a new EEG?

The European Commission's state aid decision of 23 July 2014 – C(2014) 5081 final – for EEG 2014

- Commission reviewed EEG 2014 already in light of the then upcoming Guidelines on state aid for environmental protection and energy 2014-2020 (EEAG), against the state aid law dispute on the EEG 2012
- Approval of the EEG 2014, which already contained the basis for a change to the support system for renewable energies towards auctioning to determine financial support (Sec. 2 para. 5 EEG 2014)
- From 2017 onwards, support rates for (newly installed) renewable generation were no longer to be fixed by government, but determined via a market-based auction scheme
- EEG 2017 implemented the auctioning system for most new installations

2.3 EEG 2017

Guiding Principles

Three Guiding Principles

1. The expansion corridor for renewable energy shall be met
2. Renewable energy expansion shall be cost-effective
3. All actors shall have fair chances during the tenders, plurality of actors



2.3 EEG 2017

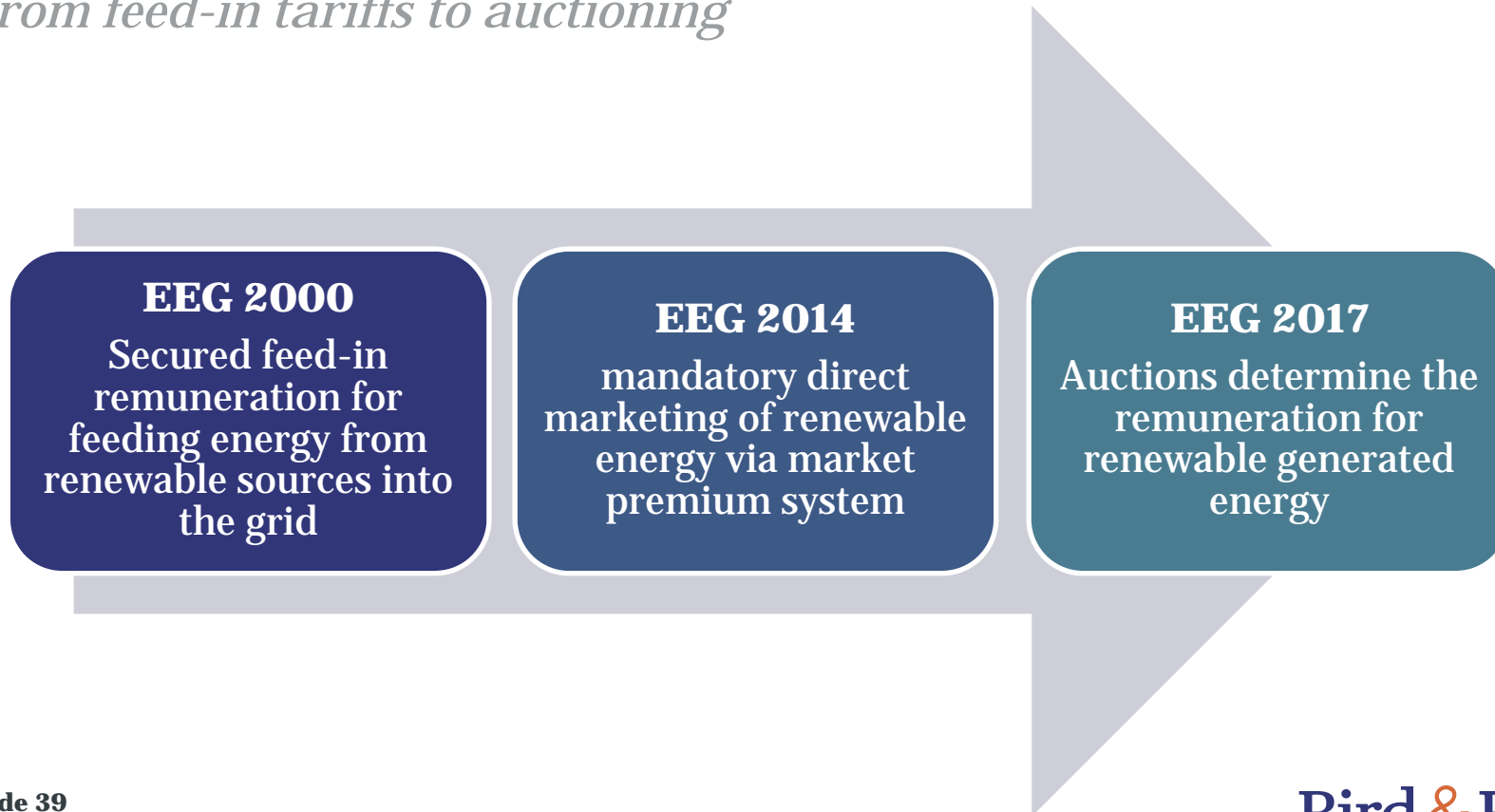
Auctions as a Key Point

General Key Points of the EEG 2017

- Auctions are to cover more than 80% of electricity generated in new renewable energy installations
 - Grandfathering for existing installations
- Auctioning applies to wind onshore and offshore, solar energy and biomass
- Auction design adapts to each specific situation of different technologies and respective market conditions
- First auctions began in 2017

2.3 EEG 2017

From feed-in tariffs to auctioning



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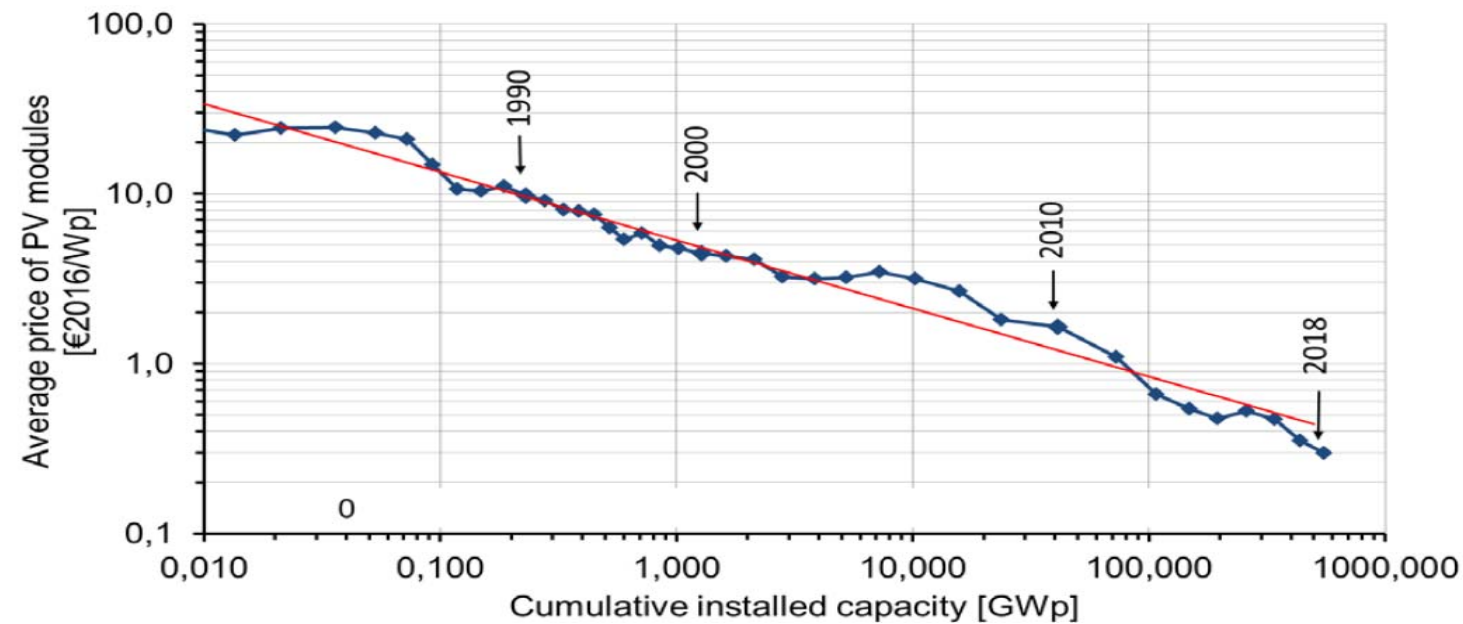
2.4 Support Reductions



2.4 Support Reductions

Reductions are a must

Historical price development of PV modules



Source: [Fraunhofer ISE, Recent Facts about Photovoltaics in Germany](#), Last update: October 14, 2019

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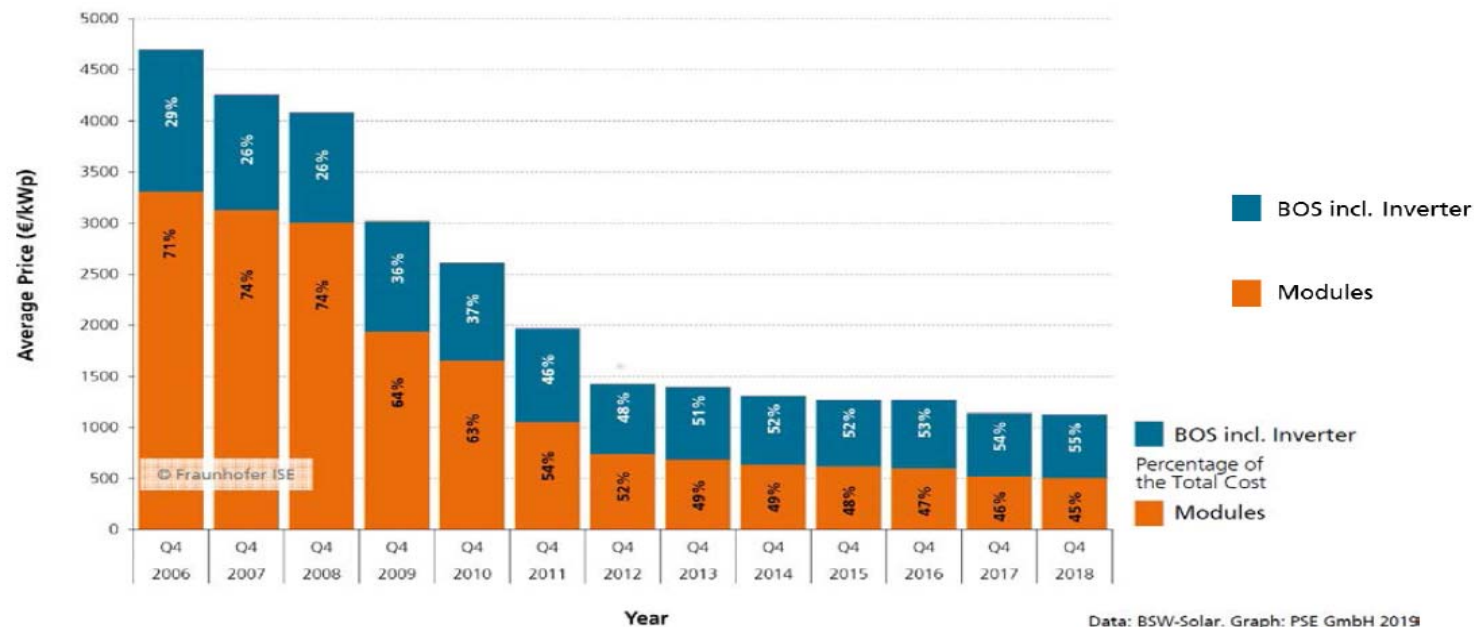
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2.4 Support Reductions

Reductions are a must

Average End Customer Price Rooftop Systems (rated nominal power from 10-100 kWp)



Source: [Fraunhofer ISE, Recent Facts about Photovoltaics in Germany](#), Last update: October 14, 2019

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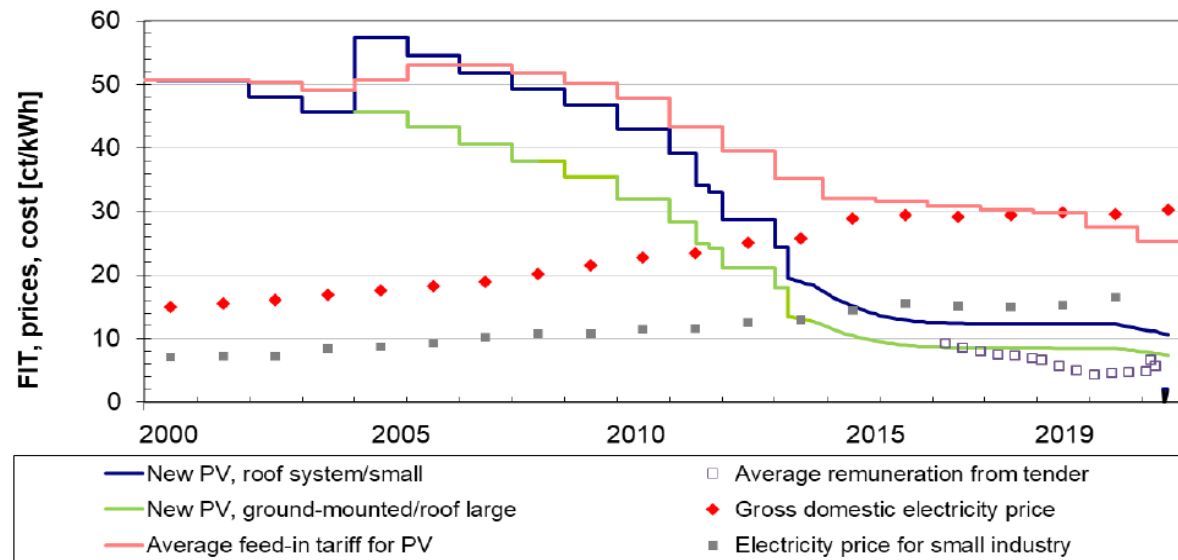
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2.4 Support Reductions

Reductions are a must

Development of PV Remuneration and Electricity Price



Source: [Fraunhofer ISE, Recent Facts about Photovoltaics in Germany](#), Last update: October 14, 2019

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2.4 Support Reductions

Reductions are a must

PV Reduction Mechanics BNetzA

Bestimmung der anzulegenden Werte für Solaranlagen § 49 EEG 2017 für die Kalendermonate November 2019, Dezember 2019 und Januar 2020

1. Neu installierte Leistung geförderter PV-Anlagen:

Monat	Leistung (kWp) ¹
April 2019	231.322
Mai 2019	203.122
Juni 2019	237.748
Juli 2019	276.310
August 2019	230.213
September 2019	260.049
Summe	1.438.764

¹⁾ Diese Werte wurde folgendermaßen ermittelt:

- **April bis September 2019:** Hierfür wurden die Meldungen im Marktstammdatenregister mit Datenstand 29.10.2019 herangezogen.

Nach Neufassung des § 49 Abs. 1 EEG 2017 im Rahmen des Energiesammelgesetzes werden nur noch PV-Anlagen, deren anzulegender Wert gesetzlich bestimmt worden ist, im Summenwert der Degressionsberechnung berücksichtigt.

2. Zubau im Bezugszeitraum laut § 49 Absatz 1 EEG 2017 auf ein Jahr hochgerechnet

Zubau Bezugszeitraum * 2 = **2.877.529** kWp

Der Zubau im Bemessungszeitraum der Degressionsberechnung liegt um bis zu 1.000 MW über dem Zubaukorridor von 1.900 MW.

Die monatliche Absenkung nach § 49 Abs. 2 Nr. 1 EEG beträgt daher **1,0** Prozent jeweils zum

1. November 2019, 1. Dezember 2019 und 1. Januar 2020.

Source: [Federal Network Agency](#) (last visited 5.11.2019)

Anzulegende Werte für Solaranlagen in Cent/kWh bei Inbetriebnahme nach dem 31.12.2018:

Inbetriebnahme	Wohngebäude, Lärmschutzwände und Gebäude nach § 48 Absatz 3 EEG			Sonstige Anlagen bis 750 kWp
	bis 10 kWp	bis 40 kWp	bis 750 kWp	
ab 01.01.2019	11,867346	11,549637	10,362903	8,325831
Rundung	11,87	11,55	10,36	8,33
Degression ²			1,0%	
ab 01.02.2019	11,748672	11,434141	- ³	8,242573
Rundung	11,75	11,43	9,87	8,24
Degression ²			1,0%	
ab 01.03.2019	11,631186	11,319800	- ³	8,160147
Rundung	11,63	11,32	9,39	8,16
Degression ²			1,0%	
ab 01.04.2019	11,514874	11,206602	- ³	8,078545
Rundung	11,51	11,21	8,90	8,08
Degression ²			1,4%	
ab 01.05.2019	11,353666	11,049709	8,775400	7,965446
Rundung	11,35	11,05	8,78	7,97
Degression ²			1,4%	
ab 01.06.2019	11,194714	10,895013	8,652544	7,853929
Rundung	11,19	10,90	8,65	7,85
Degression ²			1,4%	
ab 01.07.2019	11,037988	10,742483	8,531409	7,743974
Rundung	11,04	10,74	8,53	7,74
Degression ²			1,4%	
ab 01.08.2019	10,883456	10,592088	8,411969	7,635559
Rundung	10,88	10,59	8,41	7,64
Degression ²			1,4%	
ab 01.09.2019	10,731088	10,443799	8,294201	7,528661
Rundung	10,73	10,44	8,29	7,53
Degression ²			1,4%	
ab 01.10.2019	10,580853	10,297586	8,178083	7,423260
Rundung	10,58	10,30	8,18	7,42
Degression ²			1,0%	
ab 01.11.2019	10,475044	10,194610	8,096302	7,349027
Rundung	10,48	10,19	8,10	7,35
Degression ²			1,0%	
ab 01.12.2019	10,370294	10,092664	8,015339	7,275537
Rundung	10,37	10,09	8,02	7,28
Degression ²			1,0%	
ab 01.01.2020	10,266591	9,991737	7,935185	7,202782
Rundung	10,27	9,99	7,94	7,20

²⁾ Degressionsberechnung nach § 49 EEG 2017

³⁾ Festlegung der anzulegenden Werte im Rahmen des Energiesammelgesetzes zur Neufassung des § 48 Abs. 2 Nr. 3 EEG,

siehe Bundesgesetzblatt Jahrgang 2018 Teil I Nr. 47, ausgegeben zu Bonn am 20. Dezember 2018 oder online unter:

http://www.bgbl.de/akaver/bgb1/start_xav?startbke=Bundesanzeiger_BGBI&umpTo=bgbl118s2549.pdf

2.4 Support Reductions

Balancing different interests



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2.4 Support Reductions

Conclusion

- Support reductions are necessary to align support regime with changing environment
 - Reductions of support payments
 - Increased cost contributions of renewables generators (e.g. EEG surcharge for renewables prosumers)
- Aim to have meaningful build-up of capacity, at reasonable cost
- Somewhat opaque process of feed-in tariff/support level setting/reductions, influenced by political aims and interest groups
- Reductions in support regime regularly accompanied by strong lobbying efforts, claiming that changes go too far





2.5 EEG – Prosumer Support

2.5 EEG – Prosumer Support

Self-Supply as One Element of Support

Prosumer support (only) one area of support

- EEG does not specifically address micro and mini generation, but includes support for smaller and medium size generators who fully or partially consume their own energy
- Self-supply turned out to be commercially very attractive due to not having to pay renewables related surcharges (in particular EEG surcharge)
- EEG 2014 reversed course, introducing general rule that self-supplied energy also has to pay for renewables surcharges (with exemptions/reductions)
- Introduced sophisticated system of how new renewables installations have to pay surcharges

2.5 EEG – Prosumer Support

New installations

Exemption from the EEG Surcharge for **new installations** in EEG 2014

- If electricity is consumed in auxiliary facilities (Neben- und Hilfsanlagen) of a power plant in order to generate power, so-called own consumption of power plants (Kraftwerkseigenverbrauch)
- Plants that are neither directly nor indirectly connected to a grid
- Consumers that source their electricity 100% from renewable sources and do not claim support pursuant to the EEG for electricity that they do not need themselves
- Small plants with an installed capacity of up to 10 kW. The EEG surcharge does not have to be paid for the first 10 MW of self-consumed power. The provision applies from the commissioning of the plants for a duration of 20 calendar years plus the year of commissioning

2.5 EEG – Prosumer Support

Reductions for other new self-supply plants

EEG 2014 surcharge reductions for **other new self-supply plants**

- For all other new plants intended to provide power for self-consumption, the full EEG surcharge applies
- **Unless** they are renewable power plants or highly efficient combined heat and power plants, in which case a uniform surcharge applies that is introduced in a staggered manner
 - 2015 30%
 - 2016 35%
 - As of 1 January 2017 it was set at 40 % of the otherwise applicable surcharge
- The European Commission accepted the above exemptions as being in line with the EEAG only for a transitional period until 2017
 - Germany therefore had to review the provisions on existing plants by 2017
- System further refined in EEG 2017

2.5 EEG – Prosumer Support

Revised Self-Supply Regime

Principle: Germany tries to

- Maintain self-supply EEG surcharge exemptions for existing installations, to protect justified interests of those who have invested in own-supply installations based on earlier versions of the EEG (unless the installation is materially changed)
- No longer privilege own-supply for new installations

2.5 EEG – Prosumer Support

Revised Supply Regime Rules

Rules include:

- No own-supply EEG surcharge reduction for installations that went through auctioning (§ 27a EEG 2017)
- Additional own-supply rules for CHP plants (§ 61(2) EEG 2017 and CHP Act)
- Special exemptions for power plant own-supply, off-grid own-supply, full unsupported own-supply, de-minimise rule 10 kW installed capacity with 10 MWh per year limit for 20 years (§ 61a EEG 2017)
- Reduction to 40% for highly efficient CHP plants (§ 61b EEG 2017)
- Exemption for certain newer grandfathered existing installations (§ 61c EEG 2017)
- Exemption for certain older grandfathered existing installations (§ 61d EEG 2017)

2.5 EEG – Prosumer Support

Revised Supply Regime Rules

Rules include (continued):

- Reduction for changed existing installations (§ 61e EEG 2017)
- Legal succession provisions for existing installations (§ 61f EEG 2017)
- Loss of reduction if notification obligations are not complied with (§ 61g EEG 2017)
- Metering and calculation for own-supply combined with other supply (§ 61h EEG 2017)
- Levying the EEG surcharge for own-supply installations (§ 61i EEG 2017)
- Network operator obligations (§ 61j EEG 2017)
- Payment obligation exemptions (§ 61k EEG 2017)
- Transmission system operator obligations (§ 74 EEG 2017)
- Information obligations for final consumers and self-suppliers (§ 74a EEG 2017)

2.5 EEG – Prosumer Support

Revised Supply Regime Rules

Rules include (further continued)

- Involvement of the Federal Network Agency (§ 76 EEG 2017)
- EEG surcharge labelling (§ 78 EEG)



2.5 EEG – Prosumer Support

European Law Requirements

European Commission Influence (1)

As the European Commission (in its state aid decision of 23 July 2014 - C(2014) 5081 final) only granted a limited state aid law approval for the self-supply provisions in the EEG 2014, its self supply regime needed to be modified

- Commission reviewed EEG 2014 already in light of the then upcoming Guidelines on state aid for environmental protection and energy 2014-2020 (EEAG), against the state aid law dispute on the EEG 2012
- Commission considered exemption from EEG surcharge for auto-supply as state aid
Section 3.7.2 EEAG: Aid in the form of reductions in the funding of support for energy from renewable sources
Section 3.7.3 EEG: Transitional rules for aid granted to reduce the burden related to funding support for energy from renewable sources

2.5 EEG – Prosumer Support

European Law Requirements

European Commission Influence (2)

Issue: Paragraph 197 EEAG

"To the extent that aid in the form of reduction or exemption from the burden related to funding support for electricity from renewable sources was granted before the date of application of these Guidelines to undertakings that are not eligible under Section 3.7.2, such aid can be declared compatible provided that the adjustment plan foresees a minimum own contribution of 20% of the additional costs of the surcharge without reduction, to be established progressively and at the latest by 1 January 2019"

Commission's EEG 2014 state aid decision contains provisions on how Germany shall adjust its EEG (and CHP law provisions) going forward:

"(324) Paragraph 197 of the EEAG requires that the adaptation to 20% of the surcharge must be progressive, which would require a progression. Existing installations will however benefit from a full exemption until 2017. Germany has commitment that in 2017 the exemption will be reviewed and that the revised provision will be drafted in accordance with State aid rules."

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2.5 EEG – Prosumer Support

European Law Requirements

European Commission Influence (3)

"(325) The Commission notes that under the EEG 2012 the establishment of the EEG surcharge followed a logic that was different from the logic followed under the EEG 2014. While under the EEG 2012 the surcharge was due on electricity supplied by electricity suppliers (which logically excluded autosupply), the EEG 2014 rests on the principle that the costs of the support to renewables (i.e. the EEG surcharge) should be borne and allocated between electricity users. Under such logic existing autosupply installations should also be subject to the EEG-surcharge. Given this change in the logic of the system, the Commission agrees in this particular situation that the progressivity required by paragraph 197 of the EEAG is flat at the beginning of the adjustment period (1 August 2014 to possibly 31 December 2017) and steeper at the end of the adjustment period."

- Unclear what exactly this shall mean for existing installations

2.5 EEG – Prosumer Support

European Law Requirements

European Commission Influence (4)

*"(327) Paragraph 194 of the EEAG provides that aid granted to reduce the burden related to the funding of support to renewable electricity in respect of the years preceding 2019 can be declared compatible with the common market to the extent that it complies with an **adjustment plan**. In this respect the Commission notes that the **surcharge to be paid by new high efficient CHP auto-supply plants will indeed progressively be increased from 30% to 40% in 2017**. The measure has been notified for a period until 2017. After that date Germany has indicated that it will re-notify the measure and ensure compliance with the EEAG."*

2.5 EEG – Prosumer Support

Impact of the decision of the CJEU on the Commission's position

Decision of the Court of Justice of the European Union (CJEU) on EEG 2012 surcharge, March 2019 – C-405/16 P

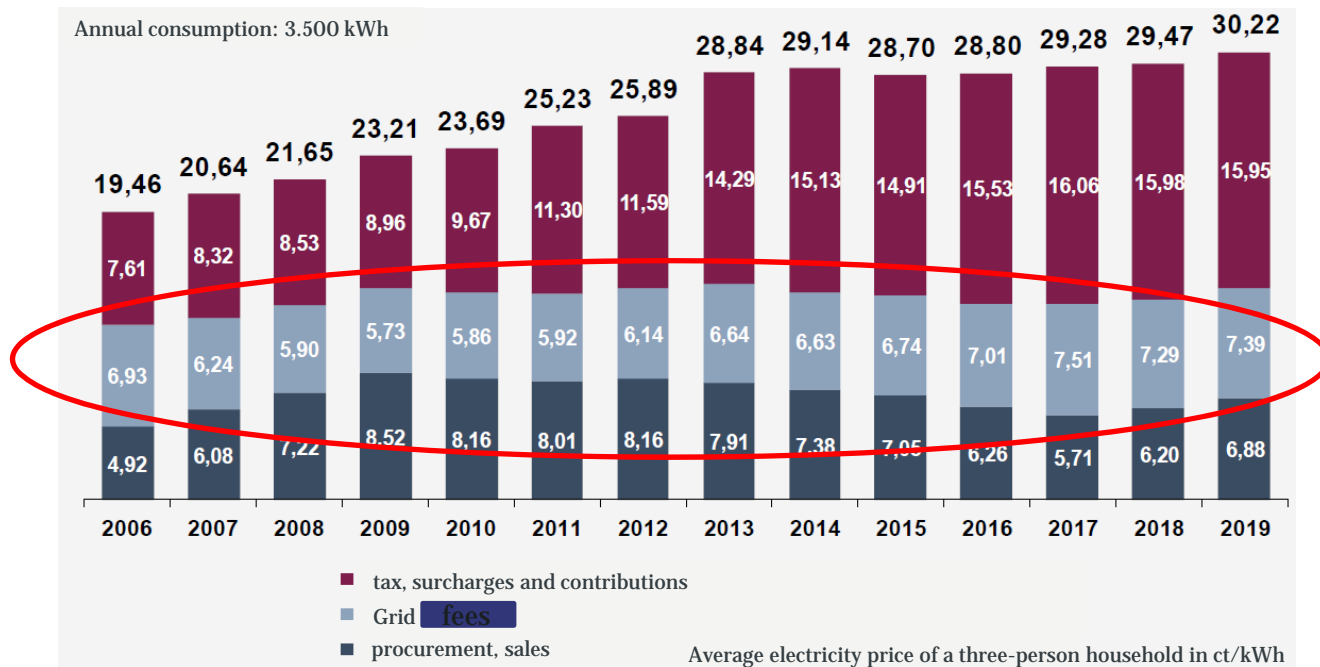
- November 2014: Commission finds EEG 2012 involved state aid
- May 2016: General Court dismissed German appeal
- March 2019: CJEU sets aside judgement of General Court and annuls Commission decision
- EEG surcharge under review is not a levy
 - Suppliers to final customers are not obliged to pass on the surcharge to final customers
- EEG surcharge cannot be attributed to the state
 - State does not have power of disposal over the funds generated by the EEG surcharge
 - State does not exercise public control over the transmission system operators which are responsible for managing those funds

3. Grid Fees – Financing Grid Operation & Expansion



3. Grid Fees

Grid Fee in Electricity Price



Grid fees make up 24,45 % of average household total electricity price

3. Grid Fees

Background

- German grid fees are established by network operators
- Charges have to be authorized by the regulator Bundesnetzagentur (BNetzA)
- Stromnetzentgeltverordnung (Regulation on grid fees for electricity - StromNEV) sets out principles governing the establishment of grid fees (§16 et seq. StromNEV)
- Grid fees are paid by the grid user (Netznutzer)
 - For household customers the gas or power supplier is the grid user. He collects the grid fees from the customer and pays them to the grid operator

3. Grid Fees

Background

- Grid fees must be cost-oriented (Verursachungsgerechtigkeit)
- Grid fees established depending on network connection level but regardless of physical distance between place of supply of electrical energy and place of removal
- Grid fees consists of two components
 1. Peak power, calculated as product of the applicable charge per kilowatt and the annual peak power demand in kilowatts of the respective user in the concerned year
 2. Energy consumption, calculated as product of applicable charge in kWh and the amount of electrical energy consumed during the year by the user.
- Grid fees have to be calculated on the basis of a simultaneity factor (Gleichzeitigkeitsgrad)
 - On the basis of simultaneity principle, grid fees are multiplied with a factor that varies between 0 and 1, depending on how much a consumer contributes to the peak power demand

3. Grid Fees

Exemption and Reallocation Regime

Concept Incentive Regulation Scheme

- Legal framework for grid operation changed in 2005, abolishing the previous cost-plus system regulation for electricity and gas network operators in favour of an incentive regulation scheme
- Underlying economic principle of incentive regulation is based on the simulation of competition and on motivating a network operator to manage its operations better and more cost efficiently than comparable network operators in other regions
- Regulatory period of five years
- BNetzA and regulatory authority of the federal states determine in advance the maximum revenue the network operator may receive on a year to year basis during these five years
- Audited costs for the operation of the network together with an efficiency benchmarking of network operators basis for determining the allowed revenues
- Network operator can freely employ and invest this predetermined revenue amount

3. Grid Fees

Exemption and Reallocation Regime

Support Through Grid Fee Exemption/Reduction

- §19 StromNEV 2011: End-users exempted from grid fees if their energy consumption reaches both 7,000 hours of use and 10 GWh of energy consumption, plus certain grid fee reductions for other energy intensive users
- Exemption granted once the BNetzA has verified that the legal conditions are fulfilled
- Exemption in the first place leads to loss of revenues for transmission system operators (TSOs) and distribution system operators (DSOs)
- Using a special equalisation system, TSO equalize their payments to DSO and their own losses and recoup them from final customers ("§19 surcharge")

3. Grid Fees

Exemption from Grid fee = State aid?

European state aid law compliance

- In March 2013 European Commission opened an in-depth investigation to determine whether exemption for certain large electricity users in Germany from network charges in 2012-2013 amounts to State aid and if it can be justified under EU State aid rules
- Investigation opened before investigation into EEG 2012
- Decision 28 May 2018: Exemption against EU State aid rules, no grounds to fully relieve those users from paying network charges, Germany to recover the illegal aid
- In 2014, Germany changed the system. Since then, users with a stable consumption can request their network charges to be calculated on the basis of the costs that they individually cause to the network. This new regime was not part of the Commission's investigation

3. Grid Fees

Impact of the decision of the CJEU on the Commission's position

Decision of the Court of Justice of the European Union (CJEU) on EEG 2012 surcharge, March 2019 – C-405/16 P

- EEG surcharge under review is not a levy
 - Suppliers to final customers are not obliged to pass on the surcharge to final customers
- EEG surcharge cannot be attributed to the state
 - State does not have power of disposal over the funds generated by the EEG surcharge
 - State does not exercise public control over the transmission system operators which are responsible for managing those funds

- Exemption for certain large electricity users in Germany from grid fees very likely not to constitute state aid
- German parliament regained competencies to design more flexible support schemes without having to involve the European Commission

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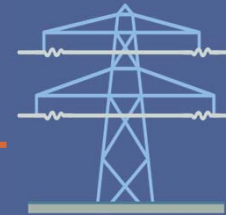
3. Grid Fees

Exemption and Reallocation Regime

Very Little Grid Fee Debate in Germany

- Increasing grid fees are starting to attract some political attention
- So far, little discussion of renewables related cost of grid upgrade
- Some discussion on grid fee exemption, but mainly against European state aid law background, not because of costs as such
- Grid fees increase currently not in focus of German renewables debate

4. Electricity Market Design



4. Electricity Market Design

Electricity Market 2.0

Aim of Electricity Market Act

- **Challenge:** Can the existing energy-only market deal with the challenges of a highly state structured support regime for renewable energy?
- Do we need a capacity market to ensure sufficient capacity at all times?



4. Electricity Market Design

Electricity Market 2.0

Aim of Electricity Market Act

- **Issue: Electricity design for renewable energy/no nuclear/less or no coal world**
- **Aim: To create a market that is able to guarantee a secure, "low-cost" and environmentally compatible electricity supply with an ever increasing (at least partially outside the market) share of renewable energy**
- **Additional legislation**
 - **Act on the Digitalisation of the Energy Turnaround: Smart metering in distribution grids**
 - **Revision Interruptible Loads Ordinance (AbLaV): Revision demand side response for large scale consumers**
 - **Renewable Energy Sources Act (EEG)**

4. Electricity Market Design

Electricity Market 2.0

Key outcome of 2014 - 2016 review of German electricity market design

- No capacity market (but: new and revised capacity mechanisms)
- Key principle: free price formation on electricity market, allow scarcity pricing
- Further development of the existing market
- Flexibility of supply and demand
- Issue: How to guarantee security of supply
- No issue: Cost of energy turnaround

4. Electricity Market Design

Electricity Market 2.0

Way to the Electricity Market Act



4. Electricity Market Design

Electricity Market 2.0

Key Measures (1)

- Guarantee free price formation (freie Preisbildung): as prices send important information to all market players, new measures shall strengthen free competitive pricing and allow price peaks on the electricity market
- Monitor security of supply (Versorgungssicherheit): Monitoring shall be improved to guarantee security of supply. Contribution of European internal electricity market to security of supply shall be taken into greater consideration
- Strengthen balancing group fidelity (Stärkung Bilanzkreistreue): responsible electricity suppliers and traders shall be further encouraged to buy electricity according to demand – less balancing by TSOs

4. Electricity Market Design

Electricity Market 2.0

Key Measures (2)

- Revise reserve power regime, increase capacity mechanism toolbox
 - Extend network reserve (Netzreserve): network reserve got extended after 31 December 2017 and introduced a capacity reserve:
 - established outside the electricity market to ensure security of supply
- Improve electricity market transparency: national platforms and a central market master data register established
- Reduce and allocate grid expansion costs more fairly: efficient network expansion planning shall reduce network expansion costs
 - Only ancillary provision
 - 3% top capping for grid expansion
 - Change avoided-grid-fee (vermiedene Netzentgelte) concept

4. Electricity Market Design

Electricity Market 2.0

Act on the Modernization of the Grid Fee Structure

- In force since 22 July 2017
- Gradually aligning transmission grid charges nationwide to eliminate regional differences
 - In four yearly steps until 1 January 2023, starting on 1 January 2019
- Reduce avoided-grid-fees privilege (vermiedene Netzentgelte)
 - In the past it was assumed that decentralized energy would be consumed locally, particularly from solar, wind, etc.
 - **But:** Energy has to be transported across the country which generates cost
 - Fees to be adjusted to the current situation for all existing plants
 - Fees to be frozen at the level of 2016 from 2018 on
 - Fees to be eliminated completely for new volatile plants (solar, wind) from 2018 on
 - New controllable generation plants (e.g. combined heat and power) will not receive any payments from avoided-grid-fees from 2023 on

4. Electricity Market Design

Avoided-grid-fees (vermiedene Netzentgelte)

- Operators of decentralised generation plants receive a fee for avoided grid use (avoided grid fee (vNE)) in accordance with the Electricity Grid Charges Ordinance (StromNEV) for quantities of electricity fed into the grid
- Grandfathering
 - For existing plants commissioned before 01.01.2018 with volatile generation, the remuneration is reduced as follows:
 - from 01.01.2018 on by one third;
 - from 01.01.2019 on by two thirds;
 - as of 01.01.2020, no further remuneration will be paid

4. Electricity Market Design

Conclusion

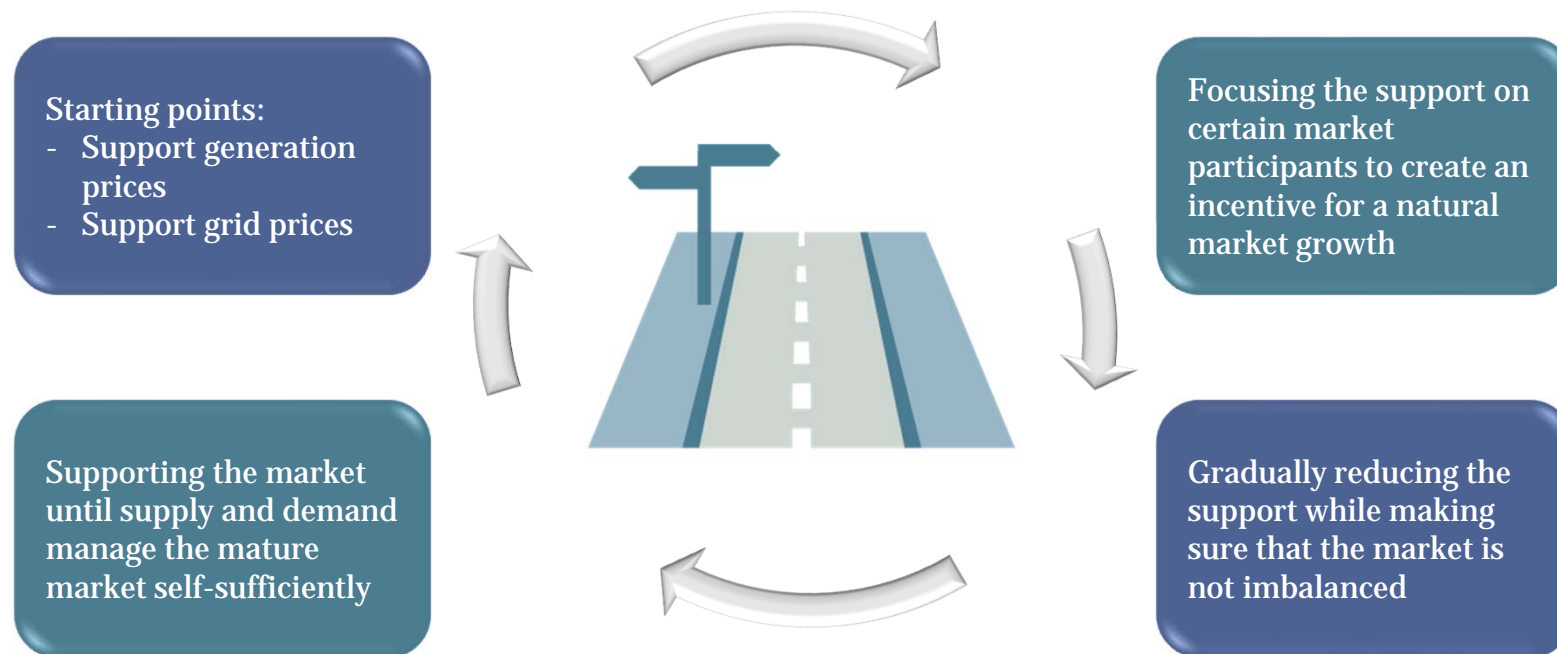
- Electricity Market 2.0
 - More renewable energy with limited market exposure/guaranteed prices
 - But: EEG 2017 with more market elements for newly commissioned plants
 - Additional power mix change due to nuclear power and coal exit
 - Challenge: Maintain security of supply at "low" cost
 - Reaction to massive changes: Keep energy-only market, no capacity market
 - Accept future price spikes
 - Principle: Market shall solve problems of volatile generation from renewables (with only very limited exposure to market price signals)
 - But: Supplemented by various capacity instruments
 - With "lignite reserve" as "dual use" item: new political coal exit instrument with capacity instrument coating (and constitutional law background)
- New market design is mainly old energy-only market design, with tweaks

5. Conclusion



5. Conclusion

Road to energy transition via renewable support schemes



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Thank you & Bird & Bird



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