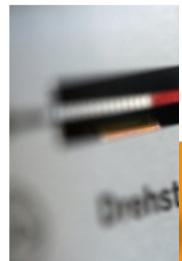


# The distribution of renewable energy policy cost amongst households in Germany – and the role of energy efficiency policies

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## Gegen steigende Strompreise hilft nur Energieeffizienz

dena-Chef Stephan Kohler glaubt nicht an sinkende Strompreise und plädiert in einem Interview mit der Zeitung VORWÄRTS für die Energiewende und verstärkte Anstrengungen bei der Energieeffizienz.

Bei der Umsetzung der Energiewende müsse man sich laut Kohler jetzt vor allem auf die Synchronisation des Netzausbaus mit dem weiteren Ausbau der erneuerbaren Energien und der Etablierung geeigneten Speichertechnologien konzentrieren. Die Kritik aus Brüssel an den EEG-Ausnahmen für die stromintensive Industrie kann Kohler nicht nachvollziehen.

Windrad, Hochspannungsleitungen in Bayern: Strom, Heizung, Warmwasser immer teurer

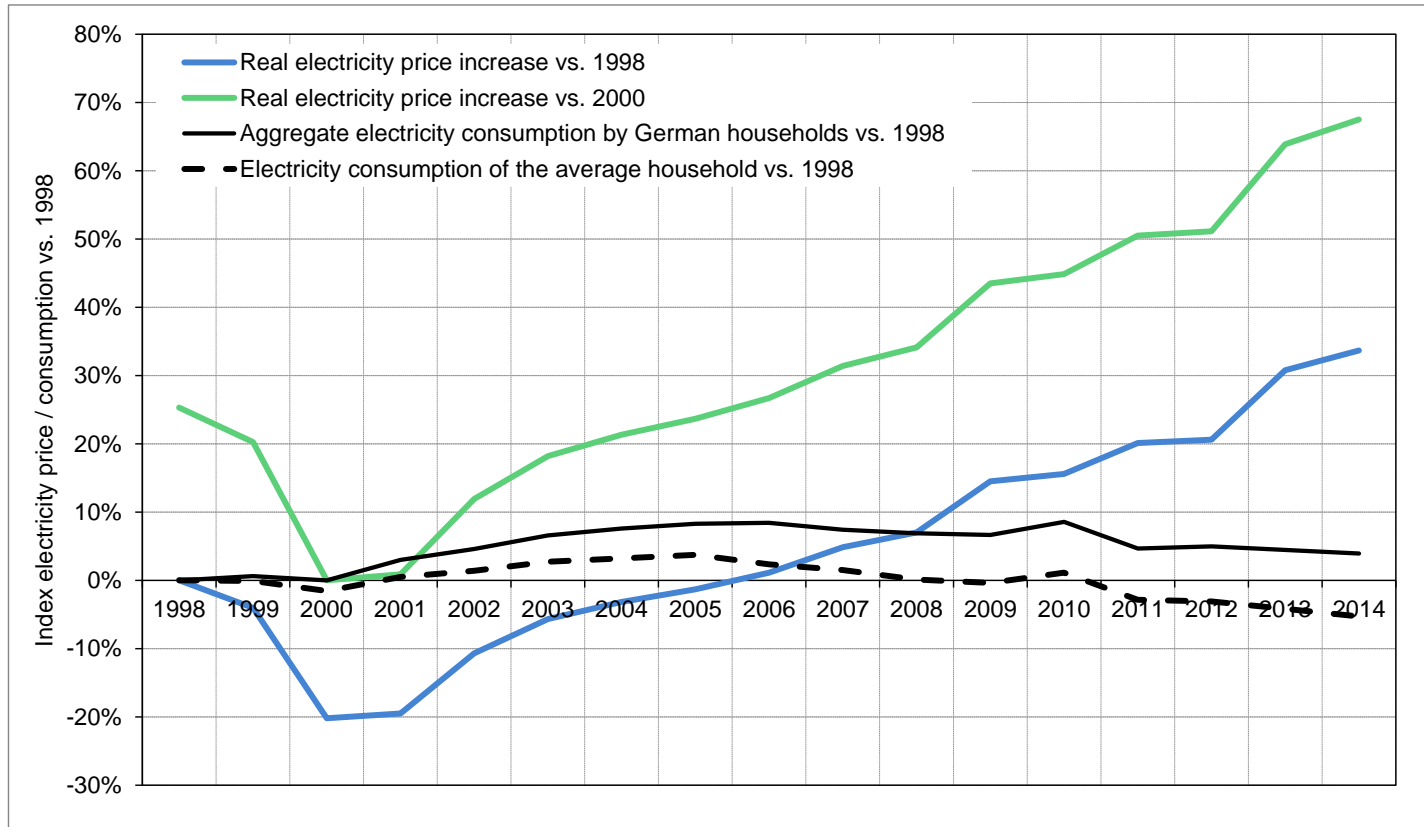
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## Short summary

- **Key idea**
  - Investigate / confirm regressive effect of electricity price rises (e.g. through the EEG)
  - Compare it to other policies that are also part of the *Energiewende* in particular expected effects of the energy efficiency portfolio
- **Key insights**
  - Higher electricity prices indeed regressive, but efficiency policies *have the potential* to compensate
  - Highly dependent on who carries them out
  - Challenges related to *quantifying monetary costs and benefits* of policies

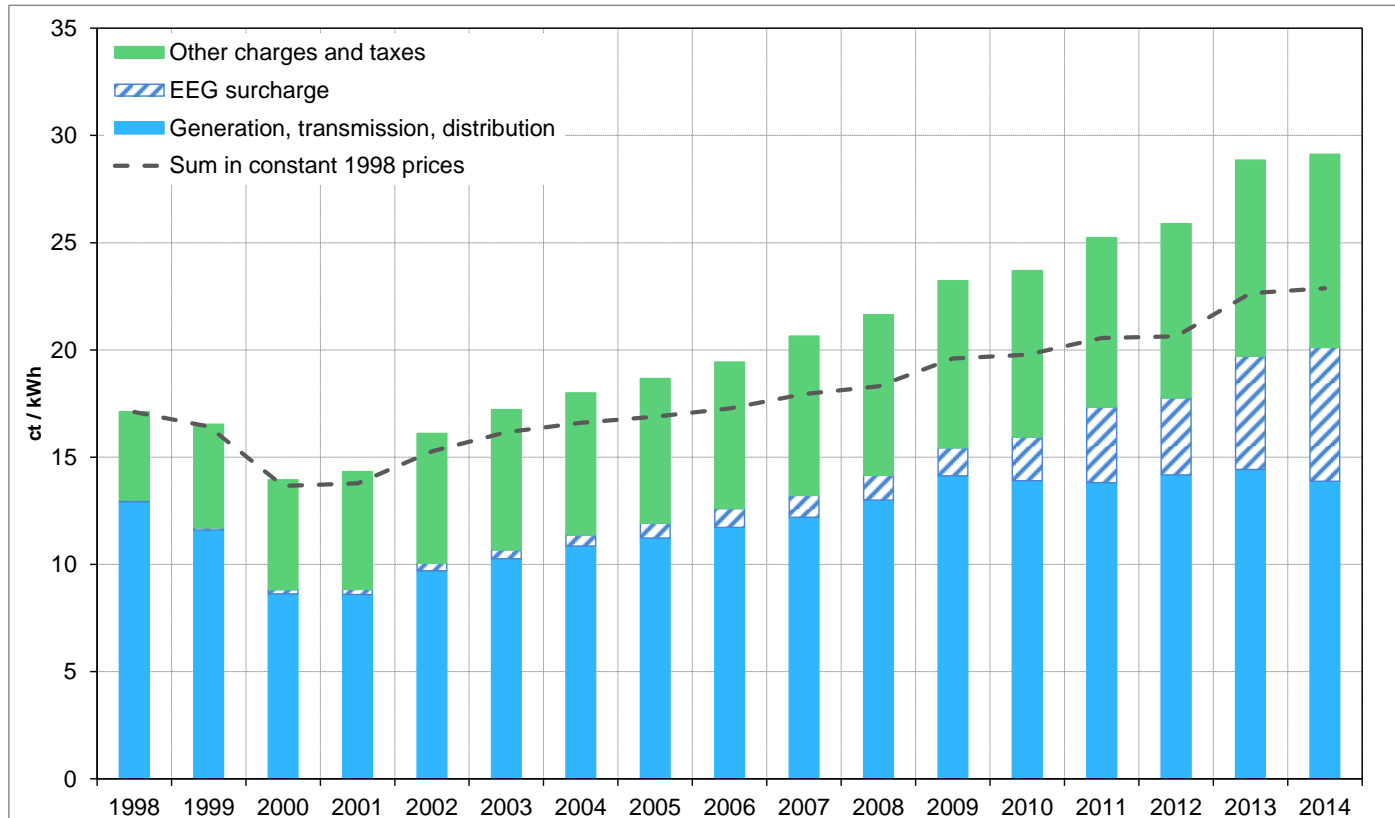
# Household electricity prices and consumption



**Sources:** BDEW (2014); BMWi (2013); Eurostat Harmonised Consumer Price Index (HCPI) Germany; own estimation and illustration

**Notes:** Electricity price for a 3-person household with yearly consumption of 3,500 kWh; consumption values interpolated between 2012 and 2014 (using average growth rates 2008-2012)

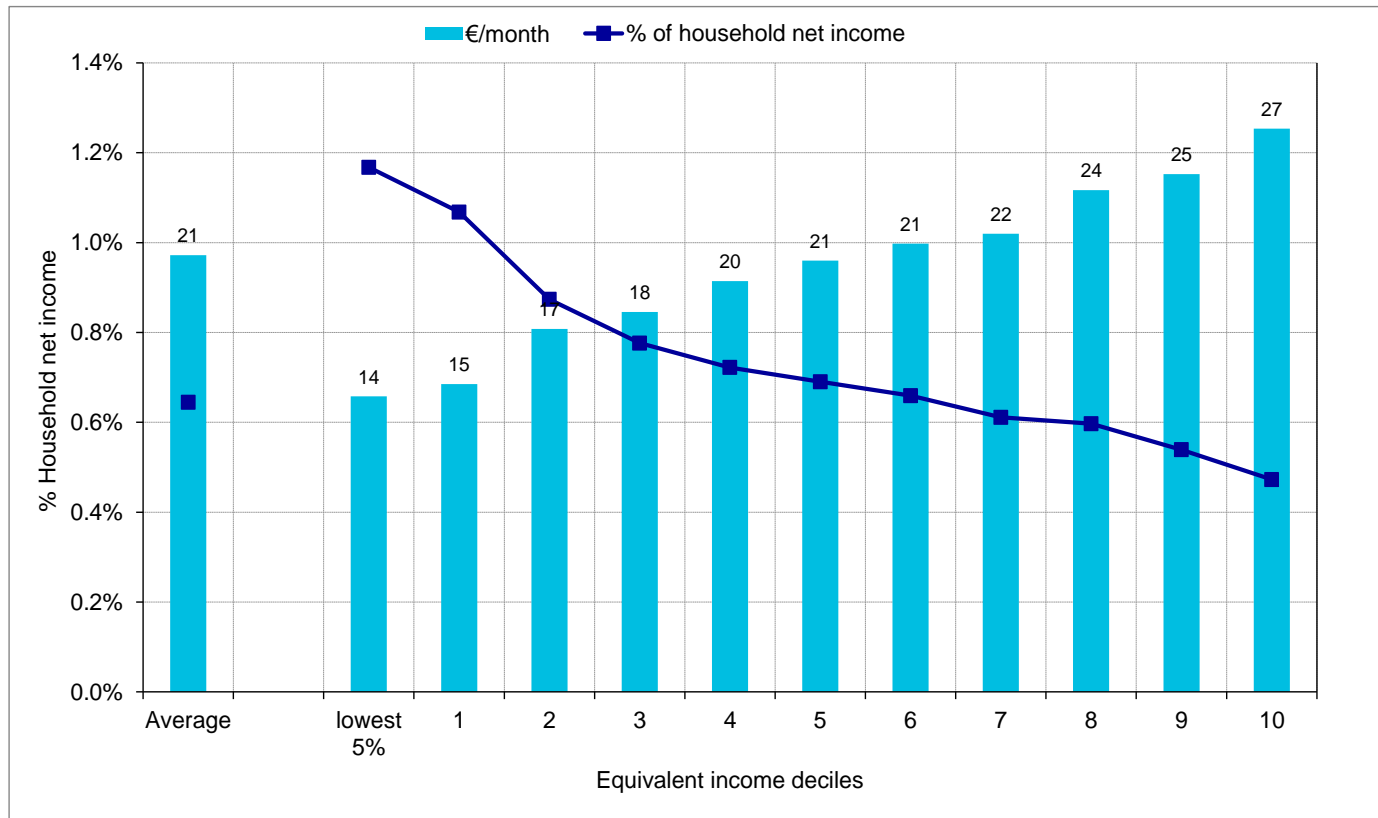
# Household electricity price components



**Sources:** Öko-Institut (2012); BDEW (2014); own illustration

**Notes:** Electricity price for a 3-person household with yearly consumption of 3,500 kWh

# Impact of the EEG surcharge on German households by income group (new OECD equivalence scale)



**Source:** Research Data Centre (FDZ) of the Federal Statistical Office Germany and the Statistical Offices of the Laender: German Income and Expenditure Survey (EVS) 2008 (80 % scientific use file) extrapolated to 2014; own estimation and illustration

# The other side of the coin: Energy saving and efficiency policies (in 2020)

Category	Policy instrument	Energy saving potential (TWh)	Annualised investment cost (M€)
Existing policies buildings	Energy saving legislation (EnEV 2013) KfW Energy-efficient renovations KfW Energy-efficient construction	-37.2	4 144
Existing policies electricity / appliances	EU Ecodesign EU Labelling Smart Meter	-19.2	1 044
Electricity Saving Check (low-income households)	Existing check Extension	-0.2	4
NAPE policies buildings	Further development of Energy saving legislation Tax incentives for energy-efficient renovations Quality assurance and optimising of energy consulting Heating check National energy-efficiency label for old heating installations	-14.4	2 110
NAPE policies electricity / appliances	Further development of national Top Runner Initiative Competitive tenders (electricity)	-6.1	314

**Sources:** BMWi 2014; Fraunhofer ISI/IFAM, Ifeu, Prognos & Ringel 2014; Fraunhofer ISI, Öko-Institut, Ecofys, IREES (2015, ongoing project)

# Assumptions for analysis of annualised investment costs and saved energy expenditures

- **Building measures**
  - affect owner-occupiers and renters equally, i.e. annualised costs fully passed forward to tenants
  - Energy saving acc. to actual consumption; investment costs acc. to sqm of dwelling
- **Appliances**
  - Same relative reduction for all households
  - Investment costs are distributed acc. to the electricity saved (i.e. each kWh saved requires the same amount of investment)
- **Electricity Saving Check**
  - Households that receive social transfers above a threshold value of 100 €/month for general transfers (“Grundsicherung”) and 50 €/month for transfers relating to living costs (“Wohngeld”)



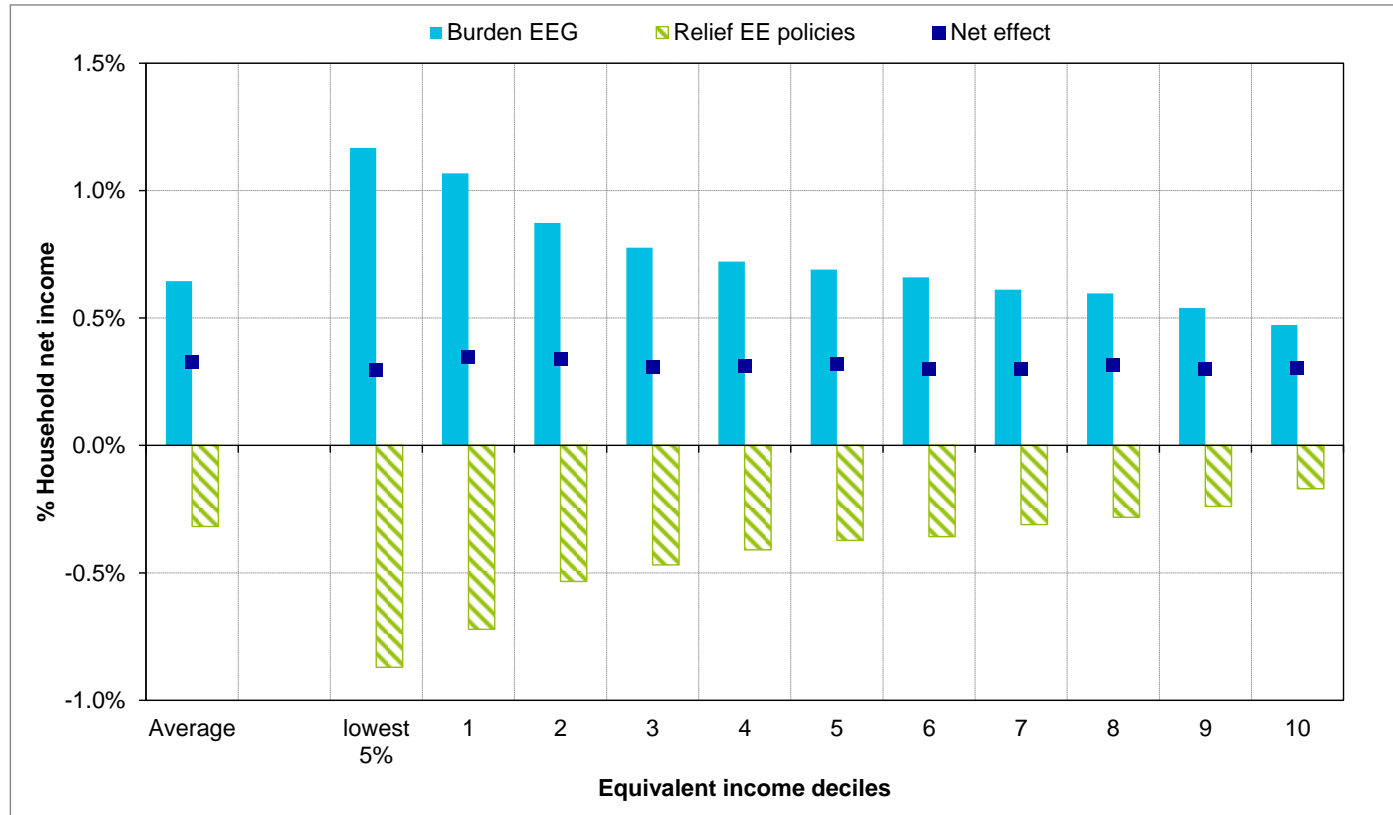
# Net effect of efficiency policies in 2020 for households of different income groups (% of household income)

Deciles of household net equivalent income	Household net equivalent income		Total effect (investment - savings)					Total
	Decile average	Highest income in decile	Existing policies buildings	Existing policies elec. / appl.	Electricity Saving Check	New policies buildings	New policies elec. / appl.	
	€/month		% of household net income					
Lowest 5 %	686	855	0.03	-0.73	-0.05	0.12	-0.24	-0.87
1st decile	812	1 043	0.02	-0.60	-0.04	0.10	-0.20	-0.72
2nd decile	1 193	1 329	0.00	-0.45	-0.01	0.07	-0.14	-0.53
3rd decile	1 441	1 552	-0.01	-0.39	0.00	0.06	-0.13	-0.47
4th decile	1 659	1 771	-0.01	-0.34	0.00	0.05	-0.11	-0.41
5th decile	1 883	1 994	-0.01	-0.31	0.00	0.05	-0.10	-0.37
6th decile	2 116	2 244	-0.01	-0.30	0.00	0.04	-0.10	-0.36
7th decile	2 396	2 564	0.00	-0.27	0.00	0.04	-0.09	-0.31
8th decile	2 773	3 021	-0.01	-0.24	0.00	0.04	-0.08	-0.28
9th decile	3 386	3 854	0.00	-0.20	0.00	0.03	-0.07	-0.24
10th decile	5 385	.	0.00	-0.14	0.00	0.02	-0.05	-0.17
Average	2 252	.	0.00	-0.27	0.00	0.04	-0.09	-0.32

**Source:** Research Data Centre (FDZ) of the Federal Statistical Office Germany and the Statistical Offices of the Laender: German Income and Expenditure Survey (EVS) 2008 (80 % scientific use file) extrapolated to 2014; own estimation

**Note:** Negative values indicate net savings

# Effect of the EEG surcharge vs. efficiency policies



**Source:** Research Data Centre (FDZ) of the Federal Statistical Office Germany and the Statistical Offices of the Laender: German Income and Expenditure Survey (EVS) 2008 (80 % scientific use file) extrapolated to 2014; own estimation and illustration

**Note:** Negative values indicate net savings

# Discussion

- Assumptions about who carries out measures drive results (in particular in the buildings sector)
  - Important to know in order to evaluate policies and target them more specifically if needed
- Quantification of costs and benefits
  - Quite clear how to evaluate (financial) benefits: Saving potential x expected price, but many additional benefits both individual and societal (well-being in home, health, biodiversity, etc.)
  - Costs less clear
    - State vs. households; owners vs. renters
    - Importance of viewpoint: Labour market effects vs. costs to households
    - Additionally: Other costs, e.g. transactions costs

# Thank you for your attention!

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