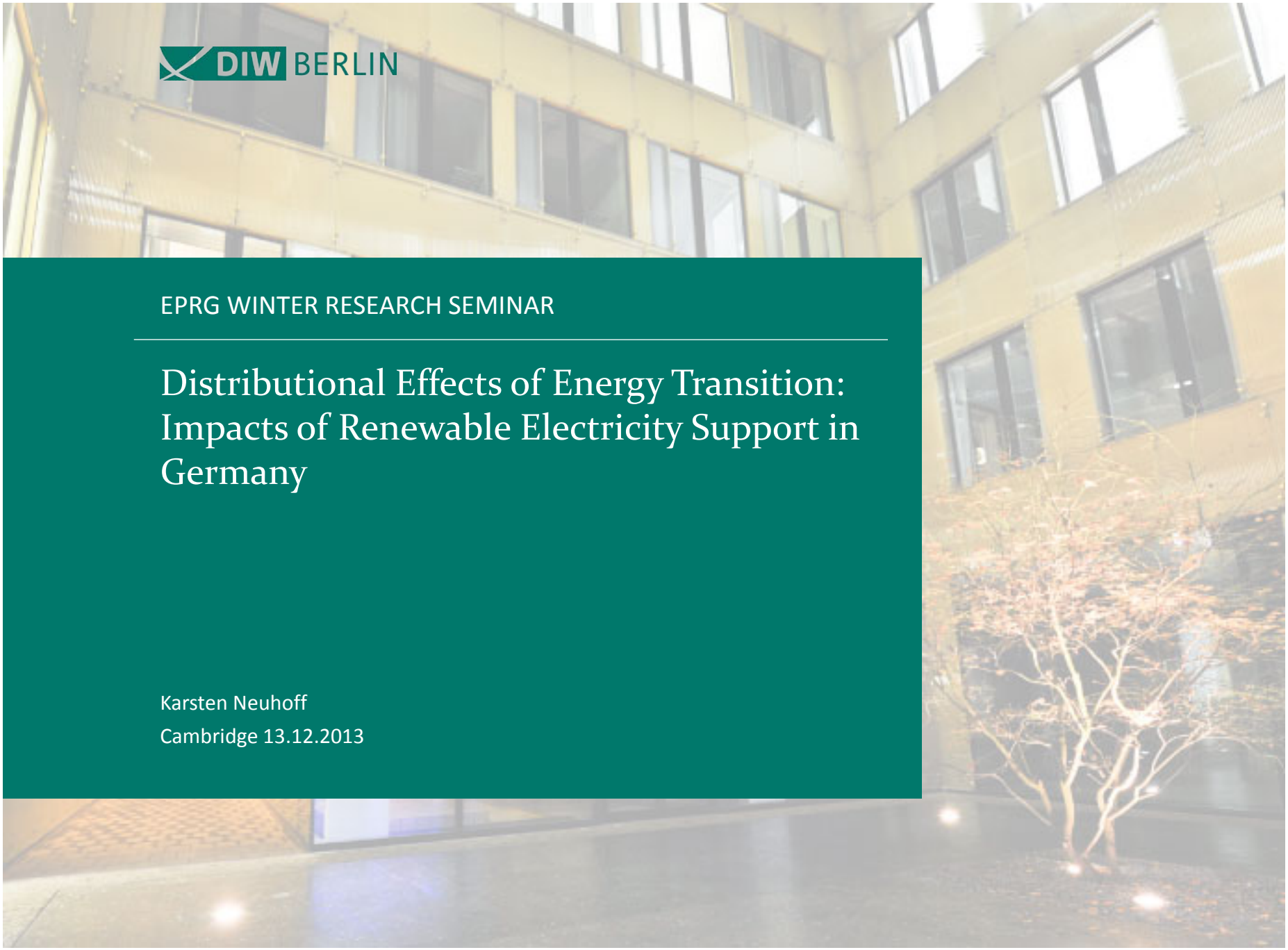

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EPRG WINTER RESEARCH SEMINAR

Distributional Effects of Energy Transition: Impacts of Renewable Electricity Support in Germany

Karsten Neuhoff

Cambridge 13.12.2013

Structure of presentation

Distributional Effects of Energy Transition

Impacts of Renewable Electricity Support in Germany

(Economics of Energy & Environmental Policy)

Karsten Neuhoff , Stefan Bach,

Jochen Diekmann, Martin Beznoska,

and Tarik El-Laboudy

DIW Berlin: Politikberatung kompakt 75

Karsten Neuhoff* (Projektleitung)
Swantje Küchler**
Sarah Rieseberg***
Christine Wörlen***
Christina Heldwein***
Alexandra Karch****
Roland Ismer****

Vorschlag für die zukünftige Ausgestaltung der Ausnahmen für die Industrie bei der EEG-Umlage

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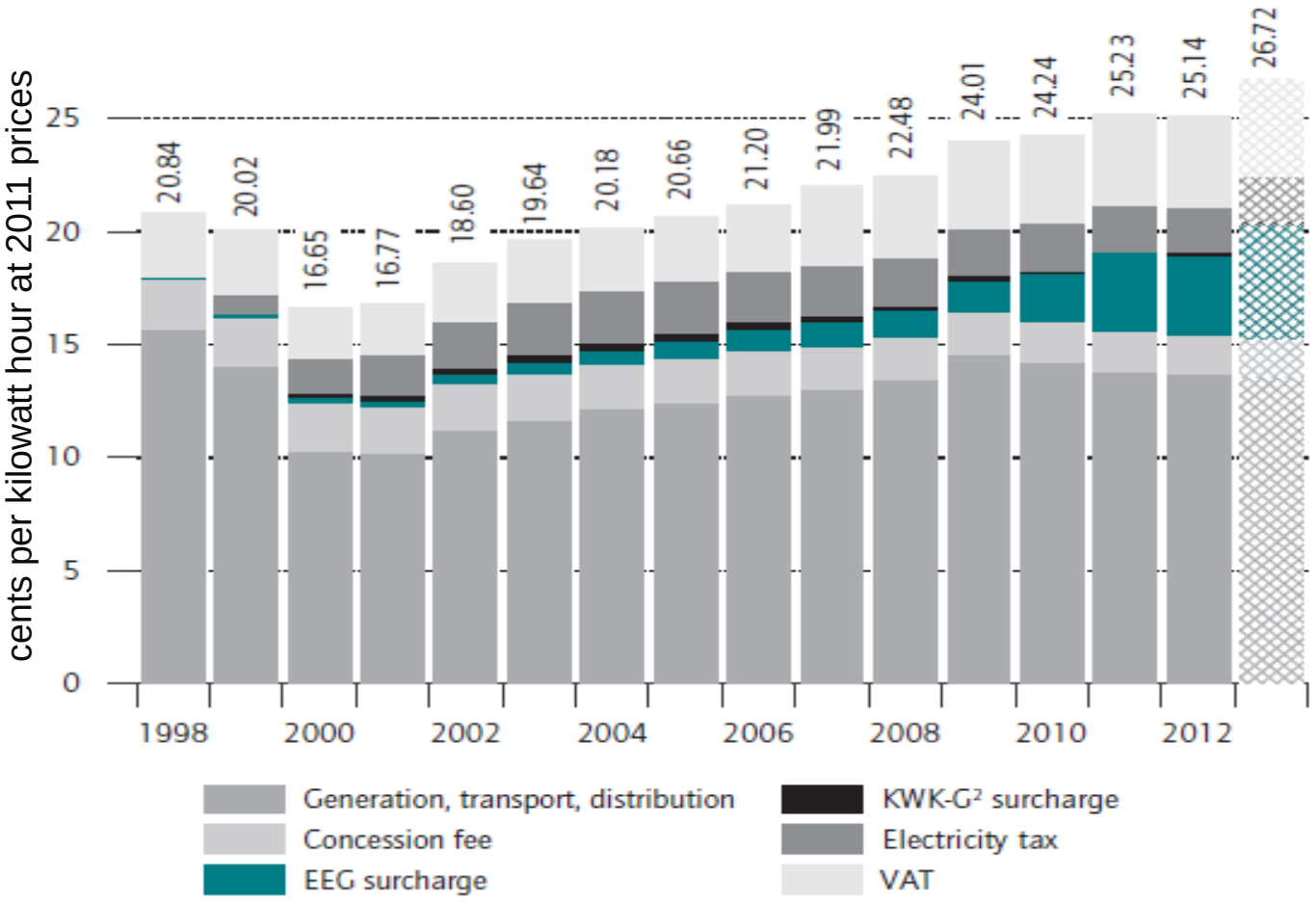
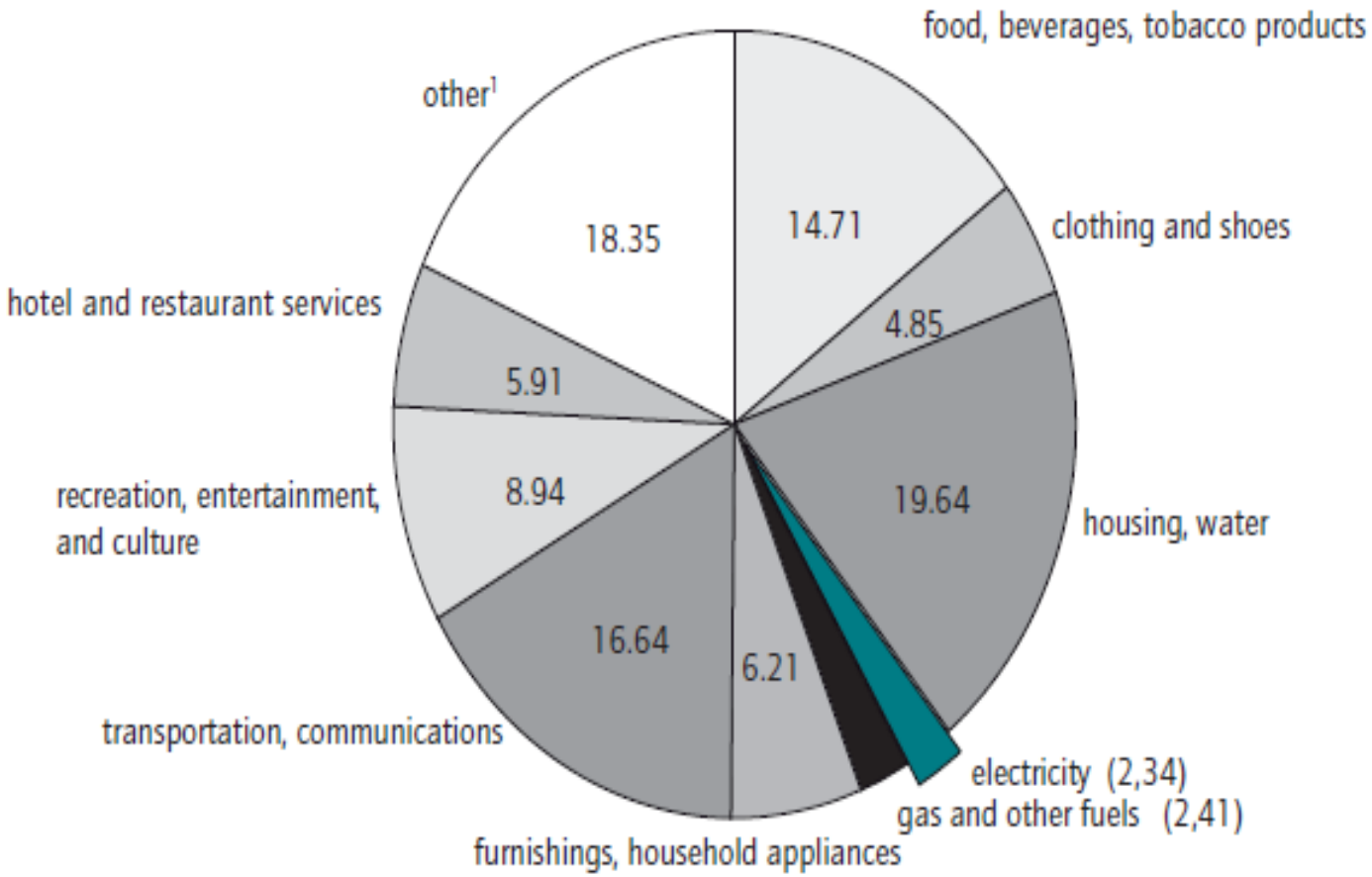
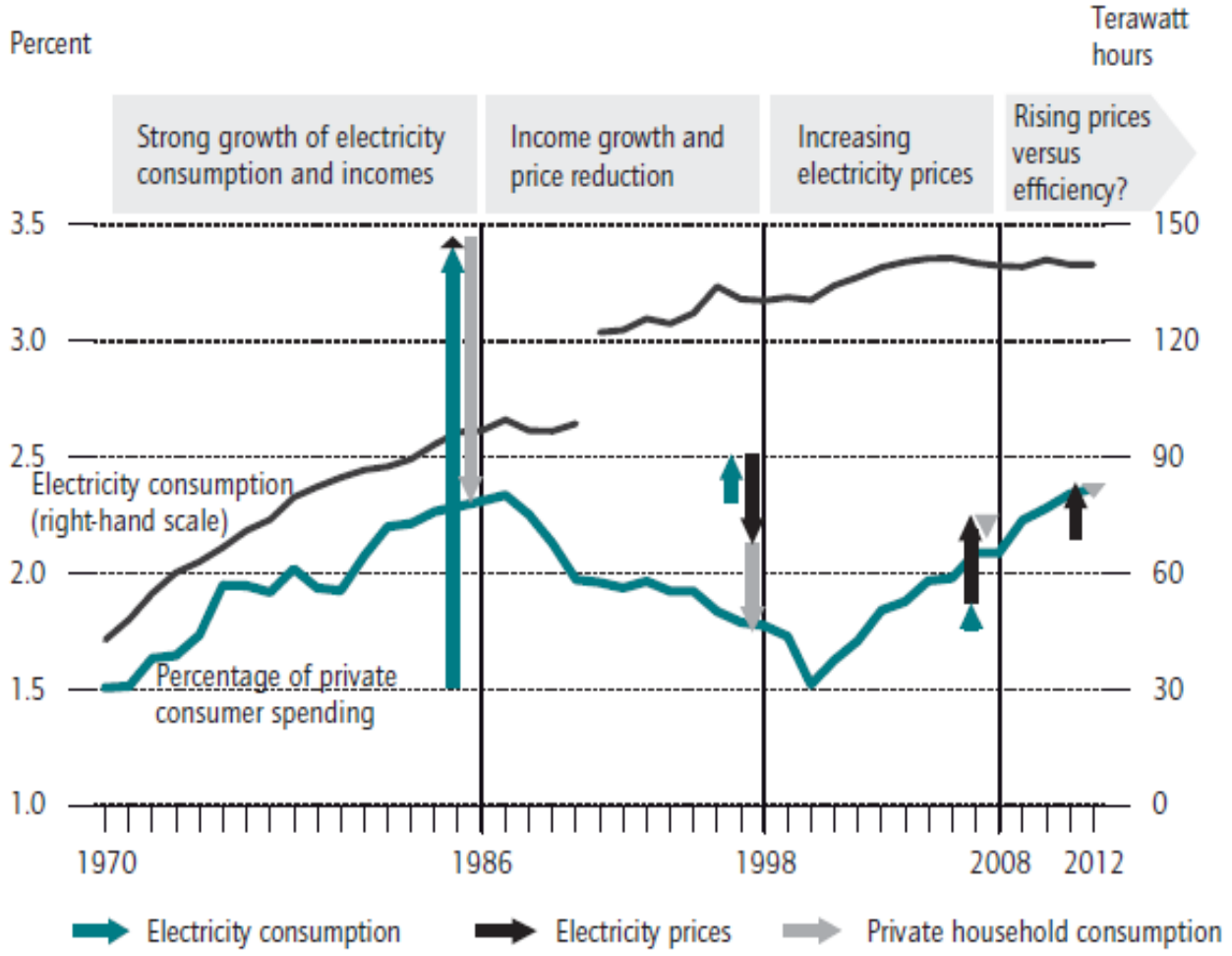
Development of the Electricity Price for Households



Consumer Spending of Households in Germany (2011)



Electricity Consumption and share of Consumer Spending



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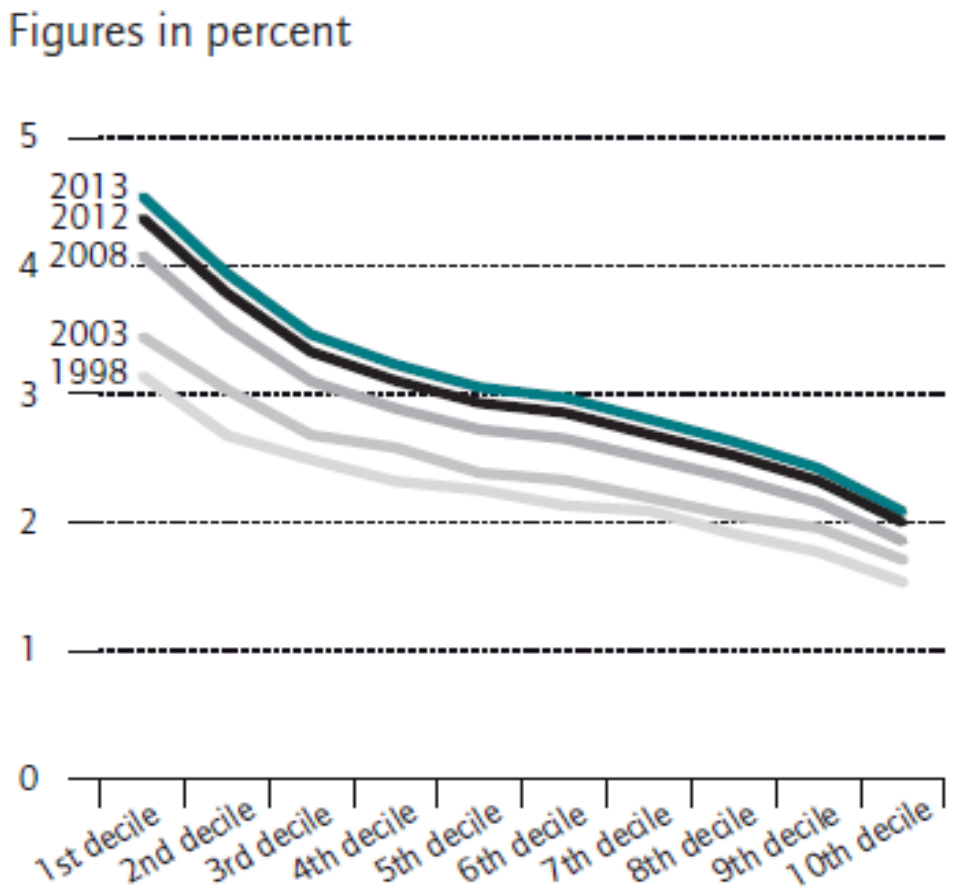
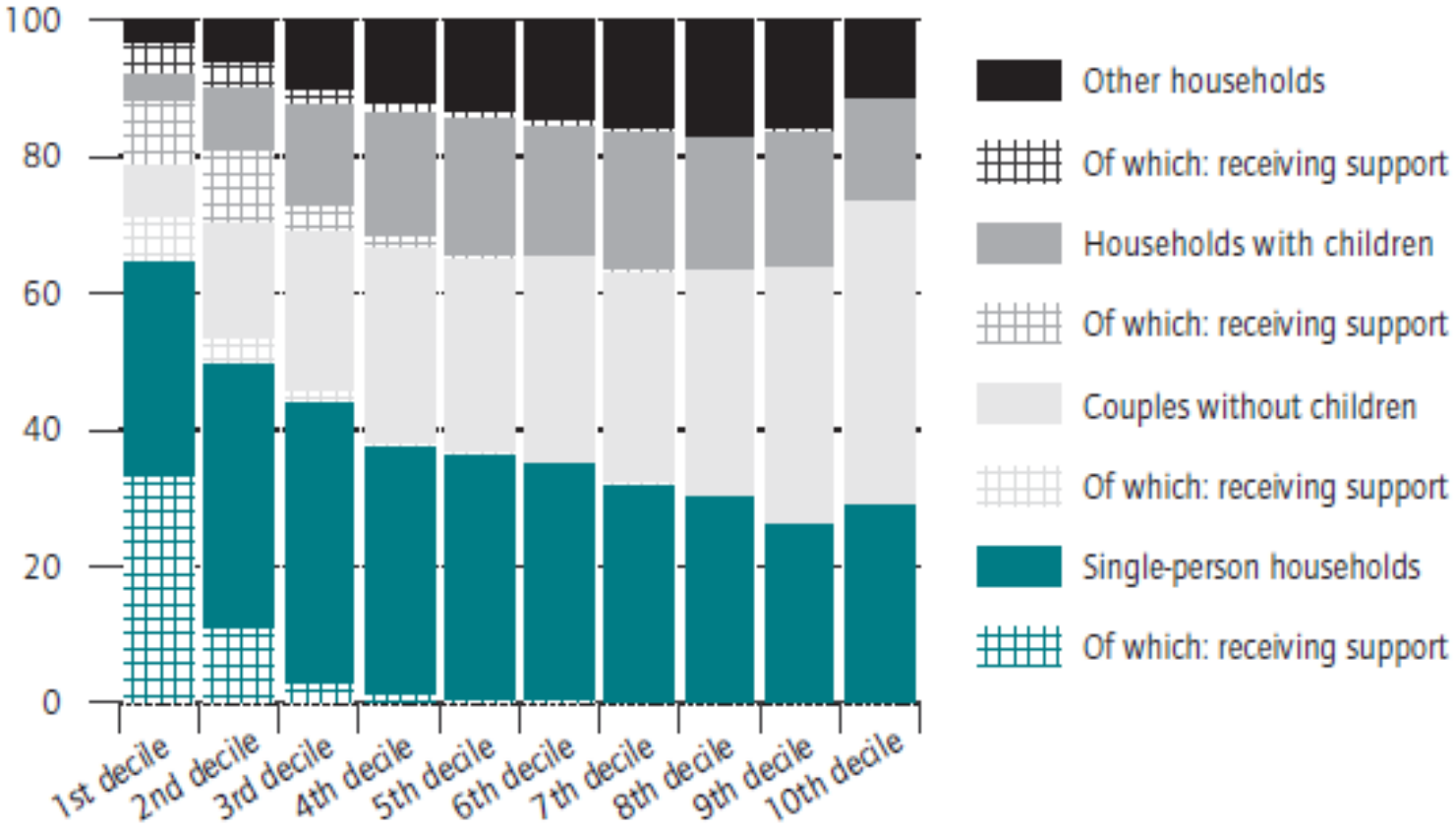
Electricity's Share of Consumer Spending / Income Group



Policy option I: Adjusting social transfers

Structure of Households by Household Types and Income



V Option 2: Basic Tax-Free Allowance for Electricity Tax

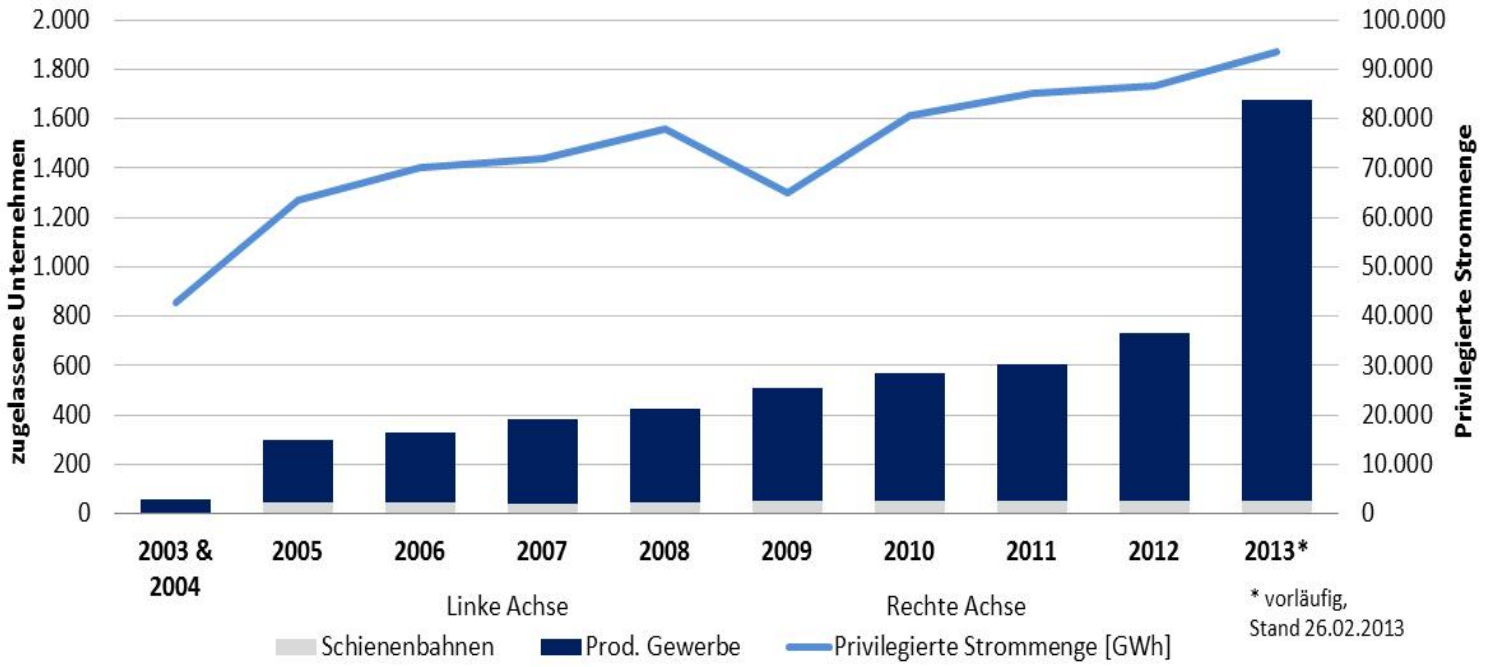
		Treshhold of (electricity-tax) free power		
		500 KWh/a	1000 KWh/a	1500 KWh/A
Compensate increase due to feed-in	Foregone electricity tax	404 Mio € (von 2,7 Mrd €)	792 Mio €	1,14 Mrd €
	Compensation 1st Dezile	-21,7 % (47,5 Mio €)	-41,7 % (91,2 Mio €)	-57,7 % (126,3 Mio €)
Compensate increase due to feed-in + Adjustment of Means tested benefits	Foregone electricity tax + extra costs	608,9 Mio €	953 Mio €	1,26 Mrd €
	Compensation 1st Dezile	-65,1 % (142,4 Mio €)	-74,1 % (162,1 Mio €)	-81,2 % (177,7 Mio €)

VAT Additional income on feed-in tariff: 2012 937 Mio. Euro
(BMF auf Kleine Anfrage der Linken)

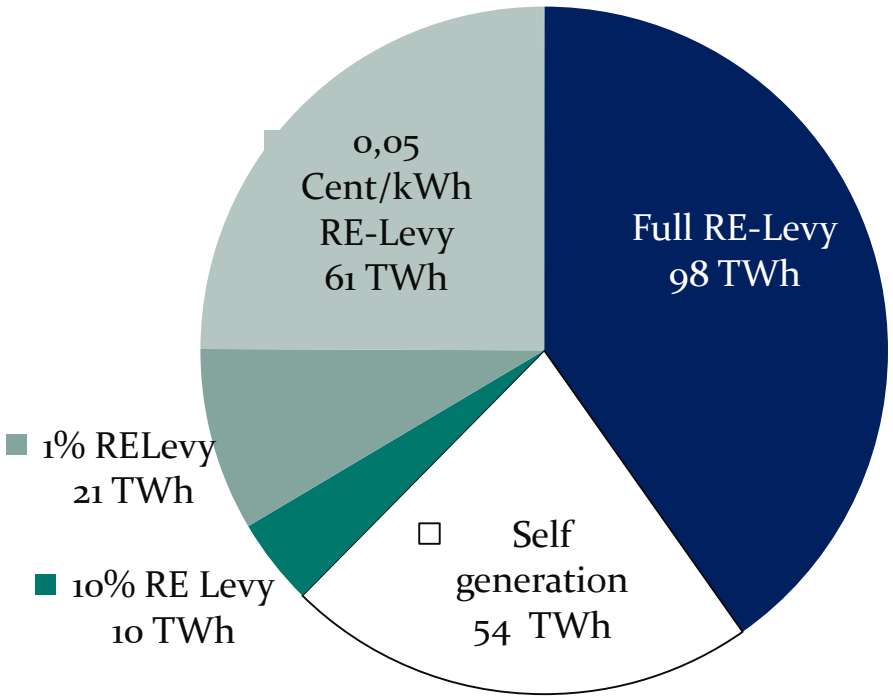
Option 3: Supporting HH in Using Electricity Efficiently

- Energy advice – 16% savings
- Support poor HH with fridge replacement with A++
  - ¼ older than 9 years -> 70% power savings, 64 Euro/year
  - ¼ 5-9 years -> savings, 40 Euro/year
- 300 Euro investment costs pay back in 5 and 8 years
  - With 150 grant – pay back in 2.5 and 4 years
  - One-off public expenditure of 560 Mio E (½ of 7.6 Mio HH)

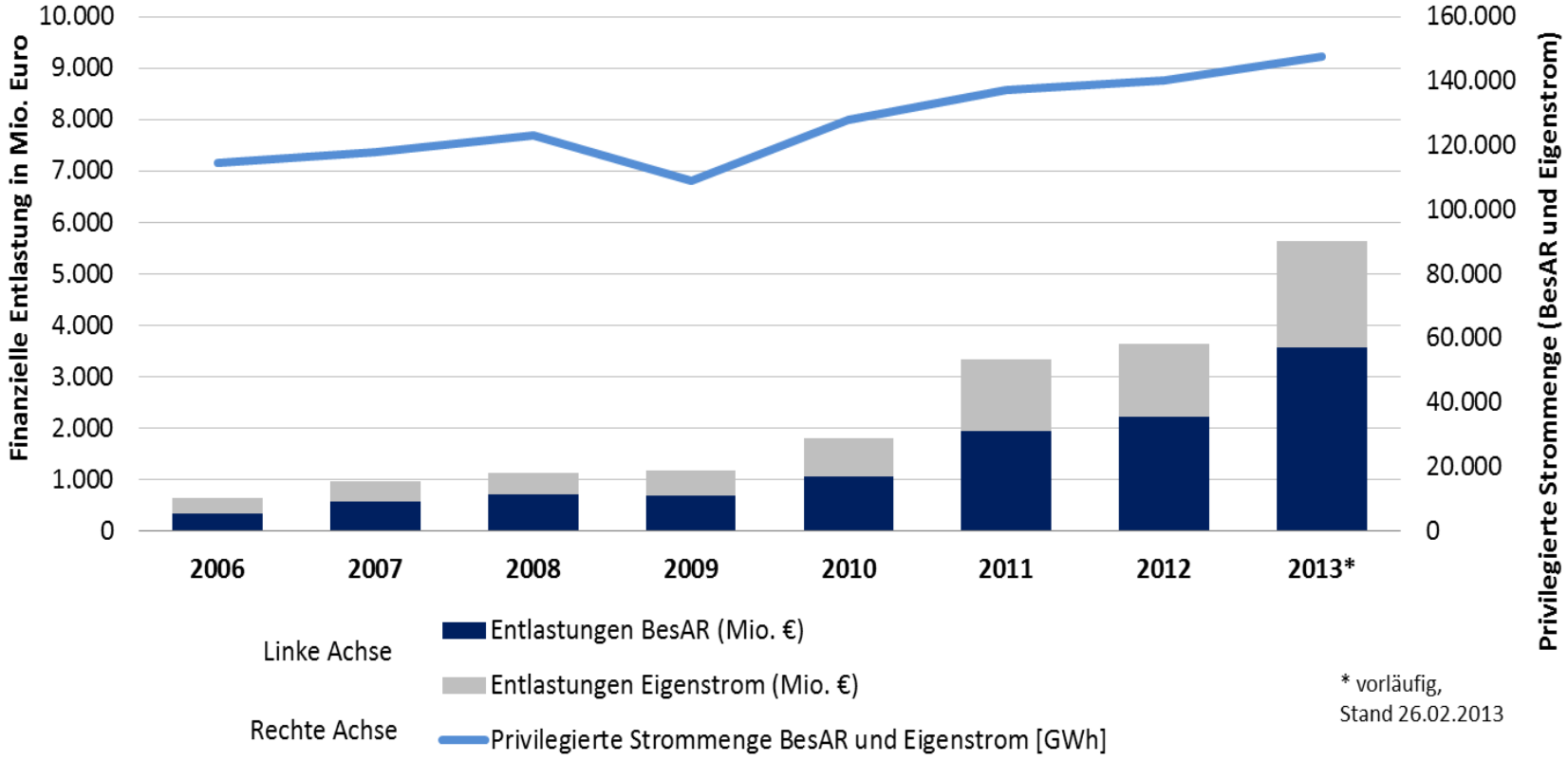
Option 4 – Reducing Industry Exemptions



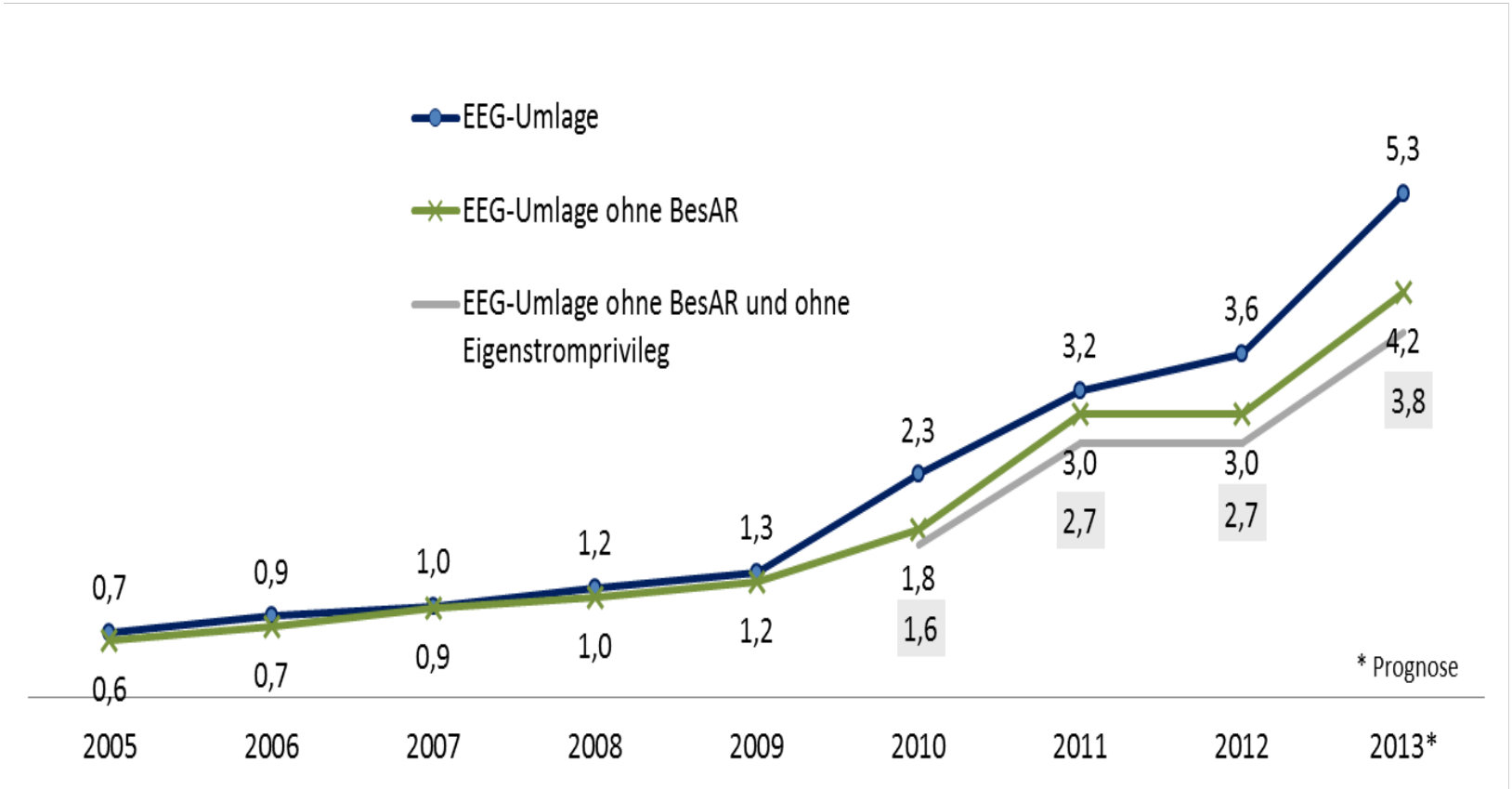
What share of RE Levey is paid by different industry



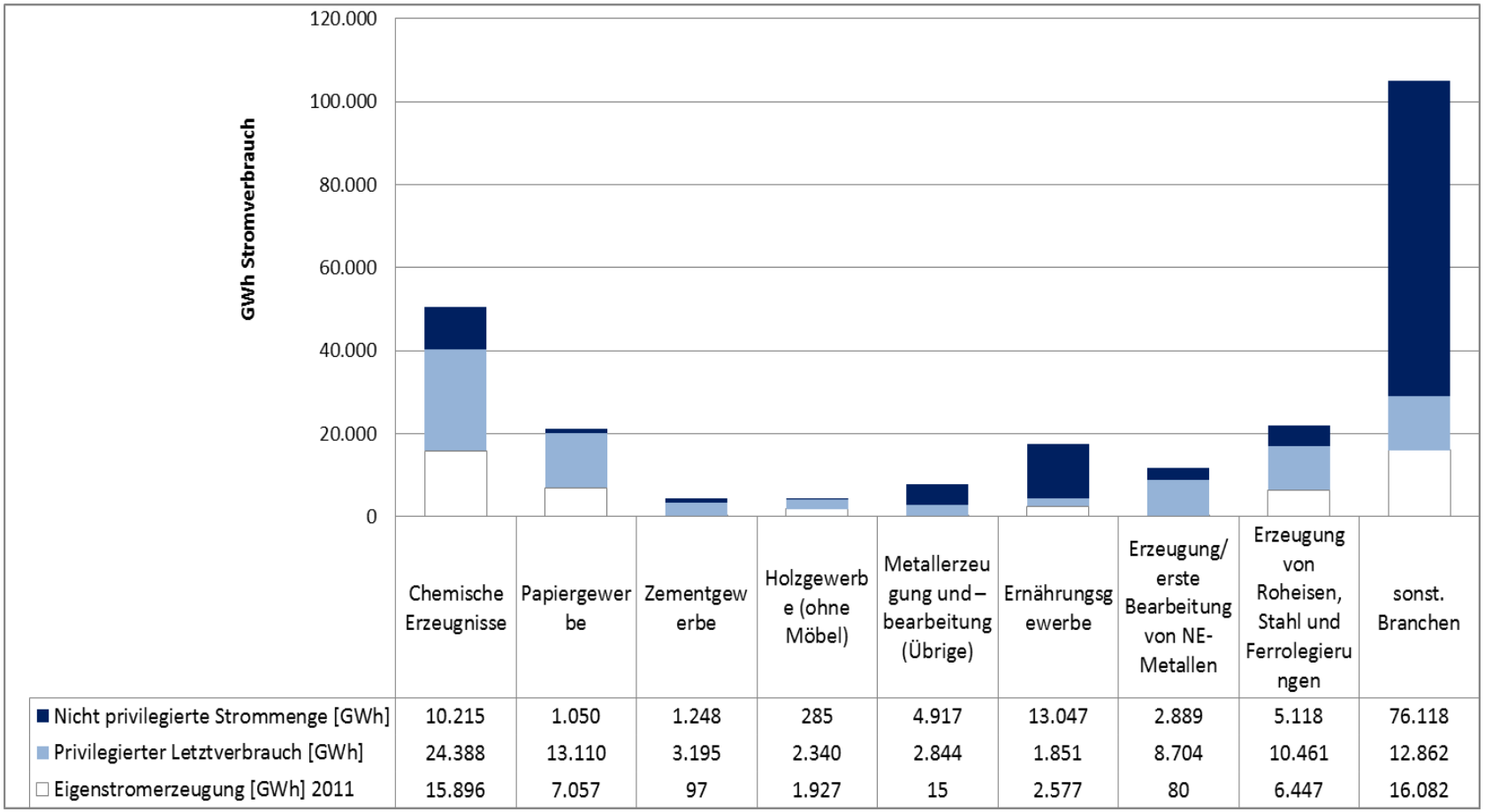
Resulting priviliges for industrial customers



Implications for non-priviliged customers

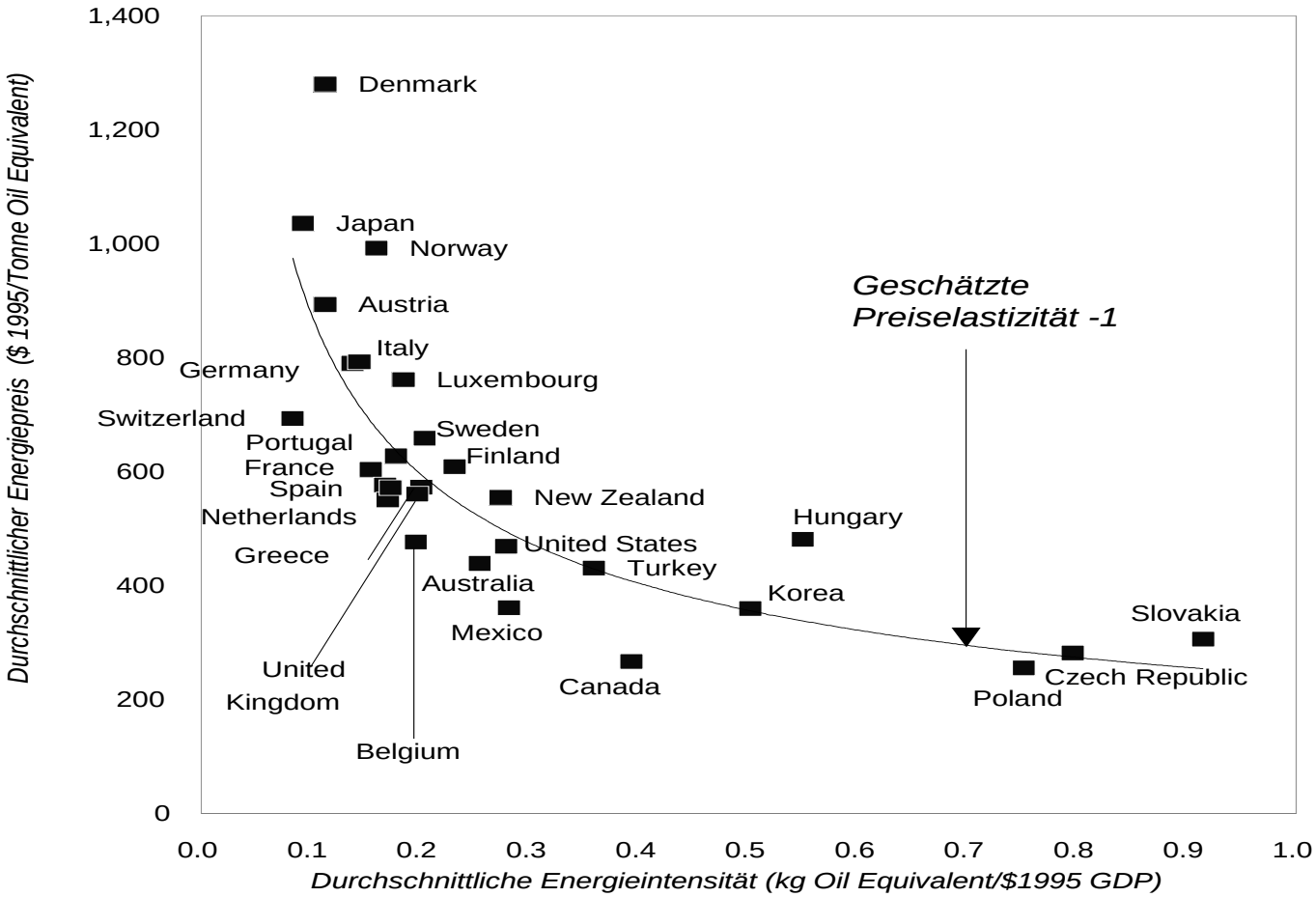


Differentiation according to sectors



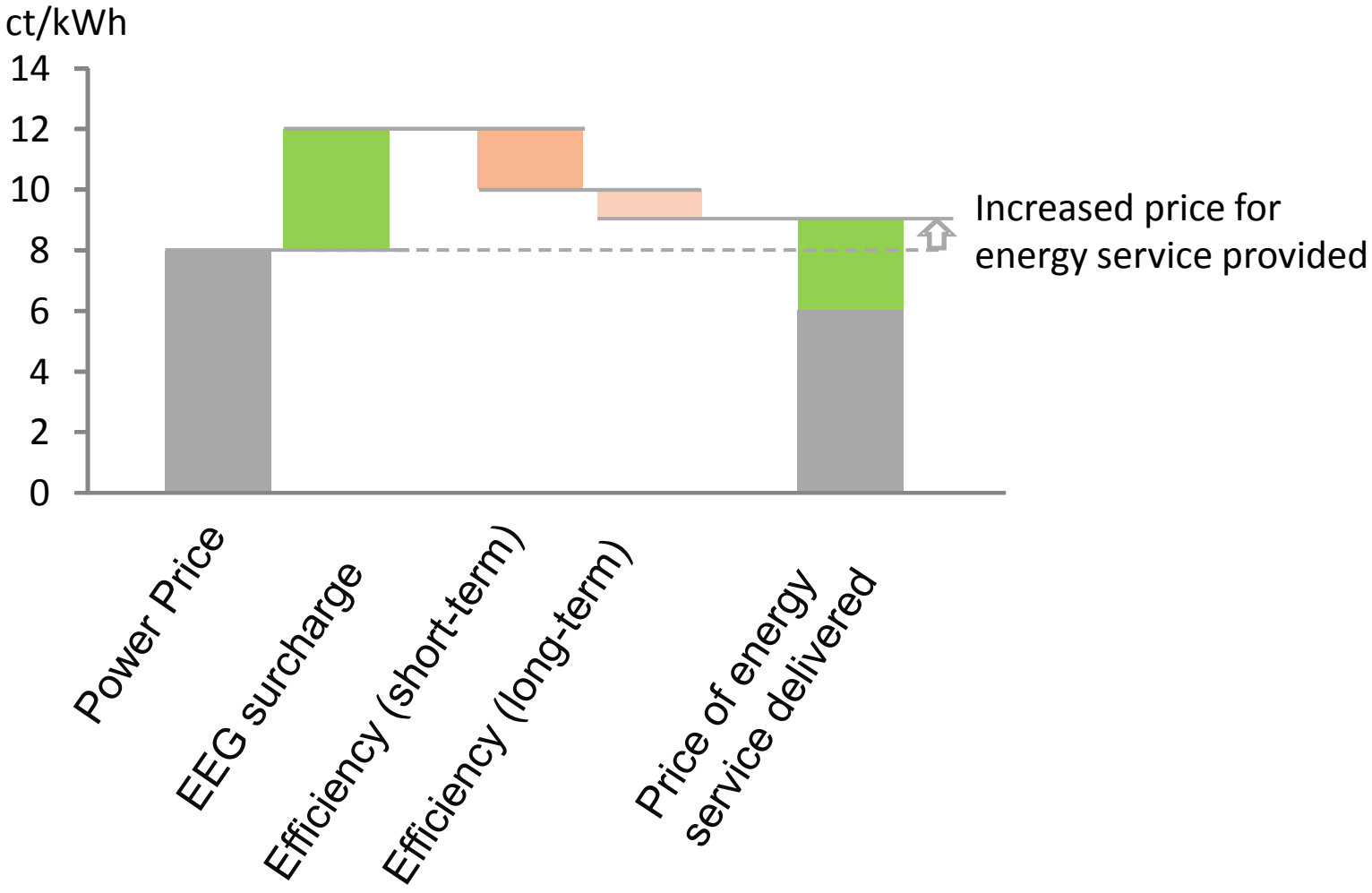
	Chemische Erzeugnisse	Papiergewerbe	Zementgewerbe	Holzgewerbe (ohne Möbel)	Metallerzeugung und –bearbeitung (Übrige)	Ernährungsgewerbe	Erzeugung/ erste Bearbeitung von NE-Metallen	Erzeugung von Roheisen, Stahl und Ferrolegierungen	sonst. Branchen
Nicht privilegierte Strommenge [GWh]	10.215	1.050	1.248	285	4.917	13.047	2.889	5.118	76.118
Privilegierter Letztverbrauch [GWh]	24.388	13.110	3.195	2.340	2.844	1.851	8.704	10.461	12.862
Eigenstromerzeugung [GWh] 2011	15.896	7.057	97	1.927	15	2.577	80	6.447	16.082

Implied costs – foregone efficiency improvements



Source – Newbery 2003

Foregone efficiency savings

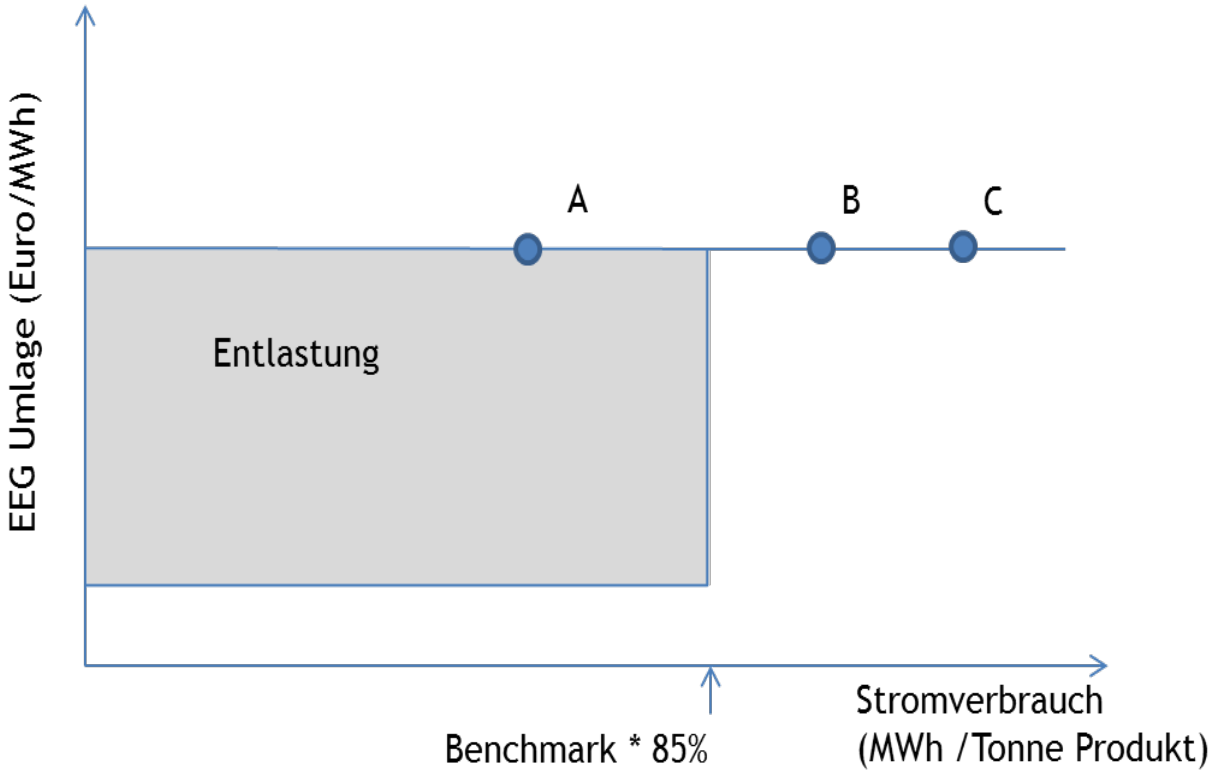


Excempt activities identified by EU ETS Power price comp.

WZ-Nr.	Branche		Stromverbrauch 2011 [MWh]	Anzahl der Unternehmen 2010
24.42	Erzeugung und erste Bearbeitung von Aluminium		8.155.198	77
08.91	Gewinnung von Mineralien für die Herstellung von chemischen Erzeugnissen		14.773	4
20.13	Herstellung von sonstigen anorganischen Grundstoffen und Chemikalien		7.667.730	62
24.43	Erzeugung und erste Bearbeitung von Blei, Zink und Zinn		829.863	21
14.11	Herstellung von Lederbekleidung	*	888	7
24.1	Erzeugung von Roheisen, Stahl und Ferrolegierungen		22.026.213	70
17.12	Herstellung von Papier, Karton und Pappe		16.071.654	147
20.15	Herstellung von Düngemitteln und Stickstoffverbindungen		2.127.355	15
24.44	Erzeugung und erste Bearbeitung von Kupfer		2.175.611	35
20.14	Herstellung von sonstigen organischen Grundstoffen und Chemikalien		18.412.065	96
13.1	Baumwollaufbereitung und Spinnerei		317.292	39
20.6	Herstellung von Chemiefasern		1.078.612	33
08.07	Eisenerzbergbau		k.A.	k.A.
20.16	Herstellung von Kunststoffen in Primärformen (teilweise)	**	(10.502.135)	(144)
17.11	Holz- und Zellstoff (teilweise)	**	(747.903)	(5)
	SUMME (ohne 20.16 und 17.11)		78.877.254	606

Quelle: Europäische Kommission 2012a,c; Destatis 2012a,b

Benchmark based – proportional to output



Proposed structure

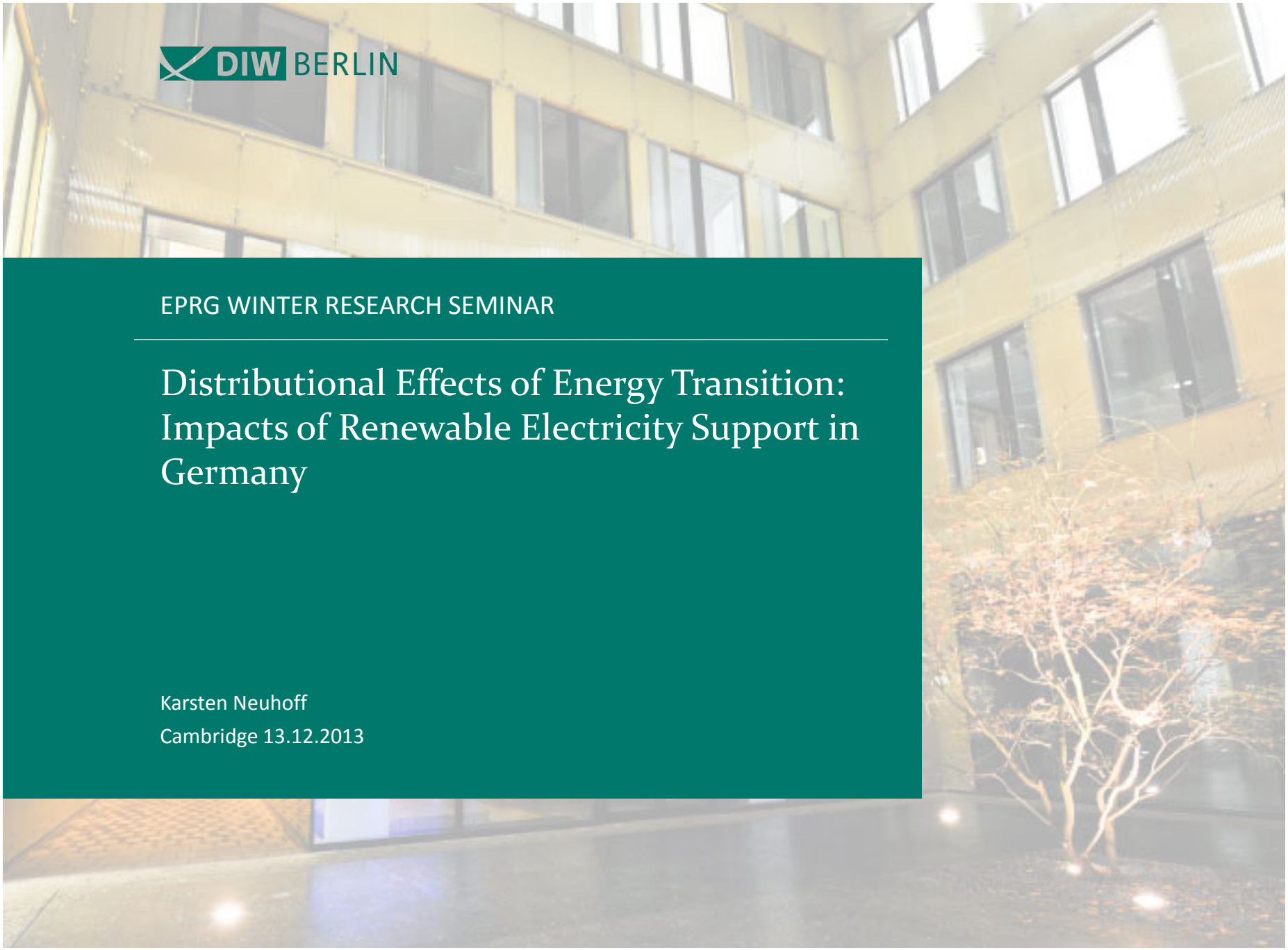
	Current	Scenario A	Scenario B
Priviliged consumption	0,05 Ct/kWh	20%	
Priviliged self generation (efficient CHP/RE)		80%	10%
Trains/Trams	0,05 Ct/kWh	50%	

TWh	Current	Scenario A	Scenario B
Priviliged consumption	91	65	50
Priviliged self generation (efficient CHP/RE)	54	32	32
Trains/Trams	5		
Total priviliged	150	~90 (max 102)	~88 (max 90)

c/kWh	Current	Scenario A	Scenario B
Priviliged consumption	5,3	4,3	4,4

Evaluation of options to structure industry exemptions

- Transparency
- Administrative effort
- Operational disincentives
- Risk of production re-location
- Incentives for energy efficiency/decarbonisation
- Effort sharing



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