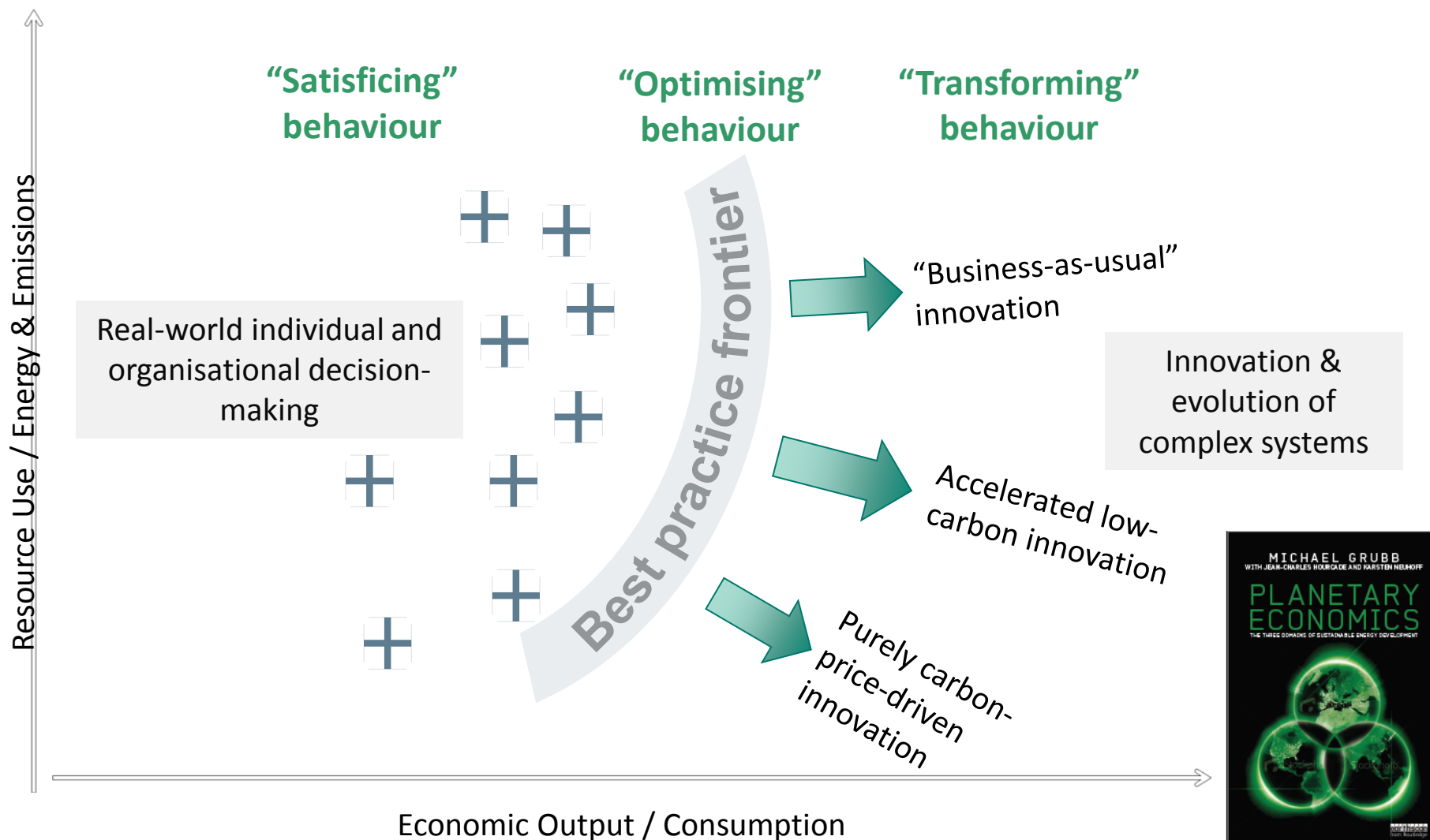


OECD Green Growth and Sustainable Development Forum

Germany's Energiewende: addressing socio-economic impacts of the energy transition

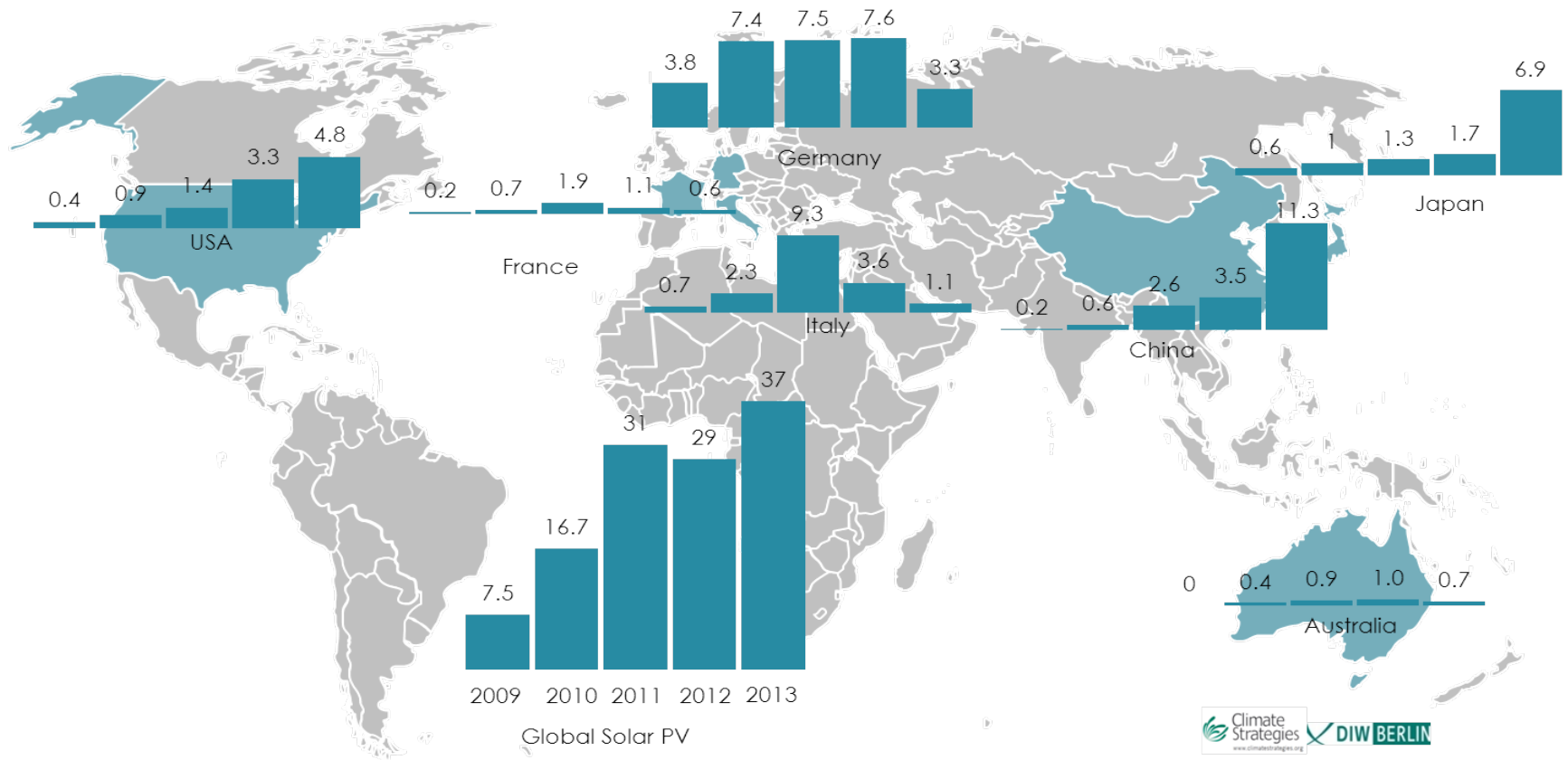
Karsten Neuhoff
Paris, 13.11.14

A framework for different elements of an energy transition



Source: Grubb, Hourcade & Neuhoof (2014): Planetary Economics, Energy, Climate Change and the three domains of sustainable development. *Routledge*.

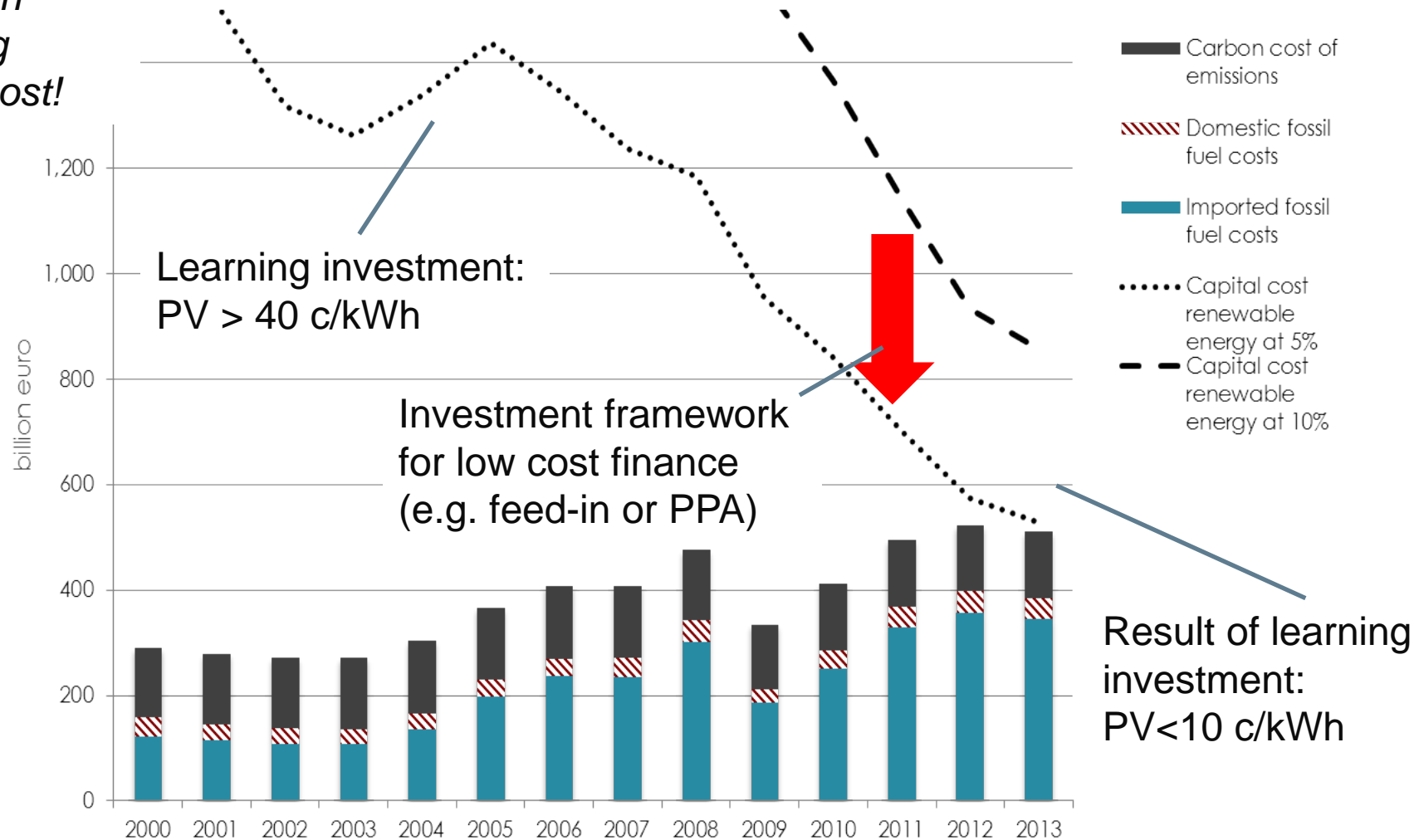
Transformation strategy: Early deployment to funding learning investment for PV



With technology progress PV became affordable for global large scale use - in 2013 70% of solar deployment was outside of Europe.

Technology success: - and importance of continued investment framework

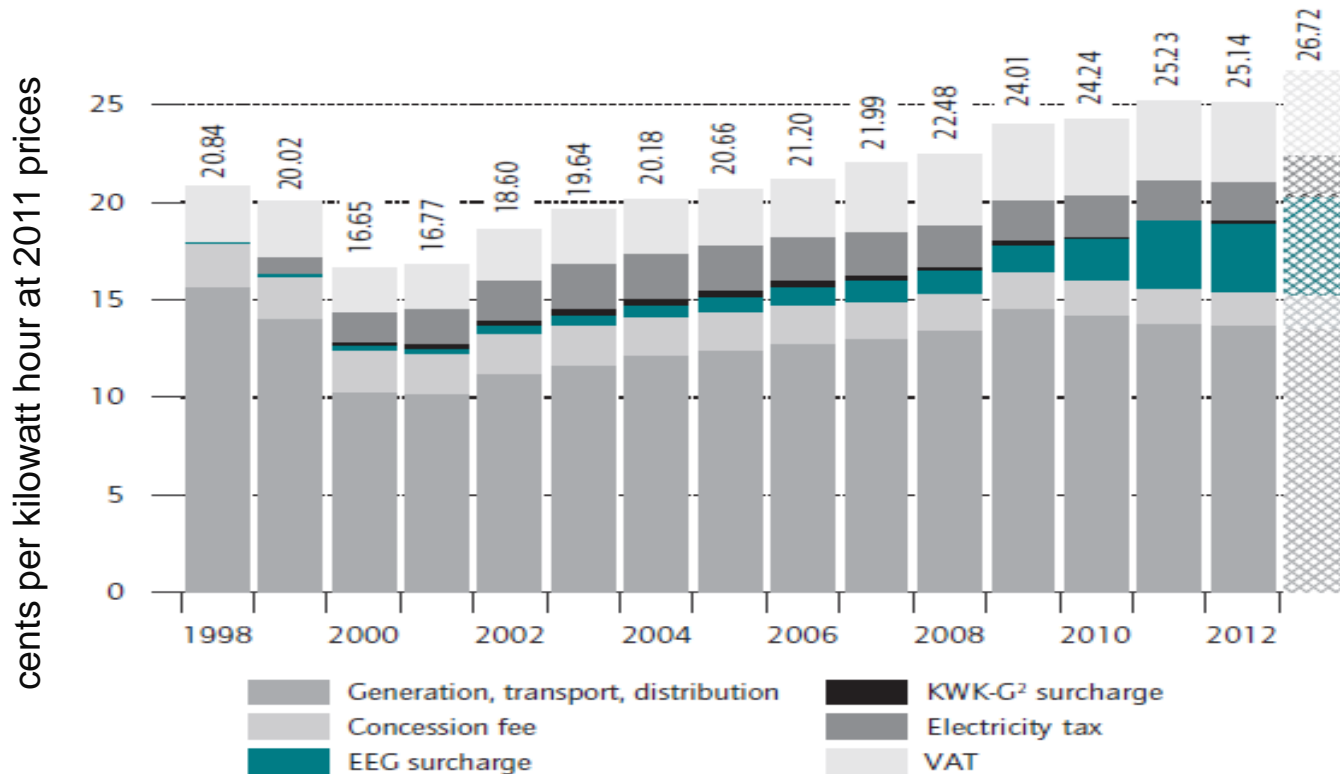
*Illustration
excluding
system cost!*



Assumptions: 2% Inflation, Fossil conversion losses 50% 66% of energy from on-shore Wind and 33% Solar

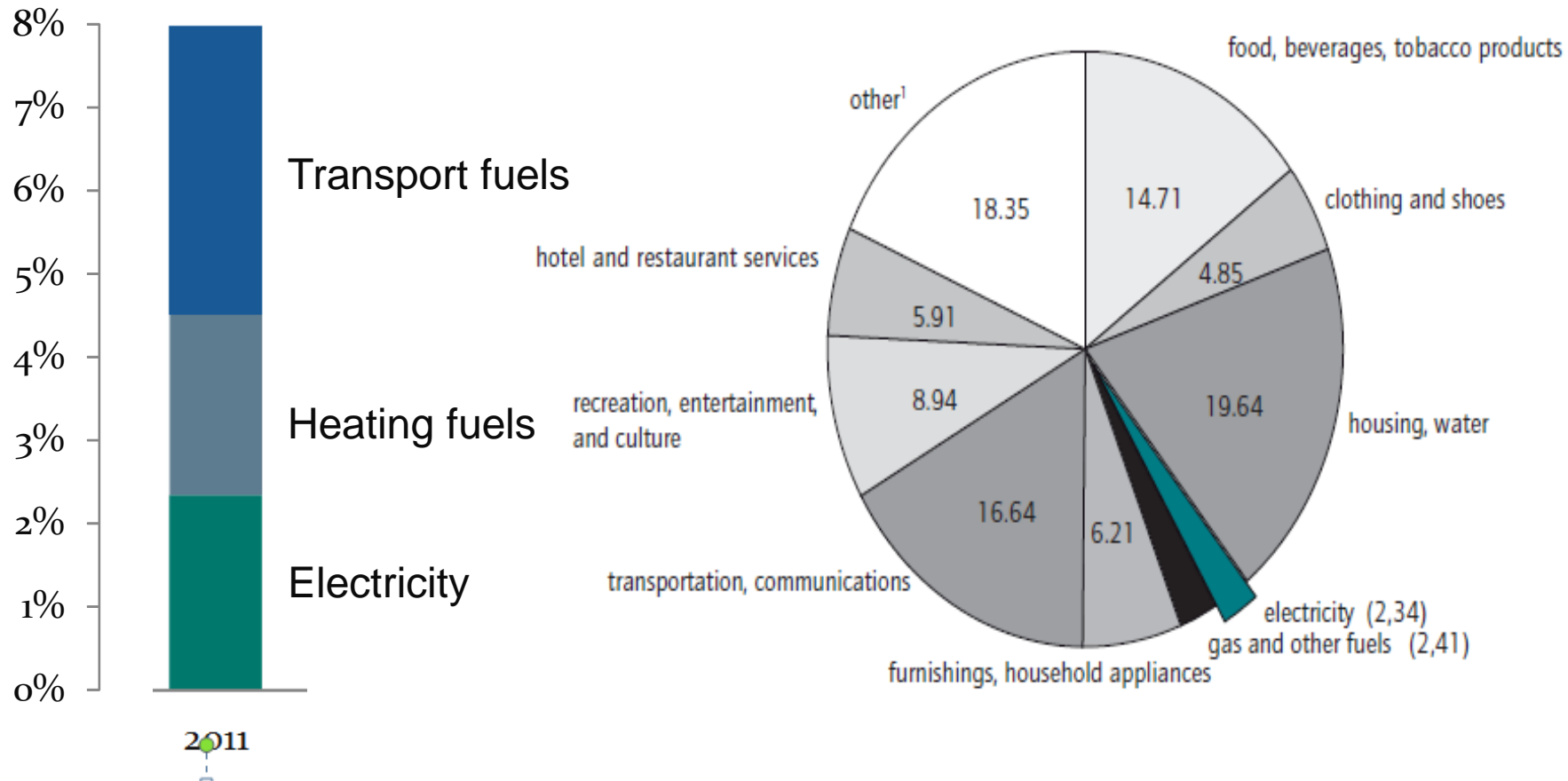
Allocation of cost of learning investment: Development of the Electricity Price for Households

RE surcharge combines elements of learning investment in new technology, and nominally fixed long-term contracts above current spot prices.



Cost reductions of PV imply that replicating RE deployment will **not** result in similar scale surcharges.

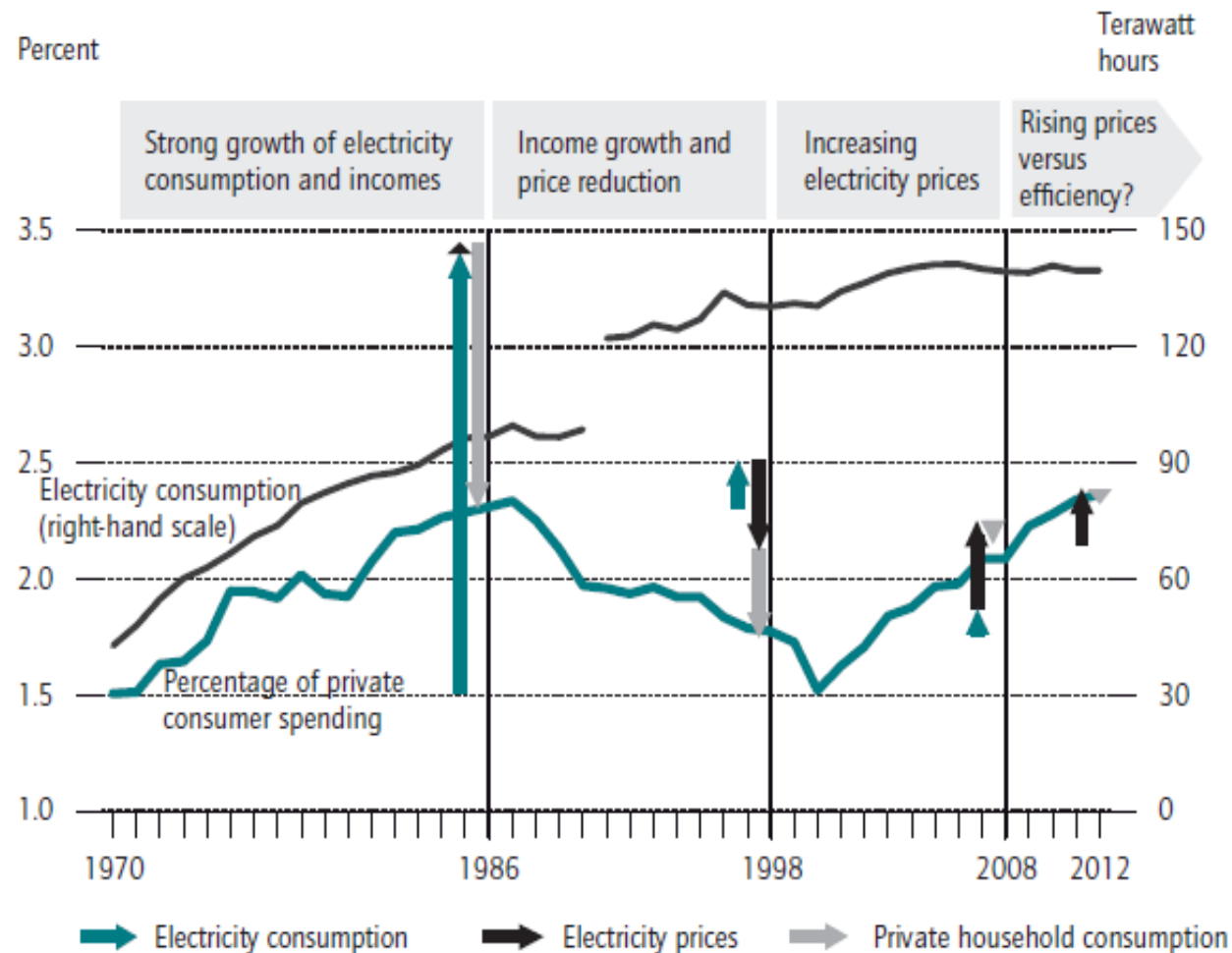
4 Electricity constitutes less than 1/3 of energy bill for HH



Berechnung für Brennstoffe aufbauend auf: AG Energiebilanz, IEA Energy Prices and Taxes, BMWi Energiestatistik, Stat. Bundesamt

Source: Distributional Effects of Energy Transition Impacts of Renewable Electricity Support in Germany (Economics of Energy & Environmental Policy) Neuhoff, Bach, Diekmann, Beznoska, Tarik El-Laboudy

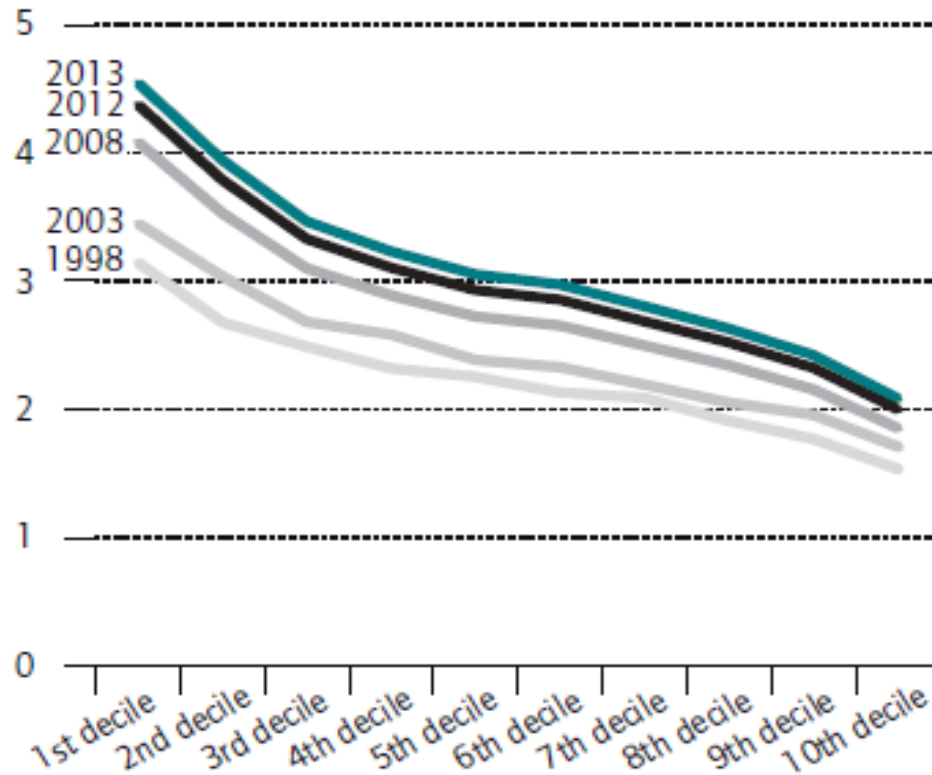
Electricity Consumption and share of Consumer Spending



Average surcharge for consumers is not the major concern.

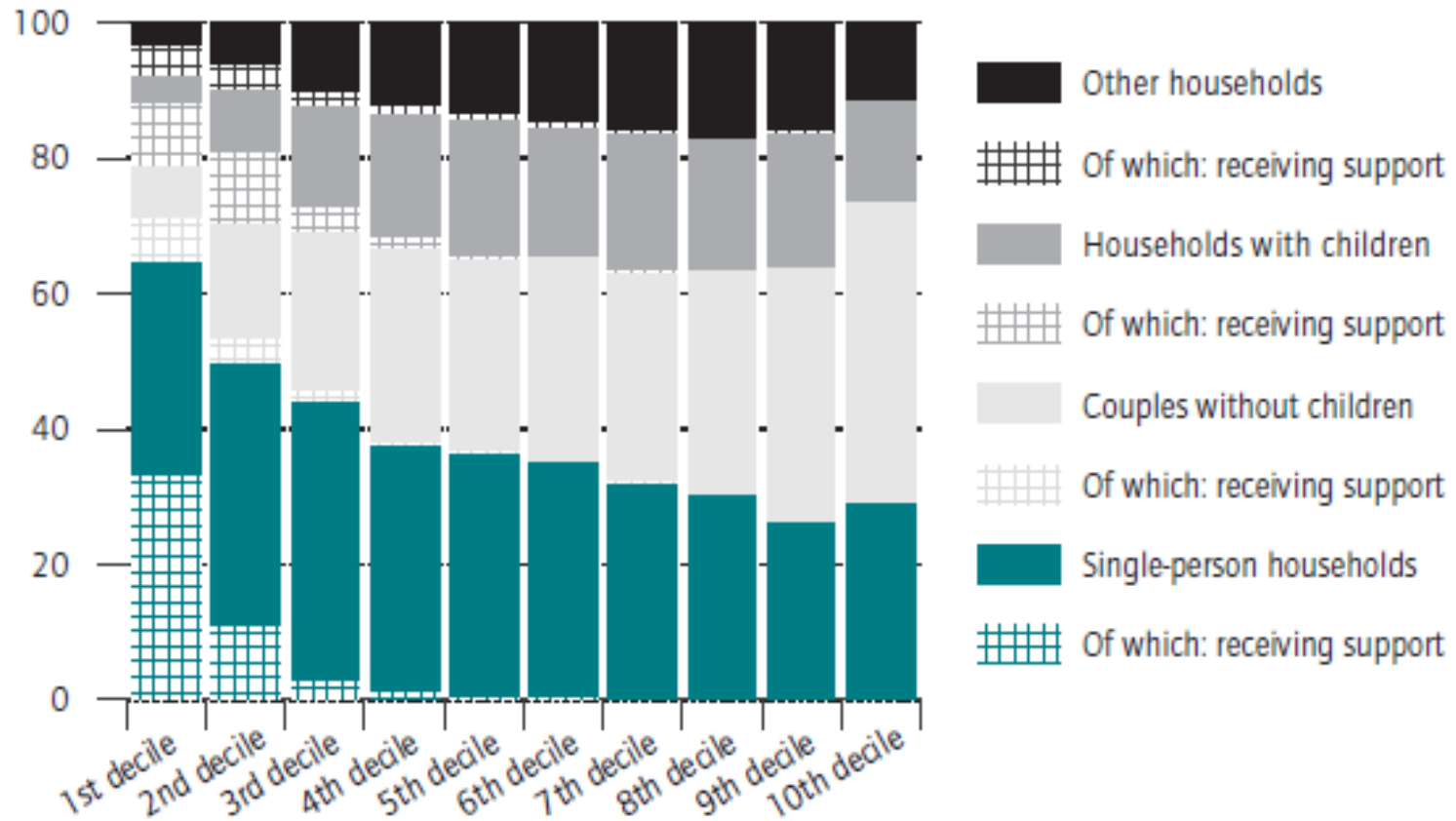
6 Electricity's Share of Consumer Spending / Income Group

Figures in percent



Main concern: Impact for poor households with higher share of energy cost.

Structure of Households by Household Types and Income



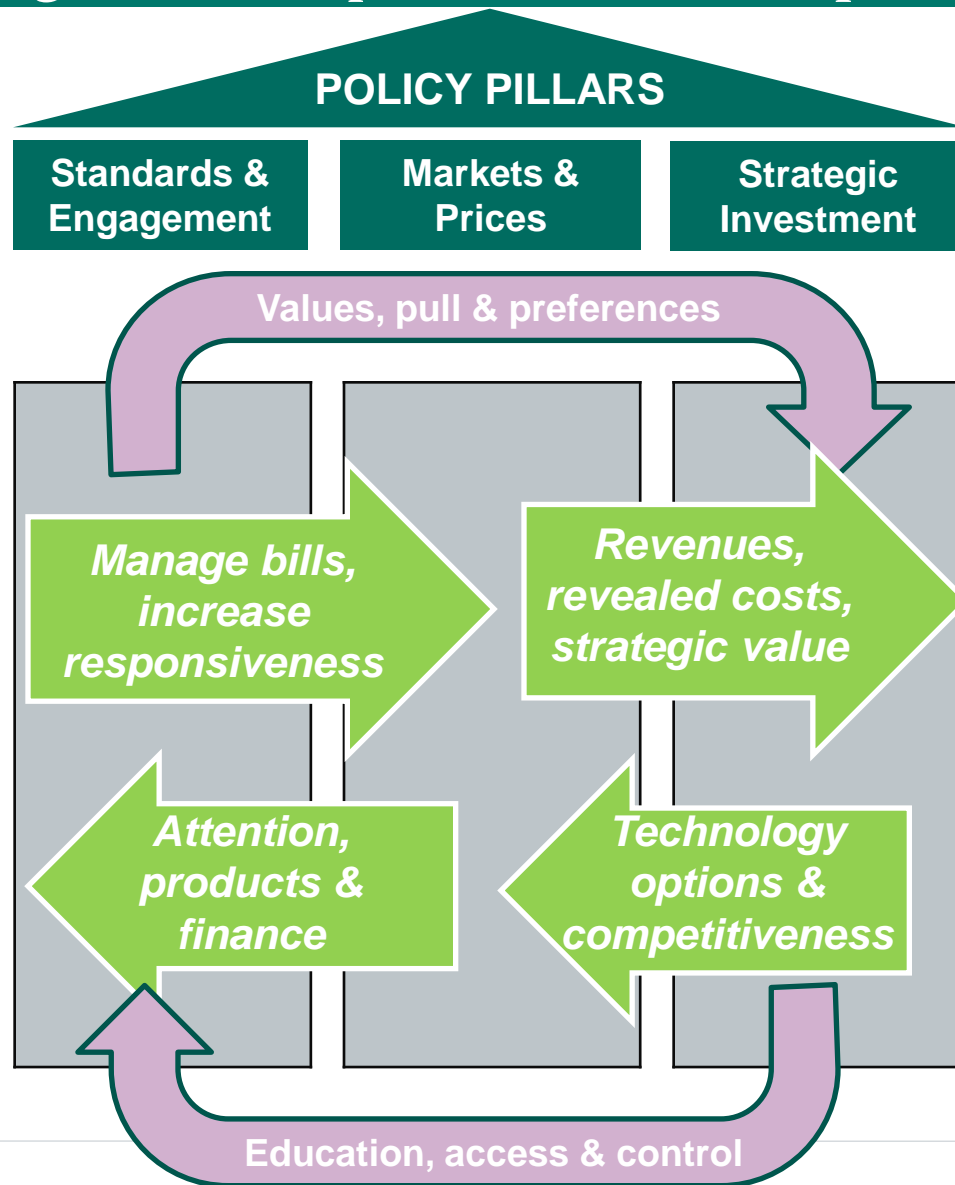
		Treshhold of (electricity-tax) free power		
		500 KWh/a	1000 KWh/a	1500 KWh/A
Compensate increase due to feed-in	Foregone electricity tax	404 Mio € (von 2,7 Mrd €)	792 Mio €	1,14 Mrd €
	Compensation 1st Dezile	-21,7 % (47,5 Mio €)	-41,7 % (91,2 Mio €)	-57,7 % (126,3 Mio €)
Compensate increase due to 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)

- Energy advice – 16% savings
- Support poor HH with fridge replacement with A++
 - $\frac{1}{4}$ older than 9 years \rightarrow 70% power savings, 64 Euro/year
 - $\frac{1}{4}$ 5-9 years \rightarrow 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 ($\frac{1}{2}$ of 7.6 Mio HH)

Distributional Effects of Energy Transition: Changing course requires a sustained package



Source: Grubb, Hourcade & Neuhoff (2014): Planetary Economics, Energy, Climate Change and the three domains of sustainable development. Routledge.