Distributive effects of climate policies

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Key messages

- **The cost of many decarbonisation policies fall disproportionately on poorer households**
- **The distributive effects of climate policies need to be addressed**
  - Compensate for regressive policy elements
  - Go for less regressive decarbonisation policies
  - Enable poorer households to benefit from decarbonisation

Carbon taxes tend to be regressive

- Poorer households spend relatively more on energy -> they tend to be disproportionately affected by carbon princing

Share of income spent on electricity and gas in the UK
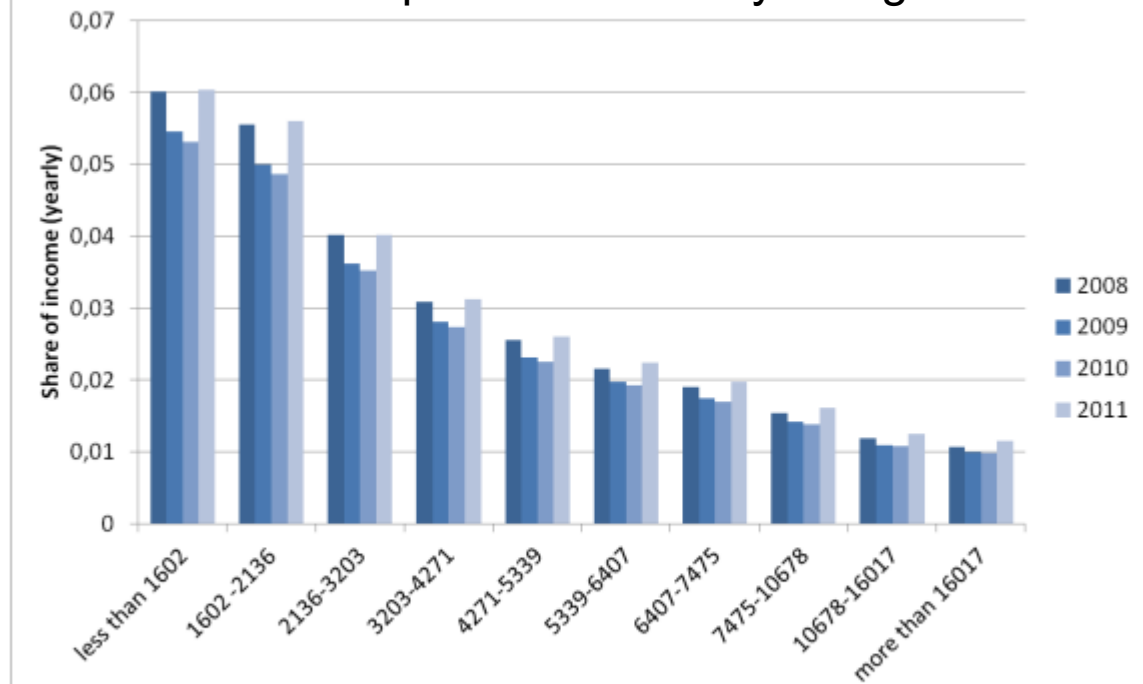
Source: Ecofys 2016 Prices and Costs of EU Energy

Technology standards for consumer goods tend to be regressive

- **Richer households use more energy -> they have the same cost from the standards, but higher benefits from the savings**
- **"fuel economy standards are more regressive than a gasoline tax with revenues returned lump sum"** [Davis and Knittel (2016). Are Fuel Economy Standards Regressive?]
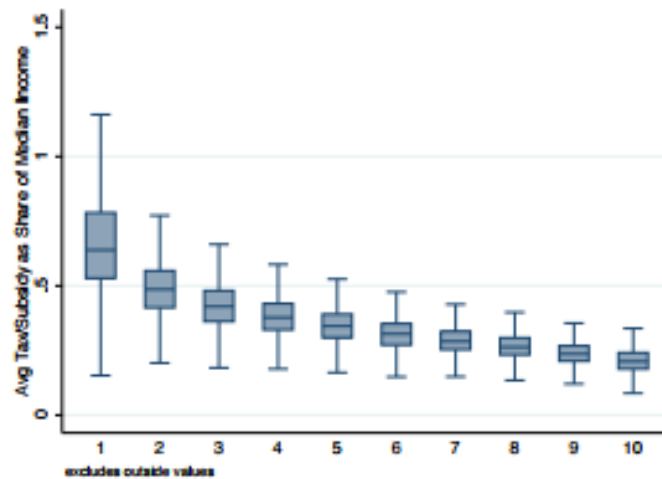
(b) New and Used Vehicles

Poorer households cannot easily invest in capital-intensive low-carbon assets

- **Poorer households tend to have**
  - More limited access to finance
  - Higher time-preferences
  - No house to put charging for electric vehicles, improve energy efficiency or install solar panels.

-> poor households benefit less from private investments into energy efficiency, electric vehicles or own solar panels that only pay back over multiple years.

Energy efficiency feature	Average household income (2010 US$)		
	No	Yes	Difference
Average (std. dev) [no. obs.]	(1)	(2)	(3)
Double or triple-paned windows	$45,063	$61,964	$16,901
	(32,859)	(37,300)	(641)
	[5,071]	[7,012]	
Compact fluorescent bulbs installed	52,783	59,657	6,874
	(35,185)	(36,643)	(1,287)
	[853]	[6,567]	
Energy Star clothes washer	52,176	65,955	13,779
	(35,093)	(36,310)	(925)
	[2,197]	[4,476]	
Frontloading washer	55,471	76,189	20,718
	(35,324)	(36,218)	(911)
	[8,092]	[1,941]	
Energy Star dishwasher	57,920	75,121	17,201
	(35,088)	(35,859)	(1,083)
	[1,642]	[3,042]	
Energy Star fridge	46,497	63,198	16,701
	(33,692)	(37,178)	(824)
	[2,981]	[4,645]	
Energy Star air conditioner	40,904	53,332	12,428
	(32,088)	(36,335)	(1,625)
	[679]	[1,176]	

Source: 2009 Residential Energy Consumption Survey.

Table from Arik Levinson (2017) Energy Efficiency Standards Are More Regressive Than Energy Taxes: Theory and Evidence

Polemically put: owners of a second-hand Dacia will pay the fossil fuel taxes that will be used to pay for a tax break for people to buy a luxurious Tesla.

Discount rate matters

- **Poorer households feature higher discount rates -> for them energy efficiency investment are less beneficial than for richer households**

	Discount rate estimate
Poor	32.9
Lower middle	30.0
Upper middle	22.7
Rich	22.5

Harrison et al.(2002): Estimating discount rates in Denmark

- **Richer households buy bigger appliances that are more efficient**

Table: Washing machines

	Investment cost	Difference to better class	Energy cons- umption in kWh/y	Annual savings compared to inferior class (@30ct/kWh)	At which discount rate it pays to buy this class
A+++	€ 755	€ 142	146	€ 15	11%
A++	€ 613	€ 204	196	€ 15	8%
A+	€ 409	€ 79	247	-€ 1	-2%
A	€ 330		243		

Own calculations based on
www.topten.eu/uploads/File/WhiteGoods_in_Europe_June15.pdf

Addressing distributional effects is crucial

Distributive effects of climate policies need to be addressed:

- **to combat increasing inequality**
- **to improve the political acceptability of decarbonisation**

- **important to ensure that the efficiency of the policies is not severely undermined, by policies to address distributive consequences (e.g., tax rebates should not increase incentives to pollute).**

Recycling carbon pricing revenues

- **Suggestions include**
  1. using these revenues to reduce taxes on labour,
  2. providing targeted social transfers,
  3. offering investment support (e.g., access to public credits for energy efficiency investments) to poorer households and
  4. public investments in areas most beneficial for poorer households (e.g., investment in efficiency of social housing or public transport).

Make climate policies less regressive

- **Fuel taxes are much less regressive than electricity taxes** (some studies find fuel taxes are even progressive)
- **Fuel taxes are less regressive than technology standards**
- **Grandfathered emission allowances are regressive -> move to auctioning**

Average household tax payment as a percentage of household total expenditure (decentile average=100)
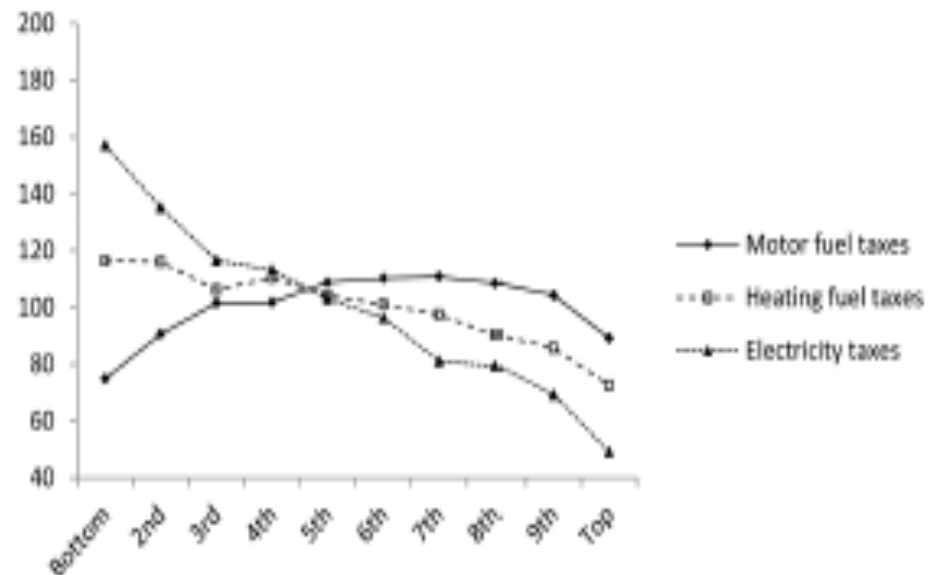
Stephen Smith (2017). "**Carbon Pricing and Taxation: Overcoming Obstacles to Policy Reform in the EU." In: Parry et.al (eds) Energy Tax and Regulatory Policy in Europe.**

Explore opportunities for poorer households

- **poorer households are characterised by lower risk and time preferences**

- **they would more easily accept to reduce/shift electricity consumption if they get a financial compensation.**

- **Hence, the market design in a digitalised and decarbonising electricity system should make sure that poorer households get properly compensated for their ability to provide flexibility.**