
Carbon Pricing: Rationale, Progress and Prospects

Conference on Environmental Tax Reform in Europe
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Kings College London

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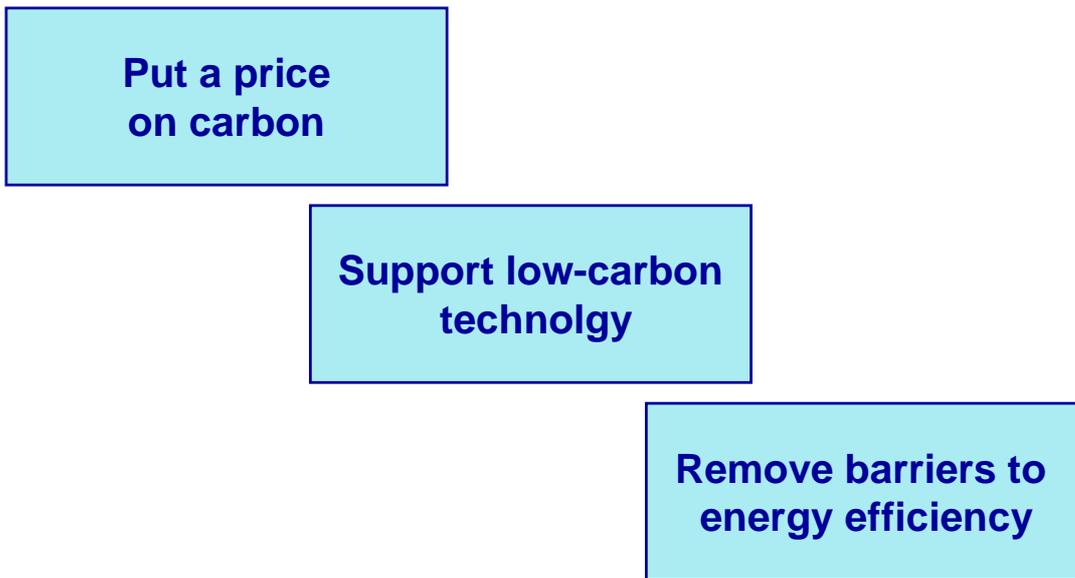


Overview

- Why carbon pricing?
- What can the carbon market deliver?
- Do we still need a social cost of carbon?
- What are the social impacts of carbon pricing?

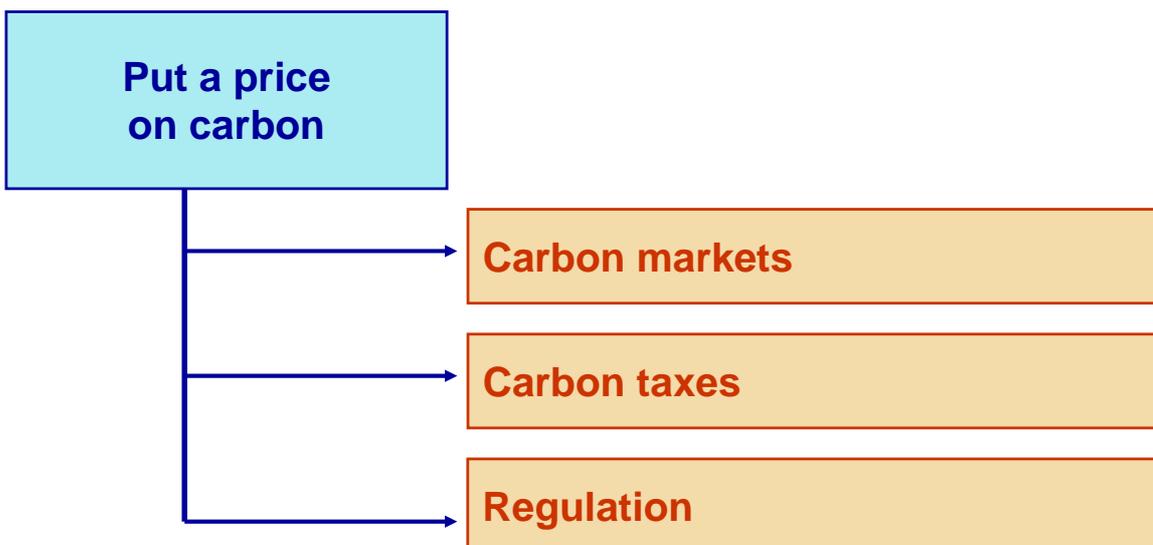


The three elements of climate policy

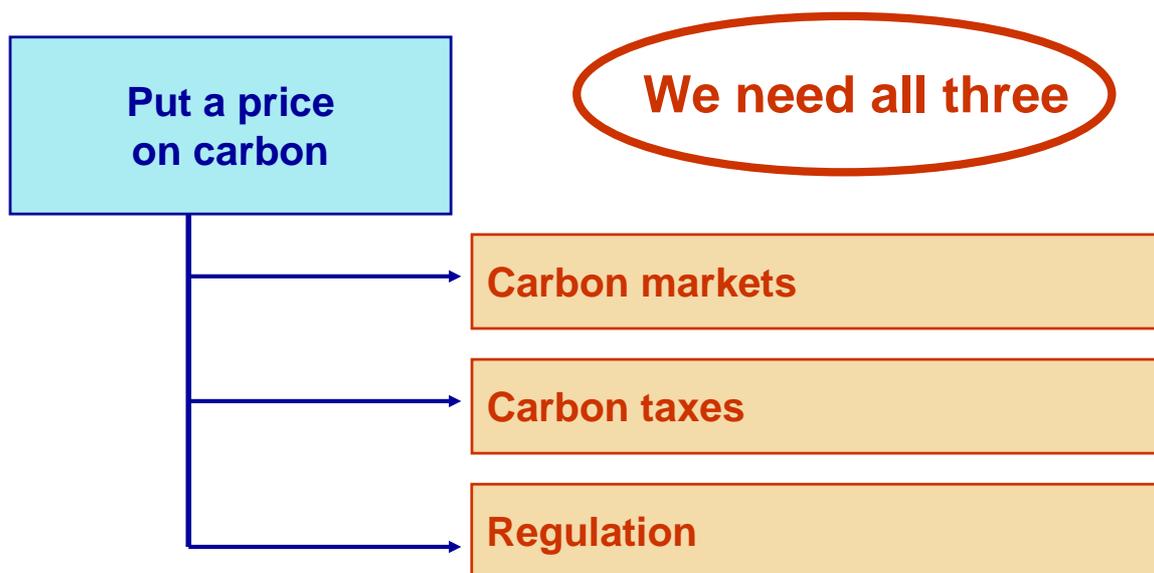


Source: Stern Review

Three ways to put a price on carbon



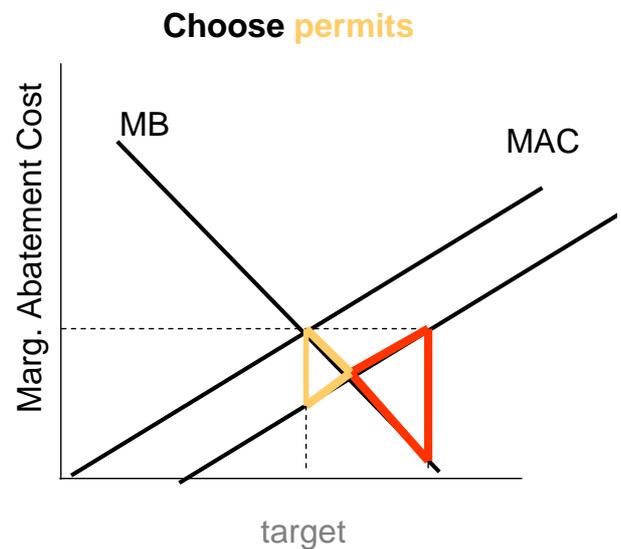
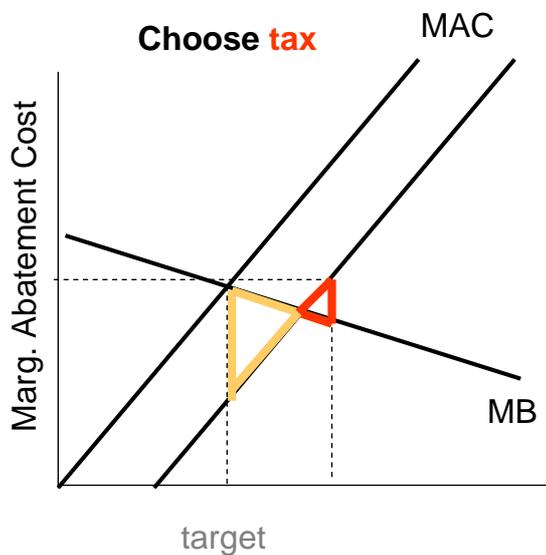
Three ways to put a price on carbon



Taxes vs permits

- Economic efficiency argument
 - Taxes: certain cost, uncertain quantity
 - Permits: uncertain cost, certain quantity
- Optimal choice depends on the slope of marginal abatement, damage cost curves (Weitzman 1974)

Taxes vs permits



Taxes vs permits

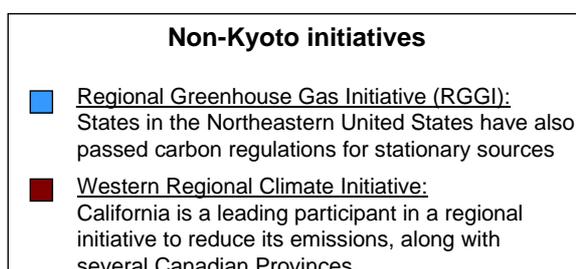
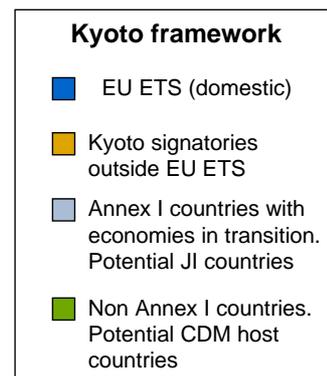
- Political economy arguments are more conclusive
- International carbon tax agreement difficult to achieve
- Domestically, industry prefers (grandfathered) permits

Overview

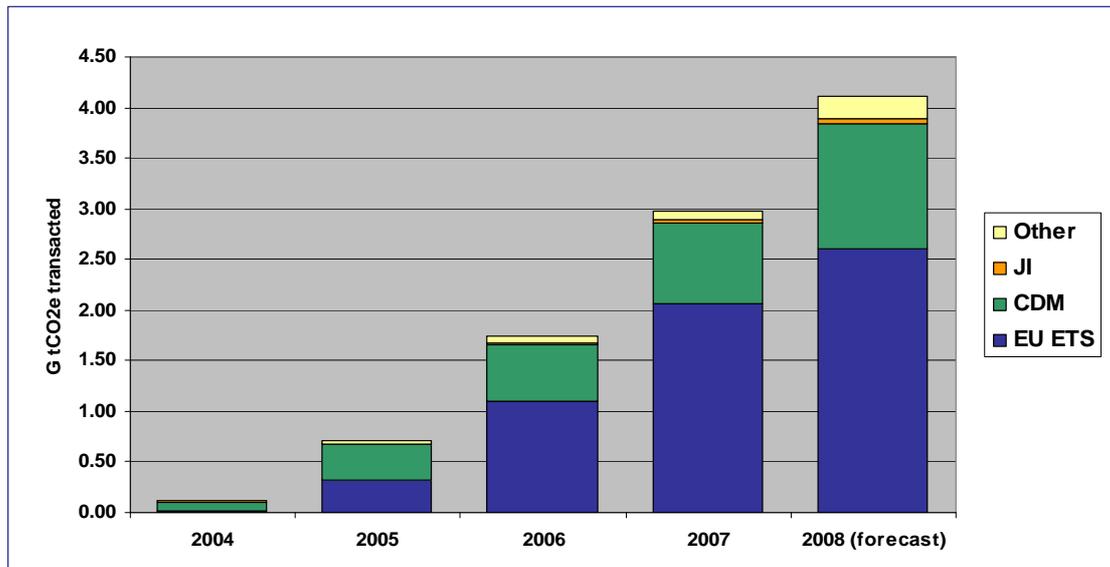
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Emerging carbon markets



A growing market



Source: World Bank



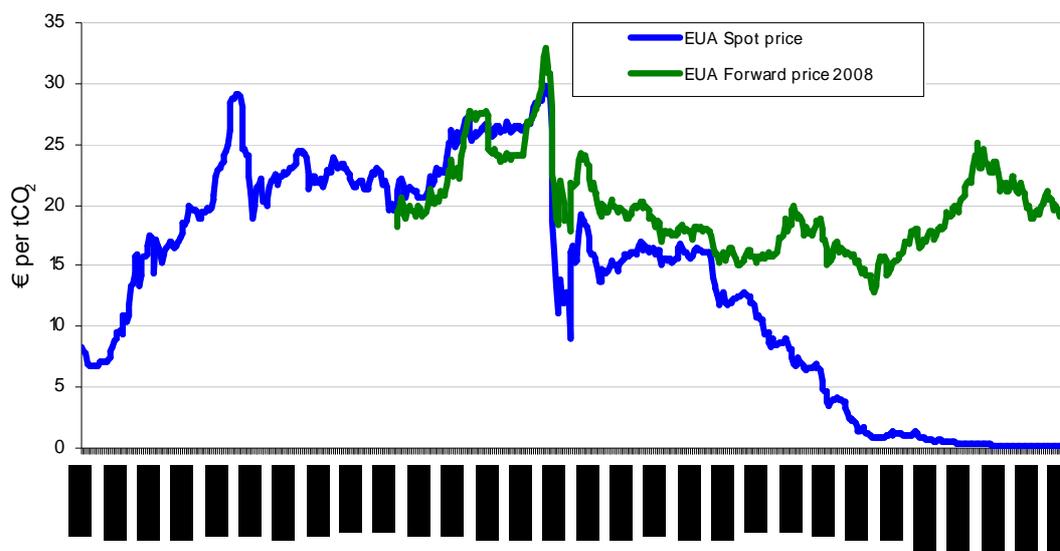
Increasing efficiency

EUA Prices (EU-ETS)		Date	Dec 08	Dec 09	Dec 10	Dec 11	Dec 12	Dec 13
FUTURES (ECX)		24-Oct	€19.14	€19.70	€20.28	€21.19	€22.32	€23.97
SPOT (BlueNext)		23-Oct	€19.01					
CER Prices (CDM)			Dec 08	Dec 09	08-12 Strip			
<u>Broker</u>								
TFS Energy	24-Oct	€16.00	€16.15	€15.85	€16.00	€16.00	€16.15	
Evolution Markets	24-Oct	€16.00	€16.15	€15.75	€15.95	€15.95	€16.15	
CantorCO2e	24-Oct	€15.95	€16.05	€15.75	€15.85	€15.95	€16.05	
Tullett Prehon	24-Oct	€16.00	€16.10	€15.82	€16.02	€15.85	€16.05	
ICAP	24-Oct	€16.00	€16.20	€15.80	€16.00	€15.95	€16.15	
MF Global Energy	24-Oct	€16.00	€16.20	€15.70	€15.90	€15.95	€16.15	
Spectron	24-Oct	€16.00	€16.05	€15.80	€15.85	€16.03	€16.08	
GFI Group	24-Oct	€15.90	€16.10	€15.70	€15.90	NA	NA	
*Reuters CER Index		24-Oct	€16.05	€15.85	Strip			
Net Chg/ % Chg			-€0.86	-5.11%	-€0.87	-5.19%	-€0.89	-5.26%
Implied Percentage/ € Spread			83.87%	€3.09	80.47%	€3.85	79.06%	€4.25
<u>Exchange</u>			Dec 08	Net Chg	Volume	Dec 09	Net Chg	Volume
ECX CERs	24-Oct	€16.02	-€0.94	157	€15.83	-€0.95	115	
Nord Pool CERs	24-Oct	€16.00	-€0.85	0	€15.80	-€0.90	0	
Green Exchange CERs	23-Oct	€17.03	€0.32	0	€16.84	€0.32	0	
BlueNext (SPOT) CERs		23-Oct	Close	Net Chg	Volume			
			€16.20	€0.00	0			
India's MCX (INR)		24-Oct	Nov 08	Net Chg	Volume			
			1,212.00	47.50	10			
VER Prices (Voluntary)			2005	2006	2007	2008	2009	2010
CCX Vintages (USA)		24-Oct	\$1.45	\$1.30	\$1.20	\$1.20	\$1.25	\$1.20

Source: Thomson Reuters



But volatile prices



Source: Thomson Reuters

Why prices fluctuate

Good reasons

- changes in economic fundamentals (oil price)
- Business cycle
- Technology developments
- Learning / anticipated policy revisions

Bad reasons

- Design flaws (e.g. rules on banking, misallocation)
- Policy uncertainty
- Speculation
- Market imperfections (e.g. 2008 cash sales)

Design issues

- Degree of price intervention
 - Ceilings, floors, safety valves, reserve prices
- Permit allocation
 - Auctioning, grandfathering, benchmarking
- Scope
 - Difficult sectors like agriculture, transport
- Carbon leakage and competitiveness
- Linking with other schemes
 - Role of CDM imports, regional linking

Markets in 2020

- Carbon markets in practically all OECD countries
- Regional schemes linked by an extended, enhanced CDM
- Underlying assets: 7.5 billion allowances, worth \$200 billion?
 - Of which > 4 billion in a US federal scheme?
- Trading volume: 20-30 billion tCO₂?

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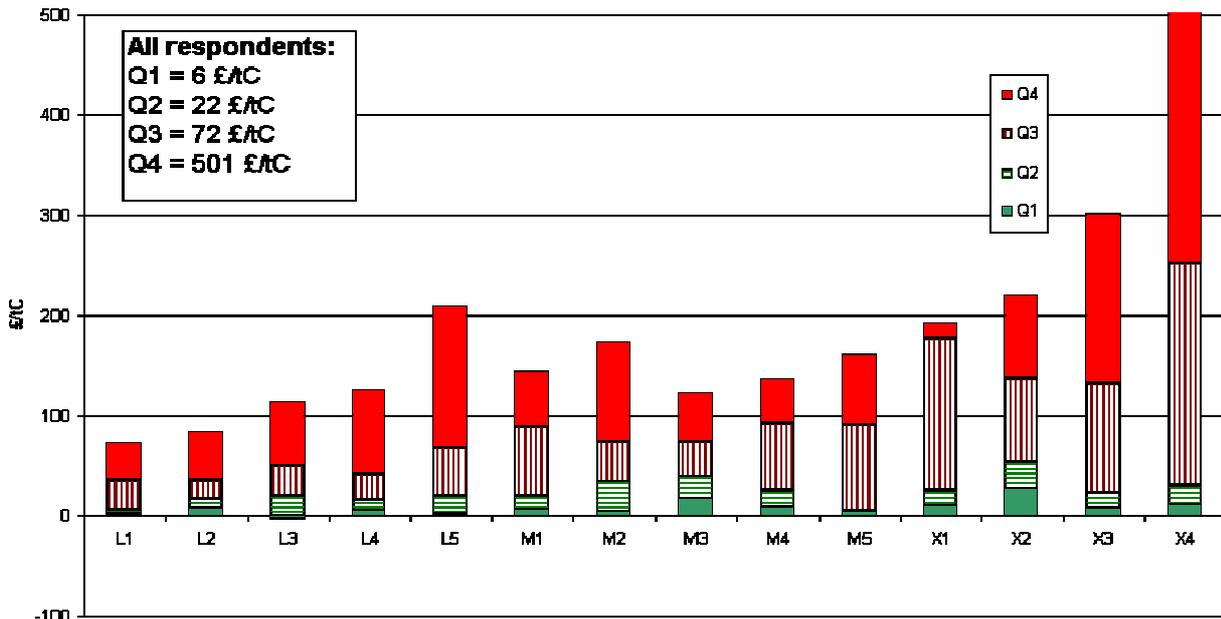


Social cost estimates

- Three ways to get a price for carbon
 - Social costs (marginal damage per ton)
 - Marginal abatement costs
 - Market price
- In an ideal world they would all be the same.
 - In reality there are big differences
 - And they all have their problems
- Increasingly we can move from social costs to abatement costs and the market price



Social cost estimates

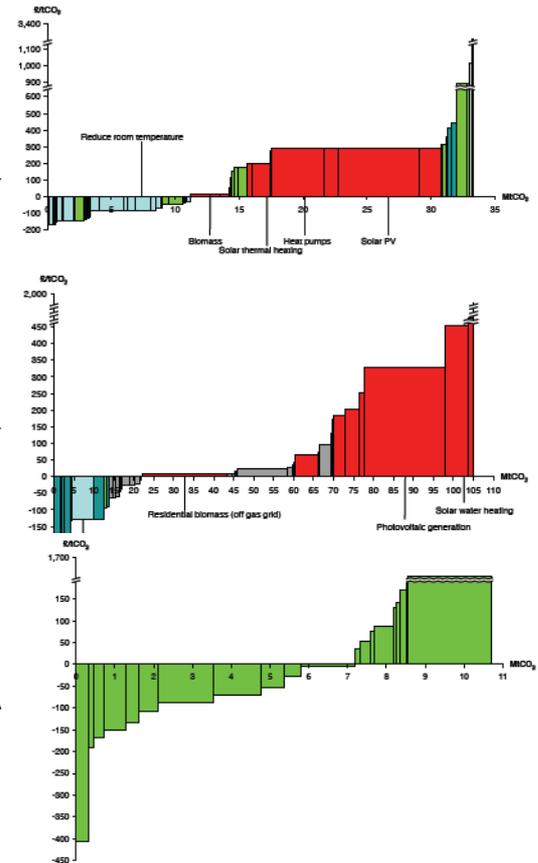
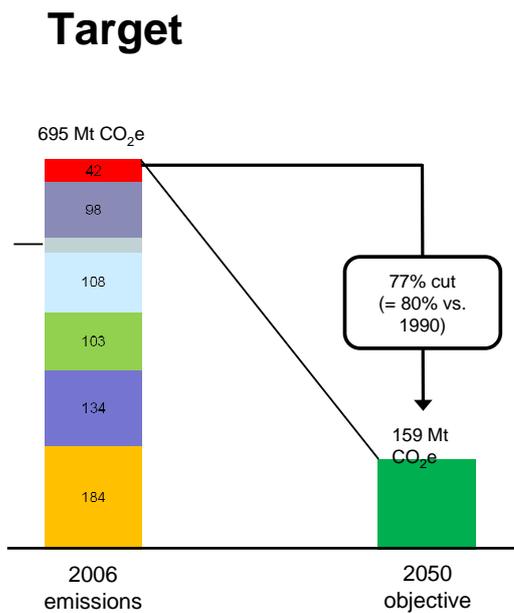


The chart shows the cost estimates (in £/tC) by 14 experts (L1 to X4) for different assumptions on impact, discount rates and aggregation methodologies. Q1 to Q4 show quartiles, i.e. 25% of estimates are in each band.

Source: Tom Downing, Oxford.



Marginal abatement costs



The market price

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Fuel poverty

1.7 million increase in fuel poverty numbers – 0.6m from electricity price impact and 1.1m from gas price impact.

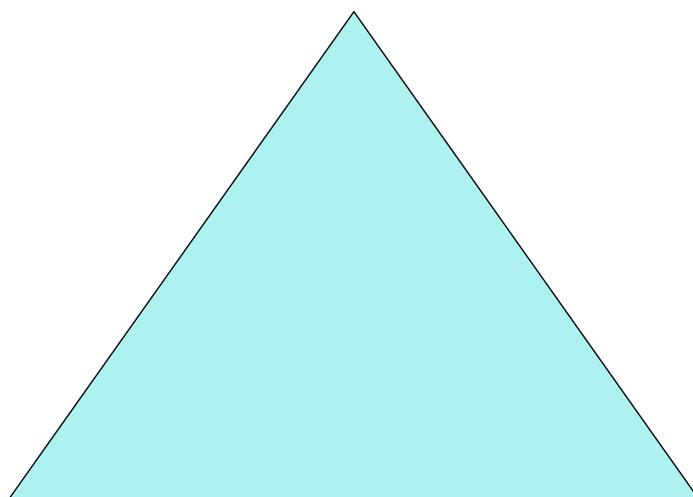
Effect of UK carbon budgets on fuel poverty

Year	Number of UK households in fuel poverty (million)	Cost of compensating existing and incremental fuel poor households (£ million/year)
2006	3.5	
2012	3.6	140
2017	3.6	320
2022	3.8	490



Measures against fuel poverty

Energy Efficiency

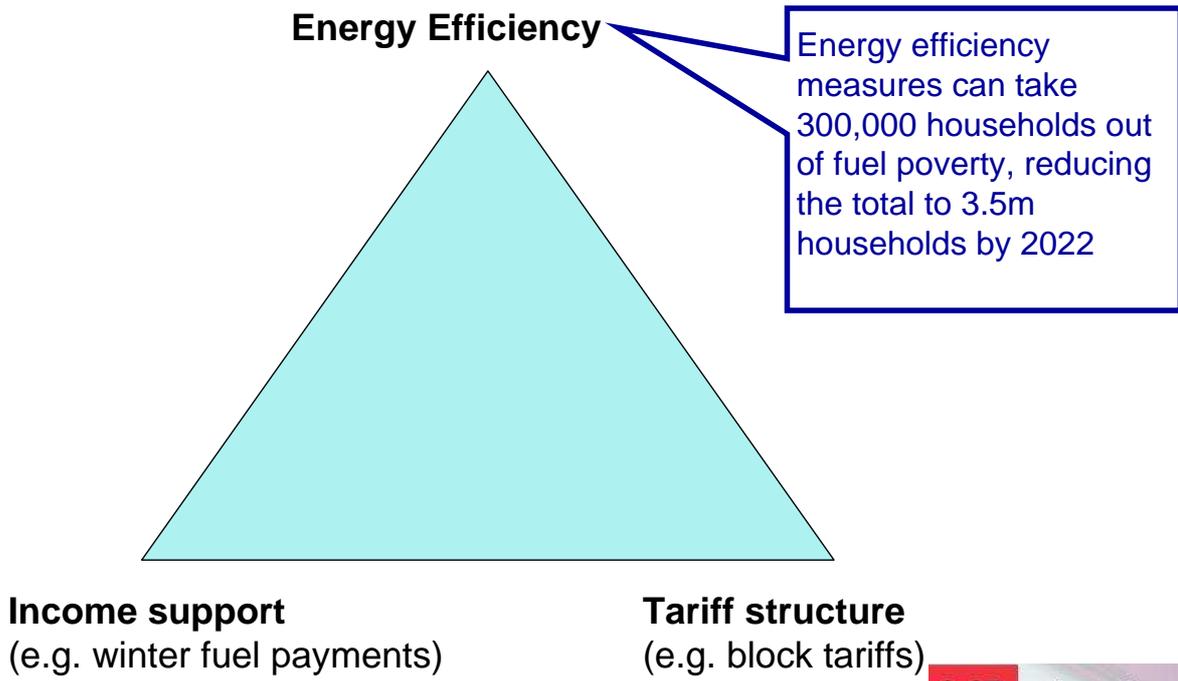


Income support
(e.g. winter fuel payments)

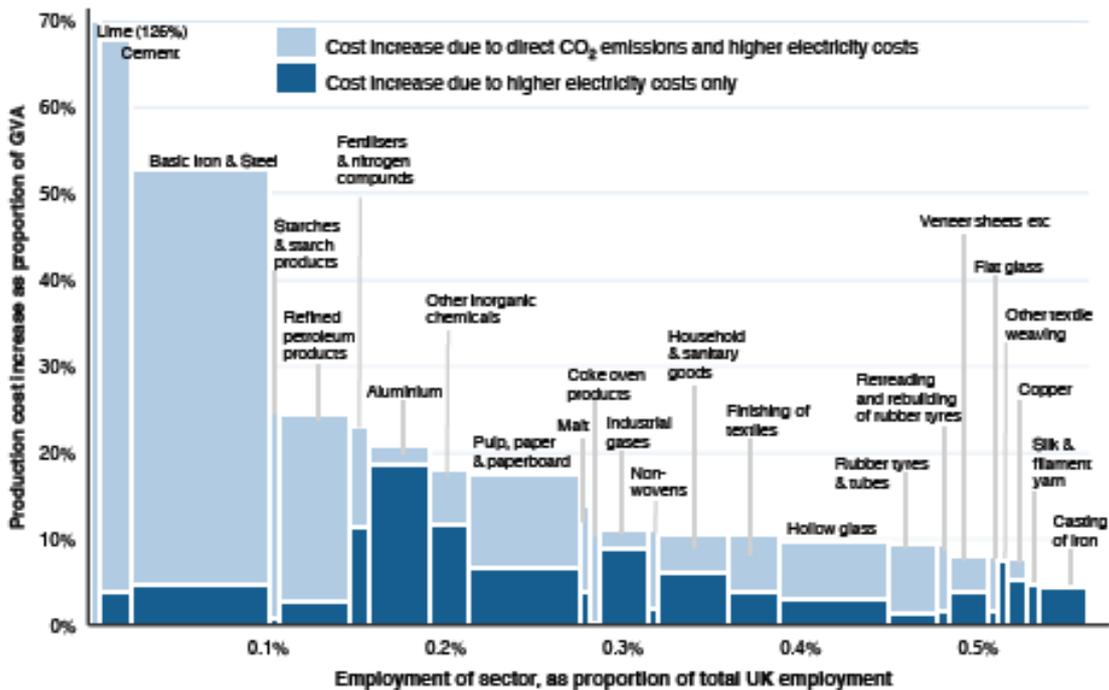
Tariff structure
(e.g. block tariffs)



Measures against fuel poverty



Impact on jobs and competitiveness

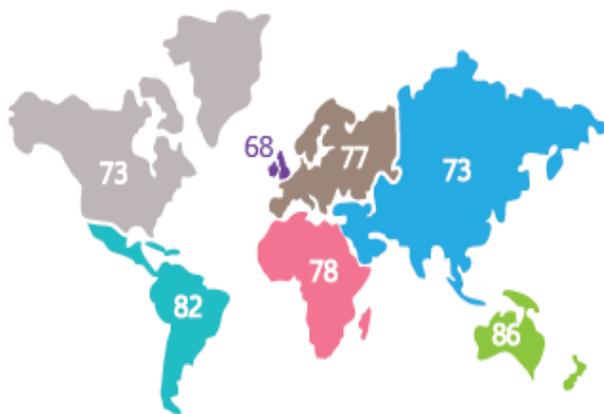


Source: CCC December 2008 Report



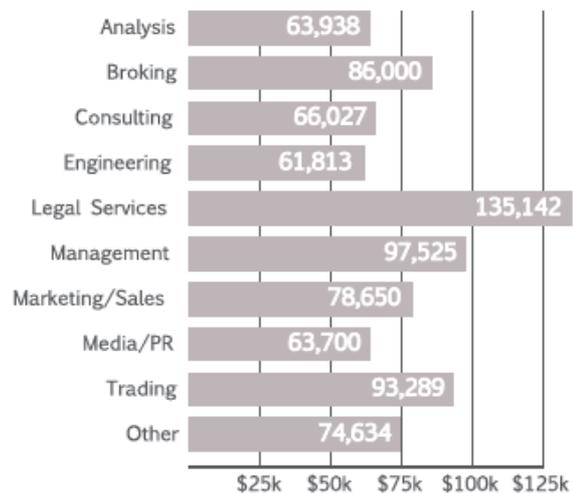
Green collar jobs

Job satisfaction



Percent of people satisfied with their job

Salary



Source: Carbon Salary Survey



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