Electricity Policy Research Group

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Green taxes: a critique

David Newbery

Treasury Economists Conference

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http://www.electricitypolicy.org.uk

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Outline

- Final Report of Green Fiscal Commission Oct ’09
- Case for Green tax - corrects externality (“polluter pays”), raises revenue, relaxes fiscal budget constraint
- Case for large-scale shift:
  - economically sensible and environmentally effective
  - can deliver 2020 GHG target
  - reduces fuel import dependence
  - can address adverse impacts on poor and competitiveness
- But do the numbers add up?

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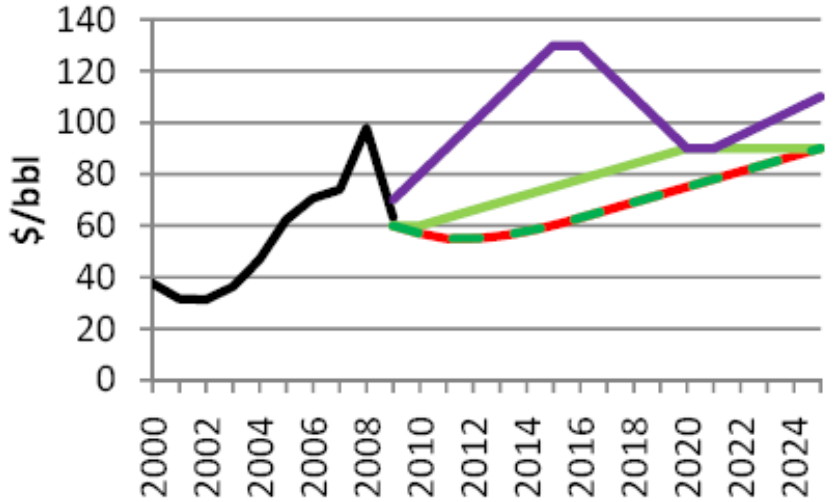
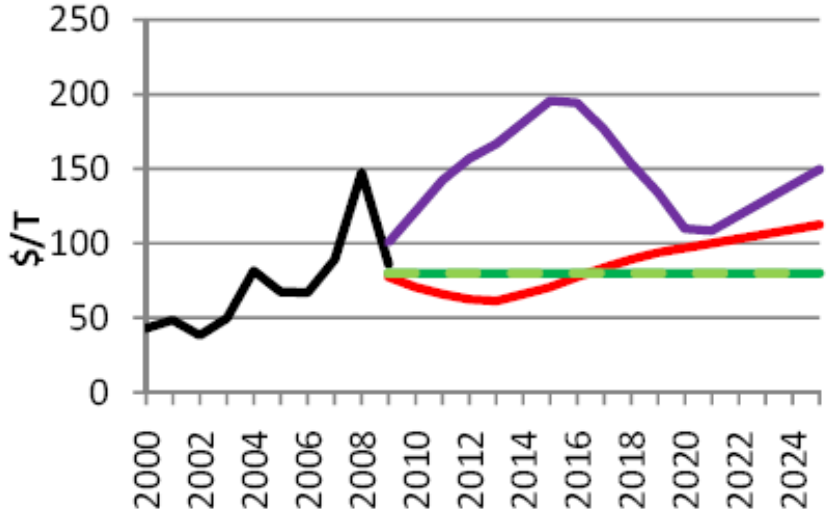
Modelling a Major Green Tax Shift

- Baseline: B1: Oil $110/bbl rising at 2% pa to $170 nominal ($134 real); B2 to $55 real; B3 to $390 real
  - EUA €20 rising to €32 nominal (€24 real)
- Green taxes:
  - CCL on electricity from £4.1/MWh to £38.2 (£29 real), gas from £1.5 to £14.3 (£10.8 real),
  - fuel tax from £0.60/l to £2.05/l (£1.54 real)
  - new car tax rising to £3,300 (£2,480)
  - water tax rise to 260% of 2010 average price (200% real)

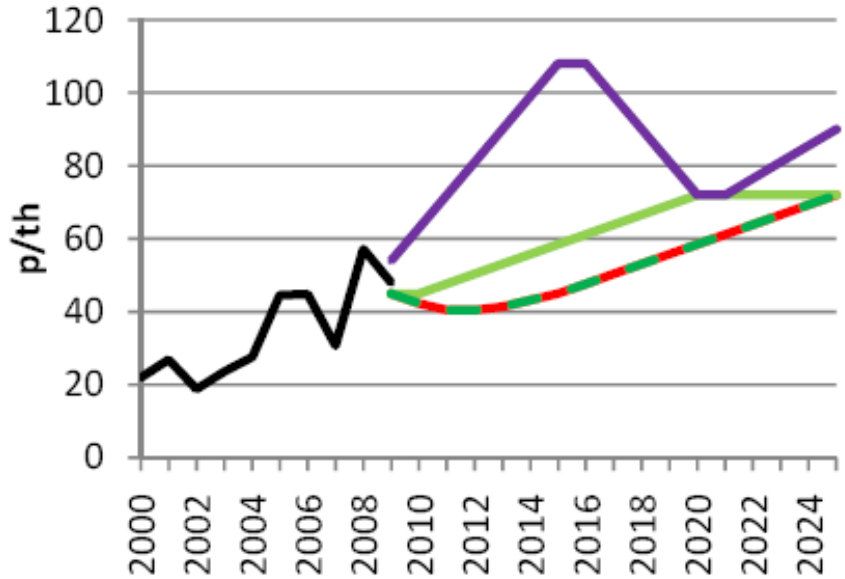
Oil prices ($/bbl[17], real 2009 prices)



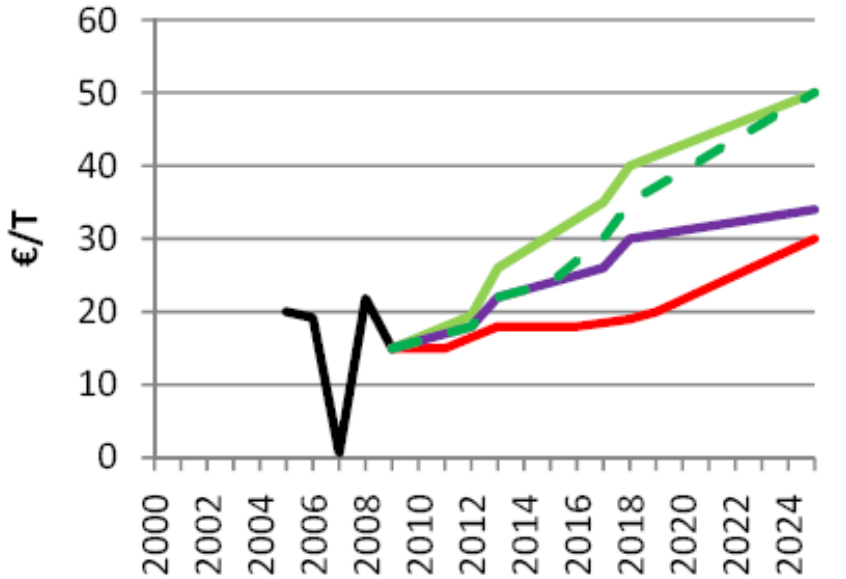
Coal prices ($/t[18], real 2009 prices)



Gas prices (p/th[19], real 2009 prices)[20]

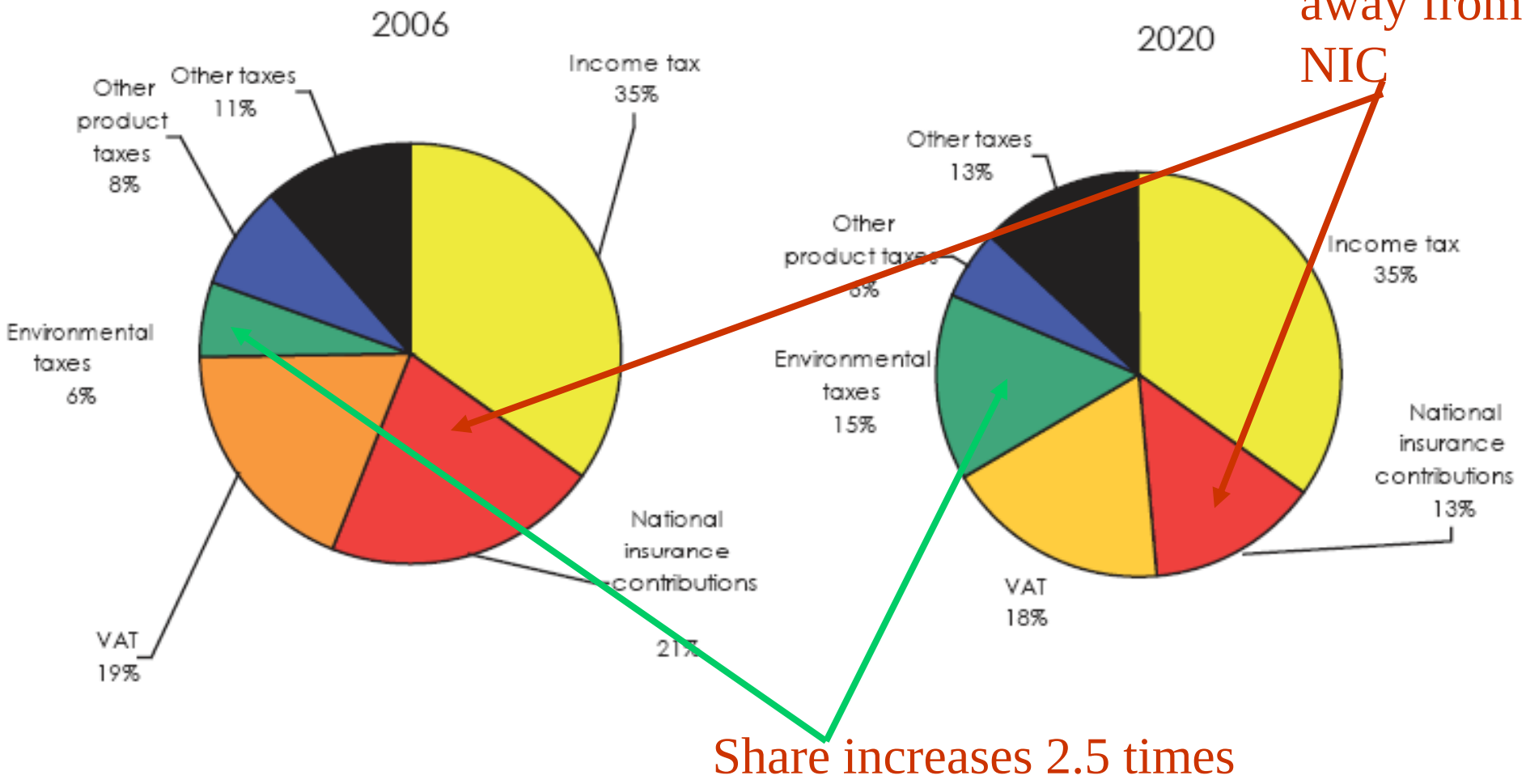


Carbon prices (€/t[21], real 2009 prices)



Historic
Green Transition
Green Stimulus
Dash for Energy
Slow Growth

Composition of tax revenues (S1)



Source: GFC Final Report

Green tax proposals

Table 7.2: Final User Energy Prices and Fuel Duty in the GFR Scenarios

	2007	2020				
		B1	B2	B3	S1	S2
2003 prices						
Domestic Gas (p/kWh)	3.17	3.23	2.30	5.64	6.54	6.76
Domestic Electricity (p/kWh)	10.37	17.50	12.81	40.85	23.40	20.55
Petrol (p/l)	84.6	109.9	79.3	190.1	220.6	228.0
Diesel (p/l)	91.4	121.6	83.9	221.1	230.6	230.4
Nominal prices						
Fuel duty (p/l / % annual growth)	50.4	78.3 / 3.6	75.8 / 3.3	91.2 /5.2	205 / 13	236 / 14.5

Notes - inflation rates differ across scenarios despite MPC
S2 targets the same end-user *nominal* fuel prices under B2 as S1
but inflation rates differ to real prices differ

Changes in CCC 2020 CO_2 forecast

- CCC ’08 forecast central case €50/EUA 2020
- CCC ’09 now forecasts €20/EUA (recession)
  - too low for required low-C investment
- requires action to raise minimum price
  - ETS cap tightened, or stabilised around trend
  - failing which UK issues CfDs on C price, or C-tax

Underlines uncertainty in C price

EUA price 25 October 2004-7 August 2009

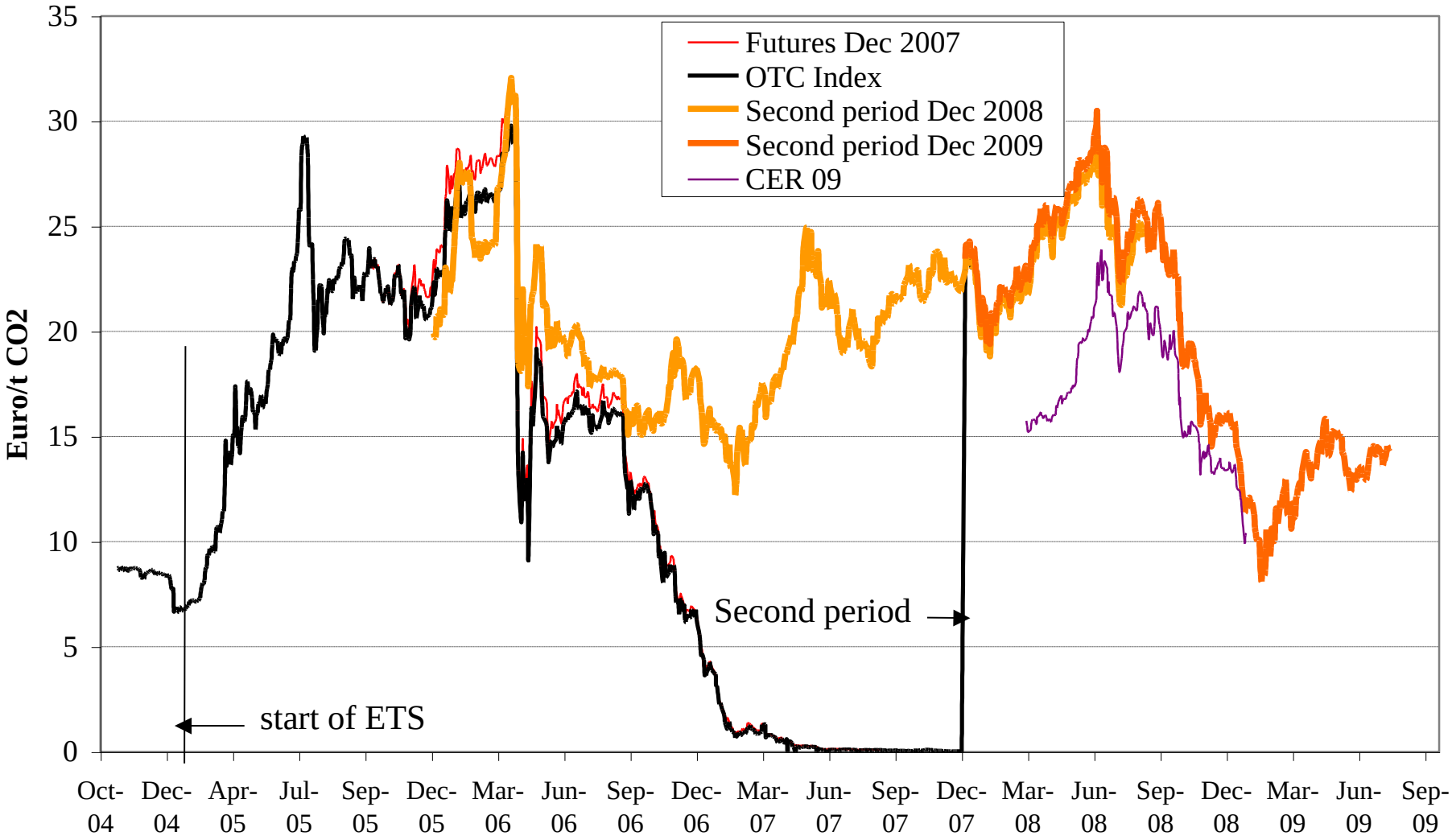
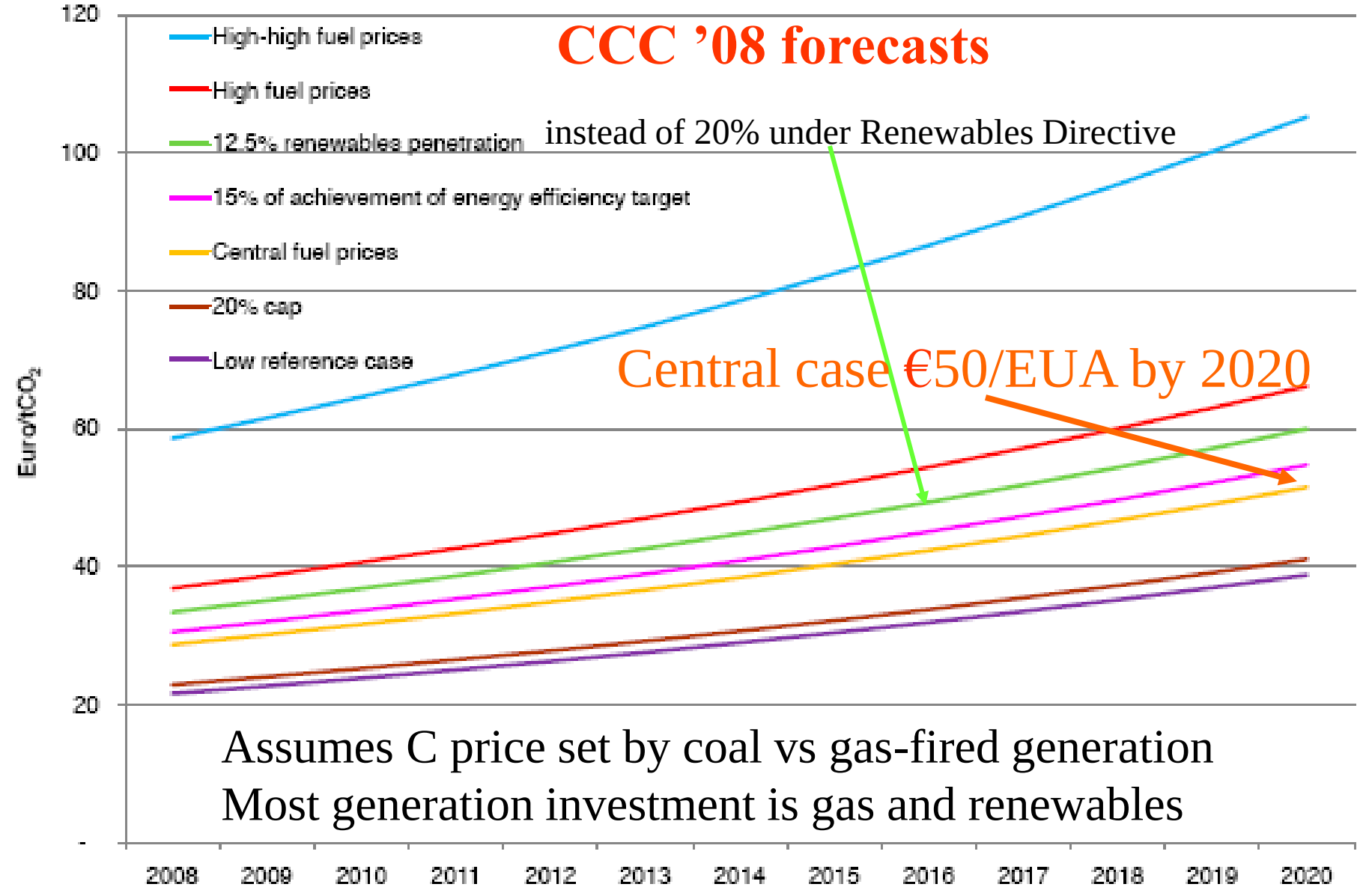


Figure 4.8 EU ETS allowance price projections 2008–2020



Source: Outputs from DECC EU ETS marginal abatement cost model, based on CCC scenarios
Note: All price projections are based on central fossil fuel price projections except where stated

CCC 2009 Report

- 2003-7 GHG emissions fall < 1% p.a.
- need to fall 2-3% p.a. (depending on target)
- recession is masking poor performance and undermining ETS Carbon price
- "significant chance" C price too low to incentivize low-C investment
  - need to underwrite C price or provide support
- need to review electricity market arrangements
  - and renewables support

Critique of GFC modelling

- Should identify externality and correct
- major uncorrected externality is CO_2 price
  - arguably should be €25 rising to €50 by 2020
  - and should apply to all emissions not just covered sector
- €50/EUA = £43/EUA = £17/MWh electricity
- €24/EUA = £21/EUA = £8.3/MWh electricity
- proposed CCL on electricity = £29/MWh

  = 3.3 times shortfall of £17-8.3=£8.7/MWh

CCL is not a carbon tax

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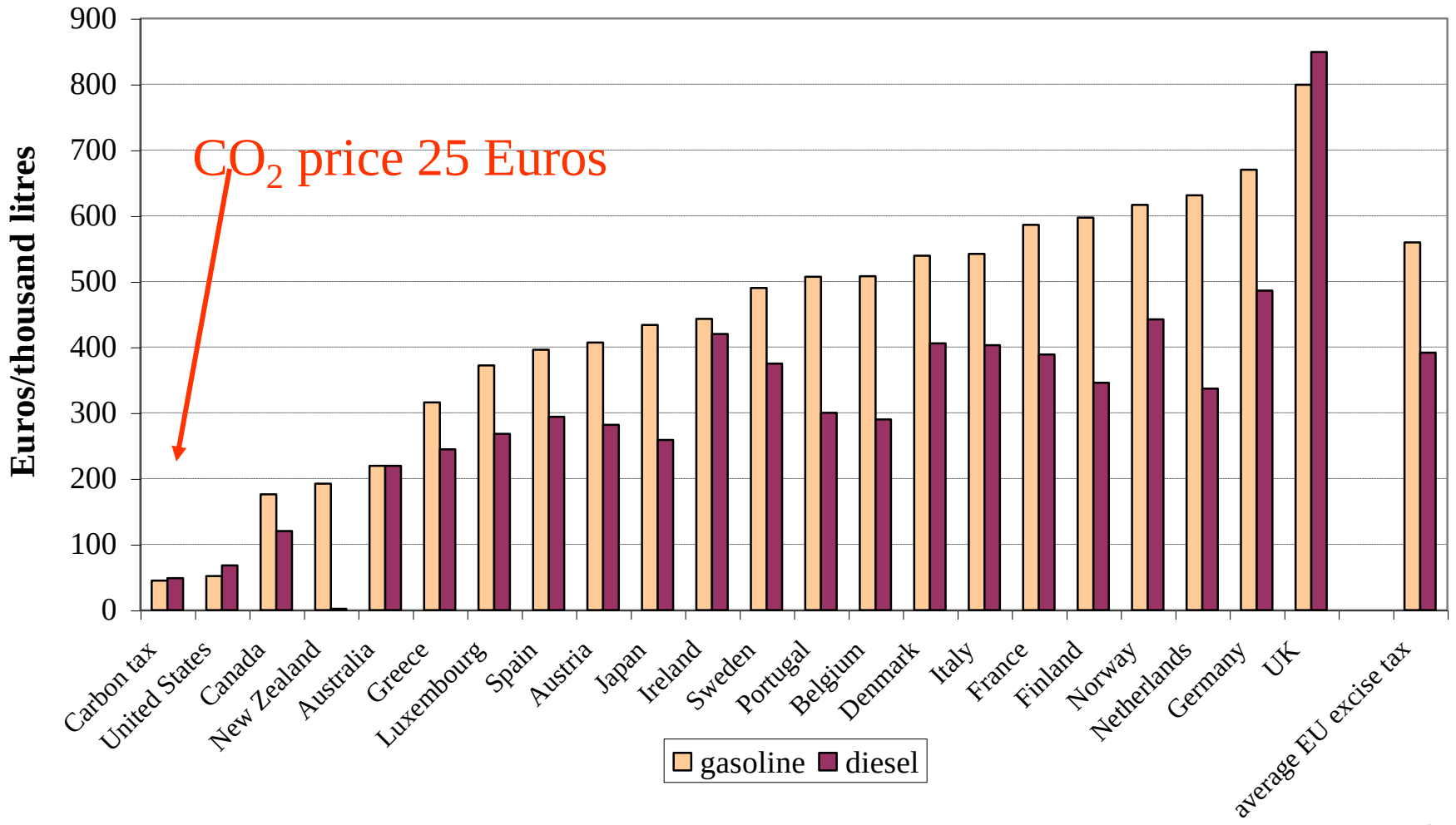
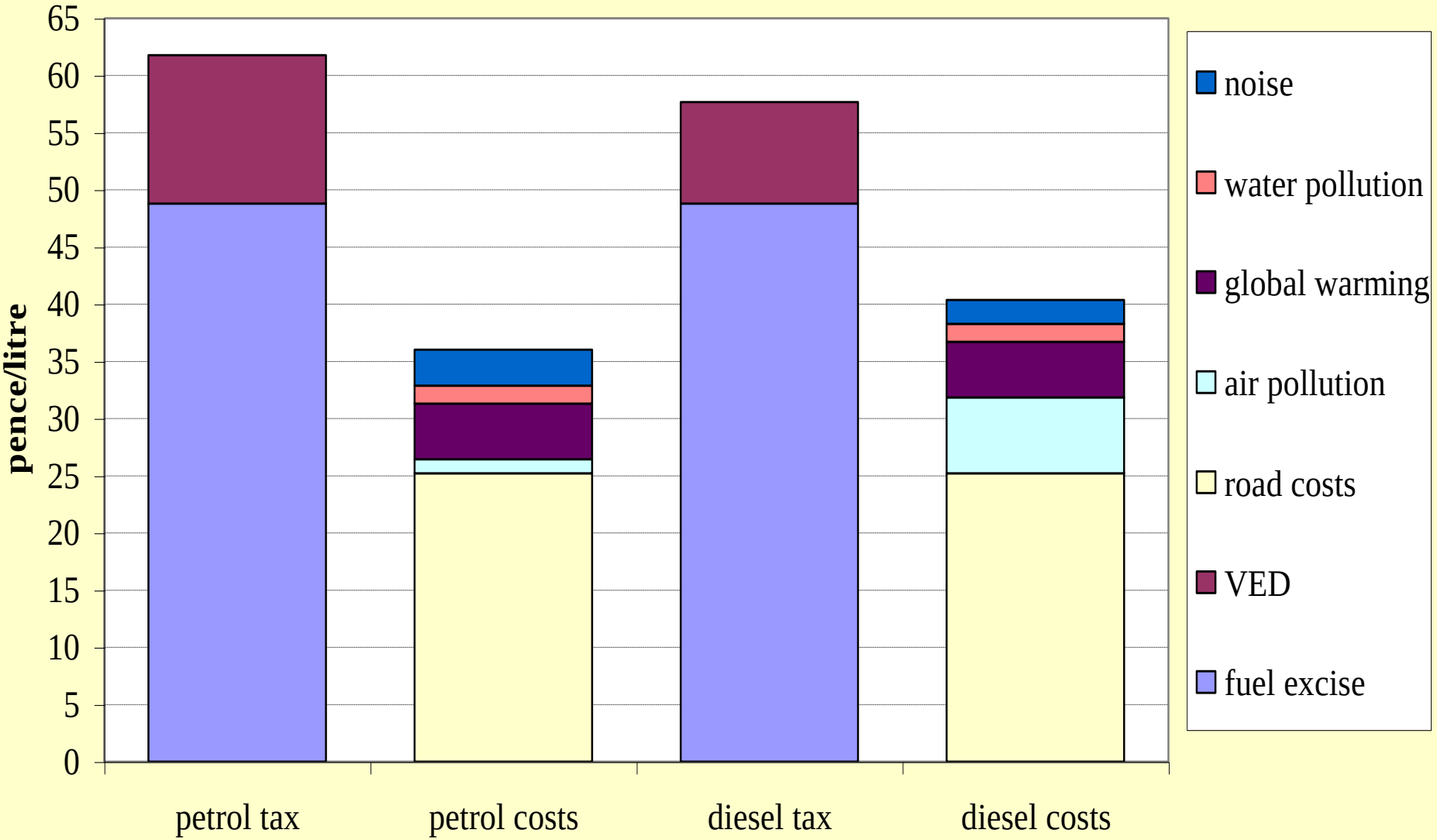
Gas and road fuel duty

- €50/EUA = £43/EUA = £9/MWh gas
- €24/EUA = £21/EUA = £4.5/MWh gas
- shortfall = £4.5/MWh
- proposed CCL on gas = £11/MWh
  = 2.4 times shortfall
- Road fuel duty
  - £43/EUA = £0.10/l, shortfall £0.048/l
- proposed increase £0.94/l
  = 20 times shortfall

Road fuel duty2005/6=£23 bn



Road revenue and costs 2002 by fuel type



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Other tax distortions

- Current VAT on domestic energy subsidise energy consumption by 11% = £45/yr
  - for electricity offset by CCL of 0.4/kWh = £13/yr
  - no offset for gas mostly used in central heating
- Heating oil heavily taxed £104/'000 l
  - delivered price £406, pre-tax £302, tax = 34%

= Tax on country vs town central heating

Correct undertaxing of domestic energy for fiscal and environmental sanity

UK's 2020 renewables target

= 40% renewable **ELECTRICITY** (SKM mid scenario)

= 150 TWh; wind = 38GW; total 110 GW

- 56 GW conventional @ 31% fossil fuel load factor
- investment cost of renewables = €70 bn + €15 bn grid
- of non-renewables = £12 b, (£coal=3.9b; nuclear = £3.9b)

= €95/t CO_2 c.f. €14/t current EUA

- CCC 2009 plan lower (27GW, 16GW off-shore
  - more costly still? £100 bn?

So what price of CO_2 is needed?

Green taxes to meet 20-20-20

- Required CO_2 price closer to €100/EUA = £86/EUA = £34/MWh elec; £17/MWh gas
- shortfall £25/MWhe, £12.5/MWhg
- proposed CCL = £29/MWhe, £11/MWhg

Almost justifies projected CCL but CCL should become a Carbon tax

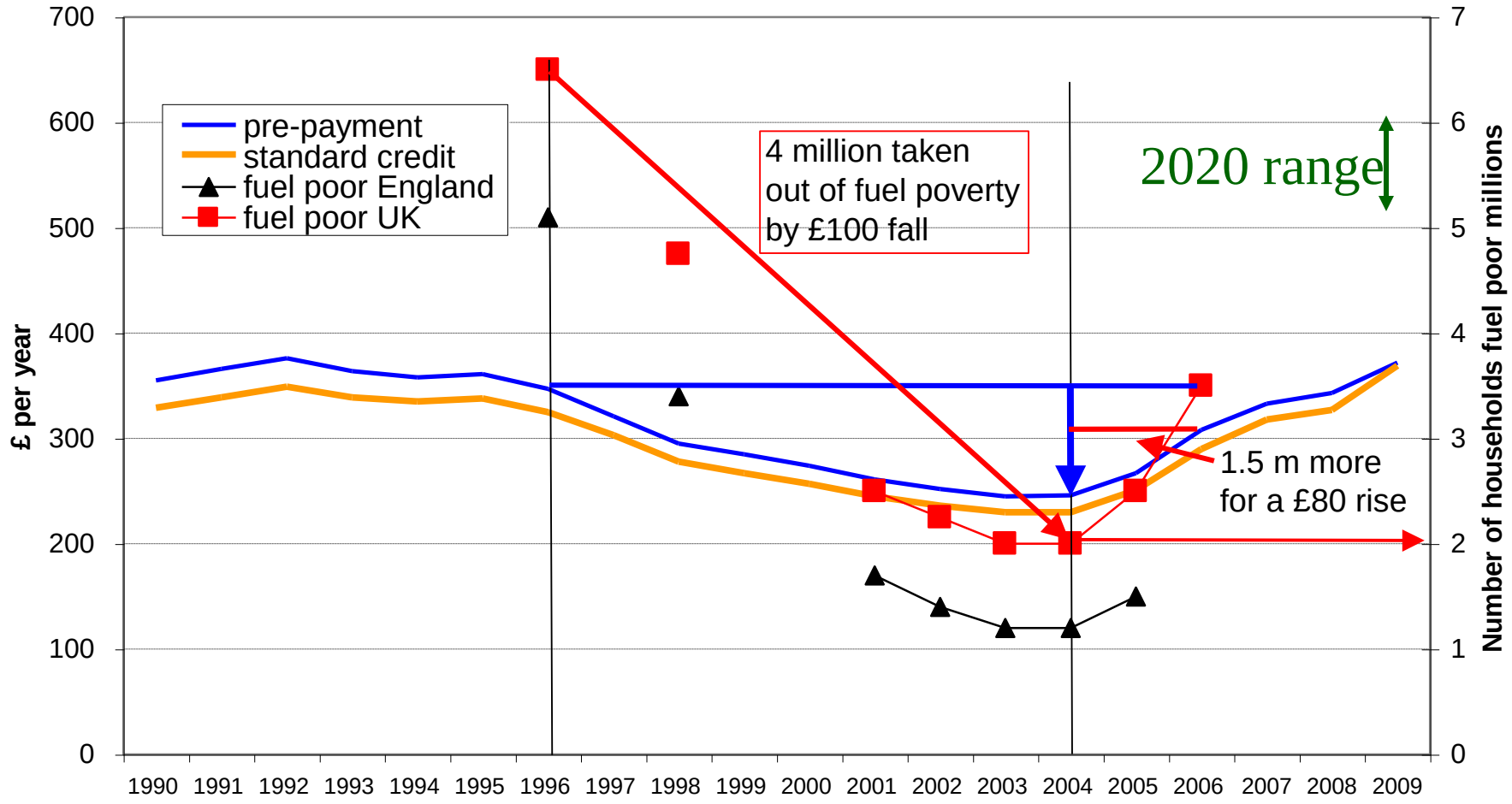
Support for RD&D

- Renewables subsidy above C price justified by learning benefits => commercialise to save the planet
- Why charge electricity consumers for that?
  - Make VAT on energy standard rate
  - C-tax on non-tradable non-ETS sectors

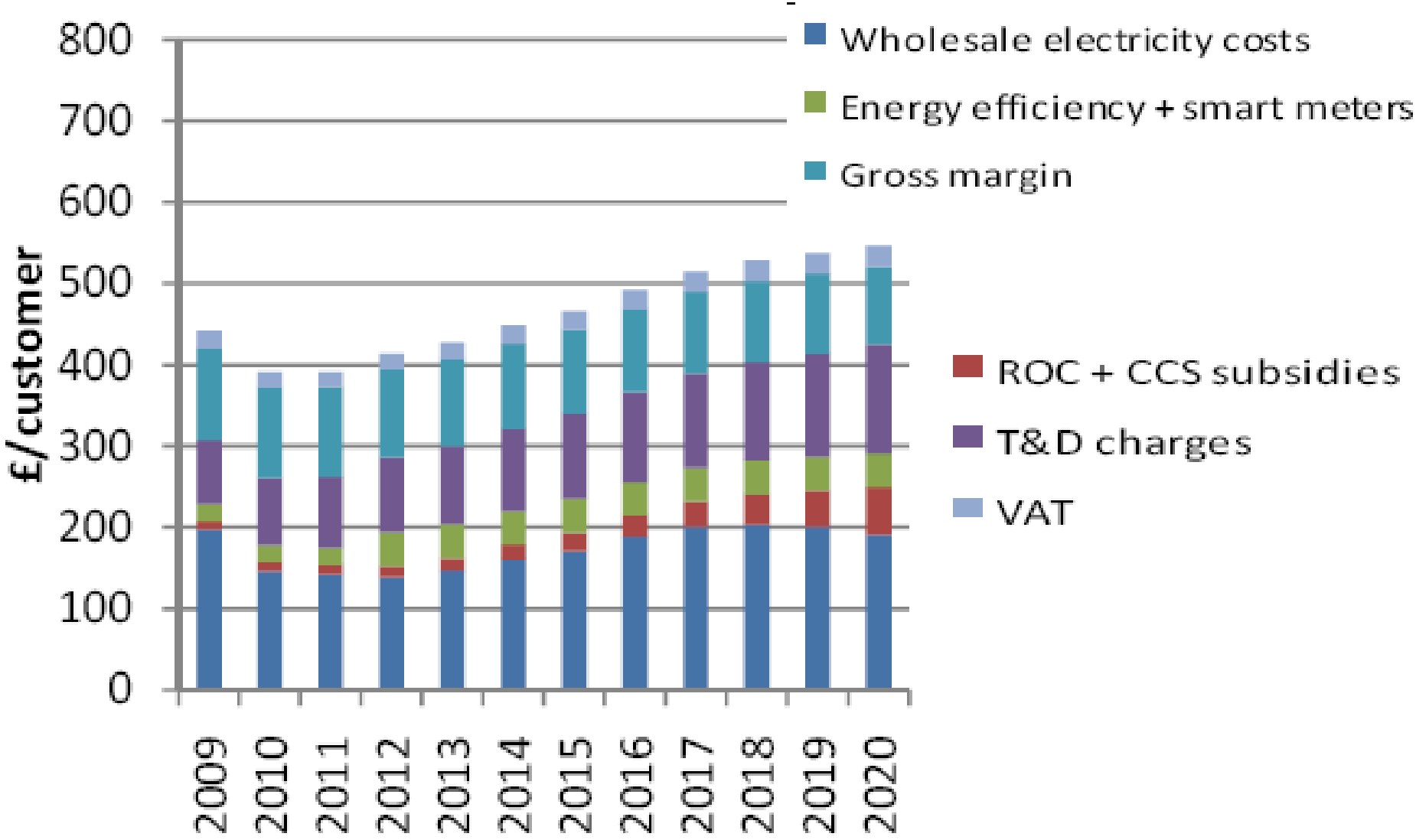
Solution - fund from general taxation or EUA auction revenues

British fuel poverty

Annual average domestic standard electricity bill, 3,300 kWh

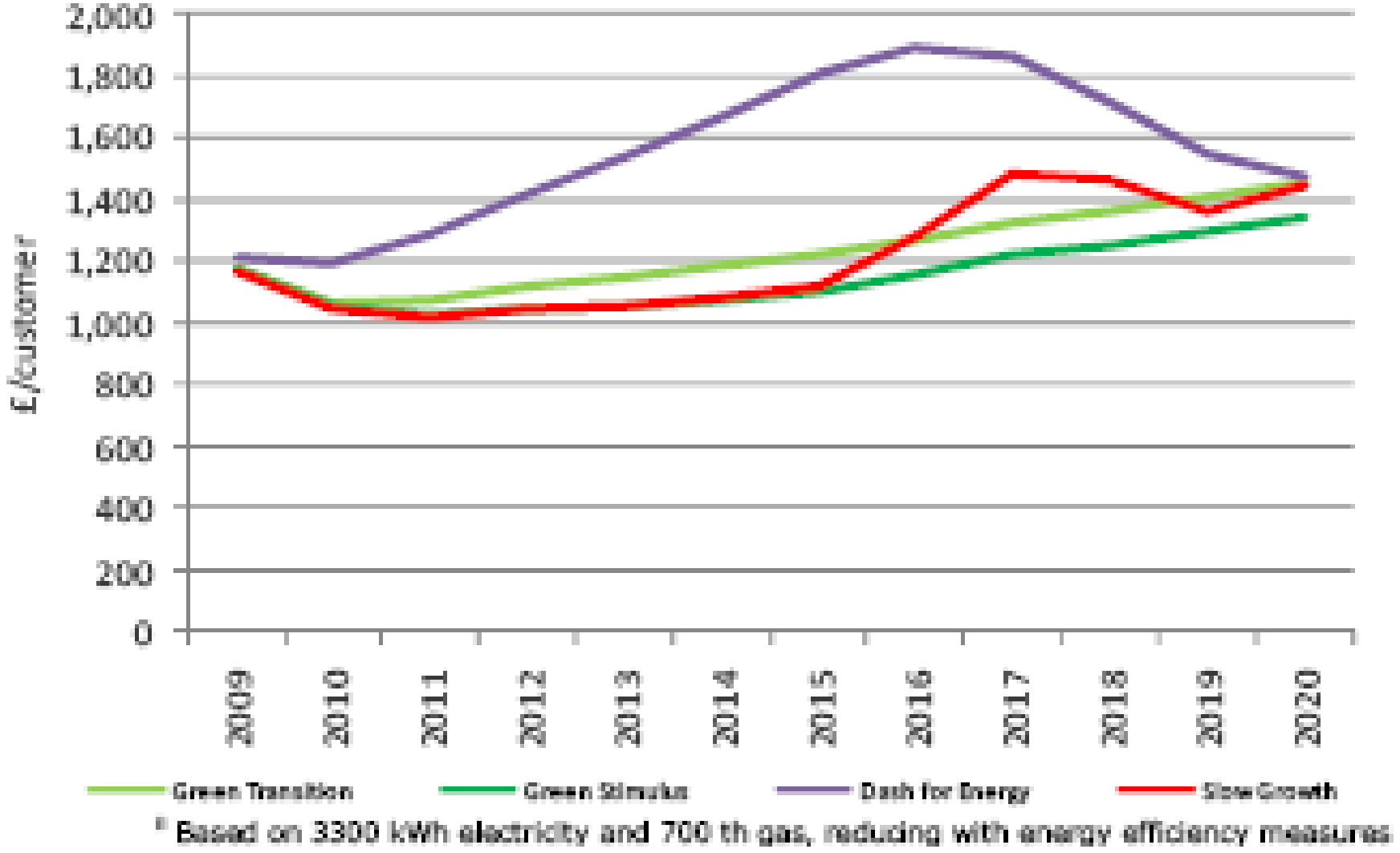


Green Transition



Ofgem: note assumes 3,300kWh falling with efficiency

Average domestic consumer bill[ii]



[ii] Based on 3300 kWh electricity and 700 th gas, reducing with energy efficiency measures

Green Transition Green Stimulus Dash for Energy Slow Growth

Ofgem: Project Discovery

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Conclusions

- Main externality is failure to set proper C price
- Main tax distortions - differentials on energy
- Renewables target justified by learning benefits
  - implies higher C price for renewable electricity
  - but not necessarily for all fuel
- Choosing arbitrary green tax escalators has little logic in public finance
  - but might prevent the goose squawking
  - risks undermining credibility of "greenness"

Start from theory then find politically acceptable transition

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