

The Price Mechanism and Eco-Efficiency: the Role of Green Fiscal Reform

Paul Ekins

Professor of Energy and Environment Policy

UCL Energy Institute, University College London

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System conditions for eco-innovation

- Achieving environmental improvements requires huge investments
- Most of these will need to be made by the private sector
- The private sector will not make these investments unless
 - Private companies can make normal profits
 - Investors can make normal returns
- Low-carbon/environmentally beneficial technologies are more expensive than their least-cost alternatives
- These technologies need subsidy/support
- For low-carbon technologies this support may be through a carbon price or through technology-specific support
- Both may be needed and optimal (carbon price because of environmental externality; technology support because of innovation externality)
- The carbon price should rise over time.
- It will give a pervasive signal for eco-innovation and eco-efficiency throughout the economy; it will choke off the rebound effect; it will change behaviour towards low-carbon lifestyles
- It may be implemented through environmental tax reform/green fiscal reform

Relevant projects on environmental tax reform (ETR) or green fiscal reform (GFR)

Definition: ETR is the shifting of taxation from ‘goods’ (like income, profits) to ‘bads’ (like resource use and pollution)

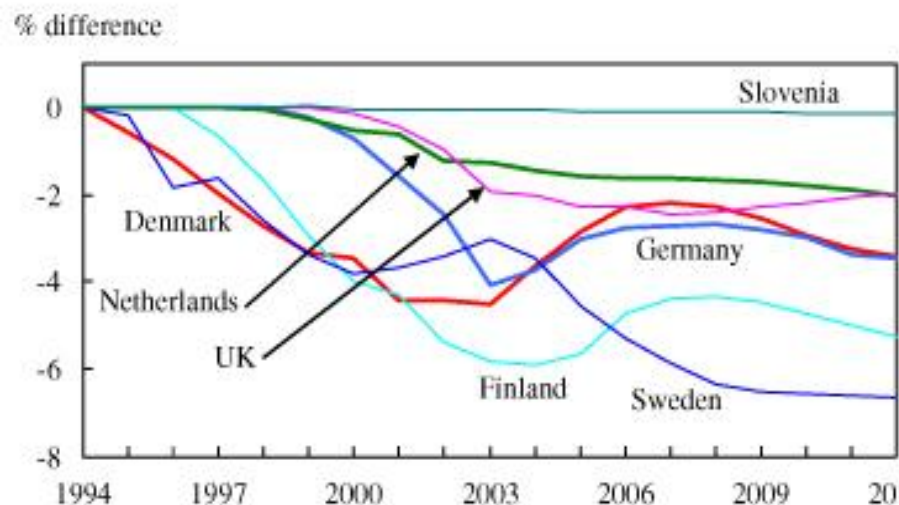
- COMETR: Competitiveness effects of environmental tax reforms, 2007. <http://www2.dmu.dk/cometr/>
- petrE: ‘Resource productivity, environmental tax reform (ETR) and sustainable growth in Europe’. One of four final projects of the Anglo-German Foundation under the collective title ‘Creating Sustainable Growth in Europe’. Final report published October 29, Berlin, November 25, London. www.petre.org.uk
- UK Green Fiscal Commission. Final report published October 26, London. www.greenfiscalcommission.org.uk

What is the experience to date of ETR in Europe?

- Six EU countries have implemented ETRs: Denmark, Finland, Germany, Netherlands, Sweden, UK
- The outcomes – environmental and economic – have been broadly positive: energy demand and emissions are reduced; employment is increased; effects on GDP are very small
- Effects on industrial competitiveness have been minimal
- See Andersen, M.S. & Ekins, P. (Eds.) *Carbon Taxation: Lessons from Europe*, Oxford University Press, Oxford/New York, 2009

Environmental and economic impacts of ETR, from COMETR study, 2007

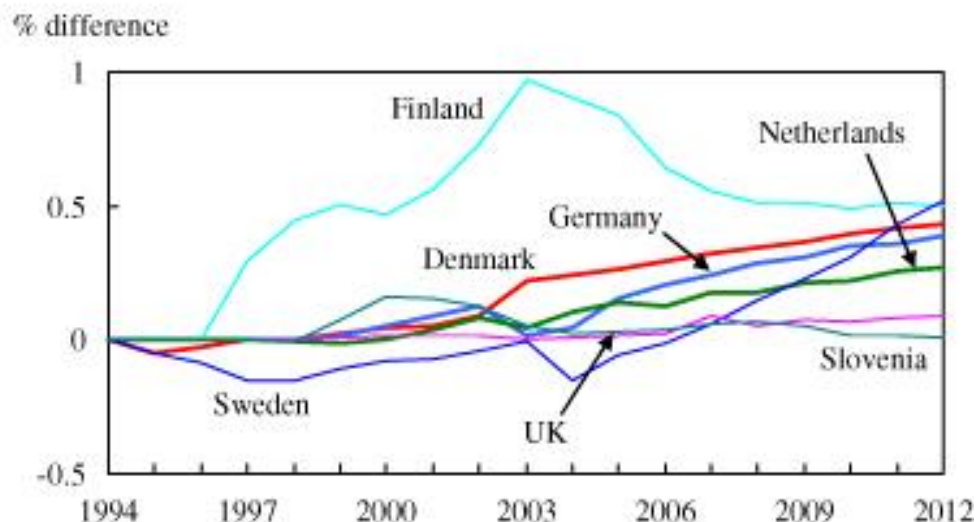
CHART 2: THE EFFECT OF ETR ON GHG EMISSIONS



Note(s) : % difference is the difference between the base case and the counterfactual reference case.

Source(s) : CE.

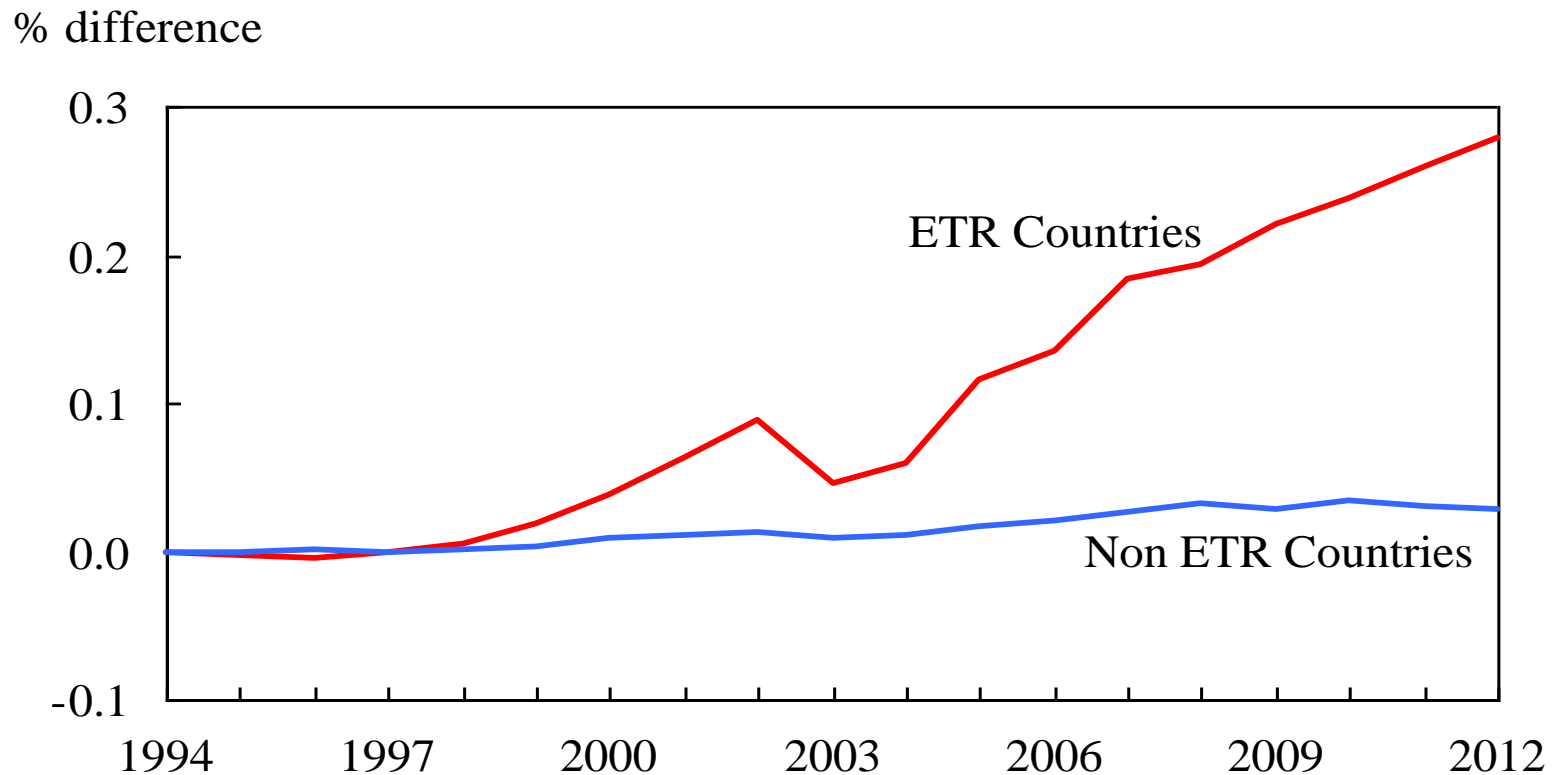
CHART 3: THE EFFECT OF ETR ON GDP



Note(s) : % difference is the difference between the base case and the counterfactual reference case.

Source(s) : CE.

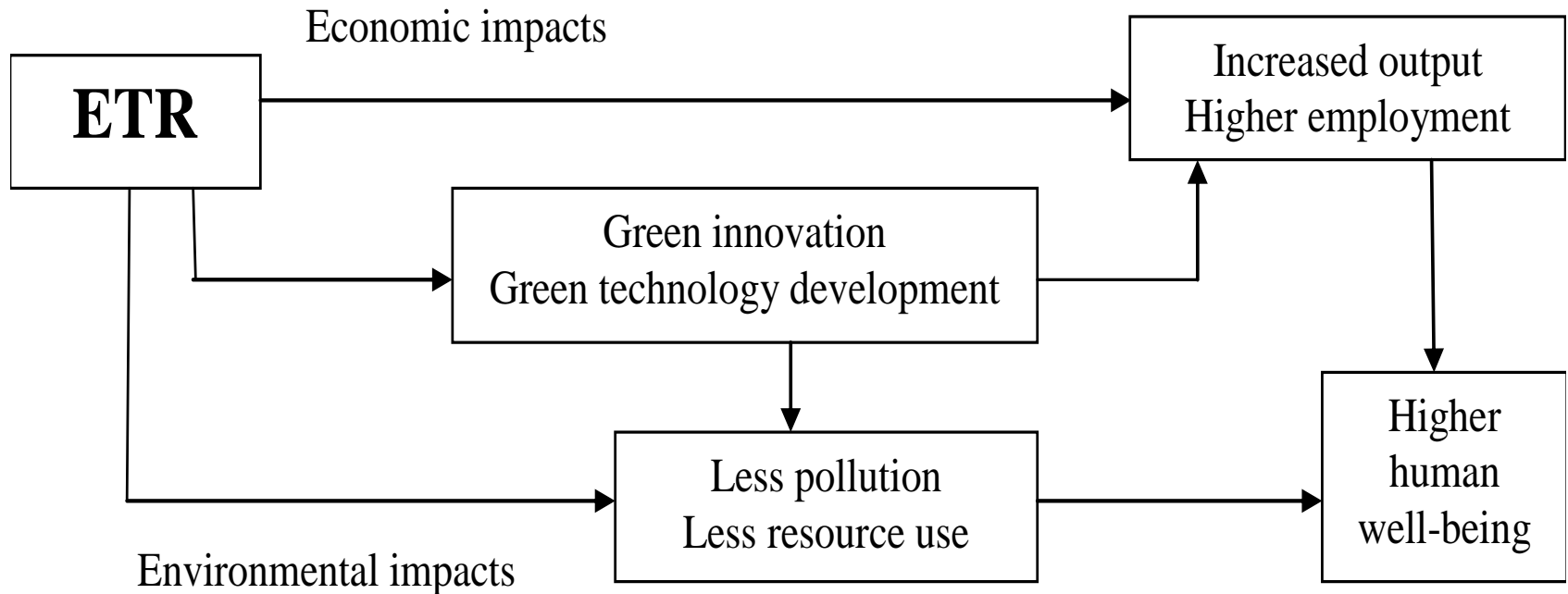
CHART 7.28: THE EFFECTS OF ETR: GDP IN ETR AND NON ETR COUNTRIES



Note(s) : % difference is the difference between the base case and the counterfactual reference case.

Source(s) : CE.

PETRE: What opportunities are presented by ETR in Europe?



What might a large-scale ETR in Europe look like.....? (1)

- Two European macro-econometric models: E3ME, GINFORS.
- Models deliver insights, not forecasts or ‘truth’
- Six scenarios:
 - Baseline with low energy price (LEP)
 - Baseline sensitivity with high energy price (HEP, reference case)
 - Scenario 1: ETR with revenue recycling designed to meet 20% EU 2020 GHG target (S1 – scenario compared with LEP Baseline)
 - Scenario 2: ETR with revenue recycling designed to meet 20% EU 2020 GHG target (S2 – scenario compared with HEP Baseline)
 - Scenario 3: ETR with revenue recycling designed to meet 20% EU 2020 GHG target (S3 – scenario compared with HEP Baseline)
 - proportion of revenues spent on eco-innovation measures
 - Scenario 4: ETR with revenue recycling designed to meet 30% ‘international cooperation’ EU 2020 GHG target (S4 – scenario compared with Baseline with HEP)

What might a large-scale ETR in Europe look like.....? (2)

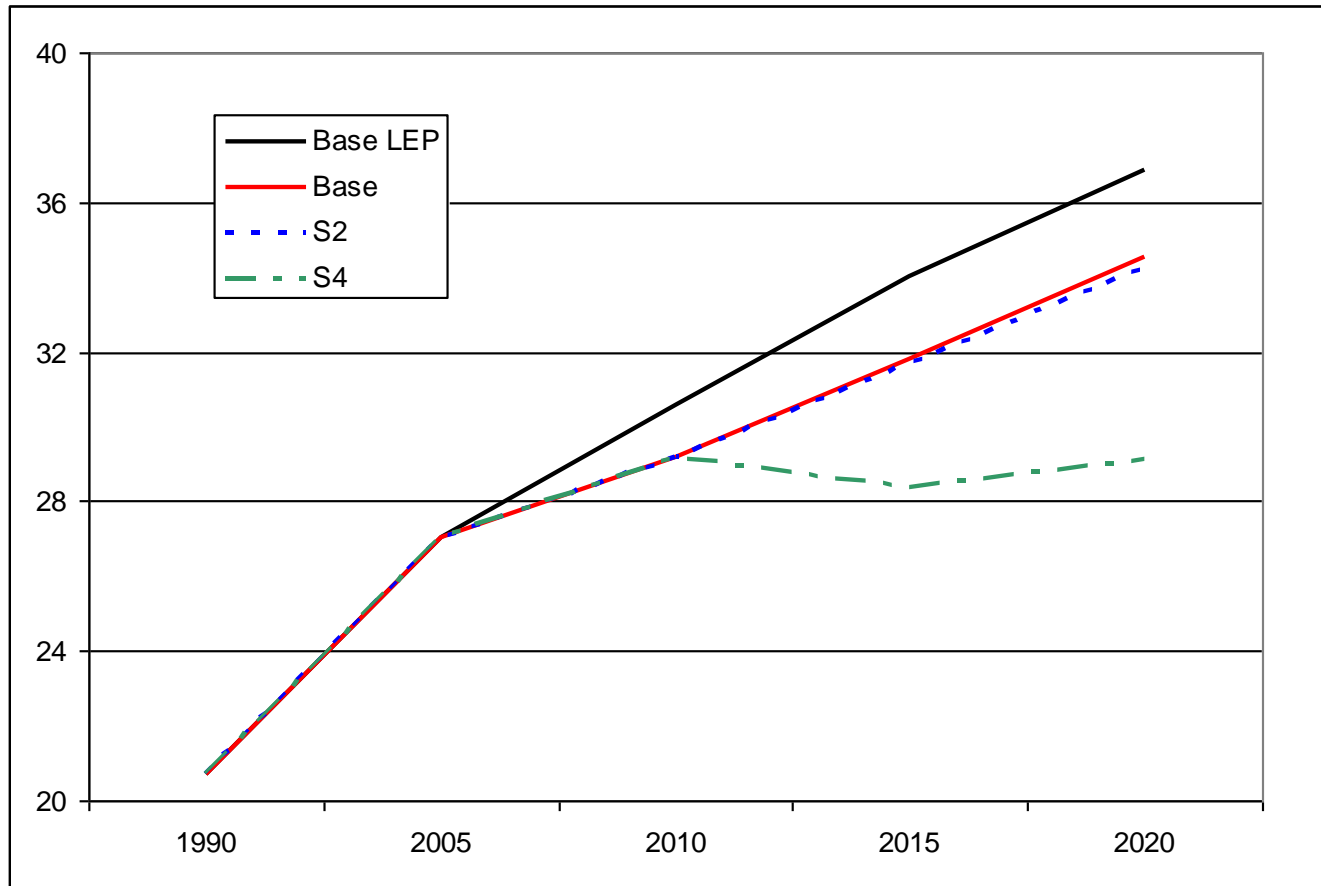
- The taxes ...
 - A carbon tax rate is introduced to all non EU ETS sectors equal to the carbon price in the EU ETS that delivers an overall 20% reduction in greenhouse gas emissions (GHG) by 2020 (in the international cooperation scenario (S4) this is extended to a 30% GHG reduction)
 - Aviation is included in the EU ETS at the end of Phase 2 in 2012
 - Power generation sector EU ETS permits are 100% auctioned in Phase 3 of the EU ETS (from 2013) [NB auctioning does not change carbon prices or emissions]
 - All other EU ETS permits are 50% auctioned in 2013 increasing to 100% in 2020
 - Taxes on materials are introduced at 5% of total price in 2010 increasing to 15% by 2020
 - S4 carbon tax in non-EU countries is 25% of carbon tax in EU
- ... and tax reductions
 - Reductions in income tax rates (for households) and social security contributions (for businesses) in each of the member states, such that there is no direct change in tax revenues
 - In S3 10% of the environmental tax revenues are recycled through spending on eco-innovation measures

A large-scale ETR in Europe that meets its carbon targets

Scenario	CO ₂ price Euro2008/t	GDP % change from baseline	Employment % change from baseline	Labour productivity % change from baseline
S1(L)				
E3ME	142	0.6	2.2	-1.6
GINFORS	120	-3.0	0.0	-3.0
S1(H)				
E3ME	59	0.2	1.1	-0.9
GINFORS	68	-0.6	0.4	-1.0
S2(H)				
E3ME	53	0.8	1.1	-0.3
GINFORS	61	-0.3	0.4	-0.7
S3(H)				
E3ME	204	0.5	2.7	-2.1
GINFORS	184	-1.9	0.8	-2.6

... and what would be its implications for the rest of the world?

CO₂ emissions- GINFORS



UK Green Fiscal Commission

- Formed May 2007
- Ran to October 2009
- Independent of government (funded by Esmée Fairbairn Foundation and Ashden Trust)
- 22 Commissioners – to review and advise on work
 - 4 MPs, 3 Lords – politically balanced, senior political representation, shadow ministers
 - business, academic, NGOs (social and environmental)
 - FSA, MPC members
 - government observers – Defra and Treasury
- Paul Ekins, Director and Secretariat provided by Policy Studies Institute (PSI)

Green Fiscal Commission - objectives

- To break the political logjam on environmental tax reform
- To prepare the ground for a significant programme of green fiscal reform in the UK
 - Creation of evidence
 - Raising awareness of evidence – communications and engagement
- To understand the social, environmental and economic implications of a major programme of environmental tax reform

Green Fiscal Commission – starting point

- Working assumption - environmental tax reform is a good idea in principle
- Considering:
 - Substantial tax shift
 - Use of proportion of tax revenues to amplify environmental benefits – technology and behaviour – revenue neutrality?
 - Should not have a disproportionate impact on already disadvantaged groups
 - Take account of and seek to mitigate negative effects on business, and foster new sources of comparative advantage as the basis for new businesses
 - No view on appropriate level of overall taxation – a shift in the basis of taxation, not an increase.
- External context
 - Oil price volatility
 - Affluence/robust public sector finances (no need for tax changes) then credit crunch and downturn
 - Unsympathetic media – ‘stealth’ taxes

Green Fiscal Commission - research

New research and review/collation of existing work on:

- Public opinion (including deliberative days)
- Modelling of economic, environmental and social implications of a major tax shift - CE
- Distributional issues
- Experience of UK fuel duty escalator/income tax reduction
- International comparisons on the effectiveness of economic instruments
- ETR and innovation
- ETR and competitiveness
- Border tax adjustments
- ETR and transport
- Revenue stability

Engagement and communications

Engagement

- Meetings with, and presentations, to target audiences
- Stakeholder engagement meetings – business, groups with distributional concerns
- Meetings of Commission

Communications

- Parliamentary Launch
- Blog – ETR news and commentary
- Website
- Summary briefings/supporting papers/book
- Press work
- Events at political party conferences

The politics is difficult: need to develop a compelling narrative

Narrative 1 - Targets and the role of price

The imperative of reducing GHG emissions:

- Legally binding targets to reduce GHG emissions (aside from other motivations for action)
- 2020 targets will have to be met through renewables, energy efficiency and demand reduction – not CCS and nuclear - can't contribute in time
- Current rate of emissions reduction is too slow – so need new policies.

Inconvenient facts about energy use:

- Energy use increases with income
- So energy efficiency alone unlikely to deliver targets, i.e. absolute reductions.
- Increasing energy price reduces demand
- Increasing price also promotes renewables, efficiency and demand reduction

Narrative 2 - How to increase prices?

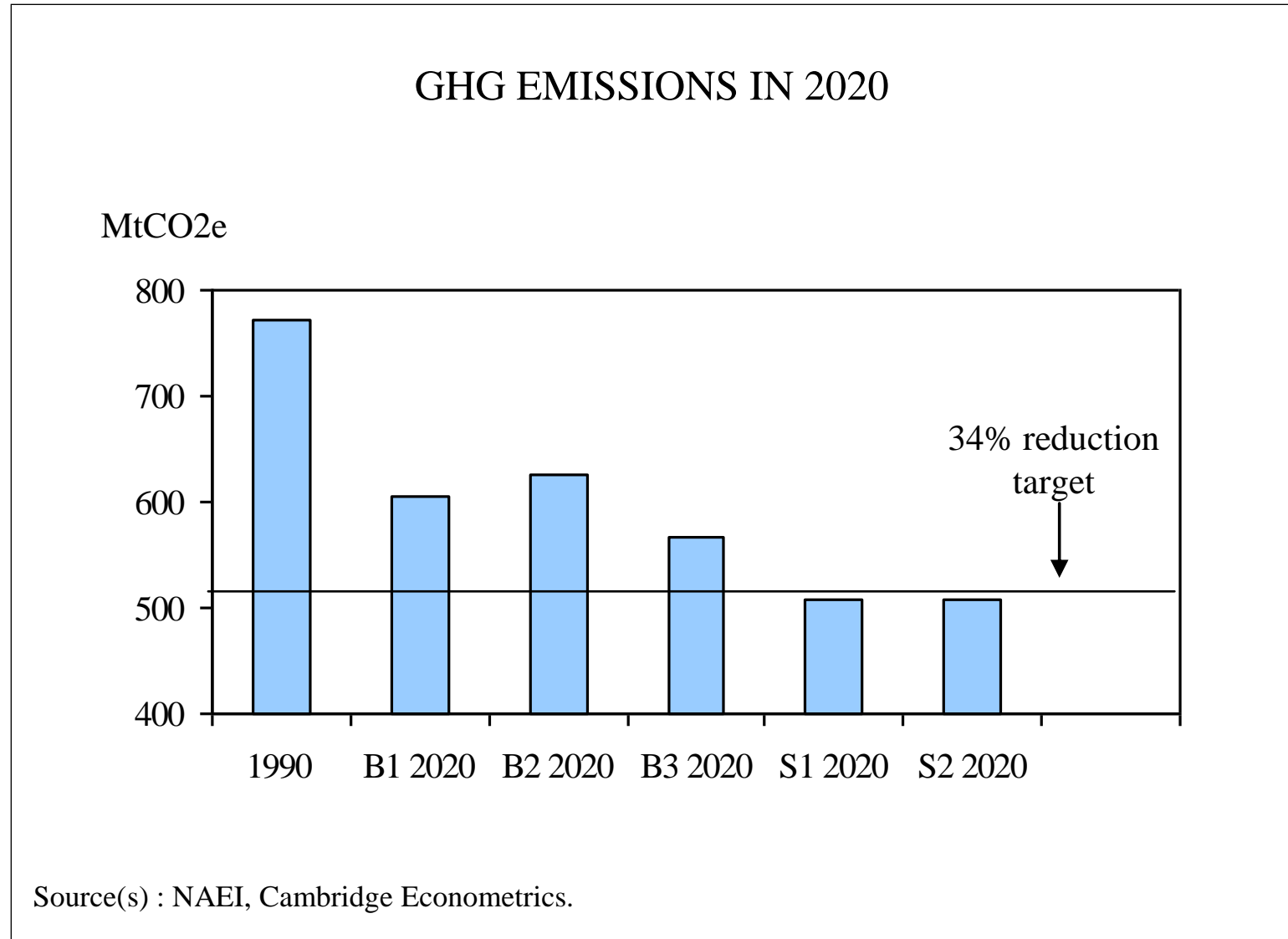
By government intervention (e.g. taxes) *or* leave to the market (price set by supply/demand)

- Both approaches reduce demand for energy
- But green taxes keep revenues in country and generate tax receipts that allow other taxes to be reduced
- Market increase in oil price incentivises development of high carbon substitutes
- Tax can target carbon
- Price increase neutralises the rebound effect

Impacts of large-scale GFR

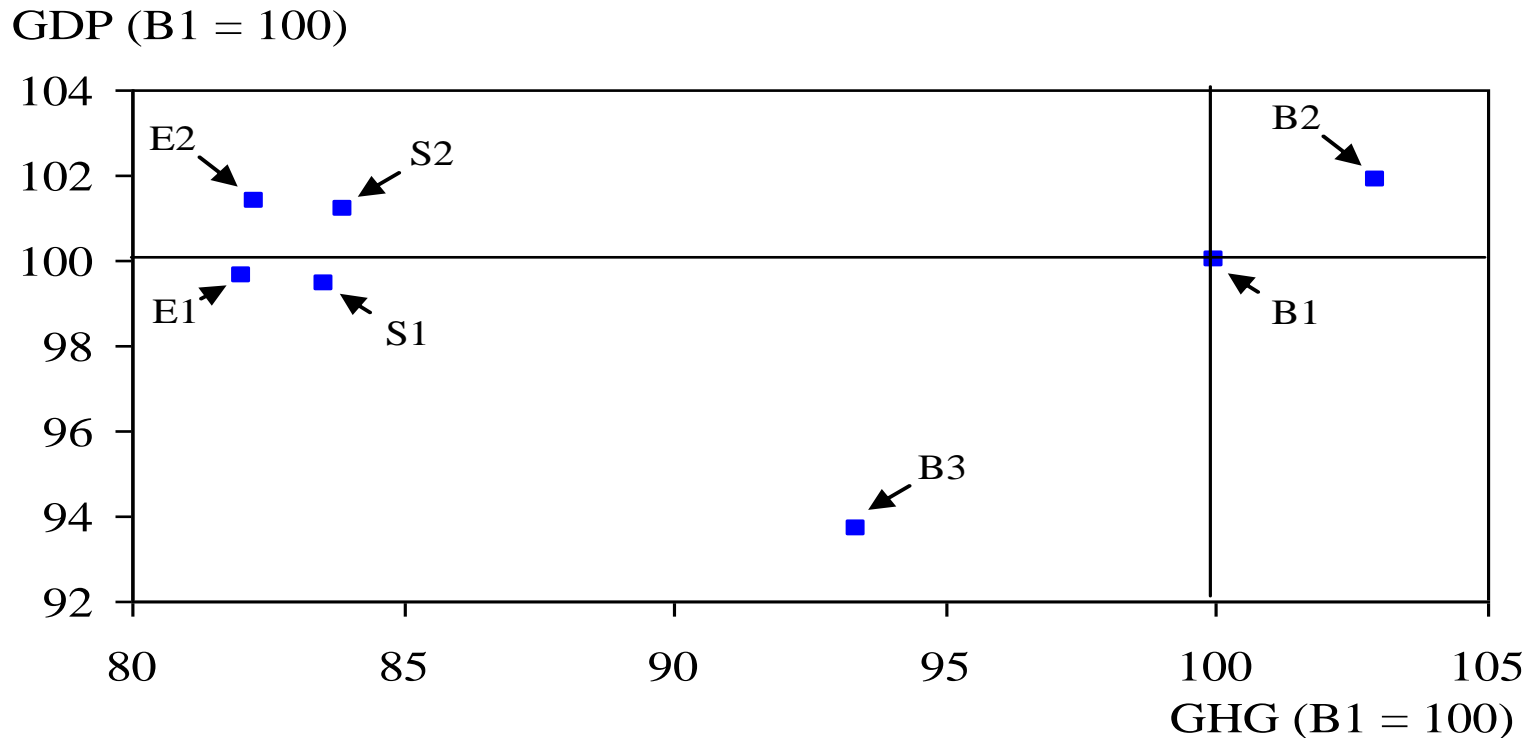
- Investigation of
 - Economic, social and environmental implications of major green fiscal reform (GFR) (share of environmental taxes in total revenues from 5% to 15-20% by 2020)
- Modelling of scenarios
 - Three baselines (B1, B2, B3) – low, medium, high world market fossil fuel prices
 - Two GFR scenarios (S1, S2) – increase in transport, household and industrial energy taxes, and taxes on water and materials, reductions in income taxes (households) and social security contributions (business)
 - Two 'eco-innovation' scenarios (E1, E2) – spending 10% of green tax revenues on energy-efficient buildings, renewable energy and hybrid vehicles

Results: GHG emission targets



Results: GDP and carbon emissions

COMPARISON OF GDP AND GHG EMISSIONS IN 2020



Note(s) : GHG figures have been calculated on a net carbon account basis in MtCO₂e.

Source(s) : ONS, NAEI, Cambridge Econometrics.

Narrative 3 – The public is not convinced

- Evidence suggests green fiscal reform should lead to widespread aggregate economic, environmental and welfare benefits, but ...
- People dislike green taxes more than other taxes. Why?
 - Impact on highly valued forms of consumption
 - Not related to ability to pay
 - Green taxes should change behaviour not raise revenue
- Think they are extra rather than replacement taxes
- Think they affect business competitiveness negatively
- Are seen as unfair
- Perceive them as 'stealth' taxes
- So how to move forward? Need to address above points

Narrative 4 - Implementing Green Fiscal Reform

- Need to increase support for reform in two areas:
 1. The need for emissions reduction
 2. That a large price increase is necessary to achieve emissions reductions
- Political consensus is required on green fiscal reform
 - Carbon targets *must* be met
 - Will require *strong* measures

When/if agree this consensus implementation likely to require

1. Fiscal neutrality to be monitored by an independent body
2. Needs of vulnerable economic sectors and households must be addressed
3. Some revenues to be spent on improved environmental measures

Narrative 5 - Accompanying measures and clear messages

- Reward perceived good behaviour – council tax cuts for energy efficiency
- Raise awareness of people's energy use and its impacts - meter, labels, etc
- Address infrastructural barriers to behaviour change
- Use regulatory policies to reduce energy use

- Need strong consistent message that energy prices will increase over time to meet carbon targets and drive low carbon investment
- When taxes go up – as they must - increase green taxes
- Will stabilise energy markets – security and stability
- Agenda is about change – doing nothing is not without costs
- There is no high-carbon, high-growth, high welfare future available

Conclusions

- The technologies for large-scale climate change mitigation are, or soon will be, available at affordable cost.
- Developing and deploying the technologies will require huge investments in low-carbon technologies right along the innovation chain (research, development, demonstration, diffusion).
- Stimulating the required investment will require high (now) and rising carbon prices over the next half century, to choke off investment in high-carbon technologies and incentivise low-carbon investments.
- ETR/GFR can provide the stimulus and such a tax shift need not impact negatively on GDP (incomes) and employment, but the higher investment will require higher savings and lower consumption rates. The high resulting high carbon prices will also greatly change lifestyles and consumption patterns.
- It is not technology or cost, that are the constraining factors to climate change mitigation, but politics – related to people's attachment to consumption rather than savings/investment, and aspects of high-carbon lifestyles.
- Changing this political reality is the necessary condition for the adequate mitigation of climate change, which will alone avoid the potentially enormous, but still very uncertain, costs of adapting to climate events and conditions outside all known human experience.

Thank You

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