

# Decarbonisation ‘Challenges’ – State of Play and Lessons Learned

Paul Drummond

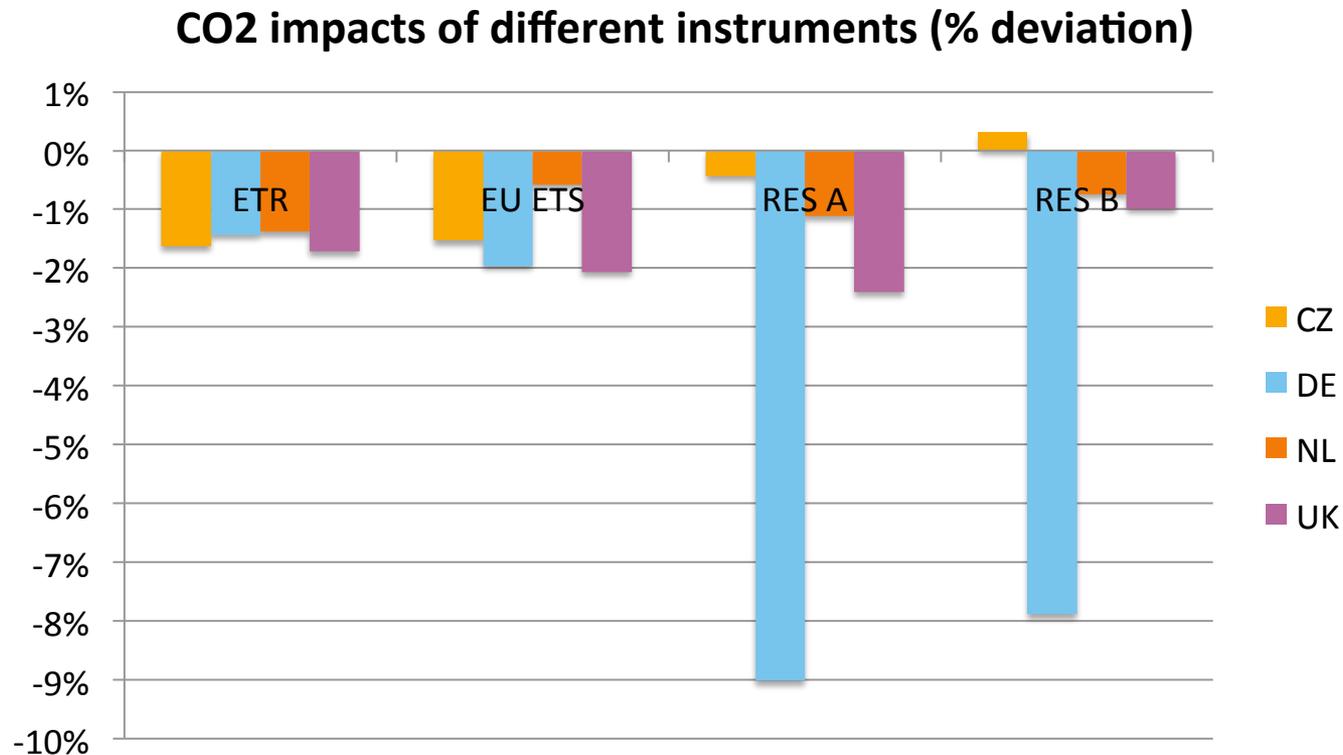
Research Associate in Climate Policy

UCL Institute for Sustainable  
Resources



## How much actual abatement produced?

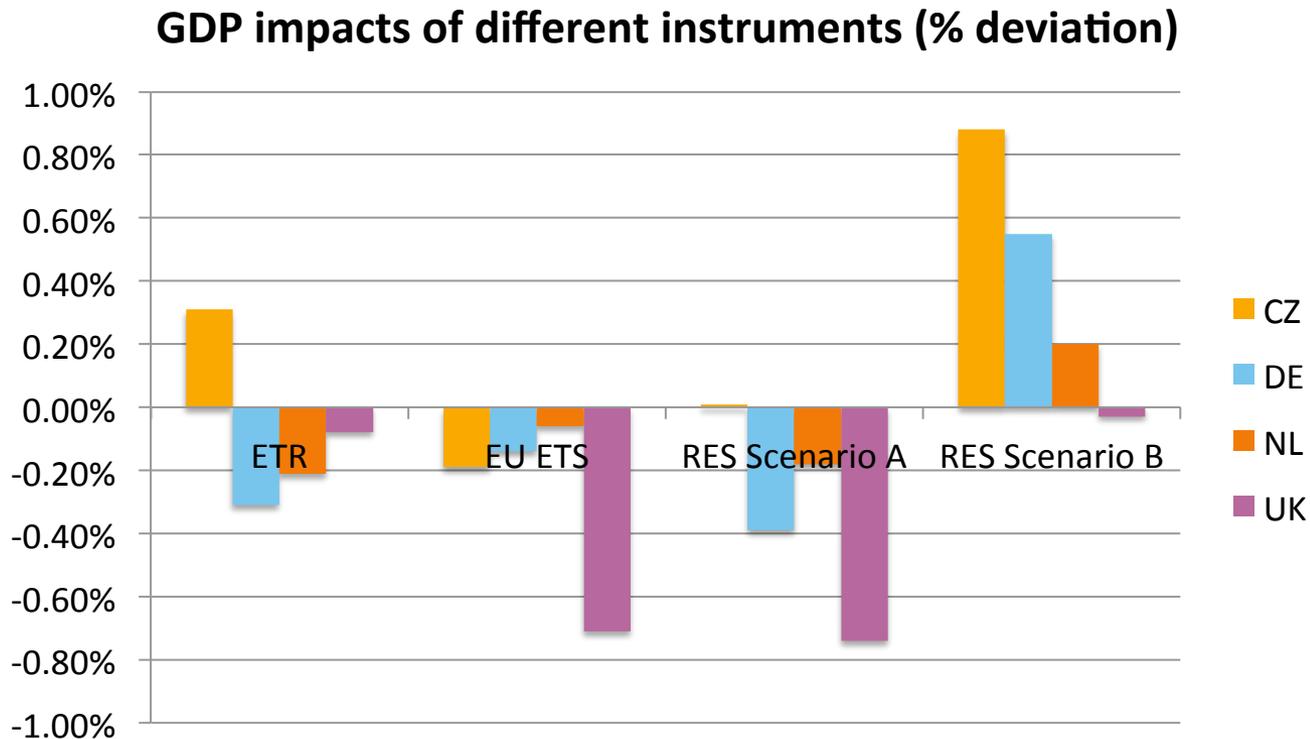
In 2008, CO<sub>2</sub> emissions would be up to 12-13% higher than actually observed in some Member States (with significant variation)



Source: Meyer et al. 2013, CECILIA D2-2a

## What macroeconomic effects?

In 2008, the policy mix probably increase GDP at the EU level, but it certainly **did not reduce it**



Source: Meyer et al. 2013, CECILIA D2-2a

# Challenges

- Establish a Meaningful Carbon Price
- EU-wide Electricity Market Reform and Integration
- Make Sound Infrastructure Choices Despite Technological Uncertainty
- Provide Finance and Mobilise Investments
- Encourage Low-Carbon Lifestyles
- Facilitate Low-Carbon Mobility
- Tackle the Energy Consumption of the Housing Stock
- Address non-CO<sub>2</sub> GHG emissions (particularly from Agriculture)
- Stimulate Radical Low-Carbon Innovation in Industry



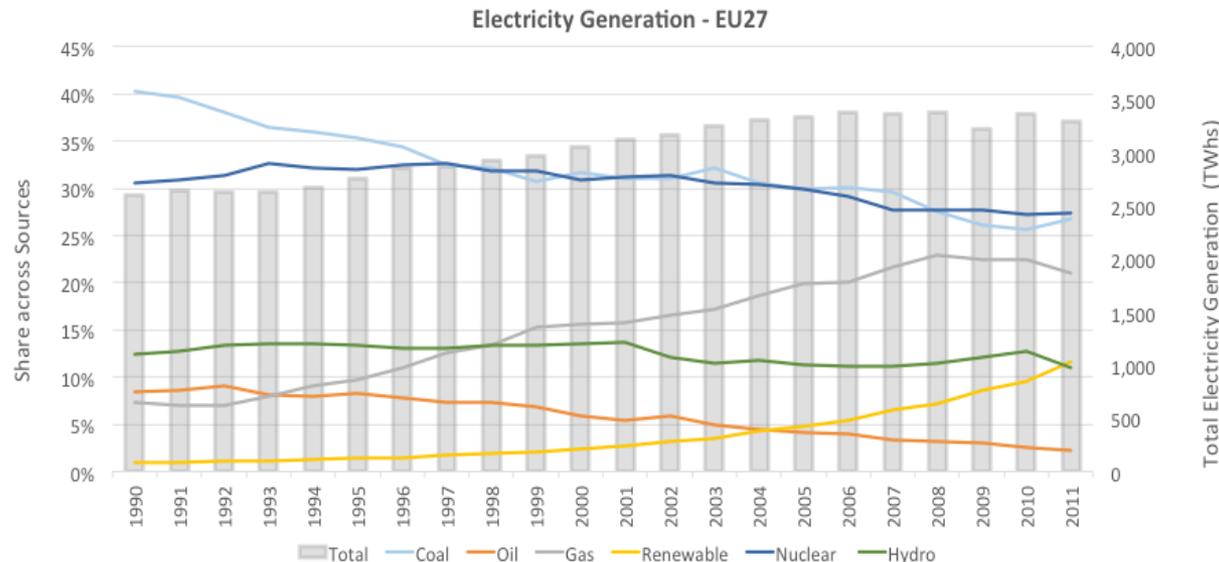
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# Establish a Meaningful Carbon Price

- At the EU level, an **explicit carbon price** is only applied to the **power and industry** - EU ETS (~55% EU CO<sub>2</sub> emissions). A few other explicit carbon pricing instruments at Member State level, in both the EU ETS (e.g. UK's Carbon Price Floor) and non-ETS sectors.
- In the absence of the EU ETS, **CO<sub>2</sub> emissions would have been around 1-3% higher in in most Member States**, delivered through temporary 'fuel switching' in power sector. **Renewable Electricity Support Mechanisms** are responsible for growth of renewables (producing ~3.5% CO<sub>2</sub> abatement on average across Member States)



# Establish a Meaningful Carbon Price

- However, such instruments are unlikely to have depressed the EU ETS price – considered in cap-setting exercises (despite such instruments delivering ~3.5%).
- **No evidence for ‘carbon leakage’** by vulnerable sectors, but risk in future with increased price. An adequate compensatory mechanism required.
- **EU ETS oversupply** likely to keep price depressed for some time, without substantial intervention, preventing further fuel-switching (with low coal prices), and structural change in covered sectors.
- Existing **Market distortions**, such as energy consumption subsidies, would reduce the impact of carbon pricing if introduced to other sectors in many Member States.
- **Potential Directions for Short-Term Improvement** – Introduce volume/price control mechanisms in the EU ETS, expand sectoral coverage. Encourage Member State-level pricing in non-ETS sectors, including the removal of existing distortions.



# EU-Wide Electricity Market Reform and Integration

- Objective to **achieve a unified EU electricity market**, to reduce prices and allow for grid balancing with the increasing penetration of intermittent renewables
- Efforts to achieve a single market so far have **varied levels of implementation across Member States** (of both policy and infrastructure – particularly interconnectors)
- The current **‘energy only’ market design is unlikely to be appropriate with increasing renewables** (‘merit-order effect’ producing a ‘missing money’ problem). Prevents investment and creates security of supply issue.
- **‘Capacity markets’** are being created by individual Member States in order to counter this increasingly-present issue. Currently subject to State Aid review.
- **Potential Directions for Short-term Improvement** – full implementation of single market (via regional coupling). Investment in physical infrastructure (interconnectors) to facilitate a single market. Capacity market alignment between Member States.



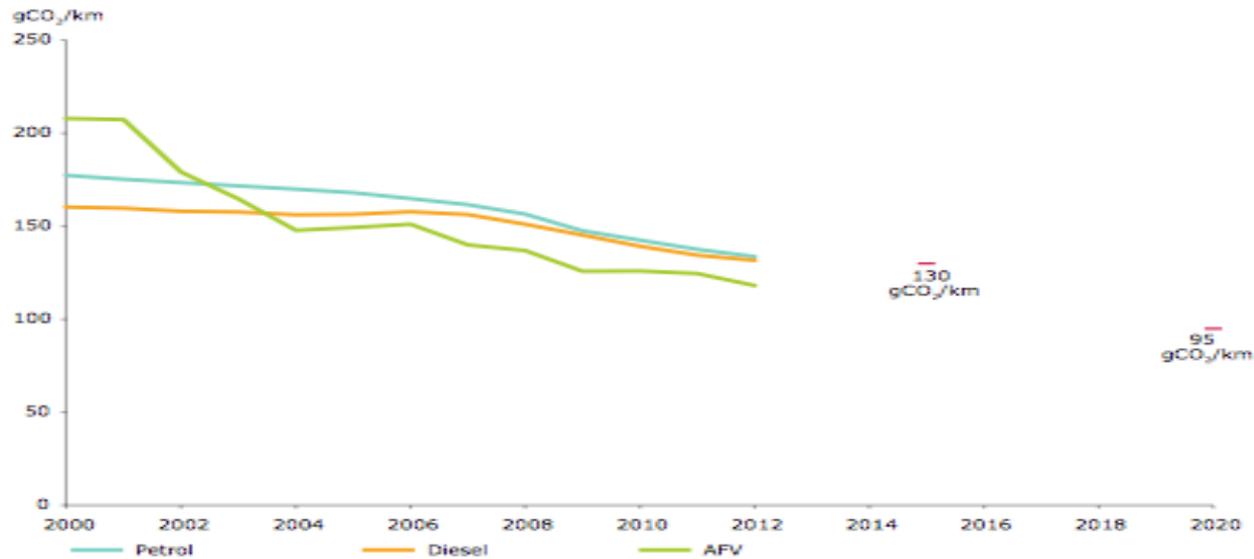
# Make Sound Infrastructure Choices Despite Technological Uncertainty

- Some **decisions must be made by government** (at different levels) to **facilitate the low-carbon transition** - e.g. the provision of electric/hydrogen/active transport infrastructure.
- However, substantial **uncertainty surrounding future technological developments**. Can lead to technological lock-in (including high-carbon) and stranded assets.
- Additionally, '**siloesation**', unclear **division of competencies and lack of co-ordination** between departments and governance levels, and a **lack of co-ordination between Member States**, may produce high costs and an un-coordinated system.
- Under existing EU frameworks, **some decisions likely to remain exclusively a Member State** competence (e.g. energy mix), others may be driven at the EU level (e.g. Alternative Fuels Directive – mandatory deployment of electric charging points).
- **Potential Directions for Short-Term Improvements** – Production of National (or regional, co-operative) Infrastructure Plans, adoption of national infrastructure planning bodies, use social cost of carbon in investment decisions.



# Facilitate Low-Carbon Mobility

- Road transport = ~95% of total transport CO<sub>2</sub> emissions.
- **Passenger cars by far the most significant policy focus**, with LGVs and HGVs subject to few instruments (directly or indirectly). EU-wide **CO<sub>2</sub> intensity regulations** a key driver in moving the market towards lower-carbon cars (2015 target achieved early)



(Source: European Environment Agency, 2013)



# Facilitate Low-Carbon Mobility

- **Pricing mechanisms** (Inc. fuel taxes and levies, registration and circulation taxes, road pricing), have likely **produced little additional abatement** (although varies by specific instrument and Member State).
- **Substantial distortions reduce pricing effectiveness** – fuel tax/levy differentials between countries (substantial fuel tourism by HGVs), company car taxation, registration/circulation taxes (if present) usually not aligned to CO<sub>2</sub> intensity.
- **Potential Directions for Short-Term improvement** – Extend and expand CO<sub>2</sub> intensity regulations to LGVs/HGVs. Reduce fuel price differentials between Member States. Reform company car taxation. Introduce road pricing. Provision of active/public transport options.



# Tackle the Energy Consumption of the Housing Stock

- Increasing energy efficiency has thus far **largely been driven by regulatory instruments** – minimum performance standards on new buildings (Energy Performance of Buildings Directive) and products (Ecodesign Directive).
- Member States **often exempt residential heating fuels** from taxation (and sometimes other implicit subsidies, such as reduced rate-VAT).
- Instruments to **tackle the envelope energy efficiency of existing housing have largely been lacking**. Energy Efficiency Directive (EED) now requires primary energy savings (with large focus on residential building stock).
- Issues of **awareness, ‘satisficing’, ‘hassle factor’ and split-incentives** (landlord-tenant dilemma) have also proven substantial barriers.
- **Potential Directions for Short-Term Improvement** – Expand use of and tighten regulatory instruments (e.g. minimum performance standards, landlord obligations), Introduce equalised carbon taxation of energy products, increase use of (and reform) ‘information’ instruments – e.g. labelling, ‘nudging’.



# Address non-CO<sub>2</sub> GHG Emissions (particularly from agriculture)

- **Few climate policy instruments focus on the agriculture sector.** Where they do exist, they are at **Member State level**, introduced recently, focus on information dissemination and R&D, and implemented on a **voluntary basis**.
- **Non-climate policy instruments have had the largest policy-induced impact** on agricultural emissions – particularly the Common Agricultural Policy (CAP), Nitrates Directive and Water Framework Directive.
- Also **non-policy drivers**, largely through increases in animal productivity in Central and Eastern Europe.
- Size and distribution of farm-level emissions, along with the effectiveness and costs of technical measures, **are poorly understood**.
- **Potential Directions for Short-Term Improvements** – Investigate the establishment of an ‘agri-food’ sector, ‘farm to fork’ emission accounting system. Encourage the use of voluntary agreements. Financial support mechanisms for low-carbon technologies and practices. GHG labelling of meat products.



# Conclusions

- The policy mix has likely achieved **relatively substantial abatement**, whilst probably producing a **positive impact on EU-level GDP** (but certainly not negative)
- **The EU climate policy mix is uneven** within and between sectors, both in terms of focus and stringency. **Regulatory instruments have driven a substantial proportion of abatement so far** (including with the use of market-based instruments to deliver regulatory requirements) – carbon and other pricing instruments have had some, but relatively little effective presence or impact.
- Such a policy mix could evolve in the short-term to **‘lean’ towards pricing and incentive-based instruments or regulatory instruments at its centre**, but elements of **both will be required** (along with information and other behavioural instruments, and institutional reforms).
- The direction taken is likely to depend on the **relative feasibility** (legal, administrative, public acceptability, but particularly **political feasibility**) of introducing the instruments of the scope and stringency required under each direction taken, which may shift over time.

