

Decarbonising the EU Energy System – Beyond Carbon Pricing

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Overview of the paper

- There is a serious challenge for policy development to effectively drive the necessary changes.
- This paper reflected on the learning from the DG Research CECILIA2050 project, concerning different options, and the associated challenges of different mechanisms
- In doing so, it picks up on a widely held view that carbon pricing is the best, most economically efficient mechanism
- We argue that while carbon pricing does have an important role, it is insufficient on its own, and there needs to be a strong focus on other policy mechanisms

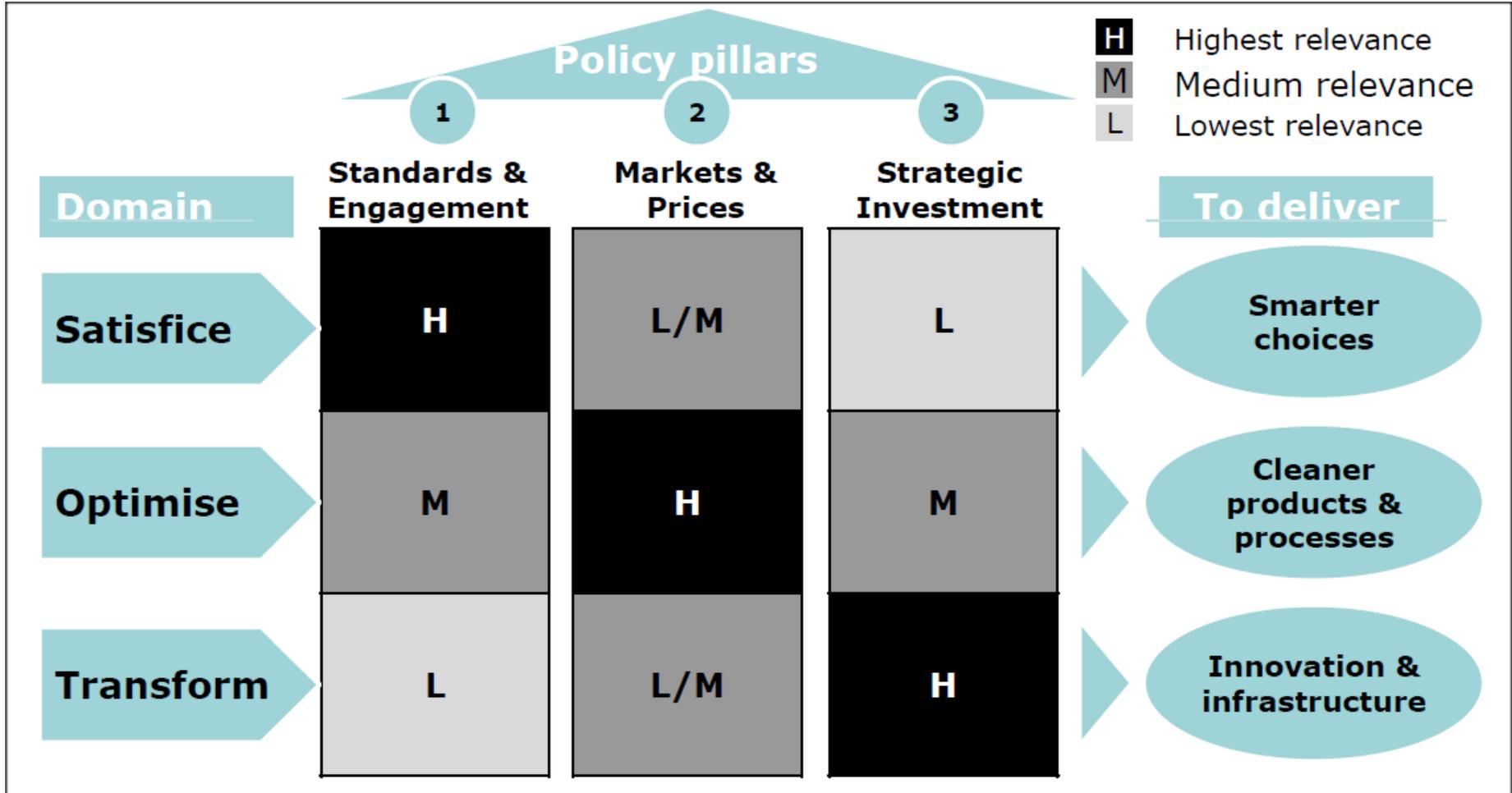
Decarbonising the EU Energy System – what is required by 2050?

EU's target of an 80% reduction in GHG emissions by 2050 (from 1990 levels). Based on modelling under CECILIA project –

- Strong reductions in power sector (~ 10 gCO₂/kWh by 2050)
- Large increase in electricity demand, resulting in doubling of current generation
- If commercially available, CCS will feature strongly across power generation and industry sectors
- Large-scale building retrofit of existing stock will be needed, and low / zero carbon new build
- Massive deployment of low carbon vehicles, powered by electricity and biofuels, with a possible role for H₂.

.....but delivery is contingent on strong and effective policy that provides clarity and certainty

Solutions need to harness corresponding policy pillars based on the three domains



Source: Grubb, M., Hourcade, J. C., & Neuhoff, K. (2014). *Planetary economics*. Abingdon: Routledge.

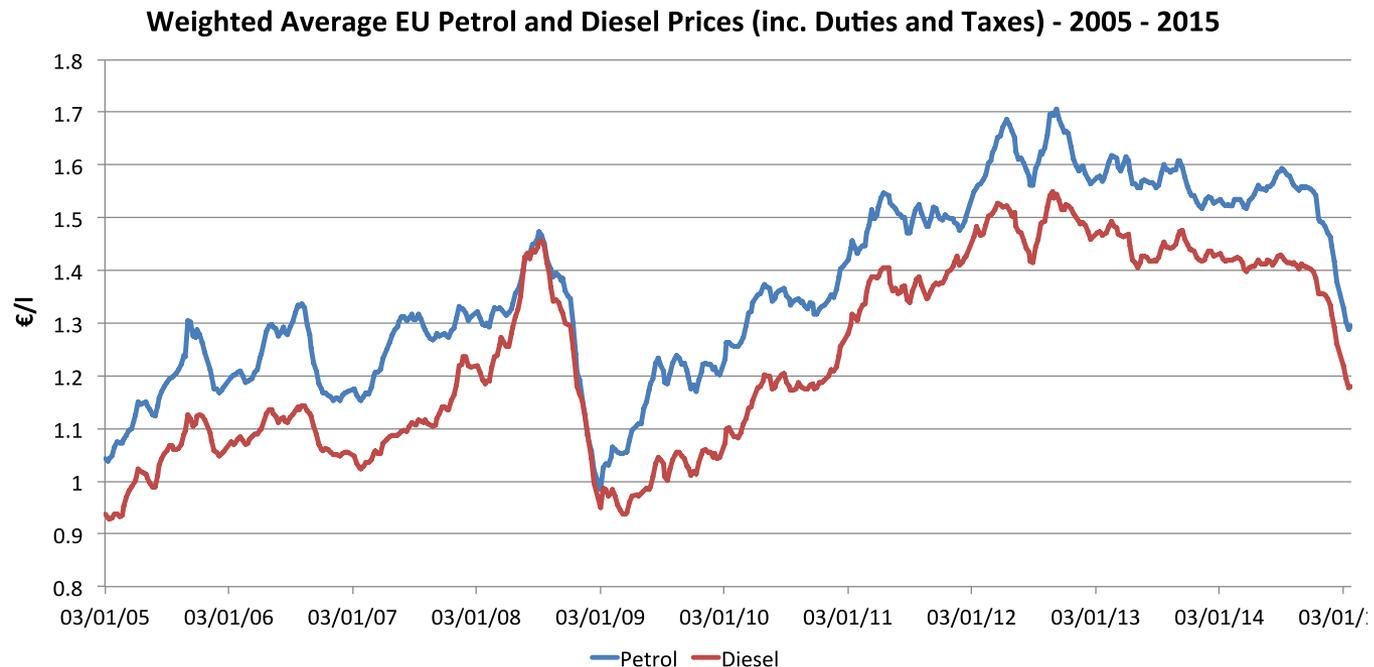
The role of carbon pricing to date, and in the future

- For various reasons of implementation, the EU ETS has not delivered substantial CO₂ abatement. However, it still has a key role, strengthened under Phase 3, with further reforms for Phase 4.
- In addition to implementation, getting the carbon price correct can also be challenging due to uncertainties around technology costs and commodity prices.
- Many modelling studies assume a relatively stable price, which is required to incentivise investment. However, in reality delivering such stability to markets can be difficult – without additional mechanisms such as ‘floor’ prices.
- Therefore, we argue for other mechanisms to play a full and complimentary role alongside carbon pricing.

Example of transport fuel prices

- Weighted average €1.37/l and €1.24/l for petrol and diesel
- A price of €75/tCO₂ in 2030 would add 15%, with some impact on demand but limited effect on vehicle choice (impact from CAPEX)
- Company car taxation arrangements often allow for the costs to be borne by the employer rather than the vehicle user, reducing incentives
- Price volatility can be another problem, compounded by compensation through reducing fuel duty

Figure 1 - Weighted-Average EU Petrol and Diesel Prices (2005-2015)



The role of other policy instruments

- Other policy instruments used may broadly be categorised as 'technology-based' (regulatory) and 'behaviour-based'.
- Some of the technology-based (regulatory) instruments have produced stronger effects to date – passenger vehicle CO₂ emission regulations, the RE Directive, and the Ecodesign Directive.
- Major behaviour-focussed instruments have centred on product labelling, particularly of buildings, energy-using products and cars, to highlight energy efficiency or CO₂ intensities.
- Three reasons for limited effect to date – 1) under- or non-implementation / lack of compliance with requirements; 2) varied or relatively ineffective design; and 3) other factors overriding information deficit

The need for a broad policy mix

- Even if a substantial, predictable and broadly applicable price could be established, real-life market dynamics and structures mean that the theoretical potential cannot be easily realised.
- Three 'pillars of policy' required; carbon pricing alongside technology-based and behaviour-based instruments needed to achieve an effective low-carbon transition in a cost-effective and feasible manner.
- Framing and assessing the challenge of and potential for responses to decarbonisation around the three 'pillars of policy' may help identify gaps in the policy landscape
- Also help facilitate proposals for well-coordinated, complementary and dynamic policy packages, the individual components of which may otherwise be ineffective, high cost or otherwise infeasible.

Thanks for listening

Evolution of EU ETS price

