CECILIA 2050
OPTIMAL EU CLIMATE POLICY

Climate Instrument Scenarios for the EU

Mikel González-Eguino, Luis Rey, Anil Markandya
BC3

(Deliverable 4.1)

Prague, 22 October

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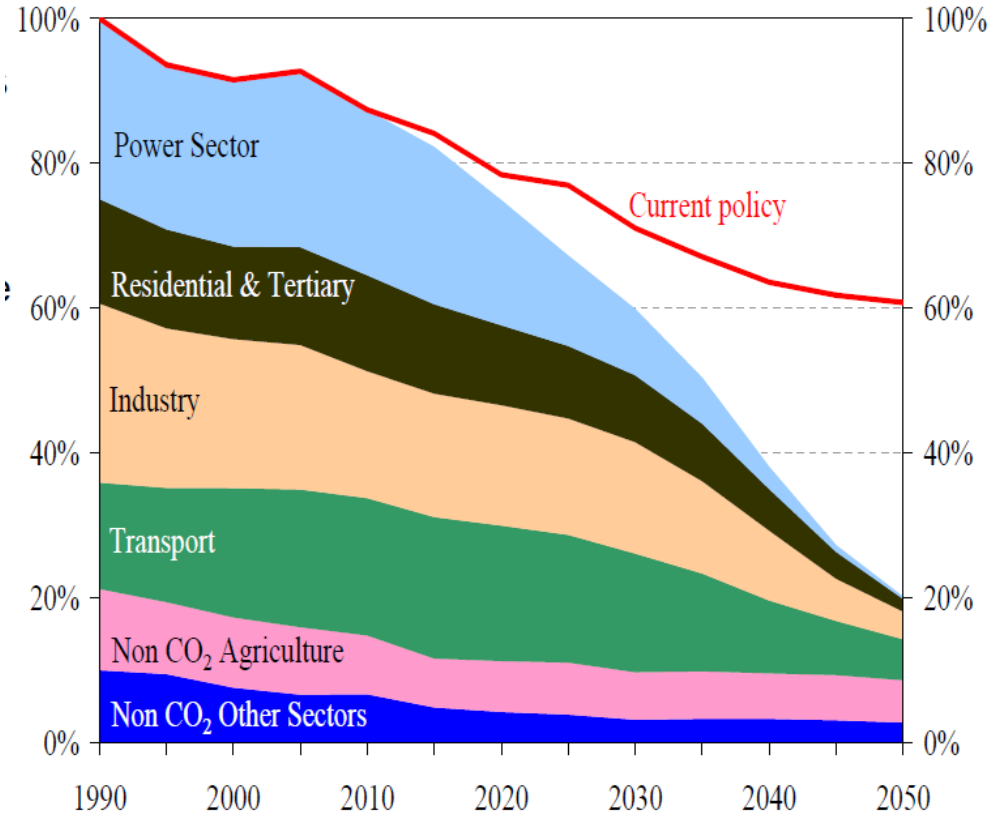
1. Introduction: objectives

- Global objective (Cancun Accords):
  - 2º C Target: emission reduction of around 50% by 2050 (c/1990, IPCC 2007).
- EU objectives:
  - Short-term (2020): 20/20/20 objectives
  - Medium-term (2030): Recently, the European Commission and the European Parliament agreed on a 40% cut in GHG for 2030. But the EC is proposing more decentralization of climate/energy policies.
  - Long-term (2050): The European Council confirmed in 2011 the EU objective of reducing GHG emissions by 80-95% by 2050 compared to 1990

1. Introduction: EU 2050 Roadmap

how to deliver this target in a cost-effective manner?



Source: EC (2011)

Is this transformation feasible from a technological point of view?

According to the TIAM-UCL model YES, BUT prices would be around 85 $/tCO2 in 2020 to around 300 $/tCO2 in 2050.

1. Introduction:

- There is an important gap between the feasibility showed by the models and the instruments and the real world.
- **We have explored the different main policy instruments that the EU could select to drive this change within the institutional, legal and political context.**

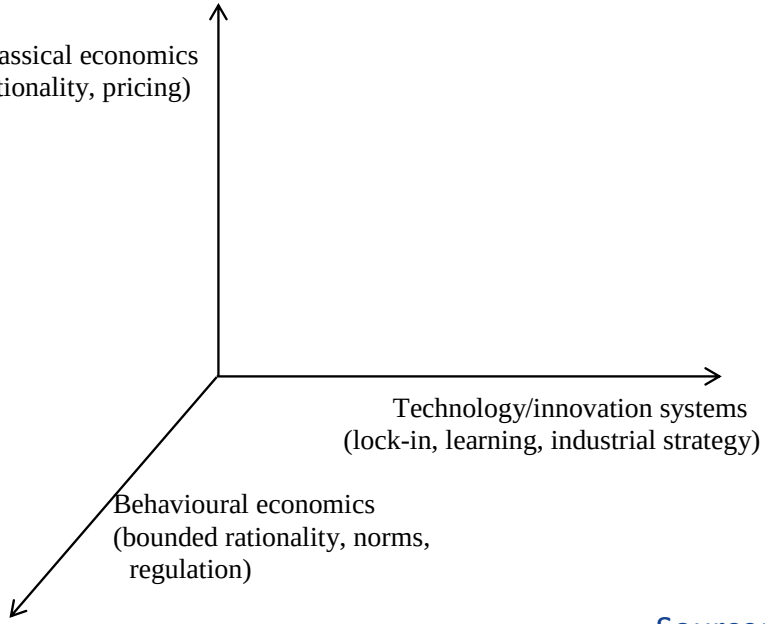
2. Pathways:

- Each pathway have one approach and focus in one type of instruments, but any successful instrument package should include **three key policy dimensions :**

  1) Carbon pricing

  2) Technology and infrastructure regulation (supply-side policies)

  3) Behaviour change promotion (demand-side policies)



Source: Grubb (2014)

2. Pathways: Market-driven

	1 – Market-driven
Philosophy	**"The market knows best"**
Storyline	Economic instruments are promoted. Taxes are harmonised and markets linked across EU.
Key instruments	**ETS extension, CO2 taxes and basic R&D**
Performance and Risks	Policy mix would be likely to achieve the objective, but political acceptability of the policy remains uncertain (dynamic efficiency depending on whether the policy signal is seen as credible), risk of policy failure.

2. Pathways: Technology-specific

	2. Technology-specific
Philosophy	**"Regulator knows best"**
Storyline	Reliance on technology support measures, directed R&D, codes and standards, and planning tools. Strong focus on stimulating technological innovation
Key instruments	**Codes and standards, FIT, directed R&D**
Performance and Risks	Policy mix in principle able to achieve the objective, but technological uncertainty is high – high risk that the regulator will pick the wrong technologies, resulting in high cost burden

2. Pathways: Behavioural-driven

	3. Behavioural-driven
Philosophy	**"Citizens behaviour"**
Storyline	Measures to raise consumer awareness are promoted. Mobilisation for demand-side efforts rather than technical solutions keep the economic burden on households as low as possible.
Key instruments	**Information, Voluntary Agreements and promotion of energy efficiency**
Performance and Risks	Difficult to anticipate the effectiveness of the policies (mixed effects on behavioural changes, rebound effects, working against market price signals etc.), risk of missing the emission target

3. Pathways: instruments by sectors

	1– Market-driven	2. Technology-specific	3. Behavioural-driven
Energy	• EU ETS • RES and FIT support schemes are gradually removed	• RES support schemes, FIT • The interaction with other instruments lowers the carbon price of the EU ETS	• Voluntary measures • EU ETS and RES support schemes • Low energy demand
Industry	• EU ETS	• Technology standards • Public support to implement low carbon technologies	• Voluntary measures • EU ETS and technologies standards • Low demand for energy intensive products
Buildings	• Taxes on energy products no covered by the EU ETS	• Energy efficiency standards	• Public information campaigns
Transport	• EU ETS expands to cover transport fuels	• Energy efficiency standards	• Information campaign. Modal shift
Agriculture	• Indirect taxes on emissions	• Technology standards (fertilizers, manure management)	• A diet change through environmental awareness

3. Pathways: trade-offs

- Trade-offs should be accepted:

	Market	Technology	Behavioural
Environmental Effectiveness	Medium	High (**)	Low
Static efficiency	High	Medium(***)	Medium
Dynamic efficiency	Medium (*)	Low	Medium
Feasibility	Low	Medium	High

(*) Depends on the long term stability of the instrument
(**) Subject to the rebound effect not being strong
(***) Government not picking “wrong”

4. Governance scenarios

- EU dimension: more o less centralization of climate/energy polices?
- Global dimension: more or less participation in a climate agreement?

EU dimension	EU centralised	EU decentralised	EU centralised	EU decentralised
Global dimension	Global ambition	Global ambition	Global fragmentation	Global fragmentation
Market-driven				
Technology-driven				
Behaviour-driven				

Very plausible	Plausible	Depends	Questionable	Implausible

5. Current debate on the EU climate policy

- Single target vs Multiple targets
  - A market driven pathway might be the best choice when there is a single reduction target
  - Multiple targets can be met more easily with regulatory measures
- EU targets vs National targets
  - EU targets may be more efficient but less feasible (politically)
- Reform of the EU ETS
  - A market driven scenario would require a structural reform of the EU ETS
    - The price signal should encourage innovation in low-carbon technologies
    - Probably additional sectors should be included in the system
    - Should the EU ETS have an explicit carbon price objective? Should the EU ETS be replaced by a carbon tax?
  - In a technology-specific pathway and in a behavioral-driven pathway the EU ETS should be adapted to these pathways, but the system may not require important modifications.

Conclusions:

i. Any successful instrument package should include a combination of carbon prices, regulations and behavioural measures.

ii. There is no an “Optimal” mix: trade-offs should be accepted, although it is difficult to measure.

iii. Behaviour-driven measures are critical for public acceptability, but this pathway increase the risk of missing the targets.

iv. ETS should be re-design in all the scenarios

v. A decentralized Europe will require a big effort in terms of harmonization.

vi. If there is no international climate agreement, it will be very difficult to achieve 2050´s targets, even with anti-carbon leakage instruments.

vii. Further research is needed in order to identify “essential” technologies and the main bottlenecks and constraints.

Thanks for your attention.

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3. Instruments: essential instruments

- Are there any “essential” technology/infrastructure/policy/institution?
- If so, what instruments are needed to assure they are ready and on time?

Examples:

- **Technologies**:
  - CCS ready in 2020-2030?
- **Infrastructures:**
  - Smart grids 2030-2050?
  - Electrification or hydrogen infrastructures for transport 2030-2050?
- **Policies for public and political acceptance**
  - Environmental fiscal reform?
  - Public awareness on climate change?
- **Institutions**
  - Carbon Market Authority?