What Constitutes an "Optimal" Climate Policy?

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SEVENTH FRAMEWORK PROGRAMME

What constitutes an "optimal" climate policy?

- What is the issue? Approaches to optimality in theory and practice
- What do we mean by optimality
- What do we *not* mean by optimality?
- Fleshing out the notion of optimality: defining criteria
  - Your suggestions
  - Our suggestions
- Optimality – at what level?
- Problems, issues and questions

Optimality: a classical economic perspective

- Notion of optimality: central concept in economics (maximise y, subject to constraints a, b, c)
- Optimal climate policy – fairly easy to define in an ideal world:
  - Establish carbon price that internalises the external costs of carbon emissions
  - If a carbon price is established, additional policies can only make things more complicated – and more expensive
- Alas, reality is more complex…

Optimality: confounding factors from a wider perspective

- Multitude of objectives:
  - In climate policy alone (emission reduction, renewable share, energy efficiency),
  - In the wider policy context (energy policy, industrial policy and competitiveness, geopolitics …)
- Path dependency and lock-in risk:
  - Choices are contingent on past decisions: e.g. innovation, infrastructure;
  - Institutions matter – regulatory framework, e.g. in the energy market;
  - Systemic constraints and obstacles, e.g. landlord-tenant dilemma;
- Political economy of instrument choice
  - Not only the absolute level of costs matters, but their distribution
  - Instrument choice, and instrument design, reflects leverage of interest groups
- Surprises are possible:
  - Unforeseen economic and technological developments, e.g. economic crisis, fracking;
  - Political upheavals, e.g. Germany post-Fukushima
- System boundaries: Carbon leakage, small emitters, diffuse sources…

What do we mean by optimality?

- Policies that get us to the EU Climate Targets, with minimal adverse impacts on society and economy – now and over time
- Policies that stand a chance of being adopted and implemented, and function as expected once they are implemented
- Policies that can deal with the manifold uncertainties and surprises that expect us on the way to a low-carbon economy: Flexible where possible, rigid where necessary
- Policies that function as a policy mix – exploiting synergies and avoiding conflicts between policy instruments

What do we *not* mean by optimality?

- Assessment whether the EU Climate Targets are in fact justified from a cost-benefit perspective, i.e. whether they are in fact welfare-maximising;
- Assessment whether the EU Climate Targets strike an efficient balance between mitigation and adaptation (or geoengineering);
- Assessment whether European efforts are optimal in the light of global efforts to fight climate change, or lack thereof.
- EU Climate Targets (decarbonisation by mid-century) are taken as given – optimality refers to the best way of getting there.

Fleshing out the notion of optimality: defining criteria

- Delphi survey: on your place, you will find a sheet with 16 criteria for “good climate policy” (based on Guglyuvatyy 2010, US GAO 2008)
- Please indicate the importance of each criterion for an evaluation of climate policy instruments (mark the column from “not important” to “essential”)
- If you don’t have an opinion on the importance of a criterion, leave the row blank
- If we have missed something: Use the back of the sheet to list additional criteria that you consider important

Criteria for optimality of climate policies

Set of criteria for the CECILIA2050 project – based on the existing literature

- Effectiveness
- Cost-effectiveness (efficiency)
  - Static efficiency
  - Dynamic efficiency
- Feasibility
  - Political feasibility
  - Legal feasibility
  - Administrative feasibility

Criteria for optimality of climate policies – 1: effectiveness

- Effectiveness := is the policy achieving its objective(s)?
- Which objective?
  - Theory: policy outputs (e.g. laws and regulations), outcomes (direct results, e.g. MW of wind energy capacity installed), and impacts (ultimate results, e.g. emissions avoided)
  - Climate policy: Trias of objectives (GHG emission target, renewables target, energy efficiency target, plus biofuels target in transport)
  - Energy policy: Triangle of security of supply, affordability / competitiveness and environmental protection
  - Wider policy context (e.g. Europe 2020 strategy, industrial policy) – competitiveness, jobs, innovation, equity, cohesion, rural development, geopolitics …
- Policy objectives (or their hierarchy) often not clearly specified – at EU level, impact assessments provide some coherence

Criteria for optimality of climate policies – 2: cost-effectiveness

- Cost-effectiveness (efficiency) := is the objective of the policy intervention achieved at least cost to society?
- Static efficiency: all emitters covered by the policy mix, and all face an equal incentive to reduce emissions, so that overall emissions are reduced where it is cheapest to do so - *given the currently available abatement options*
- Dynamic efficiency: minimising the cost of achieving climate targets *over a given time period*, by giving emitters a continuous and ongoing incentive to search for cheaper ways of reducing emissions
  - Policy instruments induce innovation and diffusion of low-carbon technologies, avoid technological lock-in
  - Challenge to reconcile flexibility (adapting policies in the light of new information, e.g. falling prices of low-carbon technologies) and predictability (creating a credible long-term commitment and providing clear signals to investors)
  - low-carbon transformation as a search process requires flexibility, trial and error – but certain technological choices (infrastructures) require long-term planning, rigidity

Criteria for optimality of climate policies – 3: feasibility

- Feasibility: addresses the risk that the risks that a planned policy
  - might not be implemented as designed (at the level of policy *outputs*), or
  - that the policy might not deliver the expected results once implemented (policy *outcomes*), including unintended side-effects.
- Political feasibility:
  - acceptance or resistance of policies by the public at large (in their function as voters or as consumers) and by organised interest groups;
  - support for policies by policy makers, who are willing to promote or defend initiatives.
- Legal feasibility: compatibility and coherence of climate policy instruments with existing EU legislation (primary and secondary), as well as national legislation.
- Administrative feasibility: administrative burden of policy implementation in proportion to the administrative capacity. The administrative burden includes both the transaction cost (bureaucratic burden) for regulated entities, and the effort of government agencies to implement an instrument and ensure compliance.

Aggregation of optimality criteria – is it possible? Is it sensible?

- Ideal for optimisation: criteria aggregated into an objective function ("maximise y(x) subject to the constraints a, b and c")
- Challenge: several criteria do not lend themselves to quantification, assignment of weights to criteria is an inherently political task
- Alternative: establish a hierarchy / ranking among the criteria? Remains a highly normative exercise:
  - Environmental(ist) perspective: effectiveness is crucial – after all, this is about controlling climate change;
  - Economic perspective: cost-effectiveness is key – after all, this is about maximising the public good with limited resources;
  - Pragmatic perspective: feasibility is key – why should we consider policies that do not stand a chance to be adopted and implemented, or don't deliver what they promise?

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Optimality – at what level?

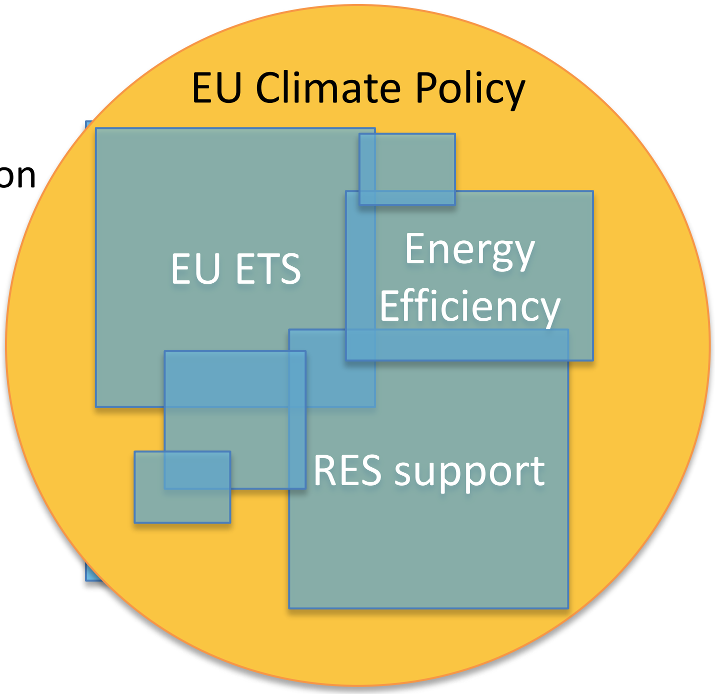
- Optimisation of individual policy instruments:
  - is the instrument well-designed and performing as planned, or could it be enhanced through design changes?
  - E.g. allocation methods, harmonisation, set-aside in the EU ETS; adaptation of feed-in-tariff rates; tax exemption rules and loopholes: micro planning of policies

EU ETS

- MRV harmonisation
- Cap adjustment
- Allocation rules

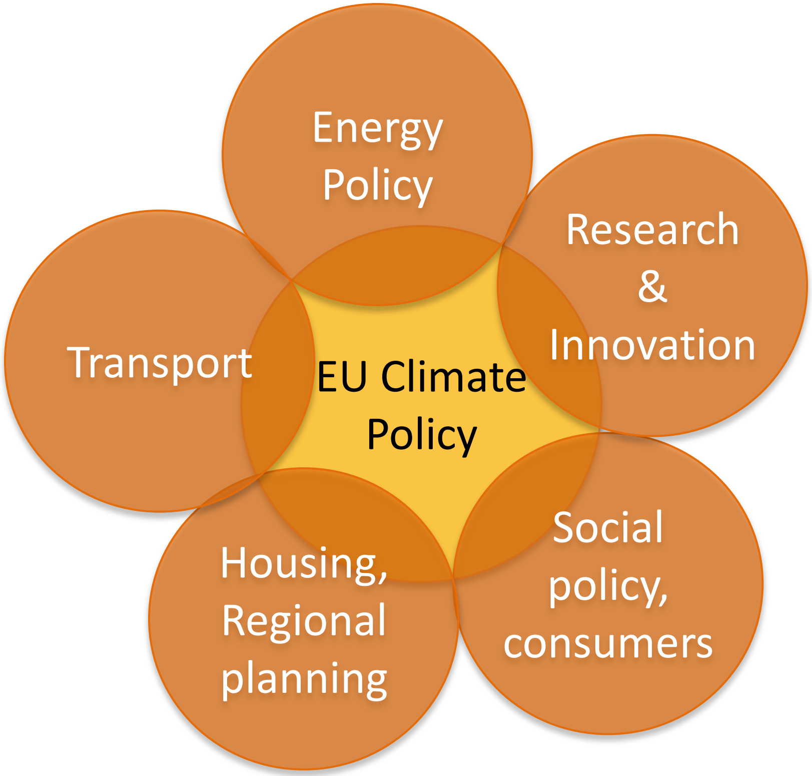
Optimality – at what level?

- Optimisation of the climate policy instrument mix:
  - are the different climate policy instruments well-integrated, coherent and consistent, do they cover all major sectors and emitters? Are the different instruments mutually supportive, or do they conflict?
  - E.g. interaction between RES support, energy efficiency and the ETS cap; distribution of reduction efforts across broad economic sectors: macro planning of the climate policy mix
  - Alignment between EU-level and national climate policy instruments



Optimality – at what level?

- Optimisation of climate policy in the wider policy context:
    - are the climate policy instruments consistent with, and supported by, policies in other areas
    - Integration with sectoral policies that define the context for climate policies (e.g. energy policy and regulation of energy markets, research and innovation, transport, social and consumer policies, etc. …)



Towards optimal climate policy – problems, issues and questions

- What role for pricing tools in the optimal policy mix: even if we had a "proper" carbon price, how far would it take us in the transformation?
  - Underlying issue: static vs. dynamic efficiency – pricing tools score well in terms of static efficiency, but do they provide a sufficient dynamic incentive to minimise cost over time?
- Should the EU aim for a well-integrated, clearly structured orchestra of instruments – or should we allow for some overlap and redundancy to insure against policy failure?
  - Underlying issue: static efficiency vs. feasibility – in terms of static efficiency, overlapping policies make the overall mix less efficient. Feasibility constraints remind us that policy failure or underperformance are risks to be reckoned with.
- How much inefficiency (imbalance) are we prepared to tolerate in the name of feasibility?
  - Underlying issue: cost-effectiveness vs. feasibility – consideration of political feasibility may imply that climate leaders do more, and at higher cost, than laggards
- How to deal with the fact that feasibility is both a constraint and a (legitimate) object of public policies?

Thank you for your attention.

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