Statkraft-LSE Program:
Credible, effective and publicly acceptable policies to decarbonise the European Union

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Grantham Research Institute on Climate Change and the Environment
Centre for Climate Change Economics and Policy
E·S·R·C Economic & Social Research Council
The Grantham Foundation for the Protection of the Environment
University of Leeds
LSE The London School of Economics and Political Science

This presentation

- Overview of the study
- Energy policy and the power sector in the long run
- The credibility of the EU's efforts to decarbonise the power sector
- How to make carbon taxes more acceptable
- Overall policy recommendations

Overview of the study

Study overview

- Power sector going through a new phase with mature, cost-competitive RES
- Growing stock of incumbent low-carbon sources
- 2030 targets, integrated national energy & climate plans

Approach: 3 in-depth studies

1. **Distributional impacts** of decarbonisation policies
2. **Credibility** of decarbonisation efforts
3. **Acceptability** of carbon taxation (outside power sector)

Summarised in a **synthesis report + brief**

All the reports are available online at: http://www.lse.ac.uk/GranthamInstitute/publication/credible-effective-publicly-acceptable-policies-decarbonise-european-union-final-report/

Energy policy and the power sector in the long run

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The approach

- **Partial equilibrium model of power sector to assess 'distributional impacts' of policies**

- **Looks at welfare cost of [additional] policies to reduce CO_2:**
  - Generating firms' profits
  - Government's net revenues
  - Consumer surplus

→

- ❑ **Wind, hydro and solar power**
- ❑ **Coal and gas power**
- ❑ **Nuclear power**

- **Doesn't include:**
  - Benefits and co-benefits from emissions reduction
  - Innovation, network and all other externalities
  - Energy efficiency investments in response to higher power prices
  - Market power, intermittency, etc.

Policies

1. **Carbon price** (either tax or ETS - for EU power sector: EU ETS)

2. **Coal tax**

3. **Tax on electricity consumption**

4. **Technology-specific subsidy** (here: WIND), financed by
    a) general taxation;
    b) an electricity tax; or
    c) the proceeds from carbon pricing.

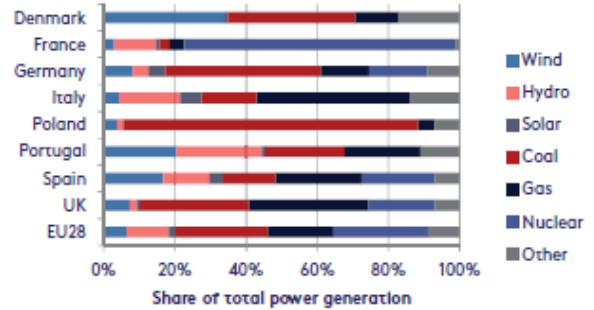
All set to achieve same relative emissions reduction (25%)

Geographical coverage

Country target for the quantitative model is Spain

- ✓ Balanced power sector
- ✓ Scope to expand hydro, wind and solar
- ✓ Generation mix similar to EU average

Figure 2.1. Power generation mix, average 2010–2015, eight selected EU member states

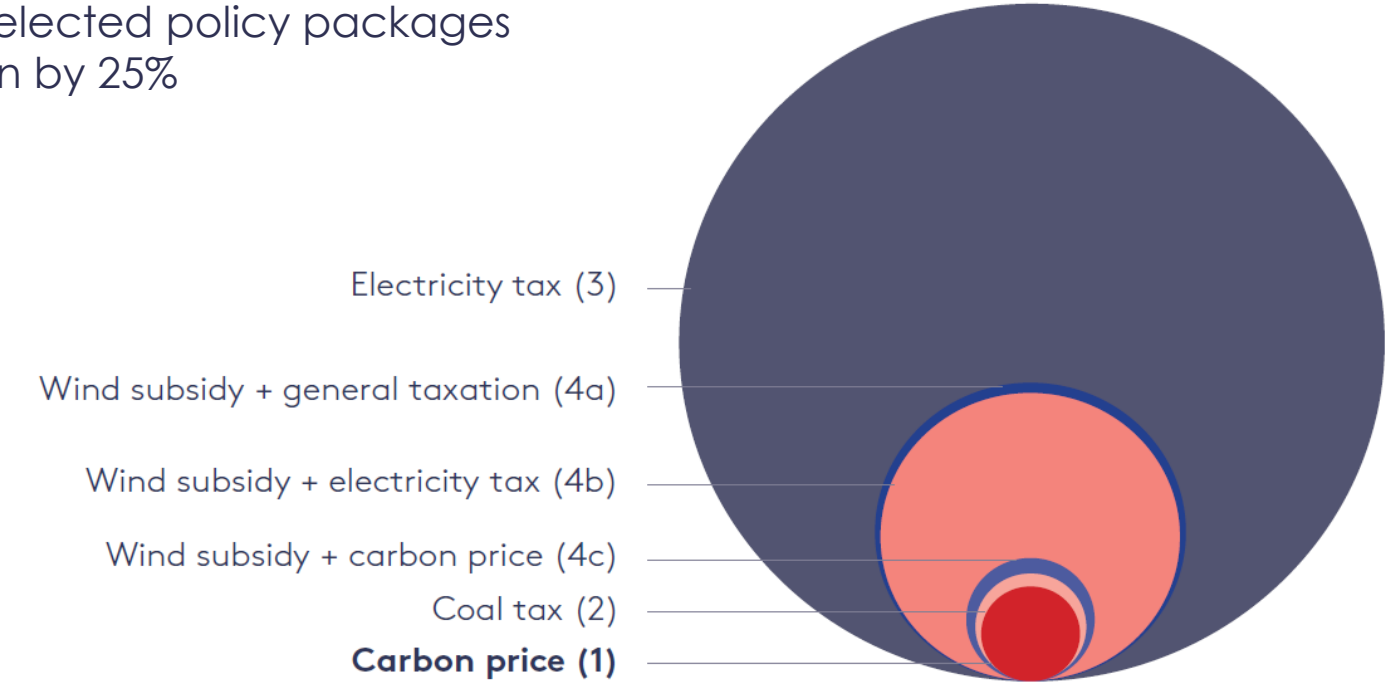


Source: Authors' calculations based on European Commission (2017)

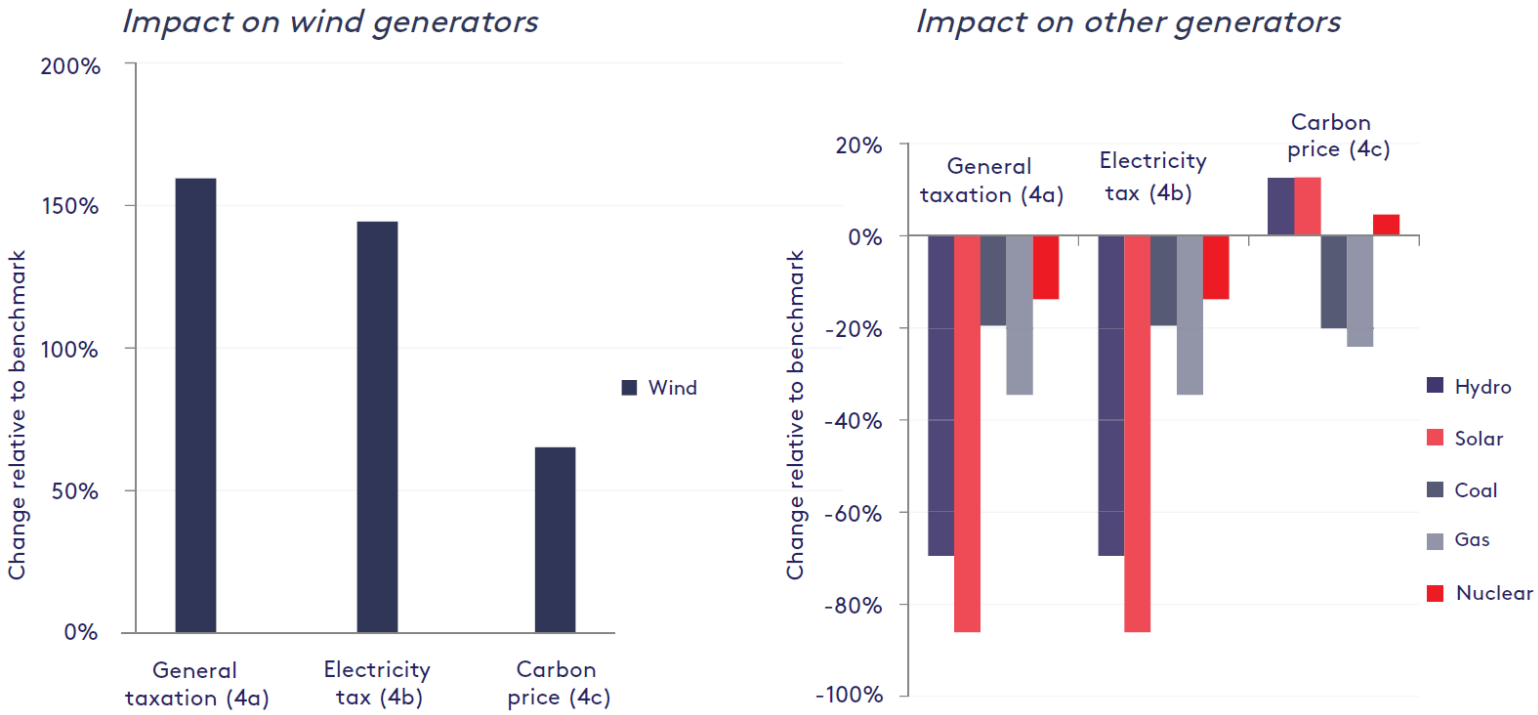
Model also applied to DK, FR, IT, PL, PT, ES and UK with **qualitatively similar results**

Key findings: Welfare cost, all policies

Welfare cost of selected policy packages reducing emission by 25%



Impact on firm value: subsidy



Key conclusions

- **Carbon pricing** (EU ETS) is the **most cost-effective policy** for reducing emissions. **It treats incumbent and new low-carbon generators neutrally.**
- Carbon pricing should be complemented by **policies that target additional market failures** (e.g. innovation, capital market imperfections) **+ flanking measures to compensate** those disproportionately affected.

- **Subsidies to mature technologies are costly** and have adverse impacts on the profitability of those who do not receive it.
- **Subsidies for new technologies should be financed by the proceeds from carbon pricing,** rather than through electricity taxes or general taxation.

The credibility of the European Union's efforts to decarbonise the power sector

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Approach

Scope: Assessing credibility of countries' efforts to decarbonise the power sector

Steps:

1. Define credibility: ***'the likelihood that policymakers will keep their promises to implement the pledges or policies they announce'*** *(from literature review)*
2. Identify **determinants** that increase credibility of decarbonisation efforts (based on theoretical and empirical studies)
3. Identify **simplified set of indicators and underlying data** for evaluation of the determinants
4. **Define scoring rules for each determinant:** 0-4 scale
5. **Apply the framework to EU + selected member states:**

   CZ, DK, FR, DE, IT, PL, ES, UK

Background: Averchenkova, A. and Bassi, S. 2016. *Beyond the targets: assessing the political credibility of pledges for the Paris Agreement*. Policy brief

The 7 determinants of credibility

1. Legislation and policy: Coherent and comprehensive legislative and policy basis

2. Public bodies: Dedicated public bodies supported by a consultative mechanisms

3. Past policy reversal: No history of policy abolition

4. Past performance: Track record of delivering on past climate change commitments

5. Decision-making process: Transparent, inclusive and effective decision-making process with sufficient political constraints to limit policy reversal

6. Private bodies: Supportive private bodies

7. Public opinion: Climate-aware public opinion

Indicators, data and scoring: example

1. Legislation and policy: Coherent and comprehensive legislative and policy basis

Determinant

High-level vision

- ❑ Framework legislation
- ❑ GHG targets
- ❑ RES-e targets

Low-carbon policies

- ❑ Carbon pricing
- ❑ Fossil fuel subsidies
- ❑ Low-carbon subsidies: size, variance
- ❑ WACC RES

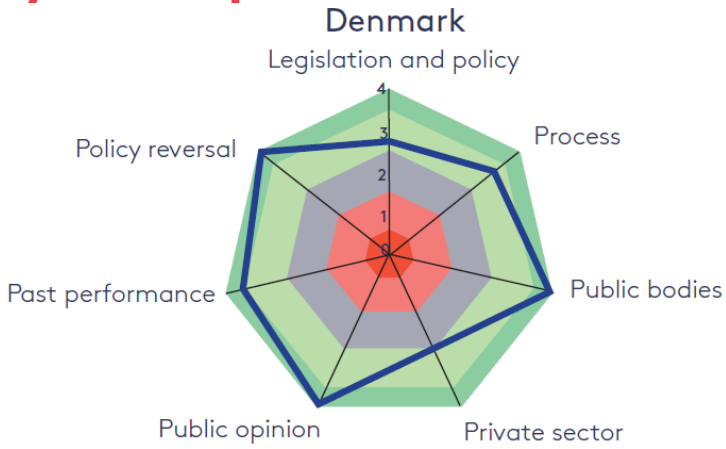
Indicators

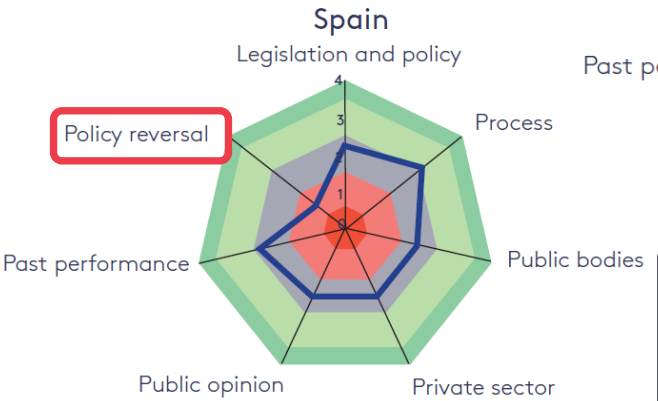
Data

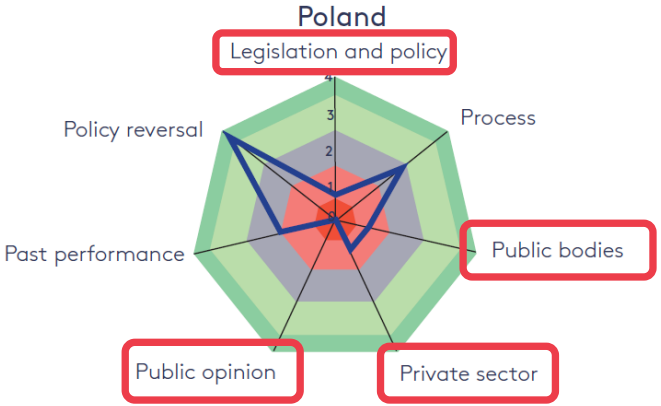
		RES-Electricity target			
		Short term (up to 2020)	Medium term (up to 2030)	Long term (up to 2050) low ambition (<80% RES) or informal	Long term (up to 2050) high ambition (>80% RES)
GHG target	Short term (up to 2020)	*Not supportive*	*Slightly supportive*	*Slightly supportive*	*Moderately supportive*
	Medium term (up to 2030)	*Slightly supportive*	*Moderately supportive*	*Moderately supportive*	*Largely supportive*
	Long term (up to 2050) low ambition (<80% decrease) or informal	*Slightly supportive*	*Moderately supportive*	*Moderately supportive*	*Fully supportive*
	Long term (up to 2050) high ambition (>80% decrease)	*Moderately supportive*	*Largely supportive*	*Fully supportive*	*Fully supportive*

Scoring matrix

Key findings: country examples







Top performers

DK, DE, UK

Medium performers

FR, IT ES

Bottom performers

PL, CZ

General policy recommendations

- **Clear policy and firm legislation** are key areas in which policy makers can make immediate gains in terms of credibility**.**
- Policy makers can further strengthen credibility by **improving joined-up thinking and scrutiny of decision-making bodies**.
- **Commitment devices** may be required to ensure policy consistency over time to avoid frequent reversals.
- **Dialogue and consultations, together with tailored policy design,** should be pursued to generate policy buy-in from the private sector and the general public.

The EU has an opportunity to scrutinise and advise on future policies when MS submit their '*Integrated national energy and climate plans*' in 2018

How to make carbon taxes more acceptable

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Approach

Scope: Identifying why voters do not like carbon taxes (outside EU ETS), and their preference to different tax designs and communication devices

Synthesis of findings from 39 empirical studies testing people's preference for carbon/Pigovian taxes, its associated designs and communication devices

Methods : qualitative (focus groups), quantitative (surveys, discrete choice experiments, lab experiments, quasi-natural experiments)

# of studies conducted in countries:

- 6 studies: Sweden, USA
- 5 studies: Norway, Switzerland, UK
- 2 studies: Denmark , Germany, Netherlands, Italy
- 1 study: Austria, Canada, Czech Republic, France, Ireland, Greece, Poland, Spain, Turkey

Key findings: Main concerns about carbon/Pigovian taxes

The **personal costs** of a tax would be too high.

Carbon taxes are regressive, having a disproportionate negative impact on **low-income households**.

Carbon taxes are not an **effective way to discourage high-carbon behaviour**.

Government's 'hidden' motive is to increase fiscal revenue rather than curb emissions (i.e. lack of trust in politicians).

Factors that affect preference for different tax designs

1. **Tax rate:** people do not like high tax rates

2. **How carbon tax revenues are used:** Due to lack of trust in politicians, people prefer clearly marking how revenues are used, with order of preferences being:
    1. Earmarking for emission reduction projects (improves perceived effectiveness of carbon tax)
    2. Redistribution to ameliorate regressive effects of taxes
    3. Revenue neutrality of carbon taxes

3. **People's aversion to carbon taxes decreases over time:** opportunity to assess costs and benefits of carbon taxes (particularly with measuring and communicating effects of tax)

Policy recommendations on options for introducing carbon taxes

Phasing in carbon taxes over time through trial periods, or introducing the tax at a low rate but having commitment devices to increase the rate to more efficient levels.

Earmarking carbon tax revenues to finance mitigation projects when this enhances acceptability.

Alternatively, and preferably, using the carbon tax revenues for **social redistribution and revenue neutrality**, whenever possible.

Using **information-sharing and communication devices** to improve trust and credibility, before and after the introduction of a carbon tax.

Final policy recommendations

- As the power sector is entering a new phase of mature renewables, **carbon pricing is the most cost-effective policy** to reduce emissions, and **is distributionally more equitable** for producers than its alternatives.

- **Credibility across the EU varies across its many dimensions,** some of which take time to influence. However, fast improvements are possible by: **strengthening the legislative framework; increasing joined-up thinking on climate and energy in public bodies; avoiding sudden policy reversals.**

- **Carbon taxes on other sectors tend to face public opposition but tailored design and communication can address people's concerns**, including through gradual phase-in and earmarking or redistribution mechanisms.

Thank you!