ECONOMIC RISKS AND OPPORTUNITIES OF DECARBONISATION
On the outcomes and trade-offs of decarbonisation policy instruments

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MACROECONOMIC IMPLICATIONS FOR DECARBONISATION POLICIES AND ACTIONS
A WORKSHOP OF THE NATIONAL ACADEMIES -SCIENCES, ENGINEERING, MEDICINE
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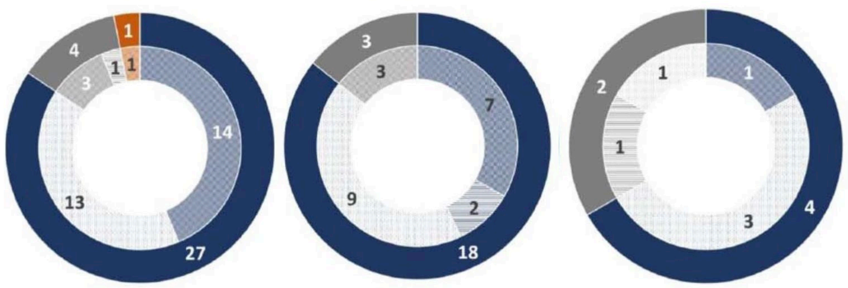
BANQUE DE FRANCE
EUROSYSTÈME

UNIVERSITY OF CAMBRIDGE
Department of Politics and International Studies

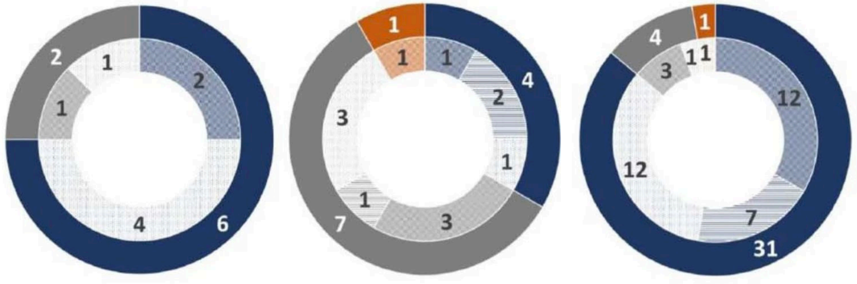
Q. HOW CAN CLIMATE POLICY DESIGN EITHER EXACERBATE OR MITIGATE RISKS AND HELP HARNESS POTENTIAL OPPORTUNITIES?

INNOPATHS

Environmental effectiveness



Technological effectiveness



- **Energy taxes** → Positive environmental effectiveness: 84% support reduction in emissions and/or energy consumption.
- **GHG ETS** → 86% of evaluations suggest positive environmental effect. Yet, difficult of separating the effect of the economic crisis
- **Feed-in tariffs (FITs)** → Small and inconclusive evidence

- **Energy taxes** → Positive technological effectiveness: 75% report positive effects but small sample and further research needed
- **GHG ETS** → Inconclusive results regarding ETS with a majority of no impact effects.
- **FITs** → Positive technology-related outcomes of FITs: 86% report positive results mostly focus on the European context

Positive impact | No impact | Negative impact
Quantitative methods | Qualitative methods | Theoretical/ex ante

*Peñasco, Anadon and Verdolini (2021). Nature Climate Change.

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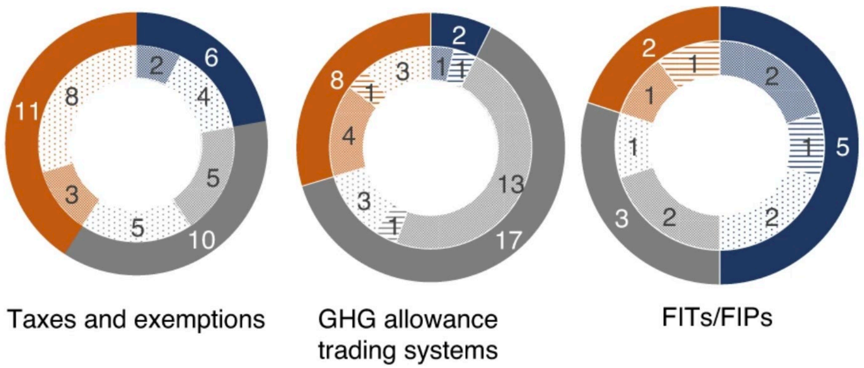
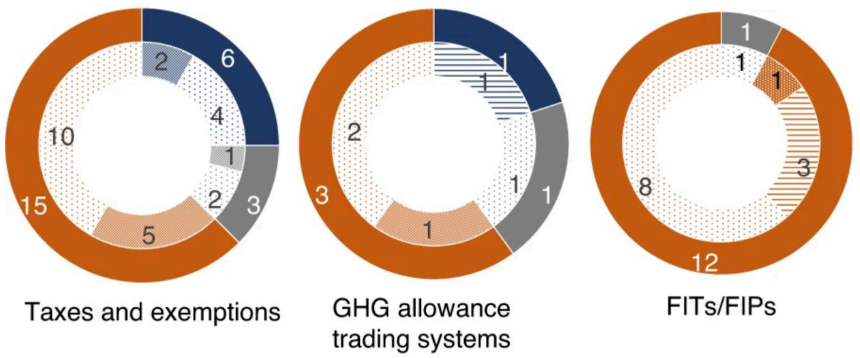
Competitiveness



Distributional impacts



- **Energy taxes →** mixed evidence on competitiveness, with negative impacts in 41% of evaluations**. Recycling mechanisms/ exemptions important** design factors contributing to different outcomes
- **GHG ETS →** mixed evidence on competitiveness, with negative impacts in 30% of the evaluations
- **FITS →** Inconclusive results on FITs but with a tendency to report positive impacts

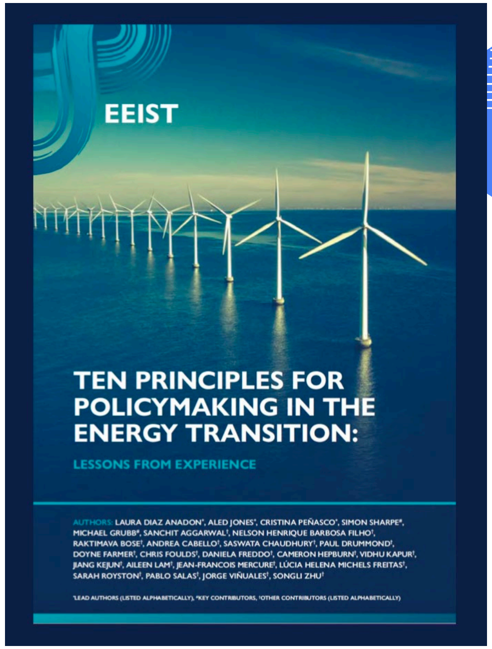
- **Energy taxes →** Negative distributional impacts (63% of evaluations) – varying results depending on the type of tax /household/ compensatory mechanism
- **GHG ETS →** small and inconclusive distributional impacts of GHG emissions allowance schemes
- **FITs →** strong regressive effects of FITs due to increases in energy prices for households

Positive impact | No impact | Negative impact
Quantitative methods | Qualitative methods | Theoretical/ex ante

*Peñasco, Anadon and Verdolini (2021). Nature Climate Change.

OVERCOMING TRADE-OFFS FOR A WIN-WIN TRANSITION

	Traditional principle	Principle for the transition
1	*Policy should be 'technology neutral'*	Technology choices need to be made
2	*Government interventions raise costs*	Invest and regulate to bring down costs
3	*Markets on their own optimally manage risks*	Actively manage risks to crowd-in investment
4	*Simply price carbon at a level that internalises the damages of climate change*	Target tipping points
5	*Consider policies individually based upon distinct 'market failures'*	Combine policies for better outcomes
6	*Policy should be optimal*	Policy should be adaptive
7	*Act as long as total benefits outweigh the costs*	Put distributional issues at the centre
8	*Link carbon markets to minimise current costs*	Coordinate internationally to grow clean technology markets
9	*Assess aggregate costs and benefits*	Assess opportunities and risks
10	*Policy models and assessment are neutral*	Know your biases



ECONOMICS OF ENERGY INNOVATION AND SYSTEM TRANSITION

*Anadon, LD., Jones, A., Penasco, C. (2022) et al. EEIST Report.

TAKE AWAYS

1. The representation of a broader set of policies in modelling tools is essential
2. Reconciling empirical insights with what is being modelled is key in understanding the ‘real’ risks and opportunities of climate policies.
3. Evidence seems to support the idea of potential negative economic effects of certain policies…
4. However, those can be corrected with the adequate design and combination of policies.
5. Policy success depends on the design elements more than the policy itself → there is no a one fits all approach

THANKS -

Questions and comments welcome!

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Decarbonization and Macro Risks

Johannes Stroebel
New York University

Heterogeneity of Transition Risks

<u>**Transition Risks**</u>

Decarbonization →

- Higher Energy Prices? Inflation?
- Stranded Assets For Traditional Energy Firms. Defaults?
- Reallocation (geographic/sectoral) of employment [winners & losers]

→ **Macro Risks**

Key: Different decarbonization policies will have very different effects

- Restrictions on drilling/pipelines →↑ Energy prices & inflation
- Subsidies for renewables → ↓ Energy prices & inflation

Heterogeneity of Transition Risks

Transition Risks

Decarbonization →

- Higher Energy Prices? Inflation?
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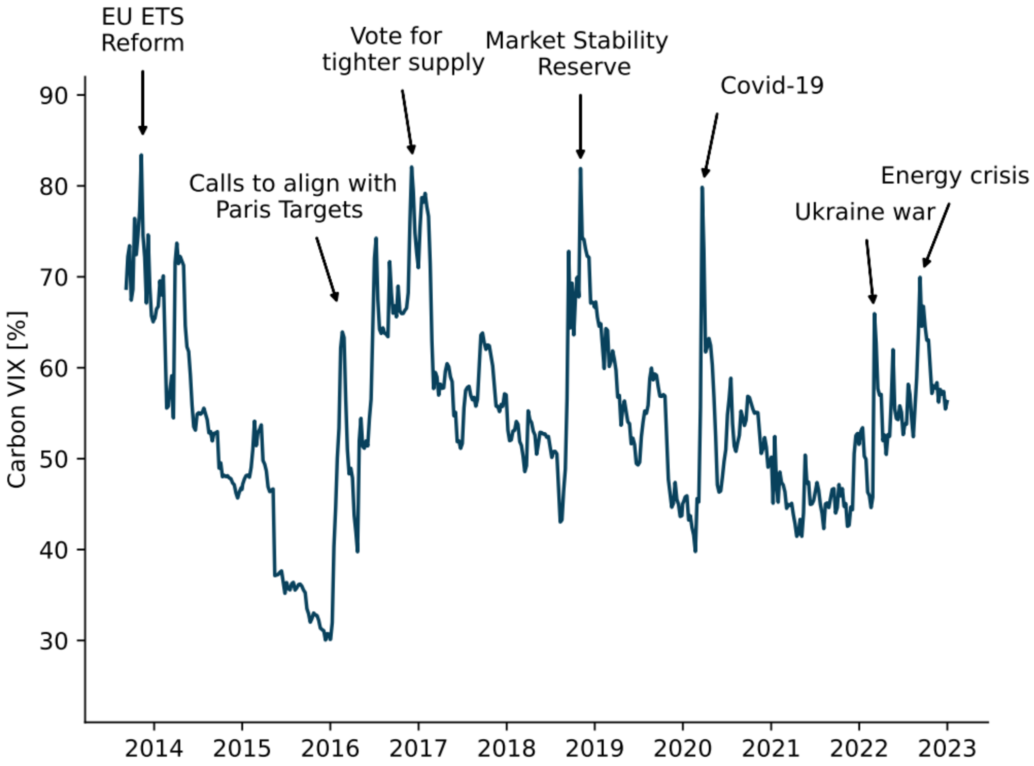
→ **Macro Risks**

Key: Different decarbonization policies will have very different effects

Risks depends on the exact design of decarbonization policies.

Policy Uncertainty Delays Decarbonization

- Substantial Risks from Decarbonization (Policy) **Uncertainty**



www.carbonvix.org

Fuchs, Stroebel and Terstegge (2024)

Higher carbon price uncertainty (affected by decarbonization policy uncertainty)

Substantial decline of decarbonization investments

Key Risks from policy uncertainty that are probably underappreciated

Other Thoughts

- Flipside of the financial risks from decarbonization are the avoided financial risks from less climate change.
  - Housing markets, insurance markets, etc.

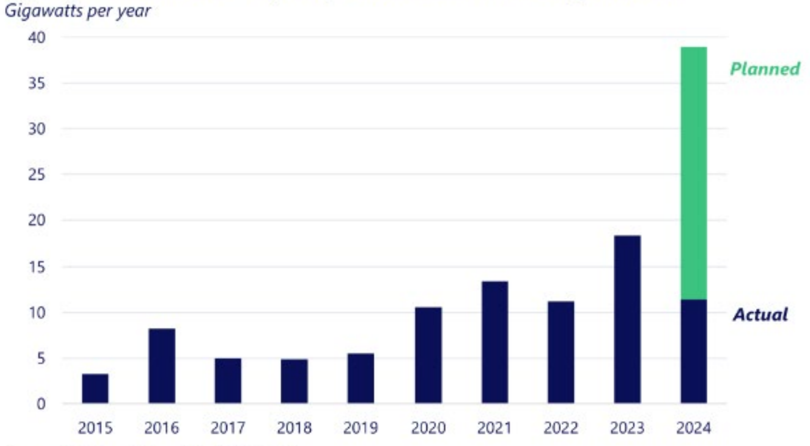
- But eternal challenge:
  - Country-by-country, the decarbonization risks are domestic, while benefits are global

    → Externality generally leads to underinvestment in decarbonization.
  - Design decarbonization policy to maximize opportunities to offset the costs [focus of other panelists' remarks]
  - Decarbonization strategies with very large negative macro effects (e.g., high energy prices) unlikely to be implemented (see lack of carbon tax)
    - Unsurprising that IRAlargely works with carrots instead of sticks

The Economics of Building a Clean Energy Economy

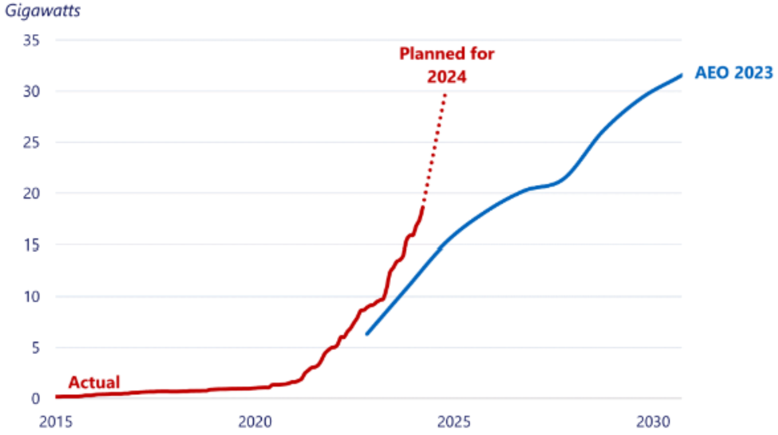
(Heather Boushey, CEA)

Figure 4. Annual Solar Capacity Additions are Breaking Records



Source: U.S. Energy Information Administration.

Figure 7. Grid-Scale Storage Continues to Advance Ahead of Projections



Source: U.S. Energy Information Administration.

- The Biden-Harris Administration has made it a clear priority to **respond to the risks and opportunities arising from climate change by building a clean energy economy**
- There's evidence of both **macro-economic consequences** and that the **macro-economy can affect policy success**, in the US and globally
- We need consistent and clear means of **quantifying the risks and opportunities within economic analysis that drives policy decisions**
- The USG has made great strides in addressing this critical gap, rooted in the President's 2021 **E.O. on Climate Related Financial Risk,** and there is much more work to be done
- Interweaving economic modeling with energy and climate forecasting requires an **interdisciplinary, iterative approach** that must overcome many challenges across the modeling communities, such as differences in **spatial resolution, temporal scale, archetypal metrics , and sectoral representation**