



POTSDAM INSTITUTE FOR
CLIMATE IMPACT RESEARCH

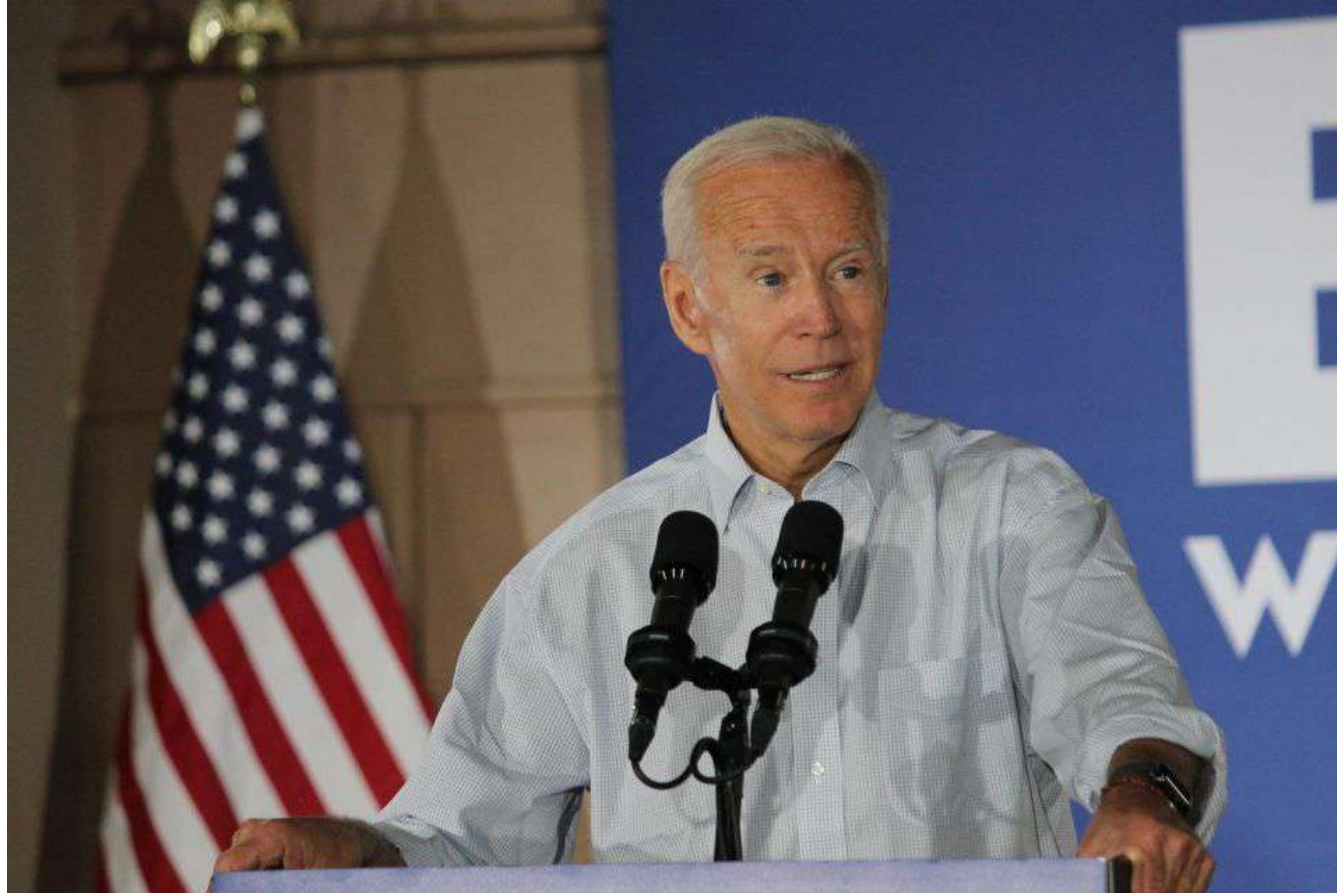
The Green Deal and the Future of Climate Policy

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A Pigovian Opportunity for the EU?

Prof. Dr. Ottmar Edenhofer
11 November 2020
Uni-Dialog LMU

The 46. President of the United States



Joe Biden

Concrete measures....

- Environmental Protection Agency (“make EPA great again!”)
 - Develop a more ambitious version of Obama’s Clean Power Plan for the electricity sector
 - Goal: Net-zero emissions electricity by 2035
 - Recalculation of the Social Costs of Carbon (SCC) by the EPA
- Department of Transportation
 - Development of rigorous new fuel economy standards aimed at ensuring 100% of new sales for light- and medium-duty vehicles will be electrified.

...also constitutionally possible:

- Put an end to Trump's oil and gas development bender on public land, reimposing protections and encouraging safe development of renewable energy.
- Restore the “waters of the United States”(WOTUS) rule to prevent water pollution.
- Restore and strengthen the rules on methane leakage from oil and gas operations that Trump rolled back.
- Ensure that Federal Reserve, and the financial system more broadly, take climate risk into account, channeling investment away from carbon-intensive projects.

→ He could even declare climate change a national security emergency

International climate policy measures:

- Rejoining the Paris Agreement.
- Rejoining WHO.
- Push forward international agreements around deforestation, plastics or other climate-related issues.
- Convene smaller “clubs” of willing nations to hasten the development of key clean energy technologies or develop policies to address environmental migration.
- Development of strategies for coping with migration caused by climate change.

Where congress can put the brakes on:

- Biden needs the approval of Congress for the introduction of a national climate protection plan and for the NDC.
- The achievement of emission neutrality by 2050 can only succeed if Congress supports this.
- Investments of the planned 2 trillion US\$ for the decarbonization of electricity, transport, industry etc.
- No Green Deal in the original design!

The new Ludwig Erhard of climate policy ?



Minister Peter Altmaier using Tesla's Supercharger in front of the MCC building in Berlin last Thursday



20 konkrete Vorschläge zur Stärkung von Klimaschutz und Wirtschaftskraft

Friday, 11th September 2020

#10. Reaching the climate targets will primarily be achieved through market-based measures. To this end, the European emissions trading system and the national CO₂ pricing system will be reformed.

State of the Union 2020 - The Green Deal



Ursula von der Leyen

Actions	Indicative Timetable ¹
Climate ambition	
Proposal on a European 'Climate Law' enshrining the 2050 climate neutrality objective	March 2020
Comprehensive plan to increase the EU 2030 climate target to at least 50% and towards 55% in a responsible way	Summer 2020
Proposals for revisions of relevant legislative measures to deliver on the increased climate ambition, following the review of Emissions Trading System Directive; Effort Sharing Regulation; Land use, land use change and forestry Regulation; Energy Efficiency Directive; Renewable Energy Directive; CO ₂ emissions performance standards for cars and vans	June 2021
Proposal for a revision of the Energy Taxation Directive	June 2021
Proposal for a carbon border adjustment mechanism for selected sectors	2021

*[T]he Commission will [...] review and propose to revise where necessary, all relevant climate-related policy instruments. This will comprise the **Emissions Trading System**, including a possible **extension of European emissions trading to new sectors**[...]*

International Climate Policy - COP 26?



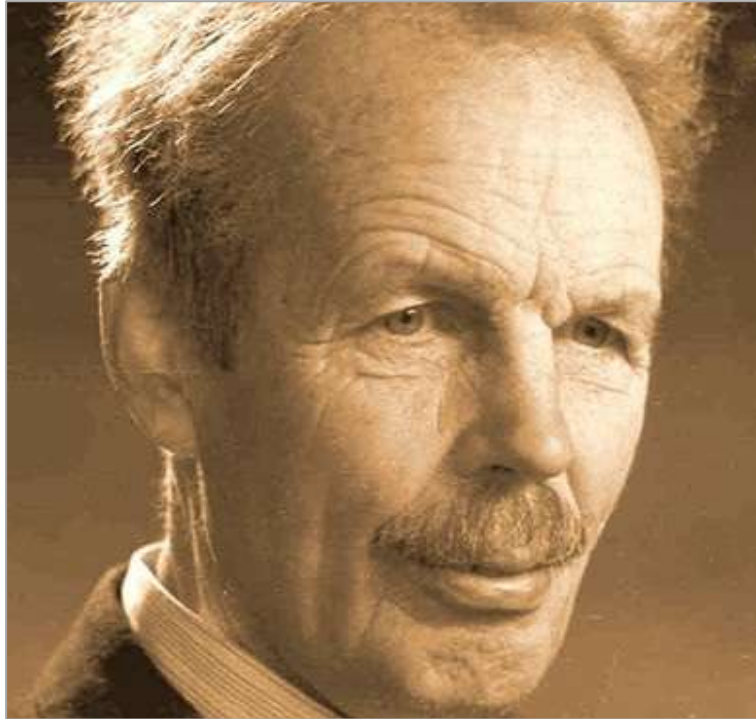
UN Secretary General
António Guterres



Secretary General UNFCCC
Patricia Espinosa Cantellano

Can Pigovian taxation rise to its historic opportunity?

„The Economics of Welfare“ (1920)



Arthur Cecil Pigou
(1877-1959)

- Recent developments (national, EU, and international) point to a historic opportunity for **carbon pricing** to become the **guiding principle** of future climate policy.
- In the past 100 years, the following **consensus** has emerged: Whilst Pigovian taxation is **highly desirable** from a theoretical perspective, its **political feasibility** is essentially zero.
- I shall argue that the **consensus** is somewhat (!) **spurious** in that implementing Pigovian taxes is not as outlandish an endeavor as the consensus suggests.

Examining the consensus: Winnowing the spurious from the sound

I will use the term Pigovian Taxation in the following sense: With **taxation**, I refer to **direct pricing** - in contrast to **indirect pricing** via **emissions trading**. A **price collar** is subsumed under **direct pricing**.

In what follows, I will defend two claims:

- (i) There are sound theoretical reasons for calling the political **feasibility** of Pigovian taxation into question.
- (ii) There is a „Pigovian Opportunity“ at three different levels: national, EU and international.

The sound part of the consensus: the difficulties of implementing Pigovian taxation

- **Uncertainties about marginal benefits**, e.g. the **social costs of carbon**.
- **Regressive distributional impacts** on poor households.
- **Fragmented responsibilities** of ministries lead to excessive focus on **sector-specific policies** and/or **technology policies**.
- **Commitment problems** might require **sector-specific** and/or **technology policies**.
- **Lack of acceptance/commodification objection**: e.g. carbon pricing and carbon markets are perceived as repugnant by some environmental groups.
- **Incomplete international cooperation**.

Pigovian taxation in the wild: A drama in three acts

- 1) National policies: The German Case
- 2) EU Climate Policy: Transformation of the energy and transport sectors
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A Pigovian opportunity for Germany?



20 konkrete Vorschläge zur Stärkung von Klimaschutz und Wirtschaftskraft

2. Zur Erreichung von Generationengerechtigkeit wird in der Charta das Ziel der **Klimaneutralität bis spätestens 2050 festgeschrieben**. Die Minderungsziele bis 2050 werden schon jetzt in **konkrete Minderungsziele für jedes einzelne Jahr** zwischen 2022 und 2050 aufgeteilt und festgelegt. Dabei werden die anstehenden Beschlüsse der Europäischen Union zu den Treibhausgaszielen 2030 berücksichtigt und umgesetzt.

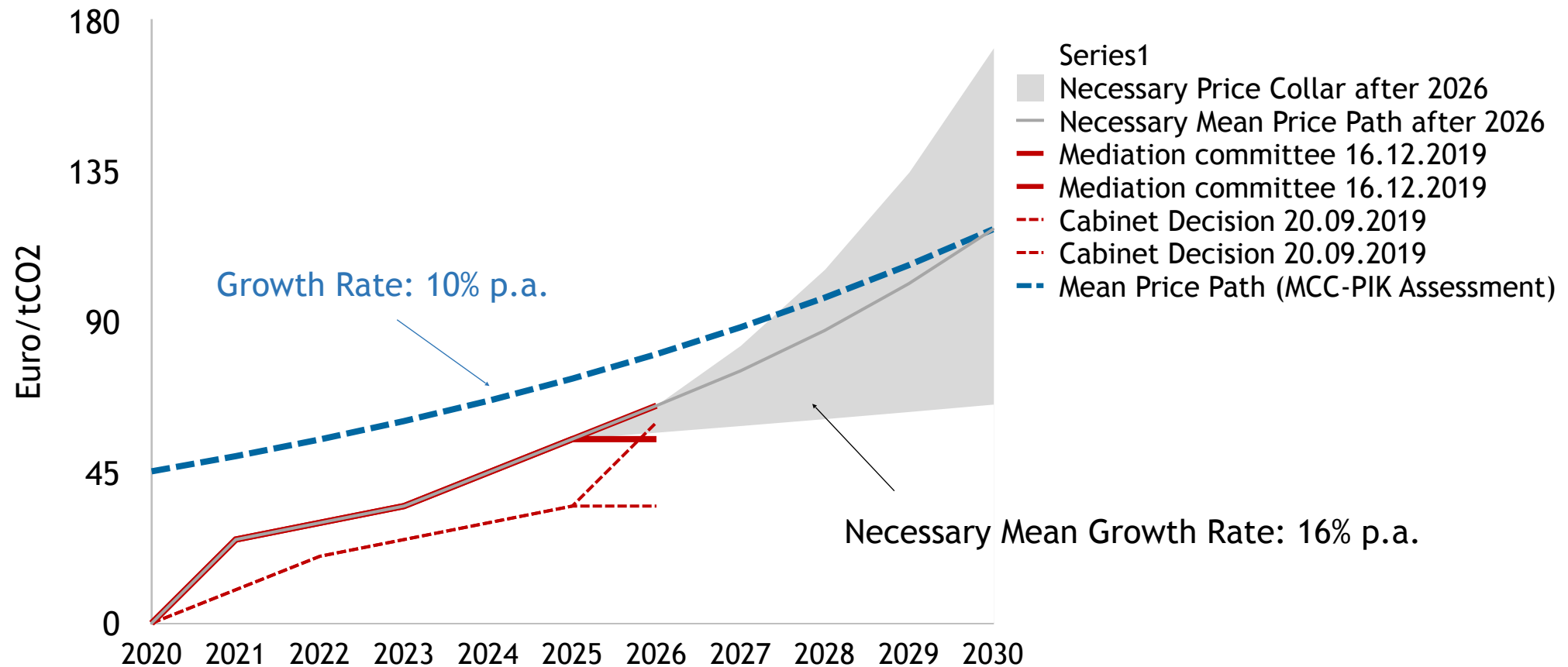
Friday, 11th September 2020

10. Das Erreichen der Klimaziele erfolgt **vorrangig durch marktwirtschaftliche Maßnahmen**. Hierzu werden der europäische **Emissionshandel** und die **nationale CO₂-Bepreisung** entsprechend reformiert.

*#10. Reaching the climate targets will **primarily** be achieved through **market-based measures**. To this end, the European emissions trading system and the national **CO₂ pricing system** will be reformed.*



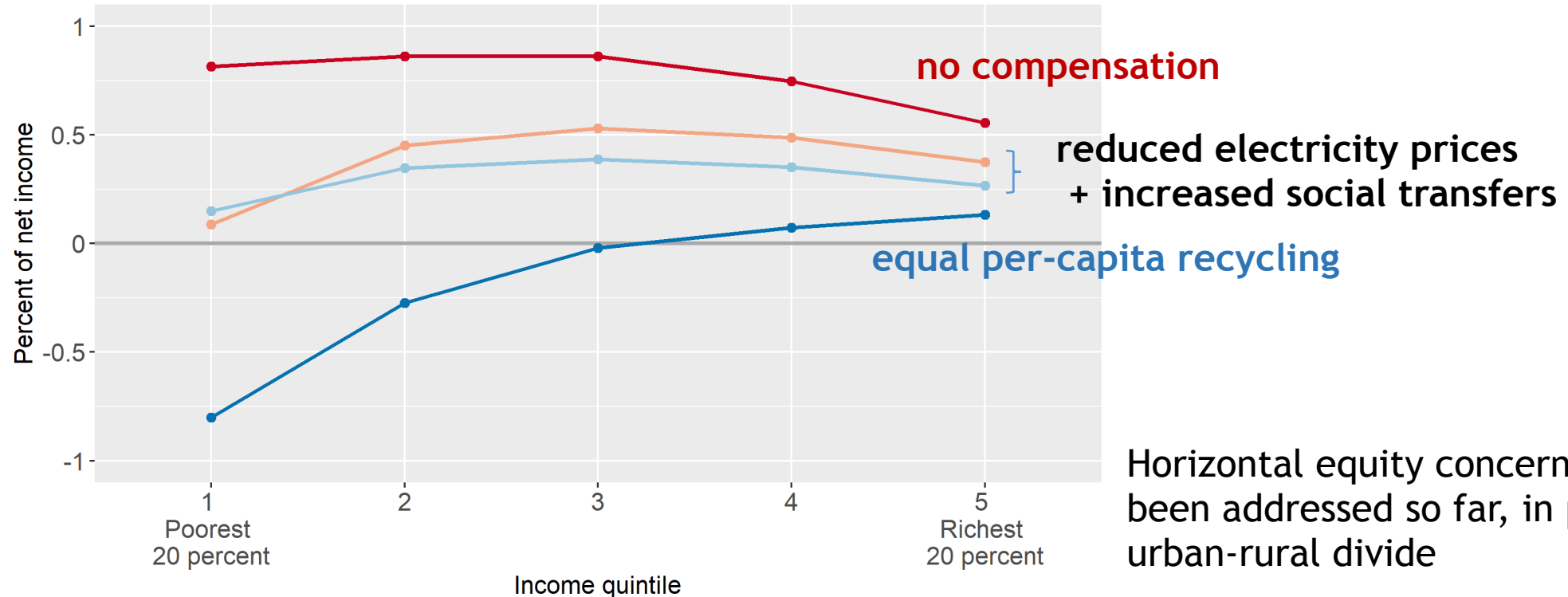
The German National Emissions Trading Scheme



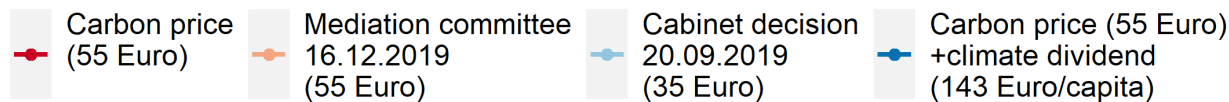
Adopted from: Edenhofer, Kalkuhl, Ockenfels (2020)

Distributional concerns are only partially addressed

Costs in 2025 (carbon price of 55 Euro)



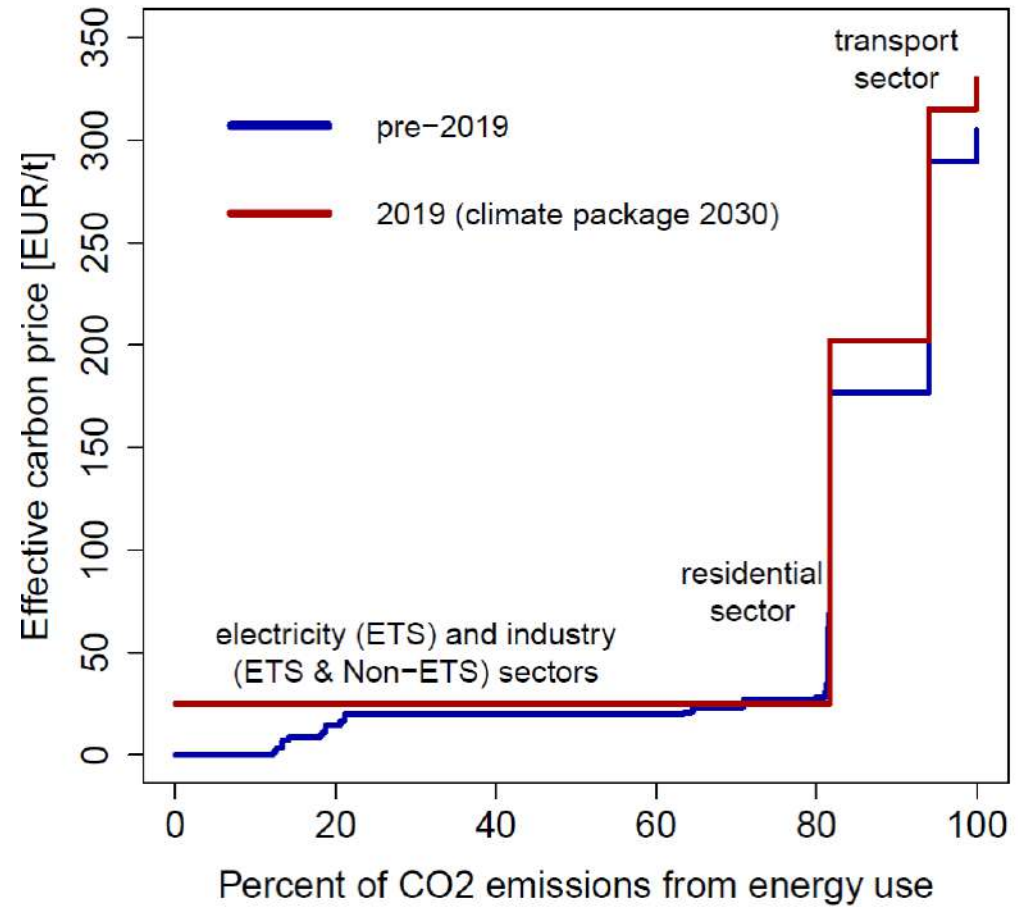
Horizontal equity concerns have not been addressed so far, in particular urban-rural divide



Household income (adult-equivalent weighted), based on EVS 2013

Adopted from: Edenhofer, Kalkuhl, Ockenfels (2020)

Inefficient sector-specific policies



Source: Edenhofer et al (2018), based on OECD data

“The world is second best, at best” (Dani Rodrick)

Problem	Steps towards a solution
Uncertainty about Social Costs of Carbon	Setting prices which are consistent with quantity targets
Distributional concerns	No per-capita recycling, but reduction of regressive energy taxes
Repugnant markets	Price floor mimicks direct pricing
Inefficient sector-specific policies	„Climate Cabinet“ - instead of fragmented responsibilities of ministries
Commitment device	The BEHG + EU Green Deal

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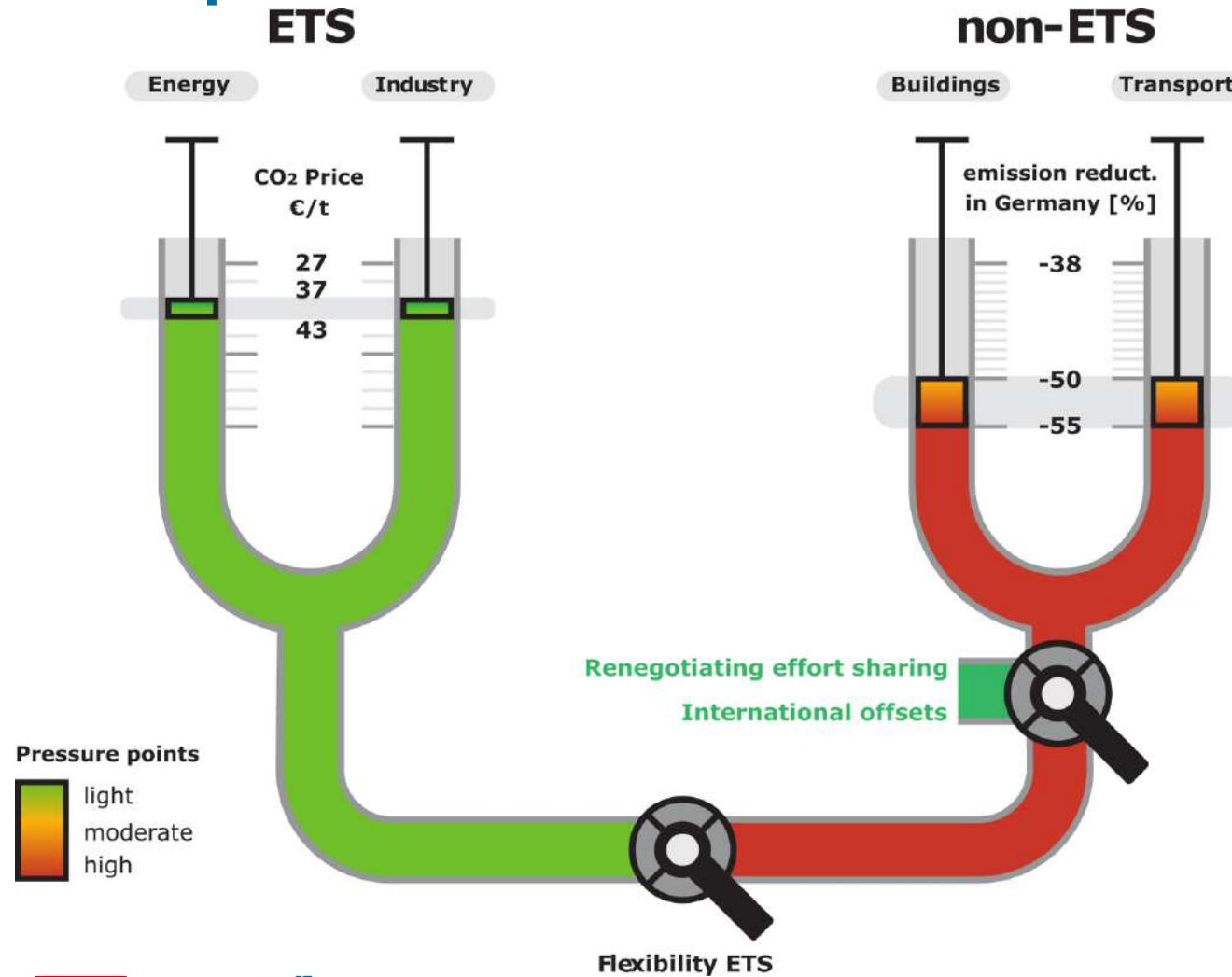
EU Green Deal: A regulatory tidal wave?

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- The **good news**: Everything is up for reform!
 - Proposals for revision of EU-ETS and ESR (Non-ET)
- The **bad news**: Everything is up for reform!
 - A period of substantial regulatory uncertainty lies ahead
 - Also includes energy and industrial policies, major interaction with climate policy

https://ec.europa.eu/info/sites/info/files/european-green-deal-communication-annex-roadmap_en.pdf

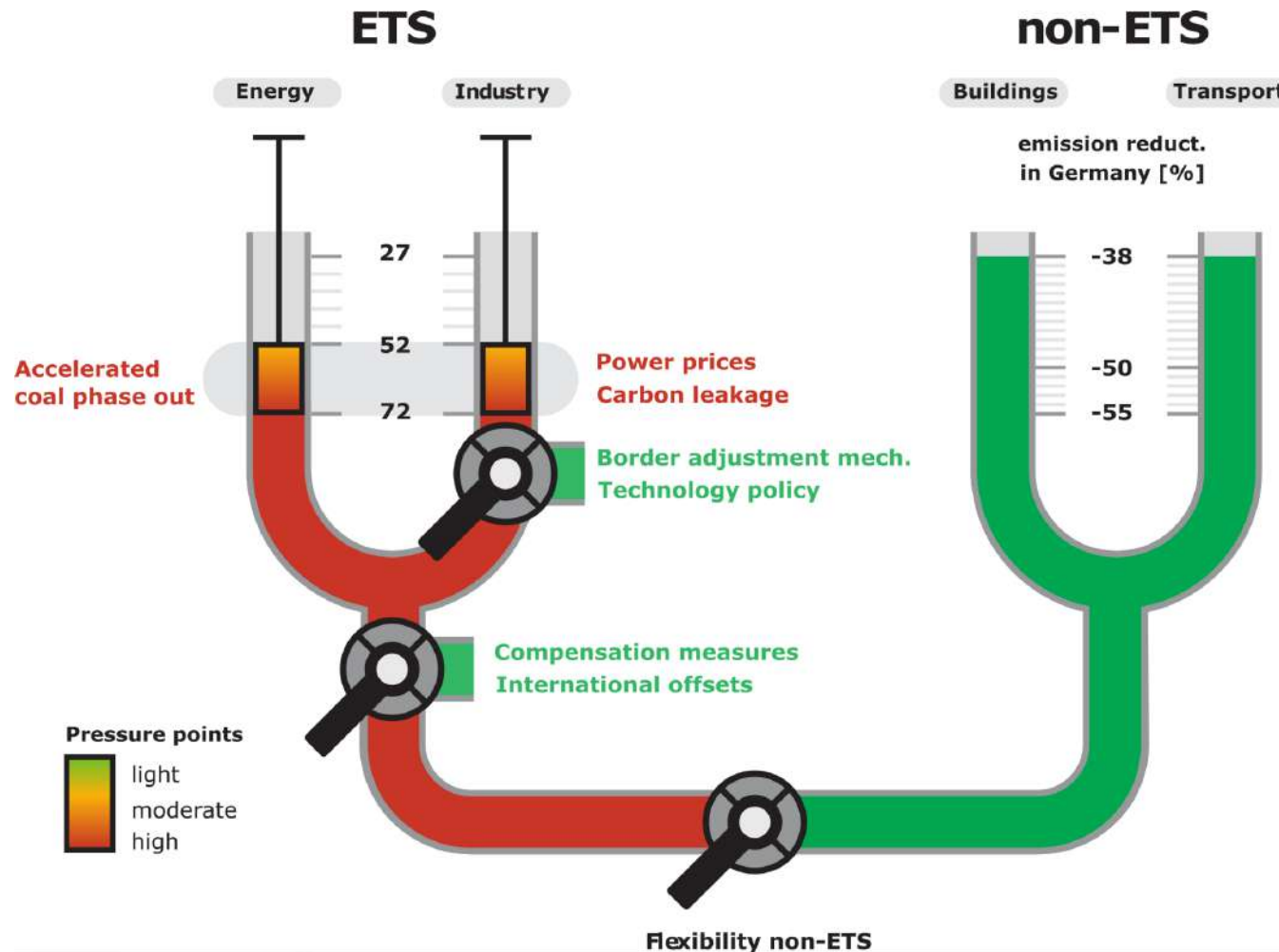
The European Green Deal - Muddling through



- EU Commission will tighten the emissions target to 50-55%.
- Then, Germany has to increase its emissions reduction target in the non-ETS sector from 38% to 50%, compared to the 2005 level.

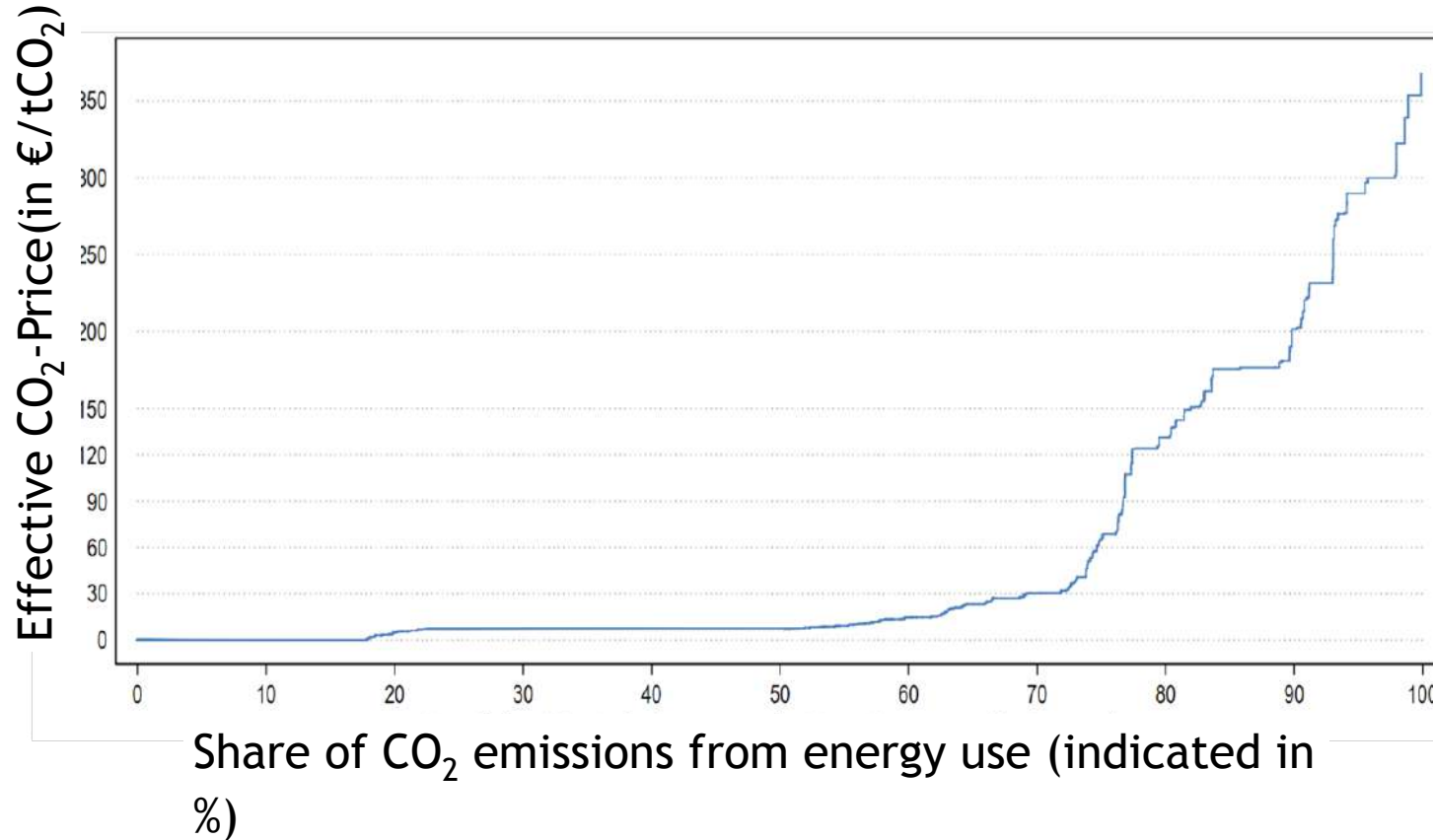
Source: Pahle et al 2020

The European Green Deal - A Pigovian Moment?



- EU Commission will tighten the emissions target to 50-55%.
- All additional emissions reductions necessary to tighten target in EU-ETS.

Enormous inefficiencies due to sector-specific policies



Data based on OECD (2018)

The changing face of European fiscal federalism

„The Union will over the coming years work towards reforming the own resources system and introduce new own resources.“

(Conclusions of the European Council, 21 July)



plastic tax
digital tax
FTT



**carbon border
adjustment mechanism**



**additional
ETS revenues**

→ The EU should use ETS revenues to generate own resources.

Fiscal federalism influences the political economy of climate policy instruments



EU perspective

EU now has a **vested interest in negotiations on climate instruments** (e.g. interest in an ETS carbon price floor)

The EU can use own resources for **increasing support from member states**



Perspective of MS (e.g. Germany) Example: EU ETS carbon price floor

Status quo

Receives full revenues from auctioning



Price floor increases revenues



Financial interest in a price floor/sectoral expansion

Possible future

Receive maximum amount from auctioning



Price floor and sectoral expansion does not increase revenues



No financial interest in a price floor/sectoral expansion

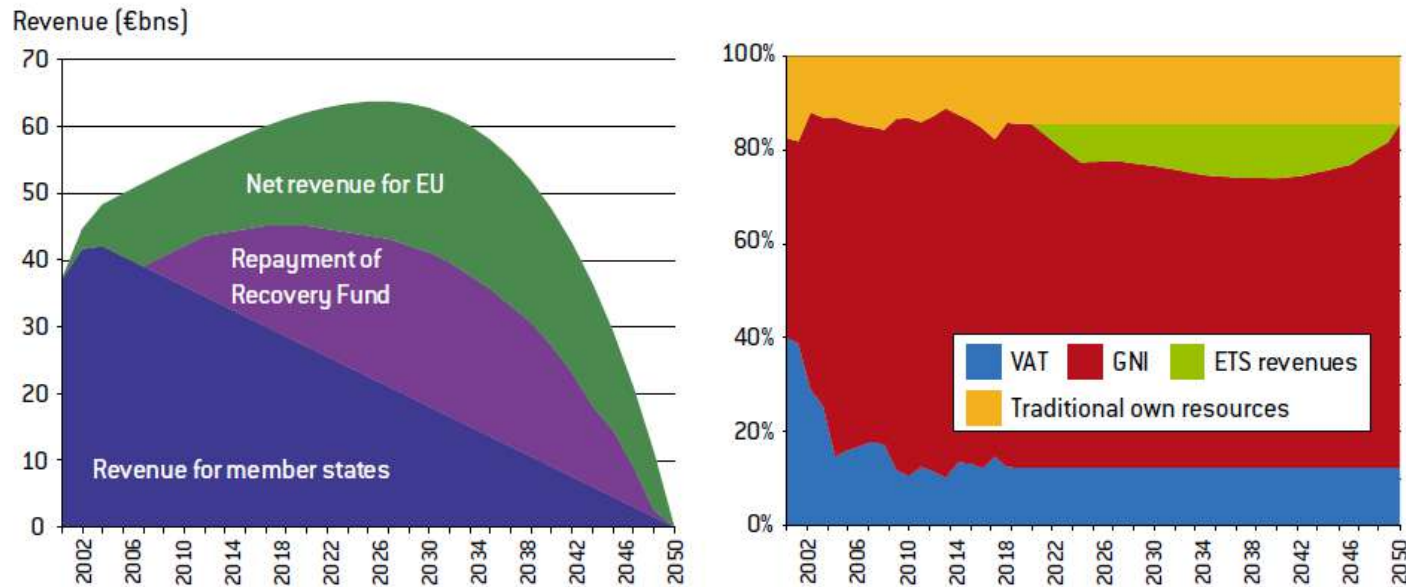
The EU's fiscal-federal structure and MS' fiscal preferences for the full integration of non-ETS sectors

	Description of options		Assessment based on MS' fiscal interests
	ETS sectors	non-ETS sectors	
1	one ETS across all sectors		EU could demand part of the revenues as own resources
2	ETS	harmonized taxes	
3	ETS	second European ETS / National ETS	Harder for the EU to justify demanding revenues → More interesting for MS
4	ETS	coordinated minimum prices	

→ Increased risk that national fiscal interests outweigh other evaluation criteria (efficiency and effectivity).

Auction revenues might be overestimated...

Figure 4: Possible allocation of ETS revenues and structure of EU resources (net of debt repayment) under scenario 5



Source: Bruegel.

Fuest, C., Pisani-Ferry, J. (2020), Financing the EU: New Context, New Responses. Bruegel, Policy Contribution, Issue n°6, September 2020, p. 17

- 80 % of allowances would be auctioned off
- Half of the transport and agriculture sectors would be covered
- „Decarbonization“ price scenario

... because Negative Emission Technologies (NETs) will reduce the carbon price and require (after 2050) additional funds

- **NETs** are required for **carbon neutrality**. After 2050, net negative emissions are necessary to limit global mean temperature to well below 2°C.
- Net zero emissions by 2050 **need investments** in NETs, even **before 2050**.
- **NETs** will **lower price** in the EU-ETS depending on their marginal abatement costs.
- **After 2050, only NETs can enter the market**; suppliers of NETs have to be paid according to their marginal abatement costs, eg. via **auctions**.
- **After 2050, the Pigovian tax** has to become a **Pigovian subsidy**. This subsidy requires another source of revenues.

Beware: Turning a forward-looking reform agenda into a status-quo-preserving mess

- Instead of uniform prices, unleashing a regulatory tidal wave, e.g. excessive focus on technology standards.
- Conflict over revenue generation between EC and MS prevents the implementation of consistent and fully integrated ETS.
- Under-investment in NETs because auction revenues are overestimated.

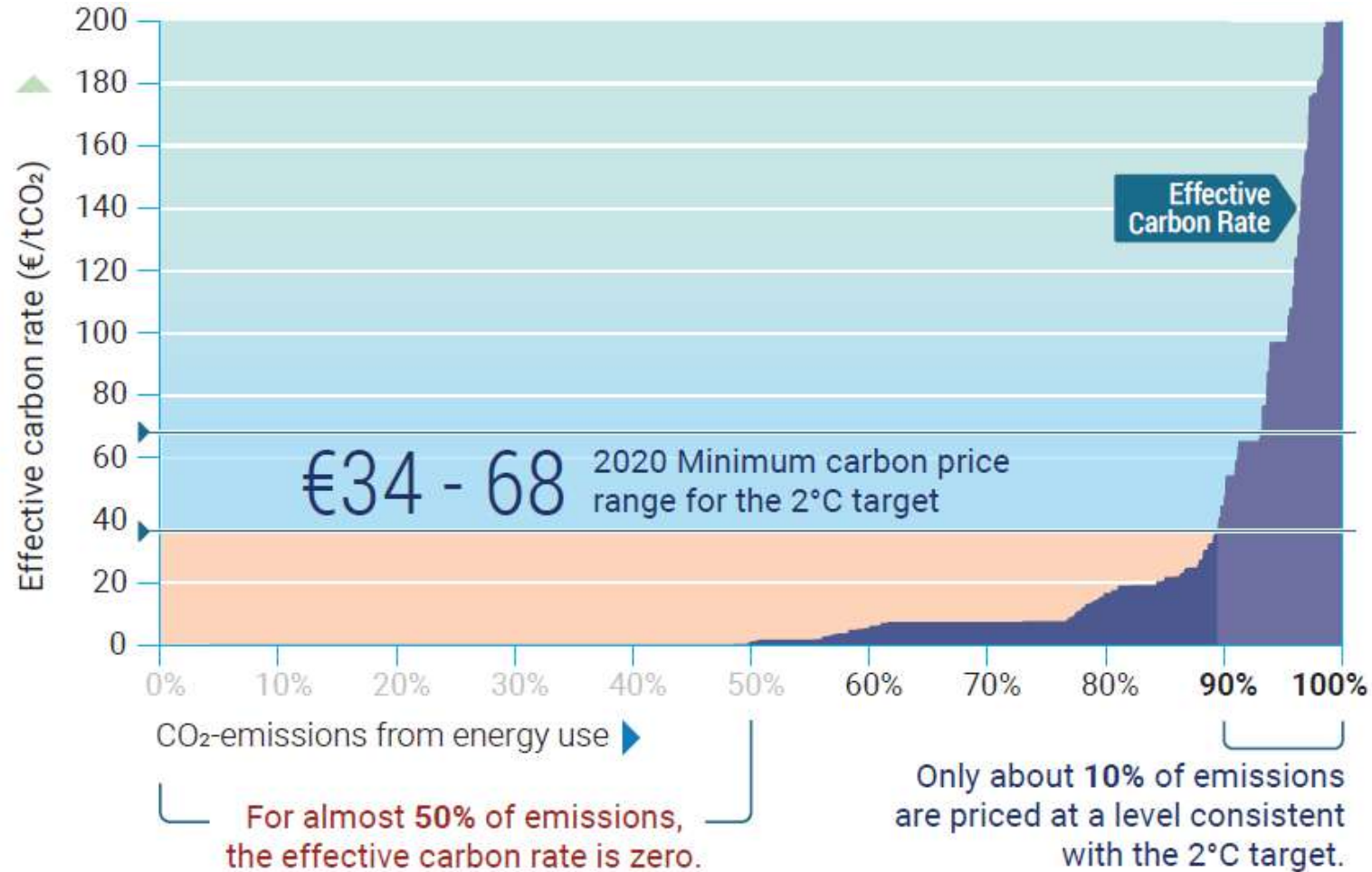
The EU is the archetypal second-best institution

Problem	Steps towards a solution
Uncertainty about carbon prices	Price floor, Market Stability Reserve
Distributional concerns	Coordinated national tax reform
Repugnant markets	Price floor mimicks direct pricing
Inefficient sector-specific policies	Incremental integration of EU ETS and Non-ETS. NETs remain an unresolved problem
Commitment device	Independent European Carbon Bank
Cooperation	Explicit and implicit transfers

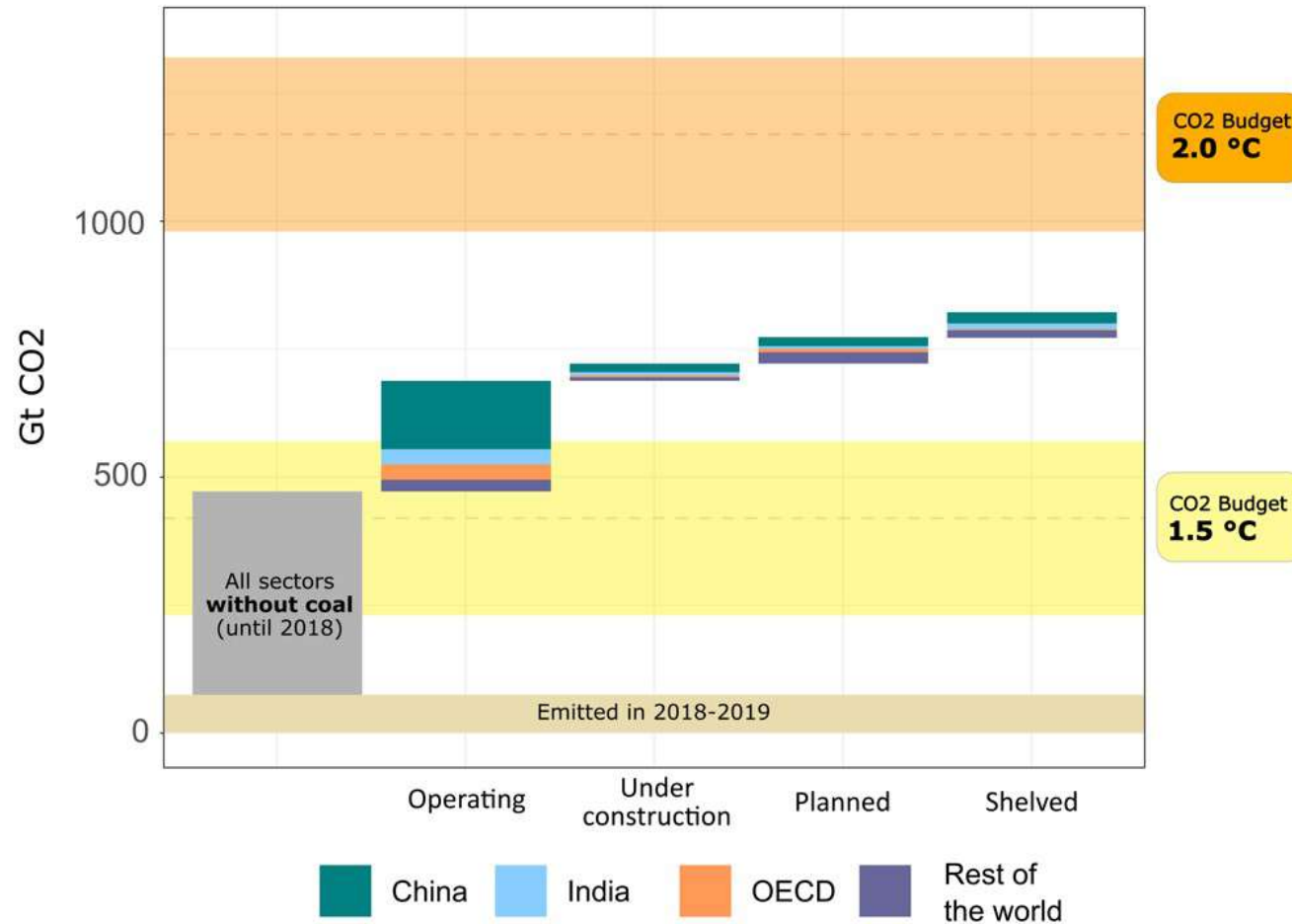
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Carbon Pricing on a global scale

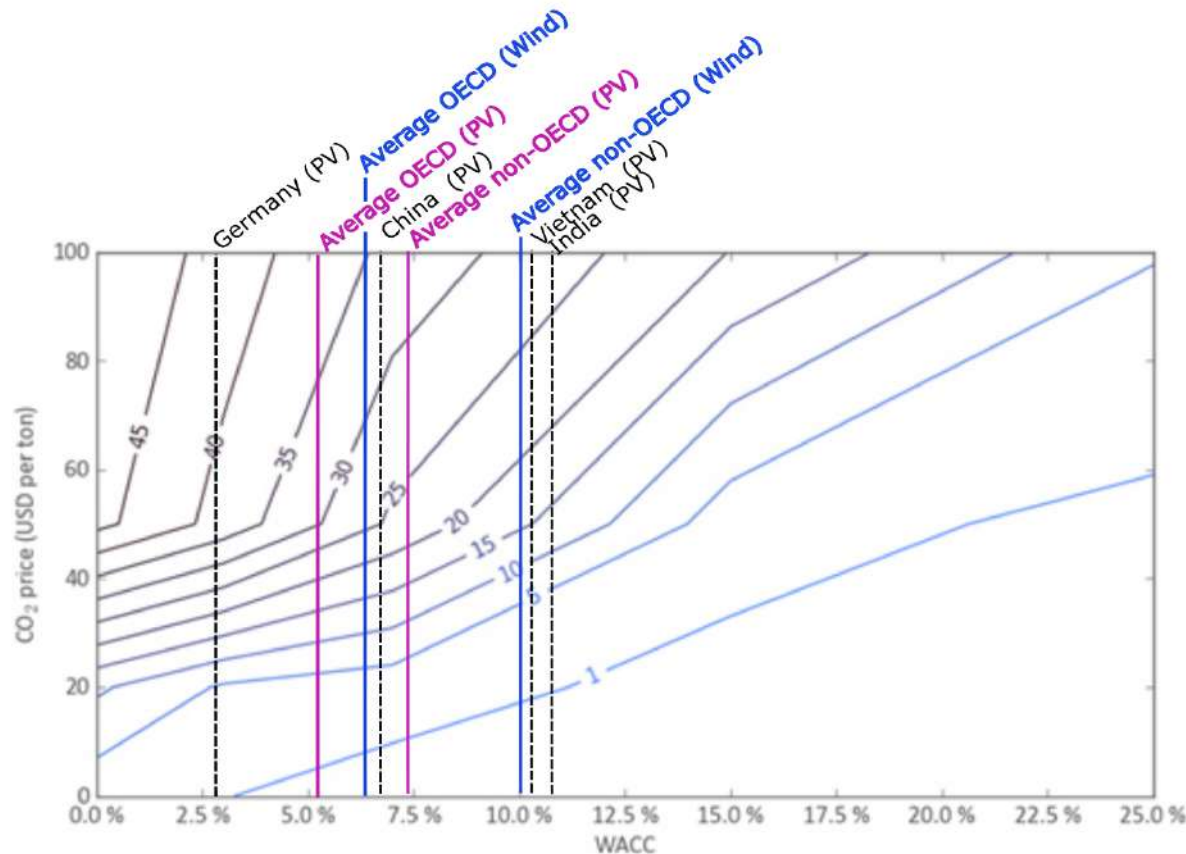


Coal-fired plants - large fiscal multiplier?



Steckel et al (2020)

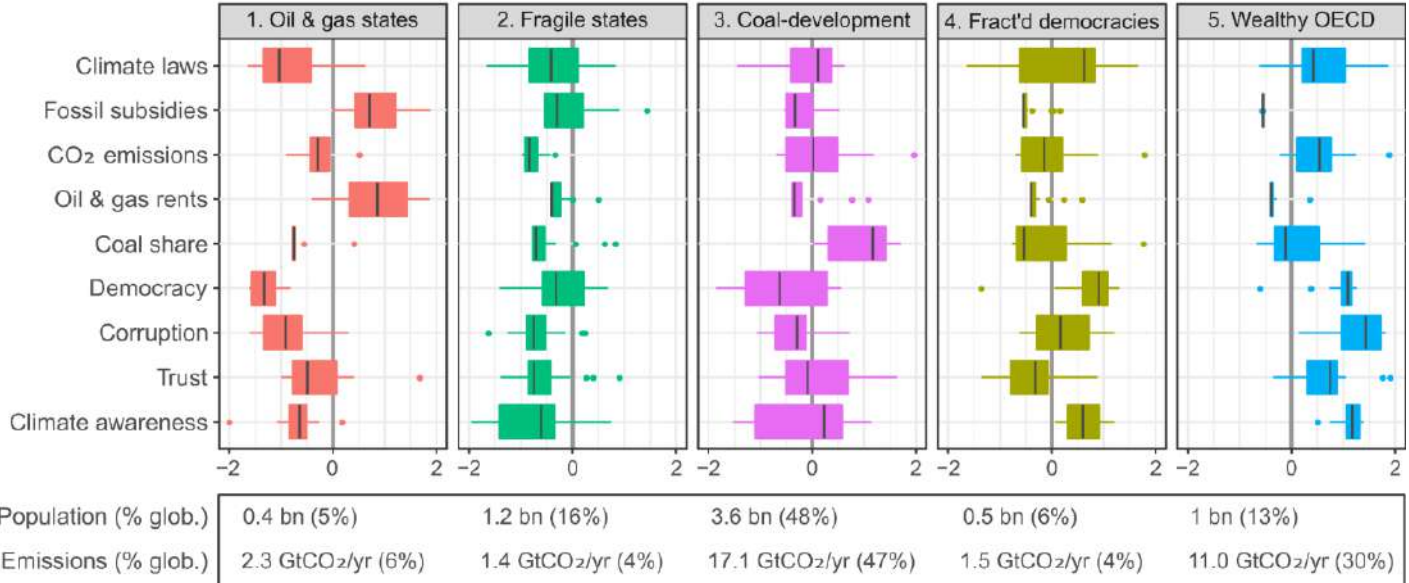
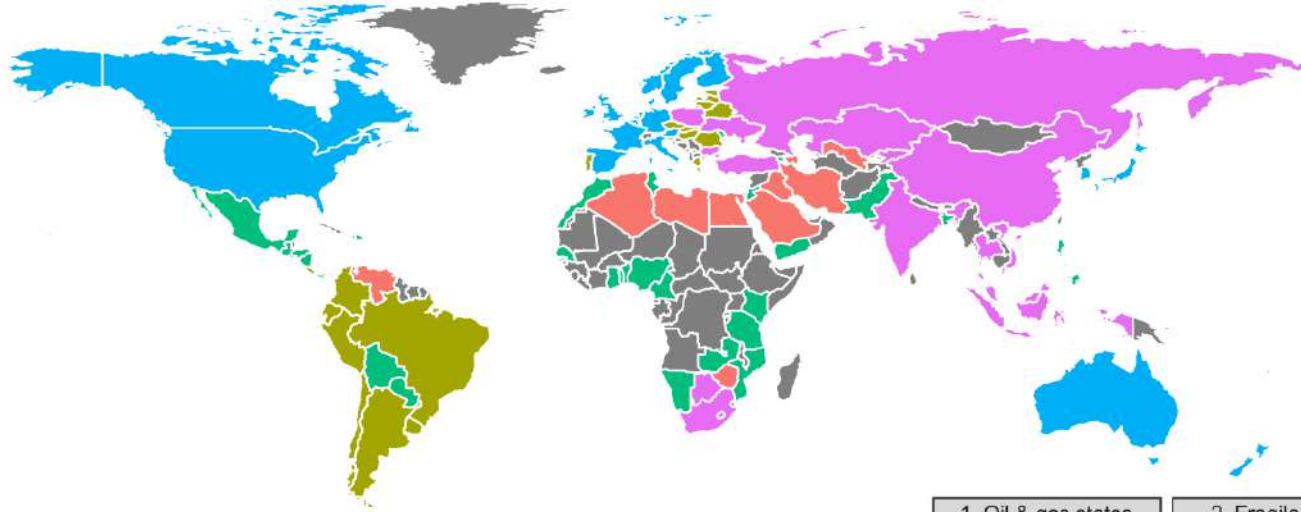
The problem of the cost of capital



Note: Underlying model calculation (Hirth and Steckel 2016) is calibrated for a typical emerging market.

- Contour lines show the expected **share of renewable energies**, given a certain CO₂-price and certain capital costs (WACC).
- Vertical lines show the **average capital costs** for investments in renewables in selected countries and regions.
- Capital costs affect the effectiveness of a CO₂-price!

The international coal problem at a glance



Paradigm shift in international climate policy is necessary and possible

14.8.2020

Green Deal: Günstiges Geld für grüne Investitionen

Handelsblatt

GREEN DEAL

Merkel-Berater Edenhofer empfiehlt verbilligte Kredite für grüne Investitionen

von: Klaus Stratmann
Datum: 14.08.2020 19:18 Uhr

Auf dem Weg zur Klimaneutralität sollen Unternehmen verbilligte Kredite erhalten, schlagen Ökonomen vor. Das Geld dafür soll über einen Fonds bereitgestellt werden.



European Economic Review
Available online 20 March 2020, 103423
In Press, Corrected Proof



The strategic dimension of financing global public goods

Ulrike Kornek ^a, Ottmar Edenhofer ^{a, b, c}

<https://doi.org/10.1016/j.eurocorev.2020.103423>

A Pigovian Opportunity for Europe?

- There is a Pigovian opportunity within the EU because of its ambitious targets and regulatory efforts.
- Crucial to avoid turning a forward-looking reform agenda into a status-quo-preserving (regulatory) mess.
- A (comprehensive) Pigovian price reform at all levels - albeit institutionally demanding - is a worthwhile endeavor.
- A dialogue between policy-makers and experts is needed. Policy-makers mustn't shy away from a thorough examination of the theoretical underpinnings of policy instruments; whereas experts must pay careful attention to the limits of political feasibility.