



The Road after Paris: the Role of Technology Policies in Supporting Future Commitments

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Resources for the Future and *FEEM*

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Paris is not the end of the road

- We will see an agreement

CAIT Climate Data Explorer



▸ Pre-2020 Pledges Map

Dashboard Map Detailed View **View Paris Contributions Map**



Search for a country... ▾

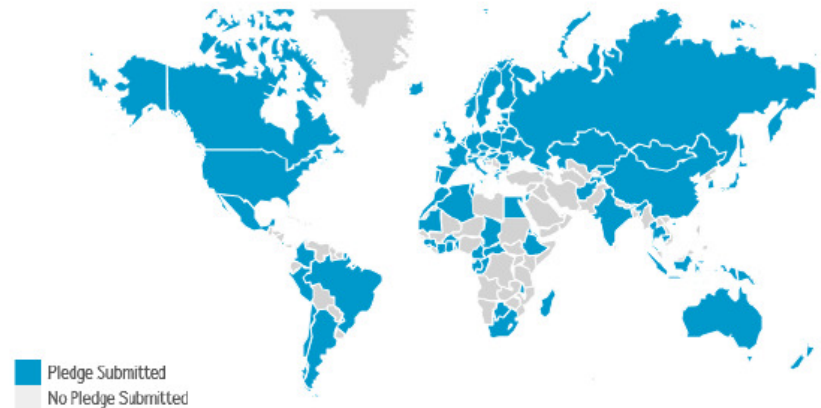
Pledges Submitted: **73**

Global emissions covered by countries that submitted a pledge ⓘ

81.3%

Pledges Submitted ▾

Expand Map



Paris is not the end of the road

- We will see an agreement
- Countries will contribute what their domestic political systems allow

Climate deal must avoid US Congress approval, French minister says

Goal of UN talks in Bonn is to shorten the sprawling climate change plan as countries push for a legally binding deal



The French foreign minister, Laurent Fabius: 'We know the politics in the US. Whether we like it or not, if it comes to the Congress, they will refuse.' Photograph: Martin Meissner/AP; Monday 1 June 2015

Paris is not the end of the road

- We will see an agreement
- Countries will contribute what their domestic political systems allow
- It won't be enough



WEO 2015 Special Report on
Energy and Climate Change

... TO BE RELEASED 15 JUNE 2015

Paris is not the end of the road

- We will see an agreement
- Countries will contribute what their domestic political systems allow
- It won't be enough
- Framework will be established to review commitments and monitor actions



What then?

- Continual pressure to upgrade commitments incrementally
 - Within UNFCCC process
- Subglobal agreement among a smaller group of countries
 - In addition to UNFCCC process



On Global Carbon Pricing, Expert Views Converge

Perhaps in response to the combined Kyoto-Copenhagen failure, there has been a convergence of views on a different approach to negotiations. Both Stiglitz and Nordhaus have shifted from advocating a global carbon tax to advocating a global price on carbon. More recently, Weitzman has published a theoretical paper arguing that a global-price approach is necessary to prevent free-riding and explaining why the individual pledges of the Kyoto-Copenhagen-Paris approach fail to address this central problem.

Their point is: **We've been playing the wrong game, so failure was inevitable.**

This page summarizes (in their own words) the views of four leading policy experts regarding the four key aspects of global carbon pricing on which they agree:

1. Global warming is a problem of the global commons.
2. To solve it, implement a global carbon price.
3. National flexibility: allow emissions trading, carbon taxes or both.
4. Make Green fund payments for participation by poor countries.

Price Carbon Project

General FAQs

- [Why is this so Important?](#)
- [How does a price commitment work?](#)
- [How will carbon revenue be spent?](#)
- [Did Kyoto prove top-down won't work?](#)
- [What about carbon capture?](#)

Price FAQs:

- [Can a price be as strong as a cap?](#)
- [How can a price hit a 2° target?](#)
- [Don't we need more than a price?](#)
- [Why does a price foster cooperation?](#)

Flexibility FAQs

- [What's wrong with capping India?](#)
- [What's wrong with capping China?](#)

Free-rider problem

- Climate change has global costs
- Individual countries bear only a small part of the global damages
 - Hence are not willing to contribute enough
 - Happy to sit back and enjoy the contributions of others
- Getting agreement requires sanctions
 - Both against non-compliers and non-participants

Do countries really want to free ride?

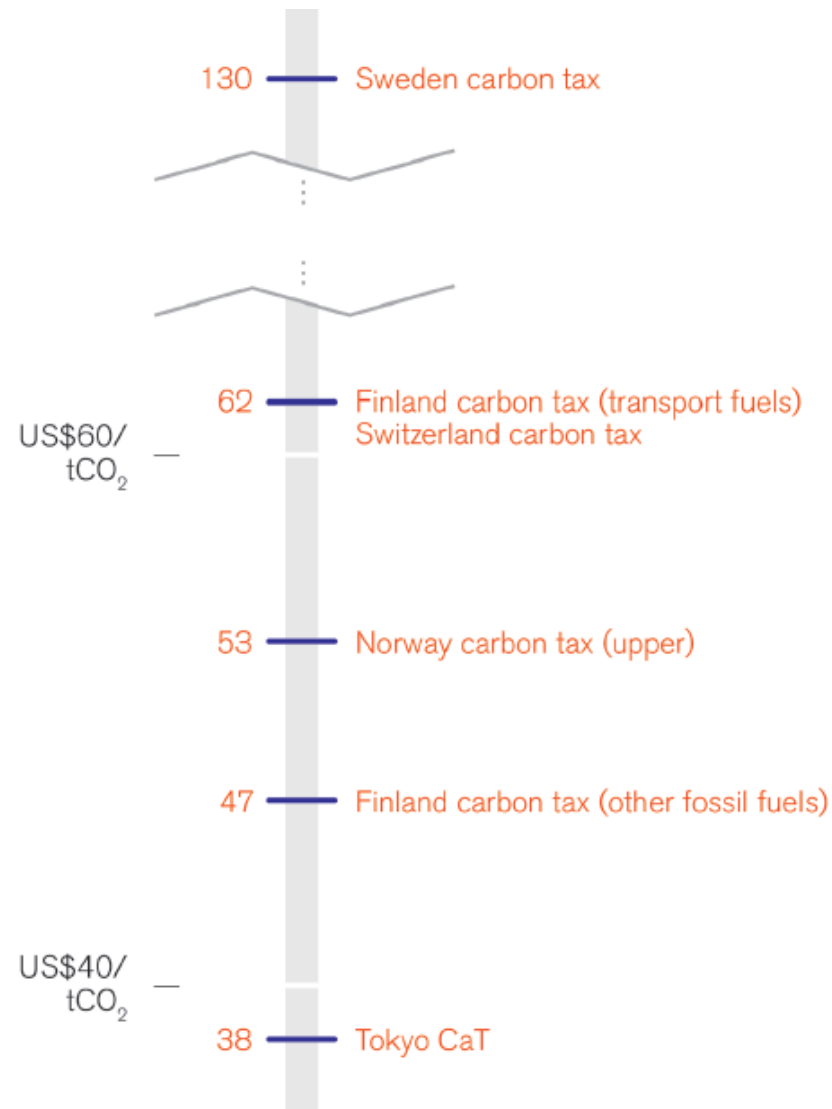
- U.S. EPA uses a global SCC

Year	Discount Rate and Statistic			
	5% Average	3% Average	2.5% Average	3% 95 th percentile
2015	\$12	\$39	\$61	\$116
2020	\$13	\$46	\$68	\$137
2025	\$15	\$50	\$74	\$153
2030	\$17	\$55	\$80	\$170
2035	\$20	\$60	\$85	\$187
2040	\$22	\$65	\$92	\$204
2045	\$26	\$70	\$98	\$220
2050	\$28	\$76	\$104	\$235

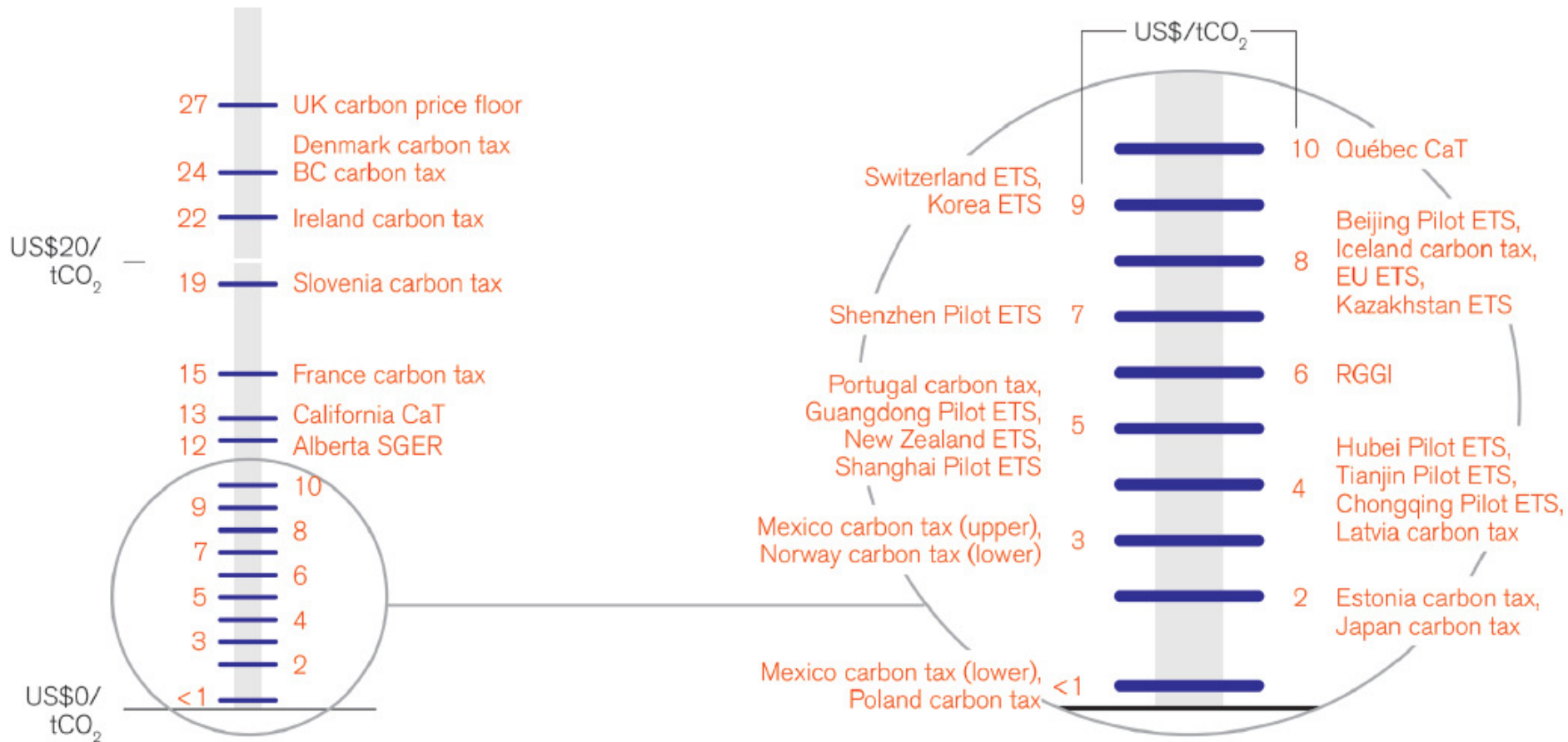
Do countries really want to free ride?

- U.S. EPA uses a global SCC
- similar concepts used in regulatory decision making in Canada, France, Germany, Mexico, Norway, and the United Kingdom
- Yet we observe much lower carbon prices, particularly for traded sectors

A few countries have high carbon prices



... but most are below estimates of the SCC



Carbon leakage problem

- Increase in foreign emissions as a consequence of domestic regulations
- Important because GHGs are a *global* pollutant



Main channels

1. Global energy markets

- Reduced demand drives down global fuel prices encouraging more fuel use and emissions abroad (Burniaux and Martins, 2011)
- Hard to address without withdrawing fossil fuel supplies (Harstad 2012)

2. “Competitiveness”

- shifting of economic activity and production (Fischer and Fox 2012) and investment (Zhou et al, 2009)
- Politically most important

Options for coping with leakage

- Global carbon pricing
 - Addresses all channels

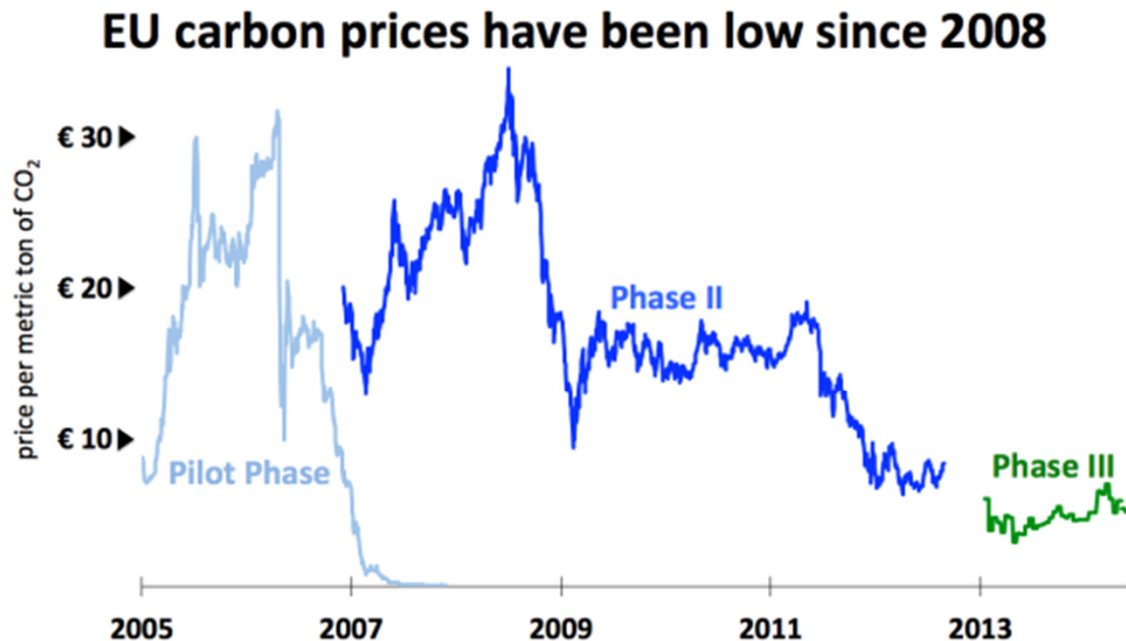


United Nations
Framework Convention on
Climate Change



Options for coping with leakage

- Global carbon pricing
- Weakening policies / exempting sectors
 - Misses lower-cost opportunities for reductions



Options for coping with leakage

- Global carbon pricing
- Weakening policies / exempting sectors
- Free allocation / benchmarking
 - Mutes carbon price signals for consumers of energy-intensive products



Options for coping with leakage

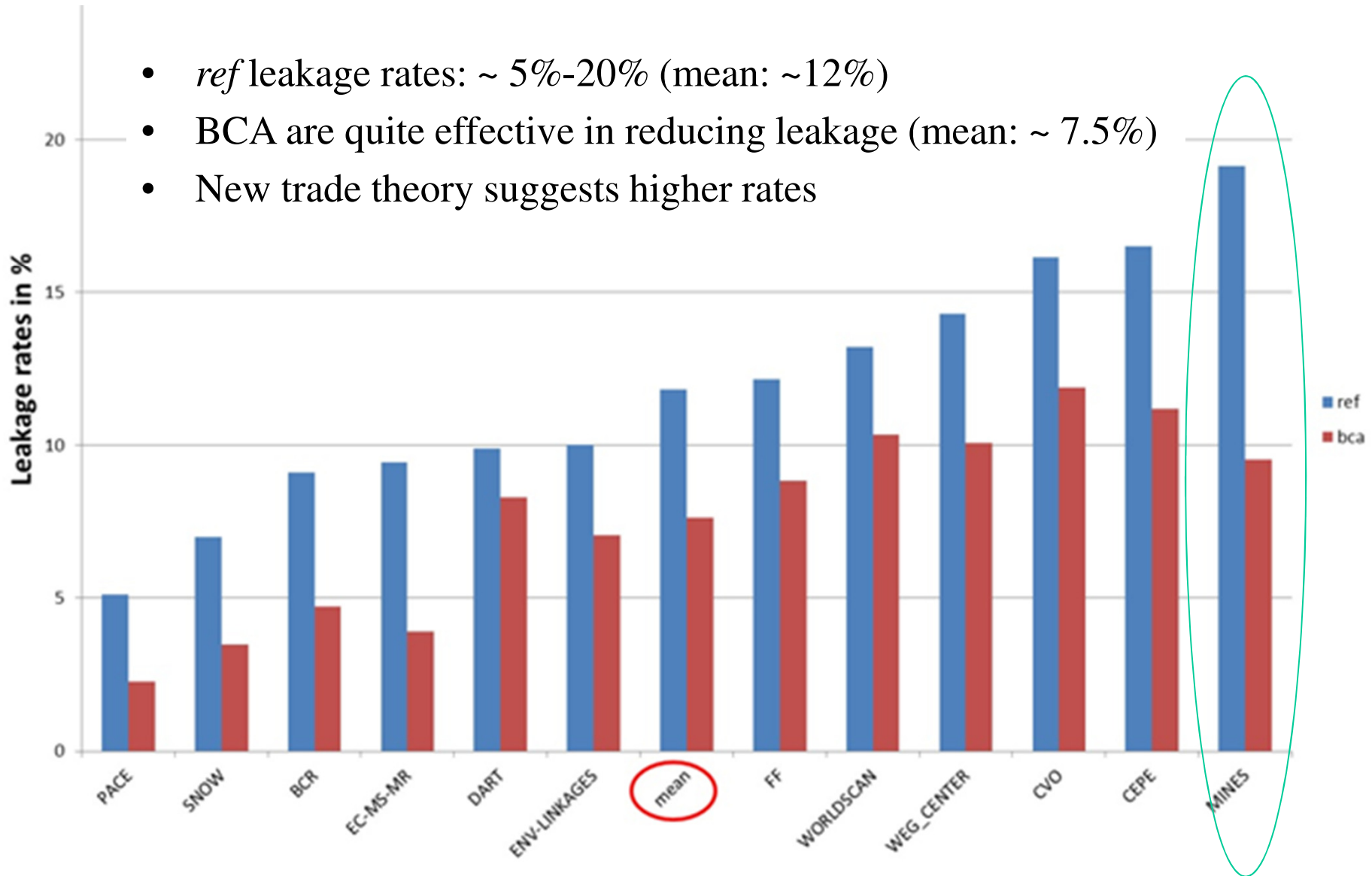
- Global carbon pricing
- Weakening policies / exempting sectors
- Free allocation / benchmarking
- **Border carbon adjustment (BCA)**
 - charge on imports based on a measure of carbon content, ensure consumers face consistent prices



Leakage rates and BCA

(Annex I; EMF study)

- *ref* leakage rates: ~ 5%-20% (mean: ~12%)
- BCA are quite effective in reducing leakage (mean: ~ 7.5%)
- New trade theory suggests higher rates



Practical recommendations



- A Guide for the Concerned: Guidance on the elaboration and implementation of border carbon adjustment
 - Aaron Cosbey, Susanne Droege, Carolyn Fischer, Julia Reinaud, John Stephenson, Lutz Weischer, Peter Wooders
 - http://www.iisd.org/sites/default/files/pdf/2012/bca_guidance.pdf

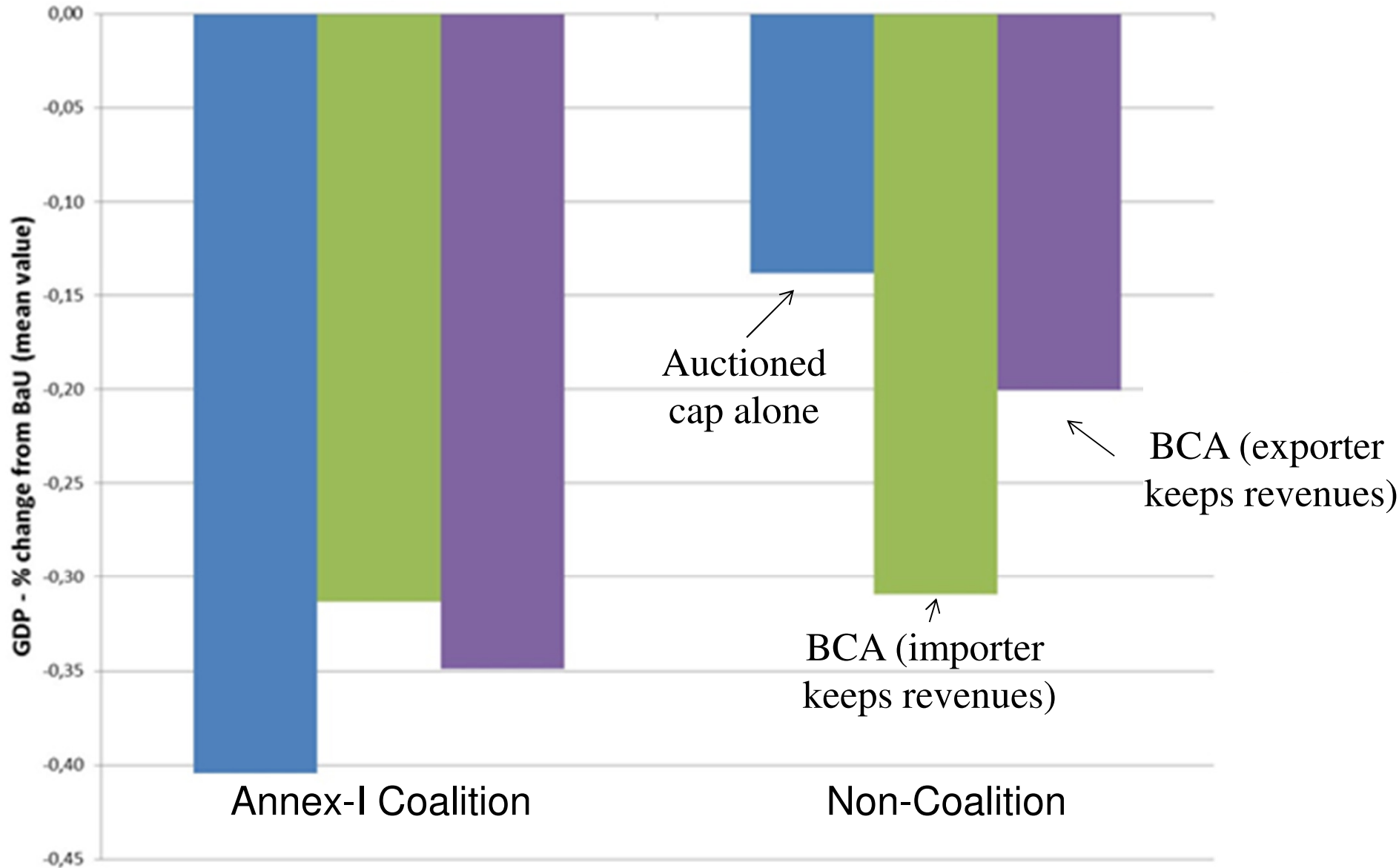
International obligations

- WTO Non-discrimination and most-favored nation principles
- Article XX exception
- Common but differentiated responsibilities

Motivations for BCA

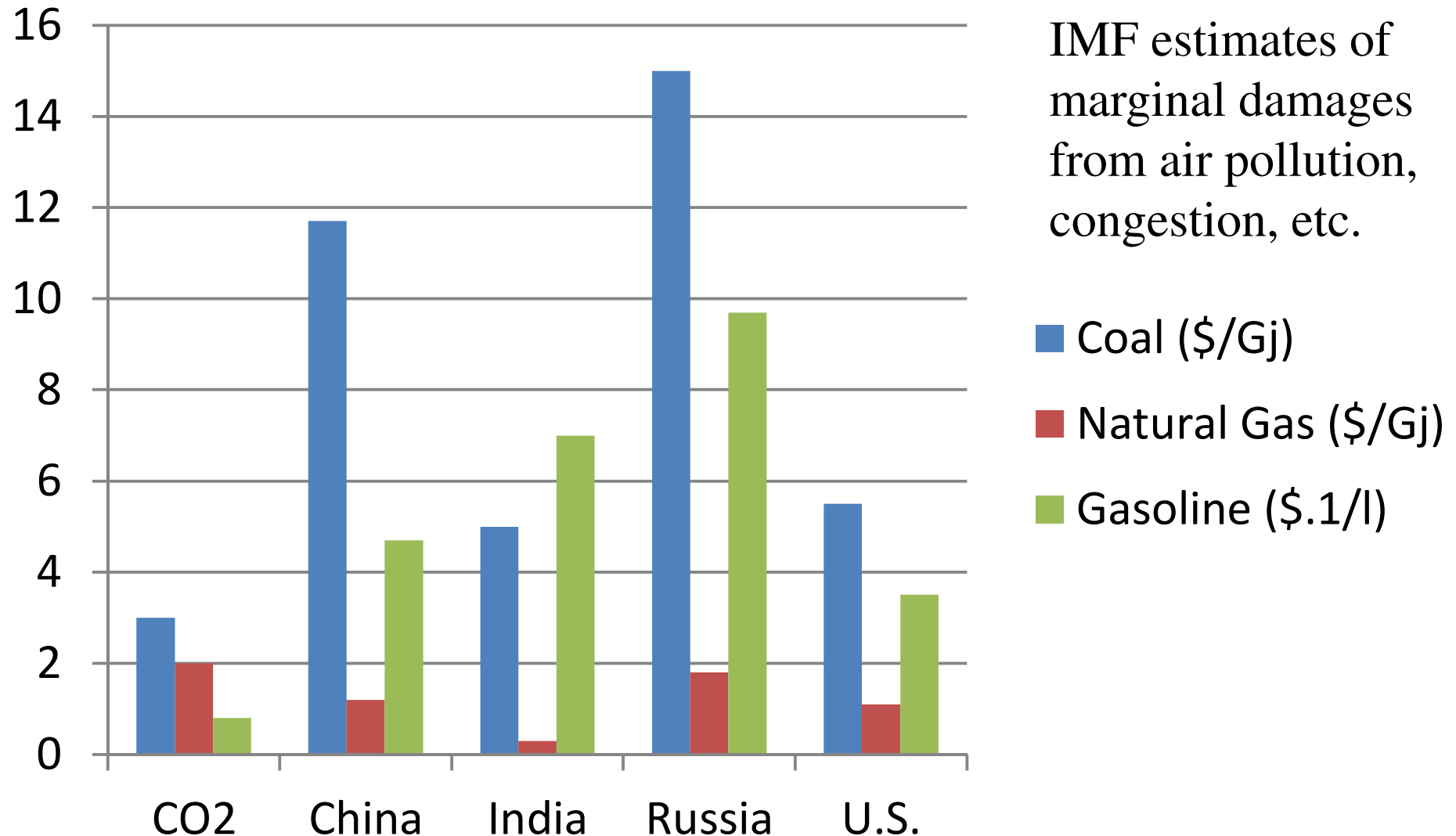
- Preventing leakage
 - Conforms with GATT Article XX goals
- Competitiveness concerns
 - May facilitate domestic agreement on stringent climate policy
 - Same motivation as protectionism
- Leverage
 - Economic incentive for trade partners to take climate action
 - Not compatible with CBDR
- Enforcement
 - Parties can agree to enforcement measures, but non-club members may not agree

Changes in burdens: Use of BCA revenues



Domestic incentives for mitigation

Region-specific corrective tax rates



Options for coping with leakage

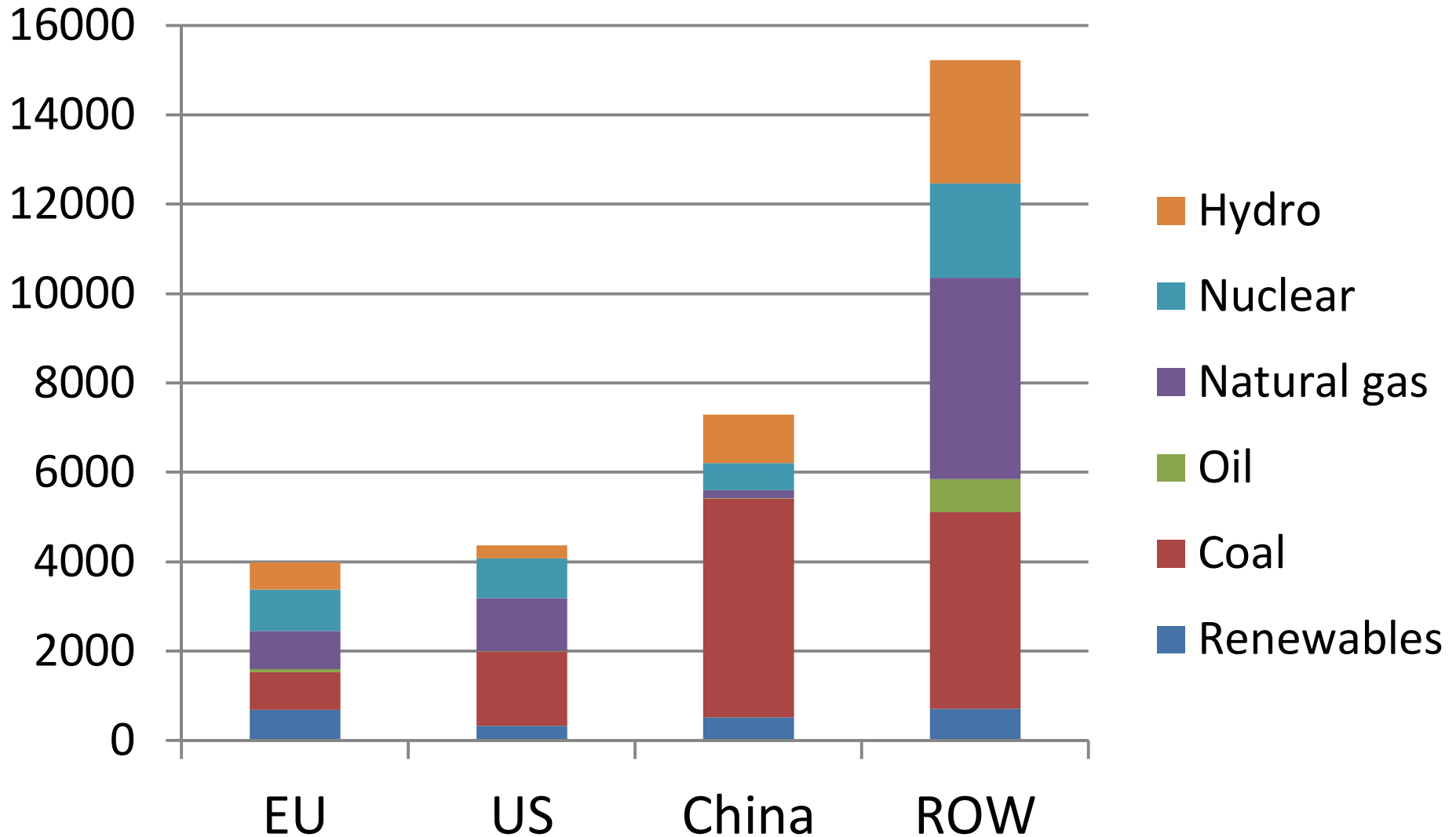
- Global carbon pricing
- Weakening policies / exempting sectors
- Free allocation / benchmarking
- Border carbon adjustment (BCA)
- Global diffusion of lower-cost clean energy technology
 - Lowers everyone's emissions and makes it less costly to regulate carbon

“Strategic subsidies for green goods”

- Global renewable energy deployment can reduce leakage
- Trade issues: renewable energy technology manufacturing is concentrated in a few regions
- Countries may have strategic incentives to subsidize renewables
 - Upstream subsidies to own manufacturing lower global equipment prices
 - Downstream subsidies for own deployment bid up global prices
 - Tension between avoided leakage and terms of trade

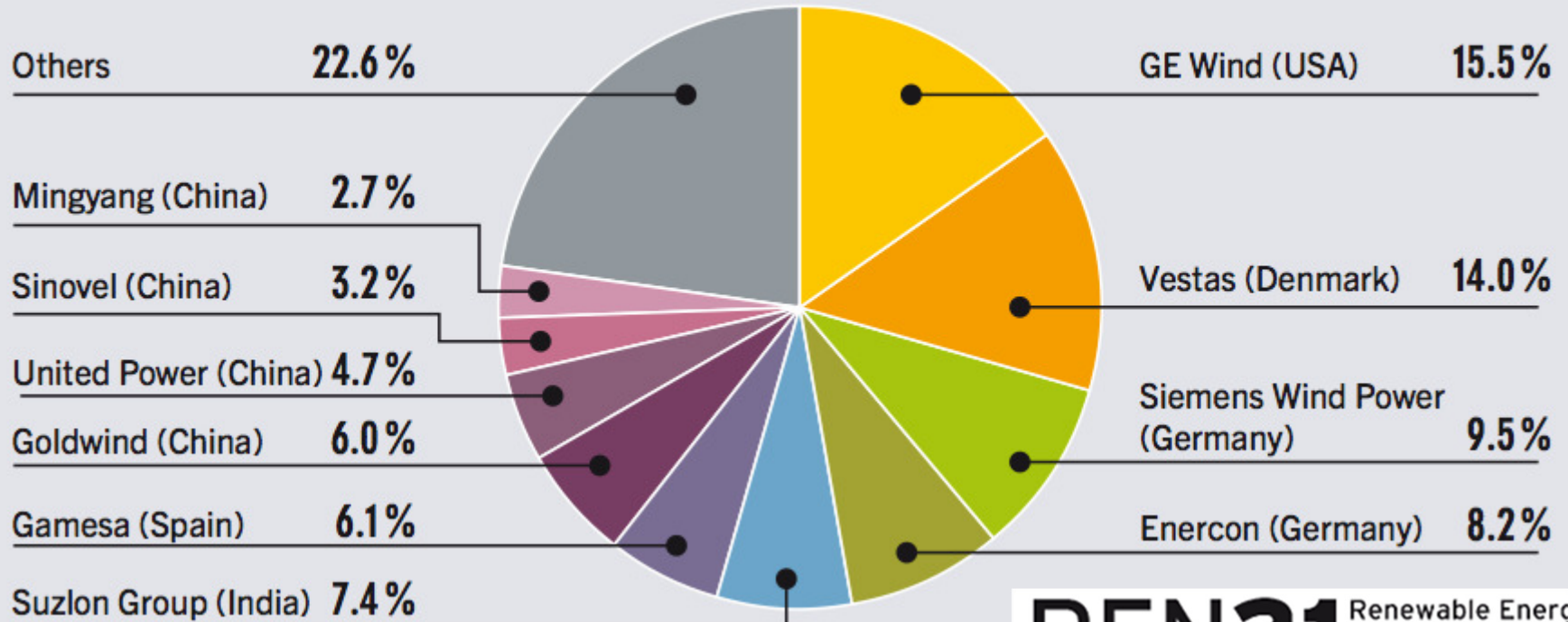
Generation in 2020 by source

(EIA IEO)



Upstream market stylized for wind

FIGURE 20. MARKET SHARES OF TOP 10 WIND TURBINE MANUFACTURERS, 2012

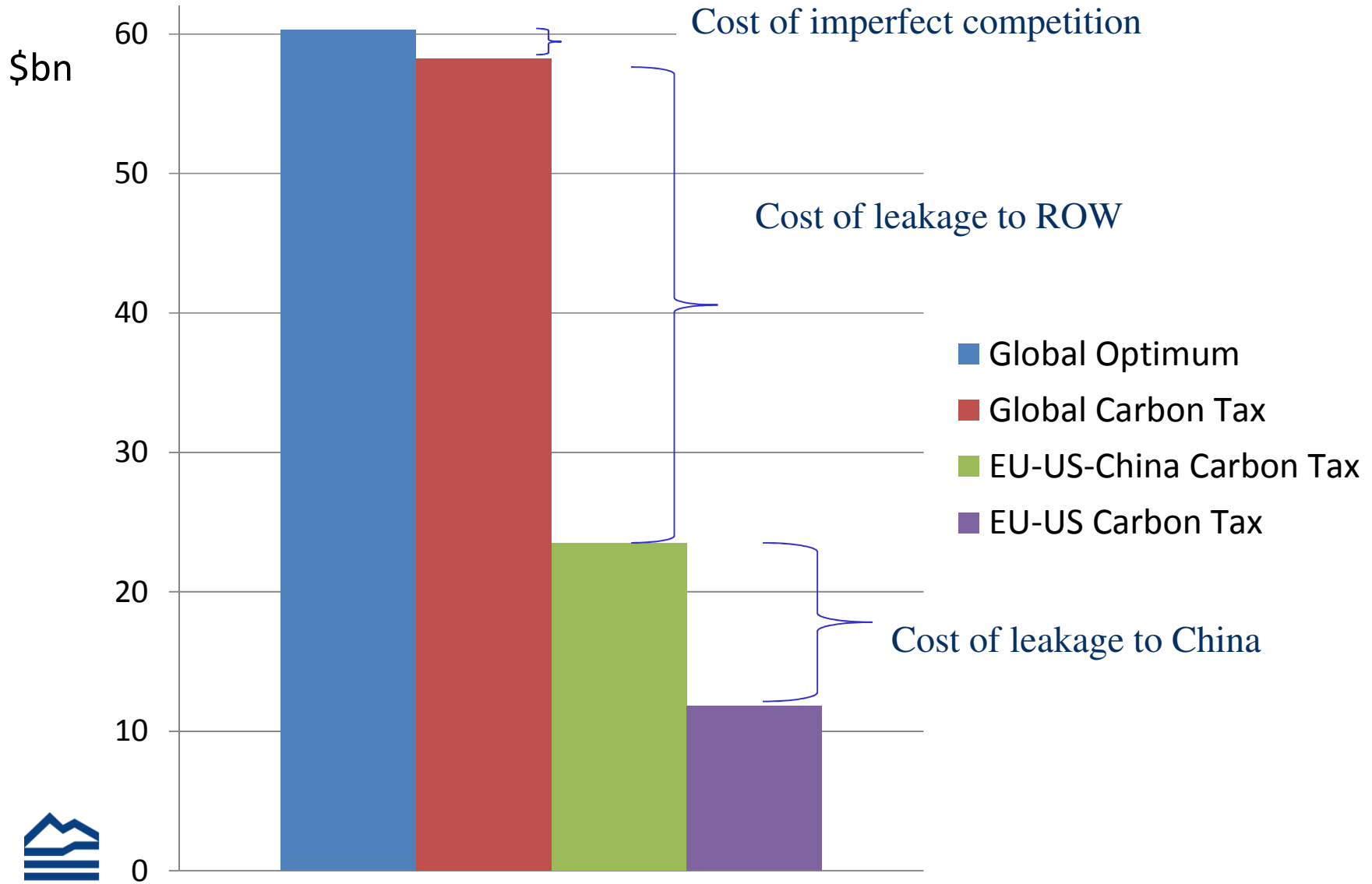


- By region:
 - US 16%; EU 38%; China 16%
 - Together, 70% of the market



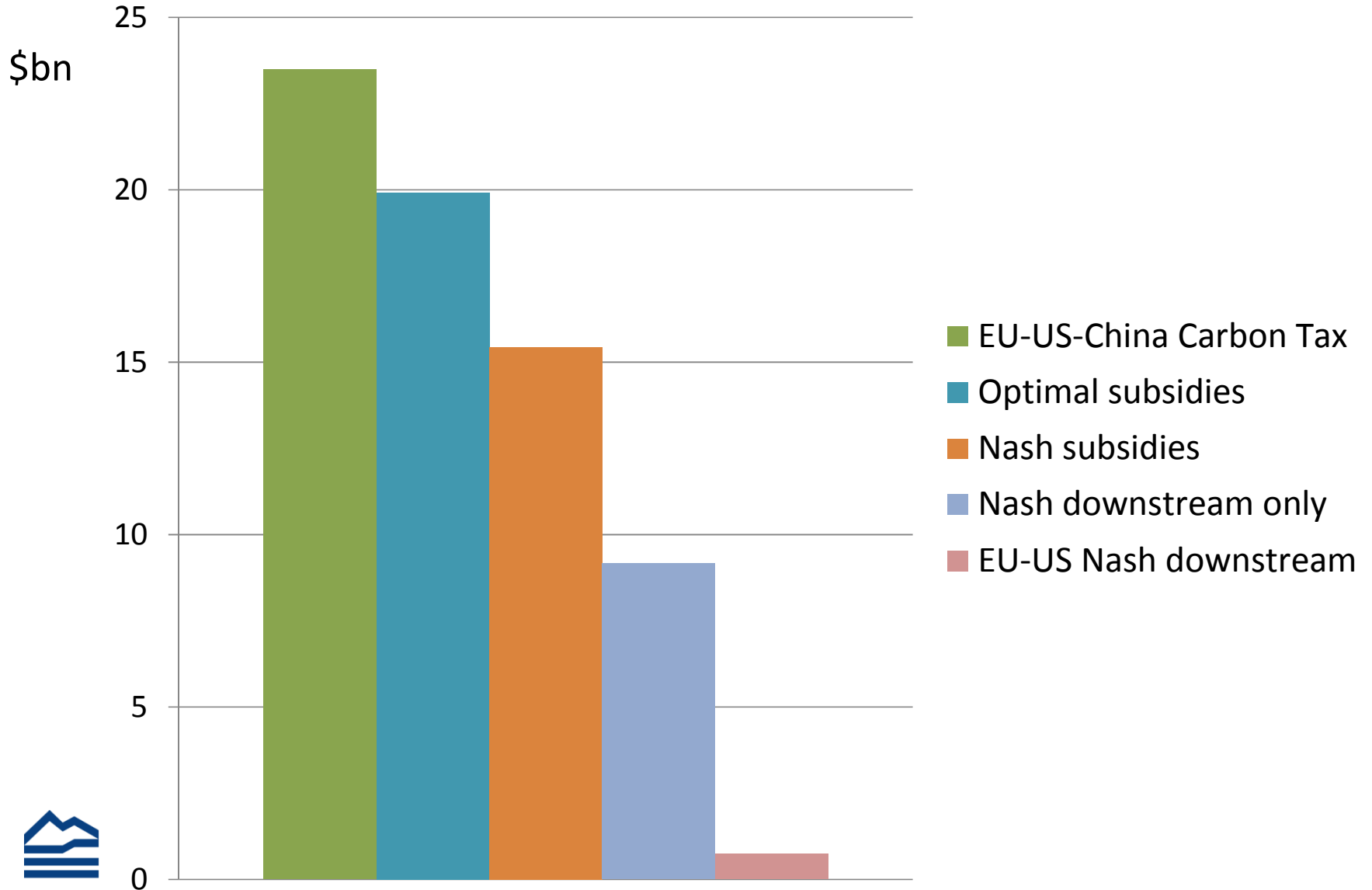
Global welfare change from No Policy

(Imperfectly competitive technology market and SCC of \$30)



Global welfare change from No Policy

(IC and all value MB at SCC of \$30)



theguardian

IPCC: 30 years to climate calamity if we carry on blowing the carbon budget

Global 2C warming threshold will be breached within 30 years, leading scientists report, with humans unequivocally to blame

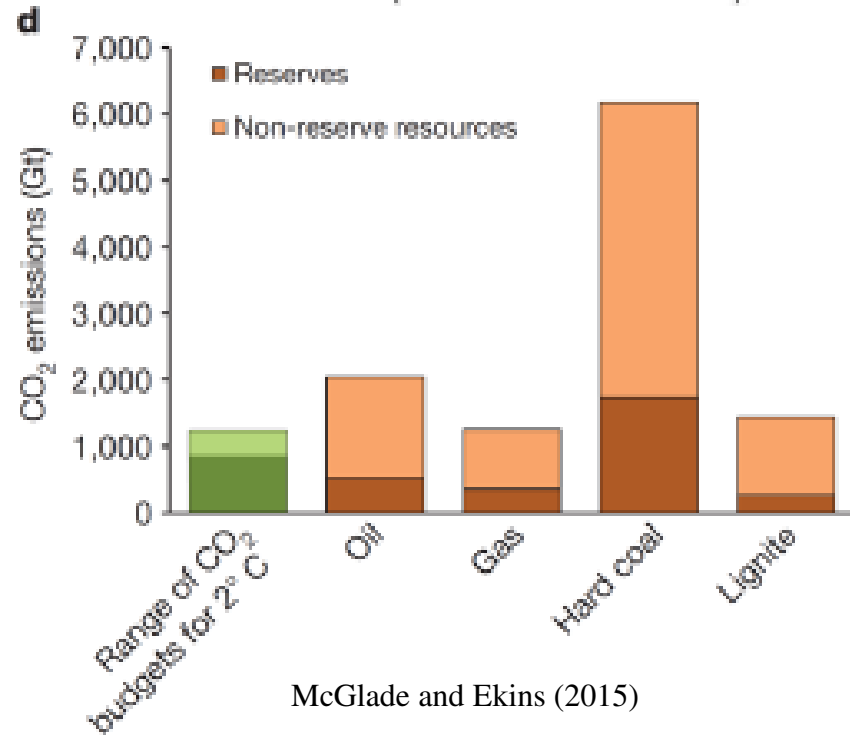
Fiona Harvey in Stockholm

The Guardian, Friday 27 September 2013 14:36 EDT



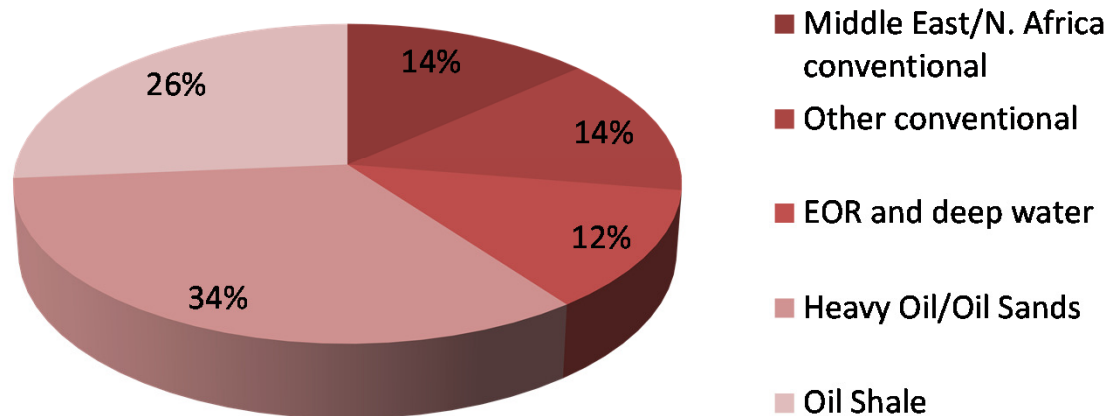
Calved icebergs in Qaqqortoq, Greenland. The IPCC report says the world is on the way to dangerous levels of global warming. Photograph: Joe Raedle/Getty Images

CO2 budgets and reserves

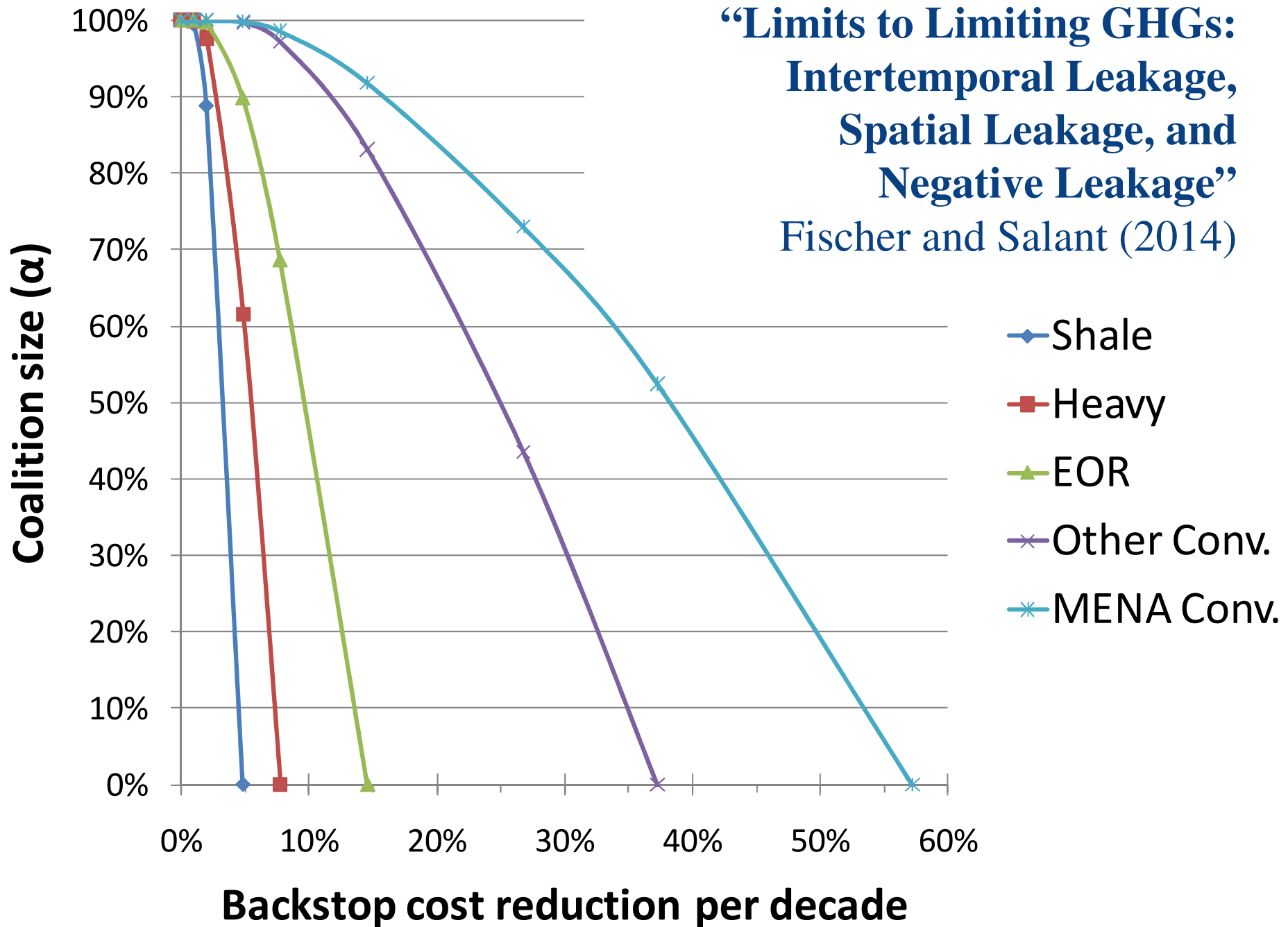


McGlade and Ekins (2015)

CO2 Shares by Reserve Type for Oil



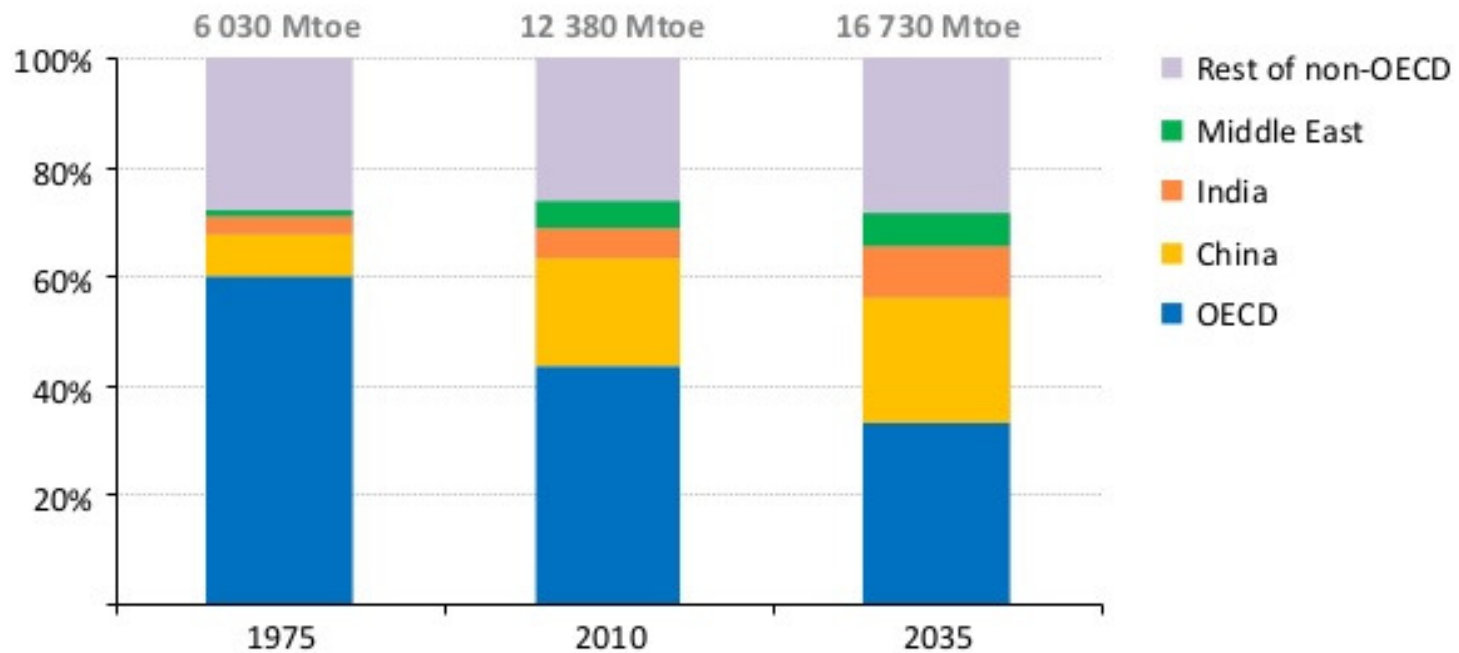
“Limits to Limiting GHGs: Intertemporal Leakage, Spatial Leakage, and Negative Leakage” Fischer and Salant (2014)



Evolving Coalition Size



Share of global energy demand



Global energy demand rises by over one-third in the period to 2035, underpinned by rising living standards in China, India & the Middle East



Ideas for modellers

- Technology scenarios very useful
- Can do more to model how policies may evolve over time, globally
 - Endogenous process
 - What energy policies support cooperation?
How does that feed back to emissions projections?
 - Distributional implications
 - Role of international trade

Thanks!

