



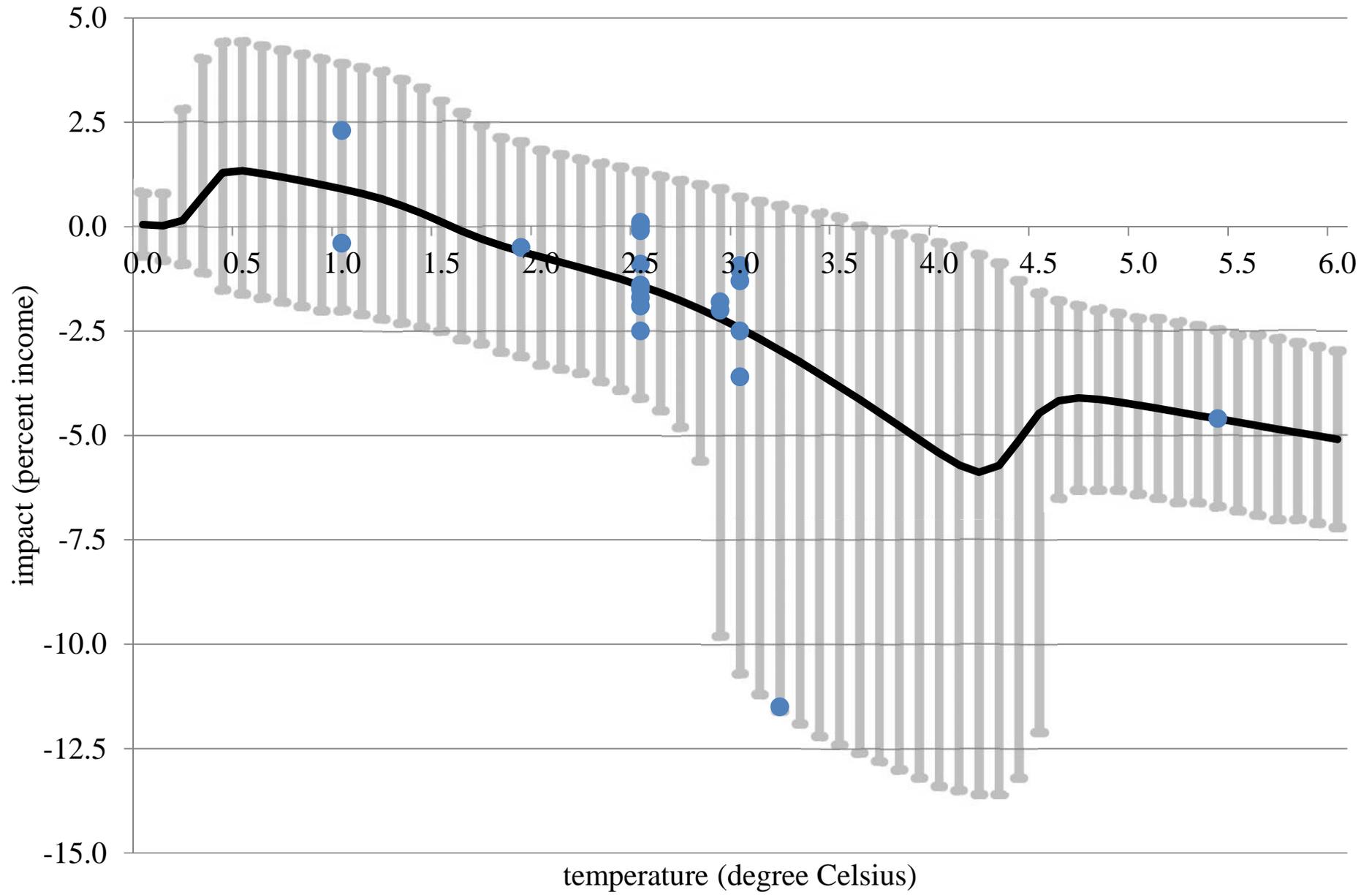
How to solve the climate problem

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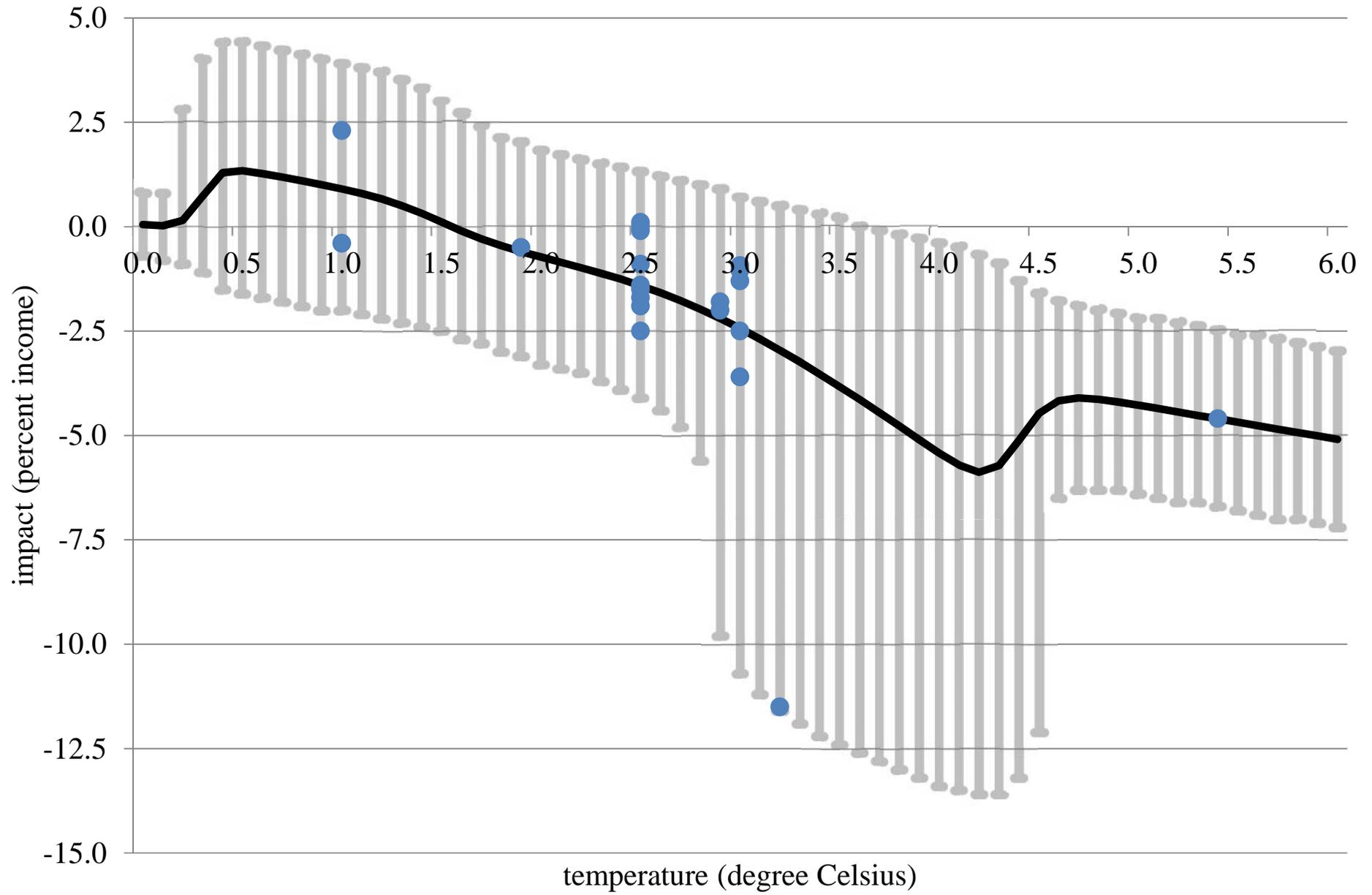
Outline

- Total impacts of climate change
- Marginal impacts of climate change
- Total impacts of climate policy
- Marginal impacts of climate policy
- Optimal emission targets
- The climate debate
- A way forward
- Discussion



Methods

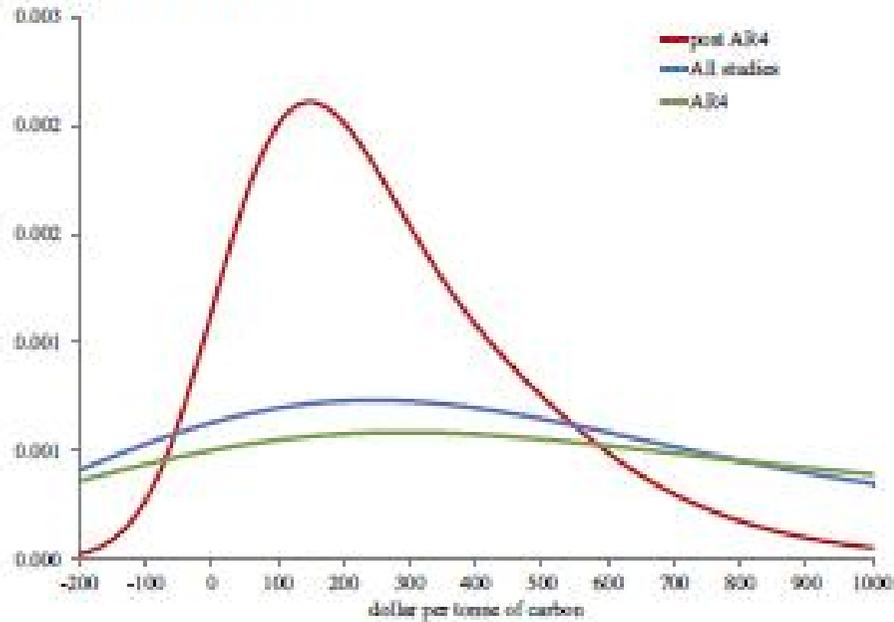
- Enumerative method
 - Quantify impact, estimate price, add up
- Computable general equilibrium
 - Quantify impact, shock model, estimate welfare change
- Statistical method
 - Estimate relationship between activity and climate over space, assume it holds over time
 - Estimate relationship between well-being and climate
- Elicitation method
 - Ask experts



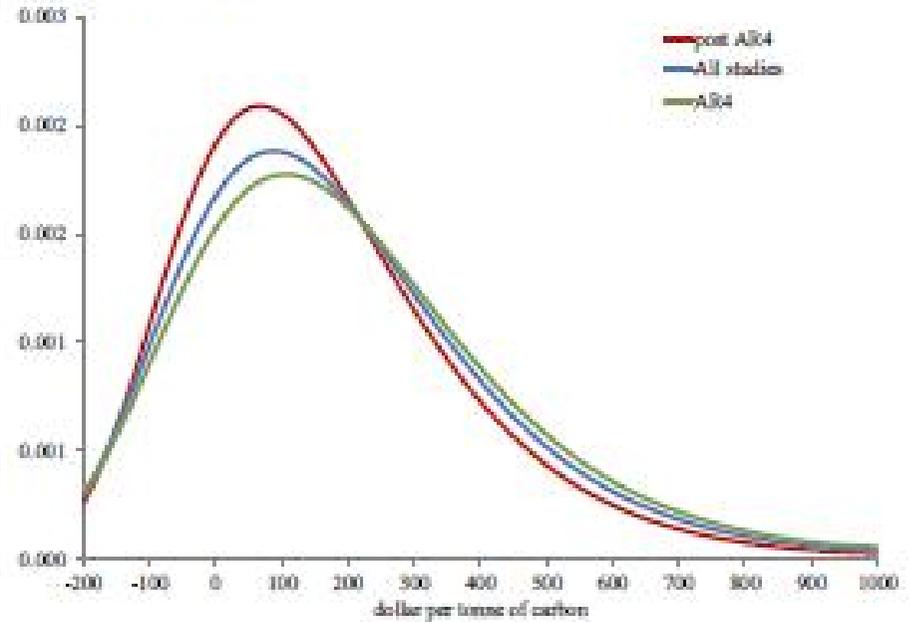
Marginal Damage Costs

- The marginal damage cost is the damage done by an additional tonne of CO₂ emitted
- It is the change in the net present value of the monetised impacts, normalised by the change in emissions
- The marginal damage cost is the Pigou tax - it says how much we should spend on climate policy, by how much we should raise energy prices
- It is a normative concept; it tells us what to do, given our values

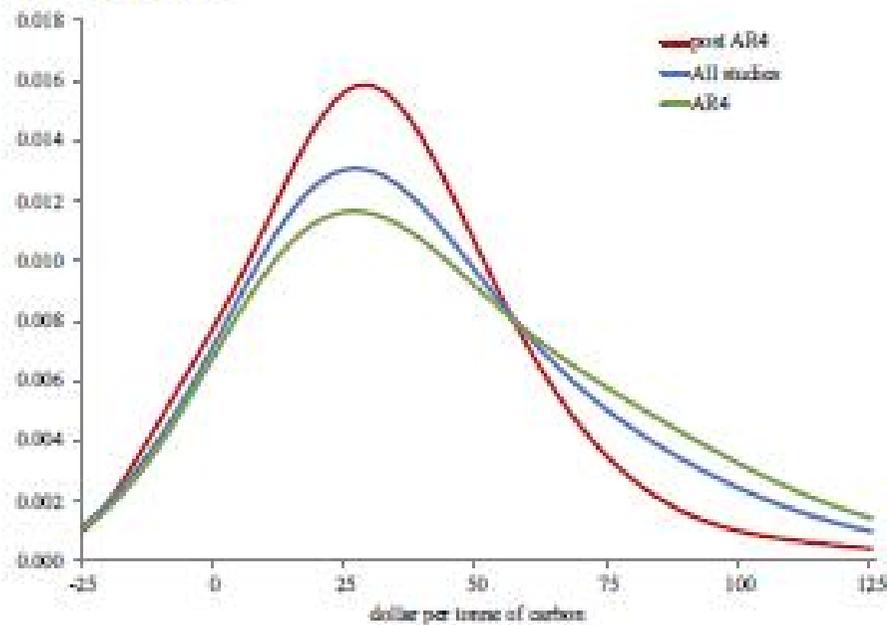
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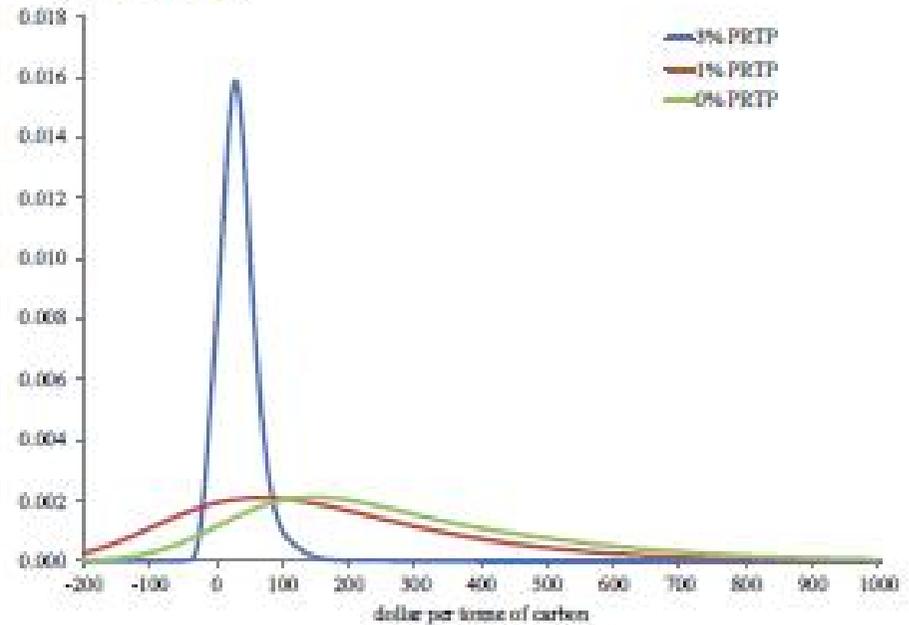
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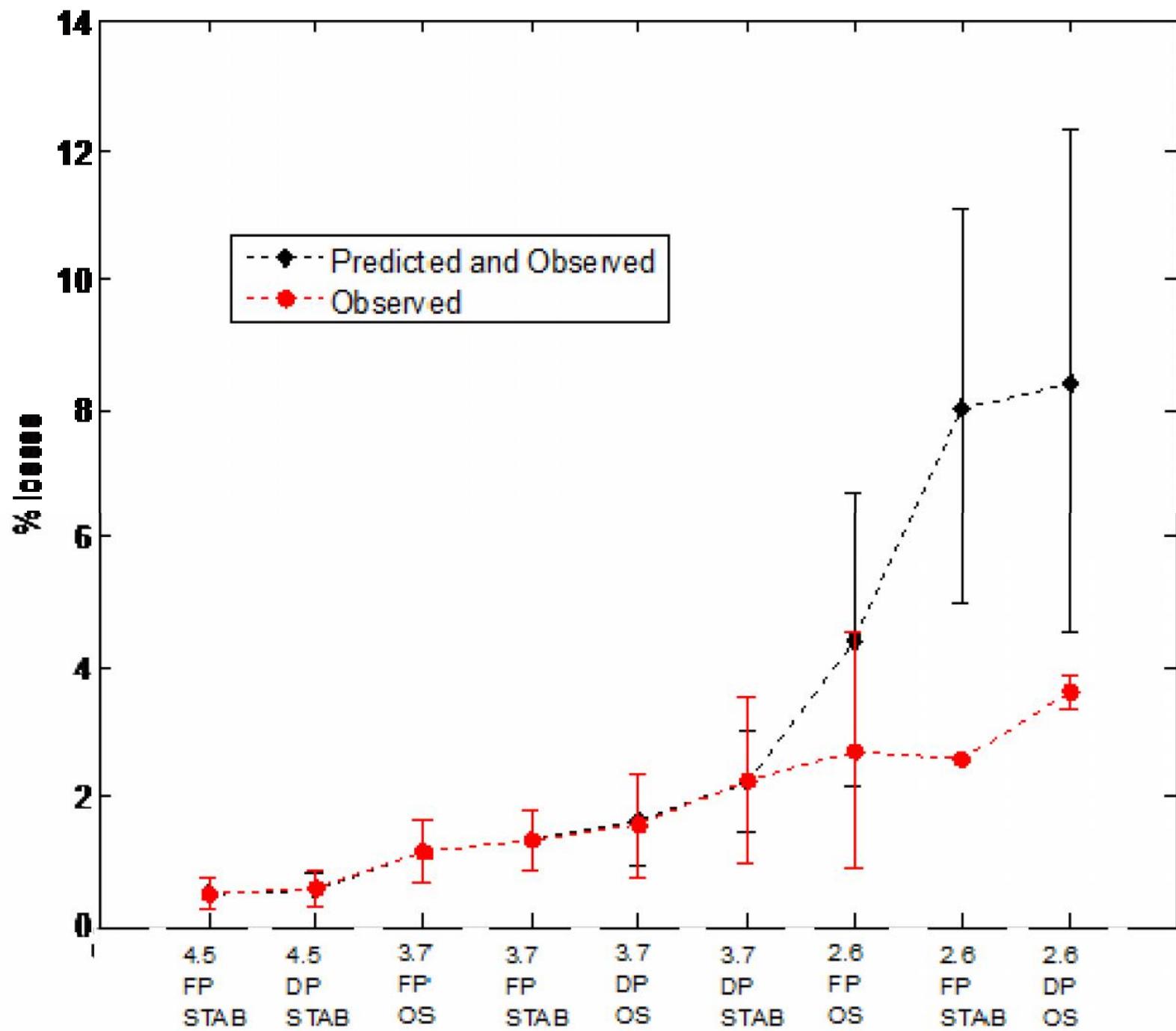


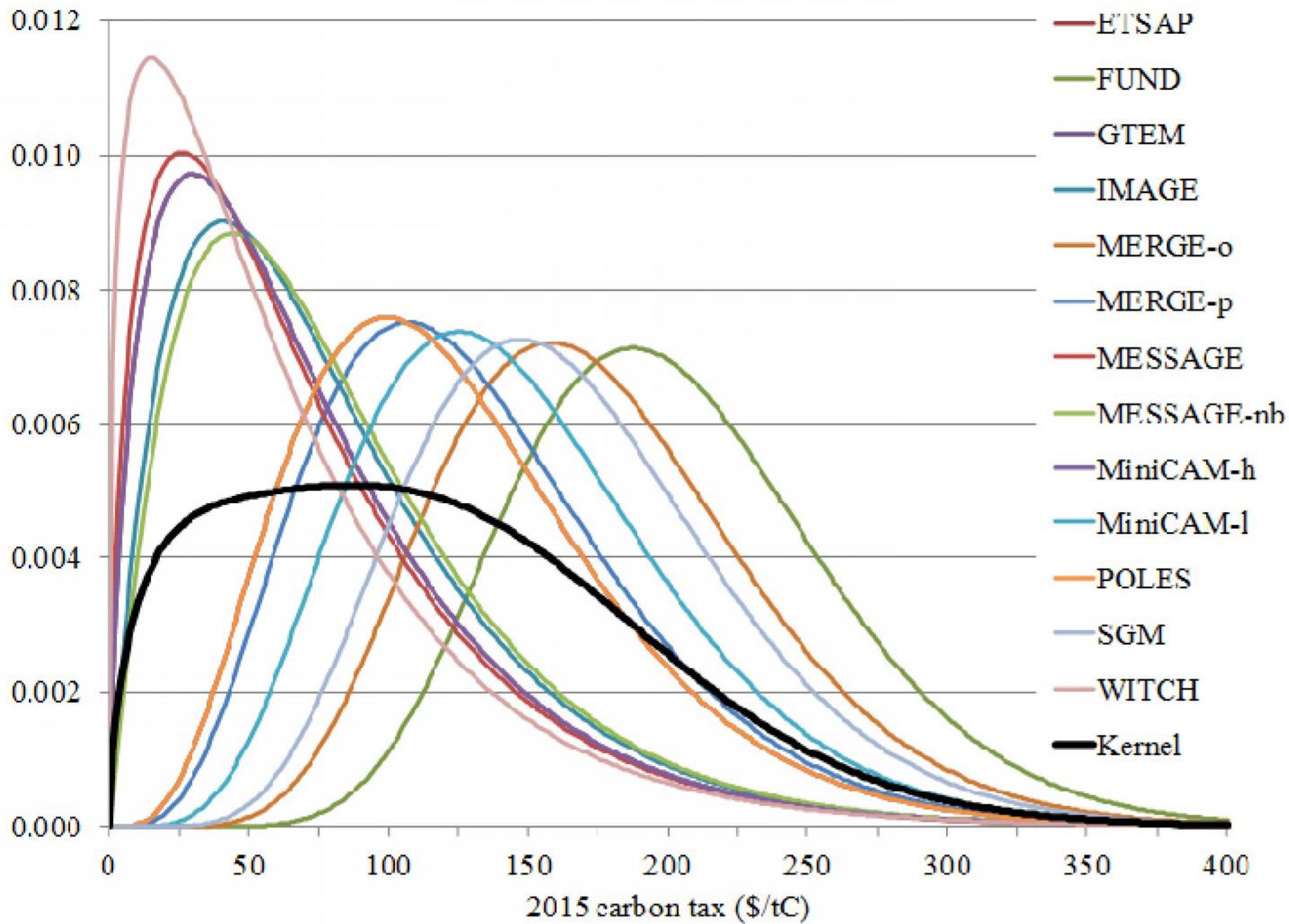
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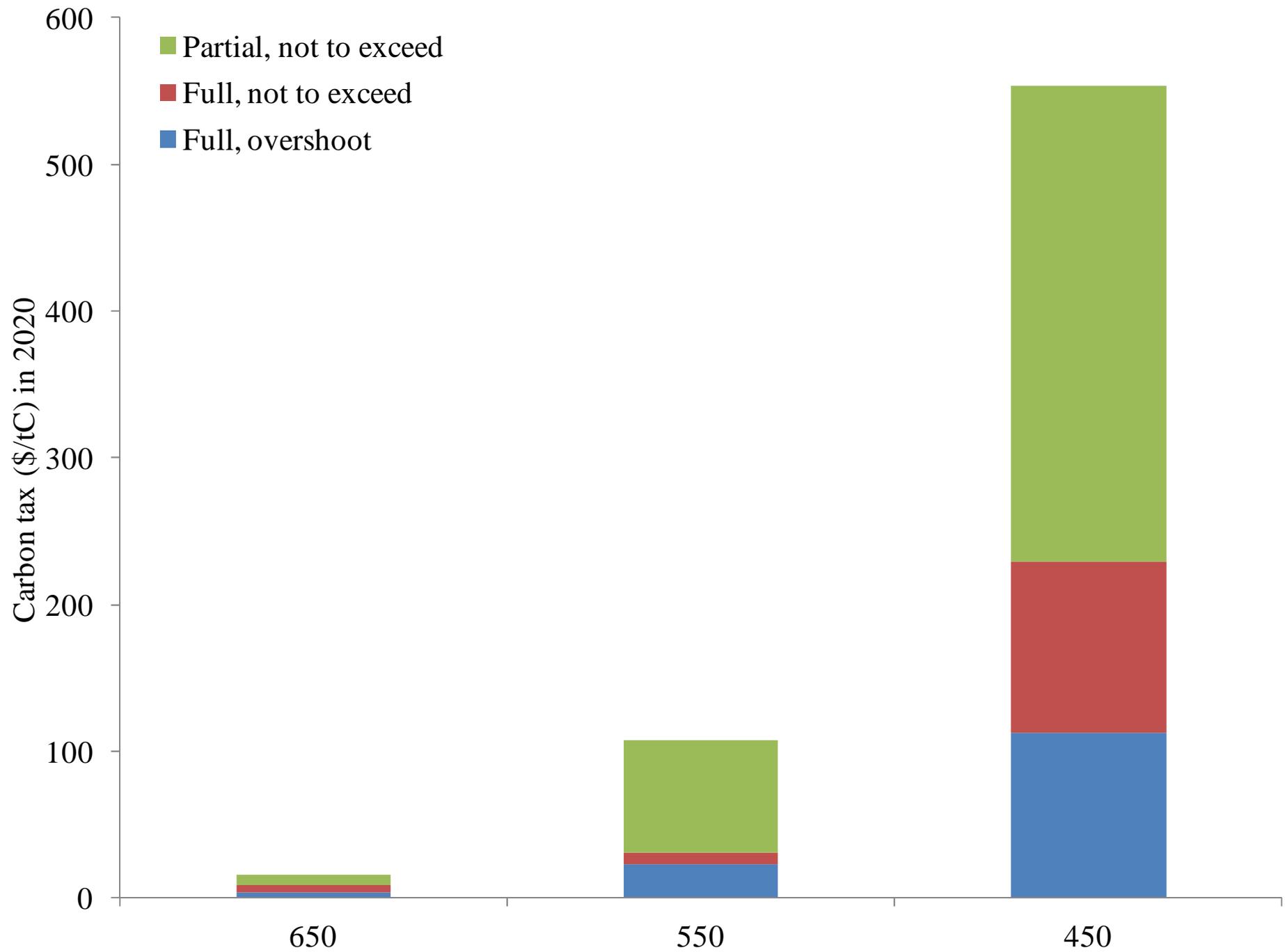


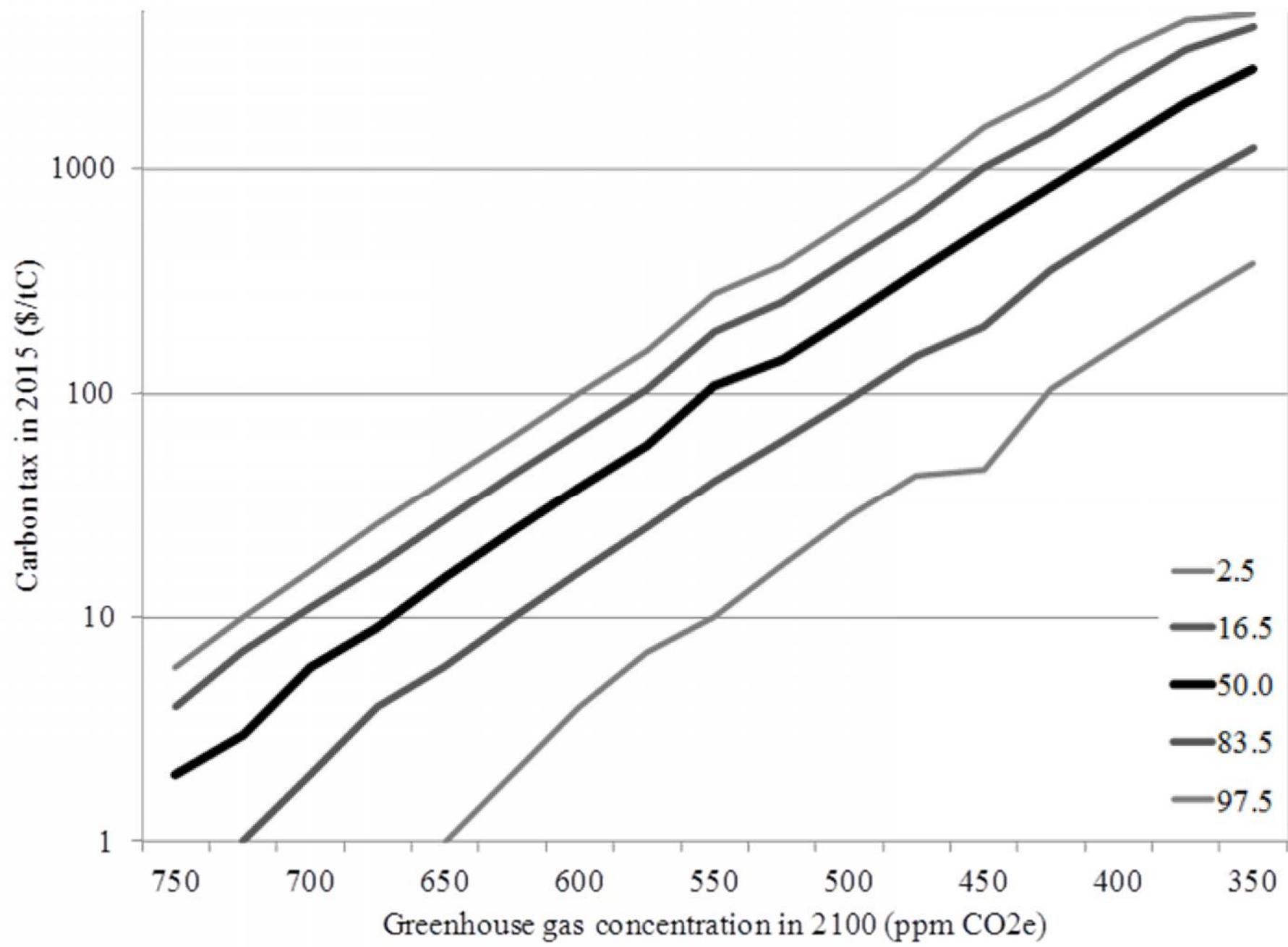
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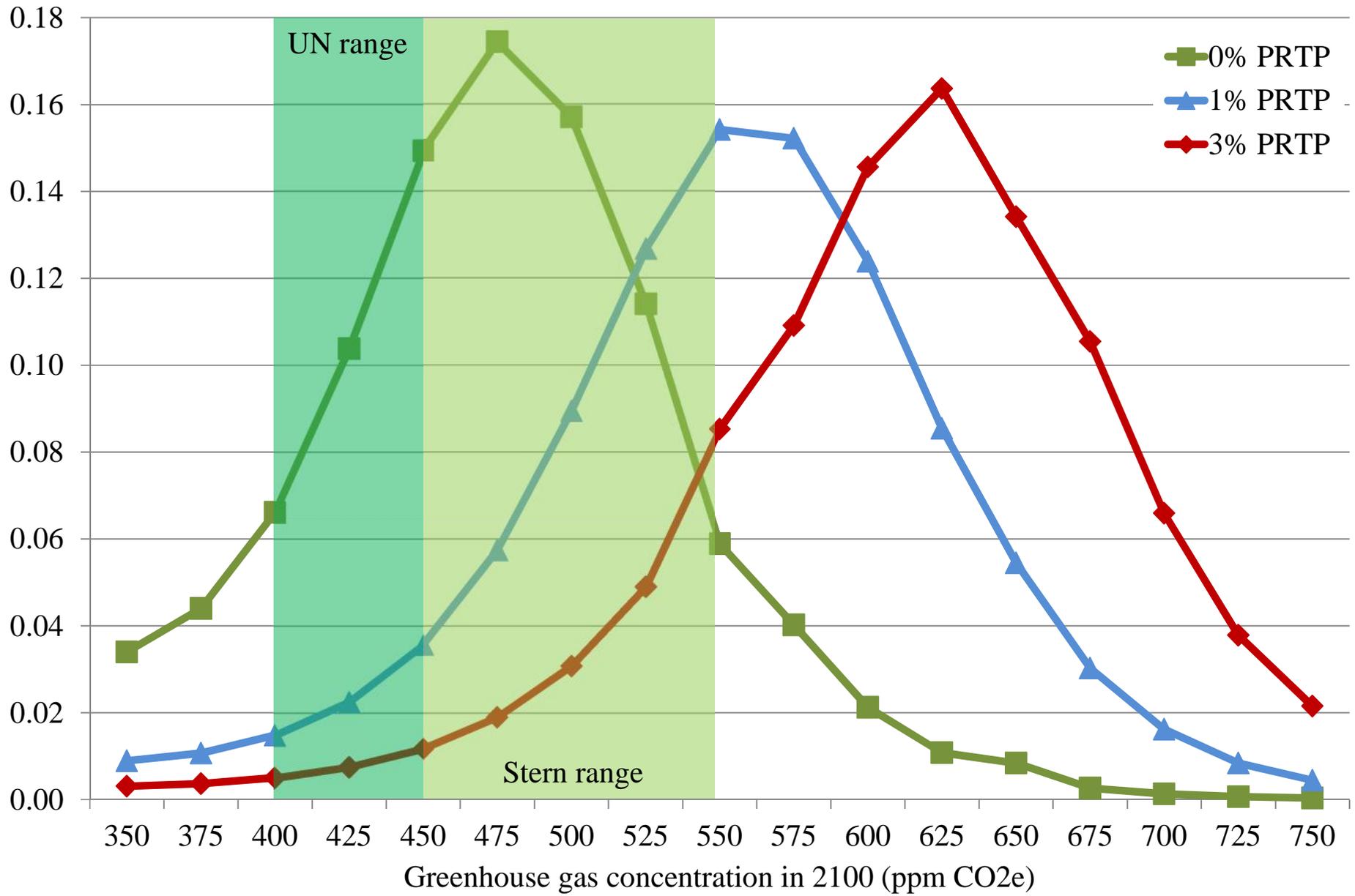












Stock take

- The economic impacts of climate change are relatively small
- The economic impacts of climate policy are smaller still
- Optimal emission reduction is lower than policy rhetoric (but higher than actual policy)
- How robust is this to concerns about deep uncertainty?

What's all the fuss about?

- Climate change is a relatively small problem, that is relatively easy to solve
- Climate change is the new Armageddon
- Climate policy allows politicians to grandstand while shifting the action to their successors
- Climate policy allows bureaucrats to create new bureaucracies
- Climate policy feeds the fears of conspiracy theorists
- ... and there is free-riding



A little game

- Greenhouse gas emission reduction is a global good: The costs are private, the benefits are shared by everyone.
- A rational, selfish actor would therefore reduce emissions by only a little, free-riding on other agents' efforts
- There is no solution to this, apart from installing a world government

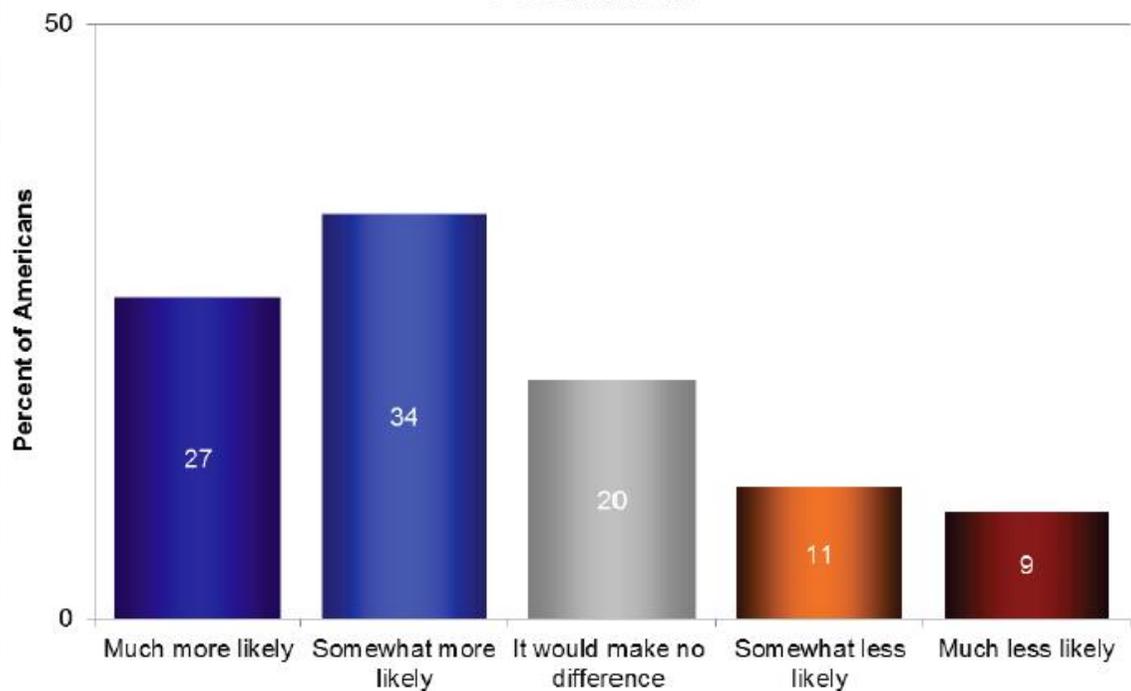
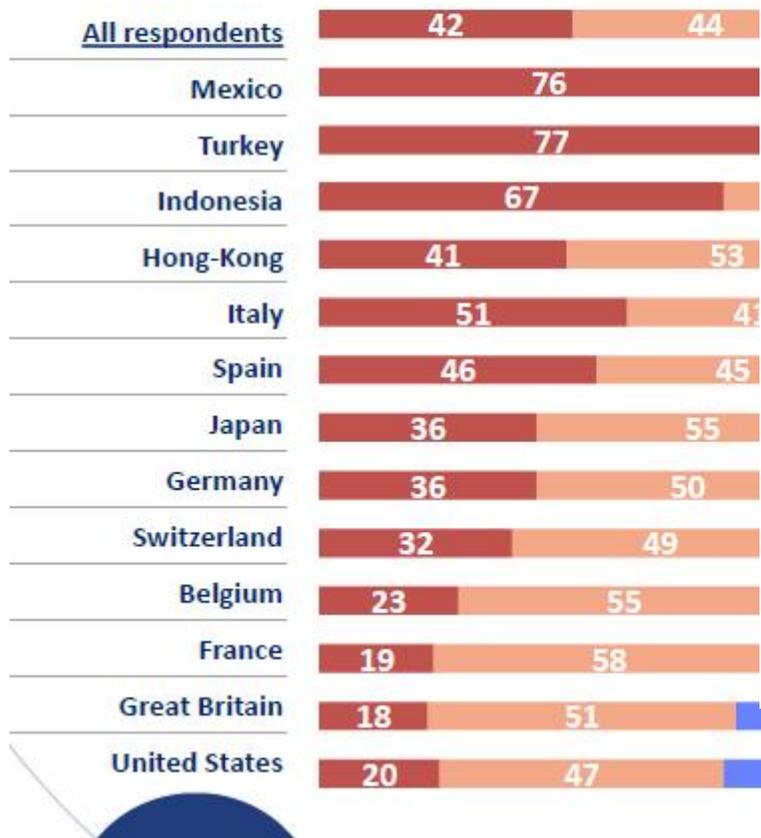


A way forward

- Climate policy must be rooted in a domestic demand for emission reduction

Question : How worried are you by the possible consequences of climate change ?

Vote for a Candidate Who Supports Legislation to Reduce the Federal Income Tax, but Increase Taxes on Fossil Fuels



69

67

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Willingness to pay

- 57% of Australians is prepared to pay a carbon tax of \$79/tC on transport fuels
- The average European is prepared to pay a \$37/tC carbon tax on transport
- The average Harvard student is willing to pay \$332/tC
- The median Harvard student \$210/tC



A way forward -2

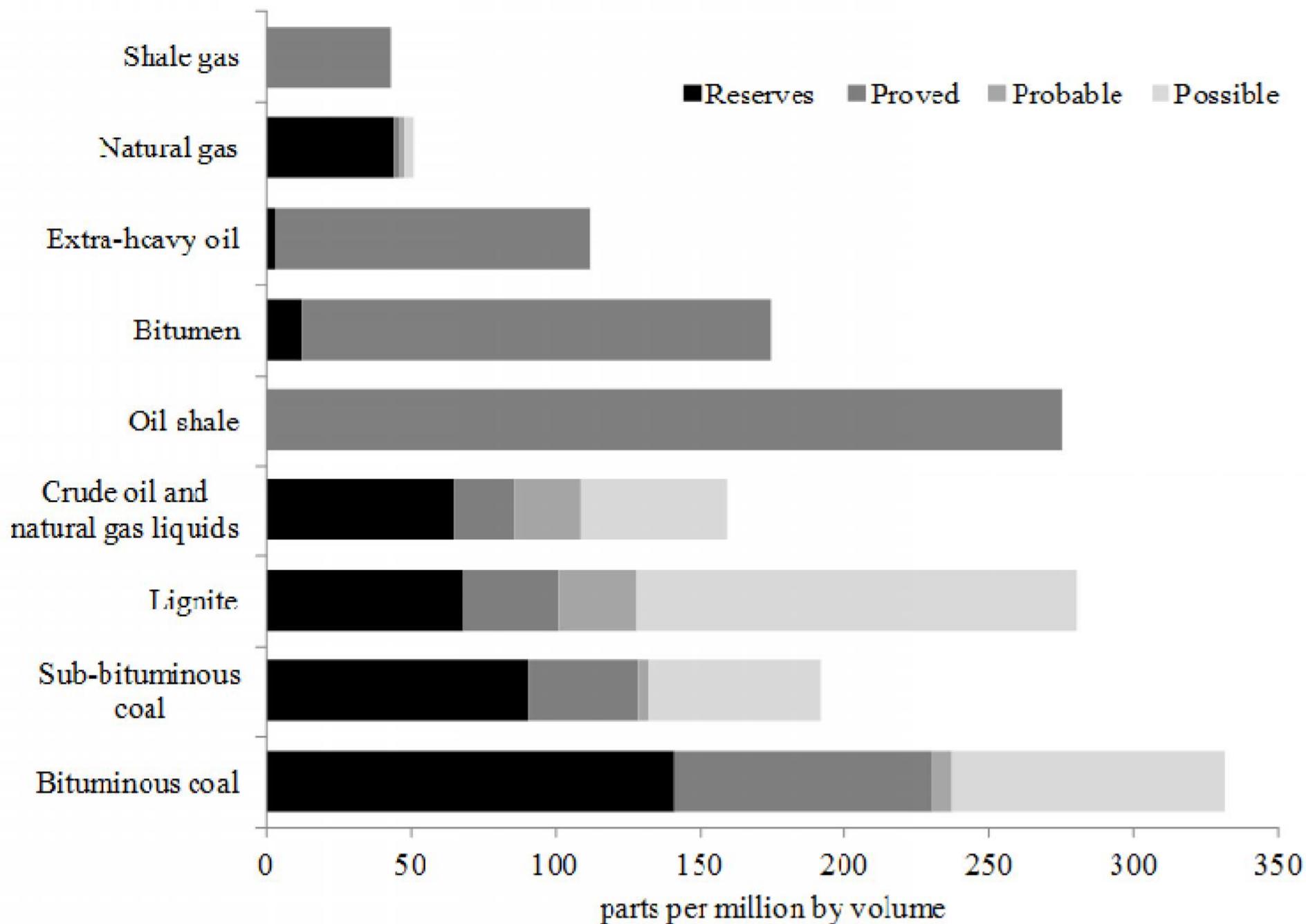
- Unilateral climate policy is expensive, because domestic producers are put at a disadvantage
- The UNFCCC establishes standards for emissions monitoring, and its annual meetings are suited for pledge and review
- Trade organizations should play a greater role in international climate policy



A way forward -3

- The costs of emission reduction vary widely between companies, between sectors, and between countries
- The Kyoto Protocol establishes flexibility mechanisms, through which countries can invest in emission reduction elsewhere should that be cheaper than domestic emission reduction





A way forward -4

- There is a revolution in energy
- Climate policy should stop trying to create its own revolution, and ride the wave of the ongoing revolution instead
- The market says shale gas. European politicians say wind, solar, nuclear. Austerity is putting an end to renewable subsidies. American shale is pushing down coal prices. The result is an increase in coal use in Europe, and higher emissions.

