Plus ça Change – all over again?

What's changed, what hasn't, and what can and needs to
OR
'Top down from the bottom up'?

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Plus ça change - plus c'est la même chose?

- Paltry Progress
- Durban
- A Crisis of Theory
- Three domains
- .. And the three pillars – reframing the challenge
- Low carbon coalition?

Note: an empirical perspective

Paltry Progress

- At the end of the ‘Age of Innocence’
  - The “rich world” is mired in debt
  - The global economy remains as dependent on fossil fuels as it was at the beginning
  - The world faces geopolitical uncertainty and potential instability not seen for two generations
  - Global CO2 emissions are rising faster than ever before (in absolute terms)
  - Global negotiations are in a tenuous state – the best milestone is agreement to try and solve the fundamental problems by December 201

Durban – what's changed, and what hasn't

Plus ça change ..

- A global process not formally based on Annex I leadership
  - The absence of formal, direct CBDR – but lots indirect
- The political dynamic:
  - 'Durban coalition' => China => US => India's last stand
- A sensible timescale

… plus c'est la même chose?

- Widening gap between science and action
- Twin track – a hybrid state
- Wildly differing views on roles, responsibilities, legal form ….
- Incapacity of US Federal action, lack of finance, blame ..
- … Just about everything of *substance*

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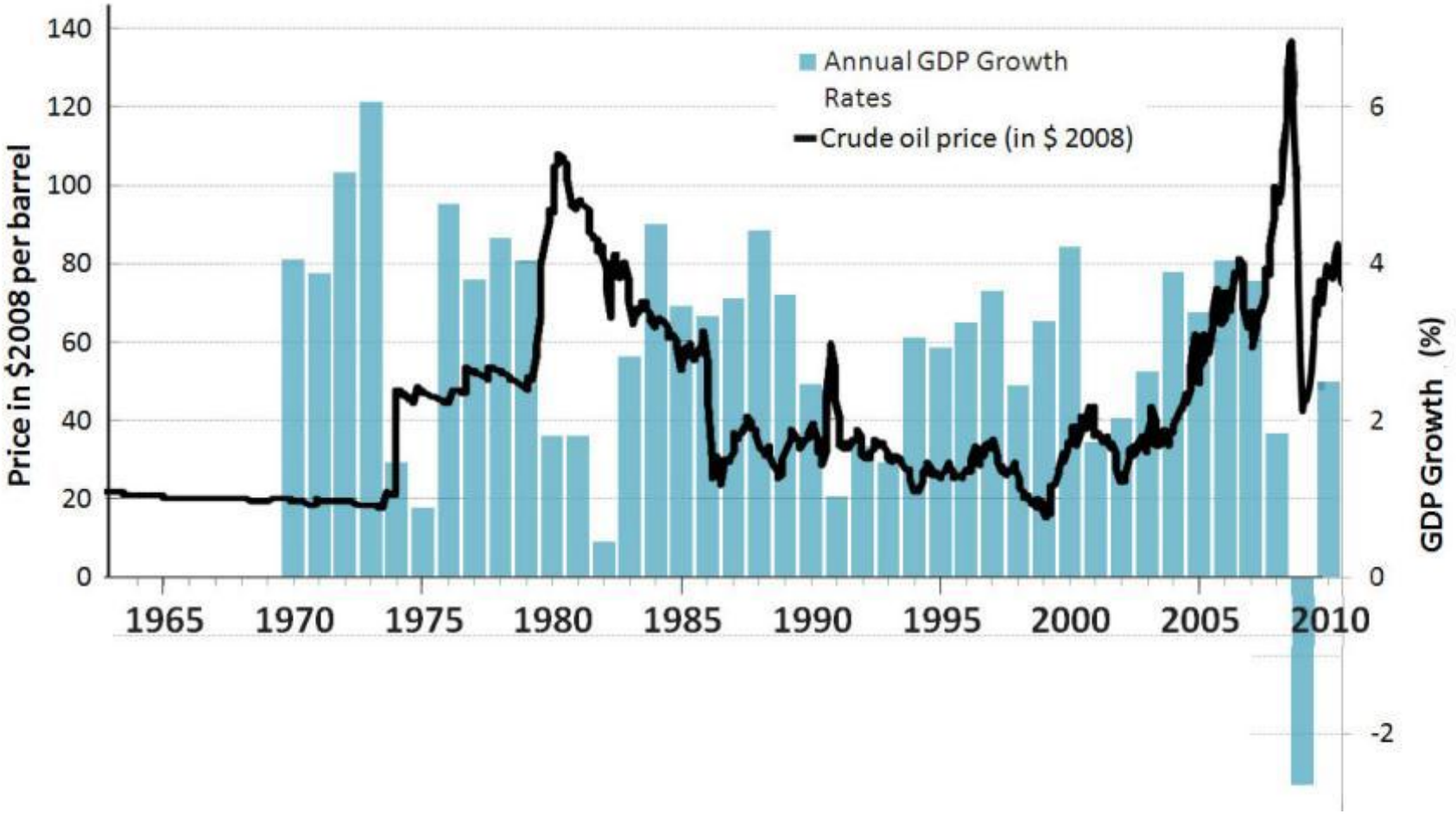
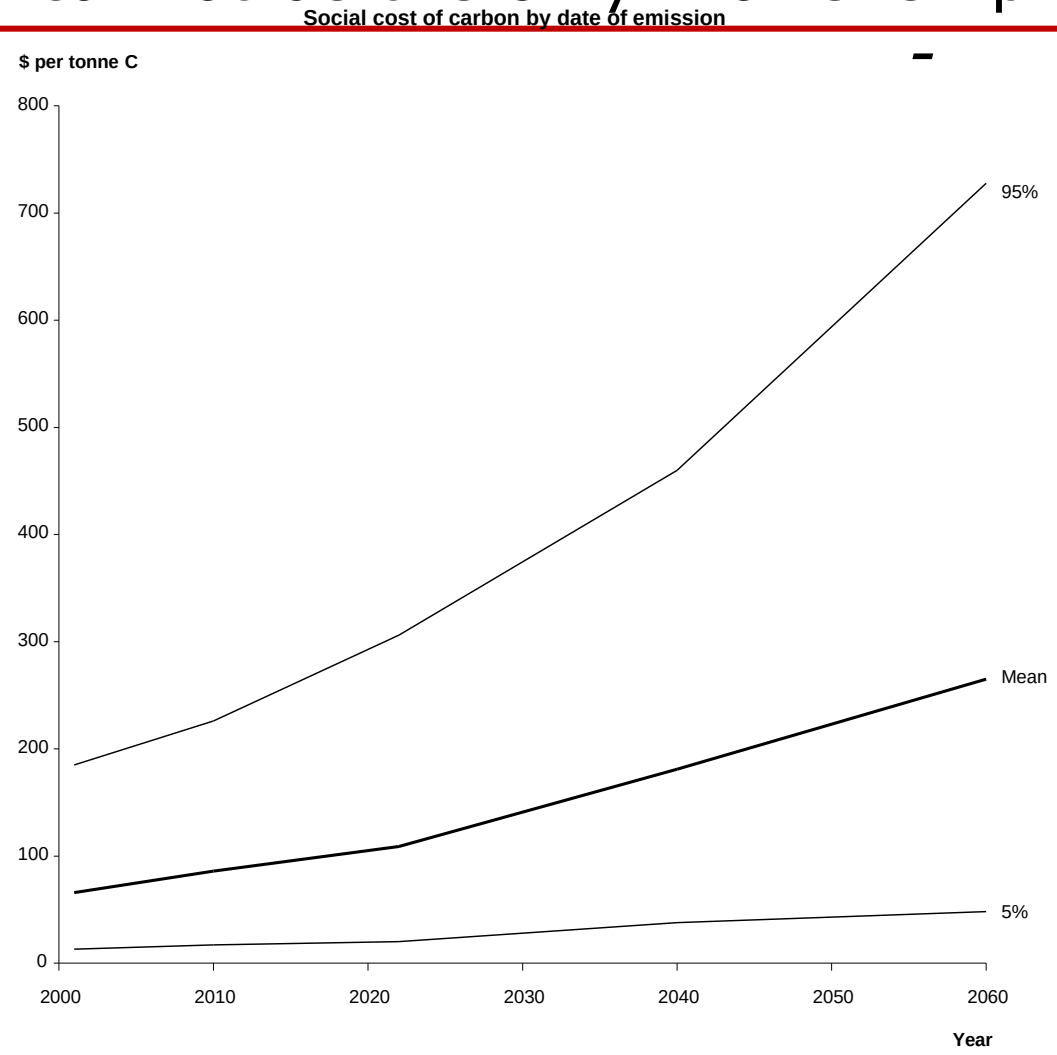
The theory: a (slight) caricature applied to energy and climate change problems

- **The basic theory:**
  - The economic challenge is resource allocation (NB competitive markets are far better than governments)
- **Energy:**
  - Establish markets to ensure least-cost system
  - For a finite stock resource like cheap oil, price should rise smoothly to reflect scarcity (Hotelling)
  - Invest accordingly in backstop technologies
- **Climate:**
  - Estimate the 'social cost of carbon emissions (SCC)'
  - Negotiate distribution of quantities and/or set a carbon price equal to the SCC with side payments

Reality 1: Oil price hardly a smooth Hotelling depletion experience!



The 'social cost of carbon'
cannot be the only – or even principal - guide to policy

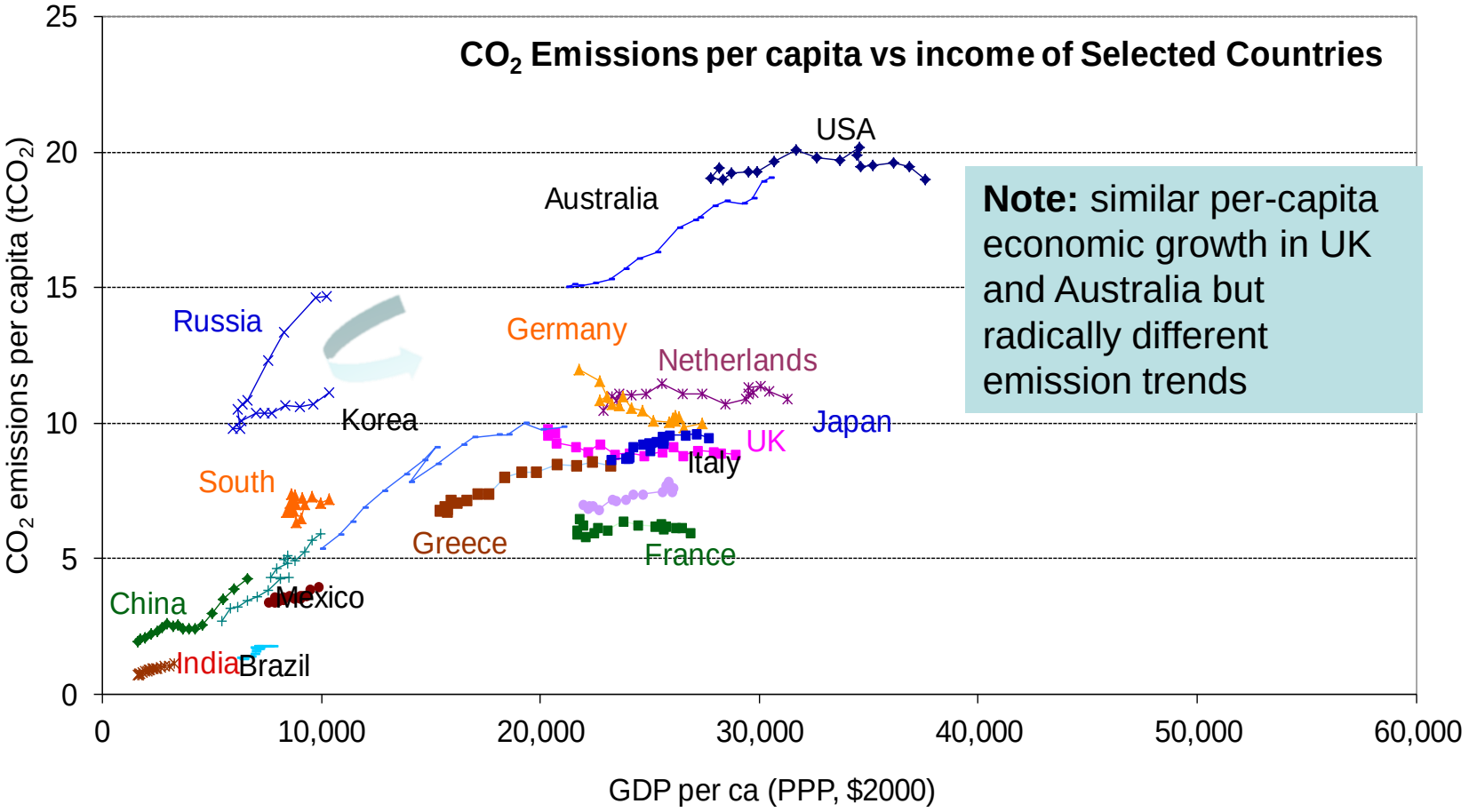


- Uncertainties with reference to Stern, Nordhaus, Dasgupta, Weitzman …
- '… somewhere between 10 and 1000 $/tC' [Downing]
- .. because it assumes a single unified decision-maker willing and able to act on the basis of an agreed number for long term good
- This bears no relationship to either economic or political reality

Source: Hope & Newbery, in *Delivering a low carbon electricity system*
Figure 2.3: Social cost of carbon over time for δ = 1.5%, and v = 1

Trends are not promising and there seems no solution to collective action problem …

- But do we see the emergence of two groups, whilst developing countries catch up … with whom and to what ?



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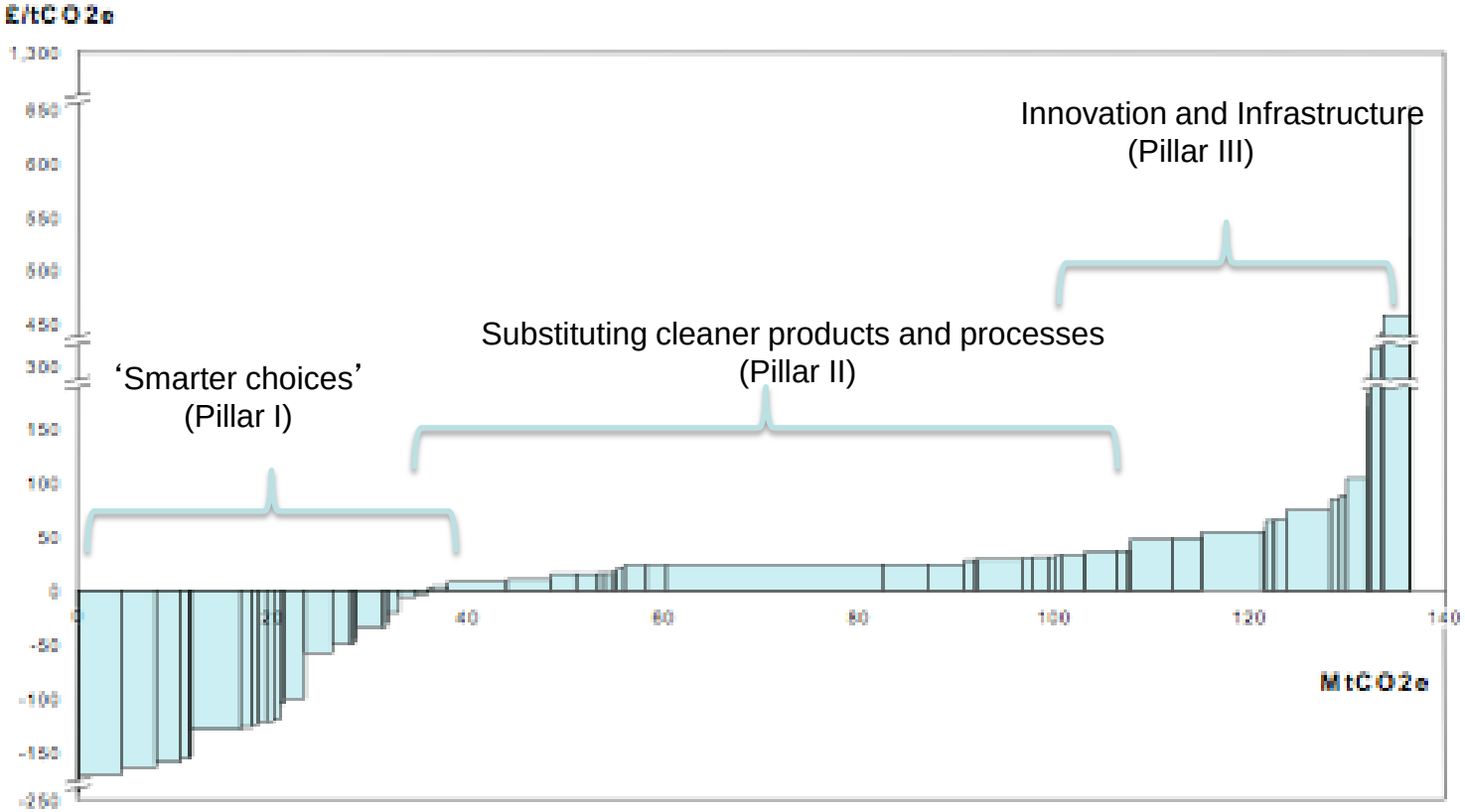
Three conceptions of the challenge

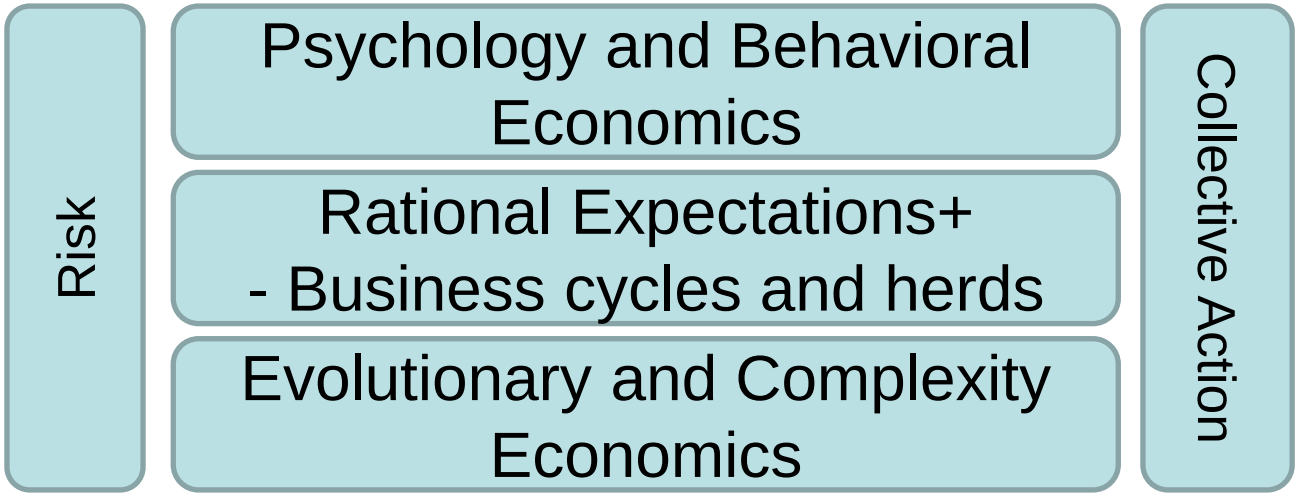
	Stage of perception	Domain of analysis / response
'Don't see, don't know, don't care'	Low / declining energy prices First 'few decades' of climate change	Volatile public concern, easily eclipsed, bored or confused; Environmental group campaigning *vs* resistance lobbying; Expert debate based on science and projections trying to look forward to …
Optimisation & cost-benefit	Tangibility – energy prices, education and/or as CC impacts rise above the noise: lead to deeper public acceptance and knowledge	Cost-benefit framing .. Grappling with the imponderables and values *.. Which will be evaluated differently in different regions*
Strategic security & sustainability	'Security' jeopardised by exposure to energy and climate risks	Challenges as a *security* issue • Ultimately for all (systemic, intergenerational/global risk) • For the most vulnerable, much sooner •.. With international spillovers

One challenge is to develop analytic discourse to help societies in the first stage look ahead to make sense of later stages

Three realms of (mitigation) opportunity

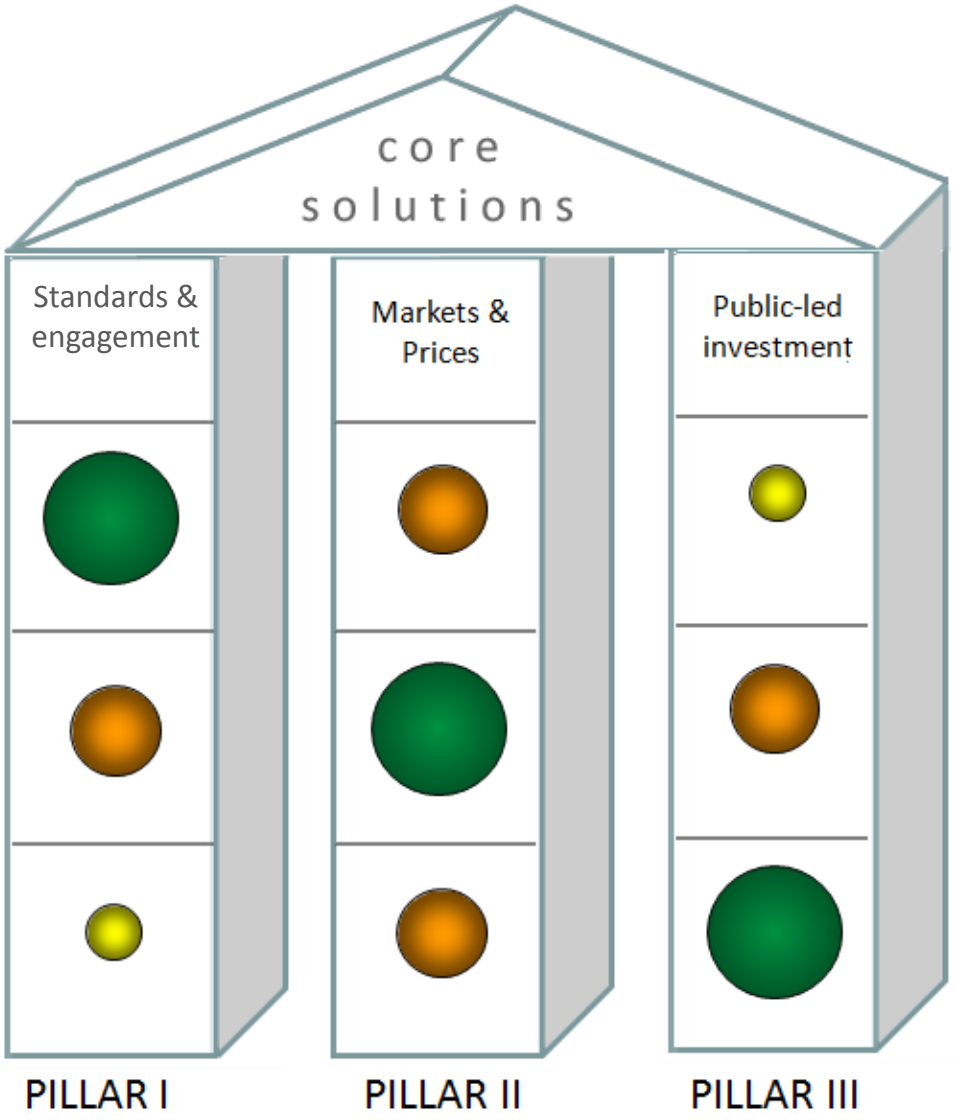


Three (plus two) evolving fields of theory

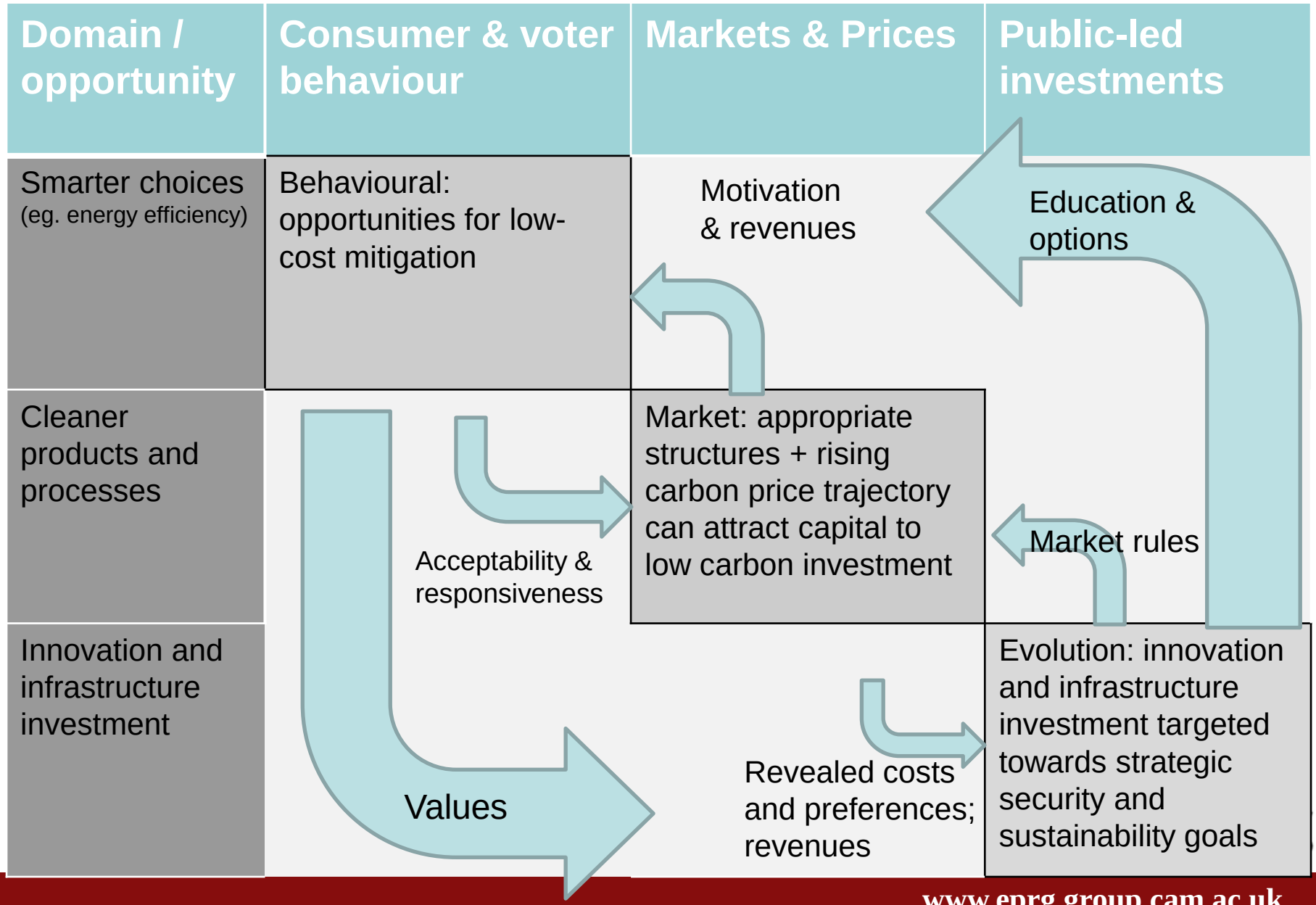


The 'policy pillars' required to exploit the realms of opportunity, based on the three fields of theory

Realm of Opportunity	Field of theory
Smarter choices (eg. energy efficiency)	'Behavioural economics' (eg. barrier, transaction, psychology & satisficing)
Cleaner products and processes	Rational expectations+ economics
Innovation and infrastructure investment	Evolutionary & complexity economics



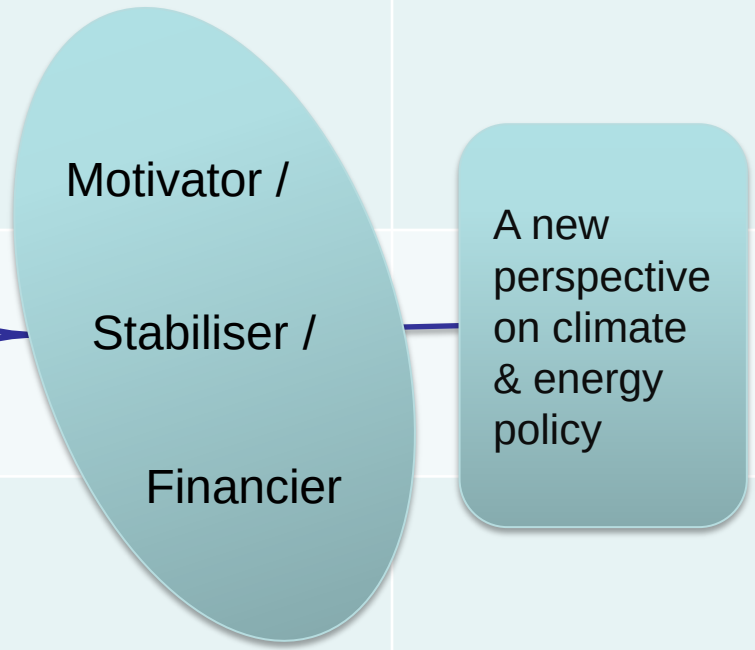
…. Will need to get smarter at integrated policies…



Climate policy is not separable from other policy areas

- And on each pillar, there is potential for co-benefits

Pillar	Potential co-benefits	Role of climate policy
Standards and engagement for smarter choices	Enhanced energy efficiency, subsidy removal and more 'rational choices'	
Markets & pricing for cleaner products & process	Enhanced investment certainty & optimal revenue raising including energy security	
Investment for innovation and Infrastructure	Accelerating innovation in some of the least innovative sectors in our economies	



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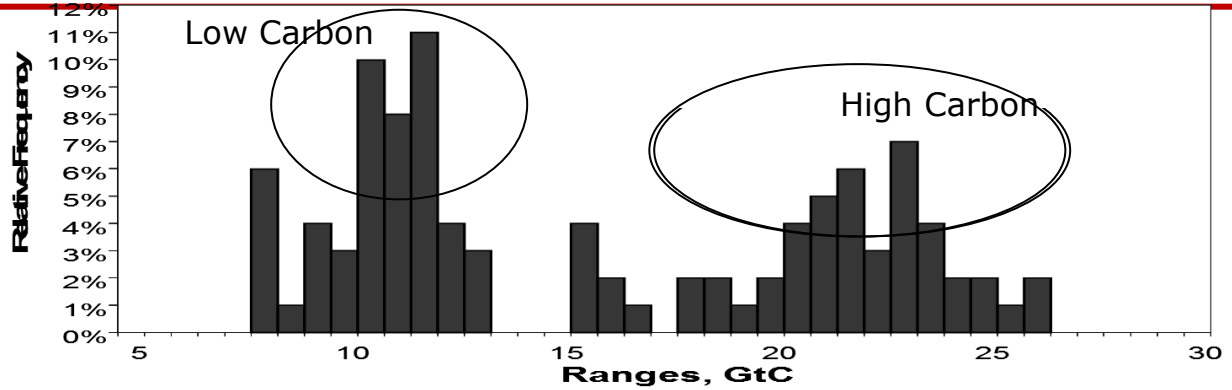
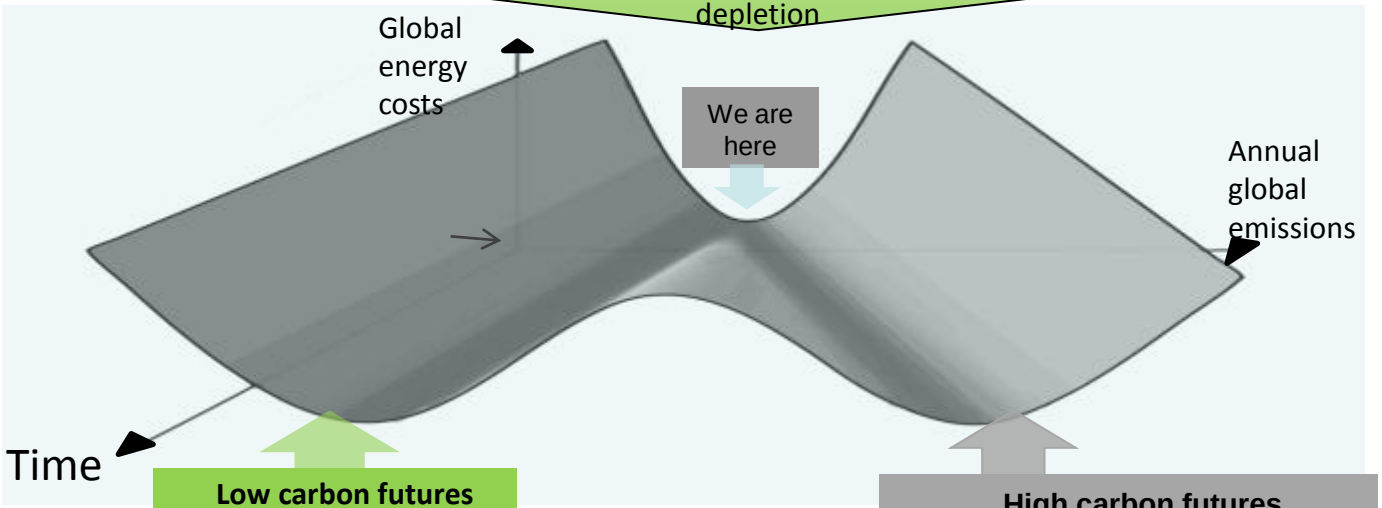
.. A coalition willing and able to strike out on a different path

Number of potential energy futures near 'minimum' cost



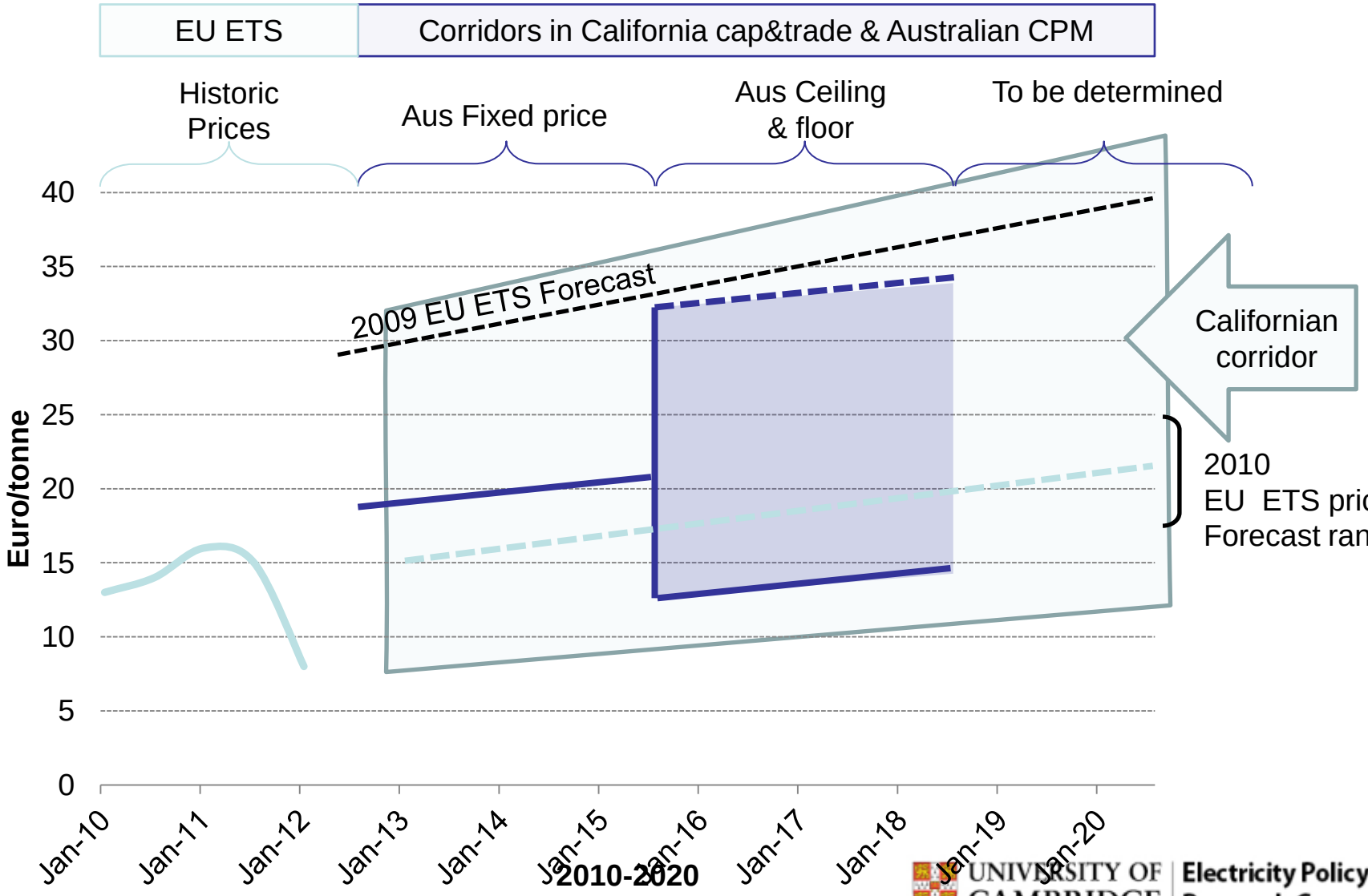
The clustering of 'low cost' energy futures around higher and lower emission levels, rather than in the middle, reflects the fundamental options in the face of oil depletion



Low carbon futures
- An integrated energy system
- Electricity in transport
- Low-carbon electricity
- High capital costs….
- ……but low operating costs

High carbon futures
- A continued dependence on fossil fuels
- Unconventional and synthetic oil in transport
- Low capital costs…
- …but high operating costs and a host of environmental issues beyond carbon

.. including carbon price design and maybe linking ..



UNIVERSITY OF CAMBRIDGE | Electricity Policy Research Group

Source: CS 'Strengthening the EU ETS: a stable platform …'

Some basic features of low carbon coalition

- Likely to be led by importers (but with exceptions)
  - Key is whether fossil fuel / energy intensive producers gain blocking power
- Integrated policy design across the three pillars for maximum economic benefit
  - Requires much smarter policy
  - Identify where are the joint gains from cooperation
- Key challenges in design & linking trading schemes
  - Complex politics and design
- Need to leverage trade dimensions
  - Coalition unstable if expected to discriminate against its own carbon-intensive producers (and ineffective if it exempts them)
  - Evolve from production to consumption for energy-intensive commodities, to address carbon leakage, carbon flows accounting, & create incentives for coalition expansion

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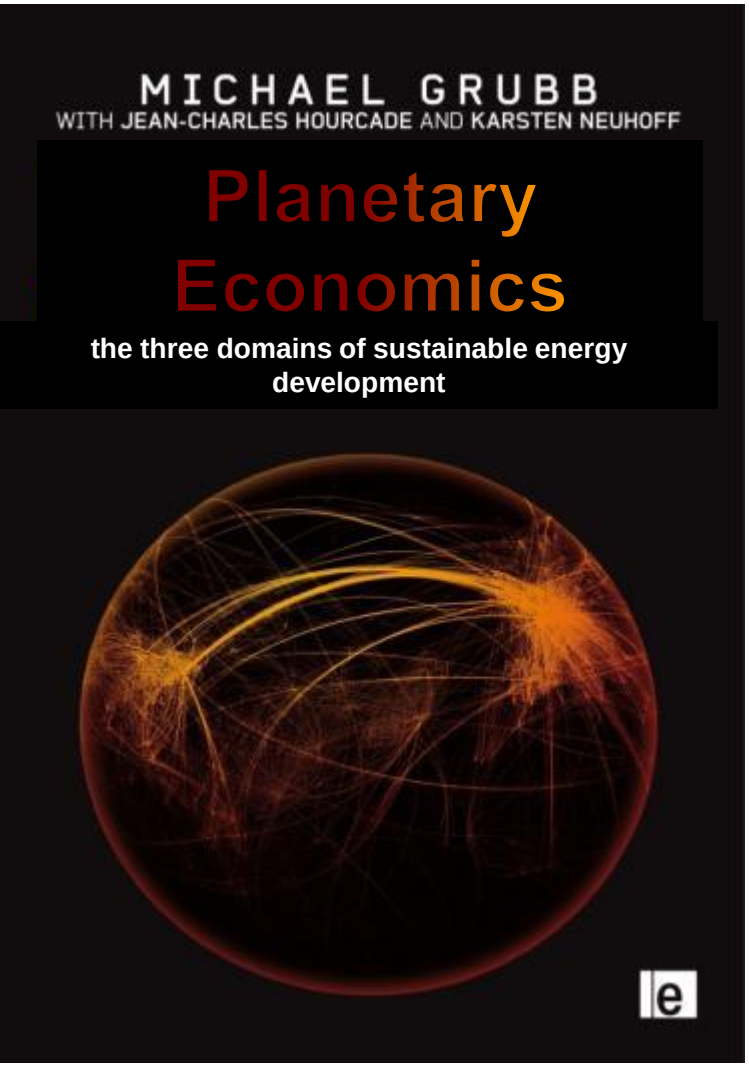
Planetary Economics:
the three domains of sustainable energy development



Chapter 1. Trapped?

Pillar I: Standards and engagement *for* smarter choices

Chapter 2: The Energy Efficiency Resource - *Why do we use so much energy?*
Chapter 3 : Tried and Tested – *Three Decades of Energy Efficiency Policy*
Chapter 4 Power to the People **-** *Understanding and empowering behavioural change*

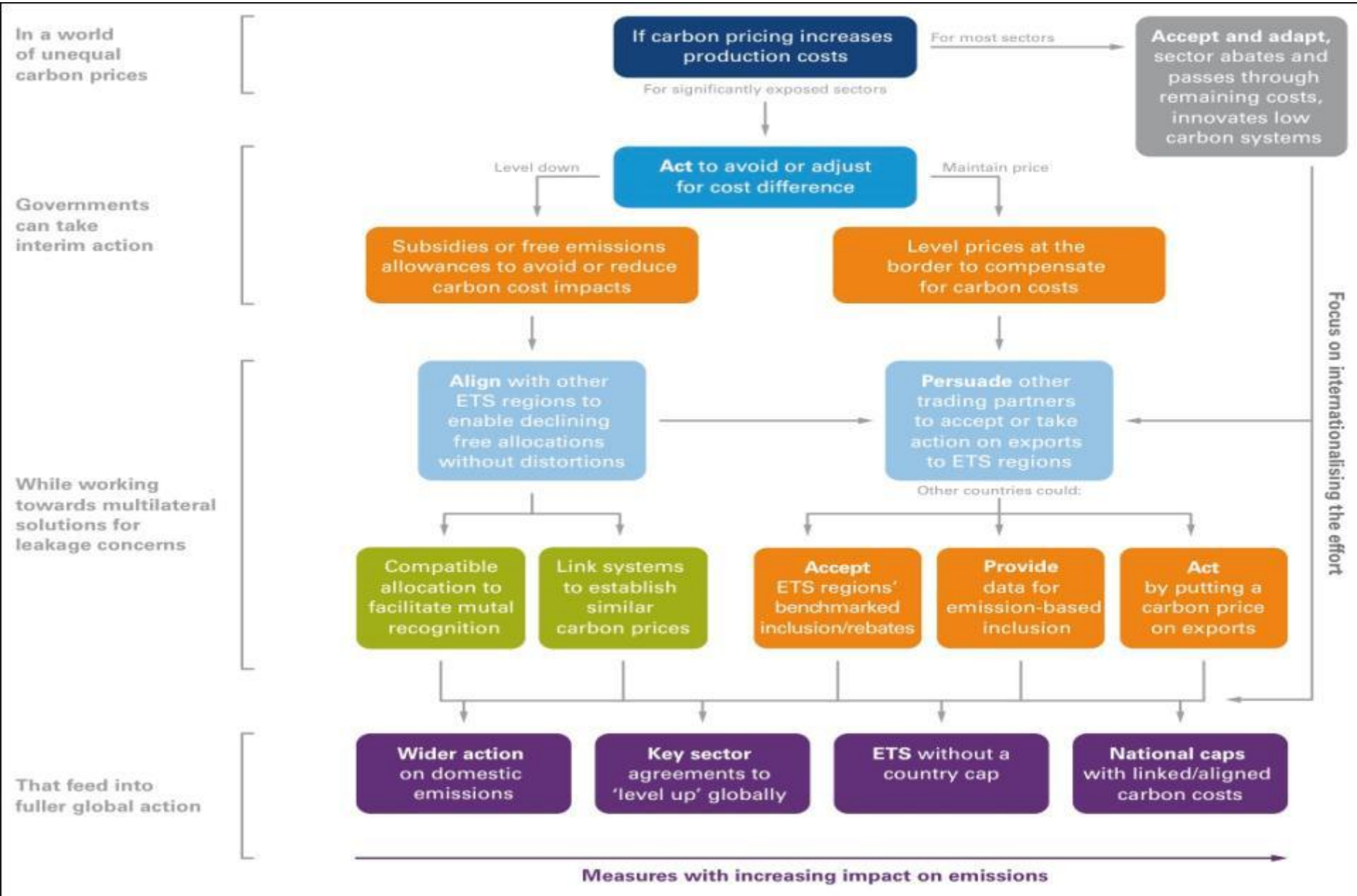
Pillar II: Markets and pricing *for* cleaner production and products

Chapter 5. Pricing Pollution - *Of Truth and Taxes*
Chapter 6. Cap-and-trade & offsets **-** *From Idea to Practice*
Chapter 7. Who's hit? **–** *The Distributional Impacts of Carbon Pricing and How to Handle Them*

Pillar III: Investment and incentives for innovation and infrastructure

Chapter 8. Energy and Emissions – *Technologies and Systems*
Chapter 9. Bridging the Technology Valley of Death - *From Ideas to Use*
Chapter 10. Transforming systems - *Investing in Low Carbon Innovastructures*

… and navigate sectoral journeys including leverage from move to consumption basis for energy intensives



To understand Planetary Economics

We need to abandon idea of a single unified global actor

Decision domains relate to *different actors with different characteristics*

Decision Domain	Actors	How many climate+energy Investment decisions?	What consistent energy/ mitigation decisions?
Adequacy & inertia	**Individuals** in own, employee and social (voter) context **Nimby NGOs**	Tens of millions to billions	Habits & rule of thumb Resistance to change
Optimisation & cost/benefit	**Regulatory authorities** **'The market'**: private sector mainstream investment, financing & purchase	Thousands to millions	Regulation for competition Standard investment & purchase appraisal
Security & strategy	**Government** – rulemaking & own investment **Multinational** energy & engineering firms - strategy **Global NGOs**	A few to hundreds	Public-led investment in R&D, infrastructure Corporate business development