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Remarks to
CEEPR-EPRG-EDF European Energy Policy Conference
Paris, 7-8 July 2016

Session: “Now Comes the Hard Part”: Climate Policy After COP21

- Some real-world complexities
- On pricing and innovation
- Constructing a ‘club good’?
Ideal policy comprises a package which matches the best instrument to the respective domain of decision-making.

Policy pillars

1. Standards & Enabling
   - Satisfice: H
   - Optimise: M
   - Transform: L

2. Markets & Prices
   - Satisfice: L/M
   - Optimise: H
   - Transform: L/M

3. Strategic Investment
   - Satisfice: L
   - Optimise: M
   - Transform: H

Standards & Enabling:
- Highest relevance (H)
- Medium relevance (M)
- Lowest relevance (L)

Markets & Prices:
- Smarter choices
- Cleaner products & processes

Strategic Investment:
- Innovation & infrastructure
Carbon pricing will overlay complex structure of existing energy subsidies.

**Existing Energy Subsidies**
- Large developing country consumer subsidies
- Sizeable developed country producer subsidies
- Highly fluid with national reforms and fluctuating international prices

**And taxes**
- Diverse consumer taxes across industrialised countries
- Gasoline taxes in EU & Japan equate to several hundred $/tCO2

Could do ‘gross’ carbon price in defined instruments; still problematic to draw line between ‘good’ and ‘bad’ guys for definition of generic eg. border adjustments?
Carbon prices will necessarily differ between countries

- Under classical utility assumptions, the *welfare cost* of a given carbon price inverse to GDP
  - Unless perfectly compensating international transfers
- ‘All politics is local’
  - Any coalition or club will need to allow for prices differentiating at least within a range, maybe even if linked (implying exchange rates)
- Implies pricing ‘club’ *on its own* will not solve carbon leakage for energy-intensive production
  - Though it might provide a framework for doing so
Another way to generate a ‘club good’?

Remarks to

Program on Science, Technology and Society at the Harvard Kennedy School lecture series on Science and Democracy

Cambridge MA, 4 November 2015

- Some contextual remarks
- A Gedanken experiment
- On energy sector innovation + carbon pricing clubs
Switch tack: we are seeking radical innovation in some of the least innovative sectors of our economies.

The ‘technology valley of death’ caused by high up-front innovation costs & long lead times => large risks weak demand-pull and large market risks in innovating for policy-dependent value.

Mix of strategic investments in both technology push and demand pull needed to overcome numerous obstacles.
What is missing?

Money =========→
(at rising scale)

| Low innovation,         |
| little connection between |
| innovators and markets  |
| R&D intensity < 1%      |
| (eg. energy & construction) |

Technology push → Technology Valley of Death → Market pull

• We have gained extensive experience of policies to span innovation chain
• Need integration between public and private, & strategic investment and markets
• Infrastructure important as the technologies expand – need to overcome lock-in
• International technology cooperation can enlarge the market and amplify the benefits

PE Figure 9.7. Innovation intensity & the broken chain

⇐ ====== Markets
(credible and strategically growing)
Renewed carbon pricing narrative:

• Not an abstract (externality pricing) but an *instrumental* rationale
  – Investment as well as operational incentive (credibility central)
  – A source of funding for energy efficiency and innovation programmes
  – A political narrative based around the Bashmakov-Newbery constant of energy expenditure

• Carbon leakage
  – A sector-specific problem potentially addressed through carbon pricing on material consumption
  – Increasingly offset by ‘clean technology diffusion’ as part of Third Pillar

Innovation / evolutionary ("Third Domain") economics:

• Accelerating innovation in such sectors can generate an economic surplus
  – Which can be shared between private and public / cooperative

• Innovation not synonymous with R&D, must span the full innovation chain
  – The economic gains emerge as industry gets closer to market and supply chains mature
  – Systemically generate positive not negative lock-in

• Carbon pricing a crucial part of the incentives and returns
Planetary Economics: Energy, Climate Change and the Three Domains of Sustainable Development

1. Introduction: Trapped?
2. The Three Domains

**Pillar 1**
- Standards and engagement *for* smarter choice
- 3: Energy and Emissions – Technologies and Systems
- 4: Why so wasteful?
- 5: Tried and Tested – Four Decades of Energy Efficiency Policy

**Pillar II**
- Markets and pricing *for* cleaner products and processes
- 6: Pricing Pollution – of Truth and Taxes
- 7: Cap-and-trade & offsets: from idea to practice
- 8: Who’s hit? Handling the distributional impacts of carbon pricing

**Pillar III**
- Investment and incentives *for* innovation and infrastructure
- 9: Pushing further, pulling deeper
- 10: Transforming systems
- 11: The dark matter of economic growth

12. Conclusions: Changing Course

Published Routledge 2014

6-page ‘Highlights’ paper available

http://climatestrategies.org/projects/planetary-economics/
for further information #planetaryeconomics