Promoting Transitions to a Low Carbon Economy: Anticipating the Sticking Points

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Introduction

Transitions pose major challenges – technologically, economically, politically, socially and environmentally.

There is some optimism – technologically and economically - that we might meet many of these challenges, at least in the short term to medium term.

But *non-market barriers* are significant – they are likely to create highly important sticking points at some point.

What can we learn from other instances where these sticking points have been encountered?

What do we need to do to turn these into tipping points so that on-going transitions can be secured in the longer term?

Economic Viability

The Stern Review changed the political landscape by arguing that the costs of action (especially with international cooperation and early action) could be significantly less than the costs of inaction.

Key policy prescriptions:

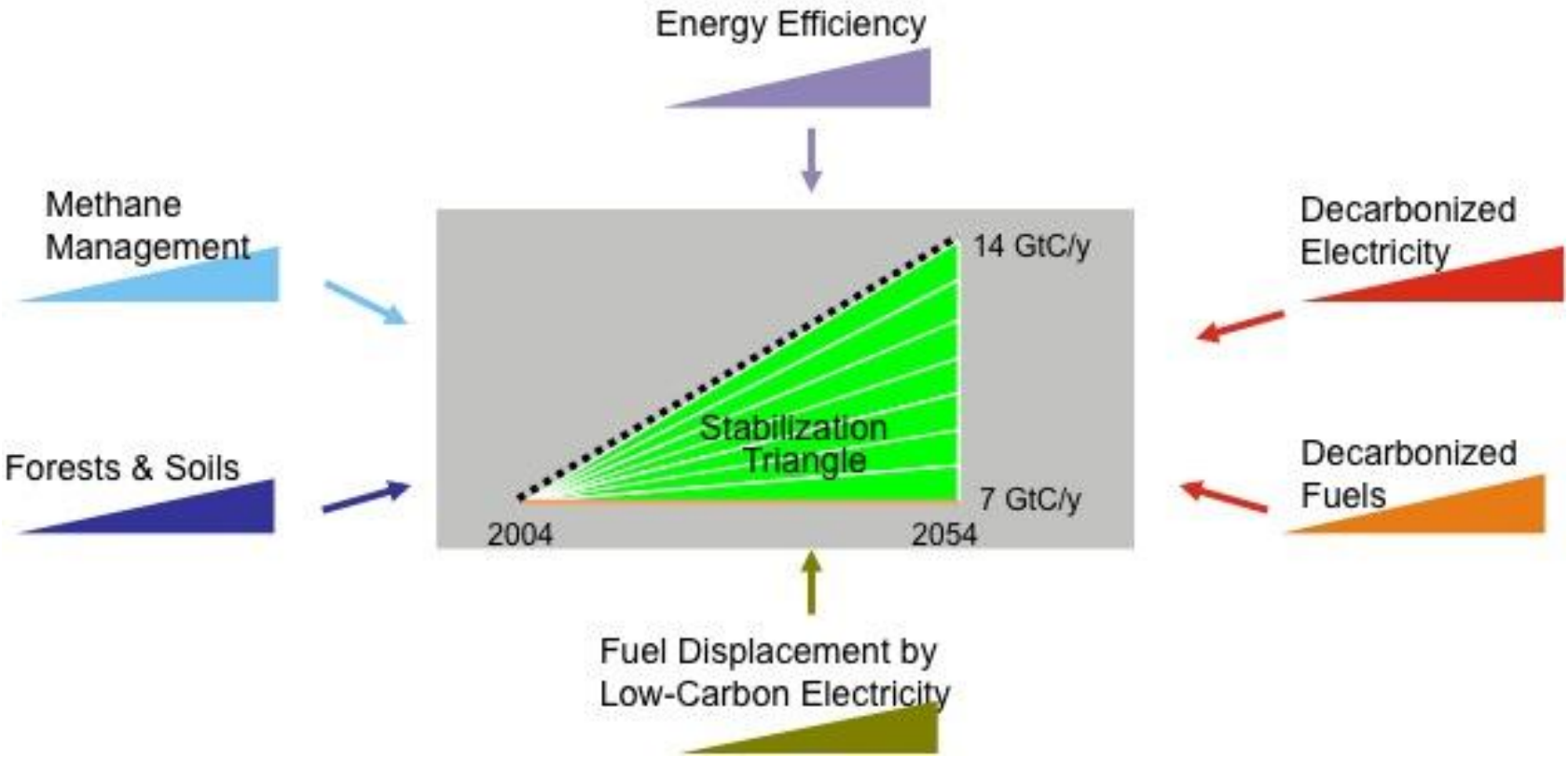
1. the pricing of carbon through taxes, trading or regulation
2. support the innovation & promote deployment of low carbon technologies
3. the removal of non-market barriers.

Technological Optimism

`Humanity can solve the carbon and climate problem in the first half of this century simply by scaling up what we already know how to do'

Source: Pacala, S. and Socolow, R. (2004) Stabilization Wedges: Solving the Climate Problem for the Next 50 years with Current Technologies, Science, 305, pp968-972.

Technological Optimism



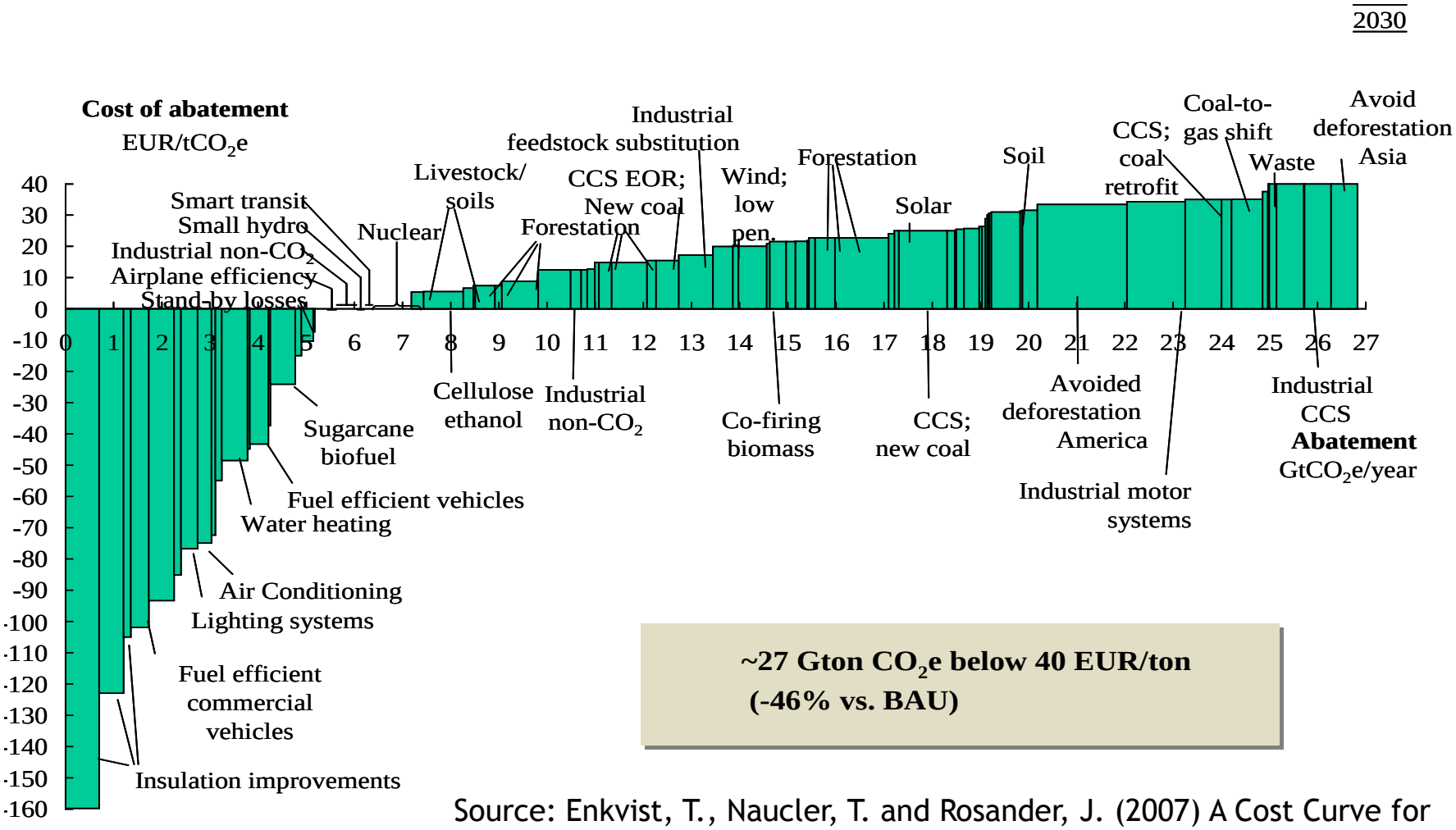
Source: Pacala, S. and Socolow, R. (2004) Stabilization Wedges: Solving the Climate Problem for the Next 50 years with Current Technologies, Science, 305, pp968-972.

Economic and Technological Optimism

…70 percent of the possible abatements at a cost below or equal to 40 euros a ton would not depend on any major technological developments. These measures either involve very little technology (for example, those in forestry or agriculture) or rely primarily on mature technologies, such as nuclear power, small-scale hydropower, and energy-efficient lighting.

Source: Enkvist, T., Naucler, T. and Rosander, J. (2007) A Cost Curve for Greenhouse Gas Reduction, McKinsey Quarterly, February.

Economic and Technological Optimism



~27 Gton CO_2e below 40 EUR/ton
(-46% vs. BAU)

Source: Enkvist, T., Naucler, T. and Rosander, J. (2007) A Cost Curve for Greenhouse Gas Reduction, McKinsey Quarterly, February.

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Political Viability

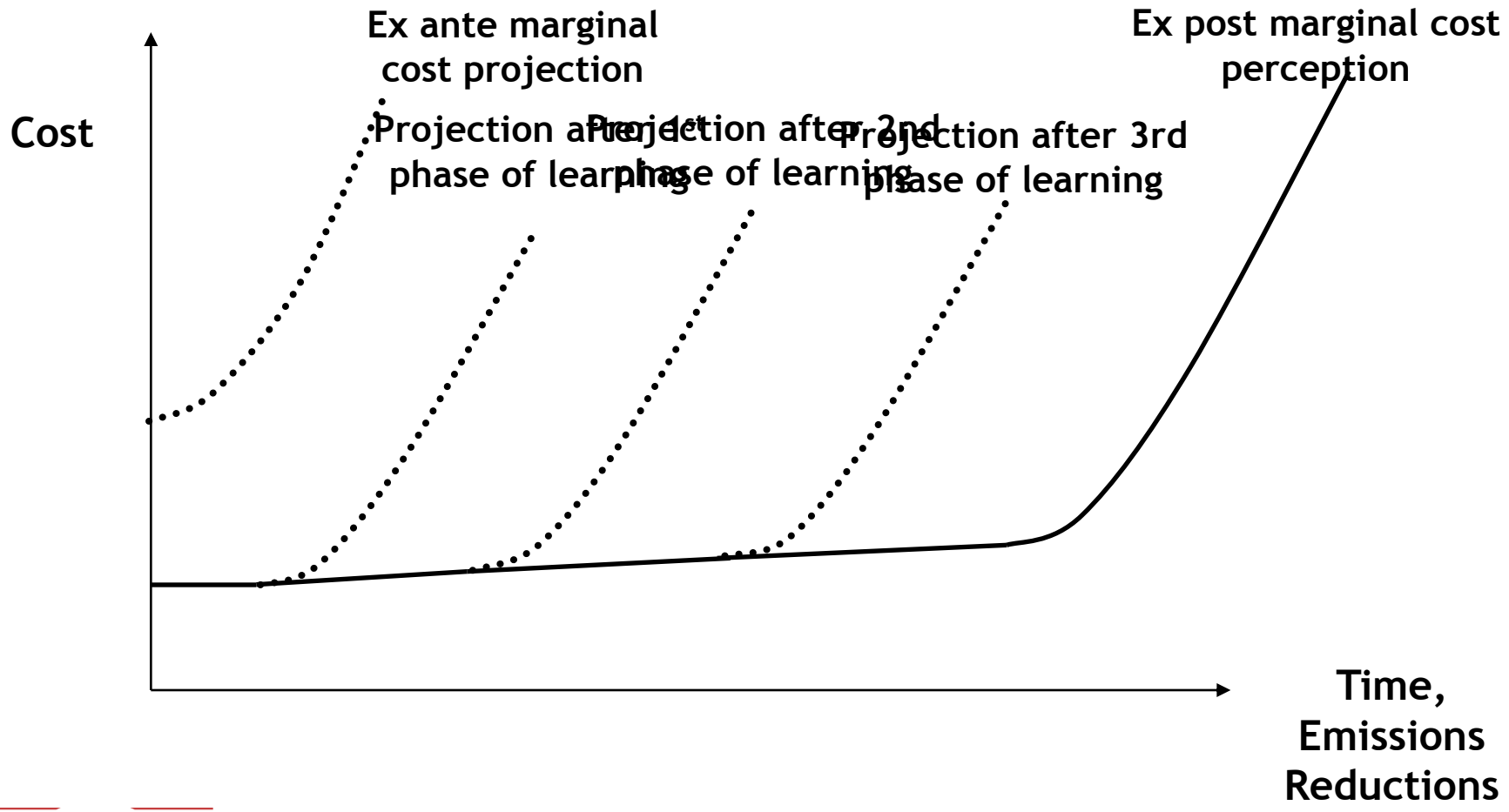
Claims about the technological and economic viability of transitions have made political interventions more viable.

A simplistic, top-down view of policy might then suggest that

- science informs the targets
- the targets inform the permit allocations
- the market sets the prices
- the prices drive the changes
- non-market barriers can be removed to ease the transition.

Key issue - what can we learn from other instances where environmental policy has encountered non-market barriers?

Insight 1 – The Micro Level



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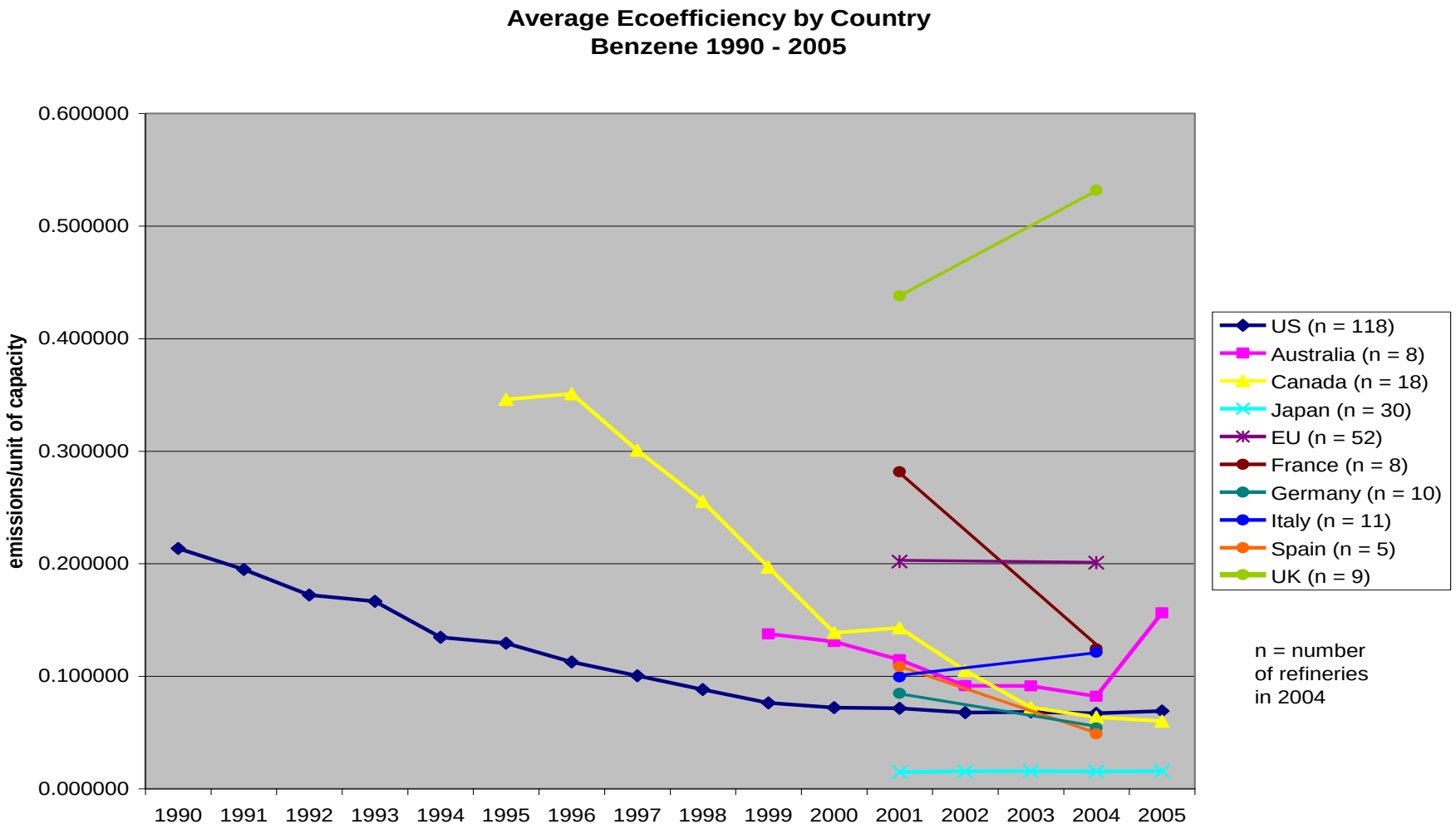
Insights 1 – The Micro Level



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Insight 1 – The Micro Level

- Ex ante predictions do not always (often?) match ex post outcomes
- Technology forcing leads to learning in both government and business.
- For a (variable) period and to a (variable) degree, learning reduces costs and extends periods when relatively pain free improvements can be secured.
- Sustained periods of improvement must eventually require structural and strategic as well as incremental change.
- *Resistance to demands for structural or strategic change is a major non-market barrier*.

Insight 2 – The Macro Level

- Dutch National Environmental Policy Plans introduced in late 1980s.
- A goal oriented approach based on consensus building and back-casting (and more recently on transitions management).
- Acknowledged to have triggered significant levels of innovation and improvements in performance.
- Process stopped in its tracks and targets weakened when it threatened established industrial interests.
- *Resistance to targets that threaten key interests is again a major non-market barrier*.

Conclusions (1)

- Whilst transitions to low carbon energy futures pose significant challenges, there is – amongst some – a degree of technological and economic optimism that these challenges can be met.

- This may be the case in the short to medium term – incremental improvements and the scaling up of existing technologies may deliver the early stages of transition in relatively pain free ways.

- But at some point transitions are likely to run into significant non-market barriers – notably when they promote structural changes that challenge vested interests or social values.

Conclusions (2)

Some of the technological and economic optimism that we have seen clearly needs to be grounded - the first phase of relatively pain free improvements might buy us time (if we have any) to prepare the ground for the more challenging structural changes ahead.

Will credible LR targets coupled with very substantial investment and learning in the SR-MR enable us to avoid these sticking points so that we achieve LR transitions?

Conclusions (3)

Many key areas for learning;

- link macro forecasts with micro outcomes and develop feedback loops between the two.
- focus not only on targets and instruments but also on institutions, implementation and impacts.
- understand the responsiveness/embeddedness of technologies and behaviour.
- acknowledge the importance of context and of distributional effects – socially, spatially, temporally.