RESEARCH BRIEFING I

THE POLITICS OF LOW CARBON INNOVATION

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The project starts in October 2010 and will last three years.

INTRODUCTION

National governments have committed themselves to ambitious climate policies. These imply substantial shifts away from fossil energy regimes and support of low-carbon electricity technologies. Yet as more and more political support and public resources are committed to low-carbon transitions, so a growing variety of technology advocates will lobby for those resources and try and realise their interests in a lower-carbon way.

The European Commission and European Member States are making substantial efforts in developing a greener energy system. Low carbon innovations such as photovoltaic power plants, off-shore wind parks and carbon capture and storage technologies (CCS) play central roles in contemporary policies.

"Yet we know little of how technology advocates negotiate and compete for public and private resources, and how governments respond politically to increasing demand for those resources", says Adrian Smith from SPRU (Science & Technology Research) at Sussex university. "Given the urgency of global challenges such as climate change, this is a major gap in our current understanding of low carbon innovation processes." This research briefing is the first to communicate our attempts to address this gap in a new three year research project.

TRANSITION STUDIES

Transition studies is a promising field to study low-carbon innovation processes. It considers incumbent technology systems as constituting a disadvantageous selection environment for low carbon alternatives. Alternatives develop in niches shielded (temporarily) from full competition with the incumbent 'regime'. Niches where experimentation and innovation is successful create socio-technical practices capable of influencing their selection environment and competing with the incumbent systems; while niches where experimentation does not generate improvements lose support and collapse.

This niche theory attracts growing research and policy interest. It promises a more rounded approach to transitions than conventional frameworks, which are based narrowly in supply-side R&D subsidy and demand-side market signals. The Dutch government adopted niche based ideas in its Fourth National Environmental Policy Plan in 2001; whilst the UK government is committed to to develop low carbon industries.

The research is a jointly funded project by the UK Economic and Social Research Council (ESRC) and the Netherlands Organisation for Scientific Research (NWO).

"Renewable industries should be challenged to innovate so that government subsidies will become superfluous"

Maria van der Hoeven, former Dutch minister of Economic Affairs

Costs of photovoltaic cells continue to decrease as technological innovations improve efficiencies and increasing demand allows mass production

Towards a theory of niche protection and the politics involved

PROTECTIVE SPACES

The temporary provision of 'protective space' is essential to niche theory. "Surprisingly, this central concept has been neither fully defined in the literature nor a focus for empirical investigation", says Rob Raven from Eindhoven University of Technology. "The processes for securing (and withdrawing) that protection, its (varied and dynamic) characteristics, and the consequences on the development of the niche, are poorly understood".

Moreover, there is a tendency to treat niche experimentation as a singularly rational and consensual process that achieves social learning. Evaluations of practical experiences with transition inspired policies in the Netherlands suggest that in reality politics, power and interests are critical.

QUESTIONS AND METHODS

1. How have CCS, offshore wind, and photovoltaics niches developed in the UK and Netherlands?

2. What forms of protection against prevailing regimes have assisted these development processes; how has protection altered over time; and how have advocates of these niches been able to secure these protections?

3. How is the gradual withdrawal of these protections anticipated (if at all), and under what circumstances?

4. How does this emerging theory of 'protective space' relate to processes of social learning, expectation development and actor network growth so central to niche theory?

5. What advantages does a political appreciation of niche development bring to our understanding of low carbon innovation?

The project will follow a four-phase research design. In the first phase a general appreciation of the cases will be made. In the second phase, the cases are analysed using methods from political science to study the narratives used by technology advocates and their interests. In the third phase, a socio-technical analysis using concepts from transition studies will inform us about how protective spaces stimulate innovation in niche experiments. In the fourth phase, results are combined to develop novel theory about protective space dynamics. Throughout the project iterations between the four phases are foreseen.

SOCIETAL RELEVANCE

This project will help policy-makers reflect on their support activities over time for key low carbon technologies. In particular we anticipate engaging with practitioners concerned about building legitimacy behind increasingly urgent yet contentious low carbon innovations in policy workshops in The Hague and London.

3 cases, 2 countries

Photovoltaic power
Off-shore wind parks
Carbon capture and storage

Netherlands, United Kingdom

Further reading

Smith, A., Voβ, J.P., Grin, J. (2010). Innovation studies and sustainability transitions: the allure of the multi-level perspective, and its challenges. Research Policy 39: 435-448

Raven, R., van den Bosch, S., Weterings, R. (2010). Transitions and Strategic Niche Management: towards a competence kit for practitioners. International Journal of Technology Management 51: 57-74

Smith, A., Kern, F. (2009). The transitions storyline in Dutch environmental policy. Environmental Politics 18: 78-98