

Modelling international wind energy diffusion: Are the patterns of induced diffusion 'S' shaped?

BACKGROUND

- As efforts to address concerns about energy security and climate change have intensified, there has been growing academic interest in the concept of 'induced diffusion'. This concept refers to any intervention that aims to alter the speed and/or total level of adoption of an innovation by directly or indirectly internalising positive and/or negative externalities.
- It is conceivable that, due to policy reversals as part of the political cycle, the patterns of induced diffusion are markedly different to those observed conventionally when policy interventions play no part in the diffusion process.
- Many targets have been developed by policymakers that are symmetrical in nature and do not account for the learning that is implicit in diffusion curves. For example, in the UK, symmetrical policy targets exist whereby renewables should reach 10 per cent by 2010 and 20 per cent by 2020, implying a linear diffusion process. This is inconsistent with historical patterns of diffusion.

METHODOLOGY

- This paper examines patterns of diffusion when diffusion is induced. It addresses the question of whether patterns are different to the conventional 'S' shaped patterns observed when diffusion is unaffected by policy interventions.
- Using two datasets, the paper focuses on patterns of international wind energy diffusion in OECD countries.

KEY FINDINGS

- The findings suggest that patterns of induced diffusion are considerably different to those observed conventionally.
- The results of the analysis were used to calculate the speed of diffusion amongst OECD countries. This procedure identifies a group of fast diffusers (Austria, New Zealand, Portugal and France) and a group of slow diffusers (Switzerland, Turkey, Finland, the UK, Luxembourg, Mexico and the US).
- The limitations of both datasets point to the need for further empirical research on patterns of induced diffusion using different datasets and in different contexts.

POLICY ISSUES

- The finding that patterns of induced diffusion are considerably different to when there are no policy interventions would imply that policies to induce diffusion do work. The results of the paper are, therefore, broadly consistent with the bulk of the evidence in the induced diffusion literature and contrast with assertions by some that interventions have little or no impact on diffusion.
- Findings suggest that policy targets should take account of learning. Failure to do so may result in an early reversal of policies that might ultimately have succeeded.
- Identification of countries that are fast diffusers and those that are slow diffusers could be used in future research to model the determinants of wind energy diffusion and to shed further light in debate concerning the efficacy and efficiency of competing investment support schemes for renewables.

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