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Low Carbon Electricity Investment: The Limitations of Traditional Approaches and a Radical Alternative

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The creation of a low-carbon electricity system is central to meeting the goals of UK energy policy, and the global challenge of tackling climate change. The creation of such a system requires massive investment, and innovation in a range of low-carbon electricity sources, renewables, nuclear power and fossil fuel generation with carbon capture and storage.

The mainstream approach to tackling this problem has centred on the creation of a carbon price, with additional technology-specific support policies, such as renewable obligation certificates, feed-in-tariffs or government-mandated targets.

This approach raises a number of issues, of which we focus on four:
1. The difficulties with creating investment in capital-intensive zero-carbon electricity generation in the current system.
2. The lack of innovation and investment in R&D in the electricity system partly due to the lack of product differentiation possible in our current markets.
3. The carbon leakage that may arise in electricity-intensive industries such as aluminium as a result of carbon pricing, and the inability of firms to purchase low-carbon electricity to avoid this pricing.
4. The inability of consumers, but most importantly businesses and industries to claim credit for low-carbon electricity purchases, reducing the demand pull for such technologies.

We then look at two complementary approaches. The first is strengthening the carbon price signal, for which the logic seems impeccable. A price floor or carbon contracts for differences can help boost incentives to investment, but are likely to do little for innovation,

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addressing carbon leakage or consumer engagement. The second approach we examine is the UK system of green consumer tariffs. Issues of additionality of renewable purchases have hindered the system, and despite regulation the system highlights the difficulties involved in engaging consumers in low-carbon power in the current regime.

We propose a radical alternative which may help overcome the problems identified. The creation of a long-term differentiated zero-carbon electricity contract market may help resolve some of the issues surrounding investment, innovation, carbon leakage and consumer engagement. Such a market would build on the incentives created by a carbon price, but would base revenues more closely on the cost base of zero-carbon generators. It could help increase product differentiation and innovation. It would help industries claim credit for zero-carbon electricity purchases, helping to reduce carbon leakage, and create greater engagement with all types of consumers, large and small.

The creation of such a market is not without its challenges, regarding additionality, attributability and establishing a tradeable contract structure that could reduce risk could live in open competition with standard grid electricity.

Whether such a market is possible is still a point of research yet there are many justifications for analysing its possibilities.

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