UKERC

Carbon Capture and Storage: Realising the Potential?

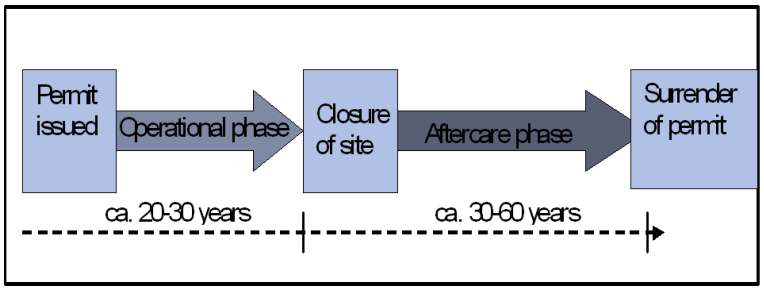
Case study: Investments in landfill in the UK (2001-2011)

Summary This case study explored the economic and financial viability of new investments in landfill.

Storing waste in landfill sites is considered as a suitable regulatory analogue to carbon storage because both activities raise questions about the long-term environmental risks and associated liabilities of dealing with waste streams. Landfilling also has a number of operational characteristics which make it similar to carbon storage (for example a long aftercare phase after operations have stopped). In terms of regulatory framework, the EU CCS directive was directly modelled on the EU landfill directive (for example, in relation to the rules on financial provisions).

Whilst landfill was previously the cheapest waste management solution, the analysis found that it has come under intense regulatory pressure during the last decade because of limits imposed by the EU landfill directive. The UK government therefore introduced a number of instruments to reduce the amount of waste being sent to landfill. The case study found that there have been no investments in new landfill sites since the EU landfill directive was implemented in 2001. New void space, where necessary, has been created through an extension of existing sites. The financial provisions for monitoring and aftercare are not perceived as an important obstacle to new investments by operators. However, they do impact on operators' ability to finance projects and their balance sheets, especially when they operate multiple sites. Widening the focus of the case to other investments in waste management infrastructure (e.g. recycling or mechanical-biological treatment facilities, energy-from-waste plants) yielded additional insights of potential relevance for investments in carbon storage. Key risks influencing the economic and financial viability of such investments include: off-take, waste stream, technology, policy and planning risk. It is argued that carbon storage faces similar risks.

Typical phases of a landfill operation



Typical investment requirements and models

Typical investment required:

- Landfill site: between £10-60m depending on size, location, geology
- Residual waste treatment facilities: £100m

Investment models

- Landfill: historically public ownership; after privatisation often supported by private finance initiative credits
- Residual waste treatment facilities: either through loan, secured by long term contract with waste disposal authority or merchant facilities funded off balance sheet by large multinational firms or loans

Lessons for CCS

1. For landfill, the financial provisions for monitoring and aftercare are not perceived as an obstacle for new investment. The most common mechanism for meeting provisions is through bonds. However, carbon storage site closure and aftercare monitoring might incur substantially higher costs and higher bond premiums.
2. A variety of policy instruments have been used to support new waste management infrastructure including long-term contracts, private finance initiative credits and grants.
3. Similar instruments are planned to support CCS investment (e.g. capital subsidies and long-term contracts under Electricity Market Reform). The provision of fixed price long-term contracts is likely to be important in enabling CO_2 infrastructure

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