

# THE CCUS HUB PLAYBOOK

A guide for regulators, industrial  
emitters and hub developers

## TRANSPORT AND STORAGE OPERATORS



## 4.3 TRANSPORT AND STORAGE OPERATORS

The essence of a CCUS hub is collective transport and storage infrastructure, supporting a range of different emitters and possibly even several hubs. Transport and storage operators are responsible for transporting the captured carbon dioxide by pipeline, ship or other means to the storage site, where they inject it into the subsurface geology. They assume most of the liability for the captured carbon dioxide once it is handed over, and they are responsible for permanent storage and monitoring at least until the well is safely closed.

To date, transport and storage operators have tended to be large companies or joint ventures, with infrastructure and sub-surface knowledge, as well as experience in running major projects. They are often also involved in hub development, playing the role of integrator as well as operator. Where CCUS-relevant infrastructure (such as carbon dioxide pipelines in the US) are more mature, transport and storage operators will more frequently be brought in as service providers by emitters or other companies wanting to set up a hub. And as the CCUS ecosystem evolves, companies focusing only on transport or only on storage are starting to emerge.

### Q: WHAT IS THE BUSINESS MODEL FOR TRANSPORT AND STORAGE OPERATORS?

The business model for transport and storage operators is relatively simple – they are paid a fee to transport and store the carbon dioxide emissions captured by their industrial customers. The tariff is structured to cover the operator's investment and operating costs and provide a return on capital employed.

Since carbon prices are low and demand for low carbon products is nascent, the current business model for carbon transport and storage is likely to involve government support and regulation, depending on market conditions.

Where transport and storage operations have the form of a natural monopoly – multiple emitters using a single piece of infrastructure – returns are likely to be regulated and comparable to those achieved by utilities and large-scale infrastructure companies.

As competition in transportation and storage services emerges, the need for regulation may decrease.

#### READ MORE

- › Understanding the business model for transport and storage operators
- › What are the policy support models used in early hubs?



## WHAT SPECIFIC RISKS DO TRANSPORT AND STORAGE OPERATORS FACE?

Storage liabilities are a key risk for transport and storage operators. Government CCUS regulation should be clear on carbon dioxide storage liability: who is responsible at each stage of injection, monitoring and long-term stewardship; and how risk is shared and eventually transferred to government.

The transport and storage operator will need to spend money upfront to quantify the storage capacity and de-risk it for potential customers. For example, geological de-risking may require shooting seismic and drilling wells. Upfront investment in de-risking storage will make it much easier to scale CCUS hubs, but few policymakers have focused on this to date.

The operator will also need to identify the specifications around purity and pressure of the carbon dioxide to be delivered to the transport and storage operator. Looser specifications makes post-capture compression and purification cheaper for emitters, but impurities in the CO<sub>2</sub> – such as water, nitrogen, SO<sub>x</sub>, NO<sub>x</sub>, carbon monoxide, hydrocarbons and mercury – can have major implications, for example corrosion, for carbon dioxide transportation and storage infrastructure.

### READ MORE

- Risks in the CCUS hub value chain and how they can be mitigated



## WHAT REGULATIONS ARE NEEDED FOR CO<sub>2</sub> TRANSPORT AND STORAGE?

CCUS hubs require regulations relating to permitting, standards for construction and operation of transport and storage infrastructure and storage facilities, storage liabilities, monitoring, reporting and verification (MRV) protocols and rules for third party access.

Governments typically have the tools and experience to incentivize and regulate the carbon dioxide transportation business, but they can struggle with understanding geology and the associated storage risks.

### READ MORE

- Developing effective regulations for CCUS hubs

