Storage framework agreements: Key terms

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Context and introduction

Navigating the complex CO_2 storage value chain

The CO_2 storage value chain involves multiple steps and stakeholders, making it inherently complex.

- **Capture**: CO_2 emitters capture emissions from industrial processes.
- **Transport**: Logistics providers handle the transportation of CO_2 to storage sites.
- **Interim storage**: Temporary storage solutions may be used before final sequestration.
- **Permanent storage**: Long-term storage providers sequester CO_2 in geological formations.

Challenges and considerations:

- **Coordination**: Ensuring smooth coordination among all parties to prevent bottlenecks and delays.
- **Risk management**: Mitigating risks associated with CO_2 handling and storage.
- **Regulatory compliance**: Adhering to international and local regulations governing CO_2 storage.
- **Cost efficiency**: Balancing the costs involved across the value chain to maintain economic viability.

A comprehensive CO_2 storage agreement is essential to manage the complex value chain involving multiple stakeholders, including CO_2 emitters, transport and logistics providers, and storage operators.

Establishing robust CO_2 storage agreements

Purpose

- This presentation outlines the key terms and considerations necessary for drafting robust CO_2 storage agreements.
- The terms discussed are based on contracts Airfix has discussed with several storage operators, including Northern Lights, but also the public tendering process of Gas Storage Denmark. They serve as foundational examples for identifying critical components of such agreements.

Key Points

- Importance of defining roles and responsibilities to ensure seamless operation and collaboration.
- Managing risks and liabilities through well-structured legal frameworks.
- Ensuring compliance with regulatory requirements and maintaining high safety standards.
- Facilitating transparent and fair financial arrangements.

➔ By understanding and addressing these key terms, stakeholders can develop comprehensive CO_2 storage agreements that support the effective and efficient operation of the entire CCS value chain.

CO_2 value chain contractualisation: Key considerations & risk for the emitter

Key considerations & risks

Based on Gas Storage Denmark's public agreement

Topic	Description	Options
Financial Guarantee	**For Storage operator** All CO_2 storage facilities working on commercial deals request from the emitter or project owner a **financial guarantee.** The guaranteed amount is typically - between **15-25%** of the total contract value - or between **1-2.5 years** of annual contract value The guarantee needs to be provided upon signature of the contract or at the latest prior to operation start.	The guarantee can be alleviated in some cases if the project owner can demonstrate a credit rating of at least BBB - from S&P (or similar equivalent). If not typical guarantees are accepted from: - Financial institution with rating of at least BBB- from S&P (or similar) - Parent company with similar credit rating requirements Alternatively, in some cases, a pre-payment of the first 1-2 years of the storage fees can also be acceptable.
	For waste permit (TBC) A guarantee equivalent to 1-year of storage costs is currently required by Swiss authorities as a guarantee of being able to transport the CO_2 back to Switzerland in case of refusal / issues at storage site.	

Key considerations & risks

Topic	Description	Options
Storage operator Conditions Precedent	Typically, several milestones will be included in the storage agreement as Conditions Precedent for the contract to come into effect. These can include some or all of the following: ● Final Investment Decision on storage site by Storage operator ● Obtaining the exploration licence / permits from the Government ● Obtaining regulatory approval for the operational phase ● Approval by environmental and other governing agencies Each condition precedent is usually assigned a deadline by which it needs to be completed.	There is not much the emitter can influence regarding this timeline.

Key considerations & risks

Topic	Description	Options
Storage operator Liability	In this very nascent market, Storage operators are taking significant risk and have typically refused to be liable towards emitters for the continuous operation of their facility. This typically translates into the fact that no financial penalty is due emitters if the storage site: ● Has to shut down for an undefined period, even due to its own mismanagement of the facility ● Faces a Force Majeure event that pauses its operations Typically, only after 6-12 months of operational break is the emitter authorised to exit the contract.	The risk for the emitter is considerable, as during a pause in storage operation, the rest of the value chain also has to be paused. Hence, the emitter should ensure its transport contract is somewhat flexible to pause for determined periods of time and that its CDR sale agreements includes a clause of non-delivery in case of storage shut-down, as the emitter may not be able to hold onto the CO_2 long enough to catch up its delay.

Key considerations & risks

Topic	Description	Options
Emitter liability	"Take or pay"-type contracts means emitters are liable towards the storage provider even if there are interruptions at its carbon capture facility or along the transport value chain. Only the cases for Force Majeure (FM) are exempt from this payment obligation. This is not a given in all storage contracts, and should be negotiated in by the emitter. In addition, defining these FM cases is crucial and as is including the entire value chain as part of the FM.	There is typically a liability cap, but otherwise this is a risk that the emitter must bear.
Quality checks	Most storage service providers will check that the CO_2 meets quality specifications upon arrival at the storage site. Others will only do random checks once the CO_2 aggregated with that of other emitters.	It is crucial for emitters to evaluate the quality of their CO_2 right after capture and to make transport providers liable for maintaining the CO_2 quality specifications throughout the transport value chain. Additionality, emitters must ensure that penalties applied by the storage site must be backed by proof of damage & cost to replace material.

Key considerations & risks

Topic	Description	Options
Carbon removal rights	Typically storage service providers waive their right to the carbon removal credits. Transport service providers do not have a claim to those rights unless contractually transferred (not common). Most of the uncertainty is typically earlier in the value chain, with the biomass feedstock provider or the purchaser/user of the bio-based product.	It is important for the carbon project owner to be able to **contractually claim its ownership of the environmental rights** linked to removing CO_2 from the atmosphere. This should be part of all contracts with CO_2 transport and storage providers, as well as with their suppliers and clients on other products. However, the title of the physical CO_2 molecule is typically transferred to the storage provider and with it the responsibility to keep it stored. According to EU regulation, leakages will require the storage provider to pay EU ETS price for the leaked CO_2 . Emitters should ensure they are notified of these events contractually.

CO_2 storage agreements: Key terms

CO_2 storage agreements: Key terms (1/8)

Topic	Description	Considerations
Parties and subject matter	Identifies the entities involved (e.g. a CO_2 emitter and a storage provider) and outlines the purpose of the agreement.	Ensures clear roles and responsibilities. Both parties need to be legally-recognised entities with the capability to fulfill the contractual obligations.
Location and facilities	Specifies the locations of the CO_2 emitters and the storage facilities.	Logistics and transportation costs are influenced by the distance between facilities. Regulatory compliance and local environmental laws must be considered for both locations.
Service description	Details the services provided, such as the capture, transport, and storage of CO_2.	Clear definitions prevent misunderstandings. Quality and specifications of CO_2 must be agreed upon to ensure compatibility with storage facilities.

CO_2 storage agreements: Key terms (2/8)

Topic	Description	Considerations
Condition precedents	Lists the conditions that must be fulfilled before the agreement becomes effective, such as obtaining necessary approvals and completing due diligence.	Provides a safeguard for both parties, ensuring that critical milestones (e.g., final investment decisions, credit support) are met before obligations are enforced. Typical CPs are: - FID emitter - FID storage site - Licence approval storage
Permits	Each party must obtain and maintain the necessary permits.	Ensures legal compliance and smooth operation. Delays in obtaining permits can affect project timelines.
Risk and title transfer of CO_2	Specifies when and how the risk and ownership of CO_2 transfer from the emitter to the storage provider.	Clarifies liability and risk management. The emitter is responsible until the CO_2 reaches the agreed delivery point.
Agreement period and longstop date	Defines the duration of the agreement and the latest possible start date for operations.	Ensures both parties are committed for and from a specified period, allowing for long-term planning and investment.

CO_2 storage agreements: Key terms (3/8)

Topic	Description	Considerations
Annual committed volume	The volume of CO_2 that the emitter commits to deliver and the storage provider commits to store annually. This agreement supports effective capacity planning and operational efficiency.	Helps in capacity planning and operational efficiency. Penalties for shortfalls or surpluses should be clearly defined. Typically the annual volumes are broken down to daily or weekly delivery schedules. Ensure that adjustments can be made under predefined conditions or by mutual agreement, providing flexibility for changes in operational conditions.
Scheduled outages	Planned periods during which services may be temporarily halted for maintenance or other reasons, for both service provider and emitter.	Enables proper maintenance scheduling without disrupting operations significantly.
Outage allowance	Specifies the allowable duration and frequency of scheduled outages, for both service provider and emitter.	Helps manage expectations and plan for operational downtimes.

CO_2 storage agreements: Key terms (4/8)

Topic	Description	Considerations
Service fee and unit fee	Outlines the fees for the storage services, typically based on the quantity of CO_2 stored.	Clear fee structures prevent disputes. Fees might be indexed to inflation or other economic indicators.
Scheduling of deliveries	Procedures for planning and scheduling CO_2 deliveries	Ensures efficient and coordinated logistics. Flexibility and penalties for rescheduling need to be considered.
Third-party CO_2	Conditions under which CO_2 from third parties can be included in the agreement.	Provides flexibility for the emitter. The storage provider needs to assess and approve third-party CO_2 sources.

CO_2 storage agreements: Key terms (5/8)

Topic	Description	Considerations
Quality specifications	Standards that the CO_2 must meet before being accepted for storage.	Ensures the integrity of the storage process, as impurities can damage the injection material in the long-run. Off-spec CO_2 can lead to additional costs and operational issues.
Off-spec CO_2	Procedures and penalties related to CO_2 that does not meet the agreed quality standards.	Protects the storage provider from handling substandard CO_2. The emitter might face penalties or have to find alternative solutions for off-spec CO_2. Off-spec CO2 may be vented or returned to the emitter. In both cases, the emitter would pay for the allocated CO2 storage anyway.
Shortfall quantities and compensation	Defines the shortfall quantities and associated compensations for both parties if they fail to meet their commitments.	Financial penalties incentivise both parties to meet their obligations. Clear definitions help in dispute resolution. Mainly emitter obligation around “take or pay”, which means paying for storage whether they deliver or not. Storage providers do not accept penalties in case of not being able to store CO_2. They will have to pay for ETS allowances however if any CO_2 leaks from their site.

CO_2 storage agreements: Key terms (6/8)

Topic	Description	Considerations
Liability and indemnity	Specifies the liability limits and indemnity obligations of each party, for example for potential CO_2 leakage or third-party liability.	Ensures legal protection and risk management for both parties. Critical for handling potential claims and damages. Storage provider not liable to emitters typically for CO2 leaked, but will be required to purchase EU ETS allowances instead. The CDRs issued by the emitter would be rendered void.
Force majeure	Conditions under which parties are excused from their obligations due to unforeseen events.	Provides legal protection in case of extraordinary events. Clear definitions and procedures for handling force majeure events are essential. These include natural disasters, unforeseen events, and can also apply to the logistics value chain (e.g. rail strike) for events that are unforeseen.
Termination rights	Conditions under which parties are excused from their obligations due to unforeseen events.	Provides legal protection in case of extraordinary events. Clear definitions and procedures for handling force majeure events are essential.Typically either for fixed fee or if one of the parties does not fulfill its requirements for a predefined period of time (1-2 years).

CO_2 storage agreements: Key terms (7/8)

Topic	Description	Considerations
Dispute resolution	Mechanisms for resolving disagreements between parties.	Ensures there are structured processes for addressing disputes, potentially avoiding costly litigation.
Notice provisions	Procedures for giving formal notices between the parties.	Ensures timely and proper communication, which is crucial for the smooth operation of the agreement.
Governing law	Specifies the legal jurisdiction that governs the agreement.	Determines the applicable legal framework for interpreting and enforcing the agreement.
Confidentiality	Obligations of the parties to keep certain information confidential.	Protects sensitive business information and trade secrets.
Amendments	Conditions under which the agreement can be amended or modified.	Ensures flexibility to adapt to changing circumstances while maintaining mutual consent.

CO_2 storage agreements: Key terms (8/8)

Topic	Description	Considerations
Insurance	Required insurance coverage that each party must maintain.	Protects against potential losses and liabilities, ensuring financial stability and risk management.
Health, safety and environment (HSE)	Compliance with health, safety, and environmental standards and regulations.	Ensures safe and environmentally responsible operations, protecting both parties and the public.
Data sharing and reporting	Obligations for sharing data and progress reports between the parties.	Facilitates transparency and informed decision-making, ensuring accountability and project tracking. A base report will be shared by the storage site to all emitters – additional data beyond the common requirements of all the storage sites' customers can in some cases lead to additional costs