

Managing risk & insurance for first-gen projects

PHASE 1: Emitter & capture site



Standard insurance covers operational risks

Capture-site risks are largely manageable with standard energy project coverage, including property damage and operational liability.

Source-level risk control

Focuses on managing the initial capture of biogenic CO₂ before it enters the wider logistics network.

First-of-a-kind challenges

Early BECCS projects often face added guarantee and collateral demands from partners, raising financial pressure and operational complexity.



PHASE 2: CO₂ transport & logistics

Flexibility vs. interruption risk

Using existing transport routes limits long-term commitments for small-scale projects but increases exposure to value chain disruptions, potentially triggering insurable costs (e.g. asset leasing, rerouting).



Swiss classification of CO₂ as waste

Local classification as waste requires a financial guarantee covering return shipment cost of transport back to CH.



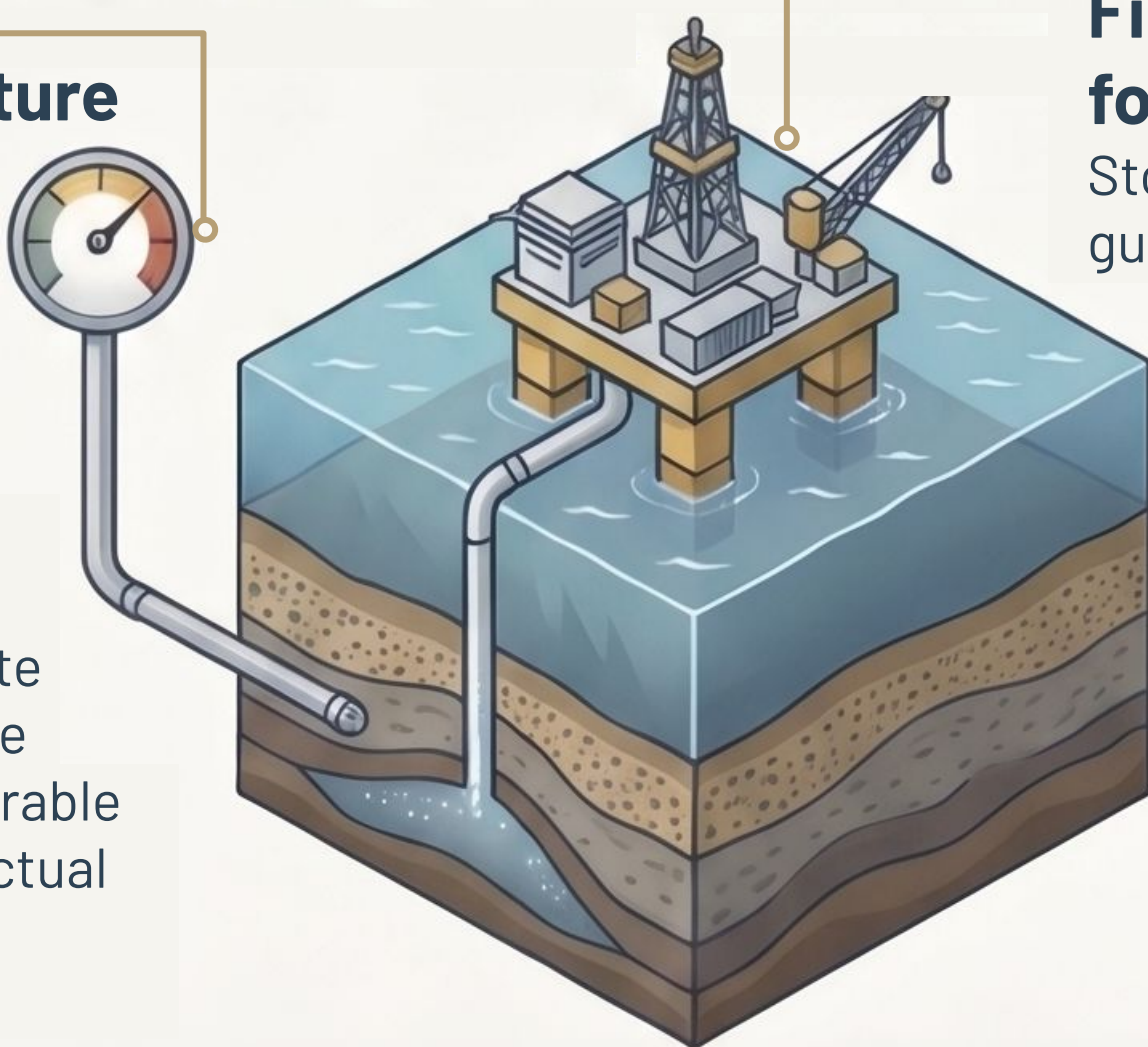
Regulatory handling

Developers must navigate regulatory hurdles to transport captured CO₂ safely and legally.

PHASE 3: CO₂ storage

Infrastructure integrity & CO₂ quality

Risks from off-spec CO₂ are mitigated through on-site testing and are generally insurable within contractual liability limits.



Financial guarantees for access

Storage providers typically require guarantees from emitters covering ~1-2.5 years of fees to secure access and manage counterparty risk.

Interruption risk

Storage capacity is not guaranteed and compensation mechanisms are limited. While insurable, interruption risk remains complex to structure and assess.

PHASE 4: Certification & market delivery

Carbon insurance for non-delivery

Specialised carbon insurance enables buyers to hedge against credit non-delivery, protecting transaction integrity.

Risk management as a catalyst

Robust frameworks – combining insurance and guarantees – build confidence, unlock investment and enable BECCS scale-up.



CDR advisory support

Advisory providers support developers across the value chain – from transport and storage to certification and sale of CDR credits.



Expanding specialised coverage

As the CO₂ value chain matures, insurers are expanding from discrete storage risks to integrated, end-to-end coverage.

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Context

Scaling first-generation Bioenergy with Carbon Capture and Storage (BECCS) projects requires more than technical readiness – it depends on robust risk management frameworks. A combination of financial guarantees and insurance solutions is essential to build trust across the value chain, enable project execution and unlock investment.

While both tools support risk management, they serve fundamentally different roles and are applied at different stages of a project's lifecycle.

How to use this guide

This infographic provides a simplified overview of how guarantees and insurance apply across BECCS projects.

It is designed to help readers:

- Understand where financial and risk-related requirements arise
- Distinguish between guarantees and insurance
- Identify how these tools impact project development and operation

The content highlights key pressure points and risk management needs encountered by project developers, policymakers and market participants when deploying early BECCS projects.

Guarantees

→ **Required to access and participate in BECCS**

What they are

Financial assurances required by regulators or value chain partners to secure access to infrastructure, services or permits, and to manage counterparty risk.

Role in BECCS

Guarantees are typically a precondition for participating in the value chain.

Impact

- Tie up capital upfront
- Increase financial pressure on early projects
- Add complexity to project structuring

Examples

- Storage access guarantees
- Regulatory guarantees

Insurance

→ **Purchased to protect against uncertainty**

What they are

A risk-transfer mechanism that protects against unforeseen events such as operational failures, asset damage, liability exposure or financial loss.

Role in BECCS

Insurance supports risk management during project execution and operation, rather than enabling access.

Impact

- Protects against unexpected disruptions
- Enhances financial resilience
- Includes emerging products tailored to carbon markets

Examples

- Transport disruption insurance
- Infrastructure & liability insurance

Airfix is committed to supporting the development and implementation of BECCS projects. To discuss these findings or explore potential collaboration, please contact our team at info@airfixcarbon.com



About the project

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Within this framework, the **Carbon Rhine Route project** is developing pathways for inland European emitters to access carbon capture and storage, supporting the scale-up of carbon dioxide removal (CDR).