Guide to CO2 transport tenders

CETP CO2RR

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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). Consortium partners include Carbon Impact, Airfix, Chemoil Logistics and Northern Lights.

Guide to CO2 Transport RfPs

Why run a CO2 Transport Request for Proposal (RfP)?

- The estimated cost for transport CO2 from Switzerland and the Rhine area can make up to **~50 % of the total costs** of capturing, transport and storing CO2 permanently. This makes it a key cost element to optimise.
- Although the transport of CO2 is already common in Europe, the long-distance transport of CO2 for the purpose of long-term geological storage is new territory. Due to the nascency of this offering, there is a wide range of transport concepts and prices, and it is important for emitters to obtain the best possible offer. Hence, a RfP is the best way for emitters to:
    - **obtain the most competitive offer**; and
    - indicate to the logistics/transport service providers that there is demand for such services.

Sharing Airfix learnings

This document is constructed as a Guide to support emitters that require CO2 transport services from their capture plant to long-term geological storage sites. The Guide builds on **Airfix's learnings from the first RfP it ran in Spring 2025, on behalf of CO2 Energie AG**. It aims to provide:

- an overview of what a CO2 transport RfP should entail, include a check-list of key elements;
- key project information needed for the RfP to be concrete / precise; and
- feedback from bidders on Airfix's first RfP and learnings of the Airfix team.

The Guide is structured around three sections:

1. Key elements, learnings and key stats from Airfix's first transport RfP
2. A check-list for emitters on key elements to embed in their transport RfPs
3. The public case of Werdhölzi and Airfix's views on the RfP

The Guide is not meant to be a template RfP, but provides key terms of such a template.

Airfix is committed to further supporting emitters in structuring their BECCS projects. To discuss these findings or explore potential collaboration, please contact our team at info@airfixcarbon.com

Airfix first CO2 transport RfP: Switzerland → Denmark

First CO2 transport RfP: from Switzerland to Denmark

for a project starting in 2026, organised by Airfix & CO2 Energie AG

Biomethane plant capturing **~4,200 tCO2 / year from 2026**

15

offers submitted

from

10

different logistics companies (~50% of which have specific CO2 transport experience)

4

transport modes combined across proposals (truck, rail, barge, ship)

Heterogeneous pricing & duration

CHF 160–320 / tCO2

Transport from Niederwil (CH) to Port of Esbjerg (DK)

New **direct rail connections** from Switzerland to Esbjerg could significantly reduce costs

4–22 days

(roundtrip)

Key elements: Company information

Topic	Description	Considerations
Administrative information	Company information such as legal name, country of registration, description of core activities.	High-level administrative information.
Company experience	Description of the company's experience with the transport of CO2 or other dangerous goods, ideally demonstrating concrete projects and providing references.	As the transport of CO2 is similar to the transport of other dangerous goods, experience can be broader than only CO2 transport. Due to confidentiality reason, companies may require anonymising their references.

Key elements: Transport concept

Topic	Description	Considerations
Breakdown of the proposed transport concept	A breakdown of each proposed transport concept, with the indications on the transport modalities and locations of transfer (if any).	Provide a structured input form in order to have comparable transport concepts. The roundtrip transit time is also crucial to add to this section.
Offering a selection of concepts	Optional – let logistics companies offer several transport concepts.	Several logistics companies submitted 2-4 transport concepts with different advantages / disadvantages. Each transport concept can be treated as an individual bid.
Additional inputs on transport concept	Each transport concept should entail a proposed number of container assets (e.g. ISOtainers) recommended by the logistics firm and back-up options in case suggested route fails.	The number of assets is crucial to understand the "real cost" of transporting the CO2. In addition, it is important to consider the reliability of transport concepts and how simple shifting to an alternative can be.
Interruption modalities	Indicate company policy on short-term and long-term interruptions.	Particularly relevant considering storage providers are often not liable for interruptions.

Key elements: Price quote

Topic	Description	Considerations
Price quote – container assets	Cost of transportation services from the plant to the storage site, and back. The cost is typically provided per roundtrip.	The cost per tCO2 can be derived based on the volume that can be transported per trip.
Included / excluded	A breakdown of what the quote includes and what it excludes (e.g. loading time, tolls, insurance, standing fees, etc.).	A more in-depth description of what to be aware of will be provided in Key elements: Additional information.

Price quote: Calculating the “real cost” per tCO2

The “real” transport cost per tCO2 is a combination of:

- The roundtrip cost per container asset – EUR / asset
- The emissions along the transport value chain – tCO2 emitted per round trip
- The cost of the container asset
- The number of assets, which depends directly on the round trip duration
- The opportunity cost of generating one less CDR / emission reduction

The formula for calculating the real cost is (only including the case of asset leasing):

$$\frac{\text{Transport round trip cost per asset (EUR / Asset)} + \left[\text{Roundtrip emissions per asset (tCO2 / Asset)} \times \text{Opportunity cost of generating one less CDR / emission reduction (EUR / tCO2)}\right]}{\text{Volume of CO2 transport per asset (tCO2 / Asset)}} + \frac{\text{Cost of asset leasing (EUR / Asset / day)} \times 365 \times \text{Number of assets required annually (\# of Asset)}}{\text{Volume of CO2 transported per year (tCO2 / year)}}$$

Key elements: Container assets (leasing or purchasing)

Topic	Description	Considerations
Container asset leasing or purchasing	Offering of logistics companies or dedicated providers for the leasing or purchase of container assets.	As some companies are dedicated to the leasing or sale of container assets, and generally offer more competitive prices than integrated offerings, it is worth having the option to bid only for this section.
Proposed container assets	Description of the proposed assets (incl. technical sheet in annex if relevant).	Verify that the asset can handle CO2 specifications and maintain CO2 at the right pressure and temperature for the duration of the roundtrip (incl. significant buffer).
Price quote – container assets	Price quote for the leasing of container asset per container per day OR cost per asset for purchase.	The price quote is typically per day per asset. Combined with the transport time duration, you can establish how many assets will be necessary and establish a cost per tCO2.

Key elements: Process emissions

Topic	Description	Considerations
Information on transport route	Split of distances travelled with each transport modality and in which country.	In order for different bids to be comparable, we recommend only asking for the distance and calculating the emissions with a tool such as Emissions Calculator.
Specifics to the proposed transport concept	Indicate whether any of the routes are operated with particular conditions (e.g. e-truck, bio-diesel truck, ship running on e-methanol)	If the logistics provider is not active yet towards its emissions reductions, it is important to understand how they envisage improving their emissions over the coming years.

Key elements: Additional information

Topic	Description	Considerations
Additional services	Description of any additional services the logistics provider can offer (e.g. GPS, live tracking, emissions reporting, etc.).	This is a more open section for service providers to illustrate how they can go beyond the traditional services offered.
Assumptions / Exclusions	Transparency on the costs is crucial to project planning. This section should cover in detail what costs are included or excluded from the transport quote. This should include at least: ● **Intermediate storage** required in transfer stations, during weekly breaks when transport may not run – the costs should include daily storage costs as well as transport costs to the storage site ● **Standing fees** in case loading or unloading takes more time. Generally, how much time is counted in the quote for loading & unloading ● **Asset positioning, cleaning & purging** – delivery of the container asset to the plant for first pick-up ● **Asset maintenance** – including maintenance costs and transport of the asset to the maintenance workshop	

Checklist

Information that needs to be provided to logistics companies to have the most accurate quote possible

- ❑ CO2 capture facility information
  - ❑ Exact location
  - ❑ Accessibility via truck / rail, proximity with port
  - ❑ Conditions of the CO2 (temperature & pressure)
  - ❑ Site access times
  - ❑ Production volumes and profile
  - ❑ Volume of intermediate storage on-site
  - ❑ Quality check requirements & duration
  - ❑ Expected loading duration
  - ❑ Coupling device
- ❑ CO2 storage site
  - ❑ Exact location
  - ❑ Accessibility via truck / rail, proximity with port
  - ❑ Site access times
  - ❑ Equipment available on-site (e.g. pumps)
  - ❑ Expected offloading duration
  - ❑ Coupling device
- ❑ Planned maintenance of the capture and storage sites
- ❑ Transport contract duration
- ❑ Monitoring requirements link to CDR generation
- ❑ Expectations regarding permitting and customs
- ❑ Expectations regarding service interruptions

Key learnings

Based on feedback from bidders on Airfix's tender and experience evaluating the bids

- Although the pipeline infrastructure necessary to truly scale the CCS and BECCS industry will take many years to materialise, **CO2 transport options for small and medium-size emitters** exist today and **many logistics companies can offer these services.**
- Tendering CO2 transport services has the advantage of showing the market that there is **demand for CO2 transport services** and that to find the **best solution for each project**.
- The **project needs to have a certain level of advancement** to ensure quotes are precise and reflect the actual future costs.
- It is crucial that bids are comparable, hence the tender should be structured and indications on what criteria will influence the decision should be clearly communicated. For example:
    - Transparently share **how the "real cost" of CO2 transport is calculated** so that logistics companies can also compare their different concepts
    - Request clarity on **what is included or excluded** from the quotes – "devil is in the detail" of the hidden costs
- Feedback from logistics companies
    - Clear structure for input form is appreciated (e.g. excel with fixed inputs)
    - Opportunity to ask questions and response within 3–5 days is appreciated
    - 4 weeks timeline is adequate – 6 weeks would be better
    - Keep the application form as short and to the point as possible (simplify)