



WHEN TRUST MATTERS

Guidance Document 4: Financial Security and Financial Contribution

Jørg Aarnes - Global Lead – Hydrogen and CCS, Offshore Norge
Johnathon Osmond - Senior Consultant - CO₂ Storage, DNV

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Scope of GD4

Financial security (FS): Provisions to ensure the operator is financially able to cover costs associated with site operations, closure, and post-closure, and which the CA may draw upon if the operator defaults or otherwise is not able to fulfil the permit obligations pursuant to the Directive

Financial mechanism/contribution (FC): A one-time payment made to the CA prior to transfer of responsibility, upon which the CA can draw to cover monitoring expenses and potentially other costs related to the storage site after transfer

Objective: Outline options for instruments that can be used to establish FS and FC, and to describe how to determine the amounts of FS and FC

Financial security (FS)

Legislative context for FS

- Applications for storage permits must include proof that the FS will be valid and effective before commencement of the injection
- The FS shall remain valid and effective until the responsibility for the storage site is transferred to the competent authority (CA), or until a new storage permit for the site has been issued.
- The operator shall submit to the CA at least once a year proof of maintenance of the FS
- FS shall be periodically adjusted to take account of changes to risk and costs of obligations
- **Obligations:** Obligations arising from CCS Directive + ETS Directive:
 - Monitoring, corrective measures, surrender of allowances, closure or temporary operation, and reporting

Selecting FS instruments

Principles

- Member States (MS) and CAs should promote FS instruments that are simple, established, low risk, flexible, non-discriminatory, and low cost to the extent possible
- The intent of FS is to protect taxpayers. FS programmes should therefore not be used for financial speculation
- MS and CAs should also aim to establish FS requirements that promote competition for storage permits and ensure compliance under the Directive
- FS instruments should be defined by the operator in consultation with the CA, and subsequently be approved by the CA
- MS should evaluate FS instruments against criteria for desired certainty, amount, liquidity, duration, and flexibility when determining which instruments to accept as FS
- MS should avoid imposing FS obligations on storage operators before start of the operations that are disproportional to the initial amounts of CO₂ stored. MS may therefore want to consider allowing operators to provide FS in phases.

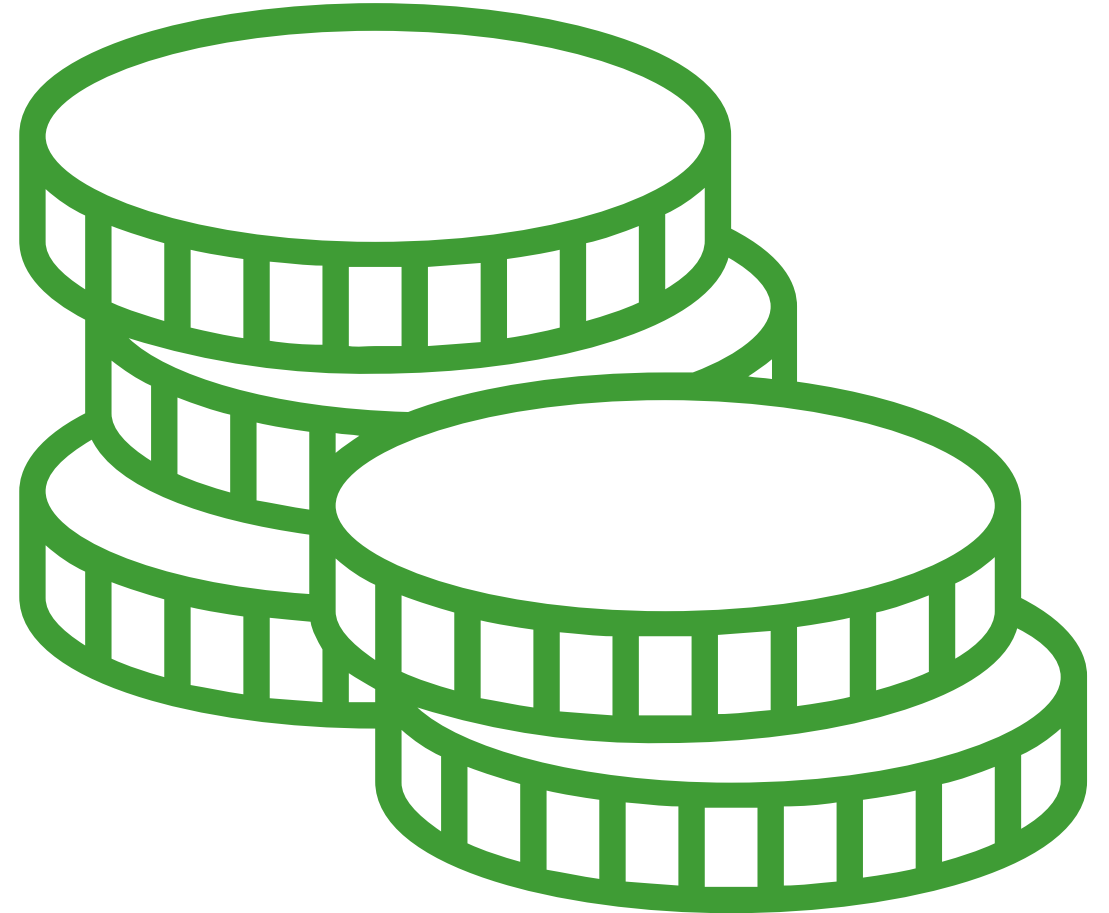
Selecting FS instruments

Options

- Funds (“direct deposits”) to the CA
- A collectively financed CO₂ fund
- An irrevocable trust fund (transfer of property)
- A parent company guarantee/affiliated company guarantee/self-guarantee
- An escrow (written agreement to set aside property)
- An irrevocable standby letter of credit issued by a bank
- A bond issued by a surety company (or a bank)
- Pool of pre-purchased EU emission allowances (EUAs)
- Insurance products

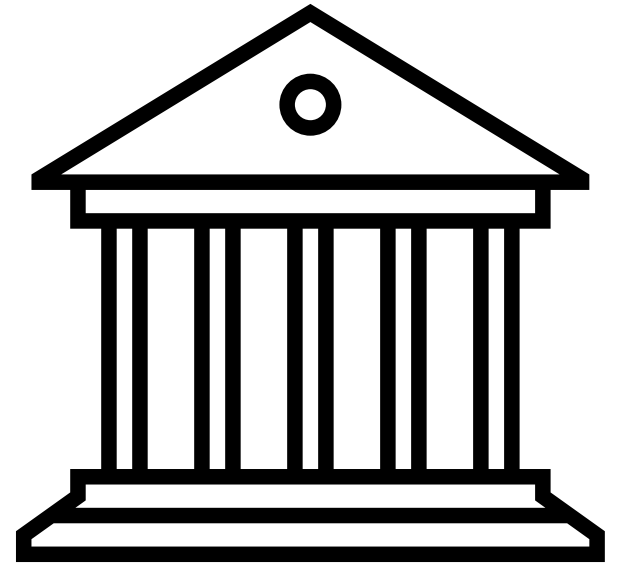
Amounts of FS Responsibility

- Amounts of FS can be derived by the operator and approved by the CA, or by the CA with operator input
- Amounts should be based on the approved plans for monitoring, corrective measures, and post-closure, and the observed performance of the storage site



Amounts of FS Principles

- Amounts should be sufficient for the CA and/or its agent to perform the obligation(s)
- Amounts should be calculated based on a site-specific assessment, considering technical risk and risk associated with the types of financial instruments used
- Amounts for covering costs of uncertain future events (e.g., low likelihood risk scenarios) should be probability weighted using conservative assumptions
- A cost-risk analysis should be applied to address uncertainties in the cost estimate
- Assumptions made in determining the amounts of FS should be stated and agreed by the CA and operator



Amounts of FS Monitoring

- Monitoring plan forms technical basis for cost estimation
- Post-closure monitoring shall assume 20-year post-closure monitoring period
- The annual costs of monitoring should include
 - Costs of base case monitoring program
 - Costs of implementing a contingency monitoring program for leakage scenarios
 - Costs of updating the monitoring plan and preparing required reports of monitoring results
 - Costs for maintaining, repairing, and/or replacing (as necessary) the various components of the monitoring system as may be needed over the relevant duration of monitoring

Amounts of FS Corrective measures

- Corrective measures plan forms basis for cost estimation
- The amount of FS should be conservatively probability weighted (see example)
- Good practice to deploy cost-estimates with high (80%+) confidence that the cost is not underestimated
- Should cover costs for corrective measures during both the injection period and post-closure period

Example:

- A CO₂ storage project has 2 legacy wells.
- P(leakage of CO₂ or formation fluids) = 1.0×10^{-3} and 1.0×10^{-2} respectively.
- Cost of corrective measures (well intervention) will be between 5 and 8 MEUR.
- Probability weighted cost of intervention of legacy wells during operations is:

$$0.011 \times 8\text{MEUR} = 88000 \text{ EUR.}$$

Amounts of FS Surrender of allowances

The amount of the FS for surrender of allowances can be based on the following formula:

$$\text{Amount of FS} = \left(\sum_{\text{potential leakage events}} P(\text{event}) \times M(\text{event}) \right) \times C(\text{allowances})$$

Where,

- P(event) = conservative estimate of likelihood of event occurring
- M(event) = conservative estimate of mass of emissions if event occurs
- C(allowances) = estimate of cost of allowances for emissions
- Determining leakage amounts should be based on an evaluation of the site-specific leakage risks, and the amount that can leak from each identified leakage pathway
- To estimate the cost of allowances, it is recommended that the operator uses projections of low- and high-end EUA prices over the period until next revision of FS

Amounts of FS

Post-closure

- Post-closure plan forms technical basis for cost estimation
- The amount of FS for closure and post-closure must be sufficient for:
 - Updating the provisional post-closure plan during the closure period
 - The costs of sealing the storage site and removing the injection facilities including their recycling or disposal
 - The estimated Financial Contribution (FC) to be provided pursuant to Article 20

Amounts of FS

Case: Permit withdrawal

- The permit shall only be withdrawn if the operator is in breach of permit conditions, or not able to stop leakages or implement required corrective measures to address significant irregularities
- The amount of FS to be provided = **minimum cost of the two options available to the CA:**
 - CA closes the storage site: the CA will need sufficient FS for the closure and post-closure period
 - CA temporarily continues injection until a new permit is issued: the CA will need sufficient FS until a new permit is issued
- If the CA decides to select the higher cost option, then the incremental cost of that option should be funded by the MS by other means than through the FS

Periodic adjustment

- The FS shall be periodically adjusted to take account of changes to the assessed risk of leakage and changes to the estimated costs of all obligations
- Changes can occur as a result of factors such as:
 - Changes in scale or timing and volumes of injections
 - Changes in the forecasted subsurface area covered by the CO₂ plume
 - Advances in science and technology
 - Changes in prices of emission allowances
 - Inflation and currency exchange fluctuations
 - Changes to the monitoring plan, corrective measures plan, or provisional post-closure plan
 - Storage permit updates
- MS may want to synchronize the time frames for such updates with the timing for update of monitoring plan (every 5 years) or storage permit updates

Validity & effectiveness

- The MS should provide clarity on requirements for FS instruments to be valid and effective, with consideration of the following factors:
 - Satisfies the legal criteria for that type of instrument
 - Issued by an eligible party
 - Enforceable by the CA and conforms to the laws of the MS jurisdiction where storage will occur
 - Properly executed by all required signatories, authorising, witnessing, and/or attesting parties as being effective as of a stated date prior to the date when injection commences
- MS arrangements for FS should include provisions relating to cancellation, termination, non-renewal, voiding, or suspension of FS instruments by issuers
- An instrument may become invalid or ineffective if the issuer:
 - Ceases to satisfy the eligibility criteria
 - Loses its legal authority to issue the FS instrument

Financial contribution (FC)

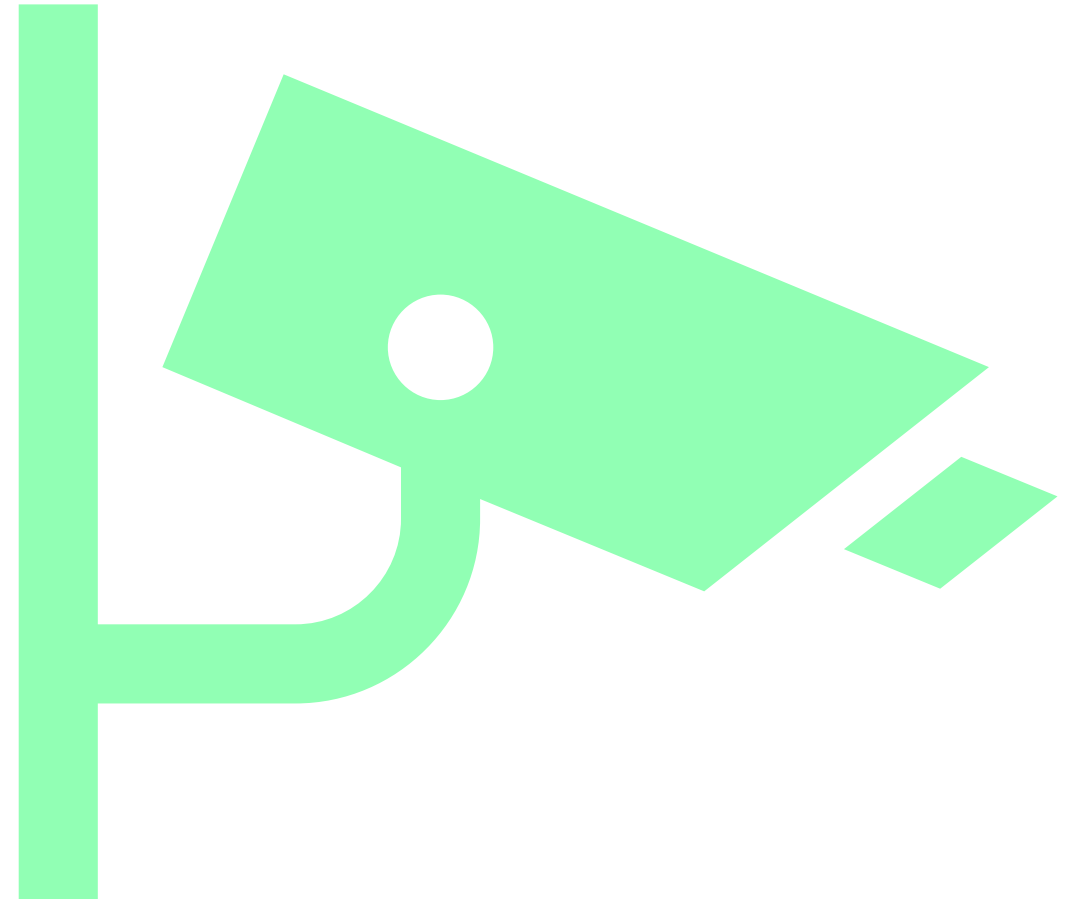
Legislative context

- Member States shall ensure that the operator makes a financial contribution (FC) available to the CA before the transfer of responsibility pursuant to Article 18
- The FC may be used to cover the costs borne by the CA after the transfer of responsibility to ensure that the CO₂ is completely and permanently contained:
 - Monitoring
 - Corrective measures
 - Surrender of allowances
 - Obligations for preventive and remedial action under Articles 5(1) and 6(1) of Directive 2004/35/EC
- The FC shall cover at least the anticipated cost of monitoring for a period of 30 years



Monitoring

- The plan for post-transfer monitoring should be based on the assessment of any residual risk of future leakage and any residual risk to the environment and human health
- For circumstances where such residual risk is considered to warrant monitoring, the CA should conduct monitoring at a level which allows for detection of leakages or significant irregularities
- If any leakages or significant irregularities are detected, monitoring shall be intensified as required to assess the scale of the problem and the effectiveness of corrective measures



Process

- MS should specify procedures and timetables for the FC
- It is anticipated that the FC will involve a one-time transaction between the operator and the CA, but MS may allow other arrangements
- The FC should be considered available to the CA when the CA can exercise exclusive rights of ownership, control, possession, and disbursement of the FC, and the operator transfers to the CA or relinquishes all rights and claims with respect to the FC



Amounts of FC

- The principles and approach to determine amounts of FS may also be used for estimating amounts of FC
- Obligations that are certain to occur should be estimated deterministically
- Estimated costs associated with contingent obligations should be probability weighted, e.g.,:
 - Intensification of monitoring if required
 - Implementation of corrective measures and preventive and remedial action
 - Surrender of allowances
- **Note:** Whereas the calculation of amount of FS related to contingent obligations should use a conservative probability weighting, the amount of FC should be based on a best estimate of the likelihood of the associated future events and a best estimate of contingent costs



Thank you

Jorg.Aarnes@offshorenorge.no
Johnathon.Osmond@dnv.com

www.dnv.com

