Enabling the H₂-CCS value chain: Business models, risk mitigation, incentives and legal frameworks.

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Outline

1. New opportunities for CCS and green finance
2. Designing business models for the whole H₂-CCS value chain
   • Including regulatory and legal risks.
4. Developing a mitigation strategy and instrument choice.
   • The role of legal frameworks.
1. Second generation of *green finance* instruments

- Do not need to re-invent the wheel, but need to learn lessons (from failures, other sectors) and adapt the solutions.
- 1st generation of de-risking in the 1990s/2000s: who should bear the burden of environmental damages? How to value the environment? Are banks co-responsible with polluters?
- Since UNFCCC, Kyoto Protocol and Paris Agreement: climate mitigation (and adaptation) put on the agenda. New regime for climate financing.
- CCS: After 1st attempts, 2nd window of opportunity for CCS, building bridges with other energy carriers.
- May not be a 3rd chance, and there is a sense of urgency (5th AR IPCC report).

2. Designing business models...

- Business model = refera to how a business seeks to create and deliver value.
- H2-CCS technologies can create value in a number of ways.
- However, incentives are per today absent or insufficient to enable the creation of such values.
- Need to align commercial interests across the entire CCS chain in combination with H2.
... which work along the value chain.

- Interlinked activities, with a variety of actors.
- All links of the value chain matter.
  - Should mitigation strategies reflect risks along the whole chain?
- Different degrees of risks, different risk types.
  - Different risks = different mitigation tools
- Different degrees of maturity for the chain:
  - No market
  - Early markets
  - Liberalised market
- So, one or several business models?

With a diversity of actors along the chain

- Local, national, regional, European and international actors.
- Both big projects/large scale (stock market) and retail (local markets, local jobb creation, sustainability of the territories) (not stock market).
  - Established companies can more easily access the debt and equity markets, which is less the case for smaller or newer companies.
  - A diversity which must be taken into account and preserved.
- Producers
- Consumers
- Suppliers
- Emitters
- Infrastructures operators
- Storage site operators
- State
- Regulator
- Tax payers
3. Starting point: risk taxonomy

The first instrument of de-risking will consist in categorizing the different risks, ie establishing the taxonomy of risks (cf. Deliverable D.3.3.1., Risk Matrix).

- necessary to clarify where the needs are in the context of the H₂-CCS value chain. Which costs will be the highest in H₂-CCS projects?
- NB: risks can be negative (threat) but also positive (opportunity).

**External risks:**
- Financial Market Risk
- Political and Regulatory Risk
- Macro-economic Risk
- Environmental Risk
- Acceptance risk

**Internal risks:**
- Operational Risk
- Strategic Risk, relating to the strategic decisions
- Reputational Risk
- Technical risk

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Classification of risks, incl. investment risks. Ex.:
Among them: **regulatory risks** due to ongoing processes

Of relevance for ELEGANCY:

- Detailed rules for the implementation of the Paris Agreement (The Rulebook) and the different carbon mechanisms defined in it (Art. 6) by 2020.

- EU: “Clean Energy Package for All Europeans”-legislative package


- Different national strategies and priorities, and CCS policies. Changes in law.

- Brexit

See mapping exercise in Deliverables D.3.1.1 and D. 3.2.1.
Other *traditional legal risks* beyond regulatory uncertainty:

- **Compliance risk**
  - Potential for fines and penalties in case of non-compliance with laws and regulations.

- **Contract risk**
  - If a partner, customer or supplier fail to meet the terms of the contract, resulting in losses. Or from own failure.

- **Non-contractual rights and obligations**
  - A third party infringing on non-contractual obligations. Eg: a competitor infringes your patents. Or you infringe a third party’s rights.

- **Legal dispute risk**

- **Choice of law**
  - Common law vs. civil law

- **Reputational risk**
  - Due to legal actions, sanctions imposed by regulators.

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4. Developing a mitigation strategy

The example of the renewables sector.

The challenge =

- to design packages of public instruments which can cost-effectively catalyse private investments.
- policy trade-off between de-risking and direct incentives.

Final objective = to find the right instruments mix.
(i) Financial de-risking instruments

- Do not seek to directly address the underlying barrier; but
- Aim to transfer investment risks to private and/or public actors.

Examples:
- Public-private partnership
- Public guarantee fund
- Green loans / Public loans
- Insurance
- Direct investments

(ii) Direct and indirect public financial incentives

- Direct financial incentives
  - Feed-in tariffs
  - Price premium
  - PPA
  - Carbon offsets
  - Public procurement

- Indirect public financing
  - Guarantees of origin
  - Carbon pricing
  - ETS

- Fiscal incentives, tax credits
  - Investment or production tax credits
  - Capital subsidy, rebate: reductions in energy, CO2-taxes, VAT or other taxtes
Some upcoming regulatory challenges:

- **Technology neutrality** as the standard requirement under common schemes.

- Changing parameter for clean energy technologies: the **progressive removal of financial incentives** in the form of subsidies / state aids (zero subsidy environment).
  - Lobby to keep support for emerging technologies.

- In this new context, **financial innovation** will be key to unlock the potential, in particular in technologies such as H₂-CCS, at the hedge of two sectors.

(iii) Regulatory and legal de-risking measures

**Policy de-risking instruments**

- **Definition policy de-risking instruments**: target the root causes of investment risk. Relies on regulatory measures to mitigate risk. Government policies can help de-risk projects and lower the cost of capital.

Examples:

- More efficient permitting procedures (including exceptions or simplifications)
  - Streamlined permits process: for installation, grid connection, etc.

- Definition of targets:
  - Emissions targets
  - Hydrogen targets

- Definition of plant requirements and standards:
  - Capture ready
  - Fuel quality requirements (FQD) – life-cycle approach
  - Use of biomass (CH), negative emissions
  - Fuel blending standards

- Priority grid access
- Political risk insurance
Sharing / balancing risks through legal instruments

• Through legislation
  • Storage liability
  • Quotas
  • Etc.

• Through contract
  • Passing on the risk: designing attractive value sharing arrangements;
    • Could reflect risks at other levels of the value chain (eg: capture, treatment, CO2 storage);
    • Or not: but then need for specific instruments for those risks.
  • Standardisation
    • See standard contractual mitigation measures used in Large Infrastructure Agreements

• NB: difference in legal traditions between Common Law and Civil Law within the ELEGANCY-project.

Conclusion

• Objective: enabling the H₂-CCS value chain.
• The role of H₂ in de-risking CCS as well as developing the H₂ market, alone or in combination with other markets (power-to-gas, etc.).
• The need for de-risking by mitigation AND incentivising at the same time.
• Economic support, but not only. Regulatory frameworks as incentives.
  • The role of law in de-risking and incentivising.
  • See the models provided by ELEGANCY project.

  = New business models.
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