

# Proposed legal framework for CCUS hub operation in Greece

For IENE's "Prospects for the Implementation of  
CCUS Technologies in Greece"

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# Introduction

- Carbon Capture and Storage: a critical innovative technology towards the efforts to mitigate climate crisis.
- Carbon capture units: at large emission sources, such as power plants burning fossil fuels or industrial units with high emissions.
- The scope of the process:
  1. To separate CO<sub>2</sub> from the rest of the gases emitted,
  2. To compress CO<sub>2</sub> and
  3. To inject CO<sub>2</sub> into particular geologically suitable storage sites.
- Important considerations on leakage risks

# EU relevant Regulatory Acts

- Directive 2009/31/EC on the geological storage of carbon dioxide.
- Environmental Liability Directive (Directive 2004/35/EC) on environmental liability with regard to the prevention and remedying of environmental damage.
- Emission Trading Scheme Directive (Directive 2003/87/EC on establishing a scheme for greenhouse gas emission allowance trading within the Community).

Directive 2009/31/EC on the geological storage of carbon dioxide

# Directive 2009/31/EC on the geological storage of carbon dioxide

- The Scope: To create the foundation for the environmentally safe geological storage of carbon dioxide (CO<sub>2</sub>).
- The Directive's Jurisdiction: Geological storage of CO<sub>2</sub> that happens in the territory of EU Member States, their Exclusive Economic Zones or on their continental shelves.
- The Directive's Sections:
  - Definitions
  - Storage sites selection – up to the Member States
  - Exploration permits (provisions for the Application and the permit Issuance)
  - Storage permits - one operator for each storage site and no conflicting uses shall be permitted
  - Storage Permit applications content
  - Storage Permit content

# Directive 2009/31/EC on the geological storage of carbon dioxide

- Stages of Site operation - CO<sub>2</sub> being the main element in a CO<sub>2</sub> stream
- Operator's liability on leakage occurrences or other irregularities
- Storage sites closure process and consequences
- Post-closure process: the Operator should be in charge for the site's closure and its post-closure stage
- Responsibilities transfer under specific conditions to the Public Authority in charge according at the post closure stage
- Financial security of the storage site operation
- Third party access – specific measures need to be applied in a nondiscriminatory way

# Framing CCUS implementation in Greece

## Norway example

- Norwegian Ministry of Petroleum and Energy
- Norwegian Petroleum Act, the licensing process of a project includes:
  - Prospecting license
  - Exploration license
  - Exploitation license
  - Post-closure: Transfer of responsibility to State / Ministry of Petroleum and Energy
  - Financial mechanism
  - Additional issues: environmental issues, the storage license and the issue of the financial security of the activities.

**\* CO<sub>2</sub> captured is not considered CO<sub>2</sub> emitted – No quotas payment under the EU ETS**

# Existing Legislation as a pattern to structure the CCUS Legal Framework

- CCUS framework in the sense of L. 3468/2006 as a new technology
- CCUS framework in the sense of L. 2289/1995 (am. by L. 4001/2011) due to the storage sites exploitation procedures



# “Architecture” of the CCUS Greek Regulatory Framework

- **A. Preliminary Questions**

- 1. CCUS - petroleum activity OR heavy industry activity?
- 2. CCUS - as commodity OR as a waste? (Legal nature of CO<sub>2</sub> emissions)
- Commodity?: ownership of rights, (Producers or Operators), potential incompatibility with ETS
- Waste?                      Potential Liabilities in the event of an environmental hazard

# CO2 Storage Site Selection

## State's storage site CO2 as waste

- Call for interest
- Public competition
- Exploitation licensing

## Investor's storage site CO2 as commodity

- Private initiative
- Prospecting license
- Exploration license
- Exploitation license

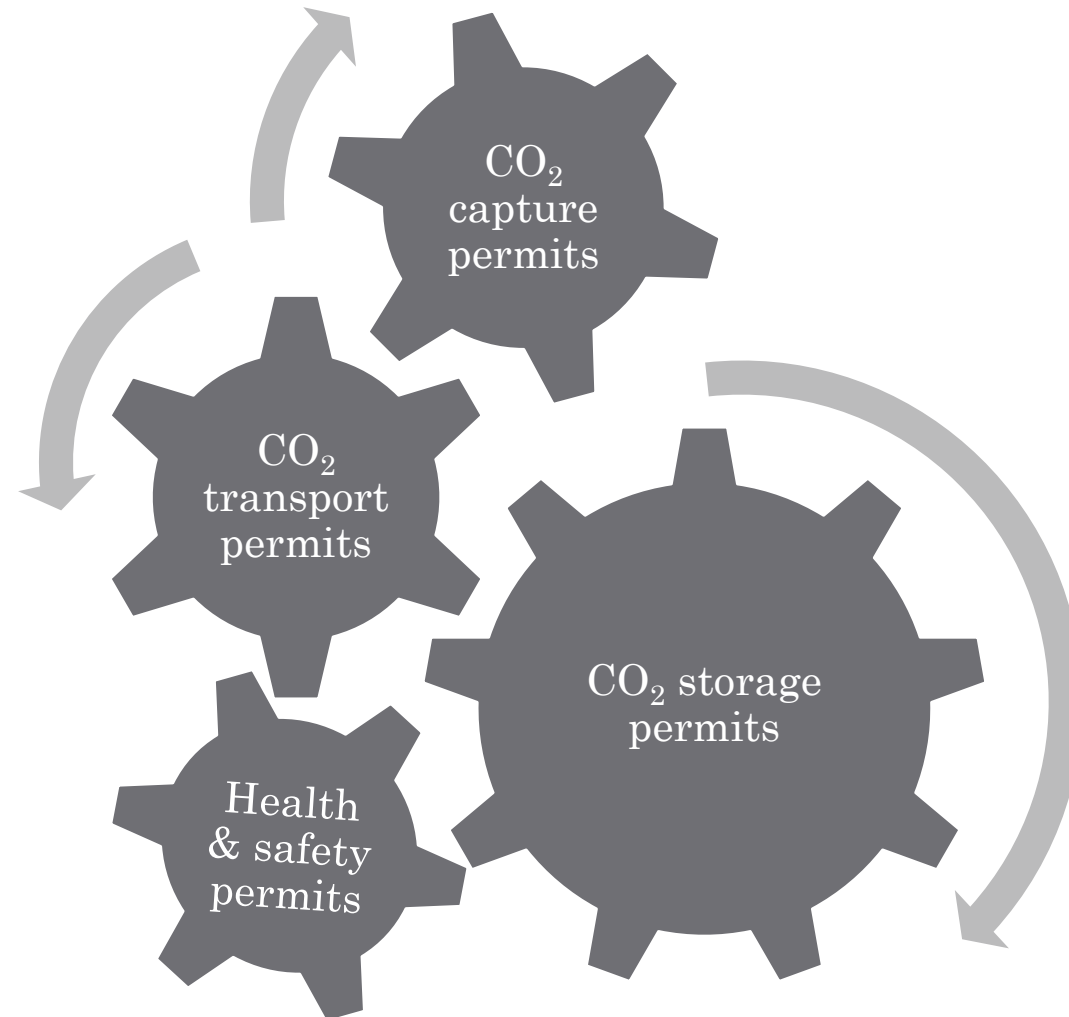
# CCUS proposed Greek regulatory framework

1. Scope
2. Terms and Definitions
3. Independent Authority on CCUS to undertake the governance of the activity

(The IACCUS shall be developed and structured based on the example of the Regulatory Authority of Energy (RAE)).

# 4. The Licensing Procedures

4. The licensing procedures



## 4.A. The CO<sub>2</sub> Capture Permits

## 4.B. The transportation Permits

- Environmental Licence
- Pipeline Network?
- Trucks?
- Rail?

Multicriteria evaluation is needed

**Eligibility criteria** ( financial requirements to be met by the Applicant)

**Permits**

- Environmental permit
- Environmental Impact Assessment

**Additional Provisions for**

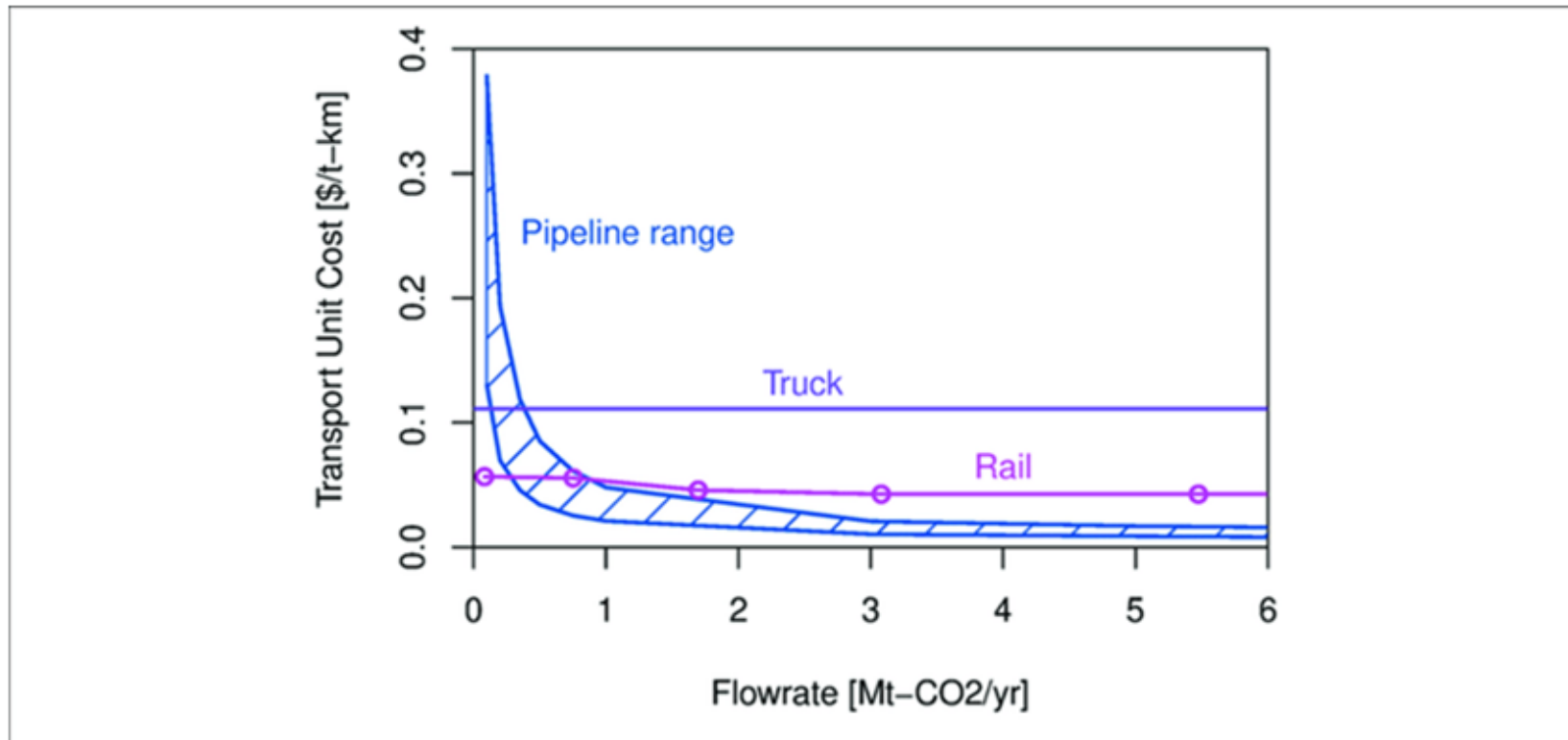
- Application process and content
- Permit content :1.Permit duration,2. withdrawal, 3.modification, 4.transfer or renewal

# Modes of CO<sub>2</sub> Transportation and costs

- Pipelines: 1\$-8\$/ton/100 Km
- Trucks: 10\$-50\$/ton/100km
- Rail: 5\$-30\$/ton/100km
- Cost effectiveness – distance – labour costs – fuel costs- infrastructures availability

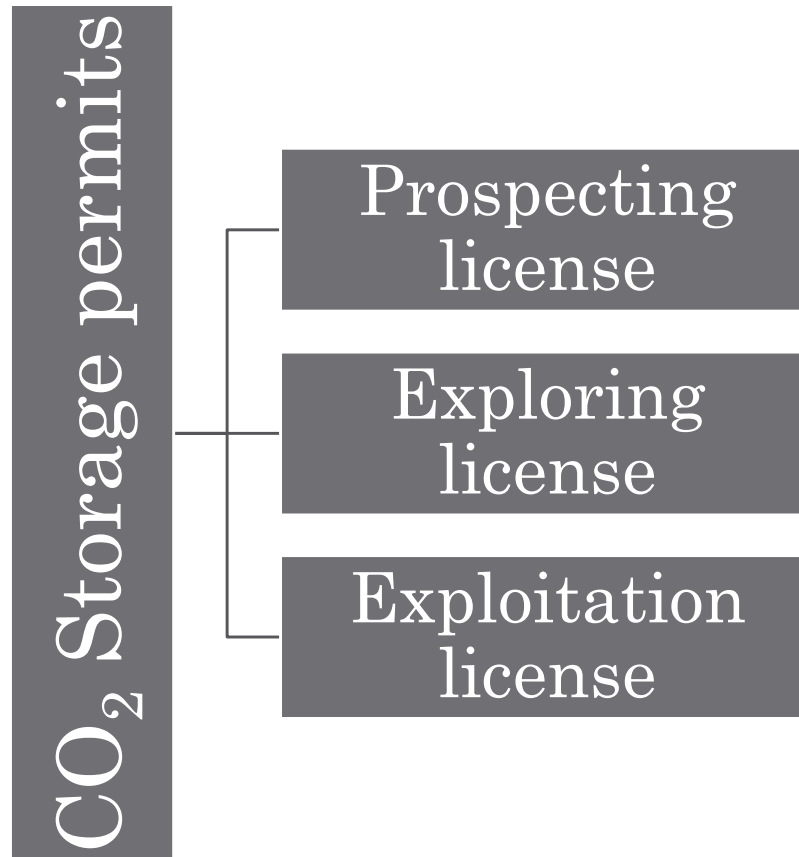


# CO<sub>2</sub> transport modes and costs



Comparison of transport costs of CO<sub>2</sub> by truck, rail, and pipeline as a function of flowrate. Costs are calculated for a distance of 200 km.

## 4.C. Storage Permits



# 4.C.1 Prospecting Licence

2)

**Eligibility criteria** ( financial requirements to be met by the Applicant)

## **Permits**

Environmental permit

Environmental Impact Assessment

## **Additional Provisions for**

Application process and content

Permit content :1.Permit duration,2. withdrawal, 3.modification, 4.transfer or renewal

## 4.C.2 Exploration Licence

**Eligibility criteria** ( financial requirements to be met by the Applicant)

### **Permits**

Environmental permit

Environmental Impact Assessment

### **Additional Provisions for**

Application process and content

Permit content :1.Permit duration,2. withdrawal,  
3.modification, 4.transfer or renewal

# 4.C.3 Exploitation license (CO2 storage permit)

Eligibility criteria ( financial requirements to be met by the Applicant)

## Permits

Environmental permit

Environmental Impact Assessment

## Additional Provisions for

Application process and content

Permit content :1.Permit duration,2. withdrawal, 3.modification, 4.transfer or renewal

5. Third party access - potential users shall have access

- **6. Closure and post-closure** - the operator is in charge for the site's closure and its post-closure state
- These responsibilities can be transferred to the competent authorities under particular conditions.

- **7. Financial mechanism**

- Bilateral agreements between the CO<sub>2</sub> producer & the CO<sub>2</sub> storage operator to check the quantity of the CO<sub>2</sub> captured in the production site and the CO<sub>2</sub> quantity injected in the storage site.



## 8. Monitoring

- A. CO<sub>2</sub> capture
- B. CO<sub>2</sub> transport
- C. CO<sub>2</sub> storage

## **9. Reporting**

- A. Registers establishment
- B. Internal reporting
- C. External reporting

## **10. Liability**

Preventive measures

Remedial measures

Insurance framework: to safeguard  
adequate insurance coverage to cover  
potential liabilities

## 11. Dispute resolution

- Dispute resolution mechanisms to prioritize Alternative Dispute Resolution
- IACCUS catalogue on Arbitrators and Mediators for CCUS
- Potential types of disputes:
  - Disputes between partners of bilateral agreements as to the quantity of avoided CO<sub>2</sub> emissions;
  - Mass lawsuits
  - Environmental impacts
- In case ADR does not work, national courts should be designated as the competent judicial authorities.

## 12. Public participation

- Adequate public consultation prior to the adoption of new laws or on the development of the existing ones for CCUS related activities
- Close cooperation of the CCUS stakeholders with the a) the local authorities and b) the local community in the areas where CCUS projects are happening.
- Public availability of important information to ease any concerns the locals may have.

- 13. **Enforcement**

- Establishment of a compliance and enforcement mechanism to ensure that CCUS projects comply with all applicable regulations and standards both of EU Law and National Law.
- Able to impose fines and other penalties, or the possible suspension or revocation of licenses and permits for non-compliance occasions.

Thank you for your attention