IENE Workshop on "The Economics of CCUS Applications in Greece"
Athens, March 12, 2025

"Implementation of CCUS hubs: A Cost Benefit Analysis"
Extended Summary

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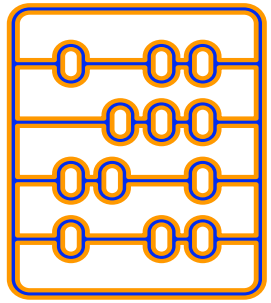
Study Background and Objectives

- Builds on the IENE CCUS study completed in October 2023
- Expands analysis of the proposed CCUS hub
- Focuses on financial feasibility and cost-benefit analysis
- Objectives
  - Introduce the hub concept in the whole CCUS value chain
  - Justify the operation of the hub
  - Promote the concept of the hub as the most cost-effective way of CO_2 treatment, storage and dispatch
  - Provide decision-makers with detailed financial insights
  - Support strategic choices for CCUS hub implementation
  - Assess the viability and sustainability of the hub

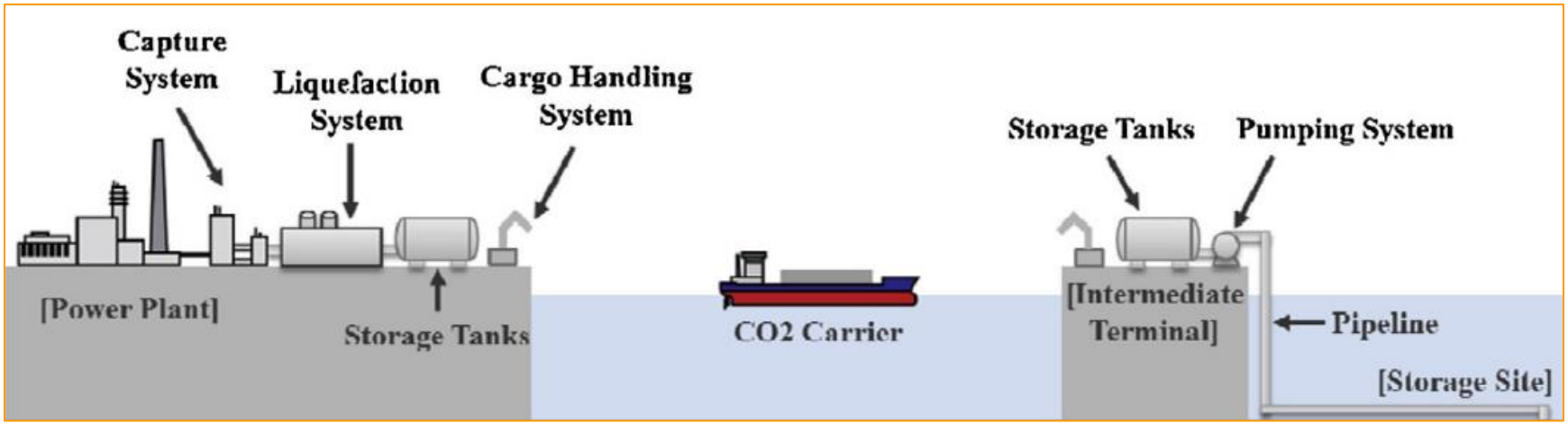
Areas of Analysis and Expected Outcomes

- Key Areas of Analysis
  - Breakdown of CCUS hub components and related costs
  - Transmission options and related costs
  - CCUS hub design
  - Complete cost-benefit analysis of the CCUS hub options
  - Financial feasibility assessment
  - Evaluation of potential benefits vs. incurred costs
- Expected Outcomes
  - Valuable technical and economic insights for stakeholders
  - Guidance for informed decision-making on CCUS projects
  - Contribution to sustainable energy discussions
  - Alignment of CCUS initiatives with economic and environmental goals



CCUS Hubs in Greece

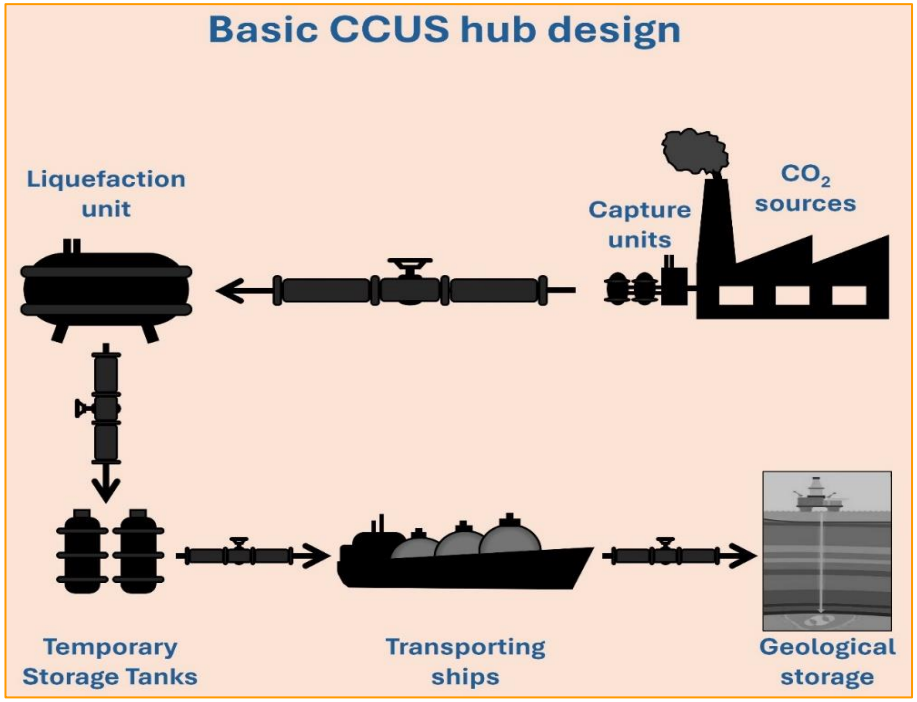
- Based on IENE's study: "CCUS Technologies in Greece – Prospects for Implementation"
  - Multiple hubs across different regions
  - Cluster approach – Serves multiple industries in various locations
  - Decentralized model – Necessary due to uneven distribution of underground storage sites



Source: Seo, Y. et al. (2016)

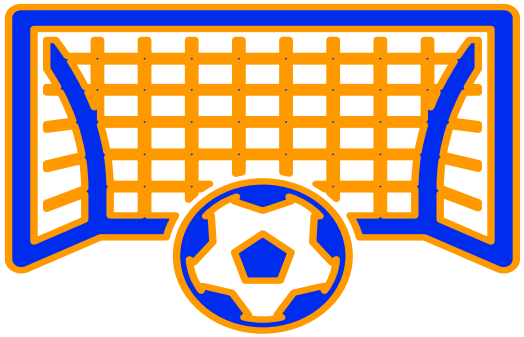
Components and design of the CCUS Hub

- CO_2 Capture
- Pipelines
- Liquefaction Plant
- Temporary Storage Facilities
- Transportation to Permanent Geological Storage
- Geological Storage Sites



End remarks

- Reinforces IENE's CCUS roadmap (Oct 2023) for Greece
- Decentralized cluster-based approach for industrial decarbonization
- Industry clusters serve key emitters (refineries, cement plants, power facilities)
- Multiple CCUS hubs
- Ship-based CO_2 transport



Thank you for your attention!

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