



Preparing a CCUS vision for Europe

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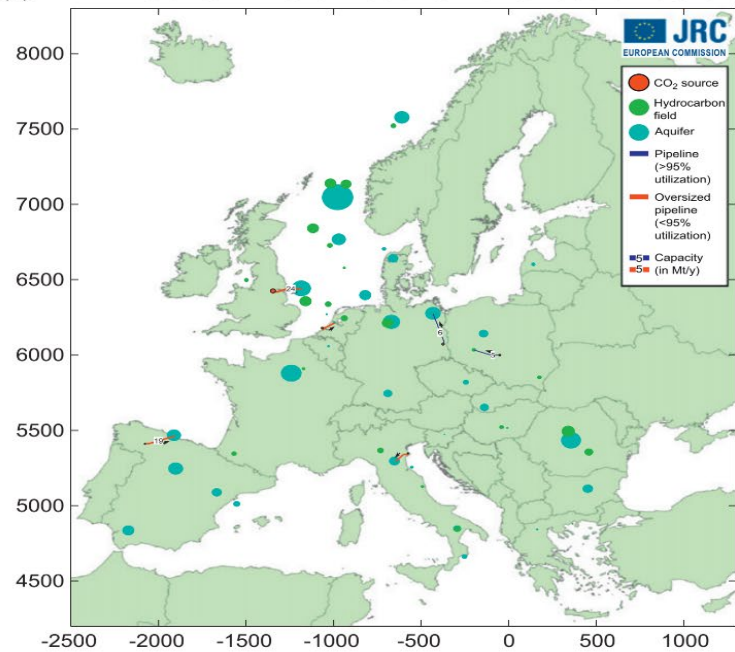
European Commission

2007

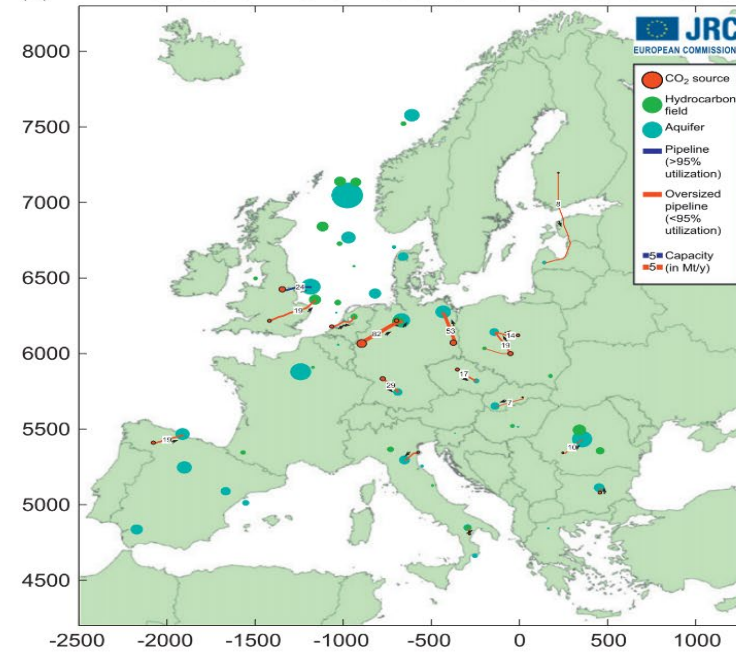


Image: Guardian

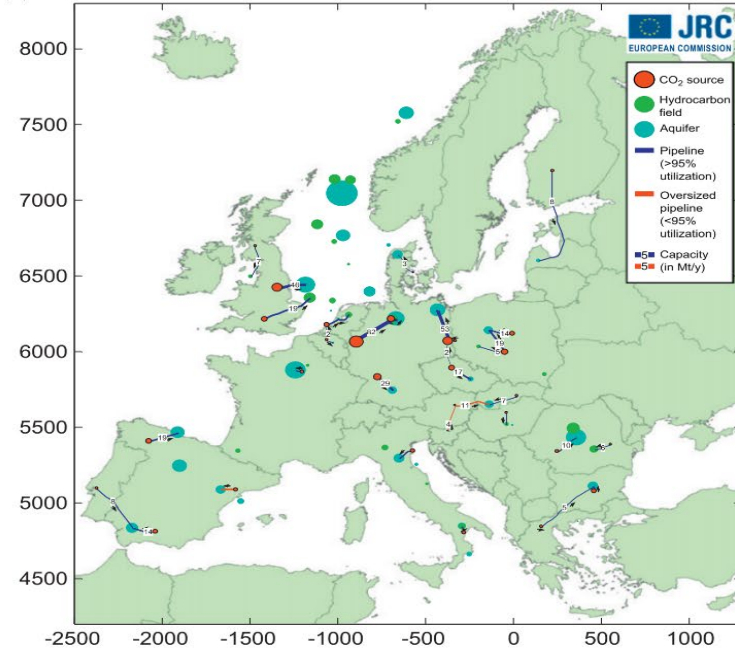
(a) YEAR 2020 - 897km network - 0.9 billion EUR cumulative investment



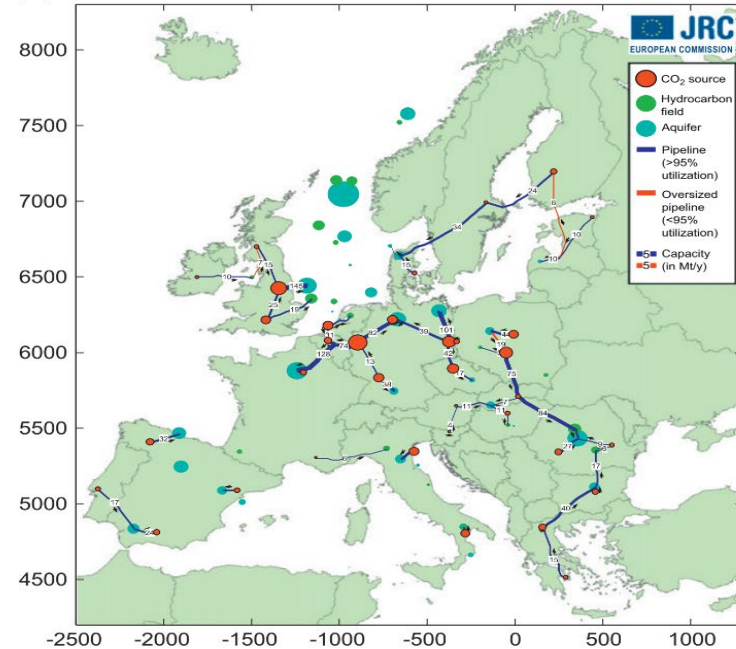
(b) YEAR 2025 - 3216km network - 3.5 billion EUR cumulative investment



(c) YEAR 2030 - 5551km network - 5.4 billion EUR cumulative investment

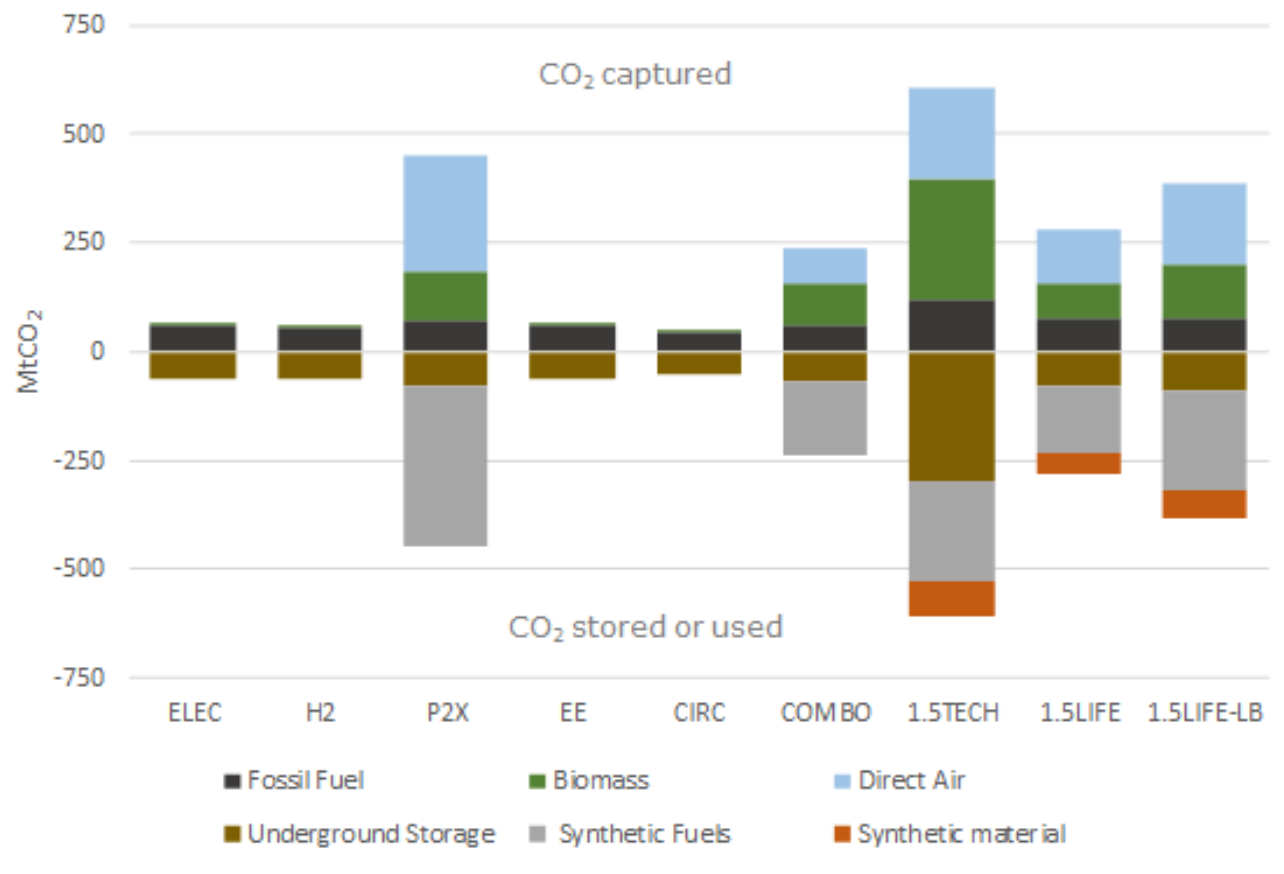


(d) YEAR 2050 - 11276km network - 15.6 billion EUR cumulative investment



Power sector
driven
infrastructure

Green Deal modelling reality



- Hard-to-abate sectors
- Bridge to H2 market
- Carbon removals
- Power sector
- Fuels and other products

Source: Scenario Analysis Results for CCUS, Vision for a Clean Planet by 2050

Driving the Strategy

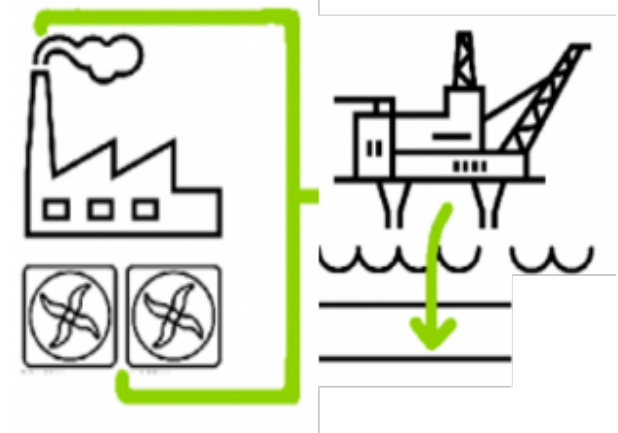
- Existing framework and projects
- Studies on CO₂ transport and storage infrastructure
- Public consultation – April 2023
- CCUS Forum – regular meetings

Legislation in place

- **EU ETS** – carbon price
- **Sustainable taxonomy** includes CCS
- **CCS Directive** - ensures CCS is done safely
- **CCU fuels** are encouraged through the **Renewable Energy Directive**
- **Trans-European Energy Networks** – supports investment in CO₂ pipelines and storage
- EU ‘**carbon removal certificates**’ framework

CO₂ storage obligation for the EU – Net Zero Industry Act

- **EU-wide objective to achieve an annual CO₂ storage capacity of 50 million tonnes by 2030 (EOR/EGR excluded)**
- Oil and gas producers to provide an individual contribution for reaching the target
- Contribution based on share of overall EU oil and gas production (2020-23)
- Target can be met using own assets and cooperation
- When NZIA becomes EEA relevant – target will be revised



Innovation Fund

Kairos-at-C - CO₂ capture from hydrogen, ammonia and ethylene oxide production

K6 - CO₂ capture at cement plant

BECCS Stockholm - bio-energy CO₂ capture at a combined heat and power plant

SHARC - Green hydrogen and blue hydrogen production



Innovation Fund

Carbon2Business – oxy-fuel CO₂ capture for methanol production (Germany)

AIR - Methanol production from renewable H₂ and carbon capture (Sweden)

HySkies - Sustainable Aviation Fuel from RES H₂ and CCU (Sweden)

Coda Terminal - CO₂ mineral storage hub in onshore basalt formation (Iceland)

ANRAV - Oxy-fuel in cement production (Bulgaria)

GO4ECOPLANET - Cryocap CO₂ capture in cement (Poland)

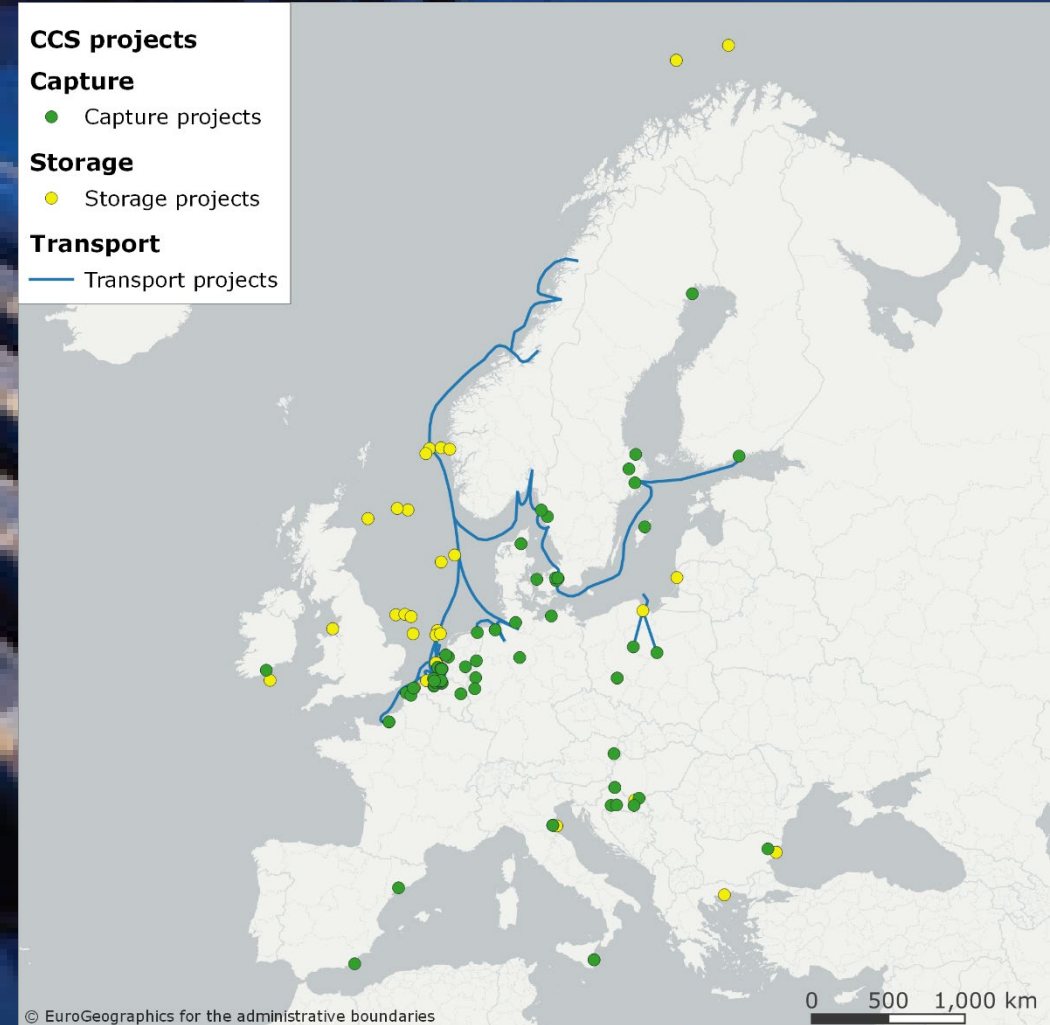
CalCC - CO₂ capture in lime production (France)

A map of Europe with country borders outlined in black. Twelve red diamonds are placed on the following countries: Ireland, Finland, Sweden, Denmark, Germany, France, Italy, Greece, Portugal, Spain, Austria, and Belgium. Ten yellow stars are placed on the following countries: Iceland, Norway, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Malta, Cyprus, and Turkey. The map is titled 'Map of Europe' in the top left corner.

EU CCS Interconnector - CO₂ from industrial area around Gdansk PL

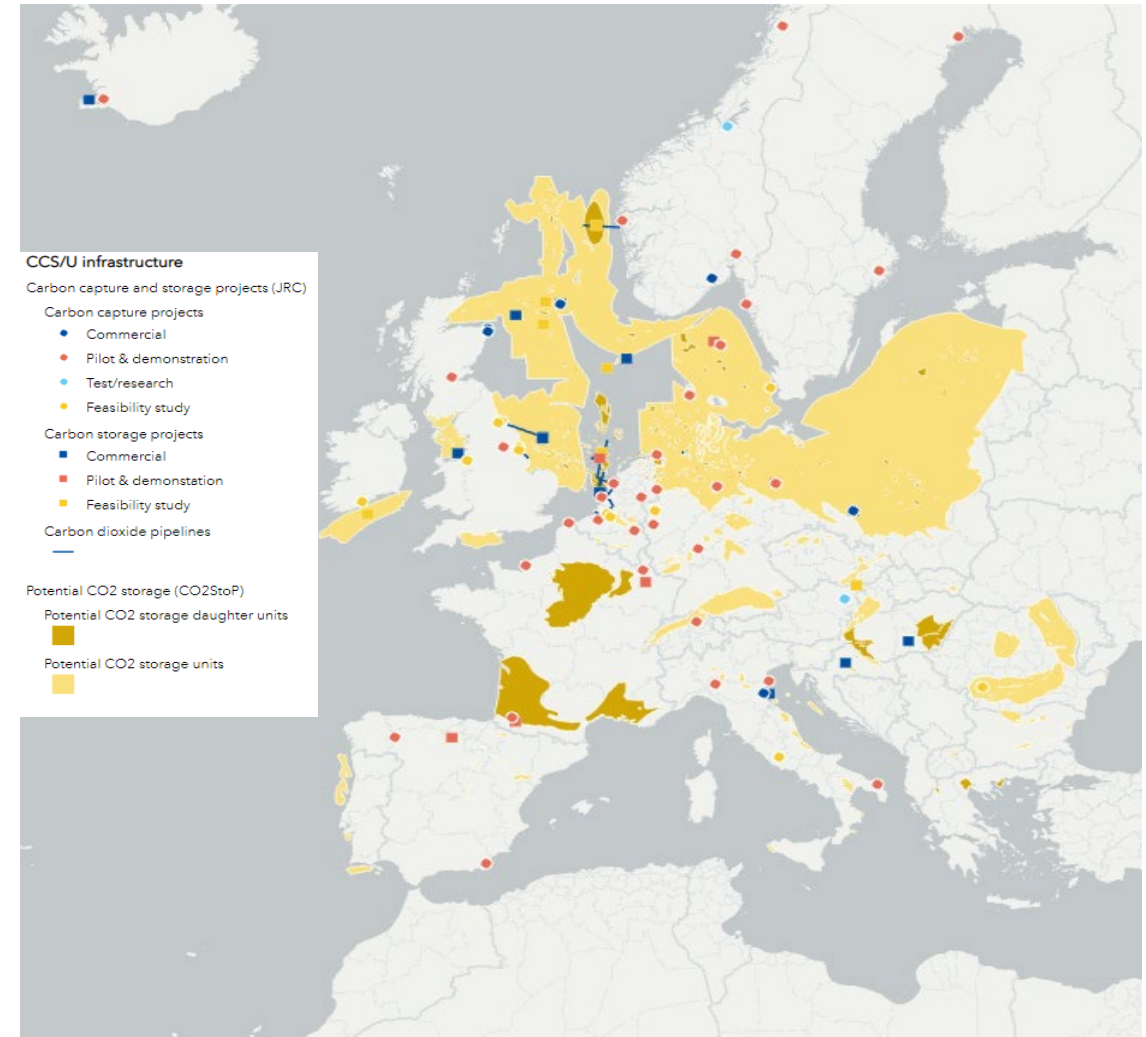
CO2 infrastructure studies

- Sources and sinks mapping and development scenarios
- Regulatory environment and standards



Optimising the grid

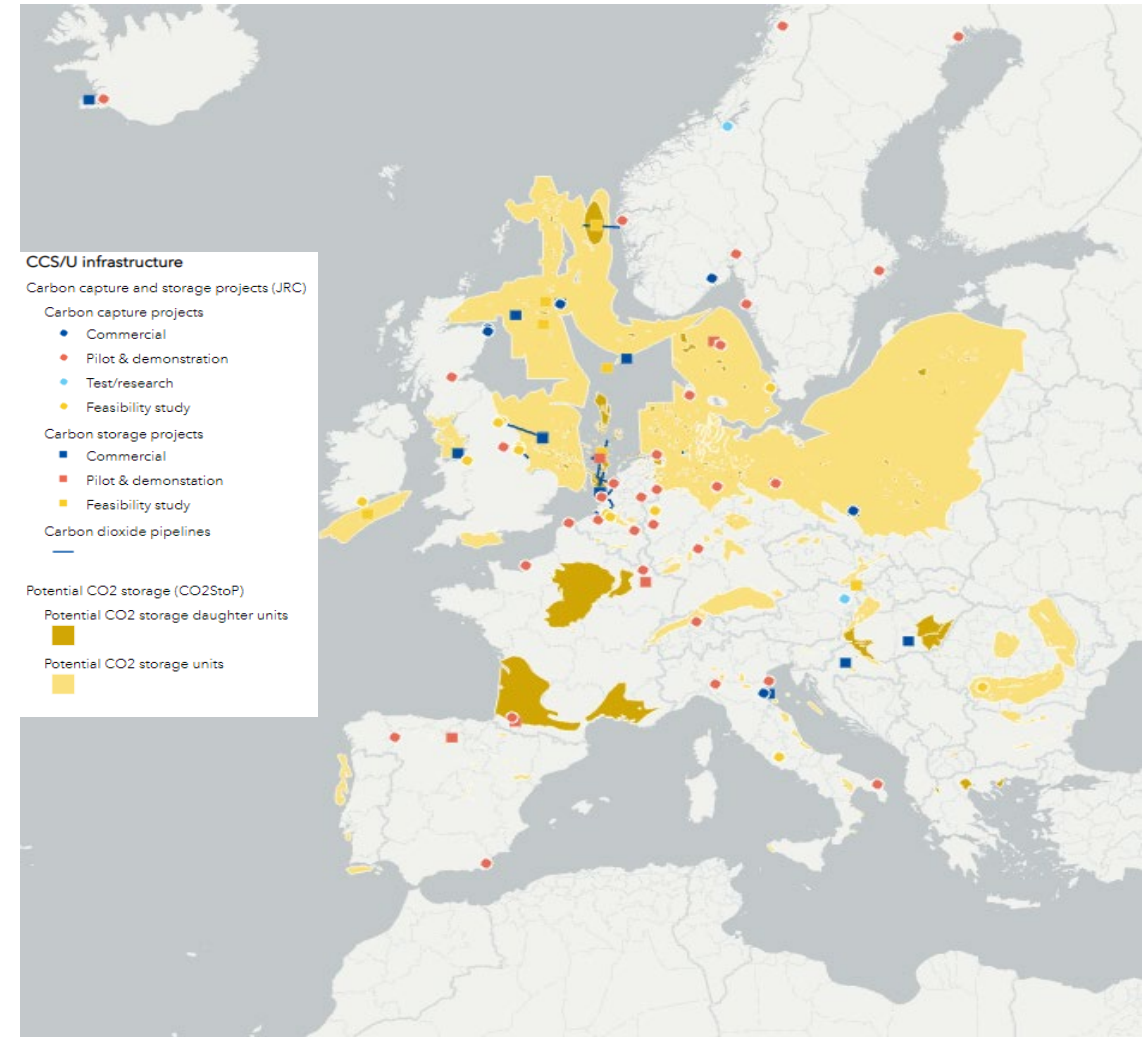
- Identification and clustering of CO₂ sources and sinks
- Scenarios on evolution of emission sources and storage capacities
- Routing of potential pipelines
- Selection of the optimal network and evolution over time



Source: <https://energy-industry-geolab.jrc.ec.europa.eu/>

Regulating the grid

- Open access infrastructure
- Long-term planning
- Regulatory oversight
- Common standards
- Unbundling
- Lessons from n. gas and H₂
- Lessons from other countries



Source: <https://energy-industry-geolab.jrc.ec.europa.eu/>

CCUS Forum – stakeholder dialogue

- Bottom-up
 - Inclusive
 - Stakeholder driven
 - Transparent
-
- WGs + Plenary



Stakeholders recommendations

- Storage capacity targets
- Network regulation and planning
- Support scheme/s and de-risking
- Storage atlas & pre-commercial storage assessment
- What kind & how much CCU and carbon removals
- Industrial initiative
- Common CO₂ standards/specs
- Carbon management value chain MRV



Milestones

- Public consultation – April
- CCUS Forum – ongoing
- CCUS Forum plenary - November
- NZIA – negotiations ongoing
- Strategy published – 4Q

Thank you!



#CCUSForum #CCUSStrategy