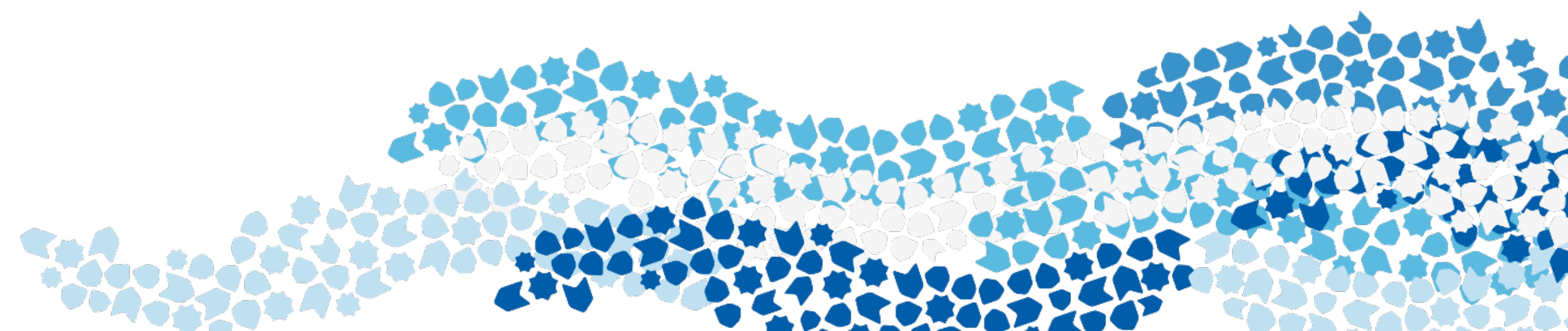


THE CRUCIAL ROLE OF A MEDITERRANEAN PARTNERSHIP – REACHING NET ZERO IN THE MEDITERRANEAN WITH CO₂ CAPTURE AND STORAGE

COP27 SHARM EL SHEIKH (EGYPT)





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Advancing CO₂ research and demonstration: PilotSTRATEGY project

Paula Canteli, CO₂GeoNet (IGME-CSIC)



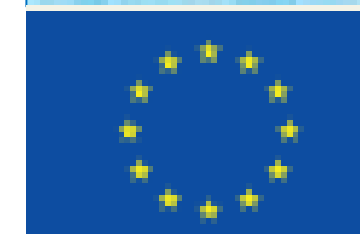
COP27



PilotSTRATEGY project (2021-2026)



- **Funded by EC – R&I H2020**
- To **support development** of carbon capture and storage (CCS) in **Southern and Eastern Europe by detailed study of 3 CO₂ geological storage pilot sites** in selected areas of interest.
- **Pre-investment proposal** for the **3 pilots in France, Portugal and Spain**, and development concept proposal for Poland and Greece regions.
- **Deep saline aquifers:** large capacity for storing CO₂.



The five-year pilotSTRATEGY project, which commenced in 2021, has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101022664.



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From REGIONAL to PILOT evaluation



Strategy CCUS (2019-2022)

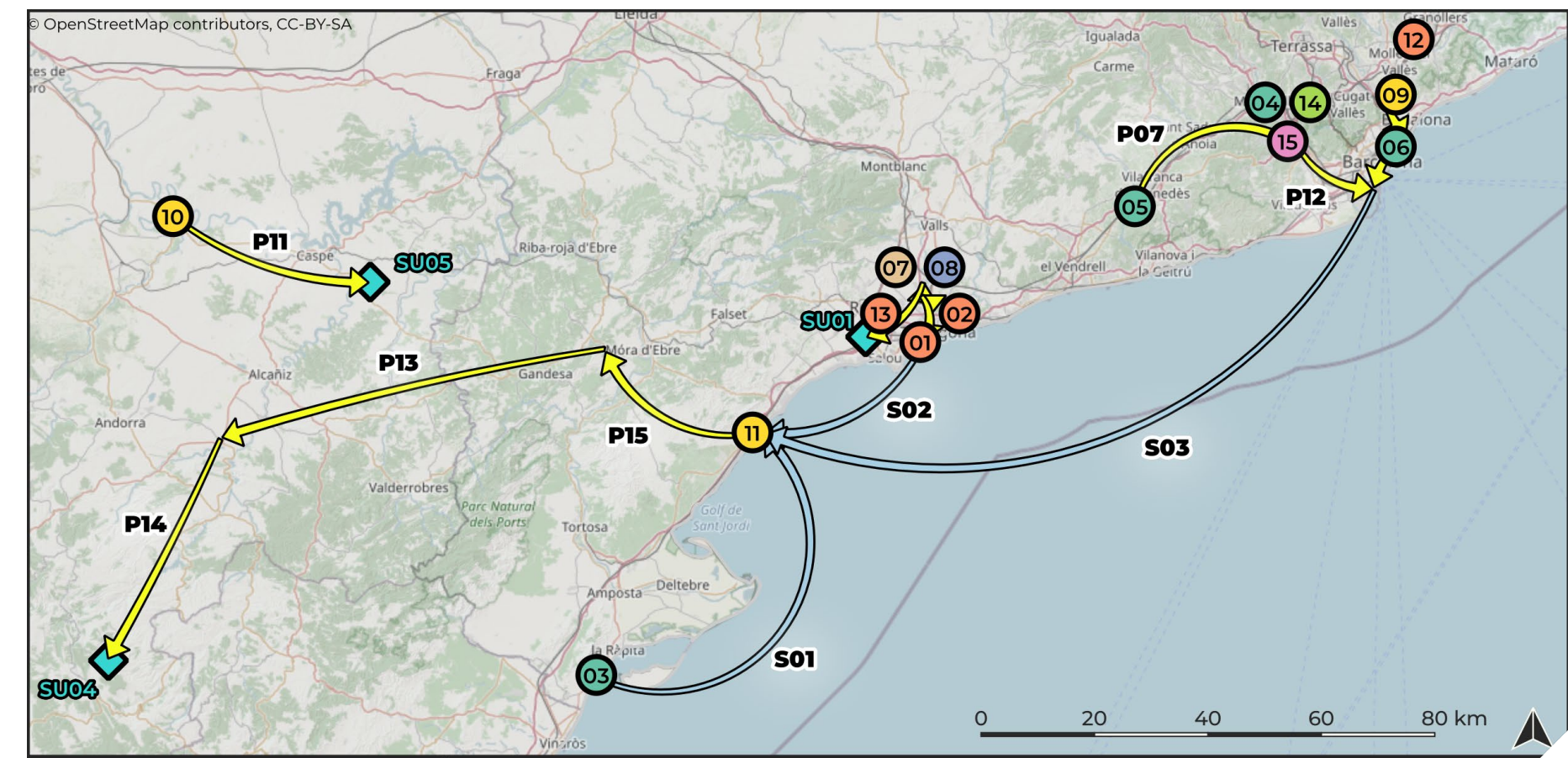
- Elaborate **REGIONAL** business case (2021-2050) for potential implementation of carbon capture, utilisation and storage (CCUS) in 8 regions of Southern and Eastern Europe and:
 - Regional techno-economic evaluation of the CCS
 - Identify and evaluate transnational corridors.

START-UP REGIONS

Supporting countries

- Germany
- Norway
- United Kingdom

1. Paris basin, France
2. Rhône Valley, France
3. Ebro basin, Spain
4. Lusitanian basin, Portugal
5. Northern Croatia
6. Upper Silesia, Poland
7. West Macedonian area, Greece
8. Galati area, Romania



Strategy CCUS Region KPIs (Discounted)

Analysis of the CCS system

Total CCS value chain	
CCS value chain (€/tCO2 avoided)	-97
Total CAPEX per block	-28
Cost of Capture (€/tonCO2 avoided)	-22
Cost of Transport (€/tonCO2 avoided)	-4
Cost of Storage (€/tonCO2 avoided)	-2
OPEX per block	-69
Cost of Capture (€/tonCO2 avoided)	-39
Cost of Transport (€/tonCO2 avoided)	-27
Cost of Storage (€/tonCO2 avoided)	-3
Transport cost (€/tonCO2 transported)	-31,3
Utilisation (income from CO2 sales) (M€)	77,5
EUA/ETS credit savings in the region (M€)	4456,8

Analysis of CO2 volumes (Mt)

Total CO2 Captured	69,4
CO2 utilized	3,9
CO2 for mineralization (perm. avoided)	1,1
Stored	65,5
Total emitted with CCS	153,1
Total avoided emission	66,3
BIO CO2 captured, neg. Emissions	1,0
Total CO2 fed into transport network	66
CCUS National Objectives	200
Share in national objectives	33,2 %

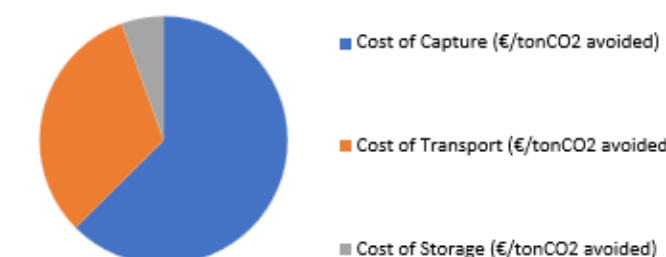


STRATEGY CCUS
A viable solution for a sustainable future

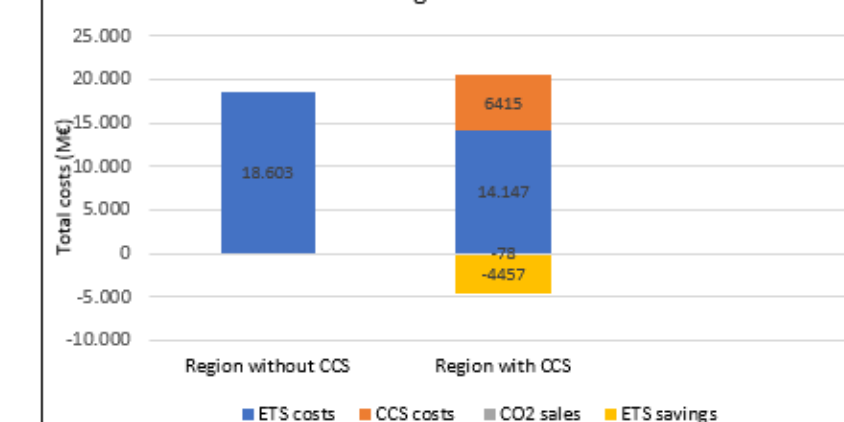
Analysis of ETS allocation

EU ETS per	
	70
	212
Whole regional expense	
ETS costs without CCUS	18.603,5
Whole region expense with	
ETS costs with CCUS, remainin.	14.146,7
Cost of CCUS (M€)	6.414,9
TOTAL costs with CCUS (M€)	20.561,5
Cost difference, with minus without CCUS (M€)	1.958,0
Average yearly energy need, TWh/year	6,36
Peak energy need, TWh/year	13,60
Breakeven CO2 price (€/tonCO2)	88

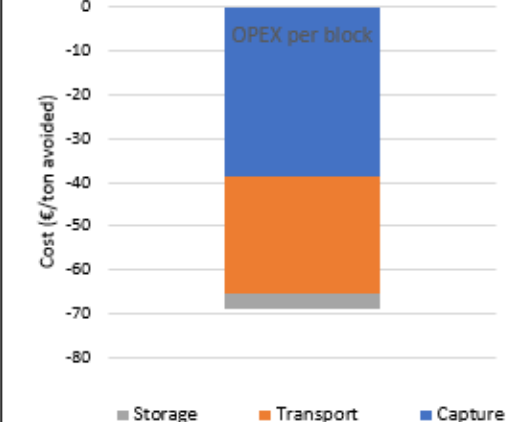
Share of the CCS chain total cost



Total costs during until 2050



Variables costs per block



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PilotSTRATEGY

Pilot detailed studies for pre-investment proposal:

- **More than a technical project**
- **Research & industry collaboration**
- **Multicriteria approach**



Paris Basin (FR)
Lusitania Basin (PT)
Ebro Basin (ES)
Silesia (PL)
Macedonia (GR)



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Multicriteria approach

- Technical evaluation
- Environmental risks
- Social acceptance and stakeholder participation
- Techno-economic evaluation
- Socio-economic evaluation
- Legal frame and incentives
- Project objectives



Ebro basin: site selection

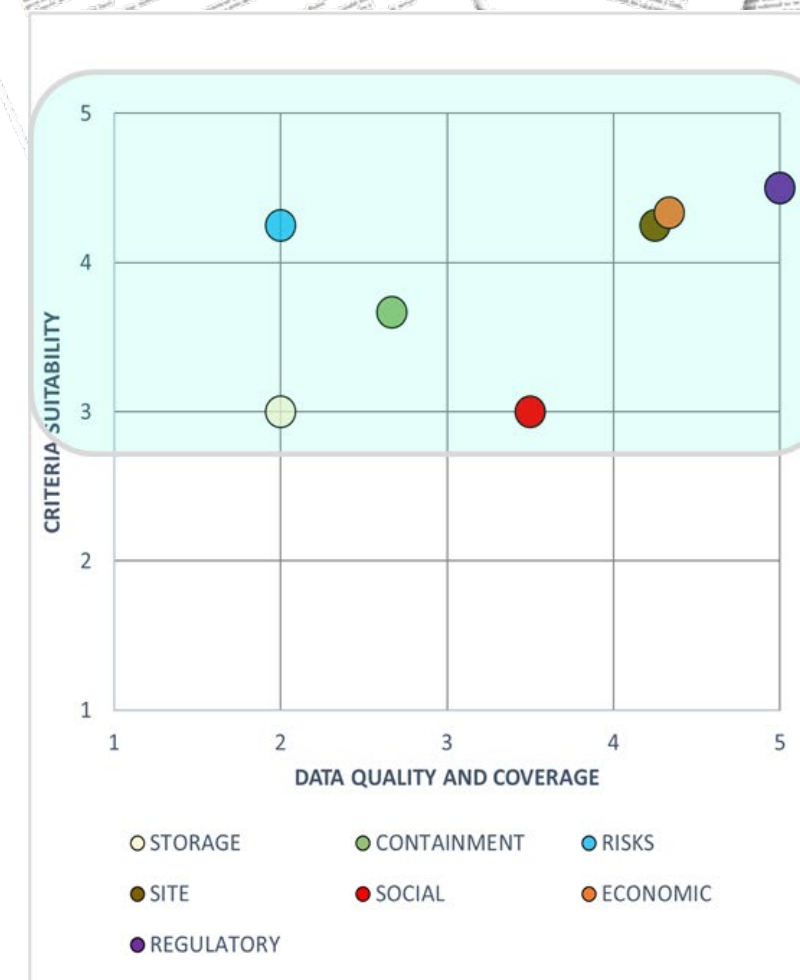
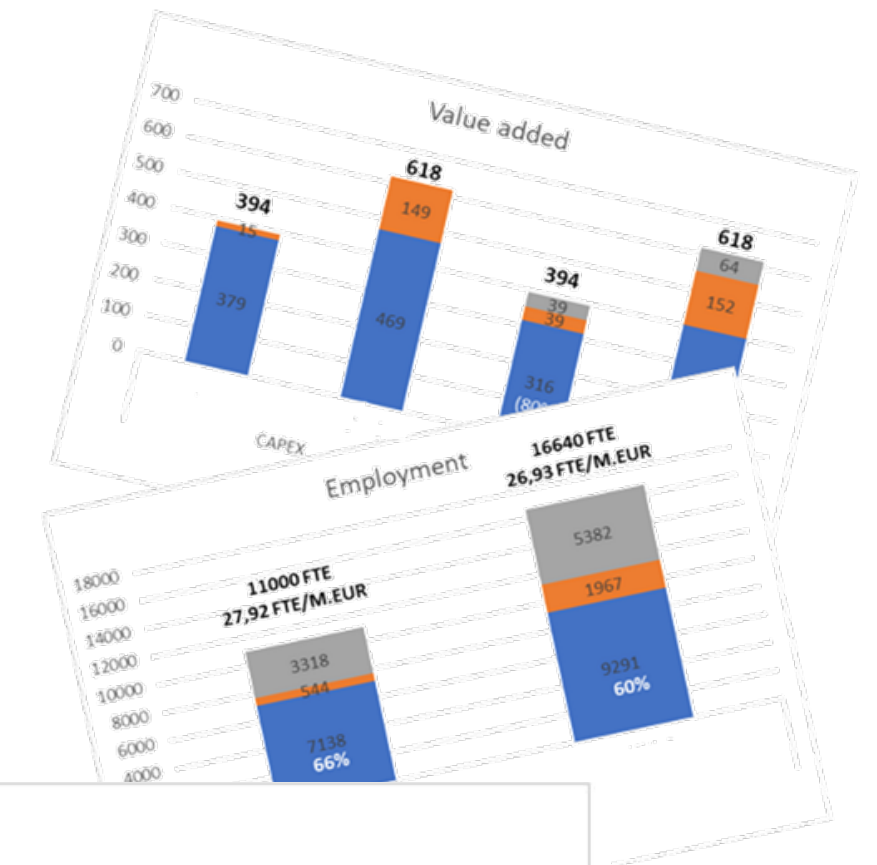
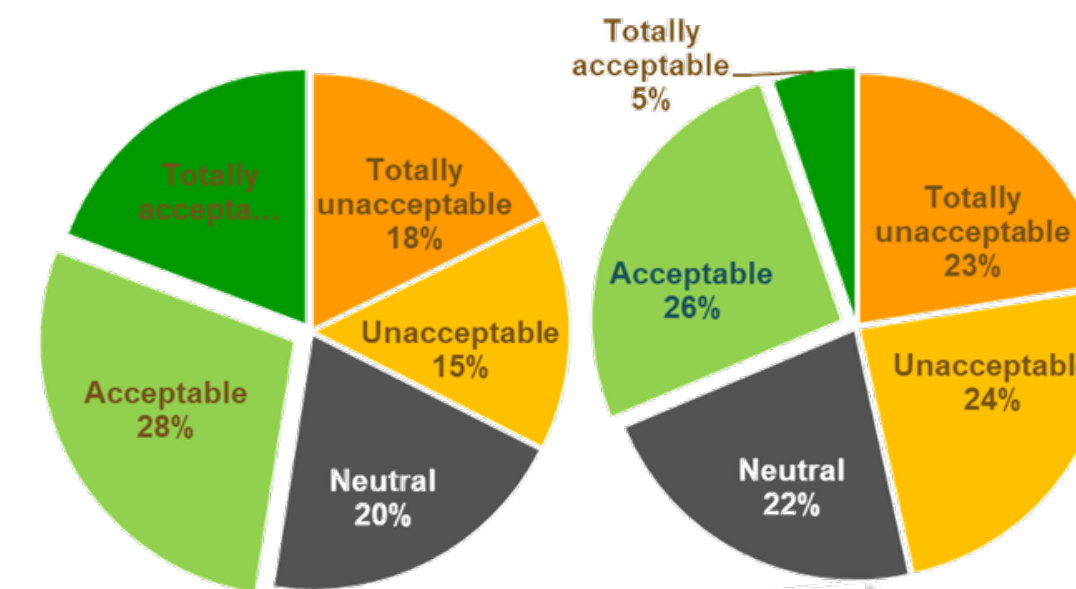
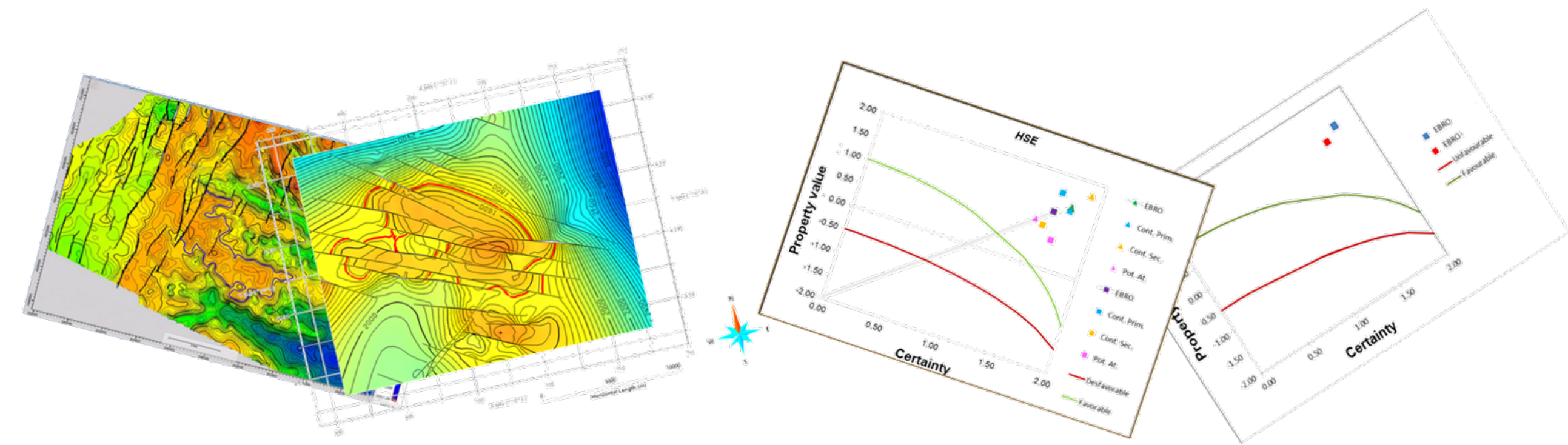
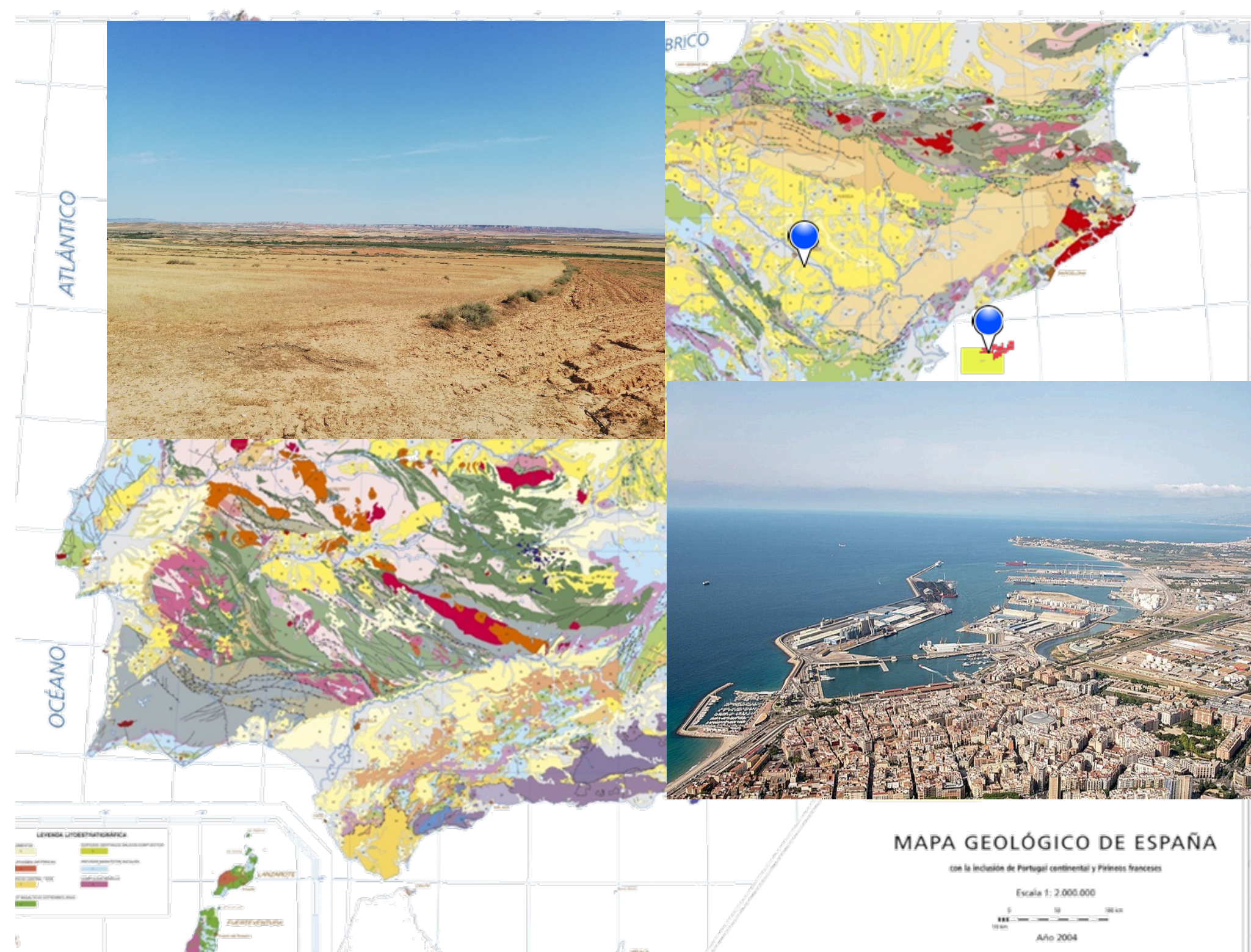


Multicriteria evaluation (for decision taking)
Ebro Basin Onshore/offshore: two independent projects



PilotSTRATEGY

Ebro basin: site selection

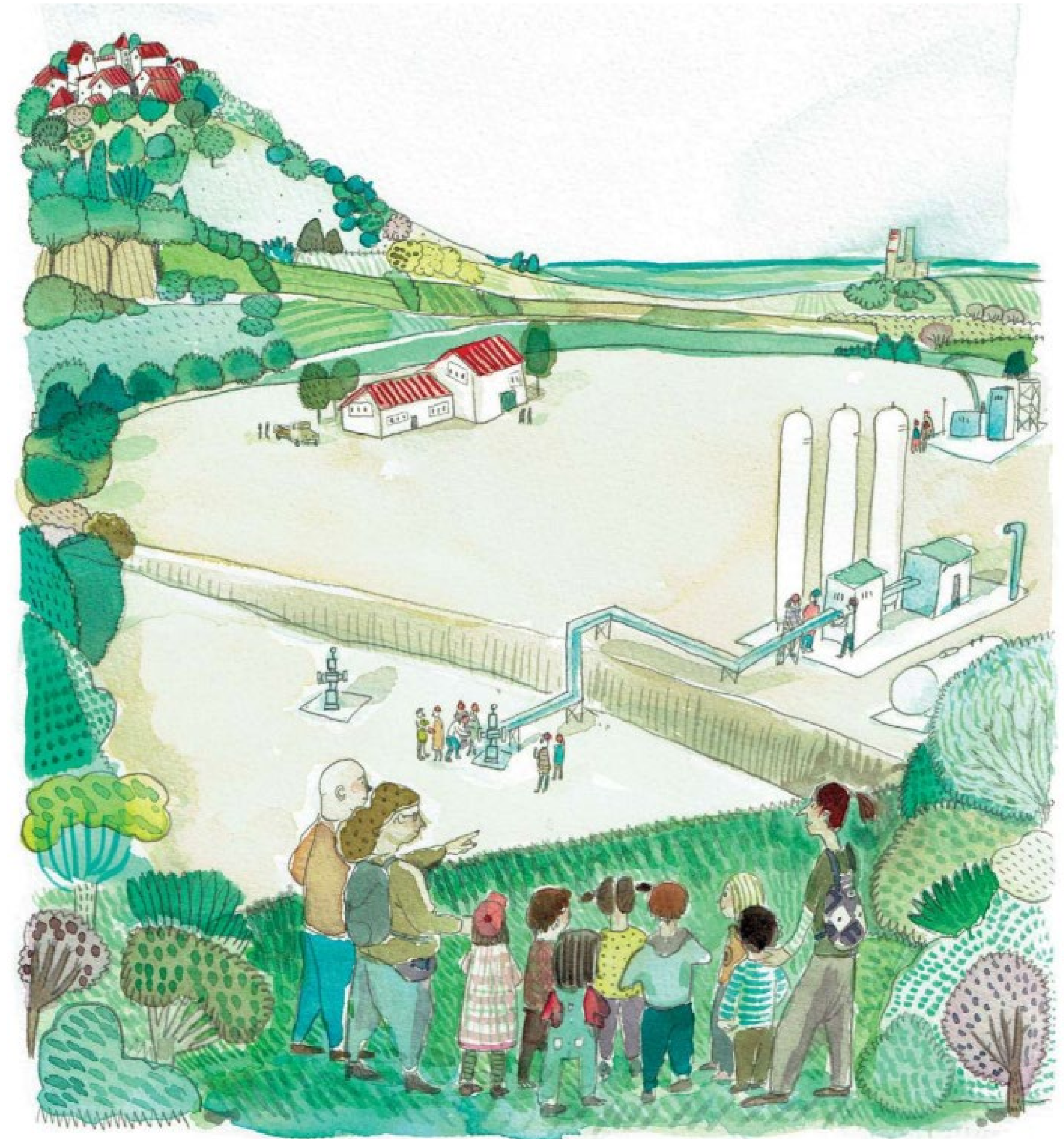


Milestone: M18 site selection (Nov 2022)
 Multicriteria evaluation (for decision taken)
 Ebro Basin Onshore/offshore: two independent projects



Conclusion

- CCUS development in the South Europe/Mediterranean area is needed, possible and viable.
- Regional approach to identify promising regions and understanding potential (including social and permits) and needs. Consider transnational possibilities!
- Multicriteria approach is mandatory: bring onboard key stakeholders.
- Pilot scale requires research & industrial collaboration, social implication, and support from government & administration.





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Thank you!

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