



Collaboration with Czech Republic

- Third Norway Grants project
- EU H2020
- CO₂GeoNet (started as FP6)

Fantastic opportunity to learn from each other and work on this practical project in tight collaboration with industry!

CO₂-SPICER

CO₂ Storage Pilot in a Carbonate Hydrocarbon Reservoir



NORCE

MND



GEOFYZIKÁLNÍ ÚSTAV
AKADEMIE VĚD ČESKÉ REPUBLIKY, v. v. i.

VŠB TECHNICKÁ
UNIVERZITA
OSTRAVA

<https://co2-spicer.geology.cz/en>



Norway
grants

Programme **Kappa**

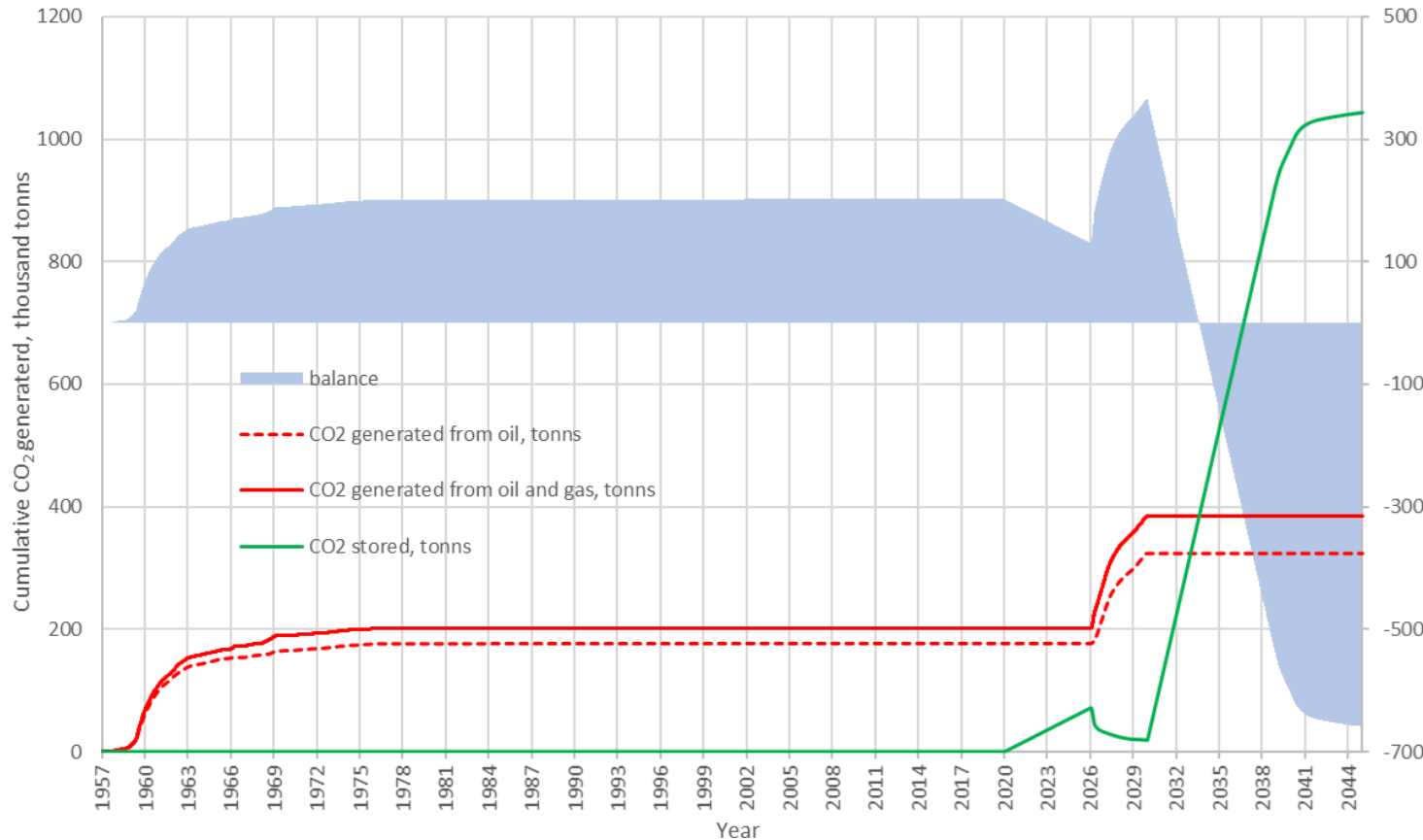
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SPICER



Why storage in HC reservoir?

Example based on previous project:



Extend field and infrastructure life

Benefit from vast amount of subsurface knowledge available

Compensate from previous emissions from oil and gas production:

CO₂ generated estimate:
from oil ~ 320 ktonns
From gas ~ 60 ktonns

Storage volume assesment: 1 million tonnes

One more pilot? Why?

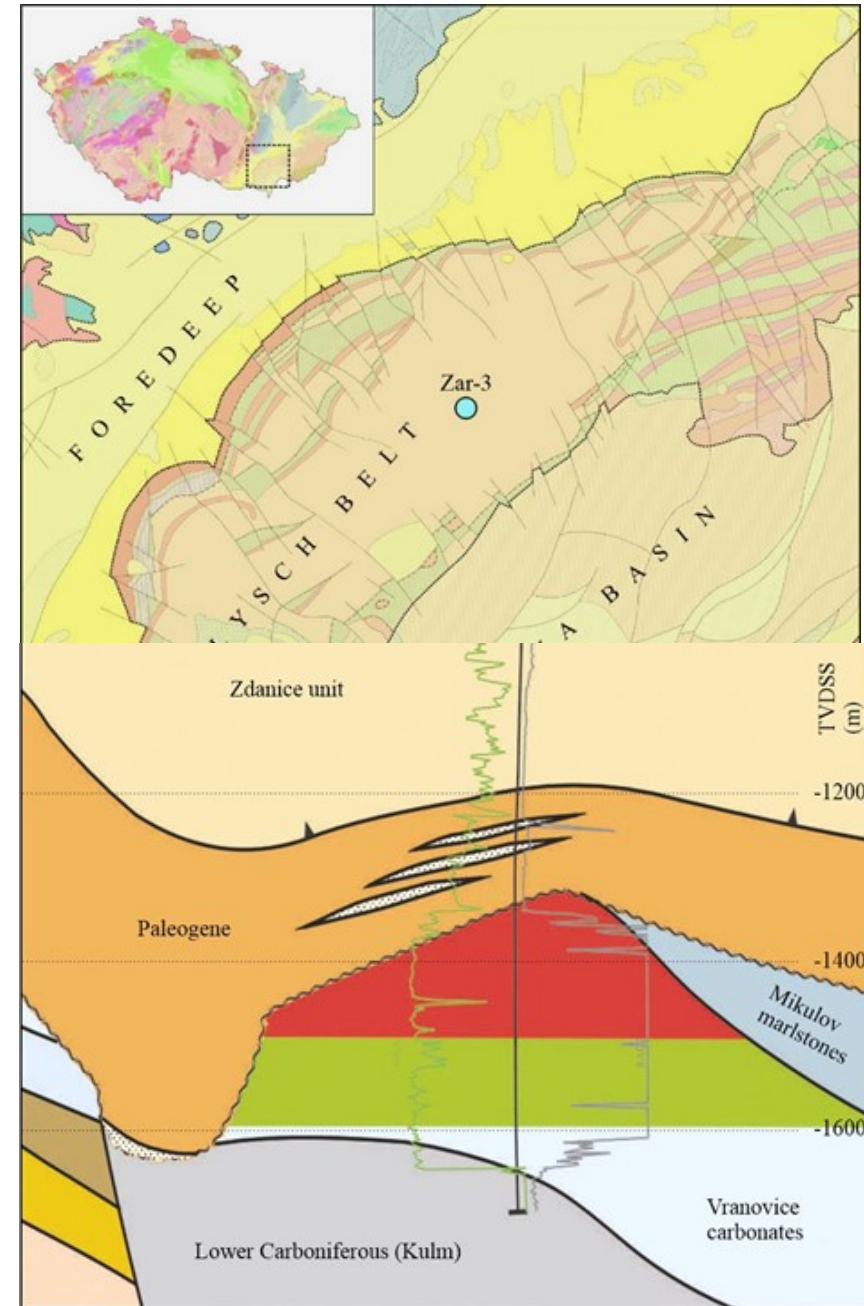
Carbonate field – geochemistry, geomechanics are important aspects.

A necessary step towards full field roll out

First CCS project in central Europe – engaging stakeholders and demonstrating safety

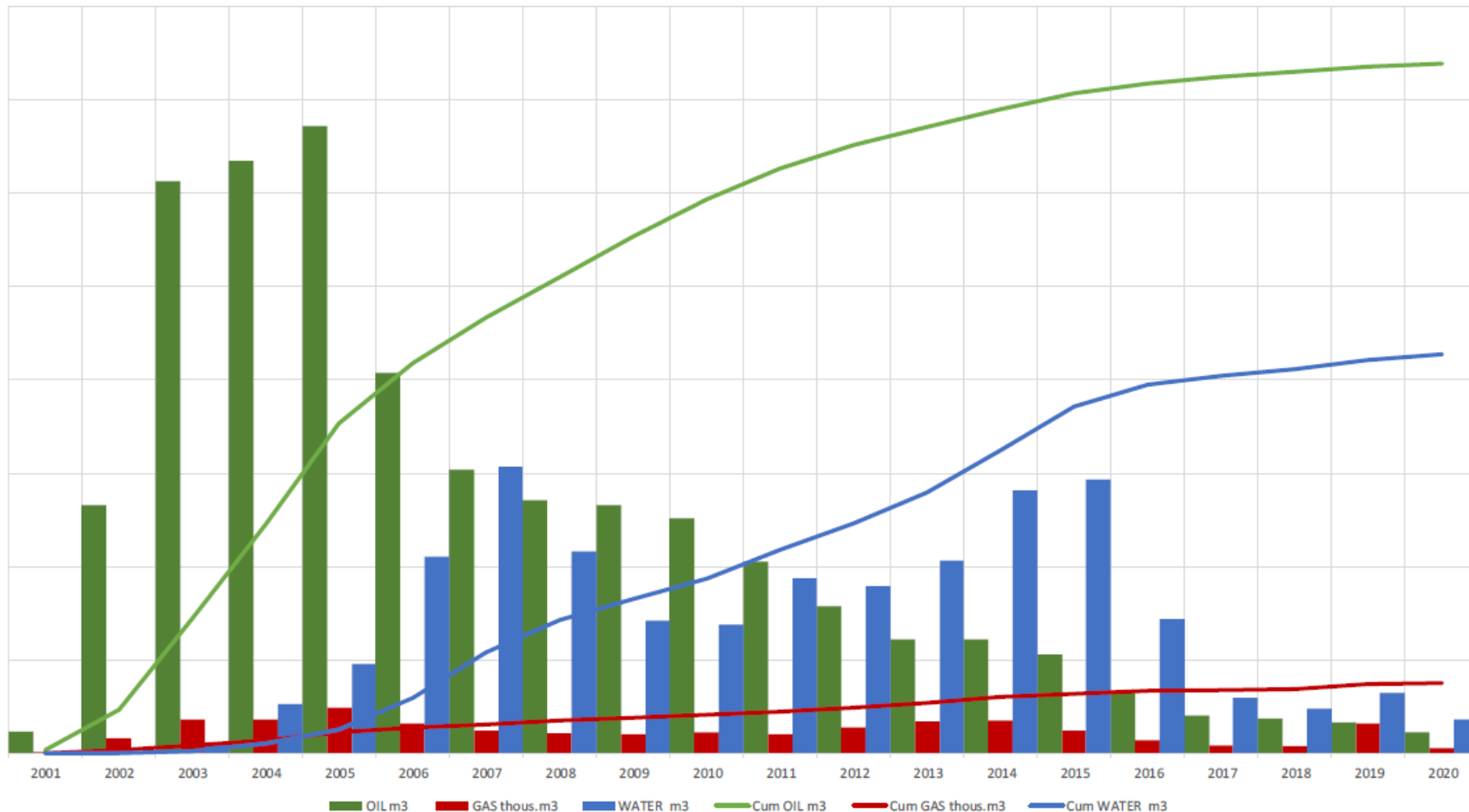
Objective

- **Main objective** is to prepare implementation of a **CO₂ geological storage pilot project** at the mature **Zar-3** oil & gas field
- **Specific project goals:**
 - construction of a **3D geological model** of the storage complex
 - dynamic modelling and **simulations of CO₂ injection** in the reservoir using various scenarios
 - evaluation of **geomechanical and geochemical properties** of the storage complex
 - assessment of the **risks related to CO₂ storage** on the pilot site
 - development of **scenarios for future site development**, including design of CO₂ injection facilities
 - strengthening of **Czech-Norwegian cooperation** in the field of CCS



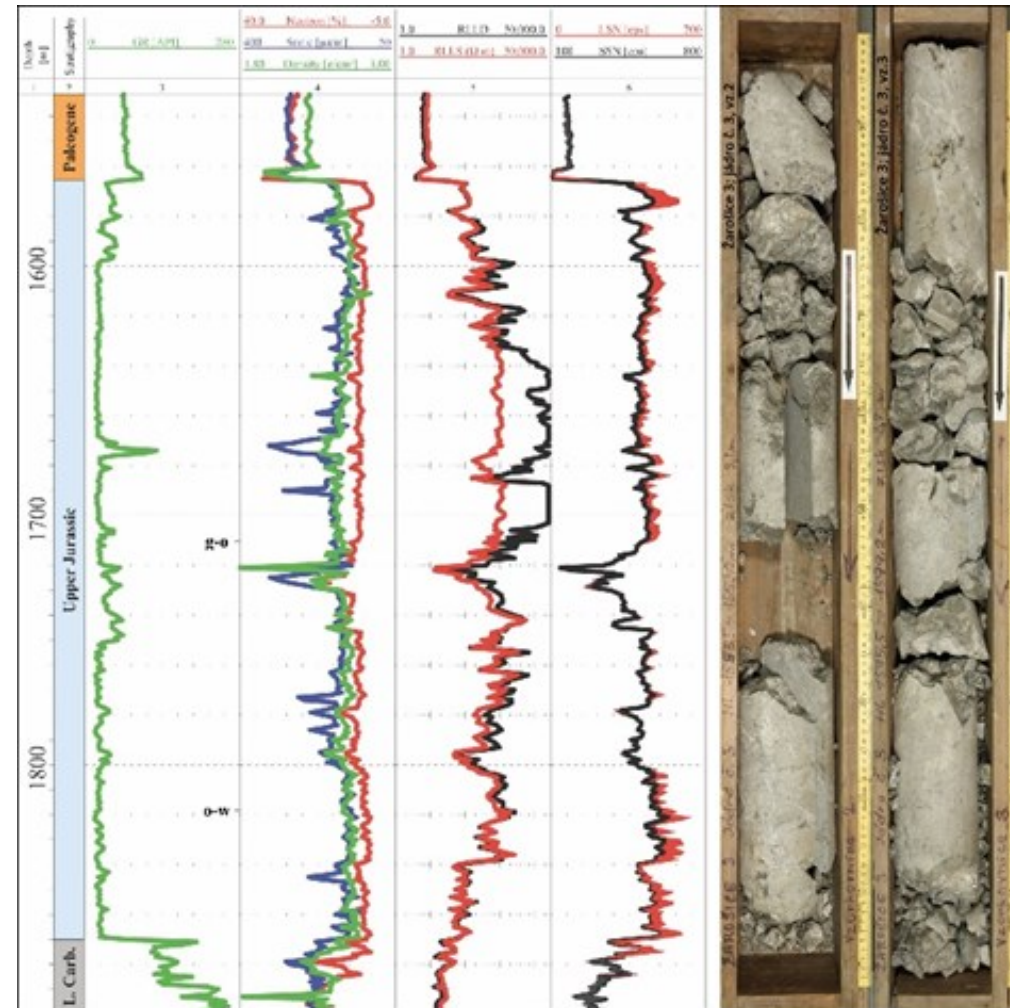
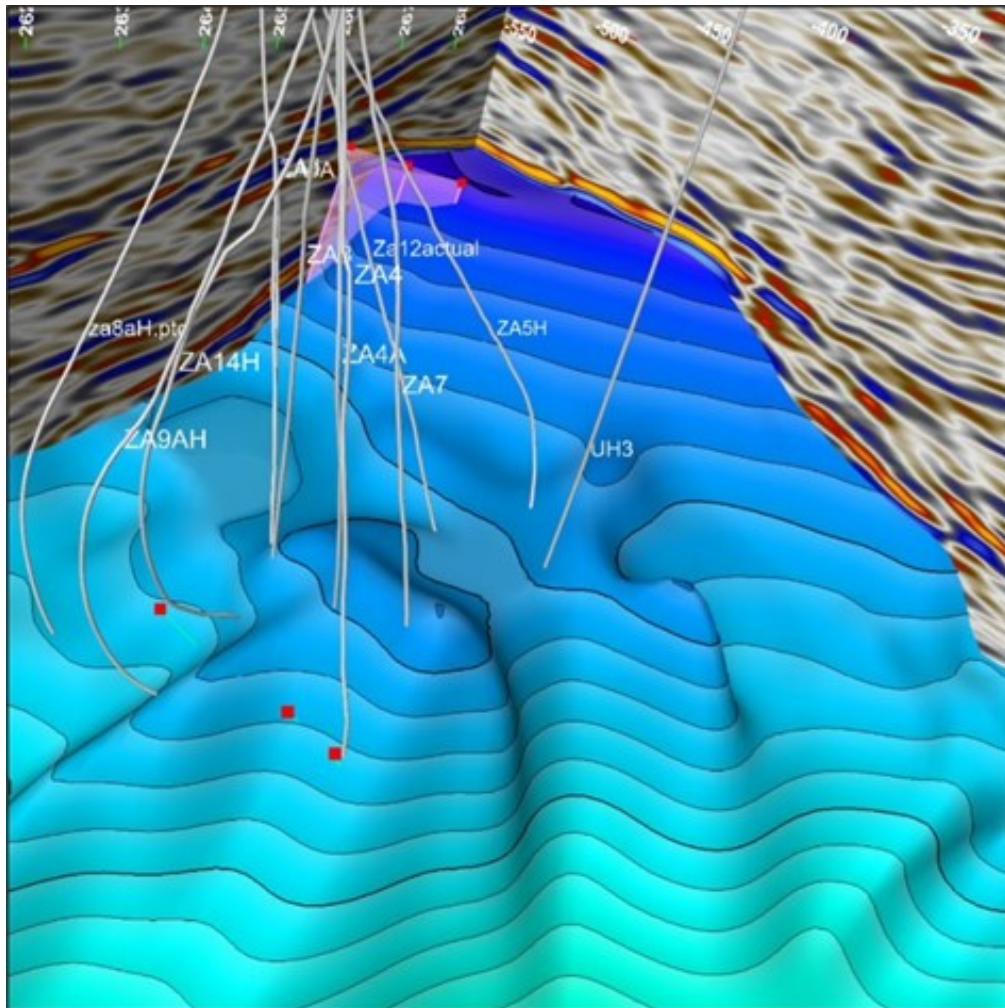
Zar-3 field – production history

Zar-3 field - production history (annual production as of 31.10.2020)

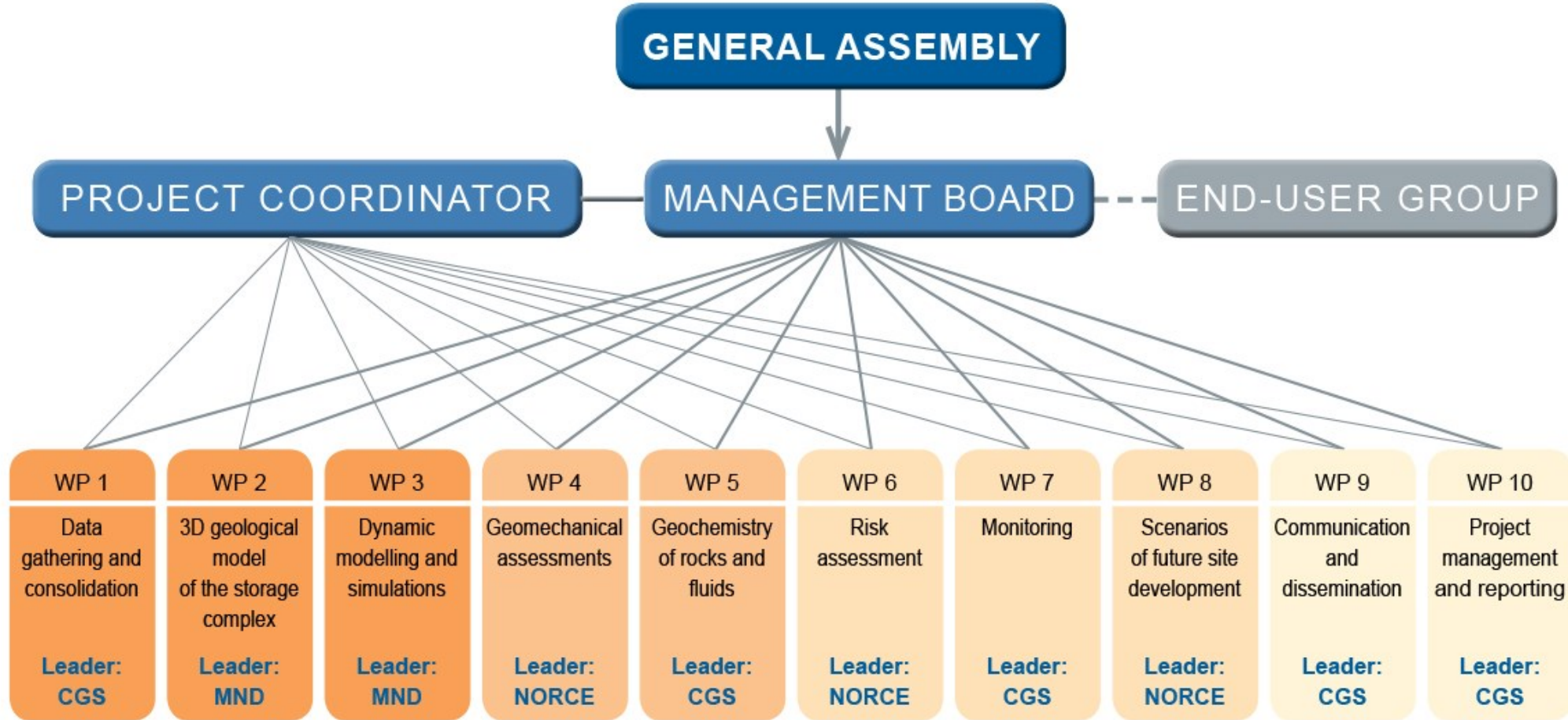


Dynamic field behavior is known and used to increase certainty of storage dynamics and volumes

Zar-3 field – input data



Project structure



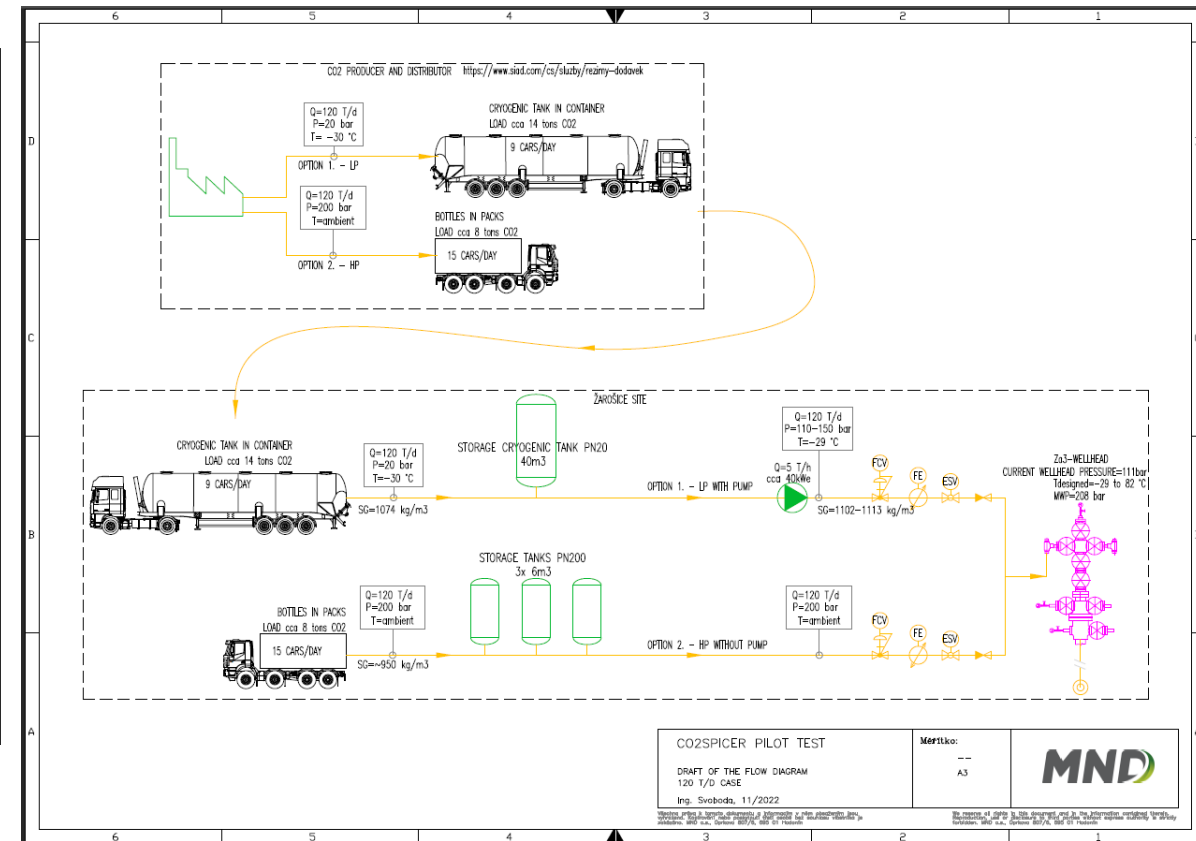
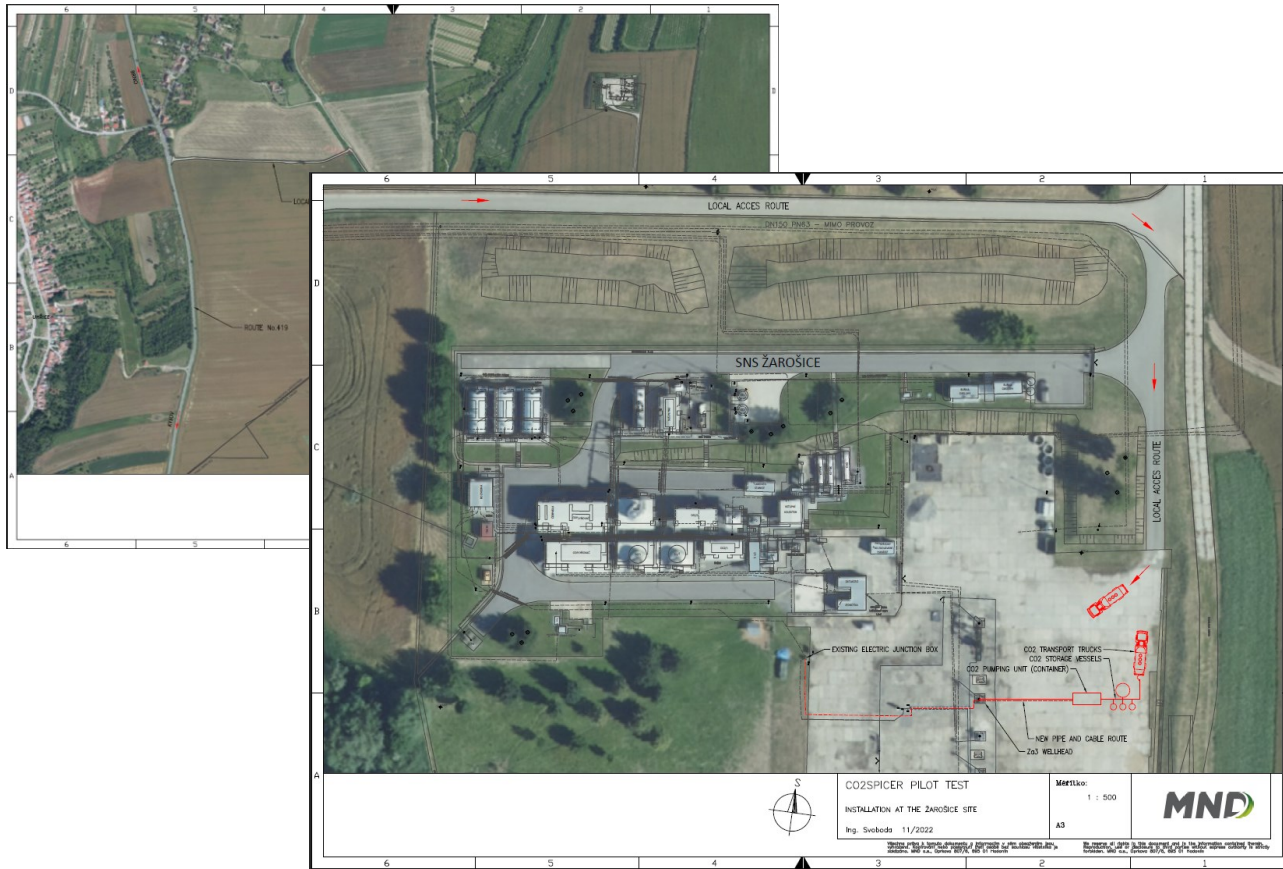
WP8 - scenarios

Design of facilities for pilot implementation Task 8.3

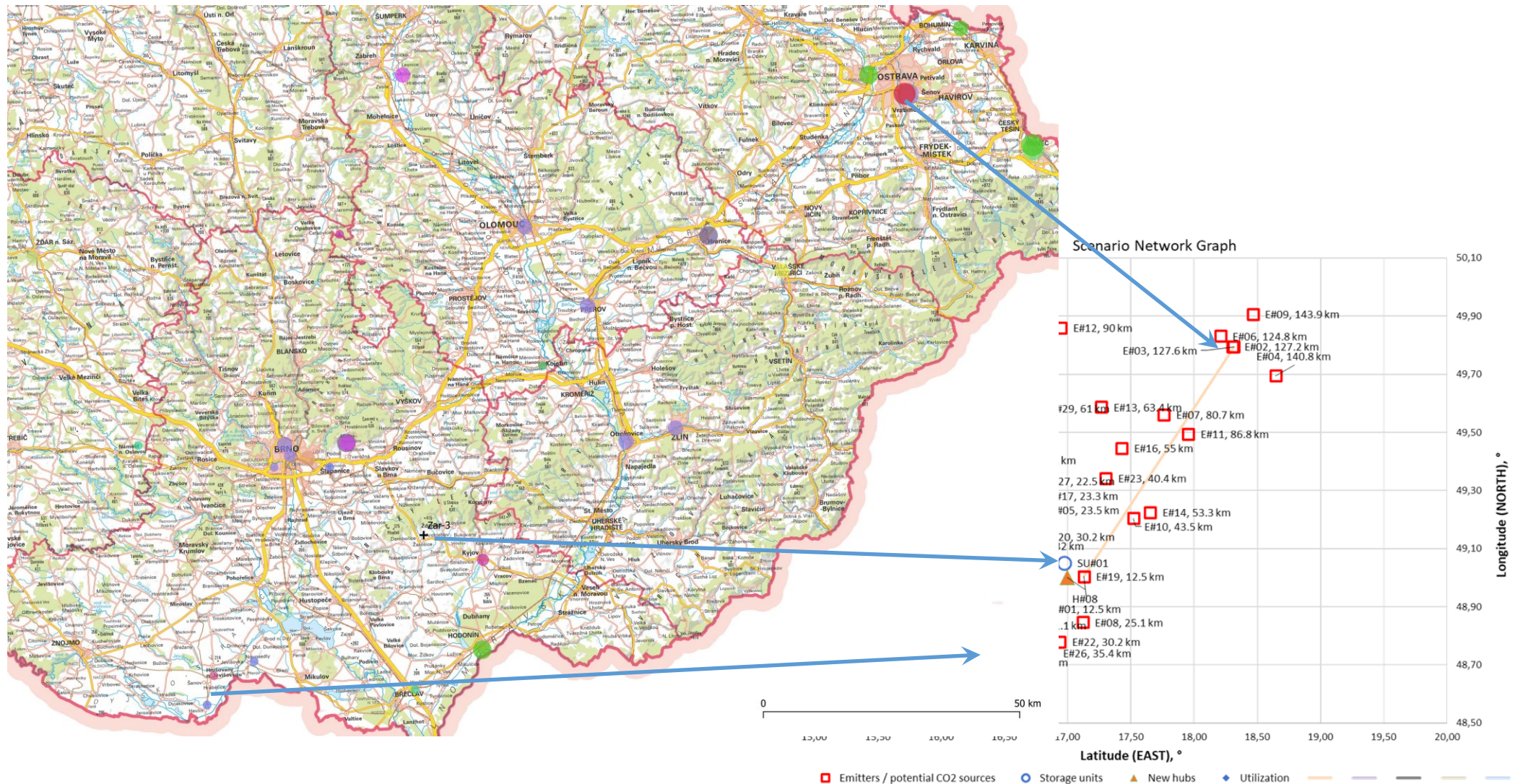
Scenarios for future site development

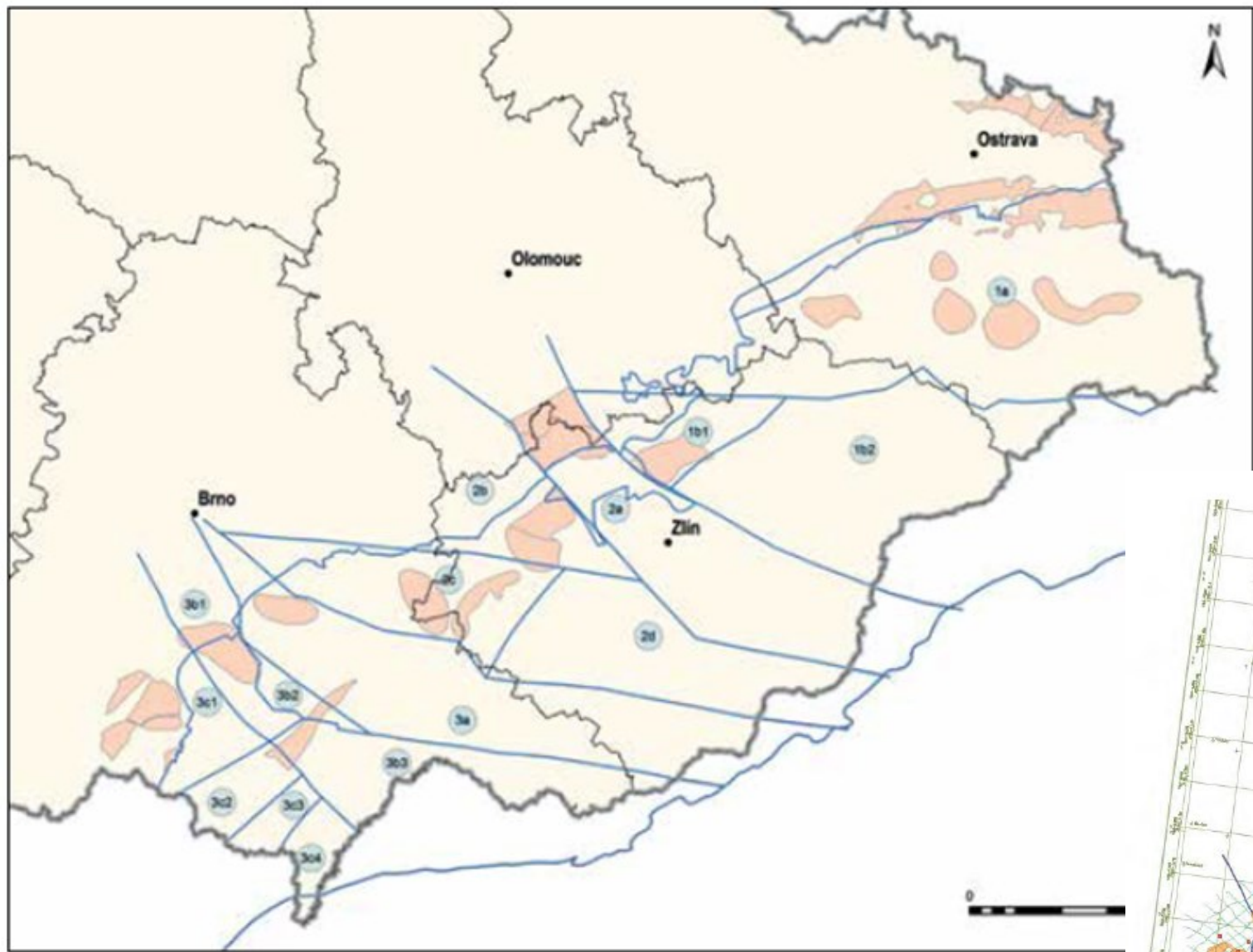
Value chain analysis for CO₂ supply, transport, EOR and storage

Injection facilities first drafts

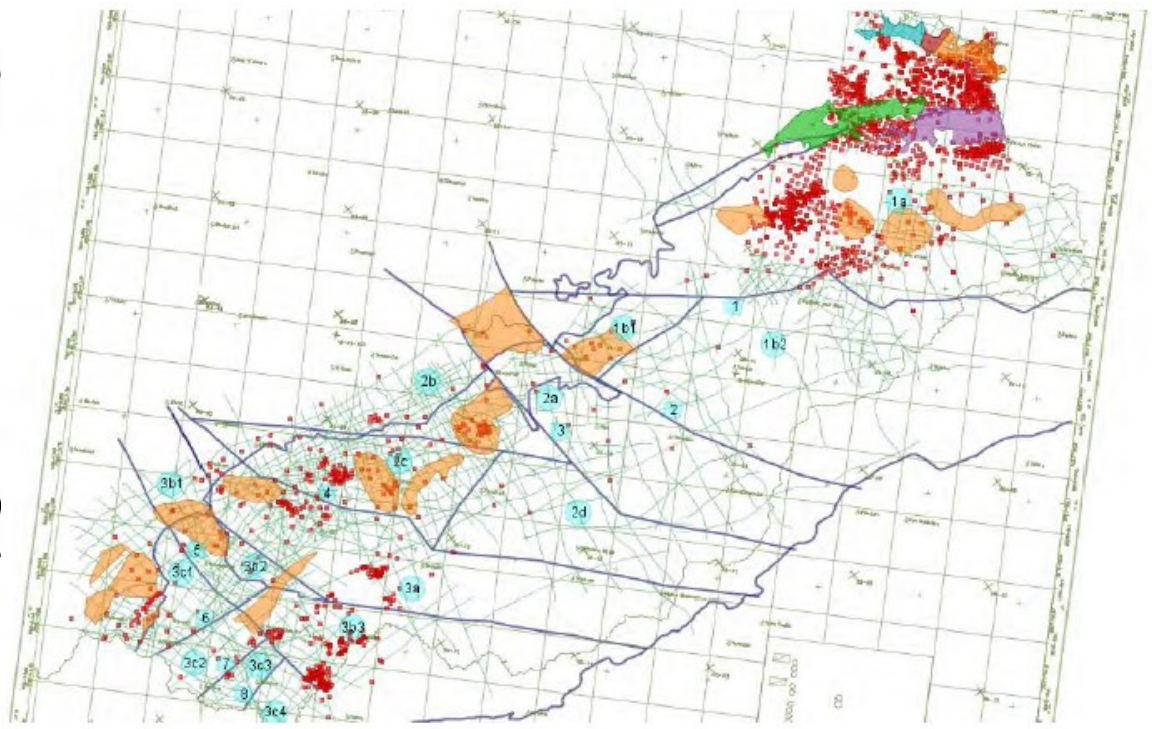


Scenarios for future site development





Obr. 7-2 Rozmístění vytipovaných struktur v karpatské soustavě.



Scenario development ideas

Pilot (20-90 Ktonn) as a part of further implementation. Average Injection rate: 64 kSm³/day

Full-field implementation scenarios from rough TEA / LCA to modelling most feasible scenario

- Basecase is storage after blowdown
- Alternative 1: Blowdown supported by CO₂ injection into water zone.
- Alternative 2: Blue hydrogen from Za gas
- Alternative 3: Classical EOR
- Alternative 4: DAC

The CO₂-SPICER project benefits from a € 2.32 mil. grant from Norway and Technology Agency of the Czech Republic.

PROJECT PARTNERS



COORDINATOR



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