Nile Delta CCUS

EUG
EGYPT UPSTREAM GATEWAY
MINISTRY OF PETROLEUM & MINERAL RESOURCES

Offshore Nile Delta:

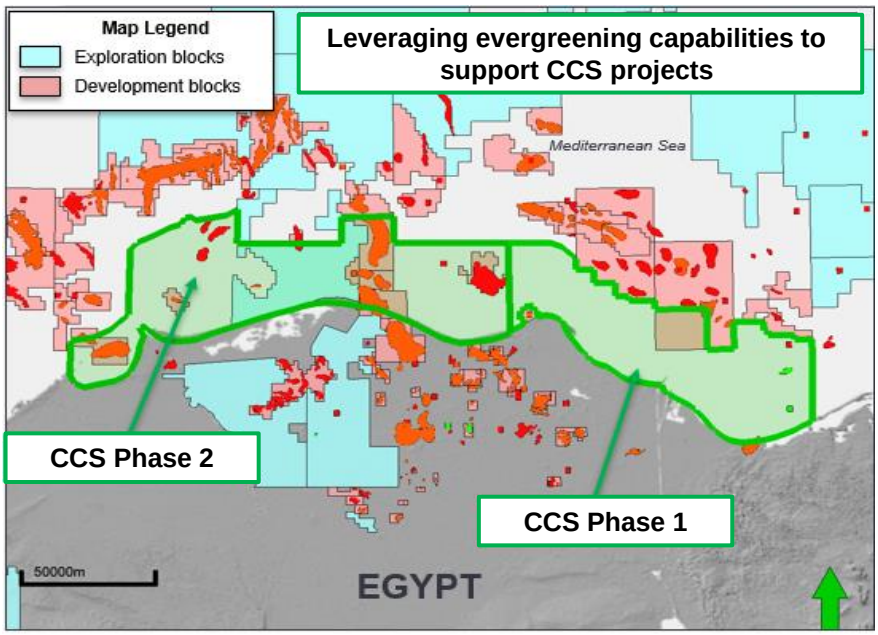
Regional Carbon capture & storage screening – Phase 1

Egypt – Offshore Nile Delta

Regional CCS screening Phase 1

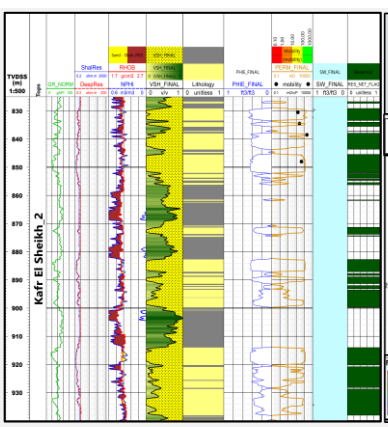
The objective of the study was to evaluate the CO_2 storage potential in the shallow waters offshore the Nile Delta-Mediterranean Sea in Egypt. The goal is to reduce the CO_2 footprint of Egypt in the order of millions of tons per annum, and to initiate discussions with different stakeholder to create a legal, environmental, social and infrastructural framework within international guidelines under which similar projects can be managed in future. The study was divided into two phases: Phase 1 focused on the Eastern offshore Nile Delta, while Phase 2 will evaluate the potential in the Western Nile Delta (see below). A summary of the potential of the Eastern Nile Delta (Phase 1) is presented here.

CCS Workflow Highlights
Non-technical evaluation
Petrophysical evaluation
Seismic interpretation & mapping
Fault seal risk assessment
Hydrodynamics and pressure-temperature assessment
CCS play evaluation
CO_2 capacity estimation & ranking

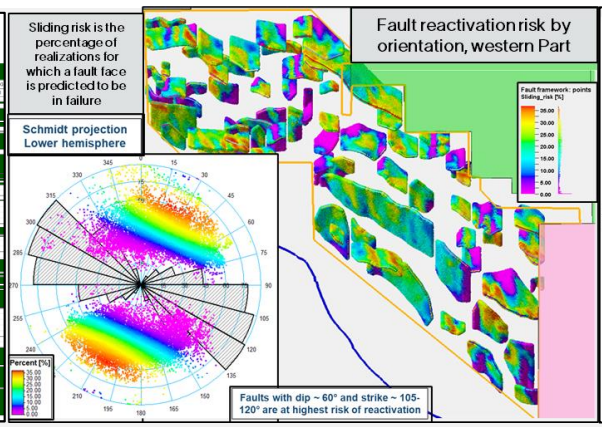


EUG East-Med regional post-stack merge over ~ 10,000 km2.

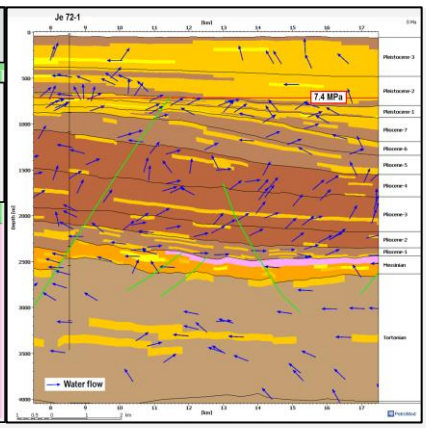
First, ten anthropogenically produced CO_2 sources are identified with an approximate total yearly emission capacity of 8.5Mt of CO_2 within reasonable distances from the study area.
The study area was evaluated using all the well and seismic data that were made available by EUG for this project. The overall stratigraphic succession from the Messinian Abu Madi to the Pleistocene formations was screened and key levels with reasonable seismic quality have been interpreted in detail. The technical aspect of the study focused on the pre-selection of potential storage sites by integrating different geological and geophysical workflows (see above).



Petrophysical Analysis



Regional Structural Geology and Fault Activity



Hydrodynamics and P-T Modelling

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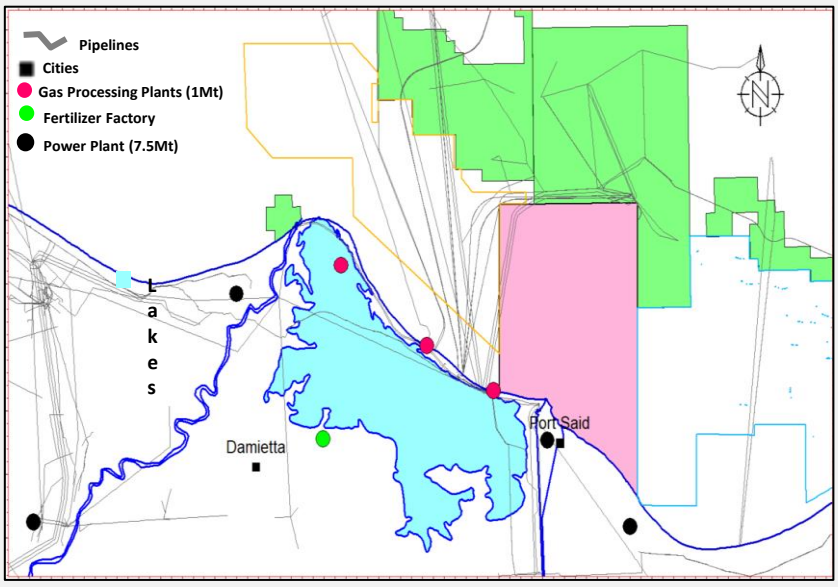
sales@eug.petroleum.gov.eg

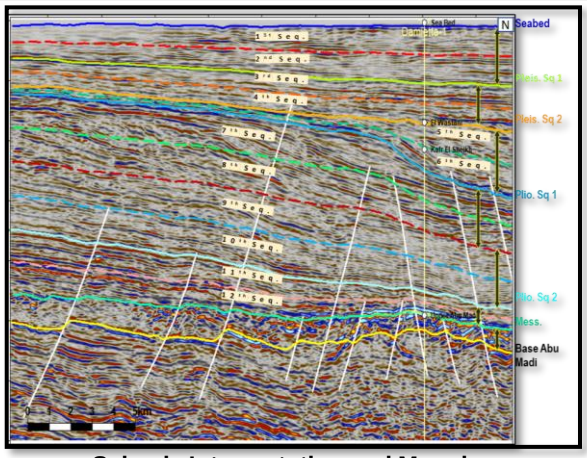
Egypt – Offshore Nile Delta

Regional CCS screening Phase 1

In this project we focused on saline aquifers, because no depleted field have been identified in the Eastern offshore Nile Delta. The Eastern Part of Phase 1 (located to the east of Port Said restricted zone) demonstrates significant containment risk resulting from low top seal capacity and numerous faults that reach almost the seabed with a high probability of being reactivated. Four potential storage sites have been identified in the Western Part of the Phase 1 study area in the Abu Madi and Lower Pliocene sediments. These sites are predominantly stratigraphic traps. Their areal extent is small and controlled by facies and fault boundaries with relatively minor estimated CO_2 effective storage masses compared to analogues from other areas worldwide.



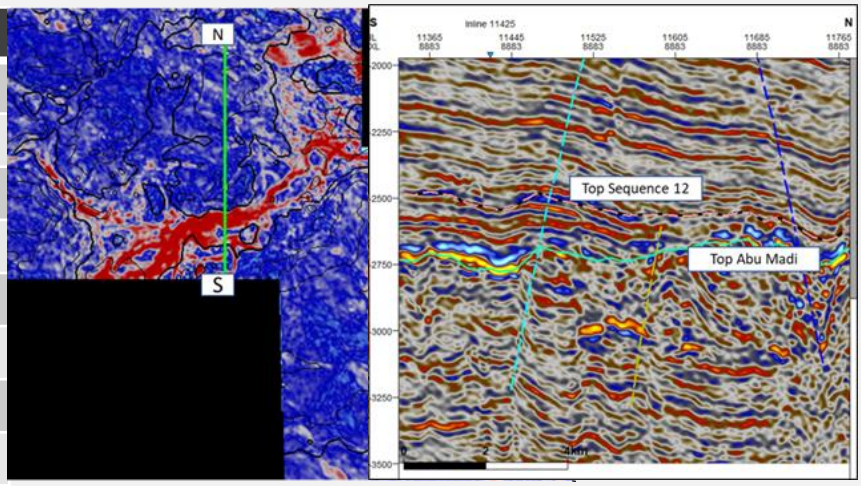
Summary of CO_2 Sources



Seismic Interpretation and Mapping

The theoretical CO_2 storage capacity has been estimated. Using the scheme outlined by the Norwegian Petroleum Directorate (2014), the sites are risked and ranked. In general, the aquifers' capacities are generally small compared to other saline aquifers around the world which are predominantly controlled by stratigraphic and fault boundaries. The storage capacity is estimated with a total maximum theoretical storage capacity of approximately 36.6Mts for all four sites.

Deliverables
Non-technical evaluation
G&G interpretation
Fault seal analysis
CCS play analysis
Well correlation & petrophysical analysis
Hydrodynamics and P-T assessment
Volumetrics
Final report



An identified Clastic Channel Prospect in Abu Madi and Sequence 12

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