



Low Carbon Day

Low Carbon initiatives in
Exploration: CCS

Mikel Erquiaga

Director of Regional Exploration
Eastern Hemisphere



The Repsol Commitment
Net Zero Emissions
by 2050



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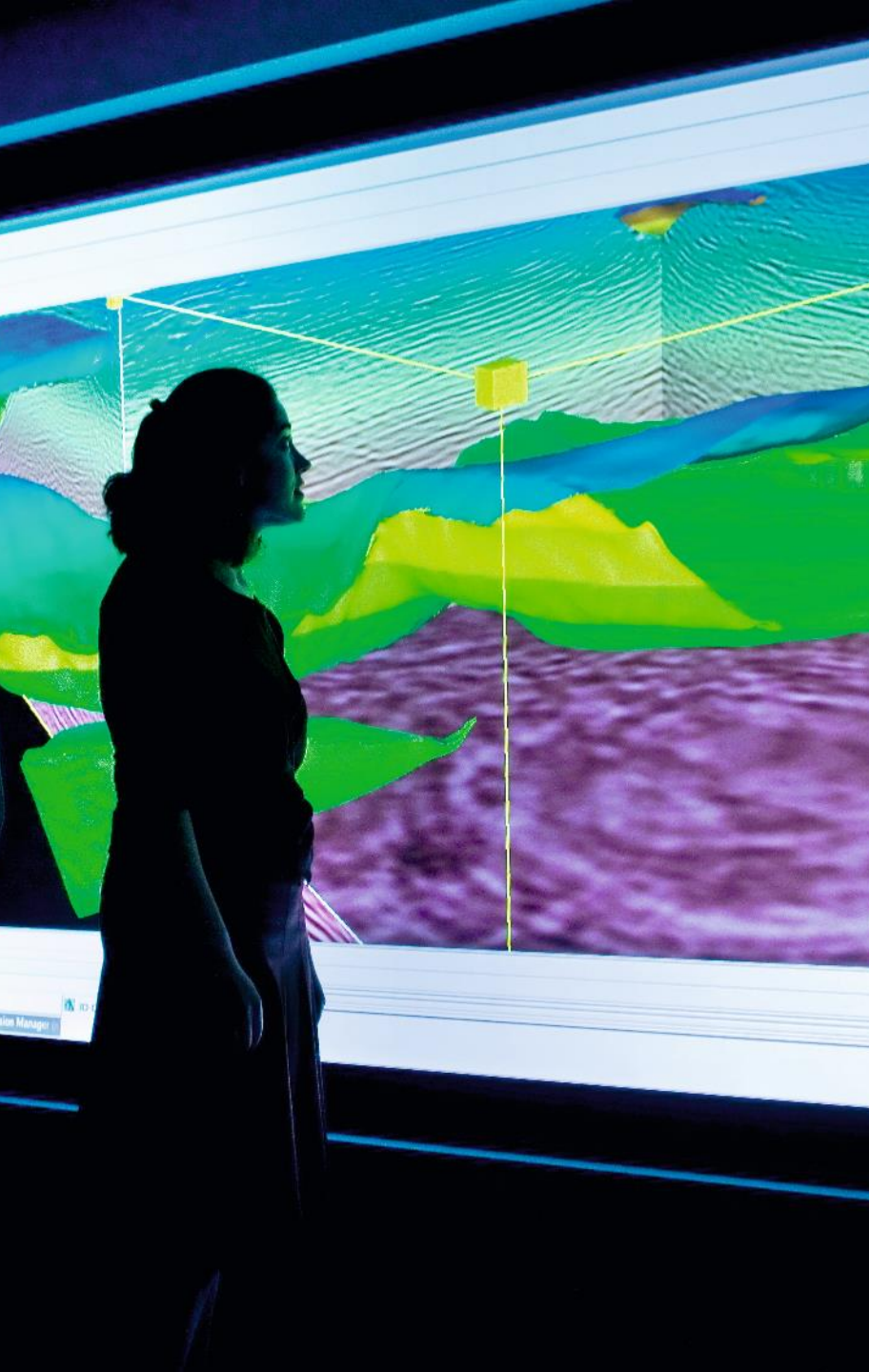
01.

Our Starting Point



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01. Our Starting Point

The Upstream Business in the Energy Transition context



Repsol: First O&G Company to announce Net Zero commitment by 2050



Decreasing capital employed in conventional O&G exploration activities and geographically concentrated (2021-2025 Strategic Plan)



Exploration personnel skill sets in conventional O&G exploration activities is being re-converted to Low Carbon Exploration initiatives aligned with our Net Zero ambitions:

- Carbon Capture & Storage (CCS) in the subsurface to abate CO₂ emissions
- Exploration for Geothermal Resources to boost low CO₂ energy generation (similar activity to (O&G Exploration)
- Hydrogen Storage to provide solution to buffer H₂ production through storage in saline cavities in the subsurface



The expertise of our G&G workforce will be source of Competitive Advantage in the Energy Transition



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02.

Sakakemang Project



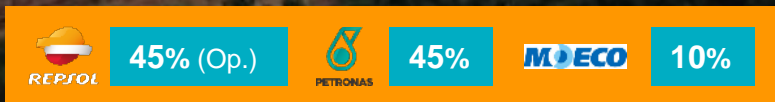
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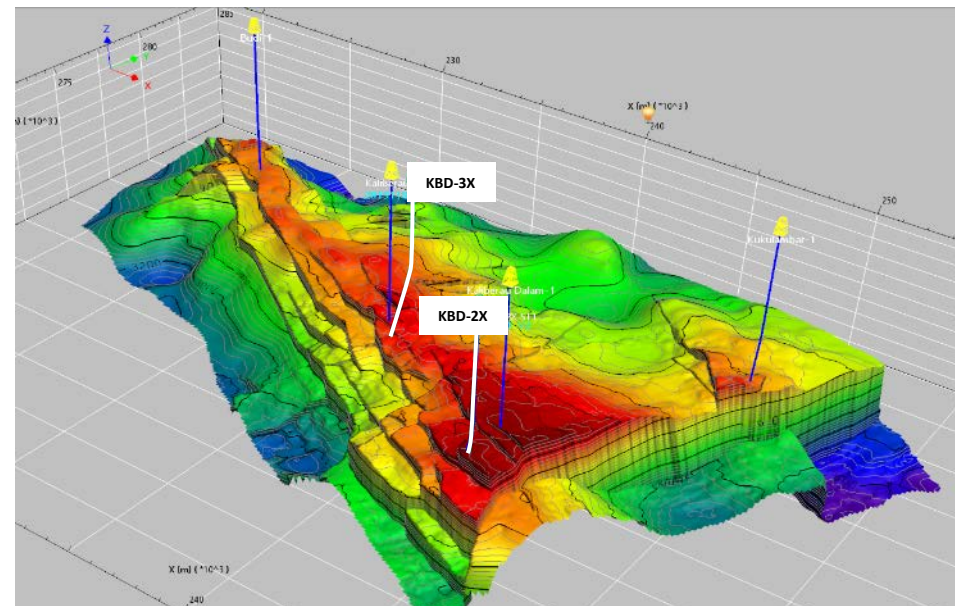
02. Sakakemang Project

Discovery & Appraisal

Sakakemang PSC:
Kaliberau Dalam-2X Discovery (KBD-2X)



- Kaliberau Dalam-2X discovery well: February 2019
- Largest Gas discovery in Indonesia in the last decade (>2 TCF)
- Gas with high CO₂ content (26%)
- New Greenfield Projects need to be Net Zero
- Appraisal campaign following the KBD-2X discovery:
 - KBD-3X appraisal well (2020-2021) – Completed
 - Long Duration Test (LDT) on KBD-2X discovery Pressure monitoring in KBD-3X (2021) – Ongoing
- Objectives of appraisal program: confirm the volumes associated to the discovery and confirm connectivity between KBD-2X & 3X
- Volumes of CO₂ directly related to discovered volumes of gas



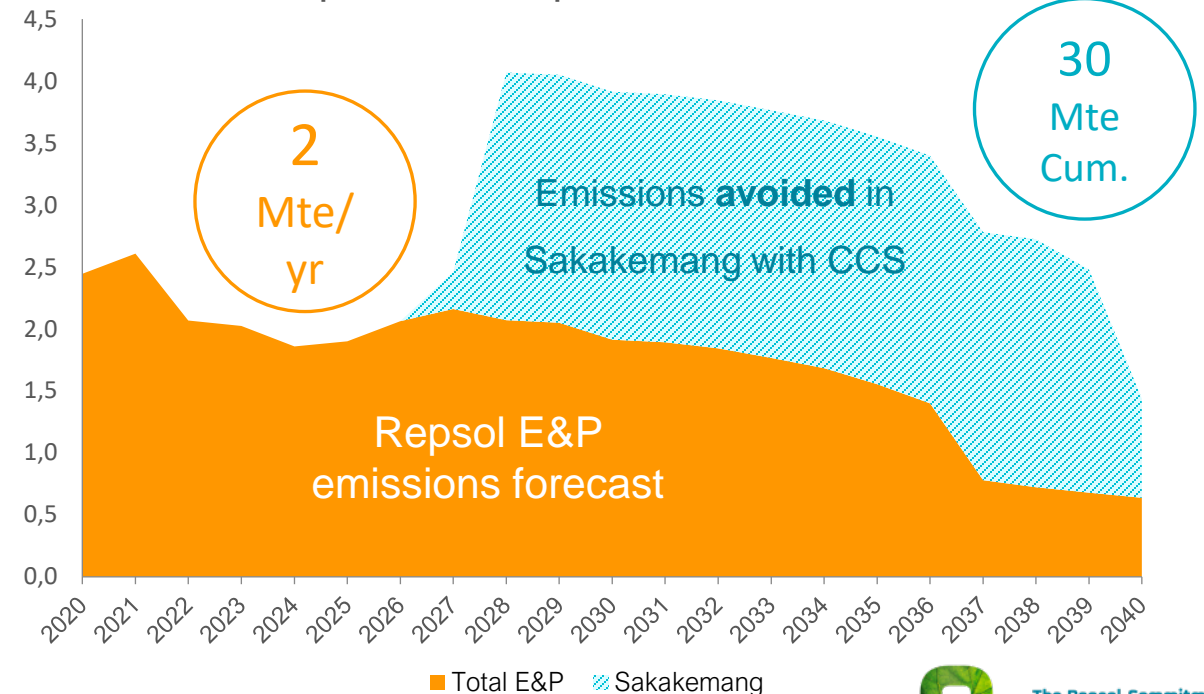
02. Sakakemang Project:

CCS

- Development of a 2TCF gas discovery & simultaneous CCS
- First CCS project deployed by Repsol and First in Indonesia.
- Among largest CCS projects worldwide today (only 6 CCS projects operating).
- Storage will commence in 2027 and will be done in two depleted gas fields of Corridor PSC contract (Gelam & Dayun).
- Main Challenges:**
 - Regulatory Framework, but the MEMR in Indonesia has already created a Task Force with the objective to have CCS regulation in place by the end of 2021.
 - Financial: cost carried by partners, but captured & stored CO₂ could be subject of further trading.

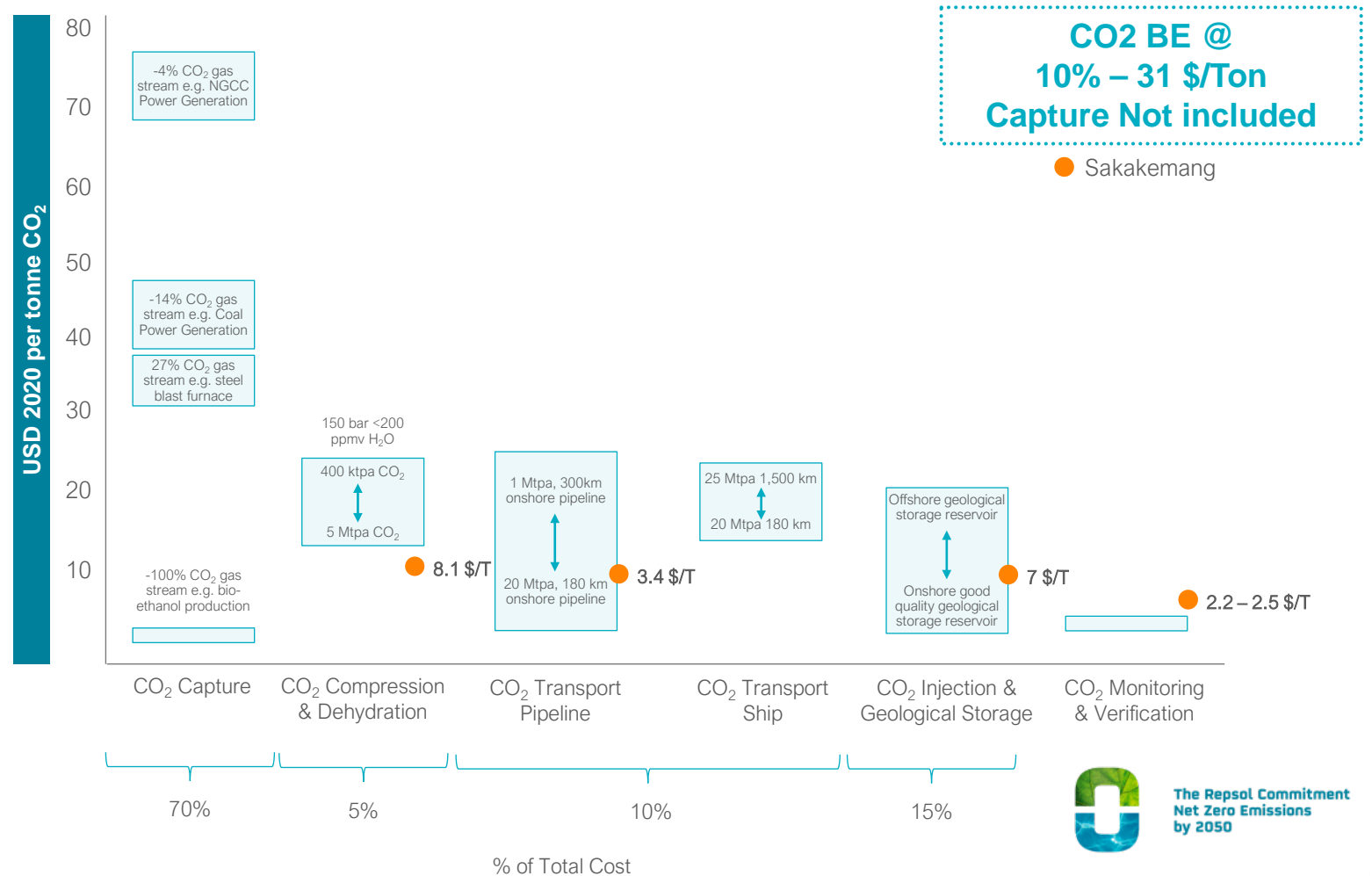


Repsol: Total Upstream emissions



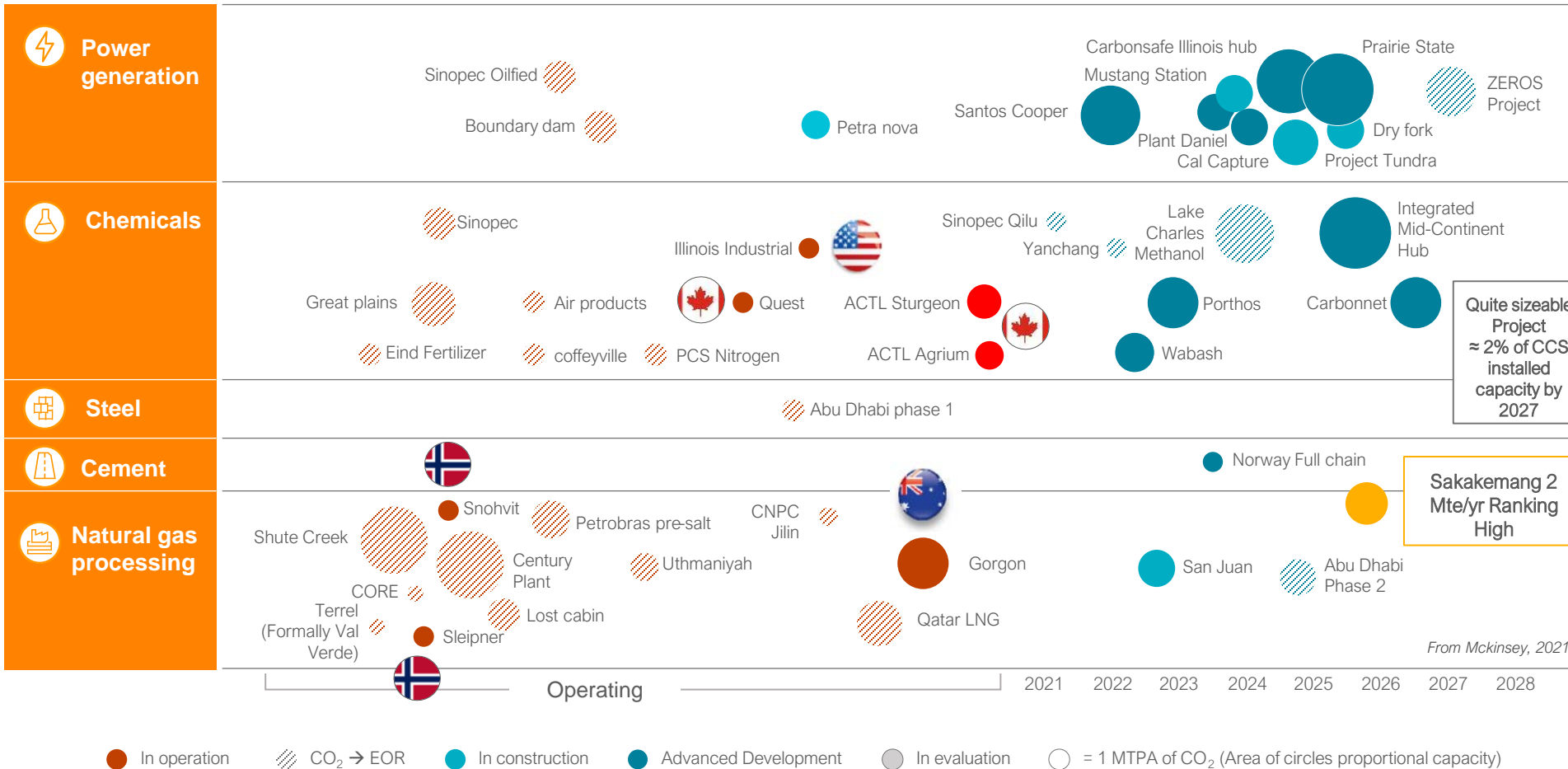
02. Sakakemang Project:

CCS (Carbon Pricing)



02. Sakakemang Project:

CCS worldwide benchmark



~40 Mte/ yr
↓
~110 Mte/ yr

Today only 6 true CCS projects worldwide

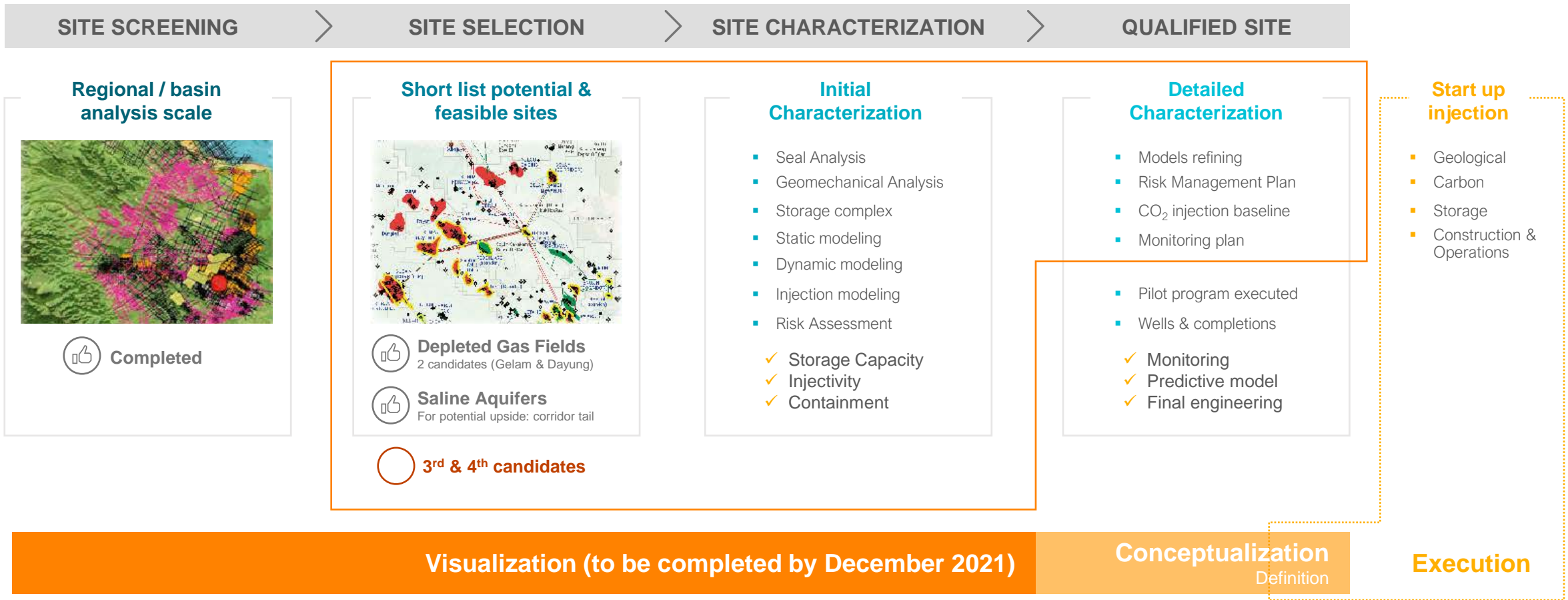
Quite sizeable Project
≈ 2% of CCS installed capacity by 2027

Sakakemang 2 Mte/yr Ranking High



02. Sakakemang Project:

CCS Technical Assessment





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Investor Relations
investor.relations@repsol.com

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