Situation in the Netherlands

- Climate target Paris & Dutch government: 49% reduction CO\textsubscript{2} by 2030

- National Climate Agreement:
  - Industry 14.3 Mton reduction per year, 7 Mton CCS = 50% 

- Debate on Climate Agreement is about:
  - CO\textsubscript{2} tax vs. bonus-malus incentive
  - Who pays? Industry vs. civilians
  - Cap on CCS: quantity and timeframe
Rotterdam ideal location

- Port of Rotterdam unique location for CCUS
  - ~16% national CO₂ emissions
  - Large industrial cluster
  - Relatively small area
  - Cost effective
  - Storage location offshore
  - Combination with other developments in the port, e.g. hydrogen
Rotterdam CCUS project Porthos

- **What**: one-stop-shop for open access CO₂ transport and storage network
- **Why**: to help meet the Dutch and EU CO₂ reduction targets of The Netherlands
- **Where**: Rotterdam as CCUS nucleus with storage in offshore P18 gas fields
- **Who**: initiated by 3 state-owned parties; EBN, Gasunie, Port of Rotterdam.
- **When**: ambition: ready for FID 2021 and commissioning in 2023
How does CCUS work?
Transport: onshore pipeline

- In existing pipeline corridor
- Total length: 33 km
- Capacity: 5 Mton per year
- Diameter: 108 cm
Transport: compressor station

- 3 possible locations: Edisonbaai, Europaweg, Aziëweg
- About 6 hectare
- Electricity
- Cooling installations
- Measure and control systems
Transport: offshore pipeline

• From the Maasvlakte (compressor station) under the bottom of the North Sea to the P18 fields

• Diameter: 40 cm

• Total length: 21 km

• Capacity fields: 37 Mton

• Maasgeul: drilling (HDD)

• At sea: pipe laying ship
Storage

- (Almost) empty gas fields
- Natural closing through sealing layers
- Depth between 3.175 en 3.455 meter
- Re-use existing platforms and wells
Status of the Porthos project

✓ CCS included in preliminary Dutch Climate Accord
  Subsidy support mechanism (SDE++)

✓ Porthos finalized Feasibility and Concept Select phases
  Started Define Phase (Front End Engineering and Design)

✓ Expression of Interest process done
  Industry expressed sufficient interest

✓ Started Environmental Impact Assessment (EIA) procedure
  Public consultations in Rotterdam Industrial Area conducted
Challenges ahead towards a Final Investment Decision

- **Business case**
  - Close the financial gap: funding

- **Regulatory**
  - Allocating the storage liabilities and roles and responsibilities

- **Technically**
  - Developing a clear operating philosophy based on complex flow control

- **Generally**
  - CCS requires leadership and offensive policies, aimed at delivering projects in industrial clusters with high potential for CO₂ reduction

→ Final Investment Decision in 2021
Thank you for your attention