



Northern Lights – building a new market for carbon storage



Christiaan van der Eijk
Business Opportunity Manager Northern Lights

Definitions & cautionary note

This presentation contains data and analysis from Shell's new Sky Scenario. Unlike Shell's previously published Mountains and Oceans exploratory scenarios, the Sky Scenario is targeted through the assumption that society reaches the Paris Agreement's goal of holding global average temperatures to well below 2°C. Unlike Shell's Mountains and Oceans scenarios which unfolded in an open-ended way based upon plausible assumptions and quantifications, the Sky Scenario was specifically designed to reach the Paris Agreement's goal in a technically possible manner. These scenarios are a part of an ongoing process used in Shell for over 40 years to challenge executives' perspectives on the future business environment. They are designed to stretch management to consider even events that may only be remotely possible. Scenarios, therefore, are not intended to be predictions of likely future events or outcomes and investors should not rely on them when making an investment decision with regard to Royal Dutch Shell plc securities.

Additionally, it is important to note that Shell's existing portfolio has been decades in development. While we believe our portfolio is resilient under a wide range of outlooks, including the IEA's 450 scenario (World Energy Outlook 2016), it includes assets across a spectrum of energy intensities including some with above-average intensity. While we seek to enhance our operations' average energy intensity through both the development of new projects and divestments, we have no immediate plans to move to a netzero emissions portfolio over our investment horizon of 10-20 years. Although we have no immediate plans to move to a netzero emissions portfolio, in November of 2018, we announced our ambition to reduce our net carbon footprint in accordance with society's implementation of the Paris Agreement's goal of holding global average temperature to well below 2°C above pre industrial levels. Accordingly, assuming society aligns itself with the Paris Agreement's goals, we aim to reduce our net carbon footprint, which includes not only our direct and indirect carbon emissions, associated with producing the energy products which we sell, but also our customers' emissions from their use of the energy products that we sell, by around 20% in 2035 and by around 50% in 2050.

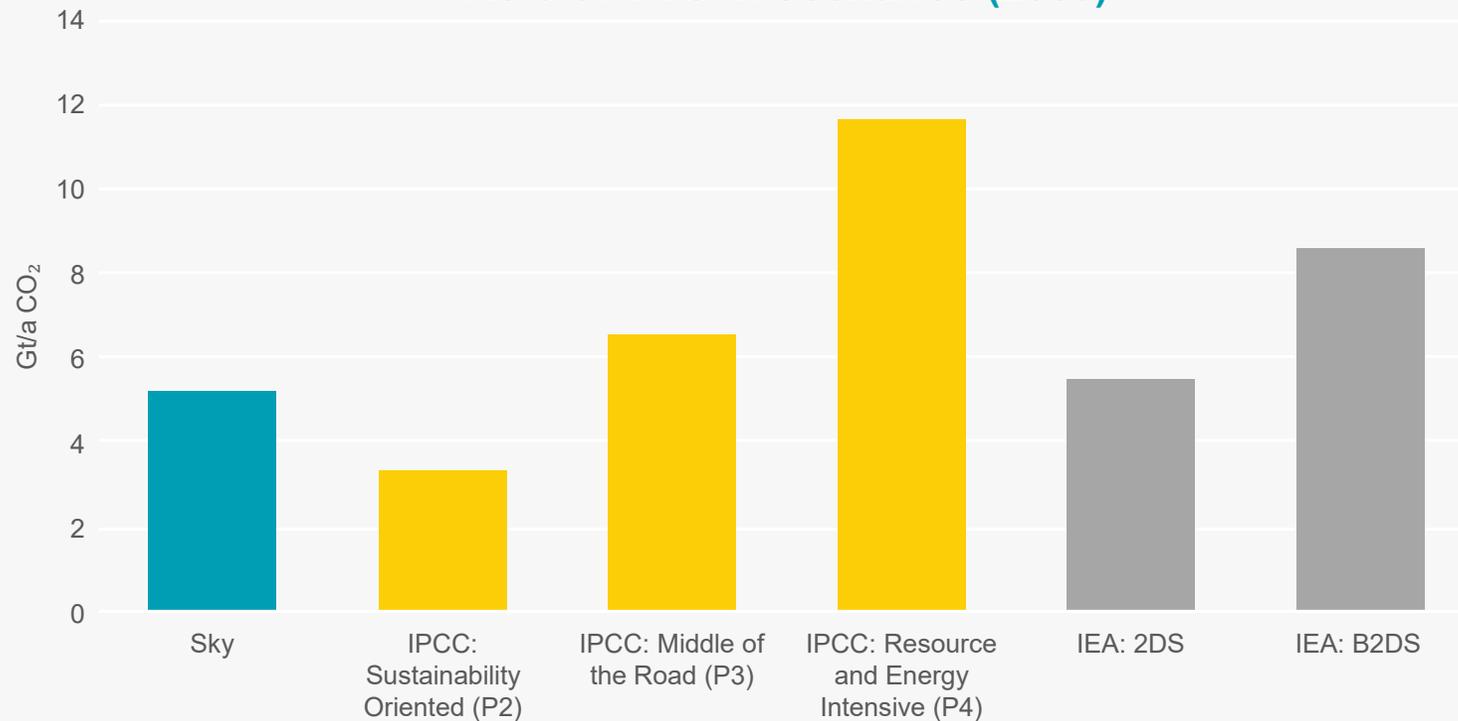
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Most scenarios to meet Paris agreement and limit average global temperature rise to below 2°C include CCS

Role of CCS in Scenarios (2050)



“CCS is essential to reach net-zero emissions, committed to under the Paris Agreement”

UK Committee on Climate Change (2018)

“CCS is vital for reducing emissions across the energy system in both the Energy Technology Perspectives 2°C Scenario (2DS) and the Beyond 2°C Scenario (B2DS)”

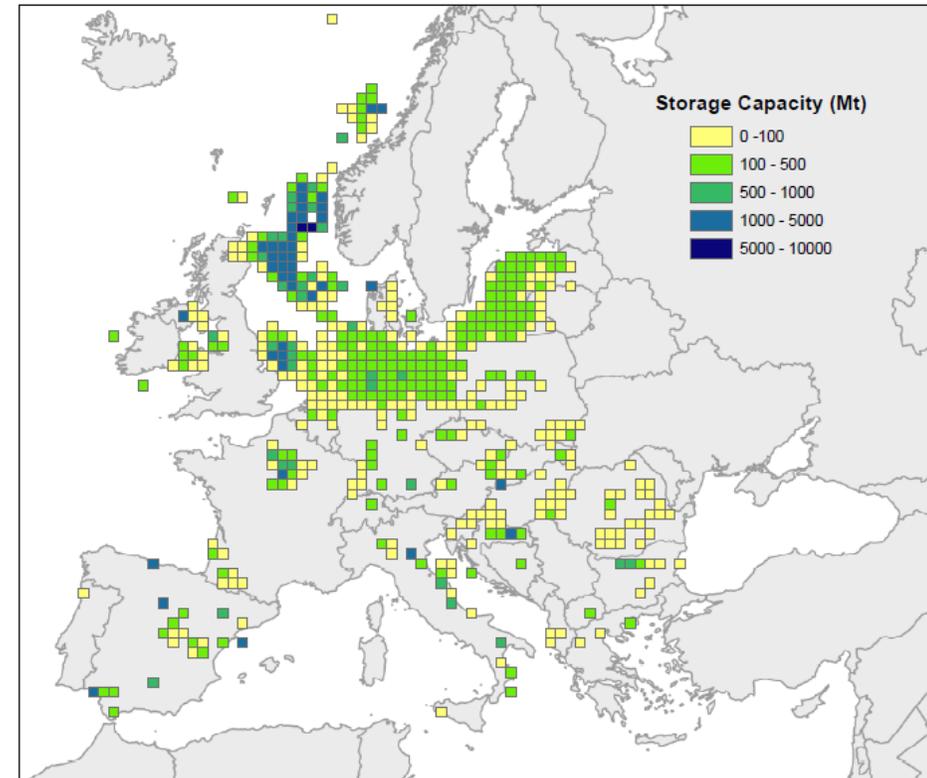
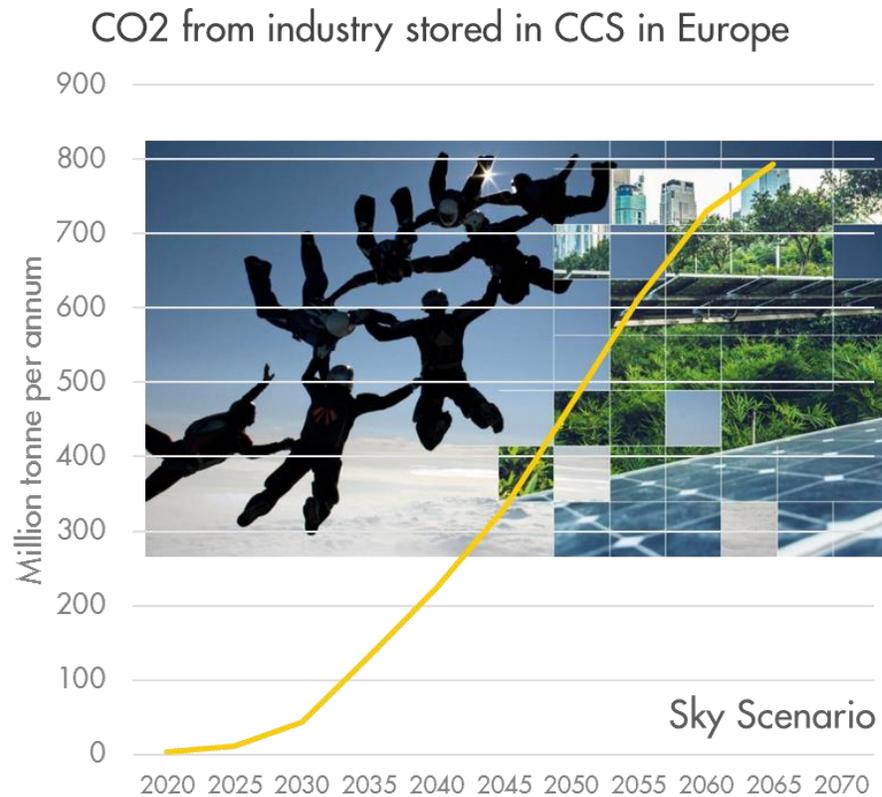
IEA Energy Technology Perspectives (2017)

“Early scale-up of industry-sector CCS is essential to achieving the stringent temperature target (below 2°C)”

IPCC SR15 (2018)

Market mechanisms are needed to make CCS investable

- Europe needs scale CCS to meet Paris Agreement. Much potential around North Sea
- To make CCS work (and meet Paris) governments will need to put policy frameworks in place that make CCS investable



Shell is involved in a number of CCS projects in different phases of development



Projects in operation

Projects under construction

Projects under planning

Involvement through Shell Cansolv technology – no Shell equity



1

Quest



2

TCM



3

Gorgon



4

Pernis CCS



5

Clean Gas Project



6

Northern Lights

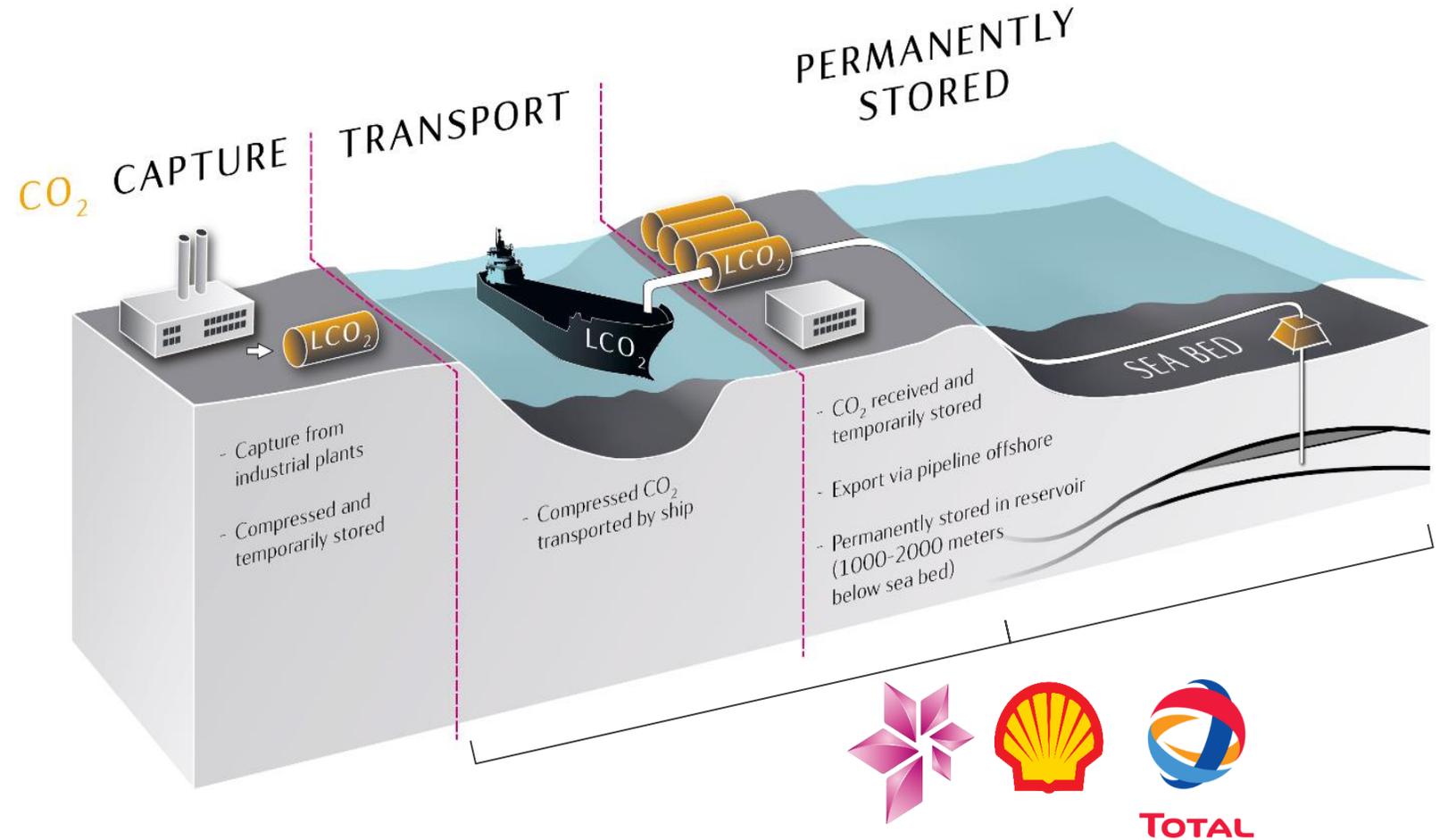


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Boundary Dam

Norwegian Full-Scale CCS project tests a new business model

- Norwegian ambition: realise at least one full scale CCS demonstration project
- Norway to stimulate the development of CCS so that long term climate targets in Norway and the EU can be reached at the lowest possible costs.
- Statoil signed study agreement in June 2017. Shell and Total joined October 2017, each with 33%



Start a new market for CO₂ storage for Europe

- Initial sources of CO₂: Norcem (cement, part of Heidelberg) and Fortum Oslo Varme (waste-to-energy)
- Project driver is for this to be scalable and take in volumes from other sources across Europe



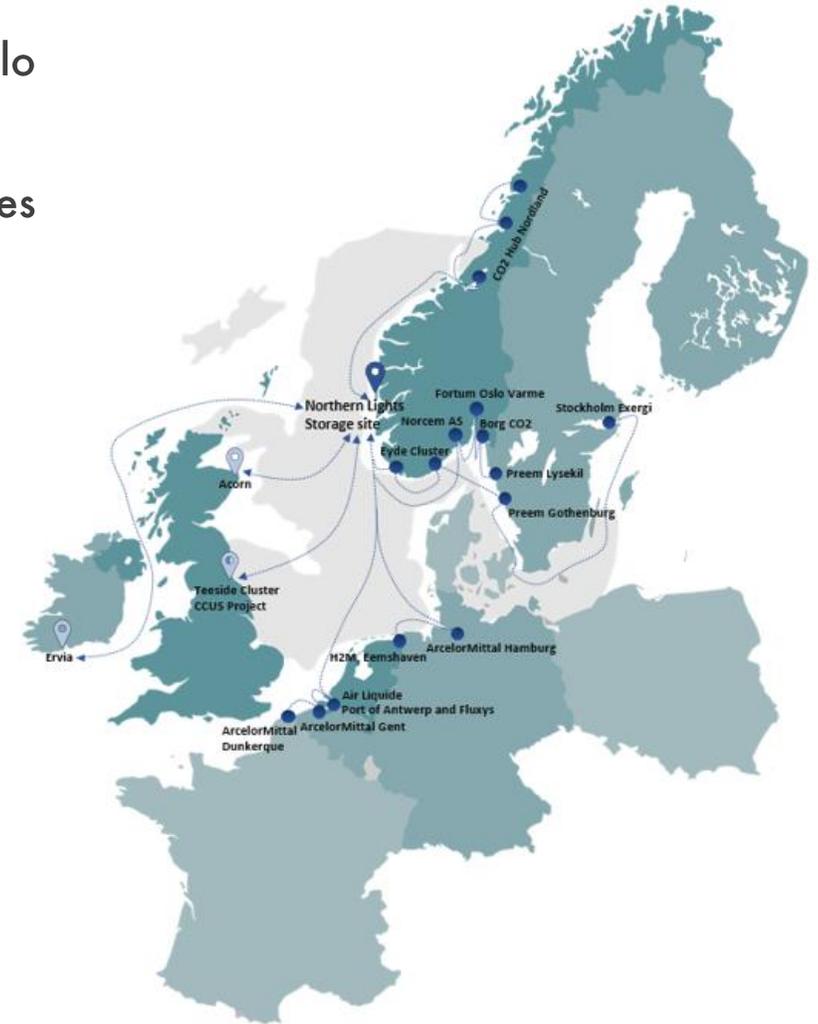
The New York Times

Norway's CCS Project Gets Boost From European Industry

By Reuters

Sept. 5, 2019

OSLO — Norway's Equinor and its partners in the Northern Lights underground carbon dioxide (CO₂) storage project offshore Norway have signed preliminary agreements with seven potential industrial customers for the venture.



The plan...

