Norwegian Ministry of Energy

Energy transition

Anne-Mette Hilmen

IKP 75-year Jubilee Seminar, Oct. 17, 2024

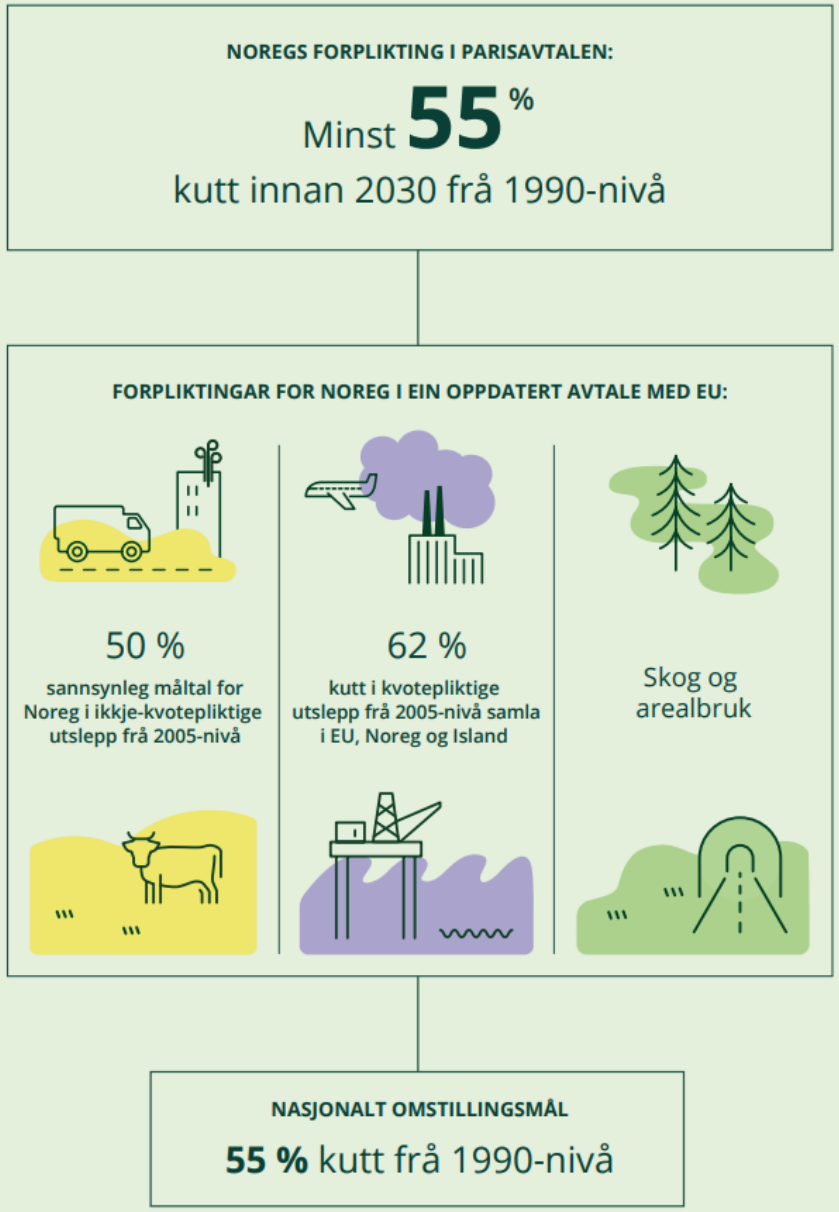
A changing worldview

The Norwegian Ministry of Energy

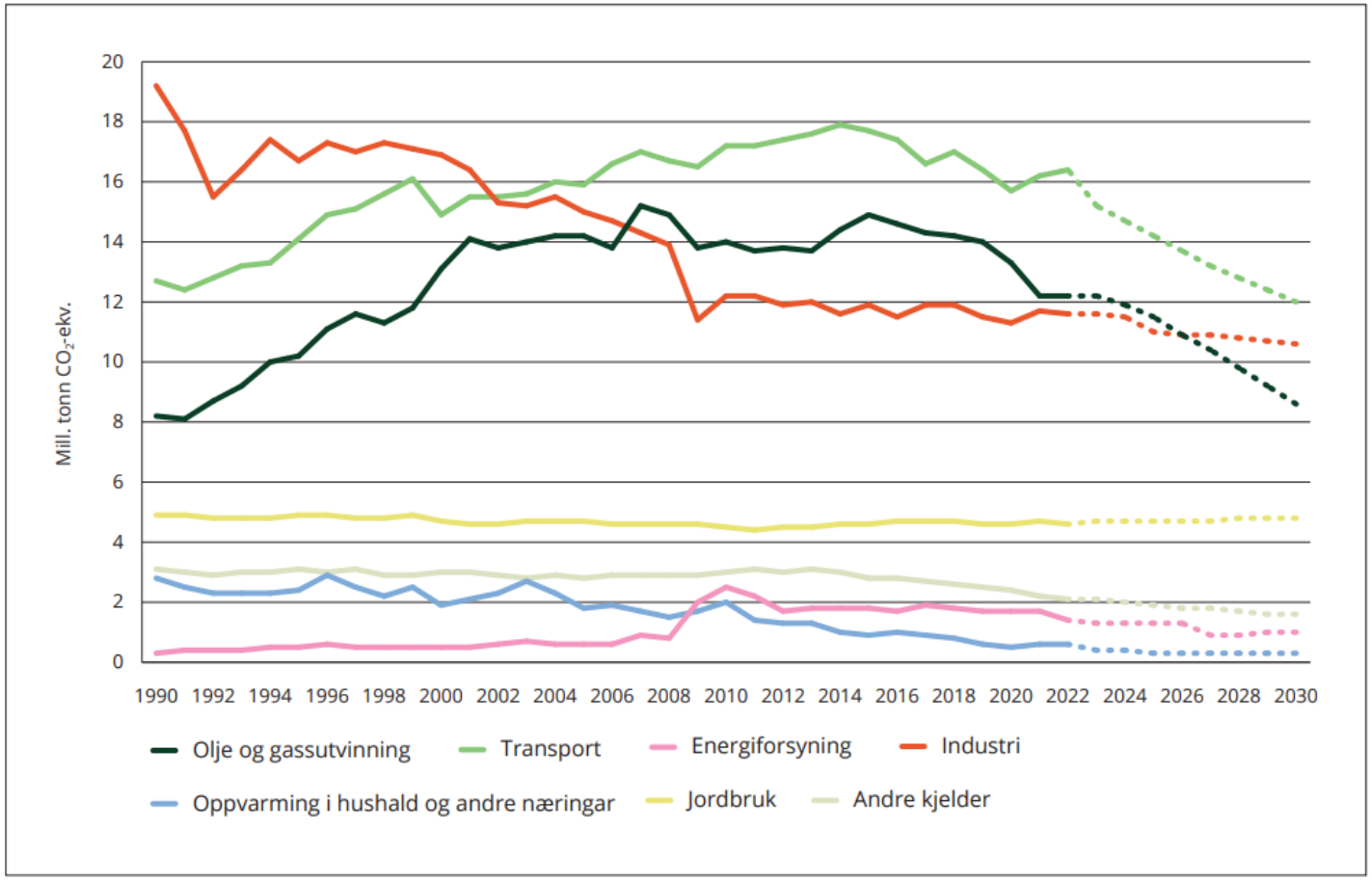
Norwegian climate commitments by 2030 and 2050

Climate Change Act:

- At least 55 per cent reduction of GHG emissions in 2030 relative to 1990-levels
- 90-95 per cent emission reductions in 2050 relative to 1990-levels



Emissons by sector, historical and projection



Figur 4.2 Sektorvise utslepp, historiske og framskriving til 2030.

Kjelder: Finansdepartementet, Miljødirektoratet og Statistisk sentralbyrå
Regjeringas klimastatus og plan, særskilt vedlegg til Prop. 1 S (2023–2024)

Emission reductions from petroleum on the NCS

Policy - government together with the industry:

- 50 per cent reduction of emissions from oil- and gas production by 2030 relative to 2005-levels;
- Net-zero emissions from oil- and gas production by 2050

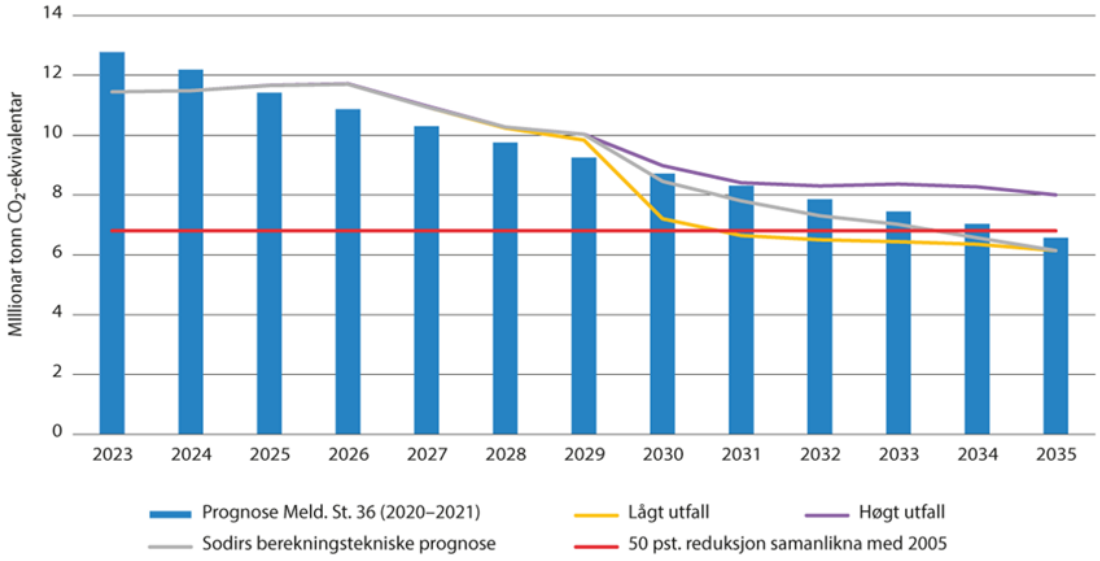
Policy instruments

- 95 per cent of emissions are subject to EU-ETS
- Tax on CO_2-emissions
- Criteria for low-emission solutions

Mitigation measures

- Power-from-shore
- CCS
- Hydrogen
- Offshore wind

Depletion of resources

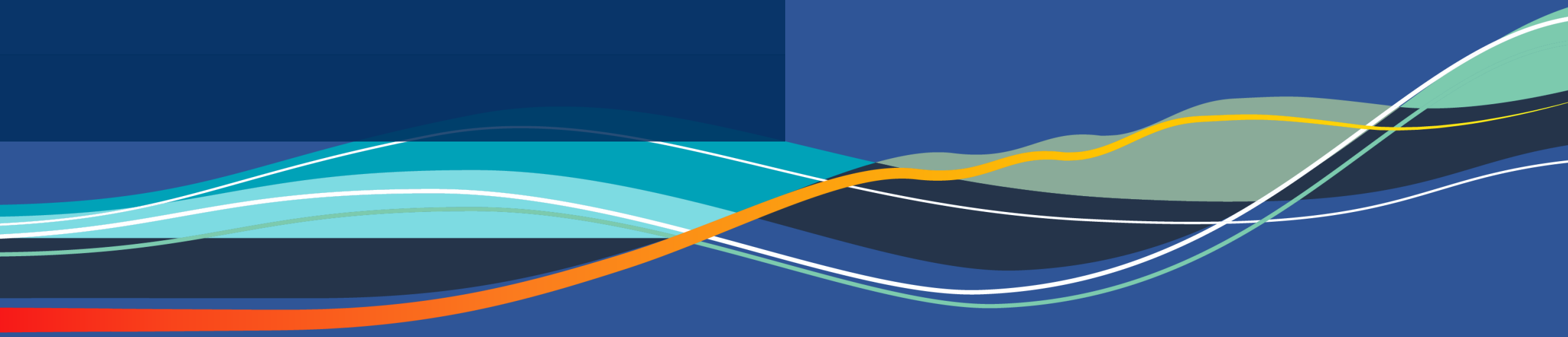


Figur 11.1 Anslag for utsleppsutviklinga i petroleumssektoren fram mot 2035

Kjelde: Sokkeldirektoratet
Prop. 1 S (2023–2024)

Norwegian Ministry of Energy

Carbon Capture and Storage (CCS)



The government's main objectives for CCS

- Speed up deployment of CCS globally
- Develop new green industry
- Facilitate commercial CO_2 storage
- CO_2 capture in Norway

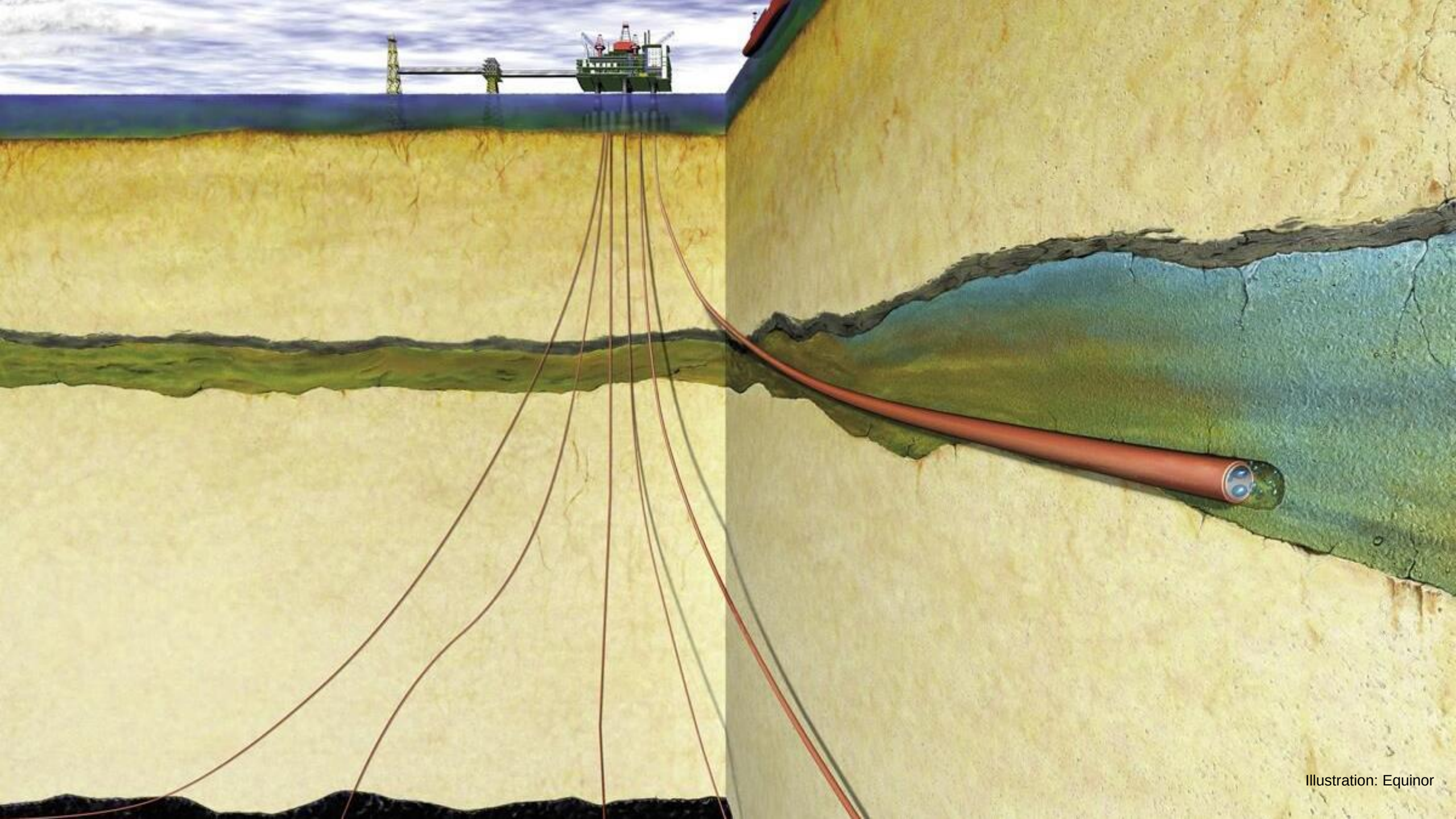


Illustration: Equinor

Research and Development

Photo: TCM (tcmda.com)

TECHNOLOGY CENTRE MONGSTAD

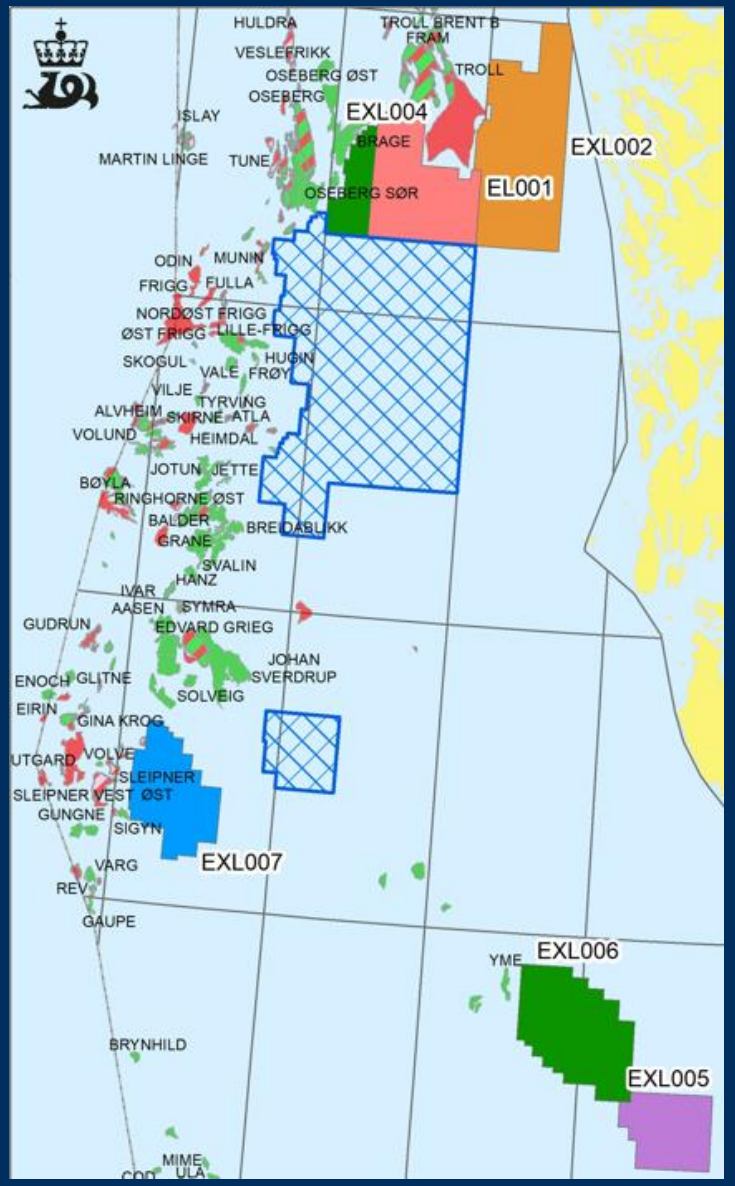
- catching our future

LONGSHIP


Storage site
NORTHERN LIGHTS
Receiving terminal
CELSIO
CO_2 capture
BREVIK CCS
CO_2 capture
ØRSTED
CO_2 capture
YARA SLUISKIL
CO_2 capture

Licences for CO_2 storage

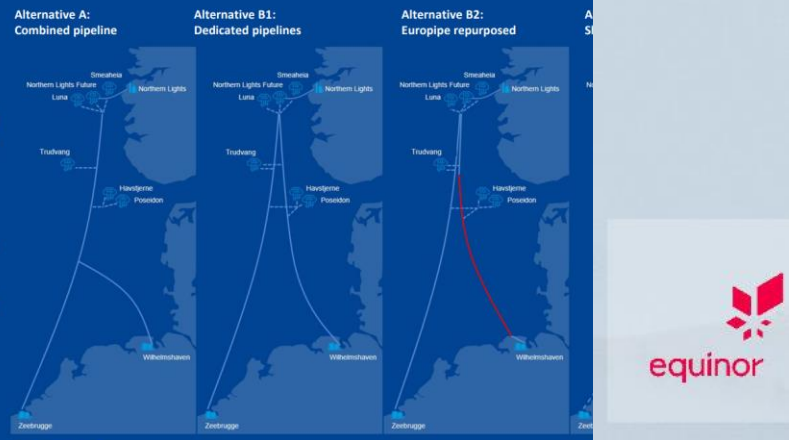
- Open door policy
- One exploitation licence
- Ten exploration licences



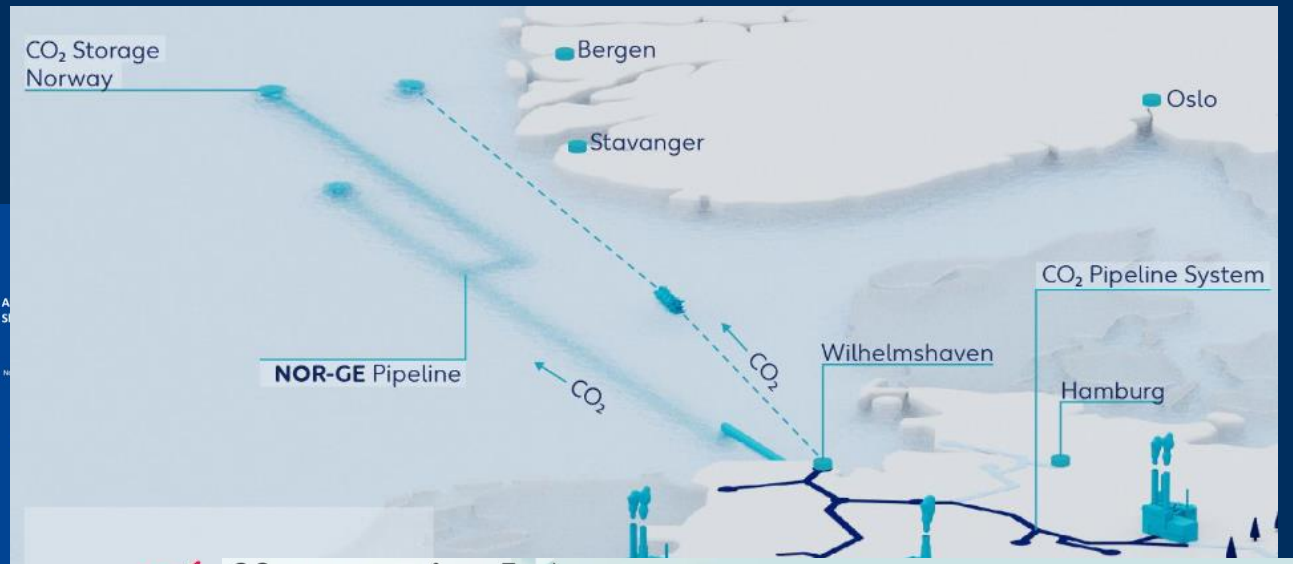
Pipeline ambitions

CO_2 offshore transport (CO2T) feasibility study

- Large scale CO_2 transport from hubs in Wilhelmshaven and Zeebrugge to NCS storages
- 20-30 MTPA CO_2 per hub → 40-60 MTPA total transport capacity
- CO_2 from both hubs assumed stored at any of the NCS storage locations
- Feasibility study report scheduled by end 2023



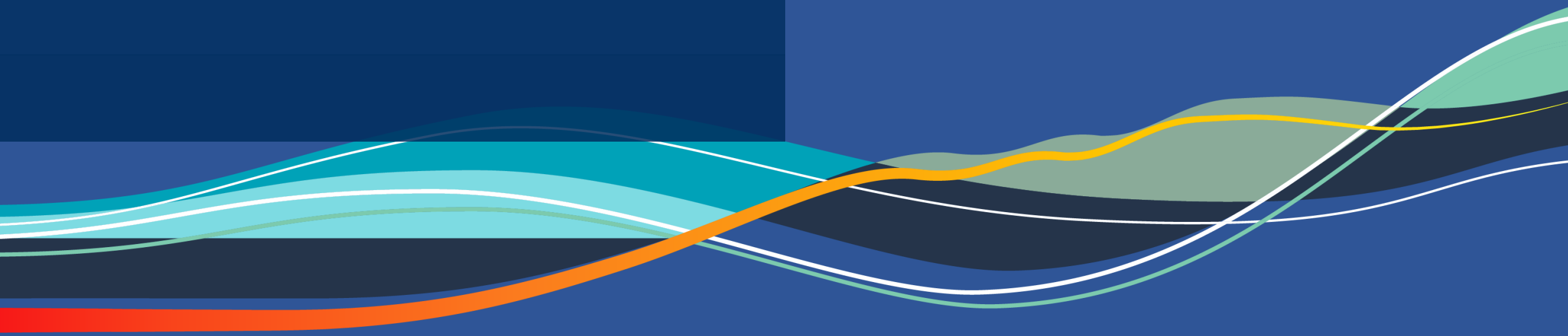
GASSCO



equinor

Norwegian Ministry of Energy

Hydrogen

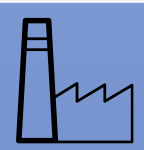
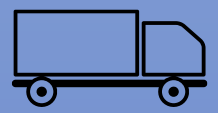
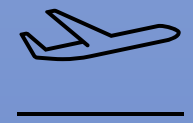


Overall objectives

- Contribute to the development of a value chain where production, distribution and usage are developed in parallel.
- Contribute to the development of a market for hydrogen in Europe
  - e.g. through international and bilateral cooperation on regulations, research[…]
- By 2025, enable development of:
  - Five maritime hydrogen hubs
  - One-to-two industrial projects with associated production
  - Five-to-ten pilot projects for the development and demonstration of new and more cost-efficient hydrogen solutions and technologies

Potential for hydrogen consumption in Norway

(1000 tons)

	Industry	Road transport	Rail	Maritime	Aviation	Building and construction	Total
							
2030	9-70	0-10	0-5	5-30	0	0-5	**14-120**
2050	35-250	50-140	5	55-180	2-40	10-40	**157-655**

Key numbers

>98 %
renewable

Hydropower accounts for ~88 % of total production capacity, while wind power accounts for about 11% and thermal power just short of 2%

39 700 MW

Installed capacity by the beginning of 2023

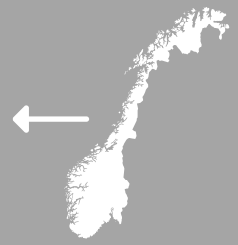
156 TWh

Production in a «normal year».

Actual production 2023: 152,4 TWh

Domestic consumption in 2023: 134,5 TWh

17,3 TWh



Net export in 2023.

Export: 30,4 TWh
Import: 13,1 TWh

Key numbers

>98 %
renewable

Hydropower accounts for ~88 % of total production capacity, while wind power accounts for about 11% and thermal power just short of 2%

39 700 MW

Installed capacity by the beginning of 2023

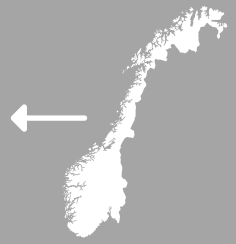
156 TWh

Production in a «normal year».

Actual production 2023: 152,4 TWh

Domestic consumption in 2023: 134,5 TWh

17,3 TWh



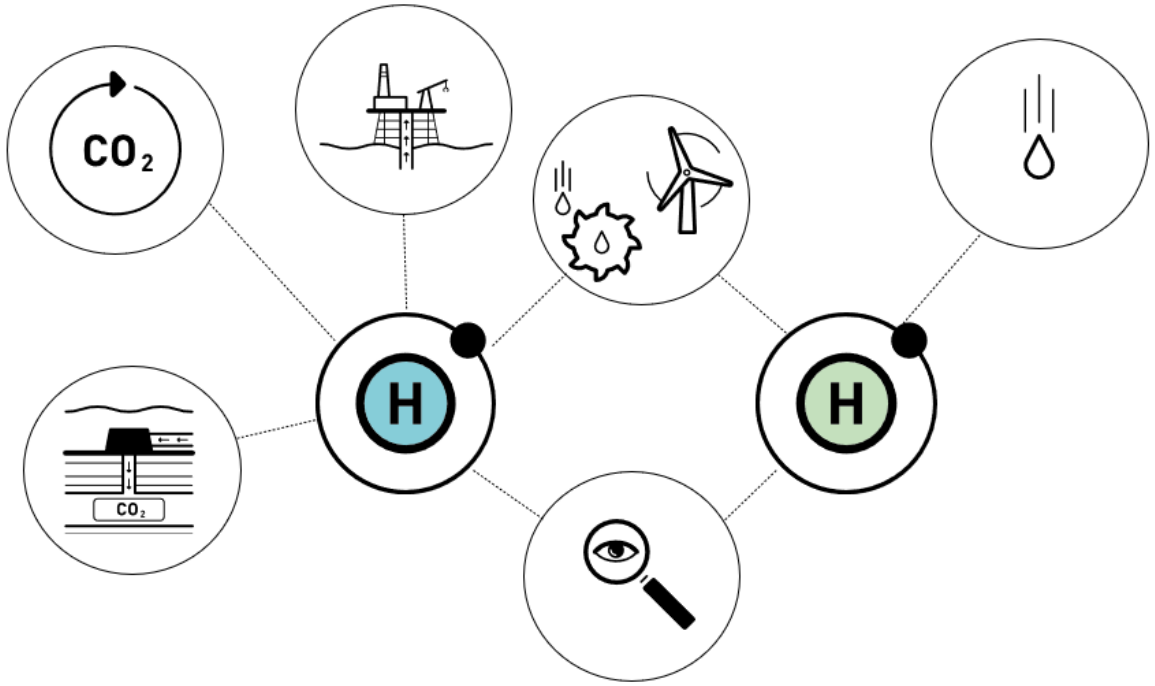
Net export in 2023.

Export: 30,4 TWh
Import: 13,1 TWh

1207 TWh

Energy content of Norwegian natural gas exports i 2023 (through the pipeline system)

Key policies to enable hydrogen value chains



- Increase renewable power production
- Faster licensing and permission processes
- Grid – enforcements and more efficient use of the existing grid
- CCS
- Research, technology development and innovation

Financial support for the hydrogen value chain

R&D

The Research Council of Norway

GASSNOVA

Pilots and market introduction

enova

Innovasjon Norge

Other:

- CO_2 compensation scheme
- Public procurement
- ++

Financial support for the hydrogen value chain

R&D

The Research Council of Norway

GASSNOVA

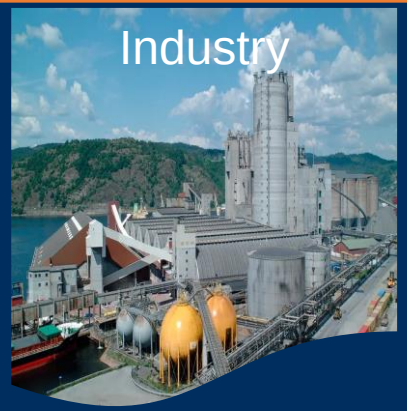
Pilots and market introduction

enova

Innovasjon Norge

Other:

- CO_2 compensation scheme
- Public procurement
- ++



Norwegian Hydrogen Forum

Project overview

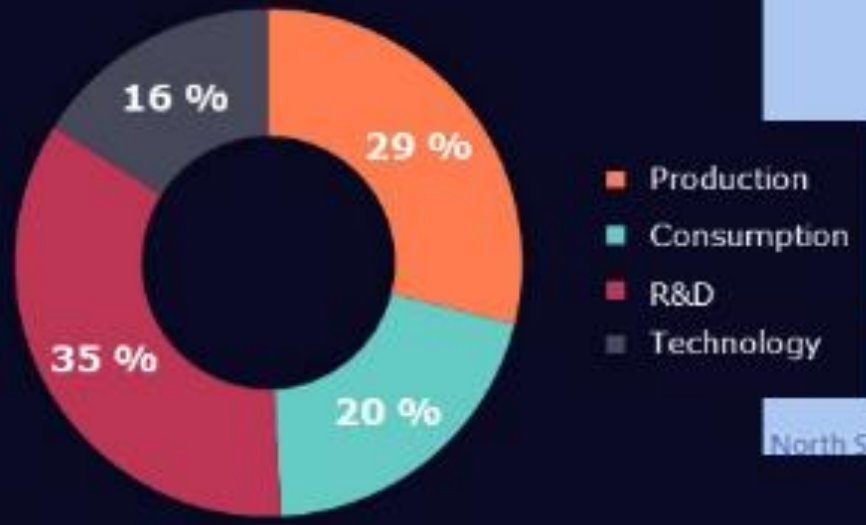
Number of projects in total

212

Projects in 82 municipalities

Different types of projects*

Production	75
Consumption	52
R&D	90
Technology	41

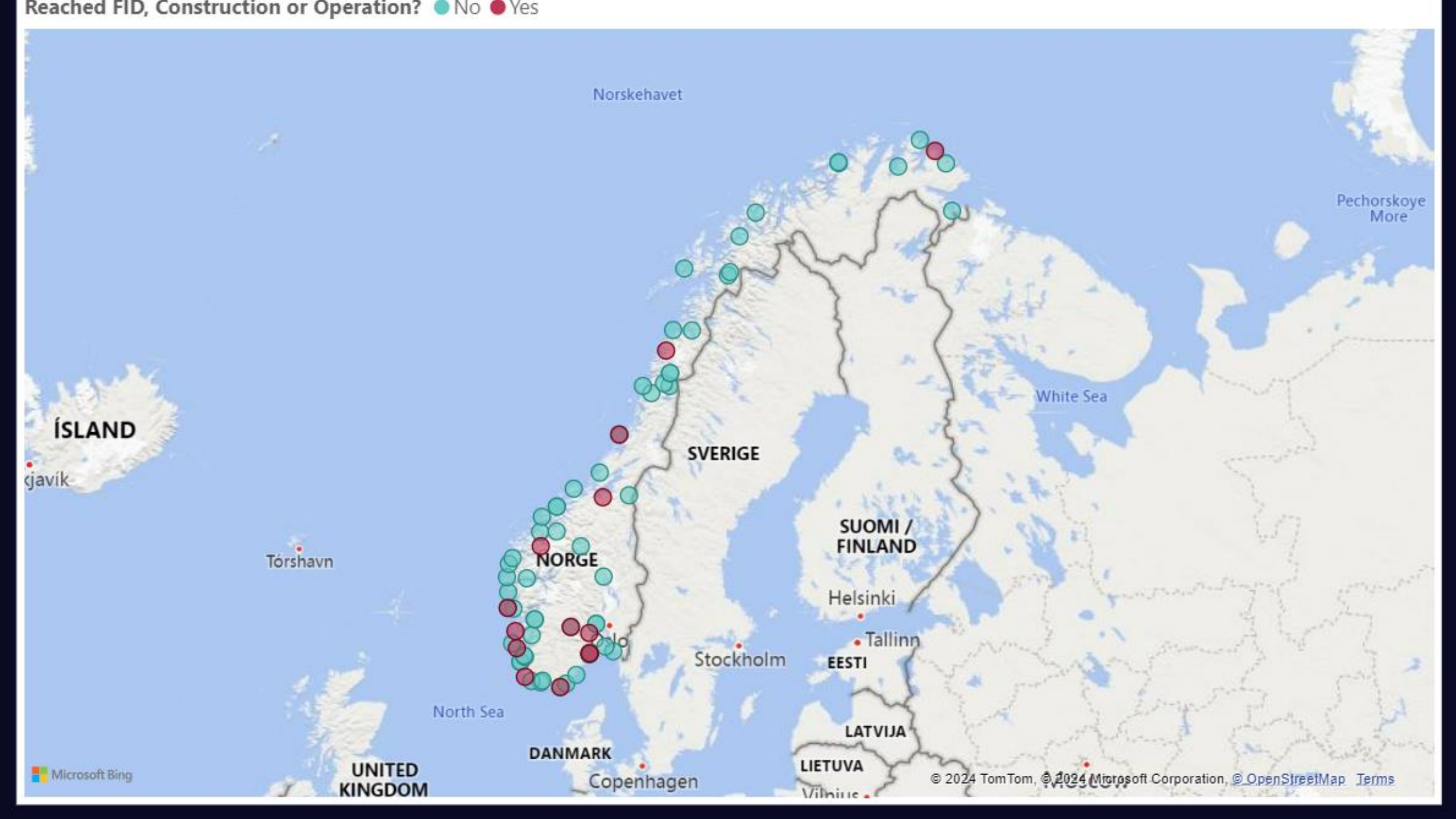


*Each project may belong to more than one category

Norwegian Hydrogen Forum

Planned production capacity in Megawatt (MW)

Number of projects	Year	Planned production capacity (MW)		
		Total	Renewable	Low-carbon
75	2025	95	69	26
	2030	7 746	7 051	695
	2035	13 007	8 532	4 475
	2040	18 007	8 532	9 475


Reached FID, Construction or Operation? No Yes
Norskehavet
Pechorskoye More
White Sea
ÍSLAND
SVERIGE
SUOMI / FINLAND
NORGE
Tórshavn
Helsinki
Tallinn
Stockholm
EESTI
North Sea
LATVIJA
DANMARK
LIETUVA
UNITED KINGDOM
Copenhagen
Microsoft Bing
© 2024 TomTom, © 2024 Microsoft Corporation, © OpenStreetMap Terms

International cooperation

European Clean Hydrogen Alliance

HYDROGEN INITIATIVE

AN INITIATIVE OF THE CLEAN ENERGY MINISTERIAL

MISSION INNOVATION

accelerating the clean energy revolution

IRENA

International Renewable Energy Agency

iea

Norwegian Ministry of Energy