

# From Sleipner to Northern Lights and beyond – CCS becoming commercial!



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Rune Thorsen, CCS project leader, Equinor Low Carbon Solutions

# Sleipner – We have been doing CCS for 25 years!



Dette er den vanligste lagringsplassen for CO<sub>2</sub> fra gassproduksjon.

Nå pumper vi den tilbake dit den kom fra.

Overskuddet av CO<sub>2</sub> fra Sleipner Vest deponeres i en vannfylt sandformasjon tusen meter under havbunnen.

Sleipner Vest inneholder store gass-reserver, og har en sentral rolle i Troll-avtalen om salg av gass til flere europeiske land.

Ubehandlet gass fra feltene i Nord-spen har vanligvis et CO<sub>2</sub>-innhold på 0-4%. På Sleipner er imidlertid nivået langt høyere – inntil 9,5%. Før gassen kan leveres til kundene på kontinentet, må det senkes til 2,5%.

Normalt ville overskuddet av CO<sub>2</sub> bli sluppet direkte ut i atmosfæren, men på Sleipner har vi utviklet en helt ny løsning: Når produksjonen settes i gang 1. oktober 1996, blir den utskilte CO<sub>2</sub> gassen pumpet tilbake – til en stor sandformasjon 1.000 meter under havbunnen.

Vi vil fortsatt generere CO<sub>2</sub> i eksosen fra turbinene. Denne CO<sub>2</sub>-gassen er vi ikke i stand til å tilkoble. Men den nye teknologien sparer oss for ekstra utslipp av CO<sub>2</sub> fra den produserte gassen. Vi skal produsere gass på Sleipner Vest til langt ut i neste århundre, og hvert eneste år vil vi spare atmosfæren for 1 million tonn CO<sub>2</sub>.

Ganske enkelt ved å legge den tilbake der vi fant den, nede i bakken.

**STATOIL**

Nye løsninger for lavere utslipp

Stavanger Aftenblad 23. August 1996

# Next up: shaping the European future of CCS and clean hydrogen

Competitive edge founded on experience, infrastructure and customers.



**15-30** MTPA

CO<sub>2</sub> transport and storage equity share by 2035

**>25%**

CO<sub>2</sub> transport and storage market share in Europe by 2035

**3-5** MAJOR INDUSTRIAL CLUSTERS

Clean hydrogen projects by 2035

**>10%**

Clean hydrogen market share in Europe by 2035

# Progressing and growing the Low Carbon project funnel



## Significant progress since CMD21

### Northern Lights

- More than 30% complete
- 4 customers selected for EU funding

### Northern Endurance Partnership

- Selected as 1 of 2 first CO<sub>2</sub> transport and storage projects in UK

### Barents Blue

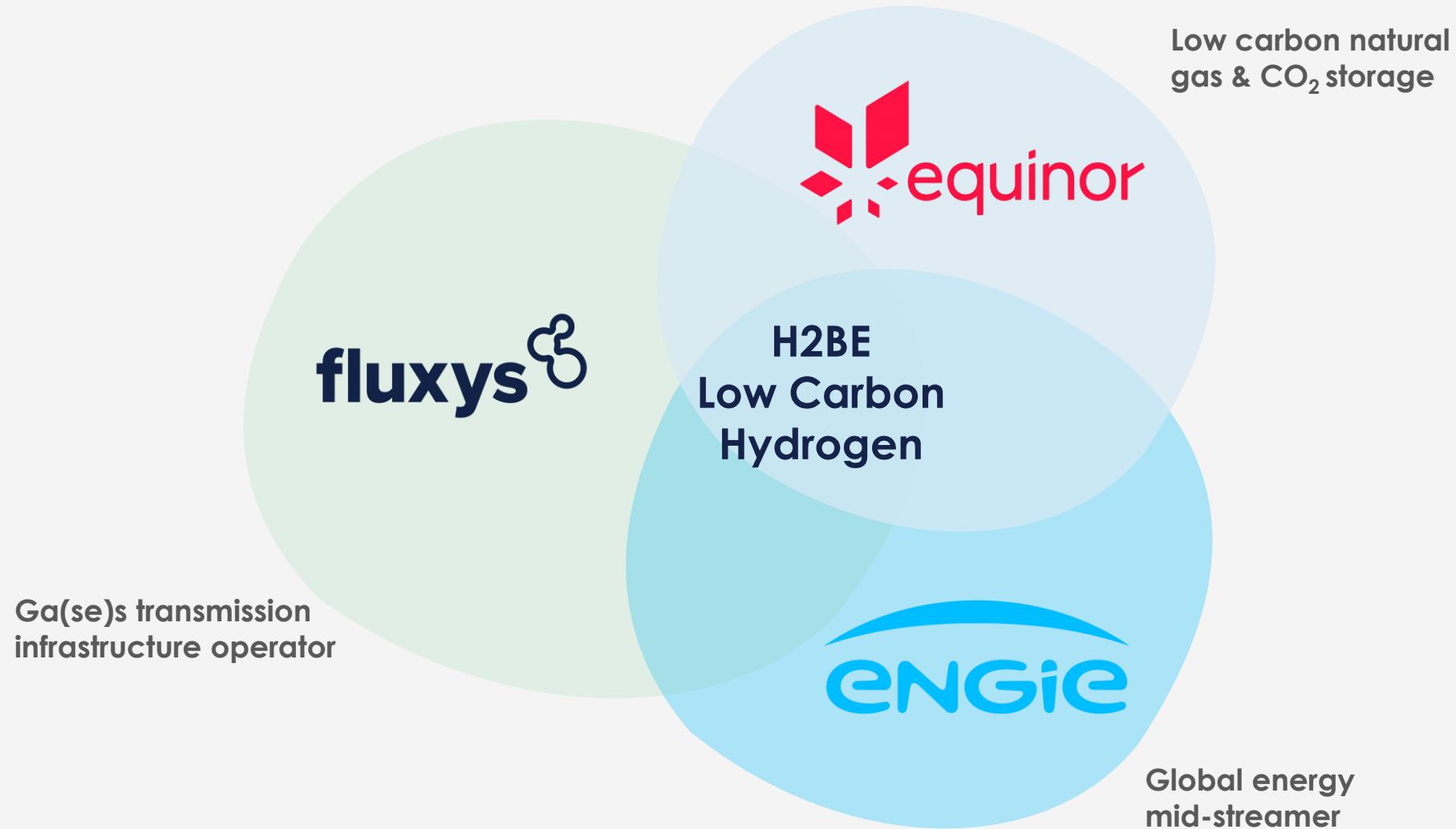
- Awarded up to USD 54 million in government funding

## New projects since CMD21

- US Tristate
- Hydrogen to Belgium (H2BE)

Project name	Project type	Country	Decarbonisation segments			
			Industry	Power	Heat	Transport
Northern Lights (NL)	Infrastructure	NO	●			
Northern Endurance (NEP)	Infrastructure	UK	●	●	●	●
H2H Saltend	H2 fuel switch	UK	●	●	●	●
Net Zero Teesside (NZT)	CCGT+CCS	UK		●		
Keadby 3	CCGT+CCS	UK		●		
Peterhead	CCGT+CCS	UK		●		
Keadby Hydrogen (2/4)	H2 fuel switch	UK		●		
H21	H2 fuel switch	UK	●		●	
H2M Magnum	H2 fuel switch	NL		●		
NorthH2	Green hydrogen	NL, BE, DE	●			●
H2morrow Steel	H2 feedstock switch	DE	●			
Liquid Hydrogen Maritime	Green hydrogen	NO				●
Clean Hydrogen to Europe	H2 fuel switch	NO	●	●	●	●
Barents Blue	Blue ammonia	NO	●			●
US Tristate	CCS+CCGT+H2	US	●	●		●
Hydrogen to Belgium (H2BE)	H2	BE	●			

# Long-term partners joining forces to realise the Belgian energy transition



# H<sub>2</sub>BE

**1 GW**

H<sub>2</sub> capacity

**1 B€**

investment

**~ 2-5 Mt**

CO<sub>2</sub>/y abated\*

**~ 300**

permanent jobs

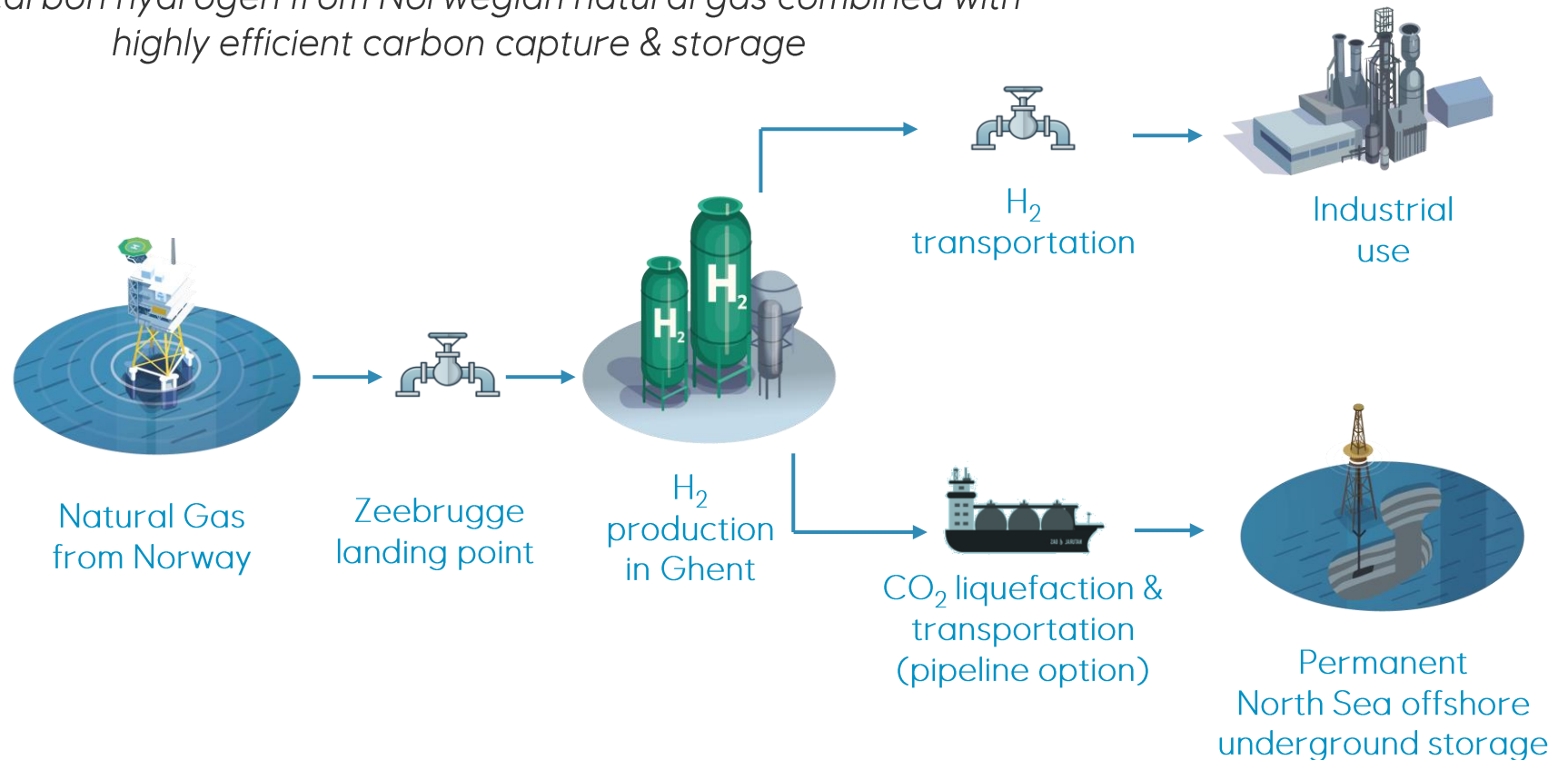
fluxys

ENGIE

equinor

## Reliable, Affordable and Available hydrogen supply at scale before 2030

*Low-carbon hydrogen from Norwegian natural gas combined with highly efficient carbon capture & storage*



\*5 MPTA if H<sub>2</sub> used to abate steel blast furnaces

# H<sub>2</sub>BE project

## Moving towards Clean Hydrogen



Invest in low-carbon hydrogen now to develop an H<sub>2</sub> ecosystem integrating production, networks and end use equipment.  
**By creating the conditions for a competitive H<sub>2</sub> market, we accelerate towards renewable hydrogen.**

23.02.2022

## Belgium and Norway sign energy cooperation: "Important step in forging North Sea coalition"



17.03.2022

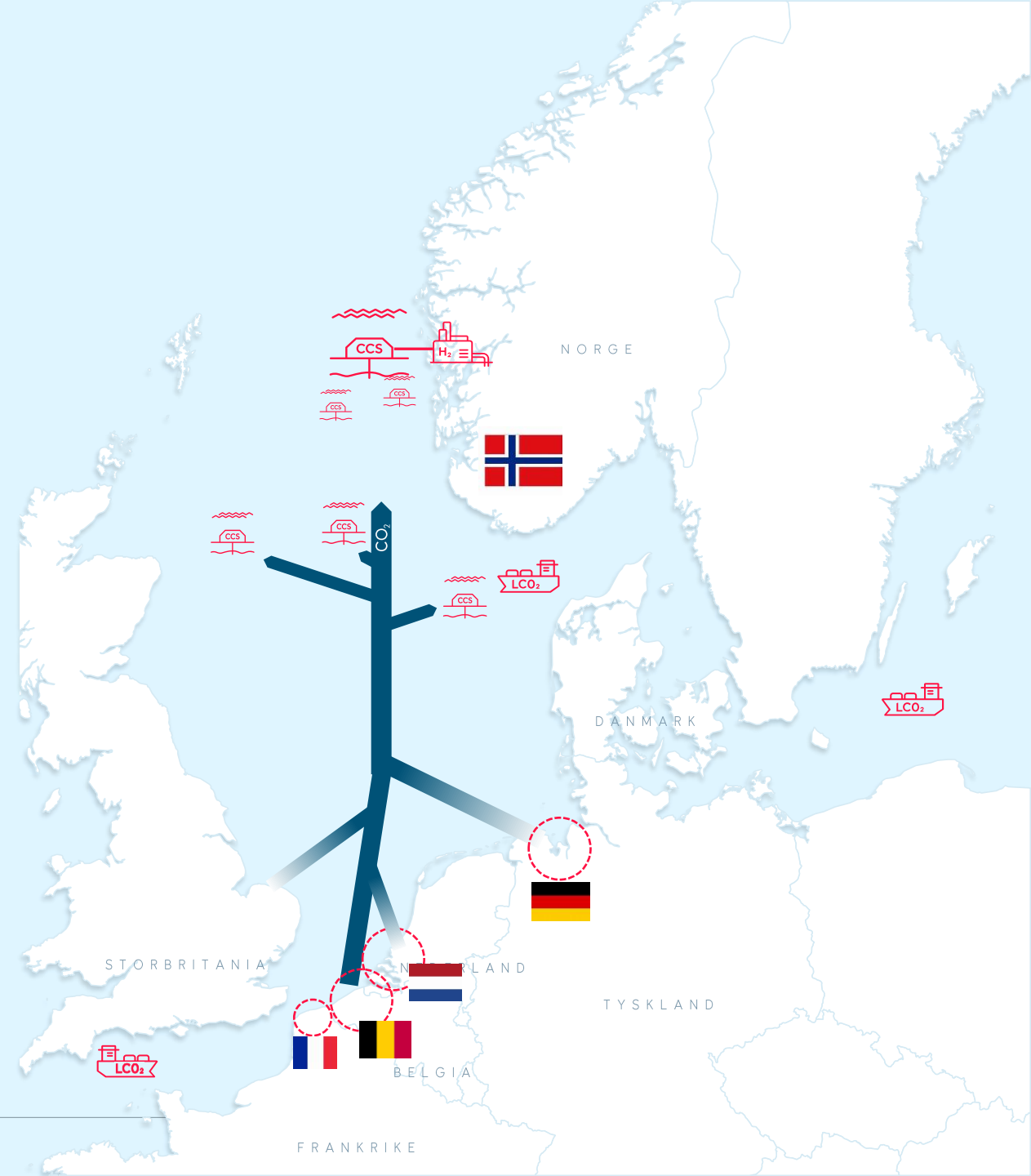


## The Region of Flanders and Norway join forces in the energy transition

Press release | Date: 17/03/2022

...they aspire to conclude a bilateral agreement within the framework of the London protocol before the end of the year, so that CO<sub>2</sub> transport between Flanders and Norway can soon be a reality.

...Flanders and Norway share the same ambitions when it comes to hydrogen...implementing various joint projects. One such project is "H2BE" where Equinor, Engie and Fluxys are looking into the possibility of realizing a 1 gigawatt low carbon hydrogen production facility in the Ghent port area in Flanders.







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