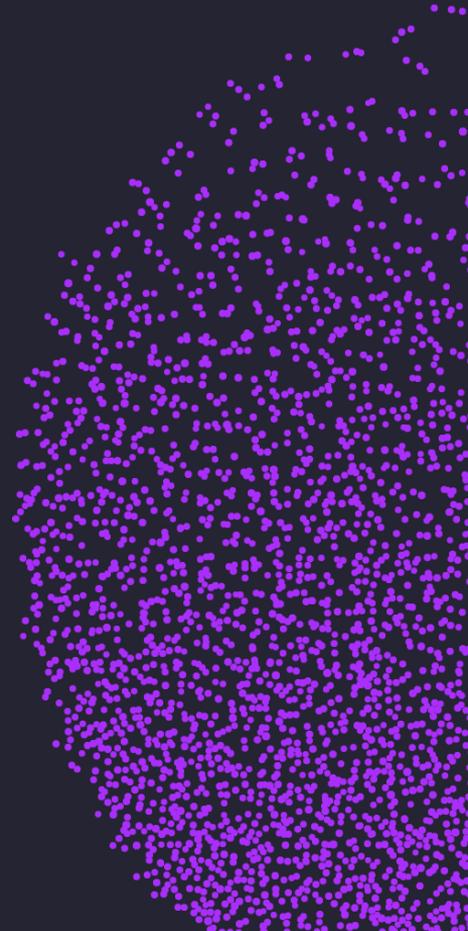


# HYDROGEN PRODUCTION

Bjørn Simonsen

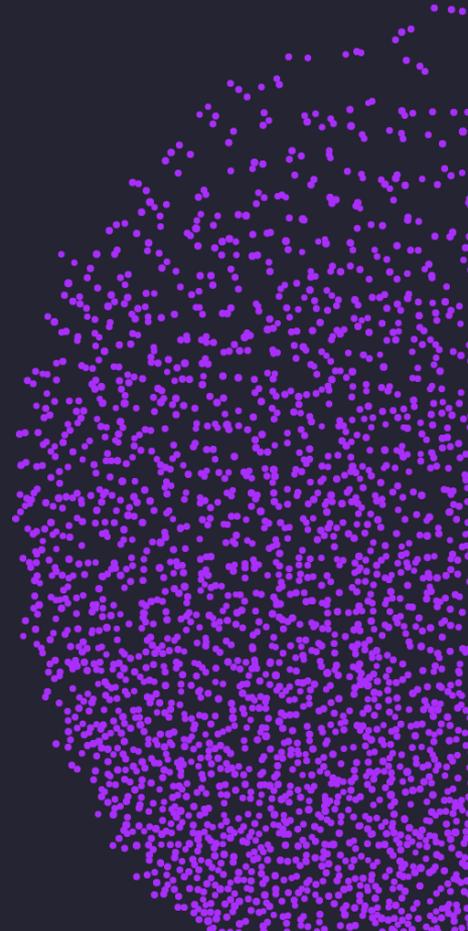
VICE PRESIDENT INVESTOR RELATIONS AND CORPORATE COMMUNICATION



# HYDROGEN PRODUCTION

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VICE PRESIDENT INVESTOR RELATIONS AND CORPORATE COMMUNICATION



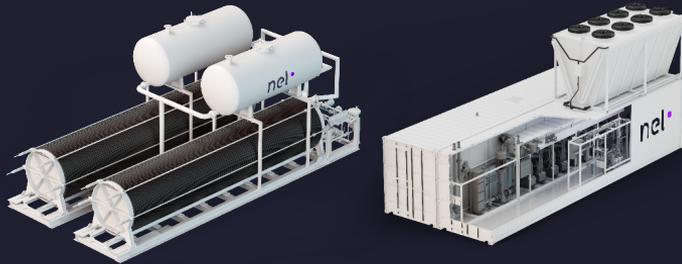
empowering generations with  
clean energy forever



**1927: THE BEGINNING**  
GREEN AMMONIA ON 100+ MW SCALE (NORSK HYDRO)

# Nel Hydrogen:

- Roots from Norsk Hydro & Equinor (Statoil) - pure play listed hydrogen technology company (NEL.OSE)
- Manufacturing facilities in Norway, Denmark and U.S.
- World's largest electrolyser manufacturer, with >3500 units delivered in 80+ countries since 1927
- ~50 hydrogen fueling stations delivered to 9 countries



## ALKALINE AND PEM ELECTROLYSERS

Converting water and electricity to hydrogen and oxygen – for industry, mobility and energy purposes. In process of scaling up manufacturing.



## HYDROGEN FUELING STATIONS

World's most compact – simple to integrate with other fuels & standardized. Serial production & capacity to manufacture 300 units/year.

Use it as  
efficiently as  
possible

*(or not at all)*





nel •

Photo: Varanger Kraft AS

# Use it when it's there

*..or store it, if you can*

EXPIRY DATE:  
from 0 to  $\infty$





Photo: Yara

## AMMONIA, REFINERIES, METHANOL

RENEWABLE HYDROGEN REPLACES COAL, OIL AND NATURAL GAS

CO<sub>2</sub>-REDUCTION POTENTIAL: 1 BILLION TONS PER YEAR (2% of global emissions)

ELECTROLYZER POTENTIAL: ~500,000 MW



Photo: LKAB

## STEEL INDUSTRY

RENEWABLE HYDROGEN REPLACES COAL

CO<sub>2</sub>-REDUCTION POTENTIAL: 3 BILLION TONS PER YEAR (~8% of global emissions)

ELECTROLYZER POTENTIAL: ~1,100,000 MW



Photos: Hyundai, Nikola Motor, Ruter, ALSTOM, Norled

## MOBILITY

RENEWABLE HYDROGEN REPLACES GASOLINE AND DIESEL  
CO<sub>2</sub>-REDUCTION POTENTIAL: 7.5 BILLION TONS PER YEAR (15% of global emissions)  
ELECTROLYZER POTENTIAL IF 50% H<sub>2</sub> MARKET SHARE: ~2,000,000 MW

# ELECTROLYSER CAPACITY NEEDED FOR RENEWABLE TRANSITION:

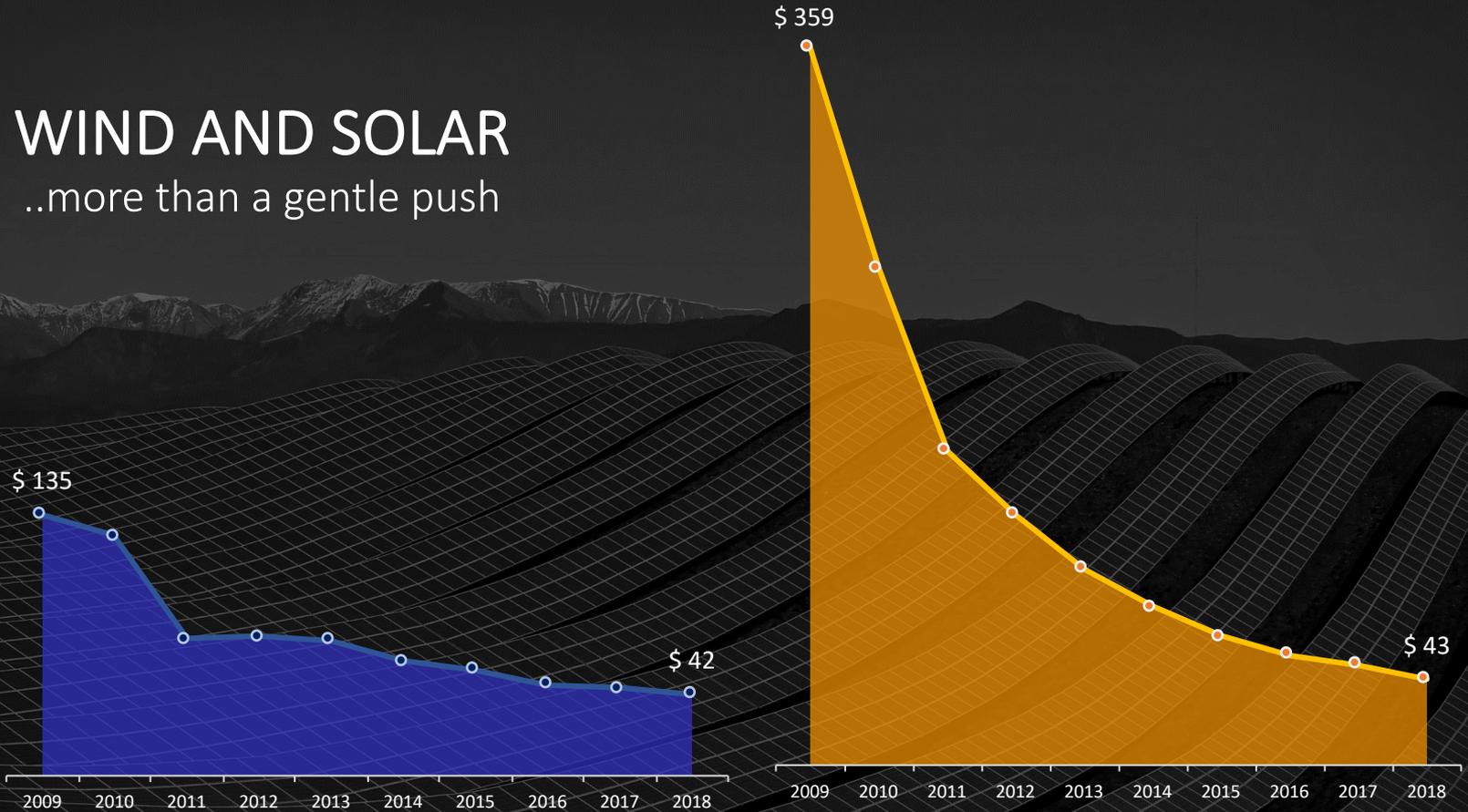
~3,500 GW

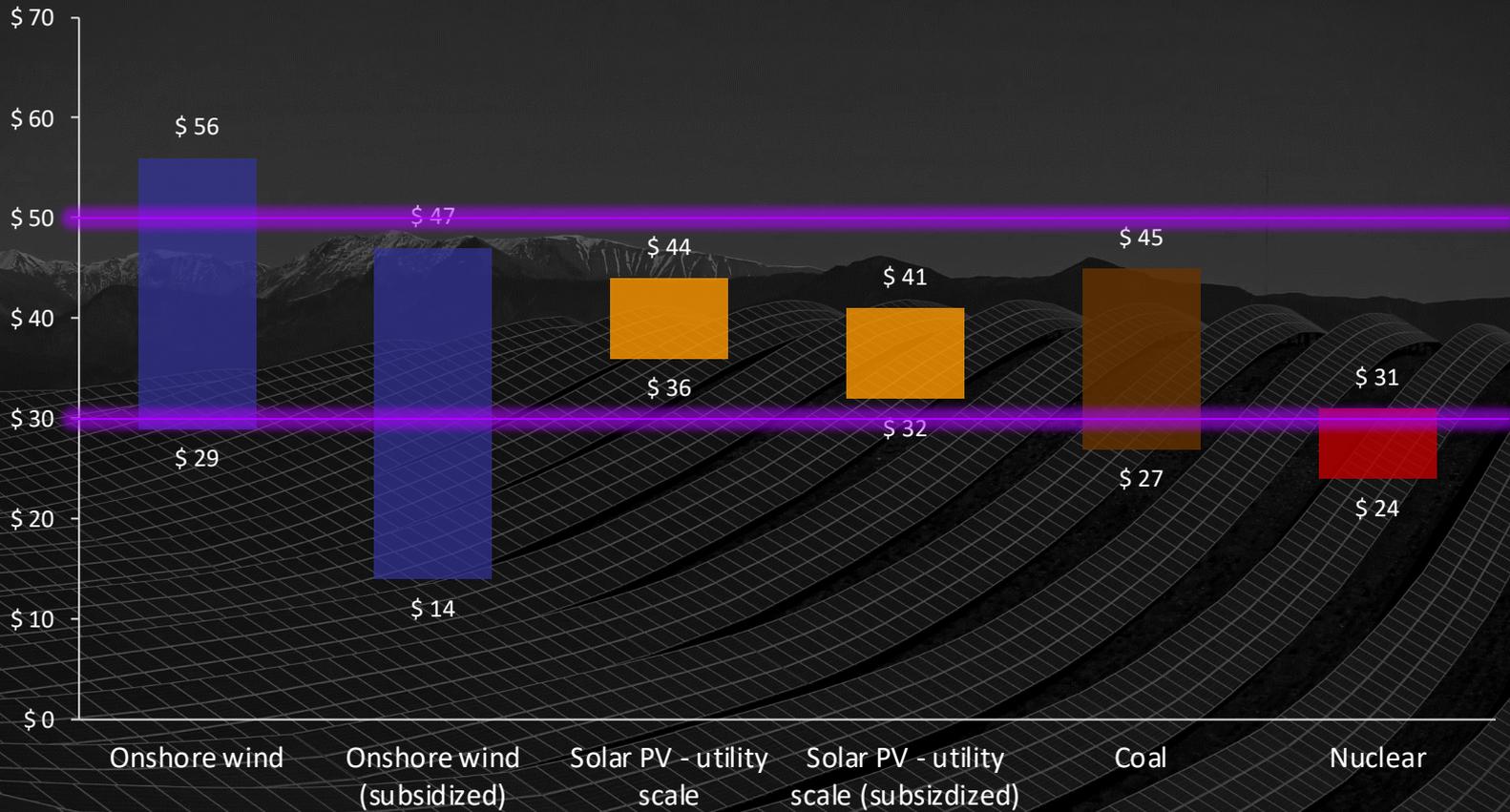
current global electrolyser market: ~100 MW/year

when should we build our megafactory?

# WIND AND SOLAR

..more than a gentle push





Q Search

Climate Changed

# Hydrogen's Plunging Price Boosts Role as Climate Solution

By [Will Mathis](#) and [James Thornhill](#)

August 21, 2019, 8:11 AM GMT+2 Updated on August 22, 2019, 7:54 AM GMT+2

- ▶ Cost to produce the fuel is seen falling up to 80% by 2030
- ▶ Hydrogen burns without producing greenhouse gases or carbon

● LIVE ON BLOOMBERG  
[Watch Live TV >](#)  
[Listen to Live Radio >](#)



## NEW ELECTROLYSER MANUFACTURING PLANT AT HERØYA:

SCALING UP FROM 40 TO 360 MW/YEAR  
EXPANSION POTENTIAL: >> 1 GW/YEAR

A night sky with the Milky Way galaxy visible, overlooking a valley with city lights and mountains.

Thanks for the ride, dinosaurs!  
We'll take it from here.