Nordic Energy Research

Progress towards Nordic Carbon Neutrality

Tracking Nordic Clean Energy Progress

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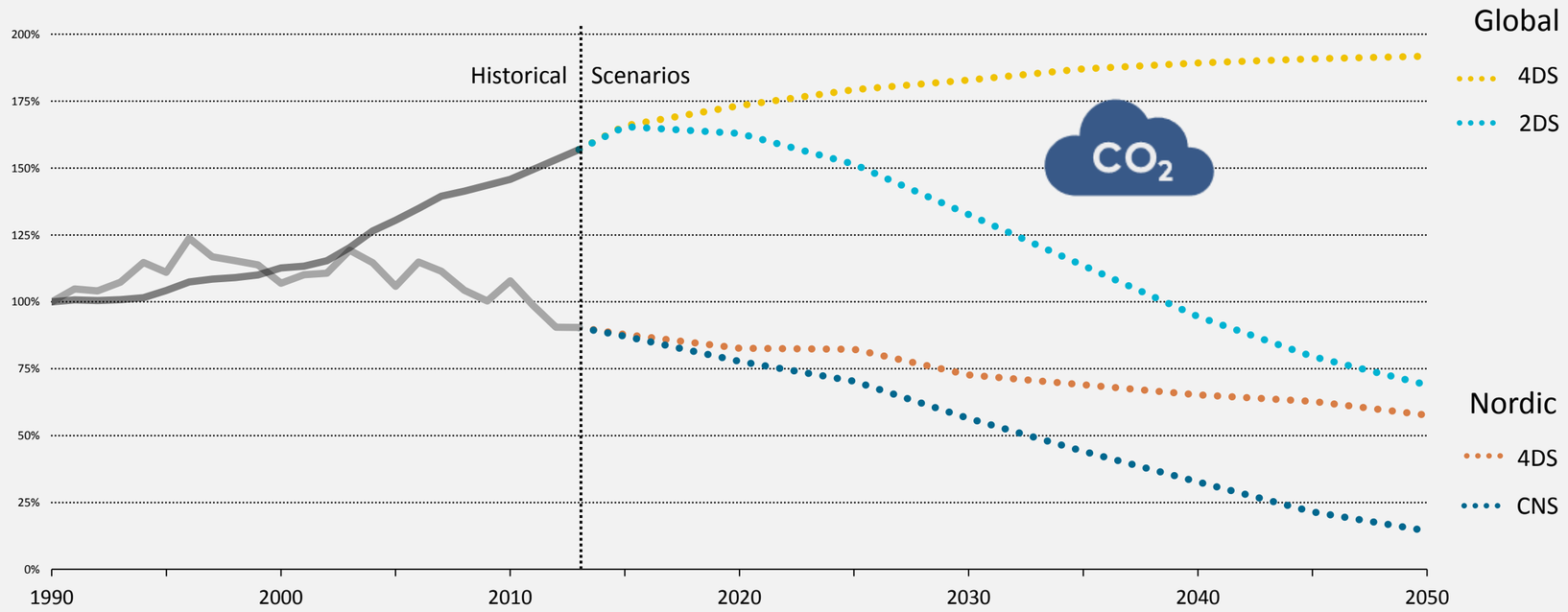
Staying on track for a low carbon energy future

CO_2 emissions in NETP scenarios

Fig 1.1: Reduction pathways for energy-related CO_2 by scenario (indexed to 1990)



The five Nordic countries have some of the most ambitious energy and climate policies in the world. Despite this, achieving the Paris Climate Agreement's vision of maintaining the global temperature rise "well below two degrees" will require radical change.

Nordic Energy Technology Perspectives 2016 (NETP) presents a detailed scenario-based analysis of how the Nordic countries can achieve a near carbon neutral energy system by 2050. The report is a Nordic edition of the International Energy Agency's (IEA) global Energy Technology Perspectives 2016 (ETP).

This publication **evaluates the progress being made towards Nordic Carbon Neutrality** and compares progress with the Carbon Neutral Scenario (CNS) in NETP 2016. The NETP publication and this publication deal with energy-related CO_2 emissions, which account for just under two-thirds of total greenhouse gas (GHG) emissions in the Nordic region.

Carbon-Neutral Scenario establishes minimum requirements for mitigating CO_2 emissions

“The aim of the Nordic countries is to be carbon neutral and to demonstrate leadership in the fight against global warming.”

These were the words of the Nordic prime ministers in their declaration at a summit in Helsinki on 25 January 2019 as part of active Nordic climate cooperation under the auspices of the Nordic Council of Ministers.

Tracking Nordic Clean Energy Progress

Red – Not on track / Insufficient steps

Yellow – Greater effort is required but critical steps are being addressed

Green – On track / Sufficiently promising efforts and impact

THE BIG PICTURE

TRANSFORMING THE POWER SECTOR

BOOSTING BIOENERGY

ELECTRIFICATION OF TRANSPORT

ELECTRIFICATION OF HEAT

DECARBONISATION OF INDUSTRY

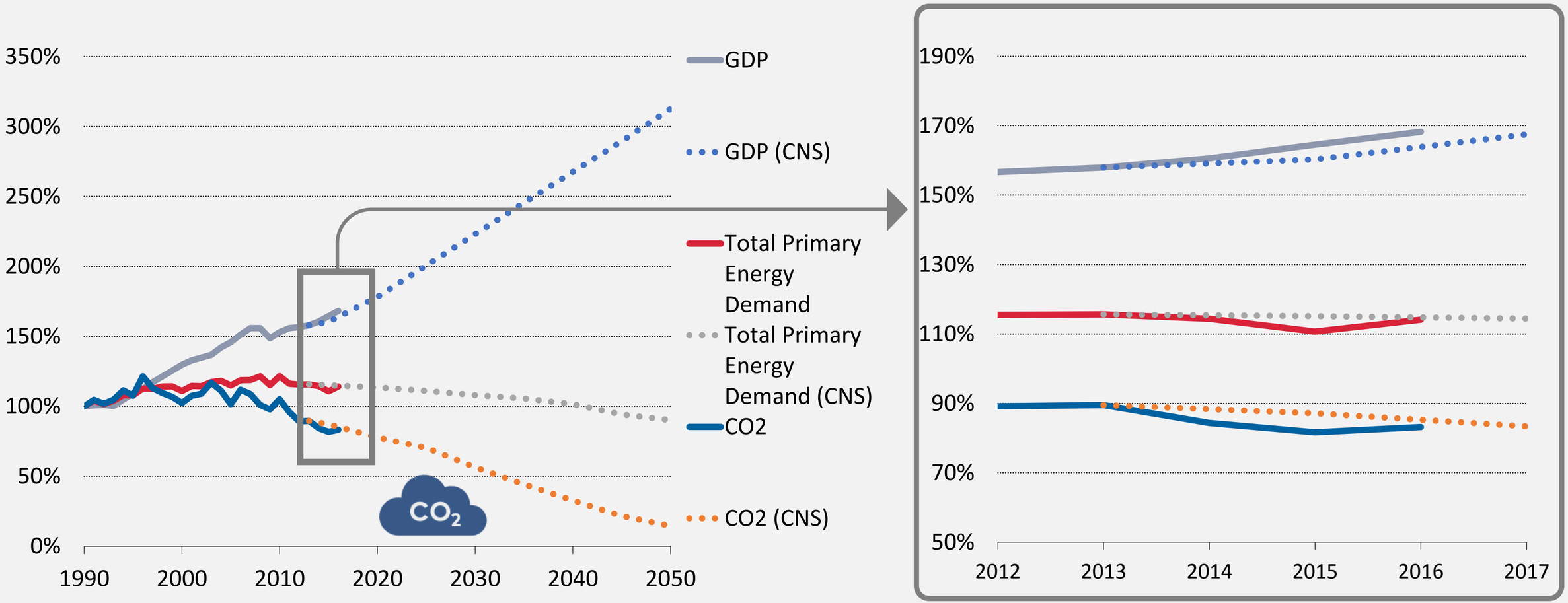
ENERGY EFFICIENT & SMART BUILDINGS

GREEN MOBILITY

ENERGY STORAGE & CCS

THE BIG PICTURE

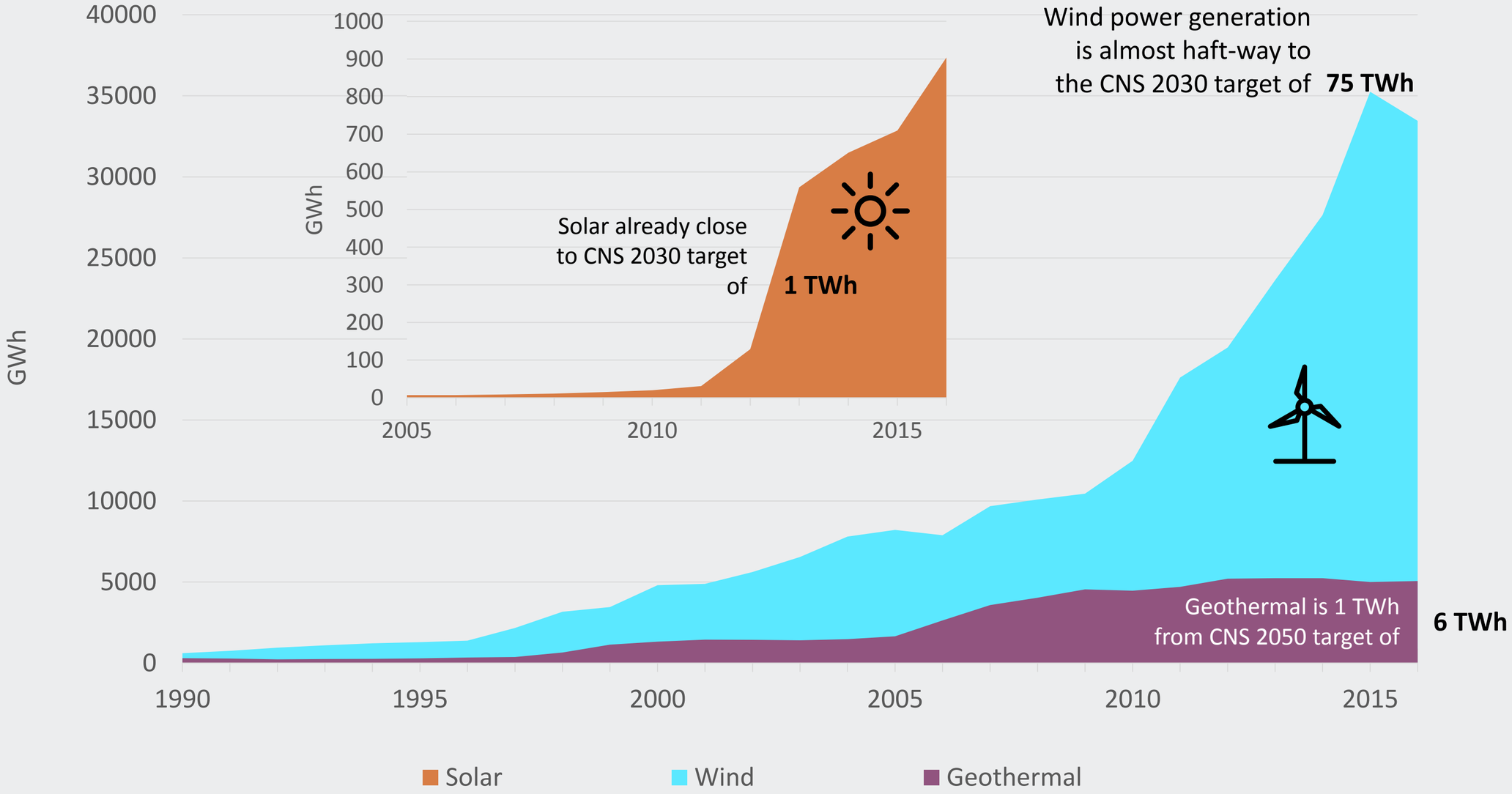
Current Progress



Higher GDP growth than expected, and lower emission growth. Emissions reductions have stalled recently.

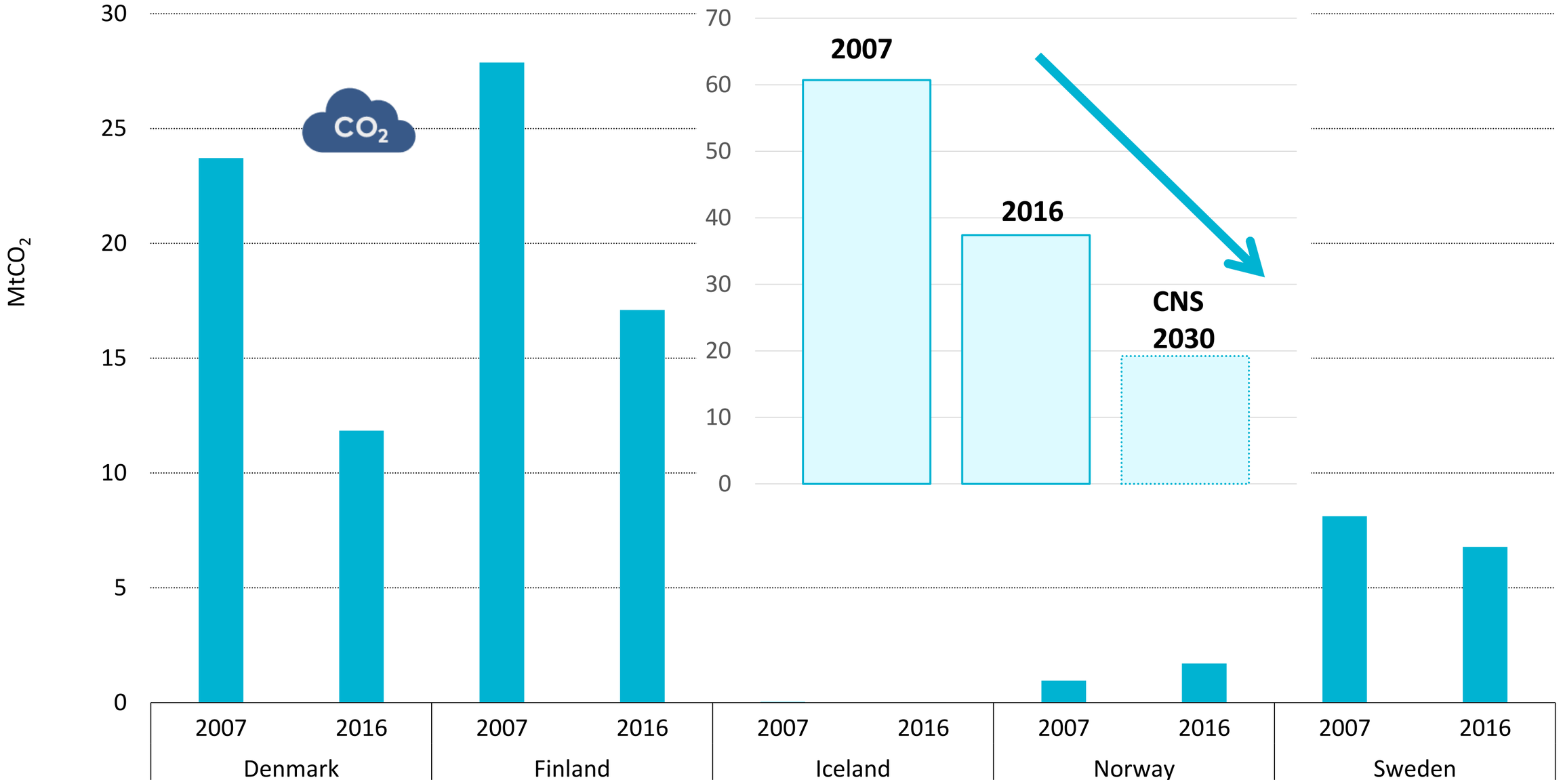
TRANSFORMING
THE POWER SECTOR

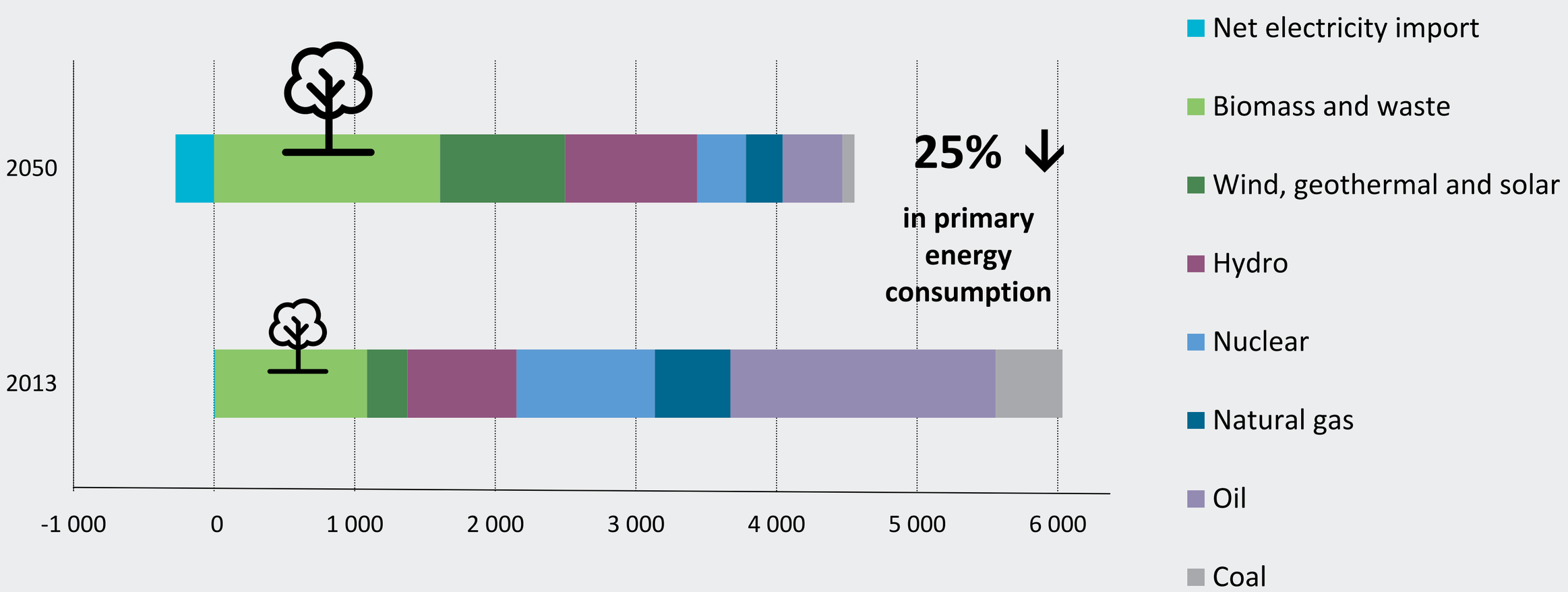
Nordic renewable electricity generation (excl. hydro)



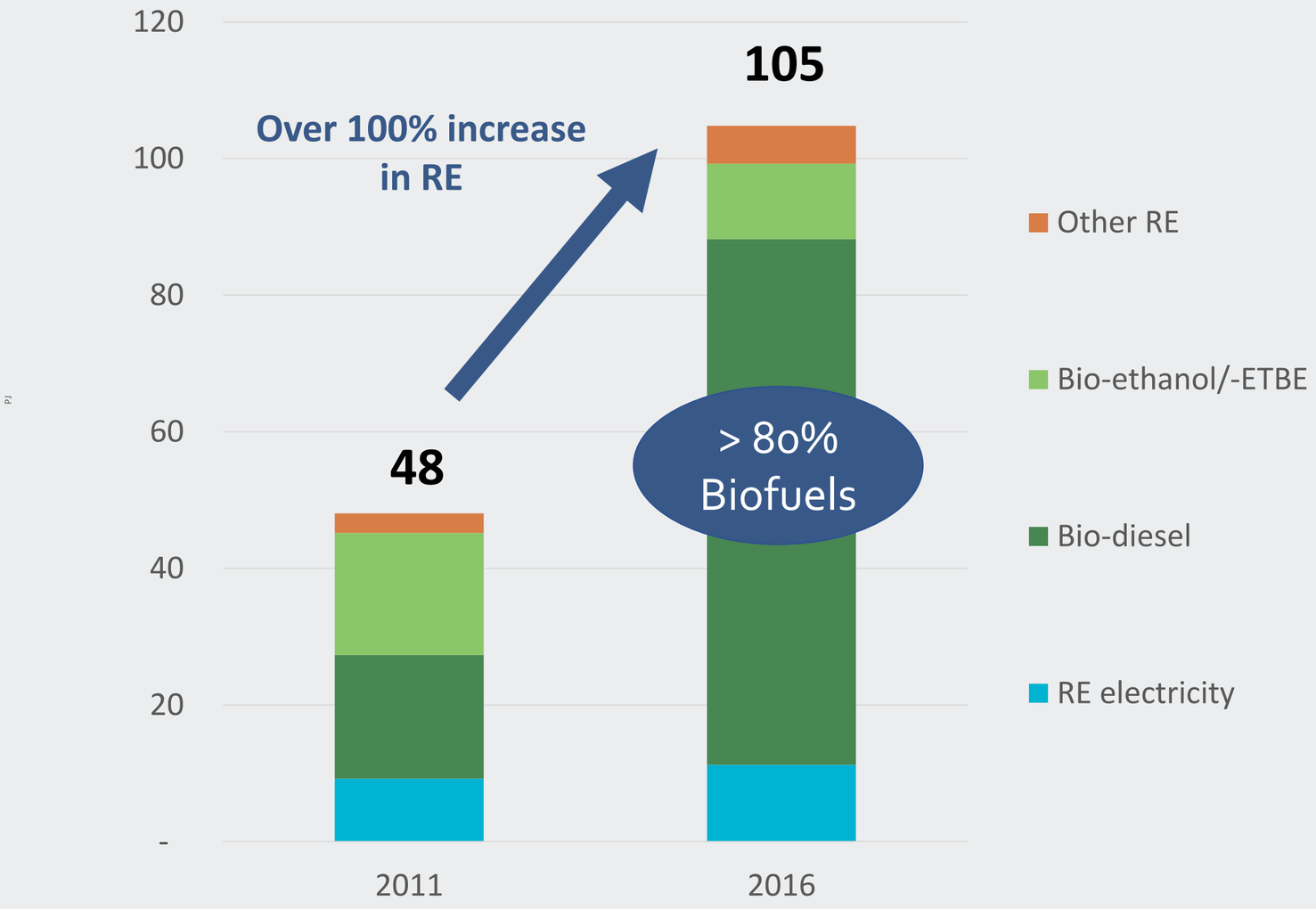
TRANSFORMING
THE POWER SECTOR

CO_2 emissions ($MtCO_2$) from power and district heat





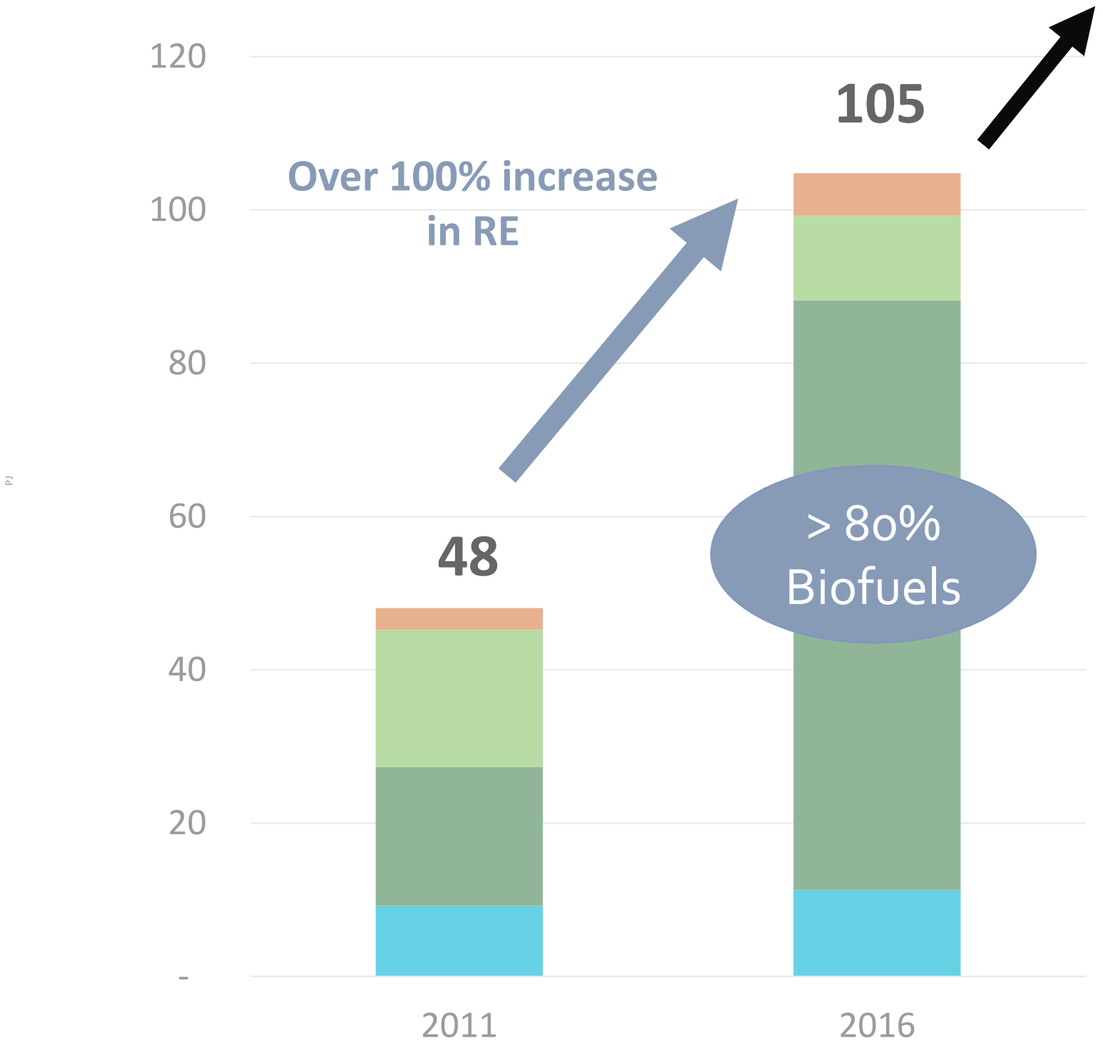
Bioenergy production is increasing and is expected to be the single largest energy carrier in 2050.



Renewable consumption in the transport sector (PJ)

Requirements for renewable fuels begin to bite in the Nordics.

BOOSTING BIOENERGY



Renewable consumption in the transport sector (PJ)

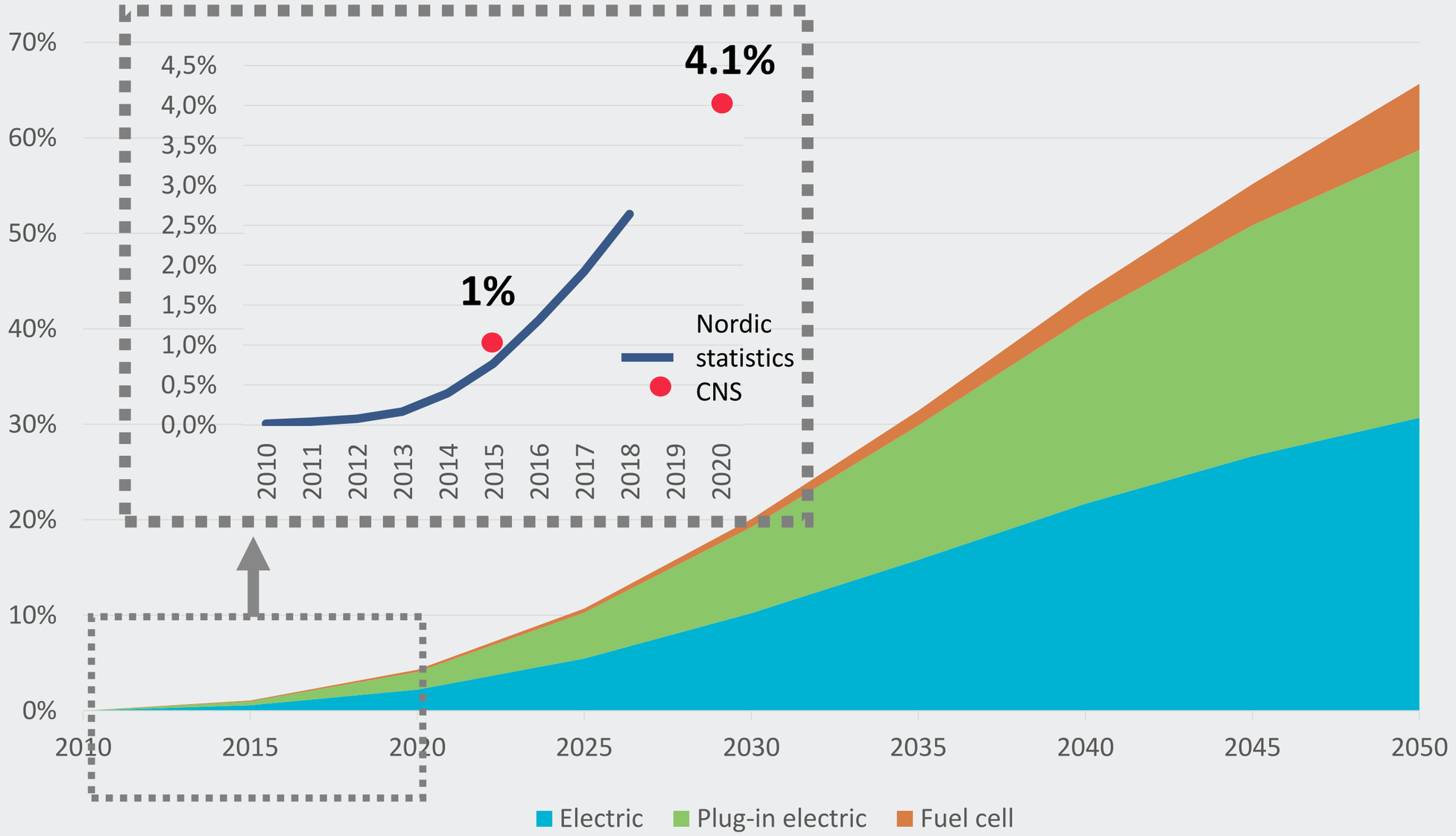
In 2050 the CNS expects biofuels for transport to reach 470 PJ

Requirements for renewable fuels begin to bite in the Nordics.

Securing sustainable production of biofuels is still a challenge.

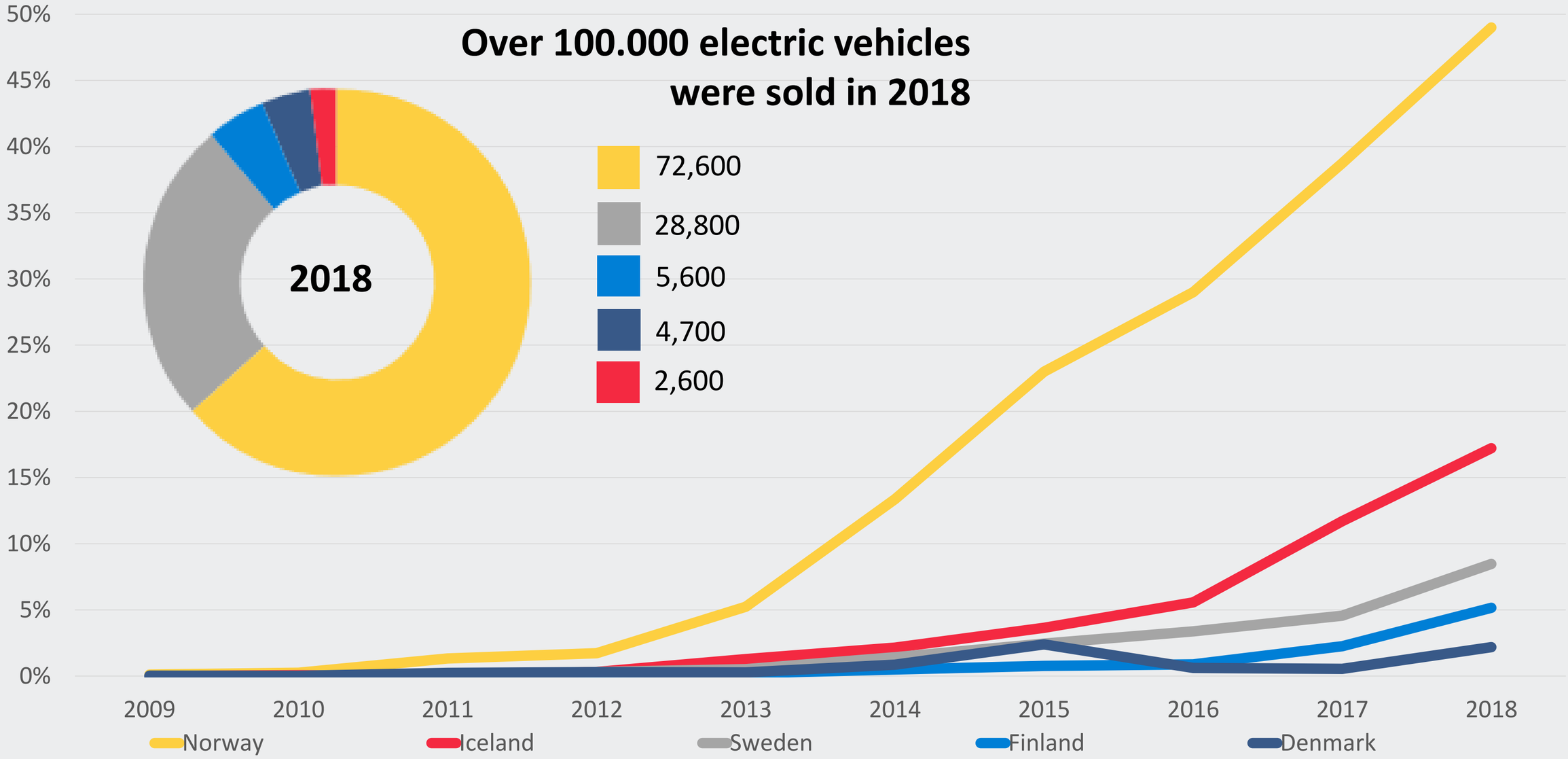
Share of electric vehicles in light-duty vehicle stock (CNS) and “zoom in” on the actual Nordic share from 2010-2018 in relation to CNS targets

Light-duty vehicles are on track



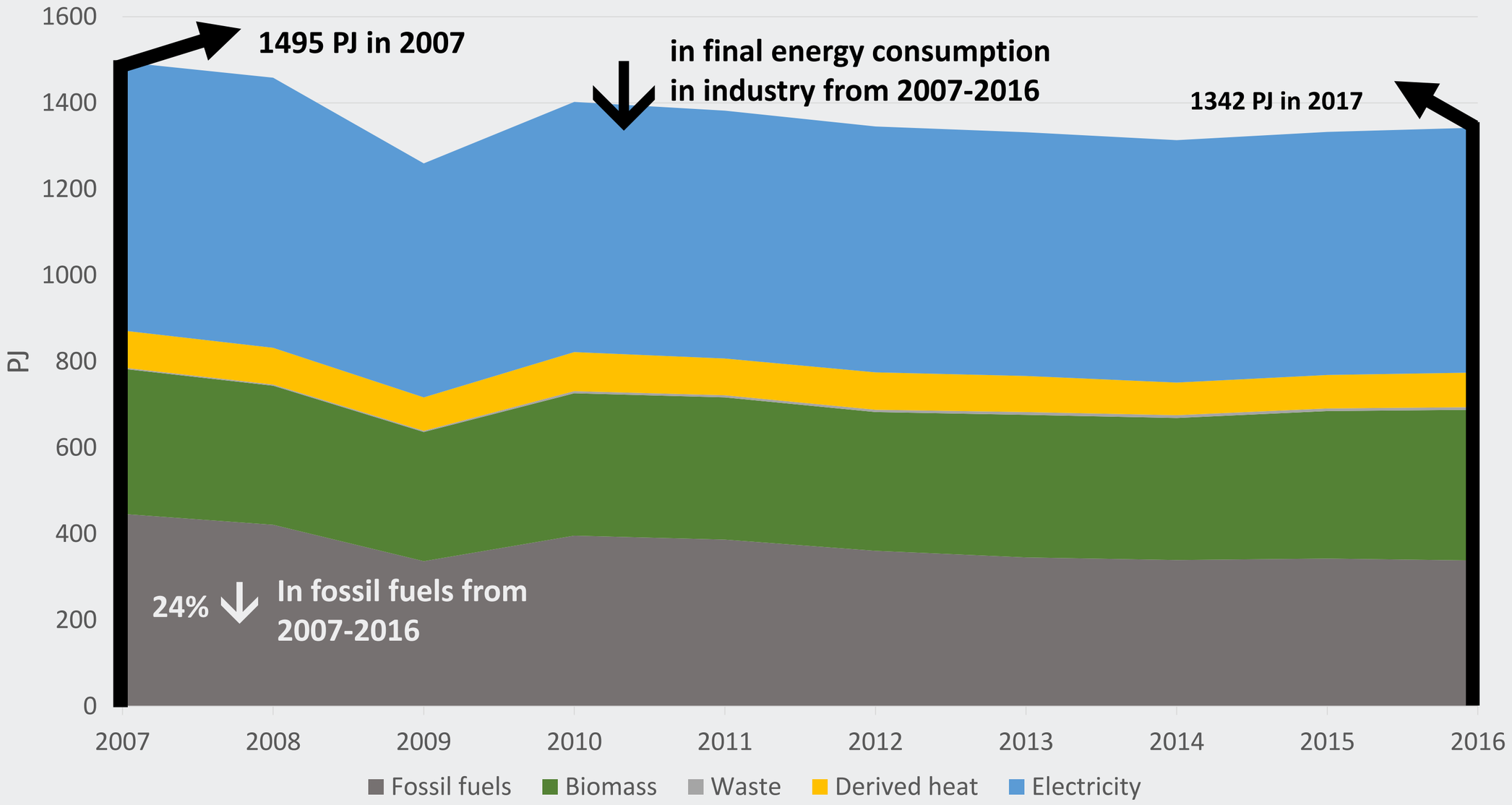
ELECTRIFICATION OF TRANSPORT

Battery and plug-in hybrid electric vehicles share of new passenger vehicle sales. Piechart: Number of new passenger vehicle sales (BEV and PHEV) in 2018



DECARBONISATION
OF INDUSTRY

Final energy consumption (PJ) in industry



ENERGY EFFICIENT
& SMART BUILDINGS

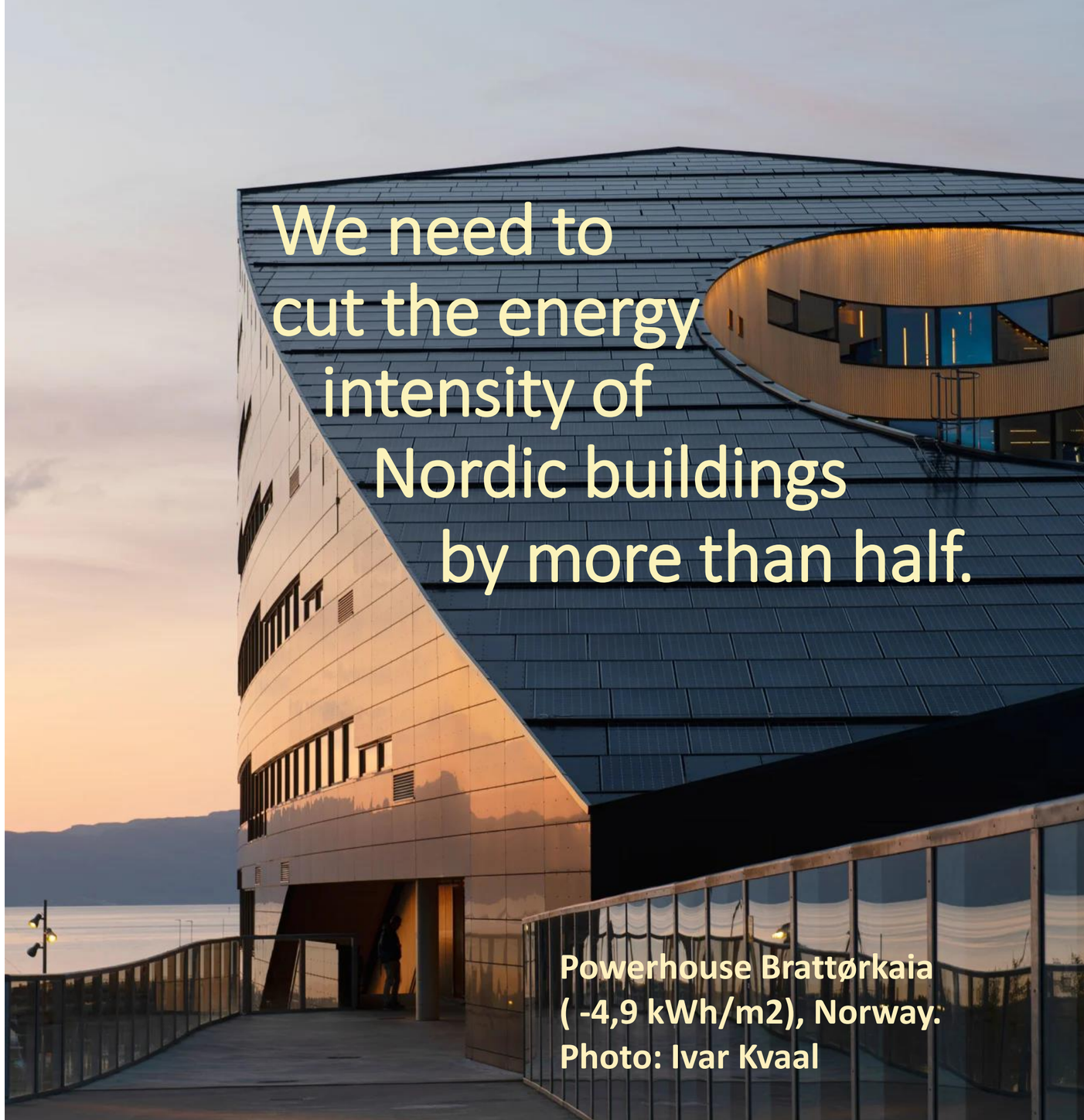
Average energy intensity in Nordic buildings

213

kWh/m^2 in **2016**

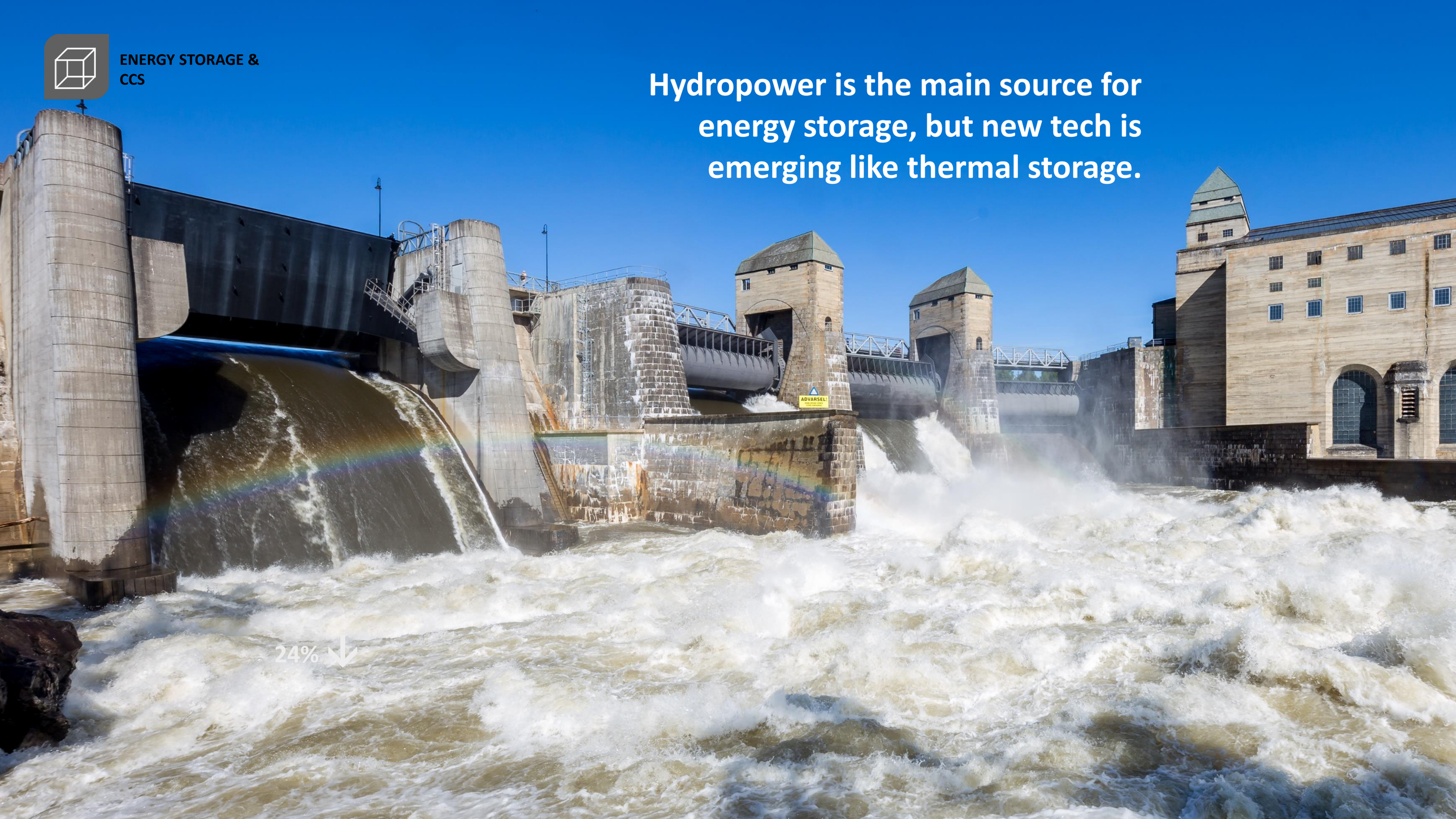
89

kWh/m^2 in **2050**



ENERGY STORAGE & CCS

Hydropower is the main source for energy storage, but new tech is emerging like thermal storage.



Carbon Capture and Storage in Industry

Total

20 Mt CO_2

Captured

7 Mt CO_2

Nordic industrial emissions in 2050

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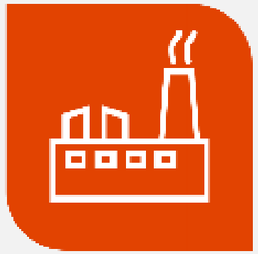

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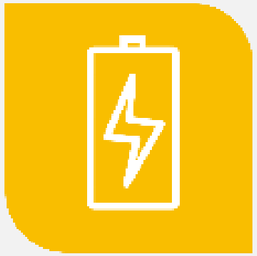

ELECTRIFICATION OF HEAT

GREEN MOBILITY

ENERGY STORAGE & CCS


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