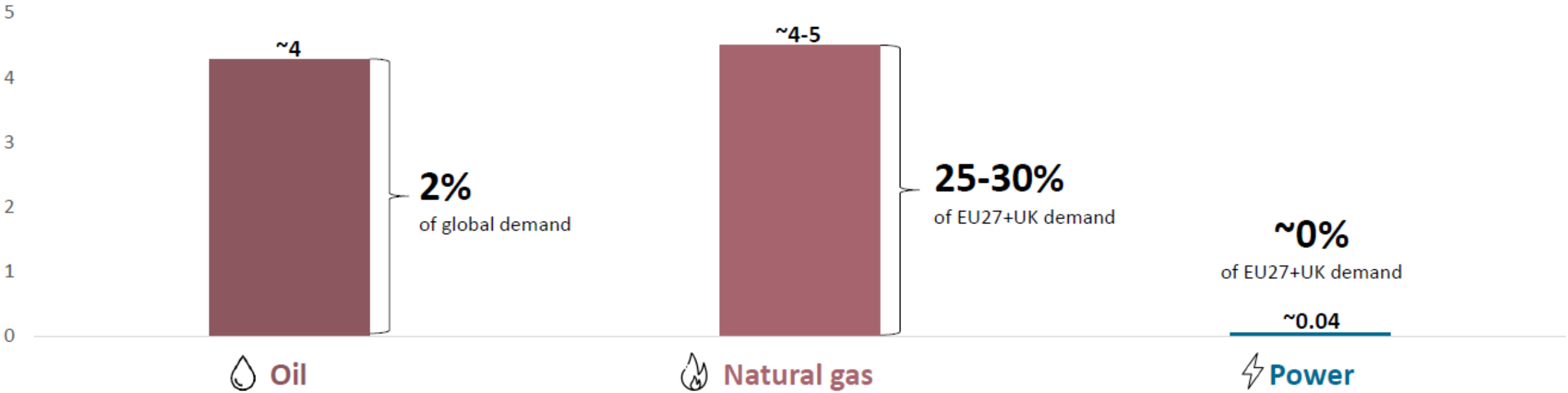
Energiomstilling på Norsk Sokkel

Simen Moxnes
Senior rådgiver Equinor

Marine operasjoner i praksis
Bergen 23.april 2025

Norwegian gas export is crucial for Europe while export of oil and power is replaceable

Norwegian 2022 energy export split by source*
Exajoule



Oil

Norwegian oil production constitutes about **2% of global demand** for raw oil. Therefore, Norway can be considered as a relatively small and replaceable player in the global oil market. Close to all Norwegian oil production is exported.

Natural gas

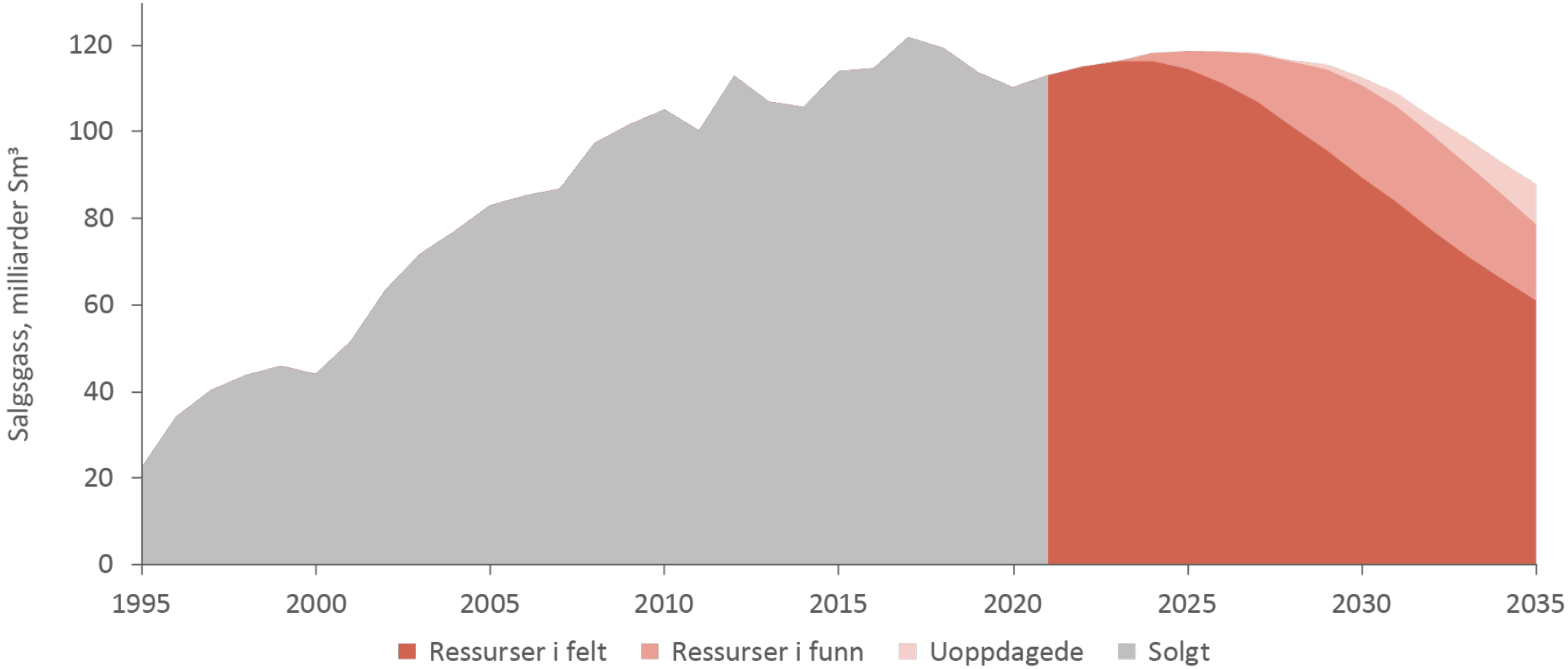
In the past years, Norwegian natural gas export has covered between **25-30% of EU27+UK** gas consumption. This share is likely to increase going forward. Norway is the third largest natural gas exporter after Russia and Qatar.

Power

In 2022, Norway produced 144 TWh and had a **net export of about 12 TWh**, constituting about 8% of total generation. This is very small volumes from a European perspective. Norway exports most power to Denmark, Sweden and Germany.

* Power is converted from TWh to EJ using a conversion factor of TWh = 0.0036 EJ.
Source: Rystad Energy research and analysis; Rystad Energy UCube; Norsk Petroleum; Statnett

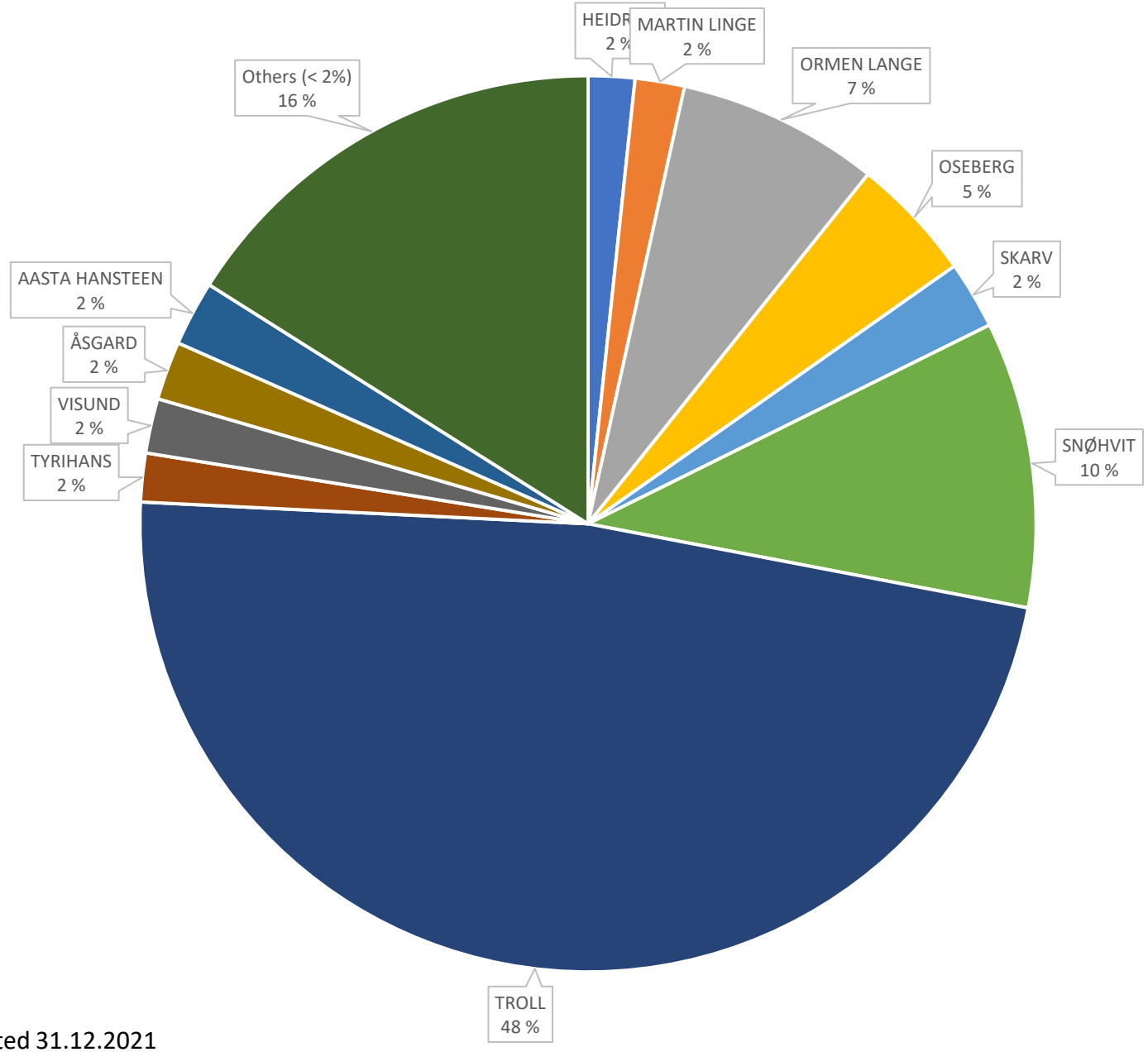
Expected volume of sales gas from Norwegian fields, 1995-2035



Source: Norsk Petroleum

Gjenværende gass NCS

[av totalt 1433 mrd Sm3]



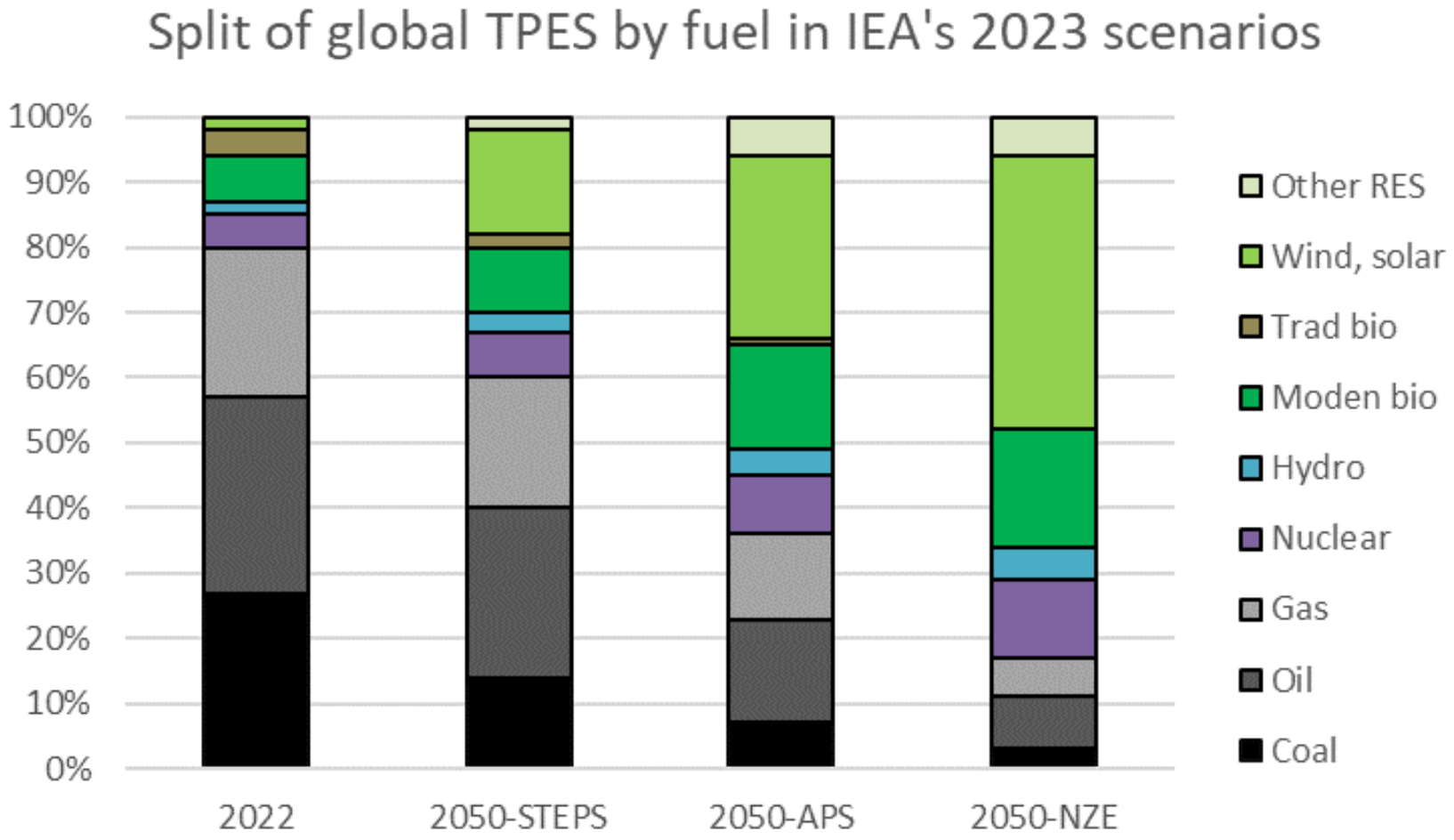
Source NPD – Resource Class 1-3 -Updated 31.12.2021

IEA – World Energy Outlook 2023

STEPS: Stated Policies Scenario

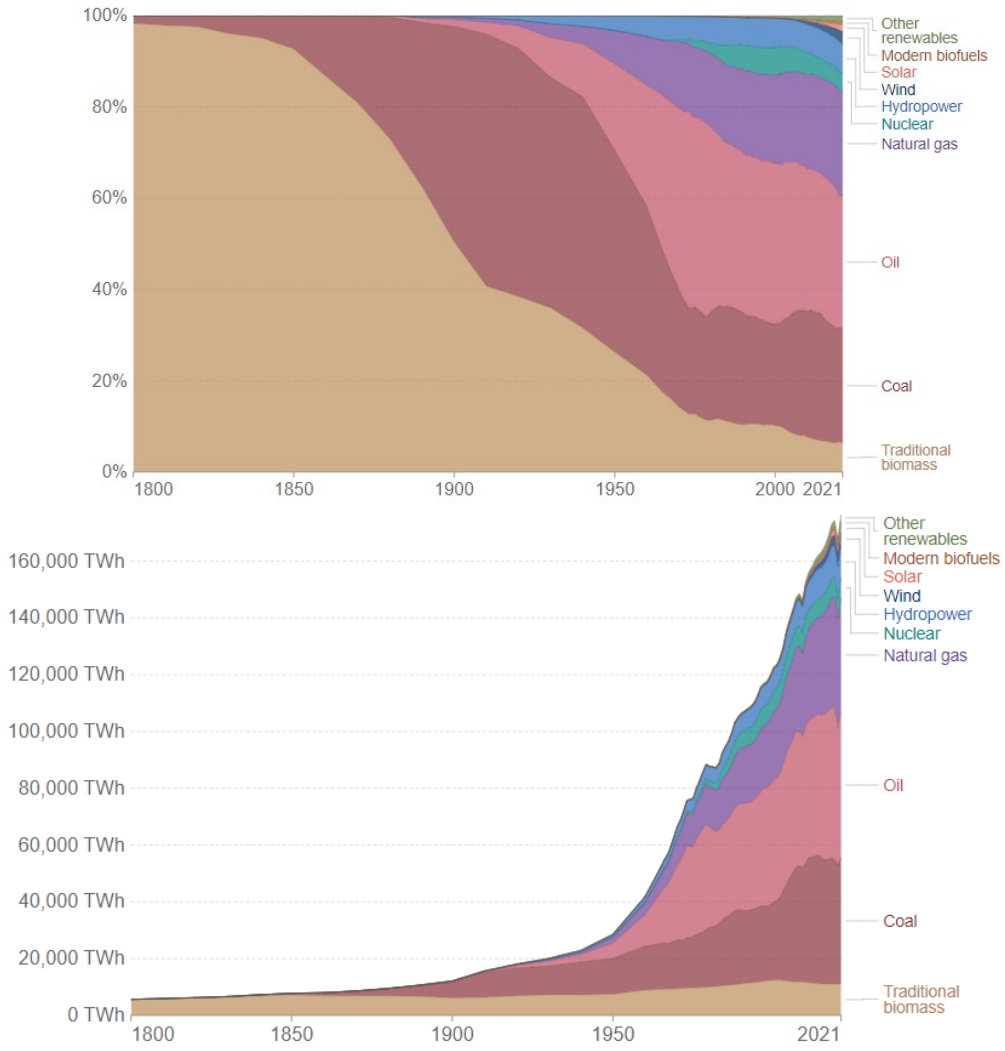
APS: Announced Policies Scenario

NZE: Net Zero Emissions Scenario



TPES: Total Primary Energy Supply

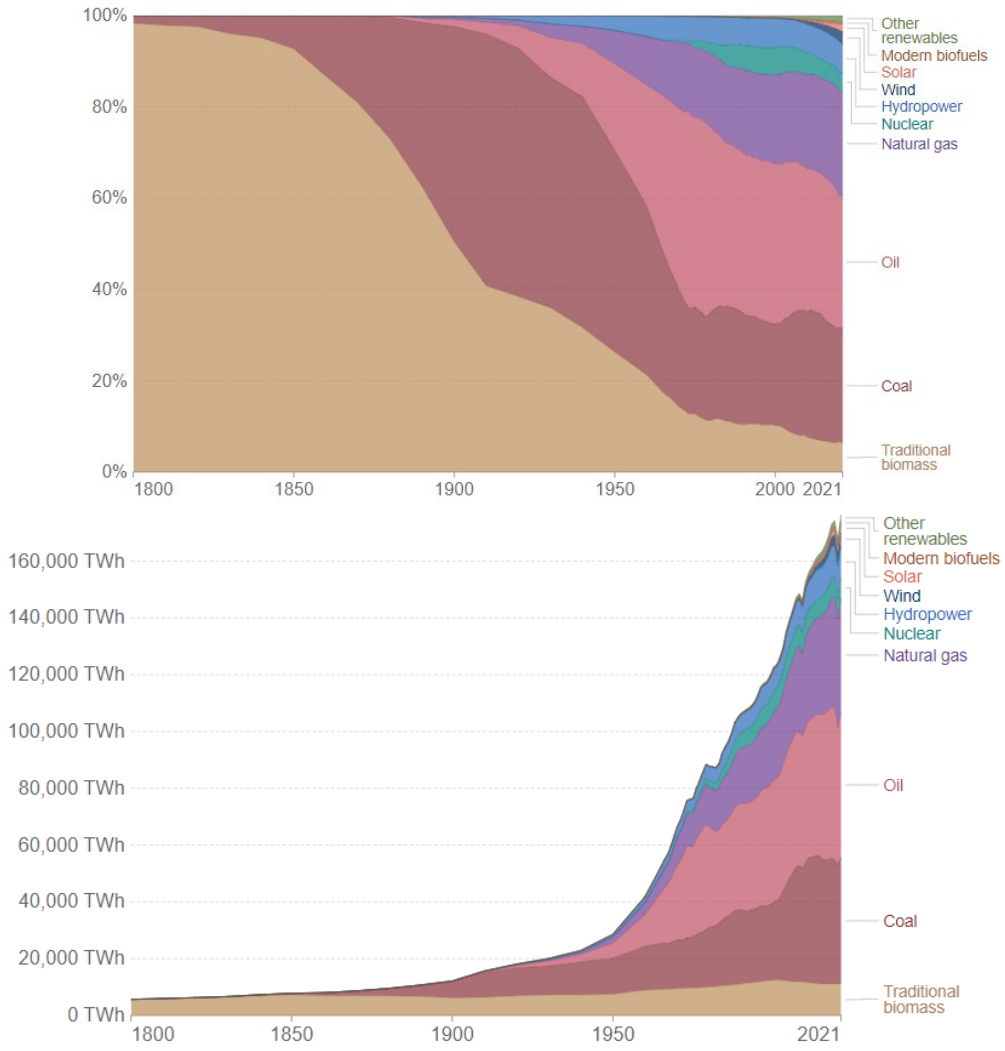
Have we been through a fundamental energy transition in the past?



- Shifts in primary energy supply has taken decades in the past

- …but GROWTH in energy demand more than outweigh shift between supply sources

Energy history is about adding – not transforming



- Shifts in primary energy supply has taken decades in the past

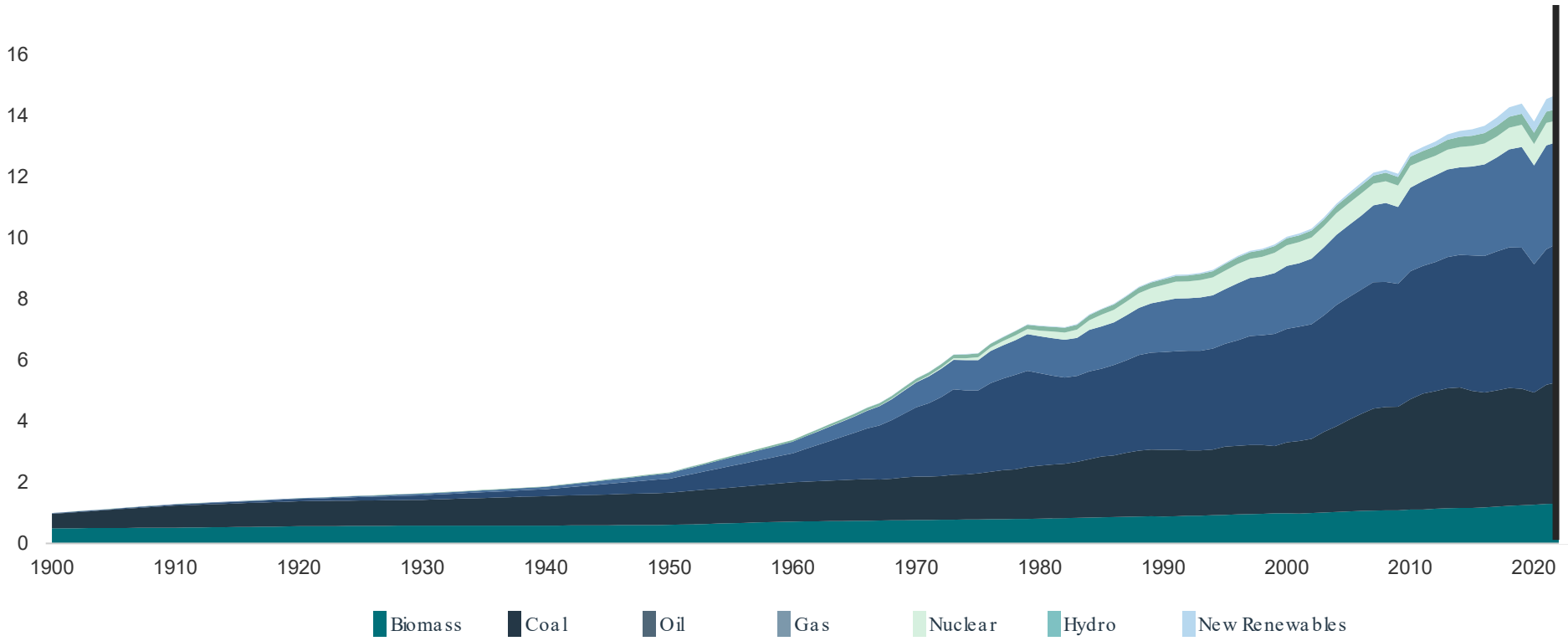
- …but GROWTH in energy demand more than outweigh shift between supply sources

Energihistorien har så langt handlet om vekst mer enn omstilling

Vi bruker i dag mer av nesten alle energikilder enn på noe annet tidspunkt i historien

Total primær energibehov

Gtoe



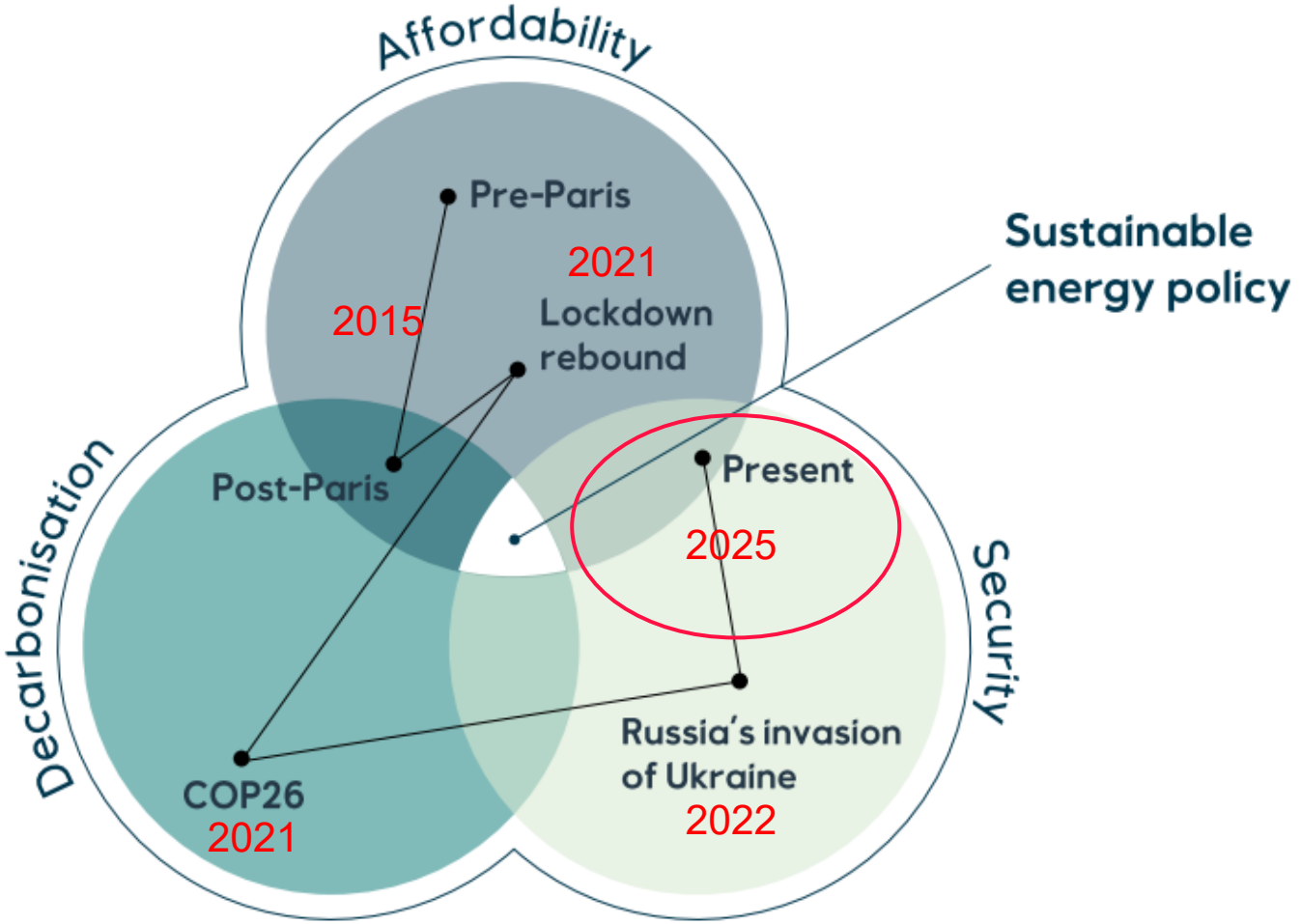
2023, rekordenes år:

- Sol&vind: ~3900 TWh
- Gass: ~4100 bcm
- Olje: ~102.5 mbd
- Kull: ~8.5 billion ton
- Biomasse: ~1.4 Gtoe

Source: Our World in Data, IEA

The energy trilemma is dynamic and shifting

The global context is changing with an increasing emphasis on security, driving a clear shift from "decarbonisation at any cost" to competitive decarbonisation that contributes to economic and geopolitical security



Source: Energy Perspectives 2022

Well positioned for value creation against market backdrop

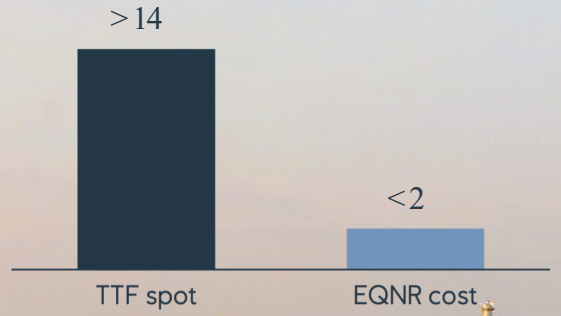
GROWTH IN ENERGY DEMAND

>10% O&G production growth to 2027

~7 GW[1] renewable energy installed or under development

Largest piped gas exporter to Europe and deepening in US gas market

EU piped gas price[2] vs. cost (USD per MMBtu)



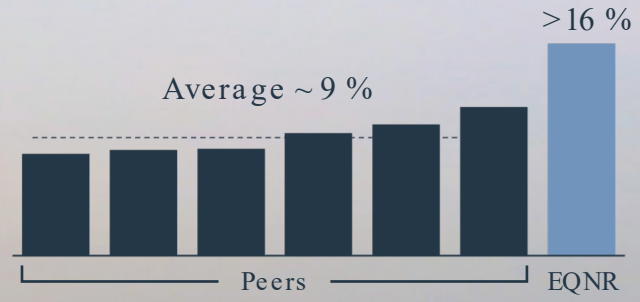
MARKET AND POLITICAL UNCERTAINTY

Robust balance sheet, resilient, low-risk and focused O&G portfolio

Trading and optimisation capabilities

Strong RoACE >15% to 2030

10-year average RoACE[3]



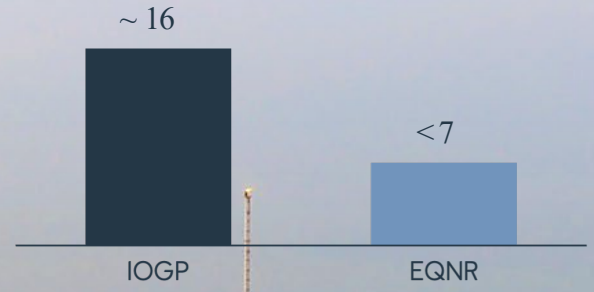
UNEVEN PACE IN ENERGY TRANSITION

Value driven growth in transition, retiring 50% gross capex ambition[4]

>60 mtpa CO_2 storage licences awarded

Carbon efficient O&G production

Upstream CO_2 intensity[5] (kg CO_2 per boe)



1. Includes Equinor ownership share in Ørsted and Scatec, see appendix
2. Average TTF price January 2025 (source: ICIS Heren)
3. See appendix for definition. Peers = TotalEnergies, Shell, bp, Chevron, Exxon Mobil and ConocoPhilips (2014-3Q24)
4. >50% share of gross capex to renewables and low carbon solutions by 2030
5. IOGP Enviromental performance indicators – 2023 data

ENERGY TRANSITION

Building resilient businesses for the future

VALUE DRIVEN & BALANCED APPROACH

Renewable power generation

GW capacity installed or under development EQNR share[1]

- 2.4 GW installed capacity

~7 GW

10-12 GW by 2030

CO_2 transport and storage

Million tonnes per annum (mtpa), capacity installed or under development. EQNR share

2.3 mtpa

- >60 mtpa of storage potential accessed

30-50 mtpa by 2035

Emission reduction

Reduction net scope 1 &2 GHG emissions[2] EQNR operated 100% basis

- Energy efficiency
- Electrification
- Infrastructure consolidation

34%

50% by 2030

Net zero progress

Net carbon intensity reduction

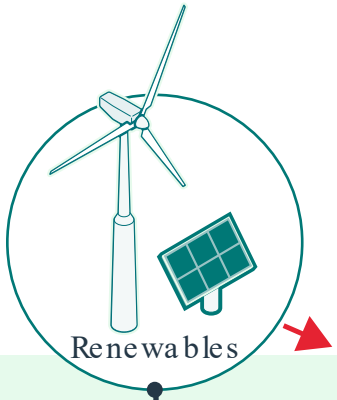
- Baseline year 2019
- 15-20% by 2030
- 30-40% by 2035

2%

Net zero by 2050

See equinor.com for more details around energy transition plan (to be published 1Q25)
1. Includes Equinor ownership share in Ørsted and Scatec, see appendix
2. Ambition to reduce emissions from our own operations by net 50% by 2030. 90% of this ambition will be realised by absolute reductions

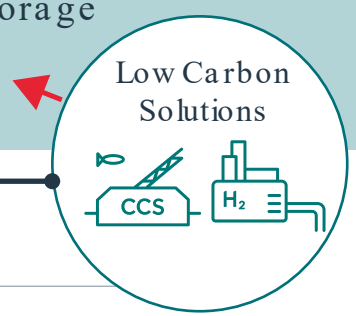
Decarbonizing energy systems



Easy ← Complexity to decarbonize → Hard

	Easy		Complexity to decarbonize		Hard
Transport	Light Vehicle Battery		Shipping Hydrogen		Air transportation Hydrogen
Power	Daily storage Battery		Medium storage Hydro-Power		Backup for variable power Hydrogen NG + CCS
Industry	Light Industry Power		Heavy Industry NG + CCS Hydrogen		Heavy industry CCS
Heat	Heat Pumps Power		Heating Hydrogen		Long-term storage Hydrogen

Multiple technologies to address the challenge



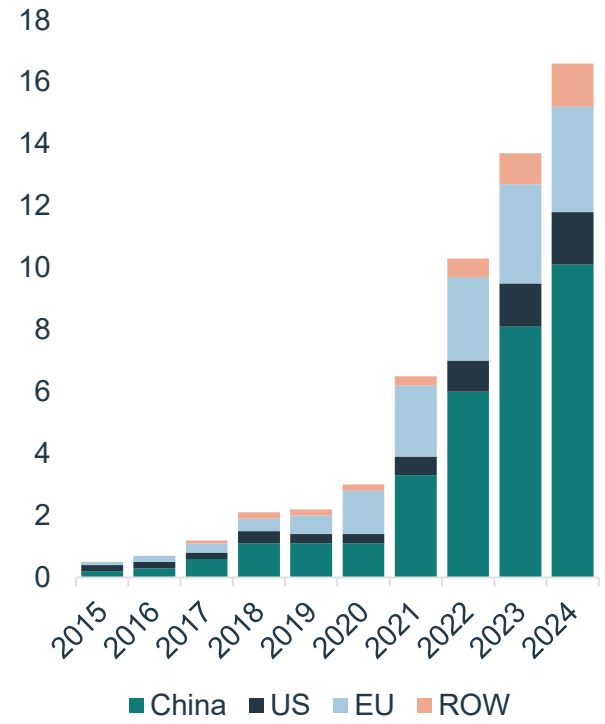
Shift in the light vehicle sector

Close to half of global oil demand is within the road transport sector and at risk of electrification

Sales

EV Sales

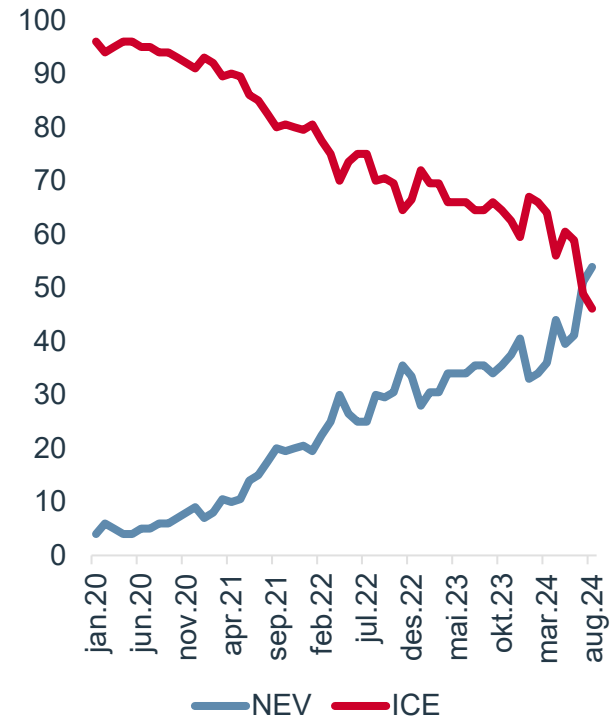
Million vehicles



Chinese market share

Share of EV sales in China

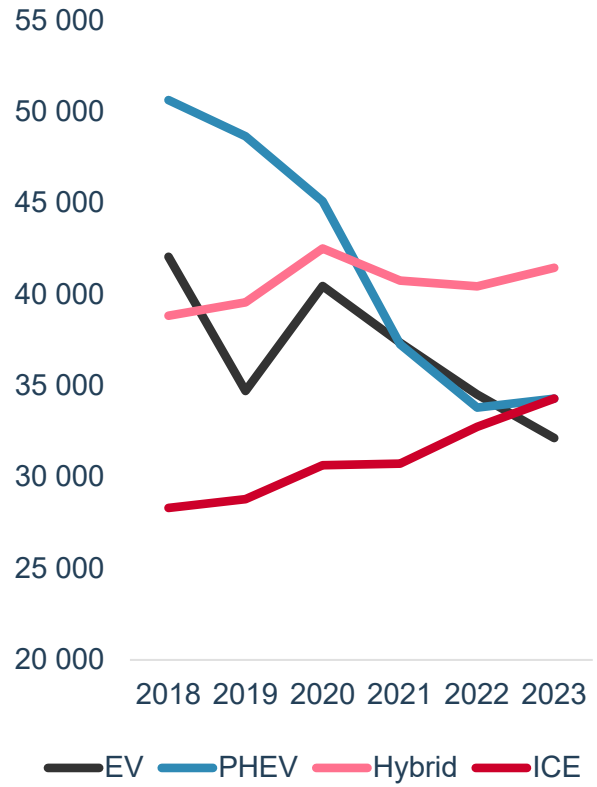
%



Prices

Chinese average vehicle price

$



Sources: IEA, Carbon Brief, BNEF Electric Vehicle Outlook 2024

Did you know?

Doggerbank v Johan Sverdrup

Utilised energy for transport

36 %

Energy content

12 %

Doggerbank v Hydropower Norway

Yearly

12 %

Doggerbank

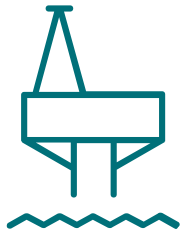
Installed capacity	**3.6** GW
Yearly energy production	**17** TWh/y
Lifetime of 30 years	**510** TWh

Capacity factor 0.54

3x

Utilized for transport

Wind-to-wheel	**75** % efficiency
Well-to-wheel	**25** % efficiency



Johan Sverdrup

Reserves	**2700** mboe
Energy content in oil	**4285** TWh

1 mboe = 1.587 TWh

NORSK SOKKELS FREMTID

Norsk sokkels vei mot en bred energiprovins

Stabil **energiproduksjon** med **50 %** lavere **utslipp**

SoDir høy scenario

30 GW myndighetenes ambisjoner

Offshore vind ambisjon for 2040

2 milliarder tonn CO_2 lagerkapasitet tildelt

Per 2025

16 milliarder € i differanse kontrakter

Tyske lisensrunder

Opprettholde verdiskapingen fra olje og gass

Industrialisere havvind

Kommersialisere transport og lagring av CO_2

Oppskalere hydrogenproduksjon

Netto null innen 2050

CARBON CAPTURE AND STORAGE

Firm ambition and steady progress

- 0.5 MTPA installed through Northern Lights
- 1.8 MTPA under development in Northern Endurance Partnership

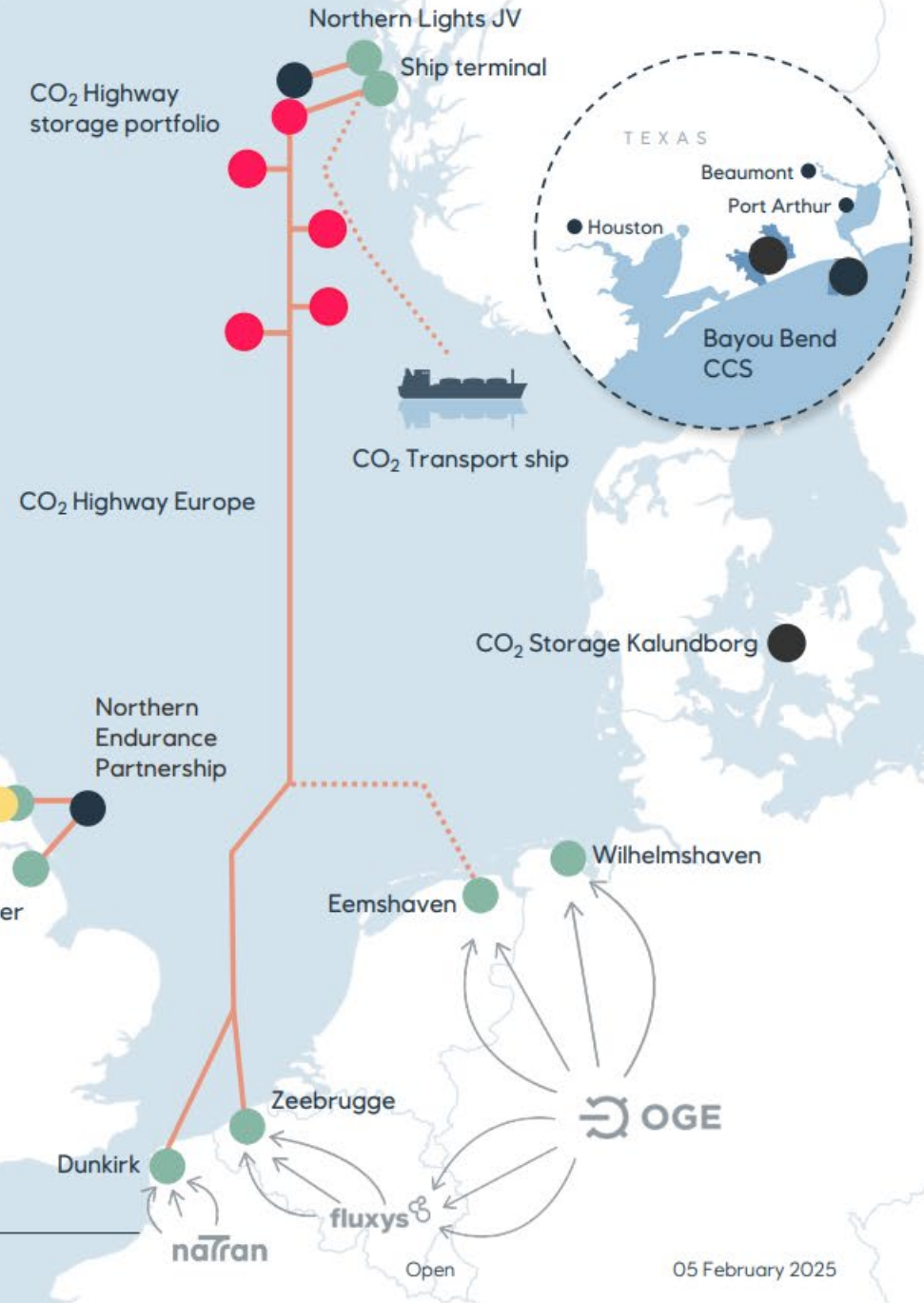
30-50

MILLION TONNES/ANNUM

CO_2 transport and storage capacity by 2035

Portfolio, Equinor share

Unrisked, CO_2 storage in MTPA



Northern Lights

World's first third-party CO_2 storage

1.5 MTPA

CO_2 volumes phase 1

100% share

5 MTPA

CO_2 volumes including phase 2

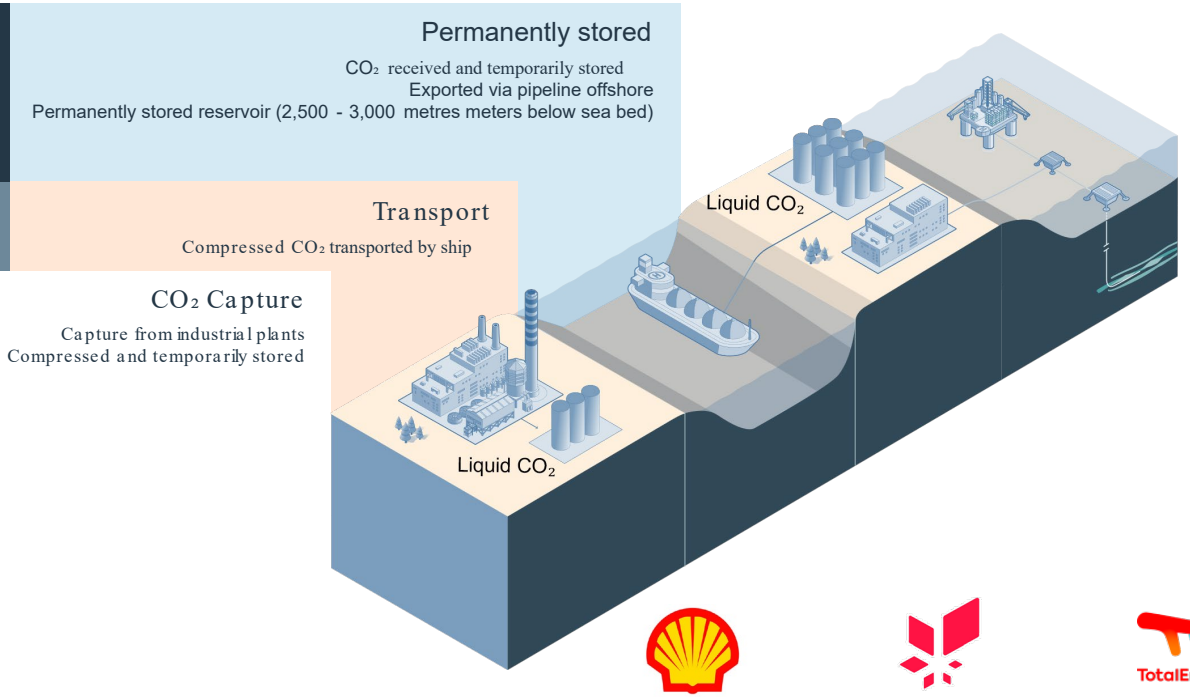
100% share

2024

Phase 1 – ready to receive CO2

~2028

Potential start-up, phase 2



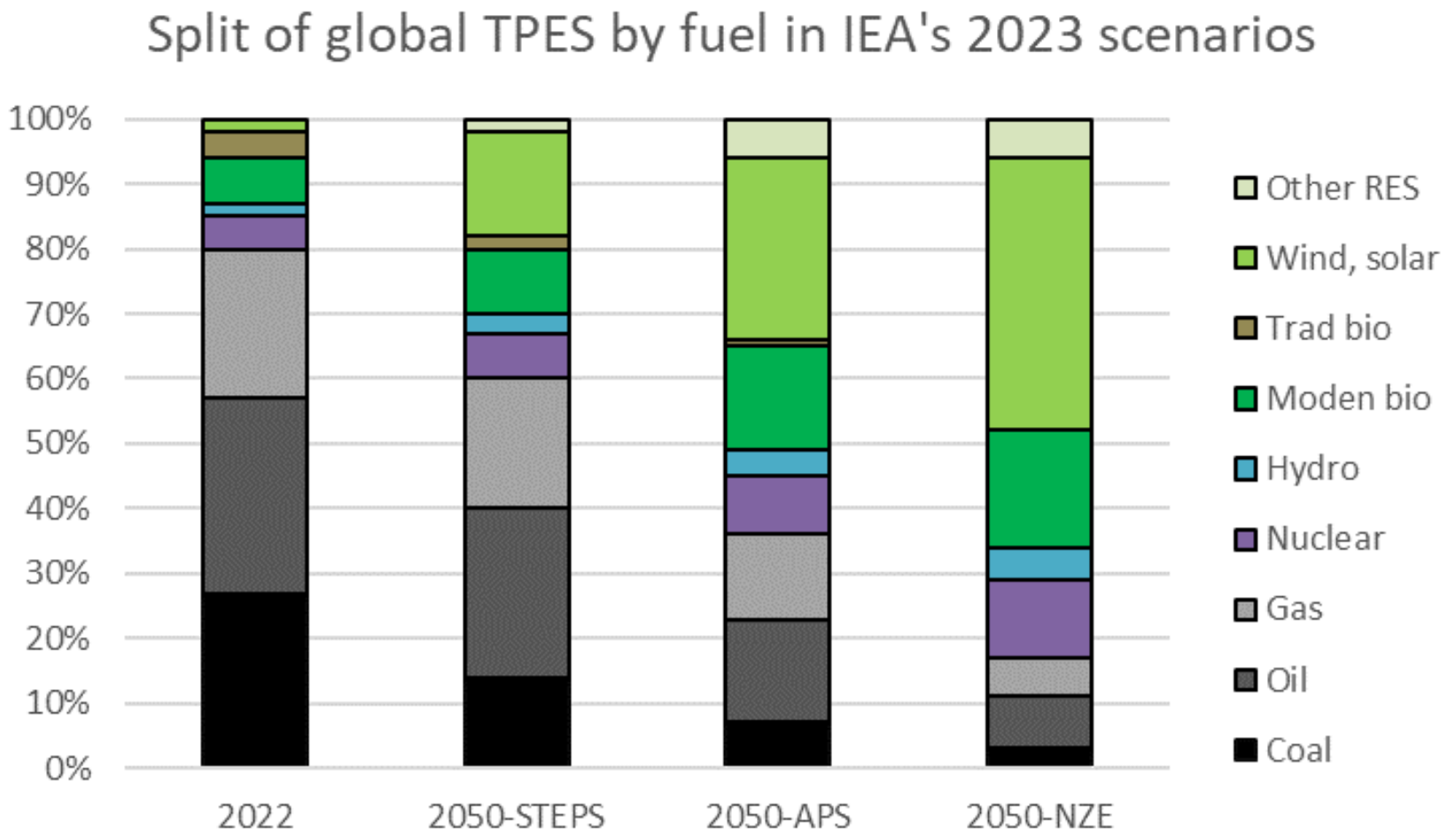
- Large scale CO_2 transportation and storage on NCS
- Funding from Norwegian government – part of Longship project
- Joint venture with Equinor, TotalEnergies and Shell
- Developing a new industry from scratch
- Proven technology - new value chains
- Commercial CO2 transport and storage contracts with Yara, Ørsted and Stockholm Exergi
- EU funding available to support development of CCS industry

IEA – World Energy Outlook 2023

STEPS: Stated Policies Scenario

APS: Announced Policies Scenario

NZE: Net Zero Emissions Scenario



TPES: Total Primary Energy Supply

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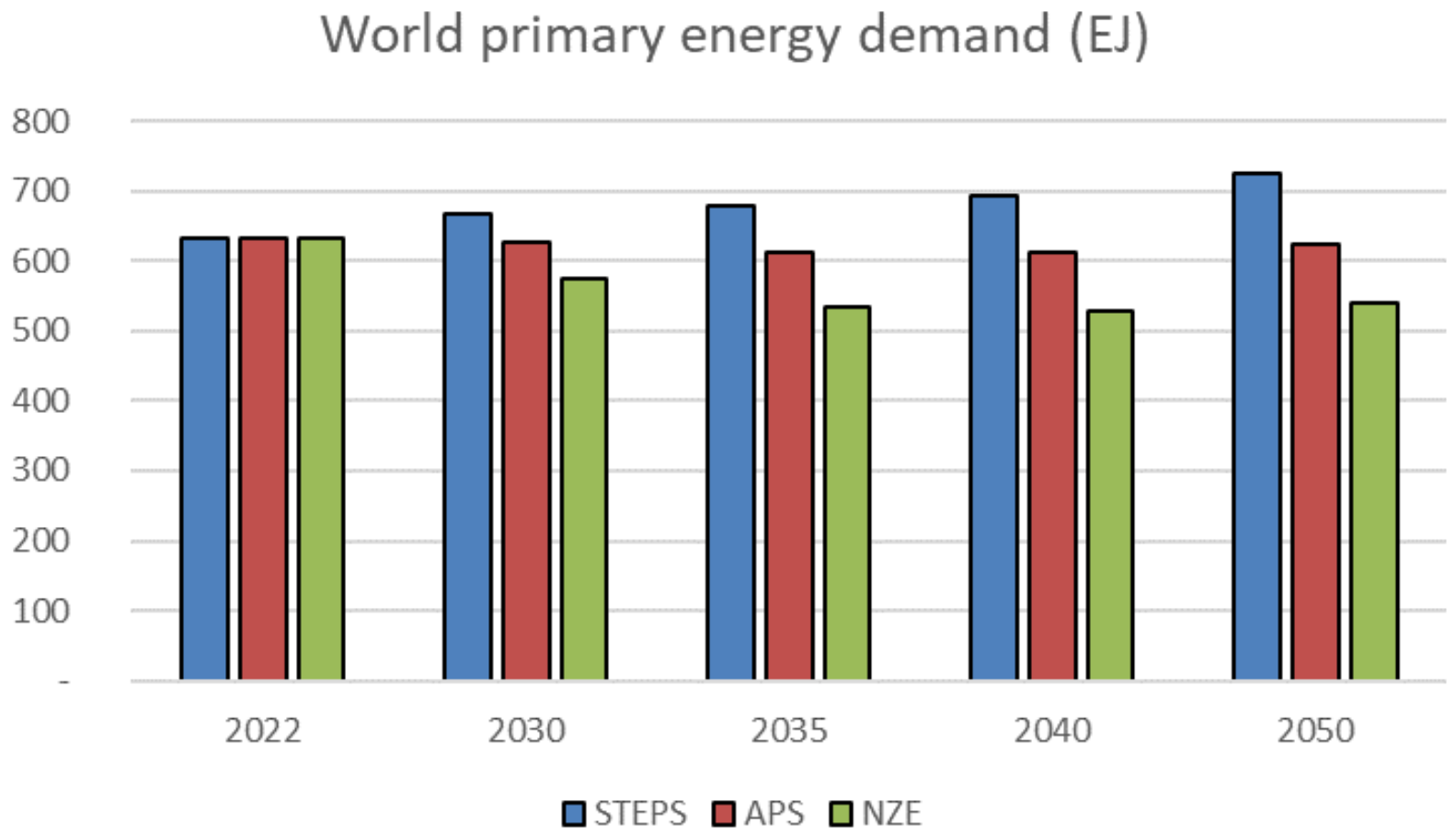

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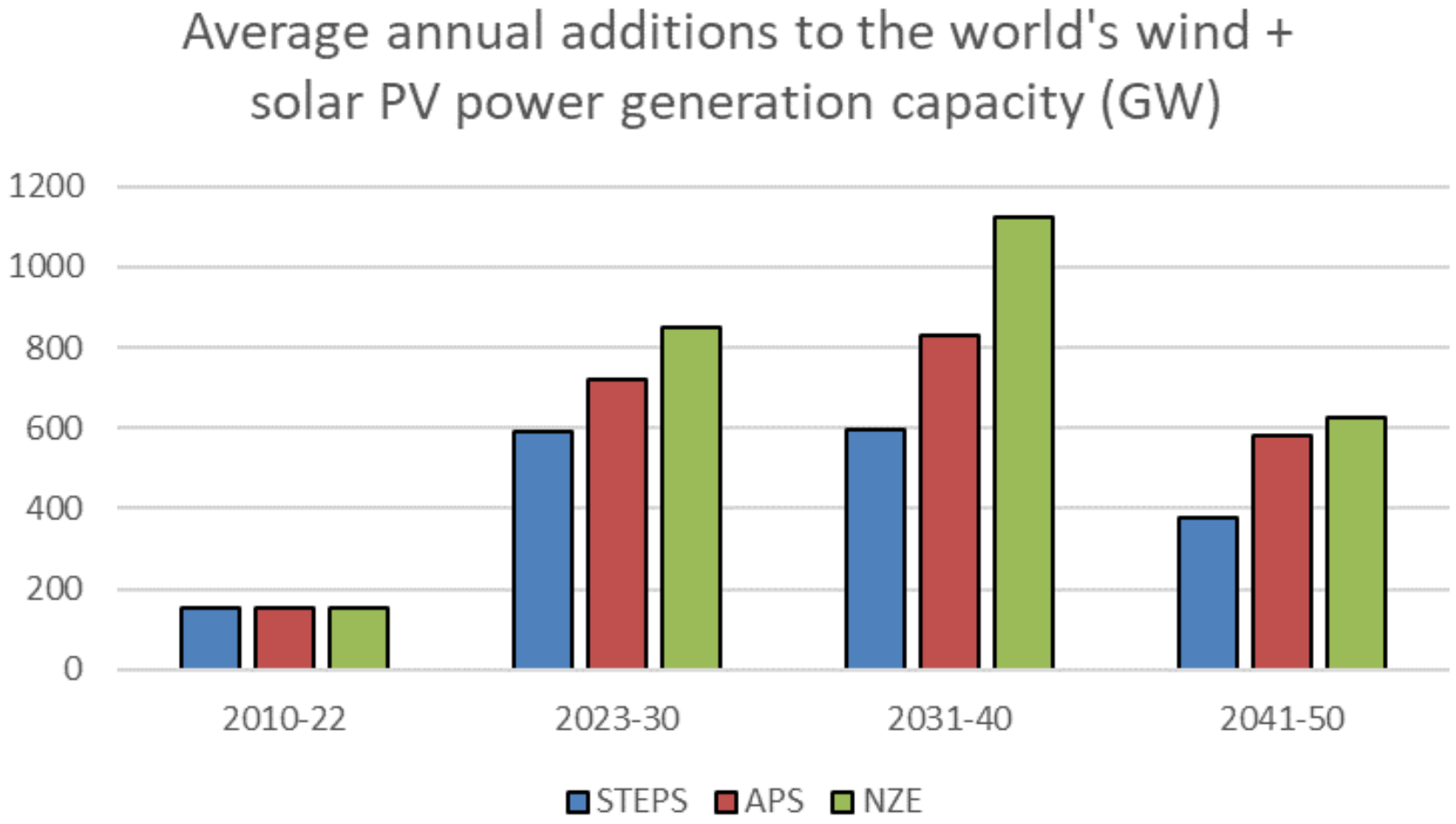

Solar PV capacity additions in STEPS

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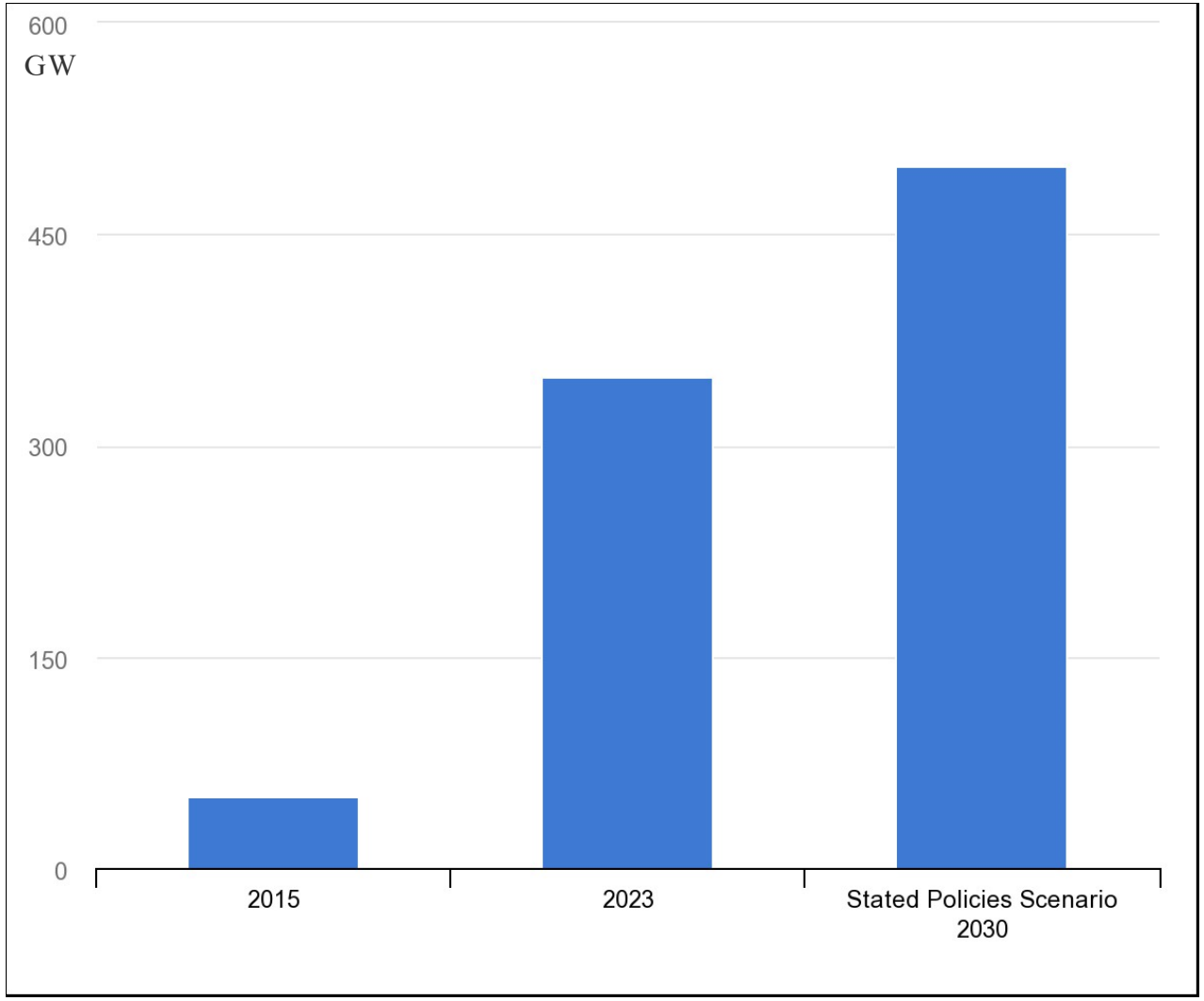


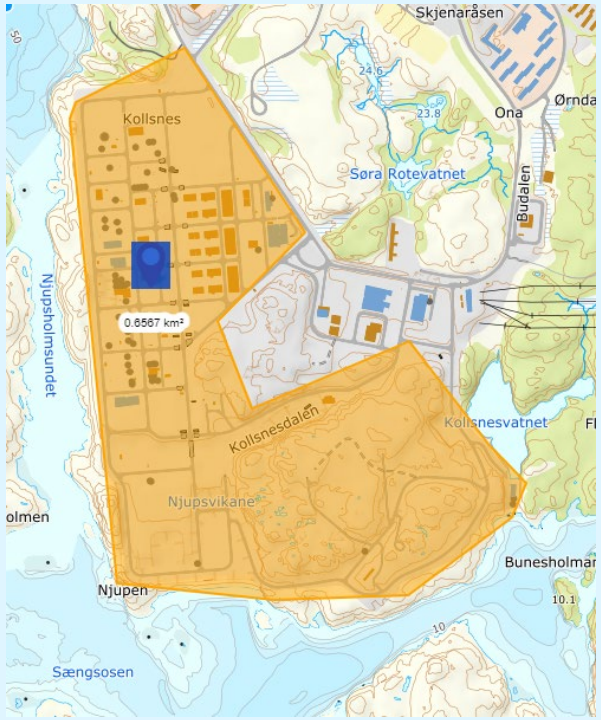
Growth in renewables requires access to area

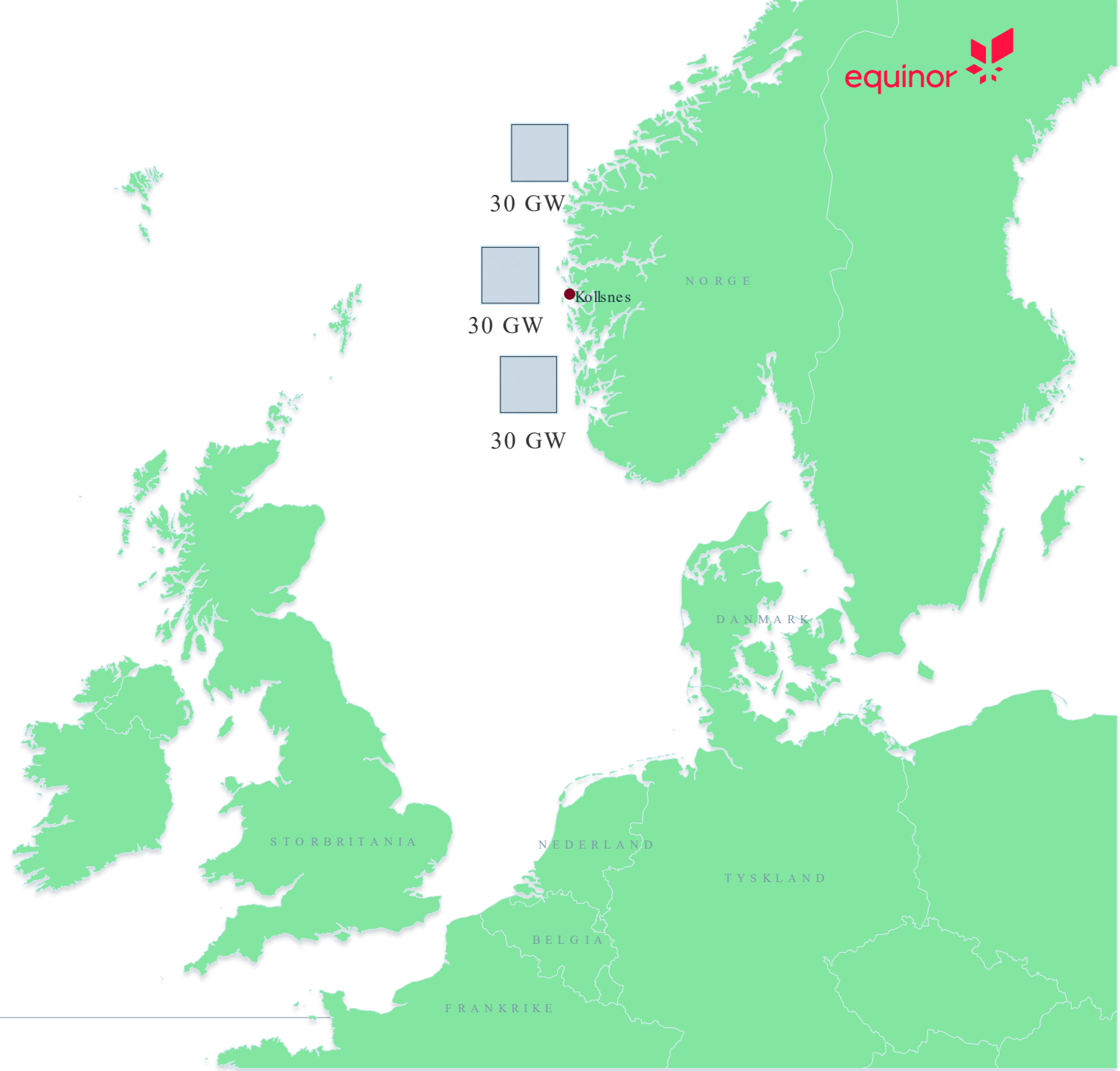
Kollsnes processes gas with a primary energy content of approximately 400 TWh/year

- …at an area of 0,66 km^2

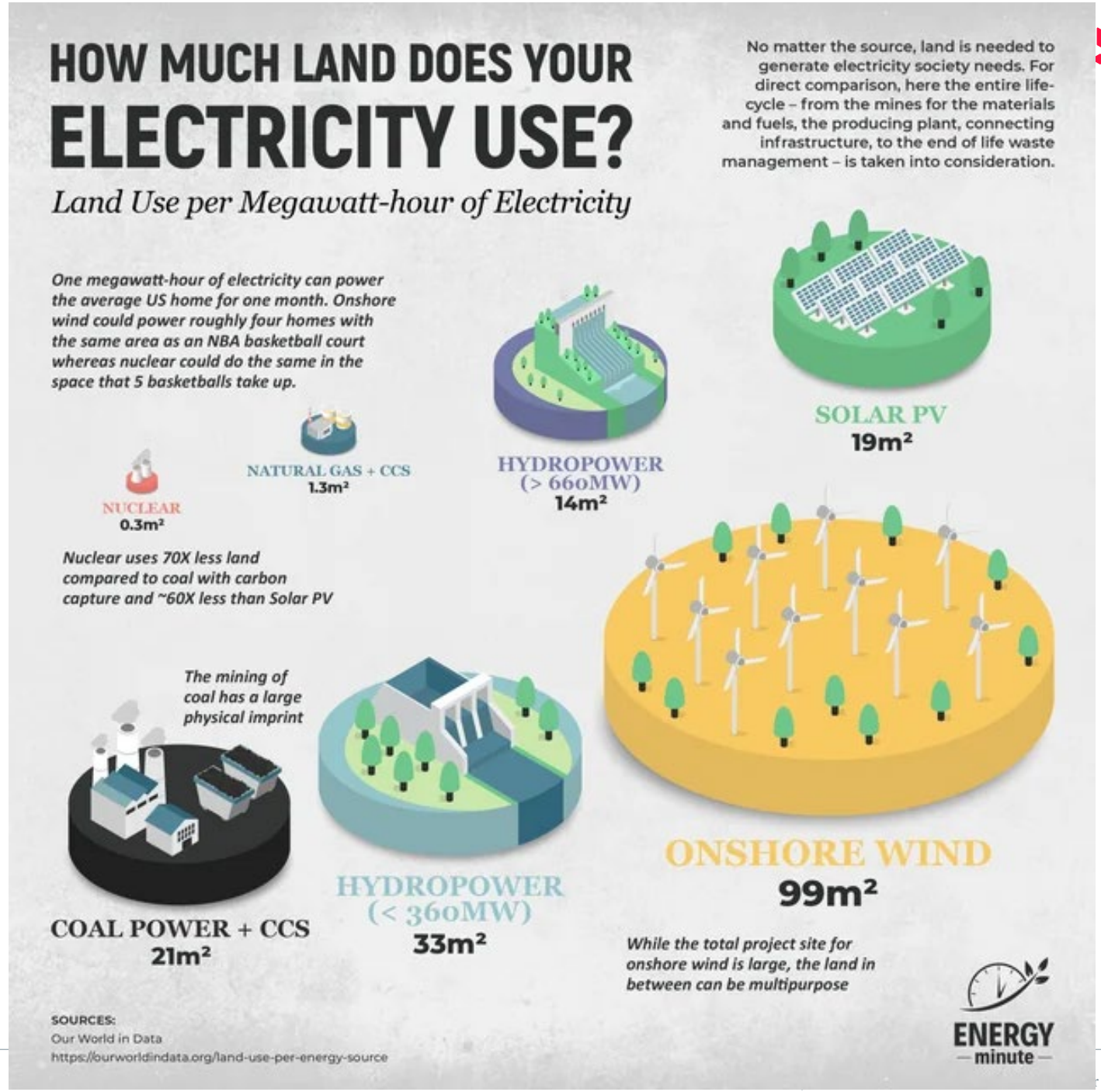
400 TWh/year corresponds to 90 GW installed capacity offshore wind

- …needing an area of 24 000 km^2

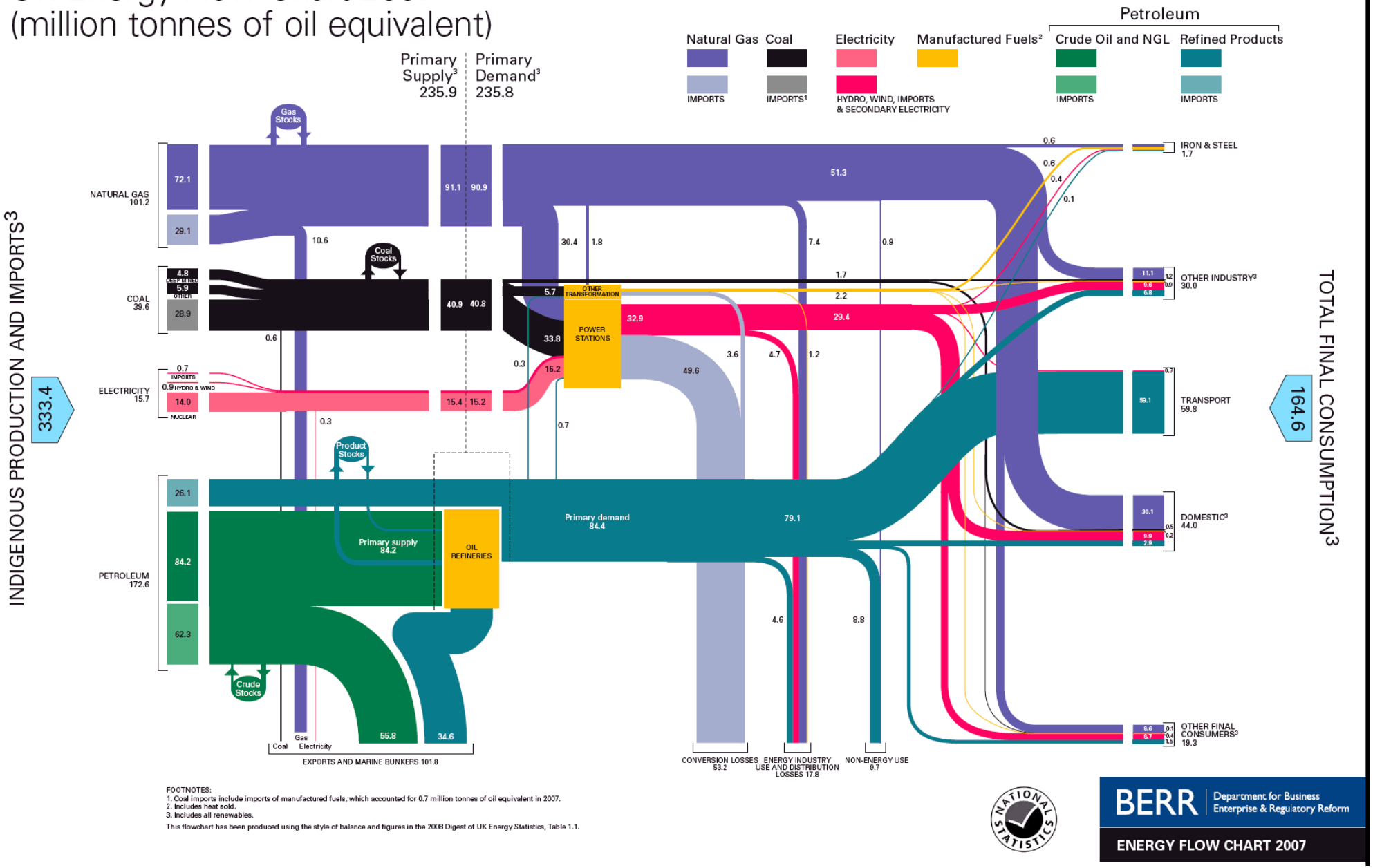




[How does the land use of different electricity sources compare? - Our World in Data]



UK Energy Flow Chart 2007
(million tonnes of oil equivalent)



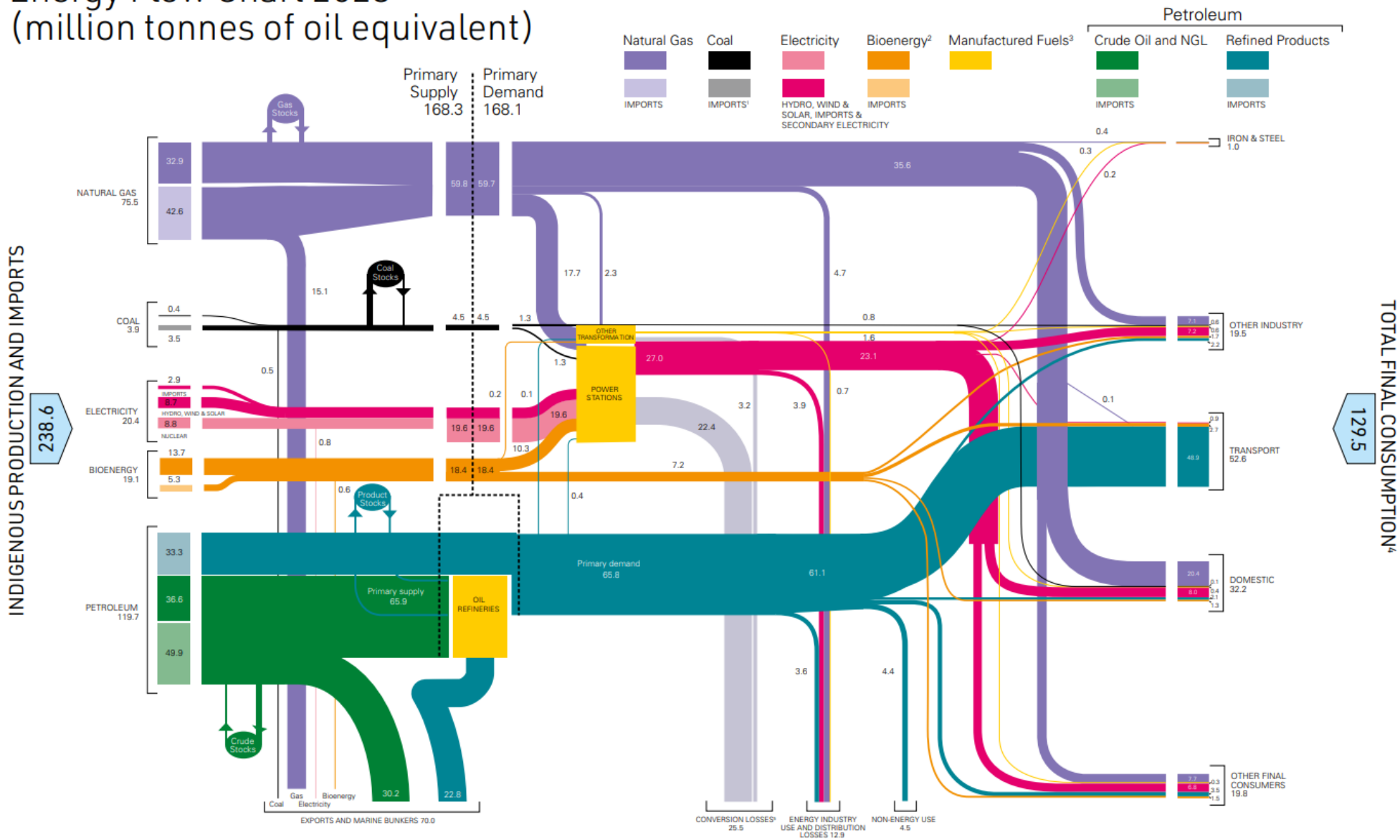
FOOTNOTES:
1. Coal imports include imports of manufactured fuels, which accounted for 0.7 million tonnes of oil equivalent in 2007.
2. Includes heat sold.
3. Includes all renewables.

This flowchart has been produced using the style of balance and figures in the 2008 Digest of UK Energy Statistics, Table 1.1.

BERR Department for Business Enterprise & Regulatory Reform

ENERGY FLOW CHART 2007

Energy Flow Chart 2023
(million tonnes of oil equivalent)



FOOTNOTES:
1. Coal imports, exports and power stations include manufactured fuels.
2. Bioenergy is renewable energy made from material of recent biological origin derived from plant or animal matter.
3. Includes heat sold.
4. Includes non-energy use.
5. Conversion losses from power stations apply to thermal sources (coal, oil, gas, nuclear and bioenergy) only; there are no such losses from non-thermal sources (hydro, wind and solar).

This flowchart has been produced using the style of balance and figures in the 2024 Digest of UK Energy Statistics, Table 1.1. (gross calorific values basis)

Department for Energy Security & Net Zero

Accredited Official Statistics

Open

“We build
too many walls
and not enough
bridges.”

- Attributed to Sir Isaac Newton