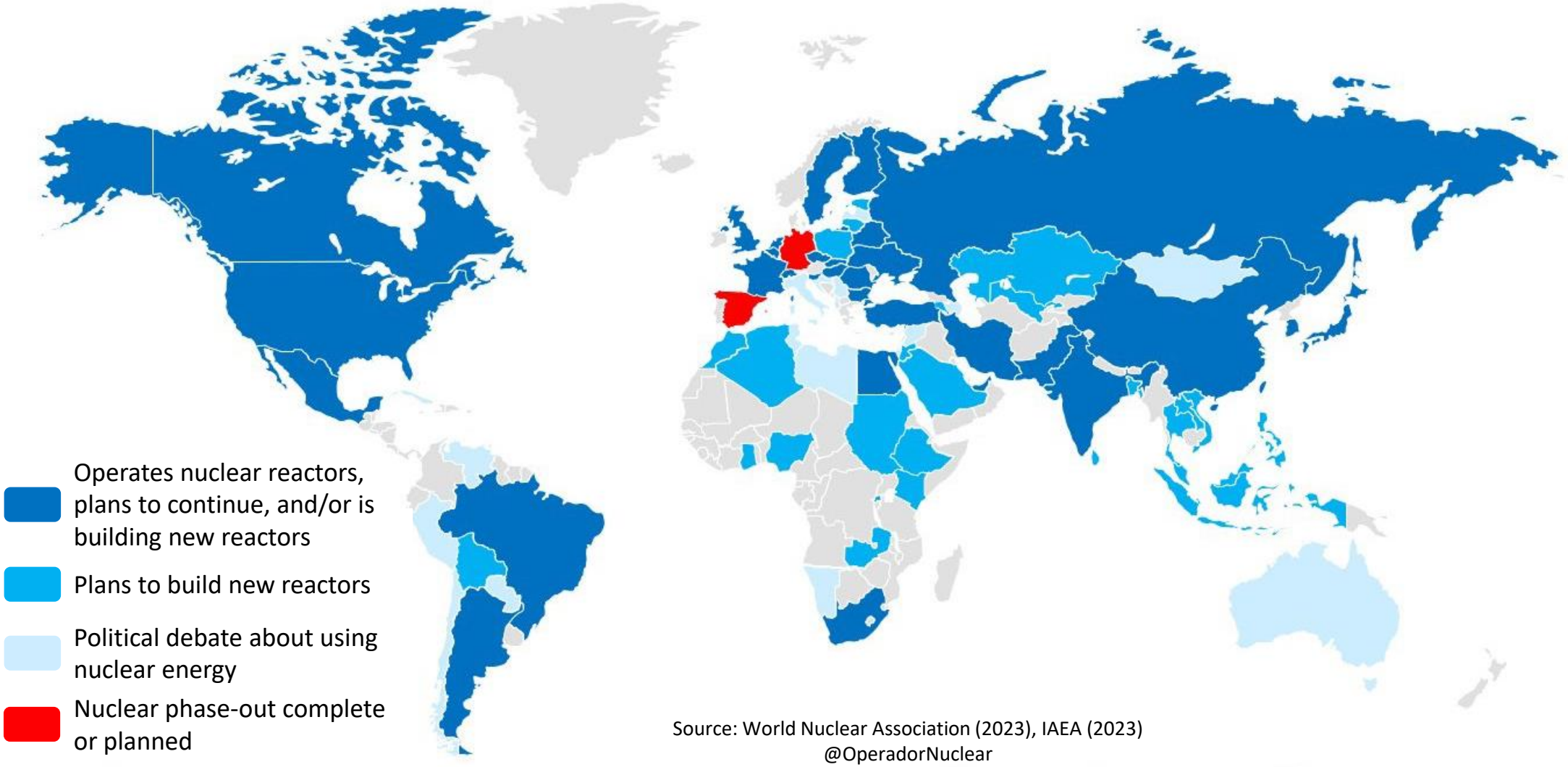
WORLD NUCLEAR ASSOCIATION

El Papel de la Energía Nuclear in el Contexto Mundial

Abril 2024

Dr Sama Bilbao y Leon
Director General
World Nuclear Association

Nuclear energy is the largest source of carbon-free electricity in OECD countries – 50% in Europe



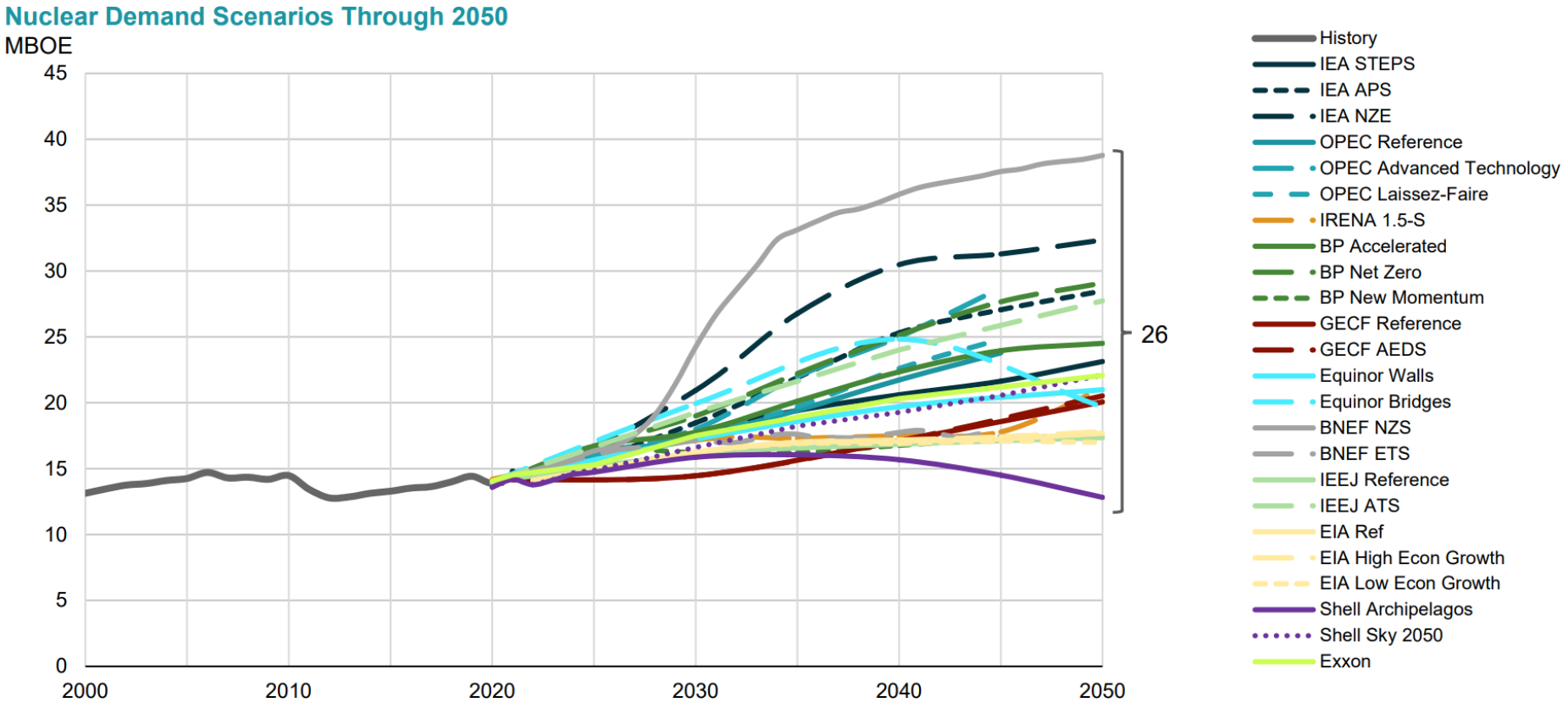
Source: World Nuclear Association (2023), IAEA (2023)
@OperadorNuclear

At COP28 25 Countries committed to tripling global nuclear capacity by 2050

50th Anniversary IEA Ministerial Meeting recognise nuclear as one technology for achieving energy security and decarbonisation – Feb 2024

2024 IAEA Nuclear Energy Summit – Brussels, Belgium – 21 March 2024

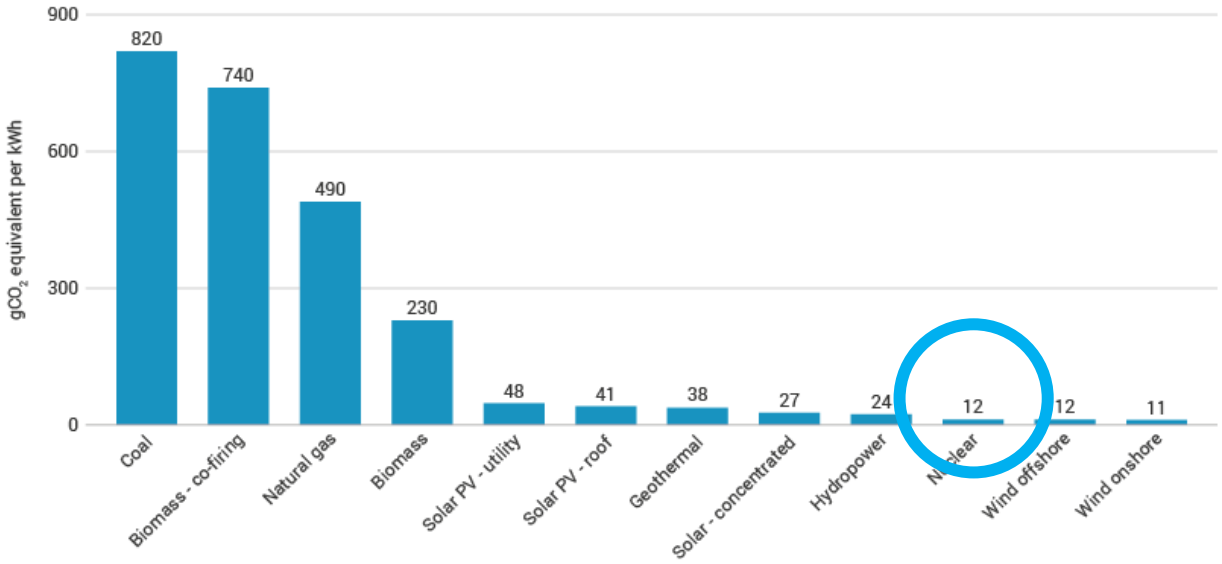
Nuclear demand: More than half of all scenarios show nuclear demand increasing by >50% in 2050 compared to 2022 levels



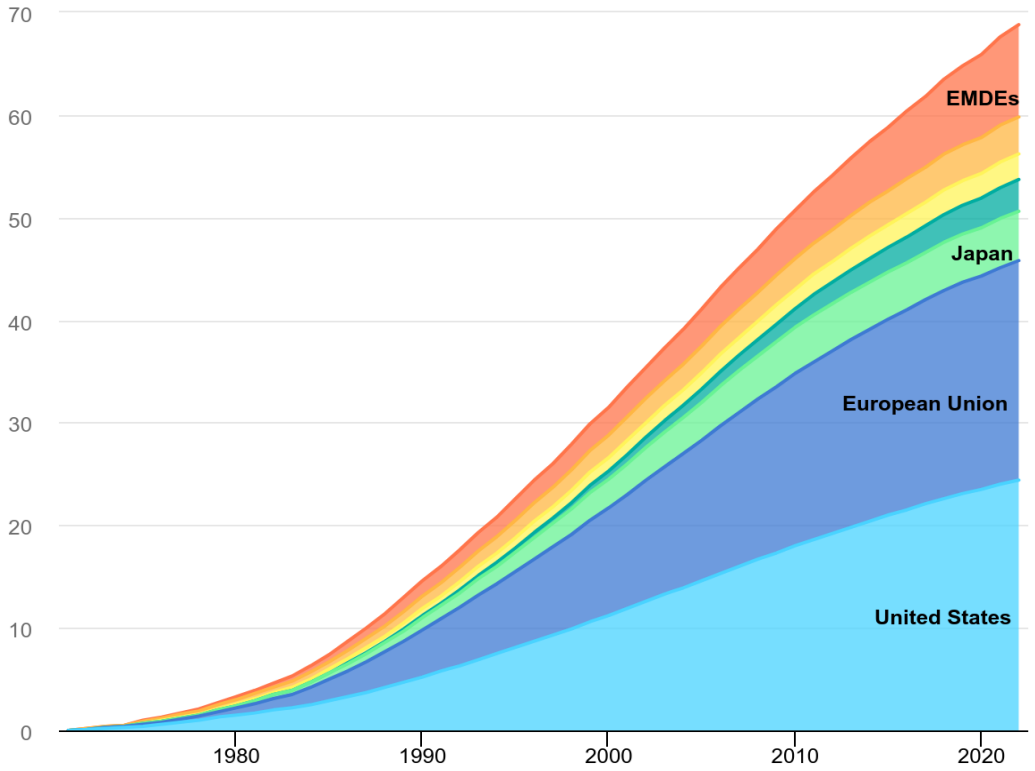
*Some calculations have been made to correct for different primary energy conversion efficiency assumptions.

Source: IEF, IEA WEO 2023, OPEC WOO 2023, IRENA World Energy Transitions Outlook 2023, BP Energy Outlook 2023, GECF 2023 Global Gas Outlook to 2050, Equinor Energy Perspectives 2023, BNEF New Energy Outlook 2024, IEEJ Outlook 2023, EIA IEO 2023, Shell Energy Security Scenarios, Exxon Global Outlook

Nuclear energy has one of the smallest sustainability footprints

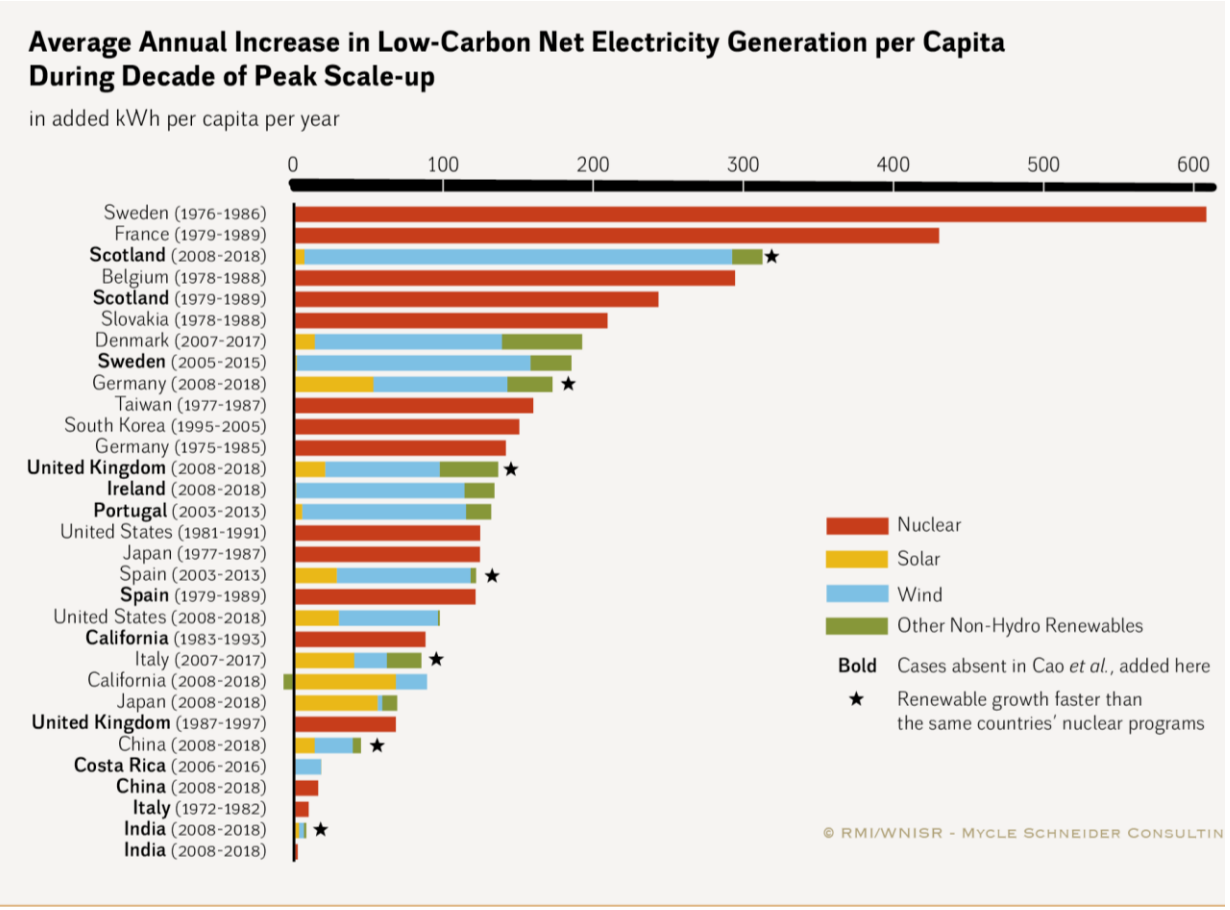


Average life-cycle carbon dioxide-equivalent emissions for different electricity generators (IPCC)

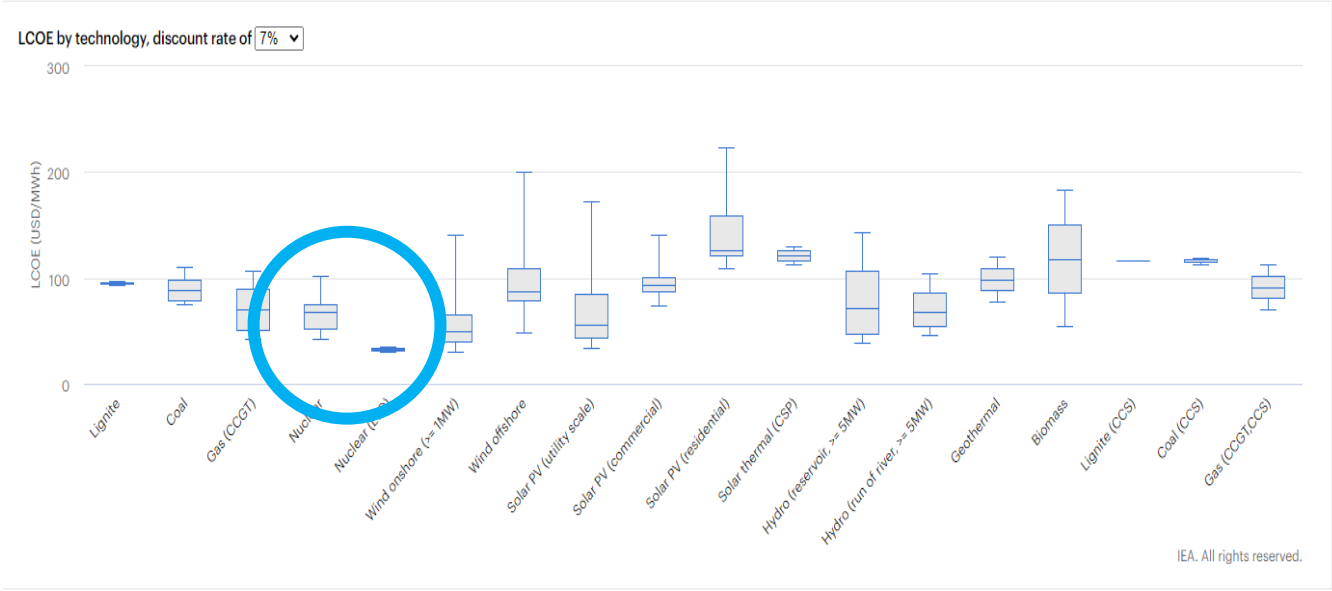


CO2 emissions avoided by nuclear by country or region, 1971-2022 (IEA)

Nuclear energy is a fast & cost-effective way to decarbonize

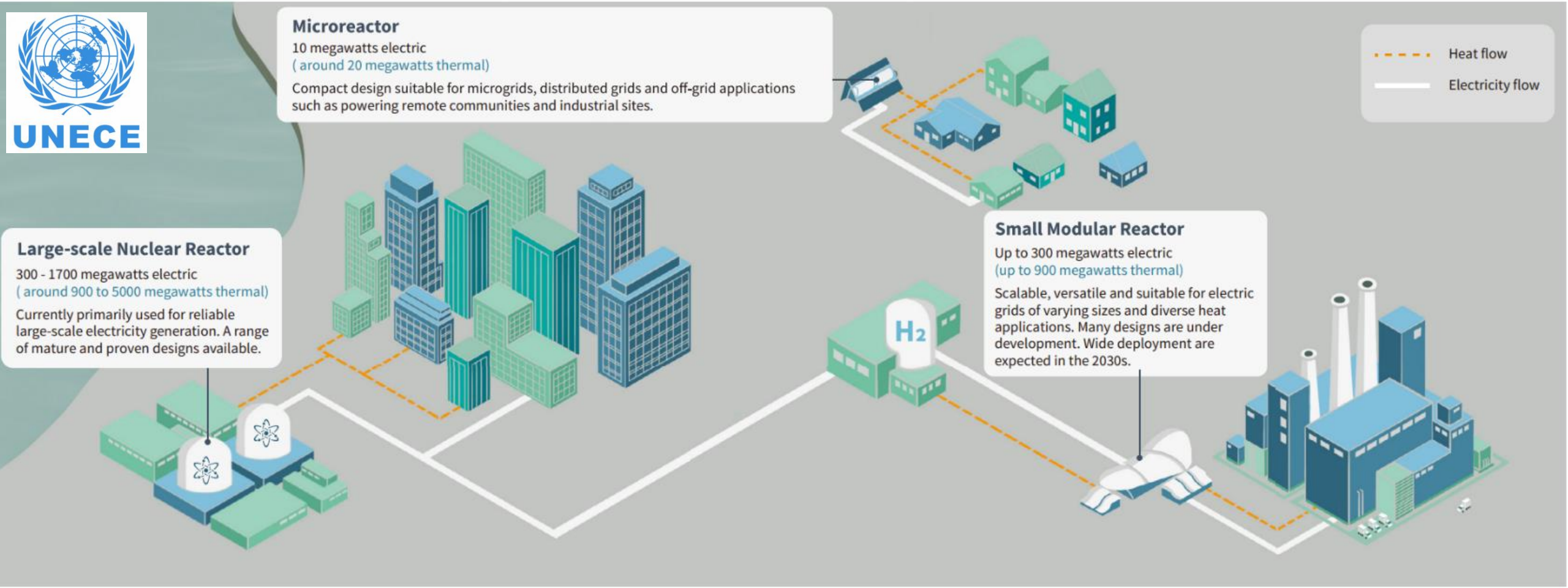


Source: https://www.onebillionton.org/



Source: IEA/NEA 2020 with cost of capital of 7% and CO2 price @ 30 USD/tCO2
https://www.oecd-nea.org/jcms/pl_51110/projected-costs-of-generating-electricity-2020-edition

Nuclear energy could help decarbonize the entire economy



Source: UNECE, 2022 UNECE Carbon Neutrality Toolkit https://carbonneutrality.unece.org/

Dow's Seadrift site selected for X-energy SMR project

11 May 2023

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Dow has selected its UCC Seadrift Operations manufacturing site in Texas for its proposed advanced small modular reactor (SMR) project with X-Energy Reactor Company. The aim is for the project to be completed by the end of the decade.

the Xe-100 plant could look (Image: X-energy/Dow)

Polish industrial firms team up for small reactor deployment

29 June 2021

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Polish chemicals group Synthos and petrochemical firm PKN Orlen have agreed to cooperate on micro modular reactors (MMRs) and small modular reactors (SMRs). Under an agreement announced today, both companies will jointly carry out research and explore the feasibility of deploying such reactors at Orlen's production plants in Poland.

(Image: Pixabay)

Russia connects floating plant to grid

19 December 2019

Share

The floating nuclear power plant Akademik Lomonosov was today connected to the grid, generating electricity for the first time in the remote Chaun-Bilibino network in Pevek, in Russia's Far East. The achievement followed Russian regulator Rostekhnadzor's provision of an operating licence, as well as permission to connect to the northern electricity grid maintained by Chukotenergo JSC. Connecting the plant to Pevek's heat networks will be completed next year.

The Akademik Lomonosov floating nuclear power plant (Image: Rosatom)

Two more Natrium units for coal-to-nuclear switching

05 April 2023

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US utility PacifiCorp has increased its ambition for using Natrium advanced reactors in the 2030s, adding two further units to its plans in addition to the demonstration unit already slated for a retiring coal power plant in Kemmerer, Wyoming.

To be repowered: Kemmerer will be the first PacifiCorp coal plant to switch to nuclear energy (Image: PacifiCorp)

China's demonstration HTR-PM enters commercial operation

06 December 2023

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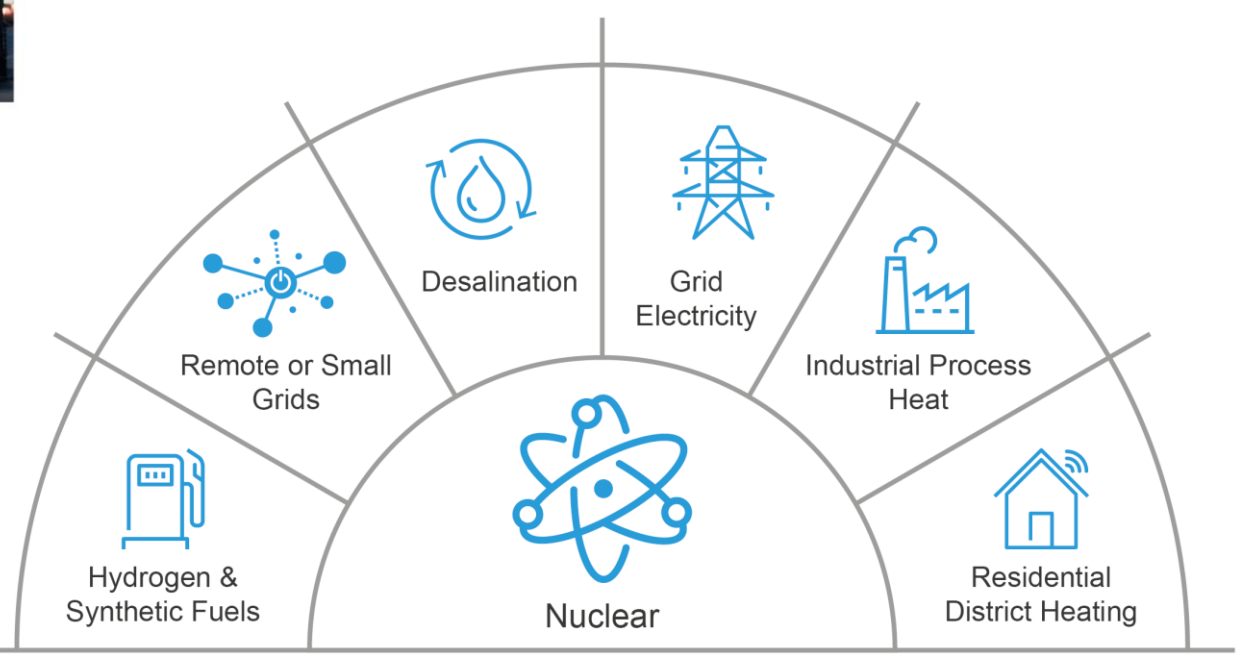
The world's first modular high temperature gas-cooled reactor nuclear power plant has entered commercial operation, China's National Energy Administration has announced.

The nuclear island of HTR-PM Demo (Image: Tsinghua University)



Korean shipbuilder joins maritime SMR project

07 February 2024

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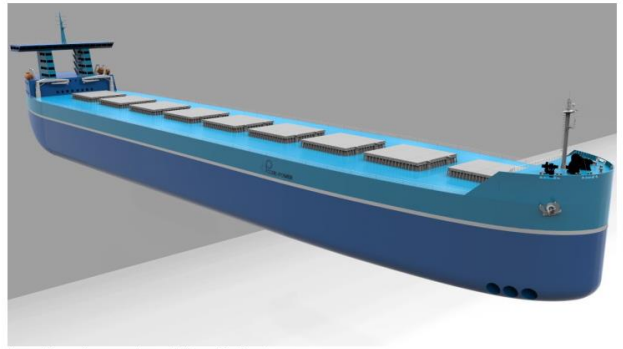
South Korea's HD Korea Shipbuilding & Offshore Engineering (KSOE) plans to develop a small modular reactor (SMR) for use in shipping in cooperation with the UK's Core Power and the USA's Southern Company and TerraPower.



A concept for a nuclear-powered cargo ship (Image: Core Power)

Germany: Unable to meet decarbonization targets at high cost

After scrapping nuclear reactors, Germany to spend billions on new gas power plants

The fossil fuel expansion is needed to ensure long-term energy security, according to industry and the government.

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Germany shut down its final three nuclear reactors last April, despite warnings that it would cause more fossil fuel to be burned | Christof Stache/AFP via Getty Images

Germany approves bringing coal-fired power plants back online this winter

Reuters

October 4, 2023 2:14 PM GMT+1 · Updated 5 months ago

General view of the Uniper's coal-fired power plant Datteln 4 in Datteln, Germany, January 26, 2020. REUTERS/Leon Kuegeler/File Photo

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ELECTRICITY MAPS

Germany

24 Apr 2024, 16:00

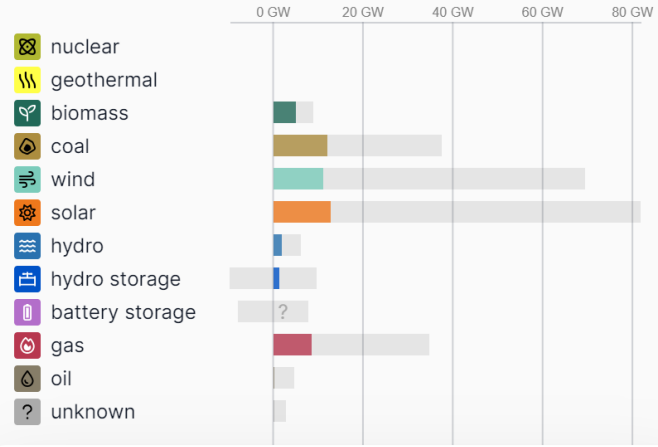
389 g — Carbon Intensity gCO_2eq/kWh

62% — Low-carbon

60% — Renewable

Electricity Consumption | Carbon Emissions

Electricity consumption by source



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https://app.electricitymaps.com/zone/DE

Finland: Achieving climate targets and bringing down costs

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Nuclear power helps bring down electricity prices by 75% in Finland

► Country expects wind to be its largest energy source by 2027

The 1,600-megawatt Olkiluoto 3 nuclear power plant joins two other reactors, each with 890 MW of capacity, at the site in Eurajoki, western Finland. EPA

Finnish EPR enters regular electricity production

17 April 2023

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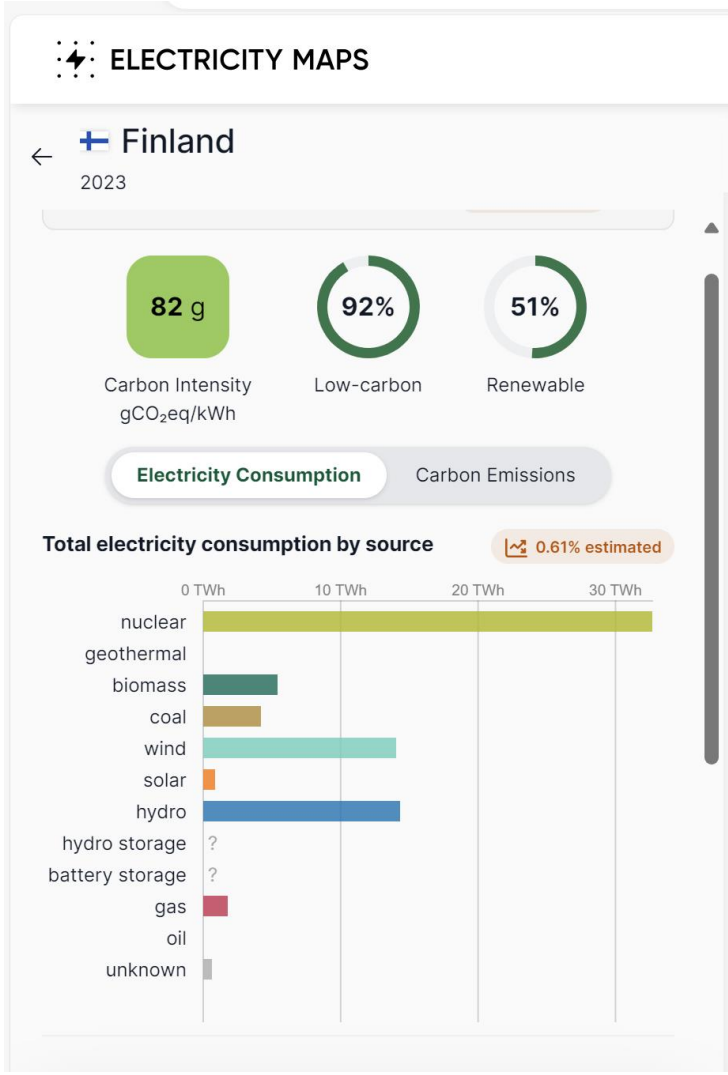
Test production has been completed at the Olkiluoto 3 (OL3) EPR in Finland and the plant has now started regular electricity production, operator Teollisuuden Voima Oyj (TVO) has announced. TVO said the reactor will soon be declared to be in commercial operation.

Olkiluoto 3 (Image: TVO)



https://app.electricitymaps.com/zone/FI

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Poland: Looking to transition away from coal in a cost-effective and equitable manner

Polish government approves first nuclear power plant

12 July 2023

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Poland's Ministry of Climate and Environment has given a decision-in-principle for Polskie Elektrownie Jądrowe (PEJ) to construct a nuclear power plant in Pomerania. It is a formal confirmation that the company's investment project is in line with the public interest and the policies pursued by the state, including energy policy.

(Image: PJE)

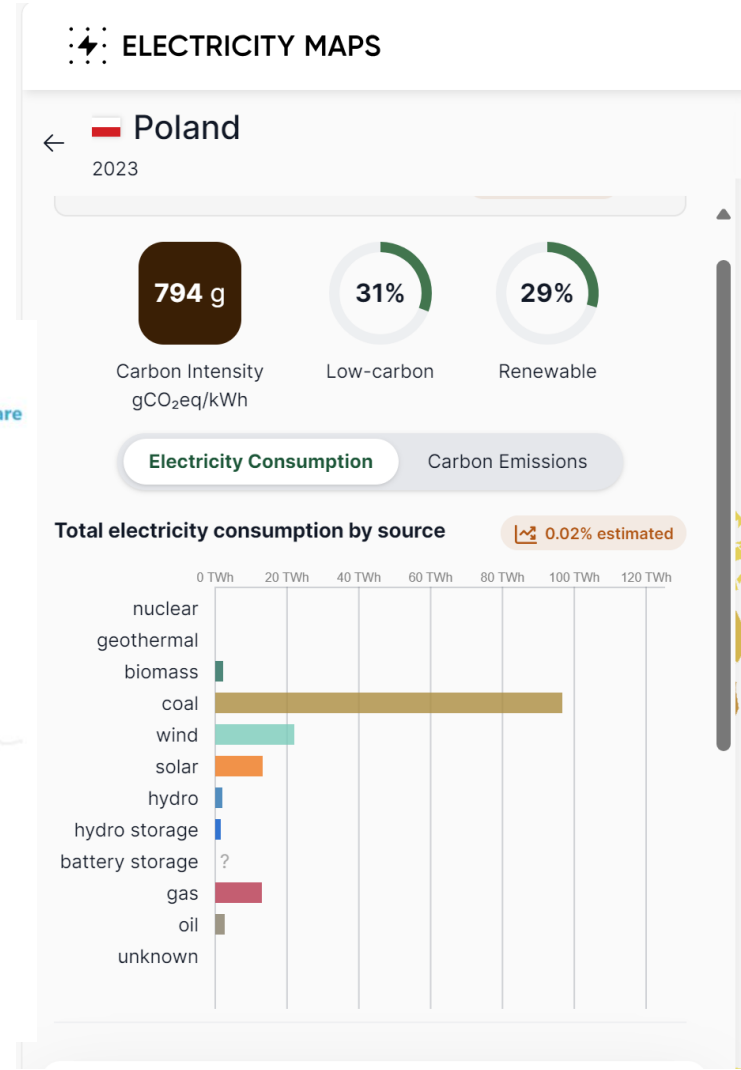
Six SMR power plants approved in Poland

08 December 2023

Share

Poland's Ministry of Climate and Environment has issued decisions-in-principle for the construction of power plants based on GE Hitachi Nuclear Energy's BWRX-300 small modular reactor (SMR) at six locations. A total of 24 BWRX-300 reactors are planned at the sites.

The locations applied for (Image: OSGE)



https://app.electricitymaps.com/zone/PL

Sources: https://netzeronuclear.org/casestudies/polands-first-ever-nuclear-power-project

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