Nuclear Energy as an Engine for Sustainable Prosperity

Dr Sama Bilbao y Leon

CEP26, 25 May 2026

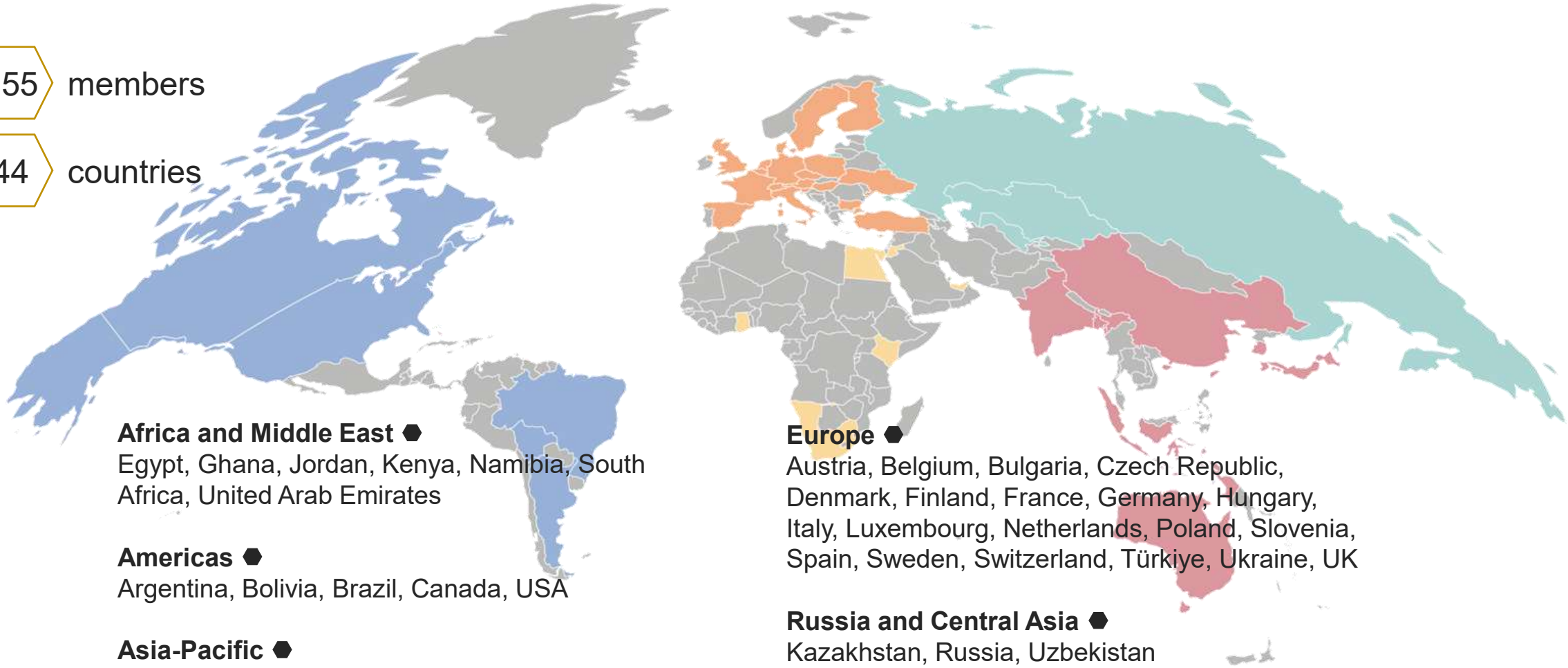
WORLD NUCLEAR ASSOCIATION

Celebrating **25** Years

We connect companies from all over the world and across the entire nuclear value chain

255 members

44 countries



Africa and Middle East
Egypt, Ghana, Jordan, Kenya, Namibia, South Africa, United Arab Emirates

Americas
Argentina, Bolivia, Brazil, Canada, USA

Asia-Pacific
Australia, Bangladesh, Mainland China and Taiwan, India, Indonesia, Japan, South Korea

Europe
Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Luxembourg, Netherlands, Poland, Slovenia, Spain, Sweden, Switzerland, Türkiye, Ukraine, UK

Russia and Central Asia
Kazakhstan, Russia, Uzbekistan

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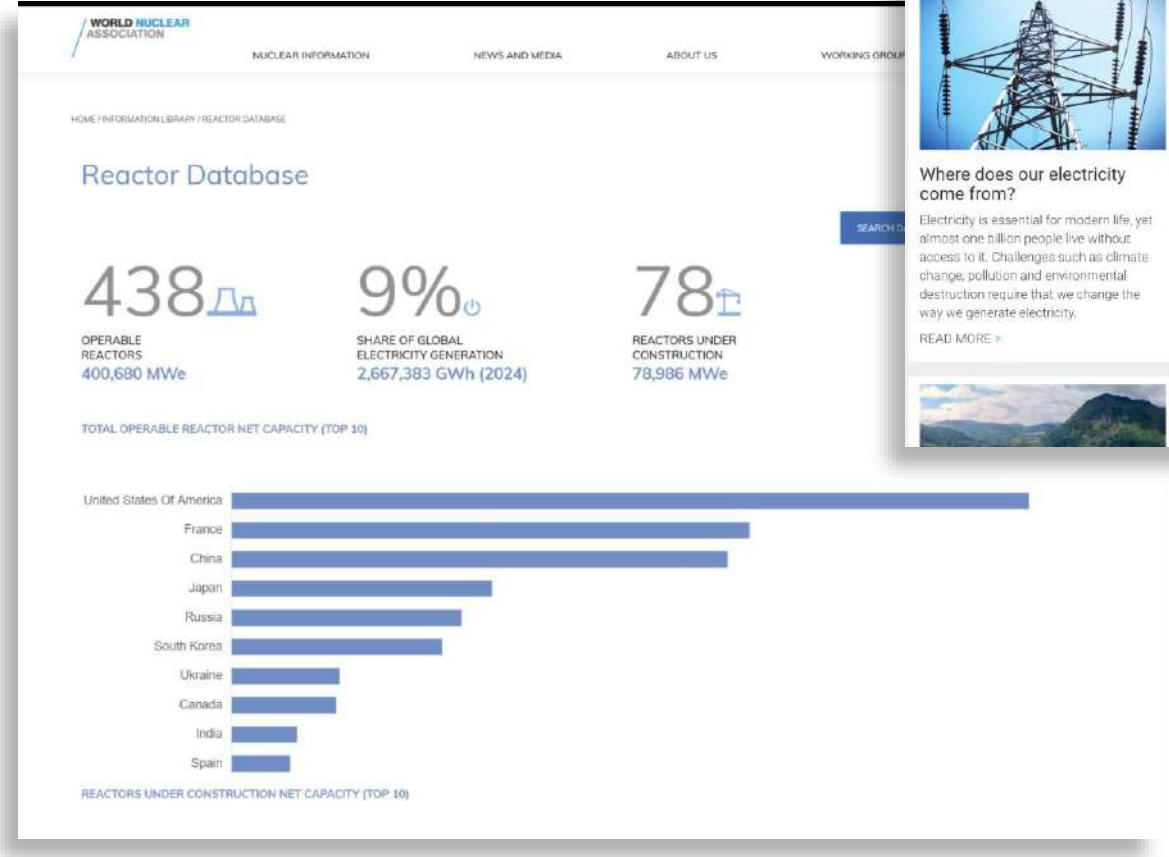
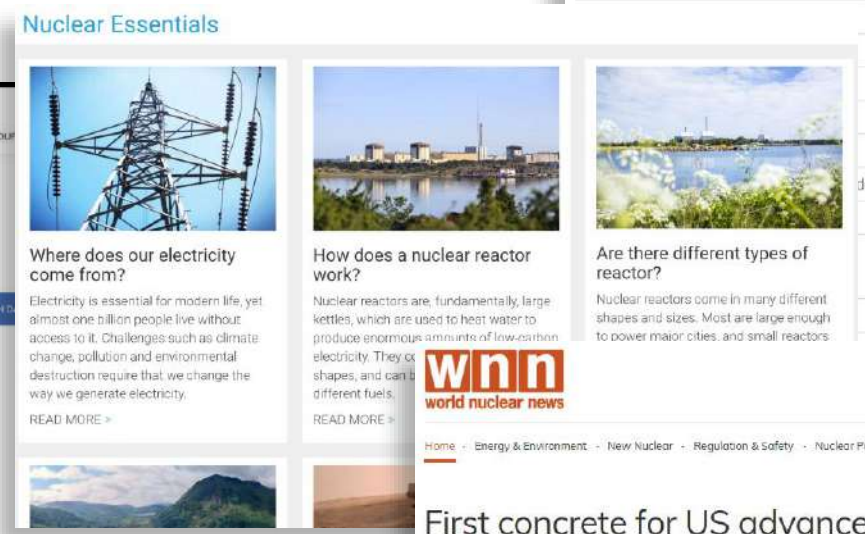
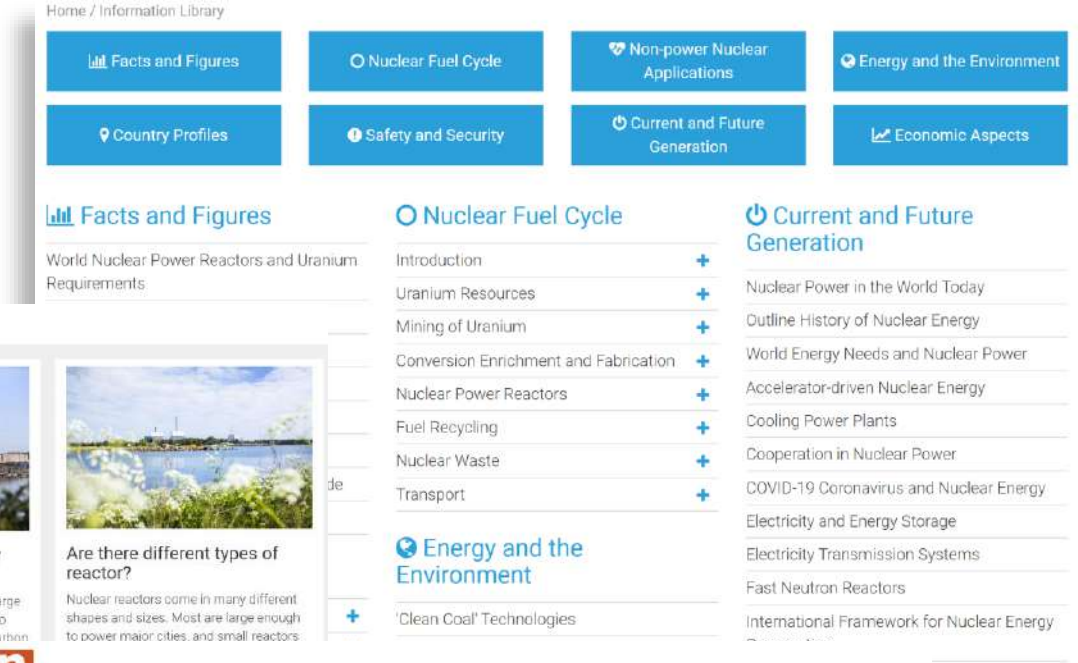
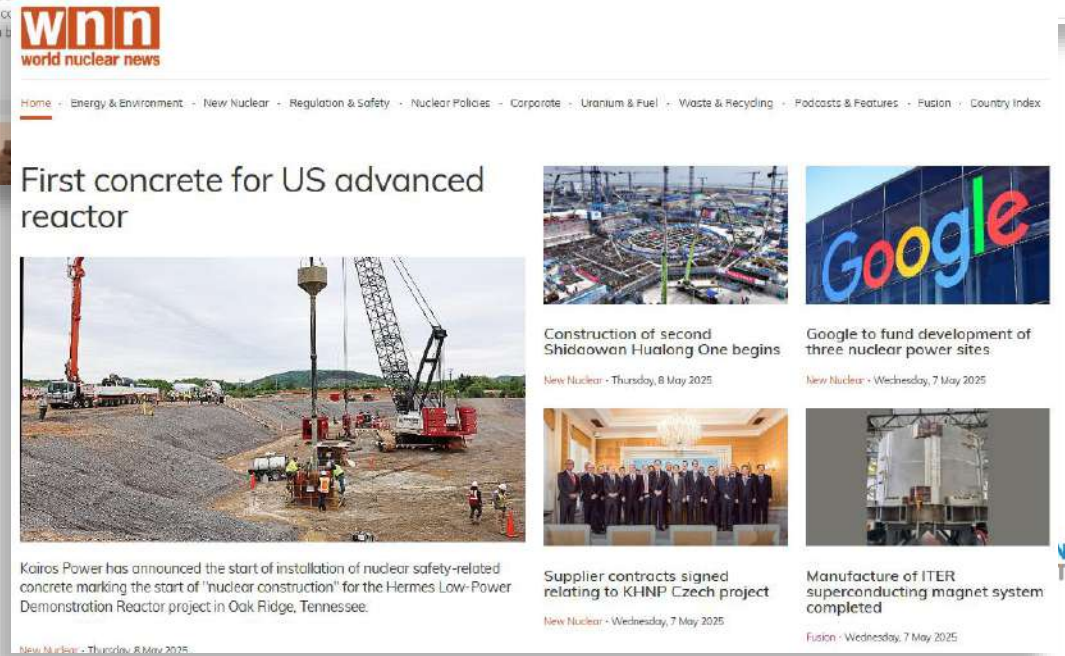
We publish the most up-to-date authoritative information about nuclear

Free-to-access information covering all aspects of the industry and suitable for all audiences

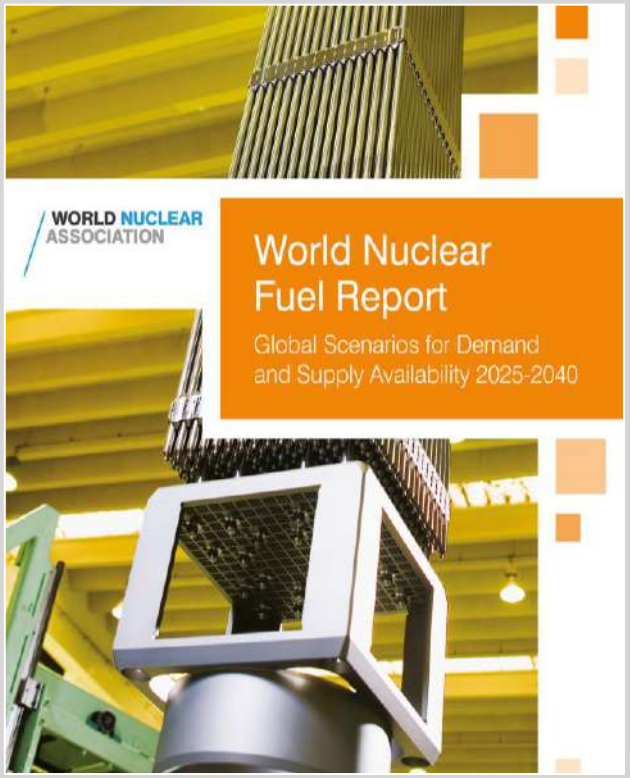




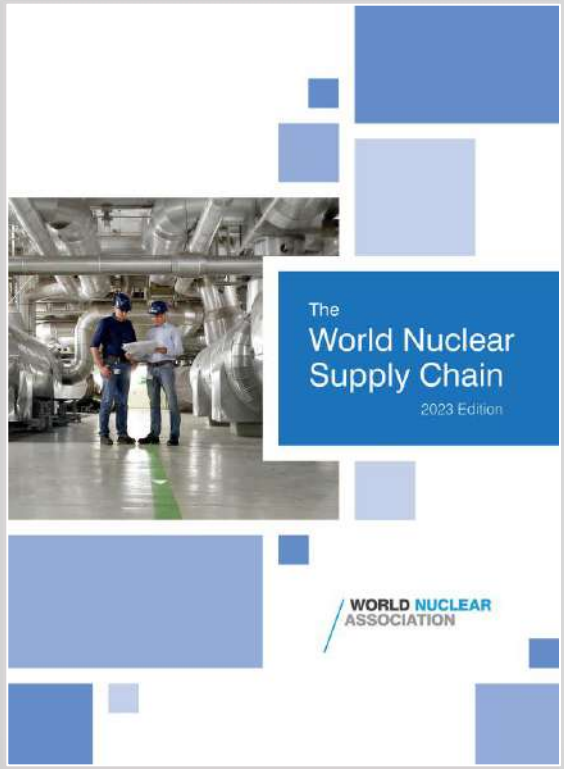




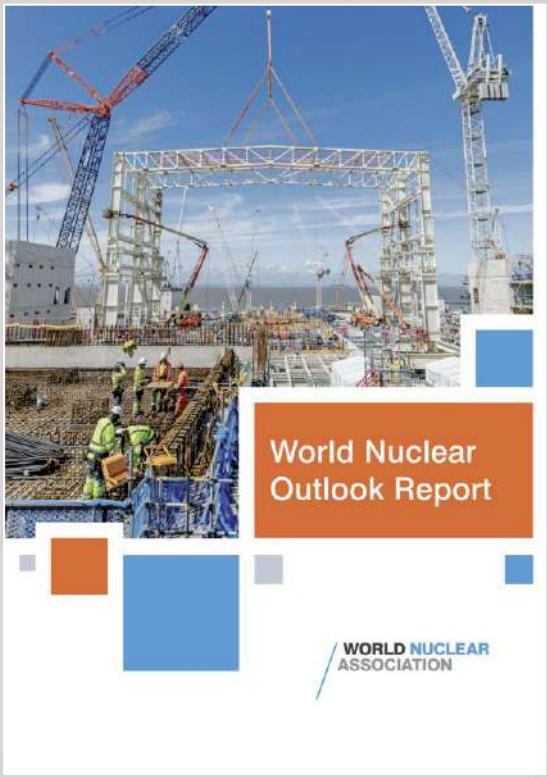
We produce expert research, analysis and global perspectives on the nuclear industry



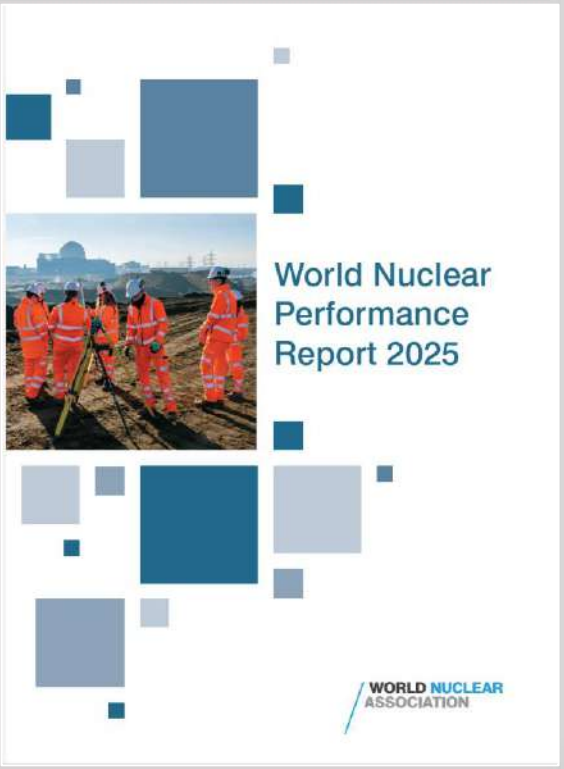
September 2025



Next Edition 2026

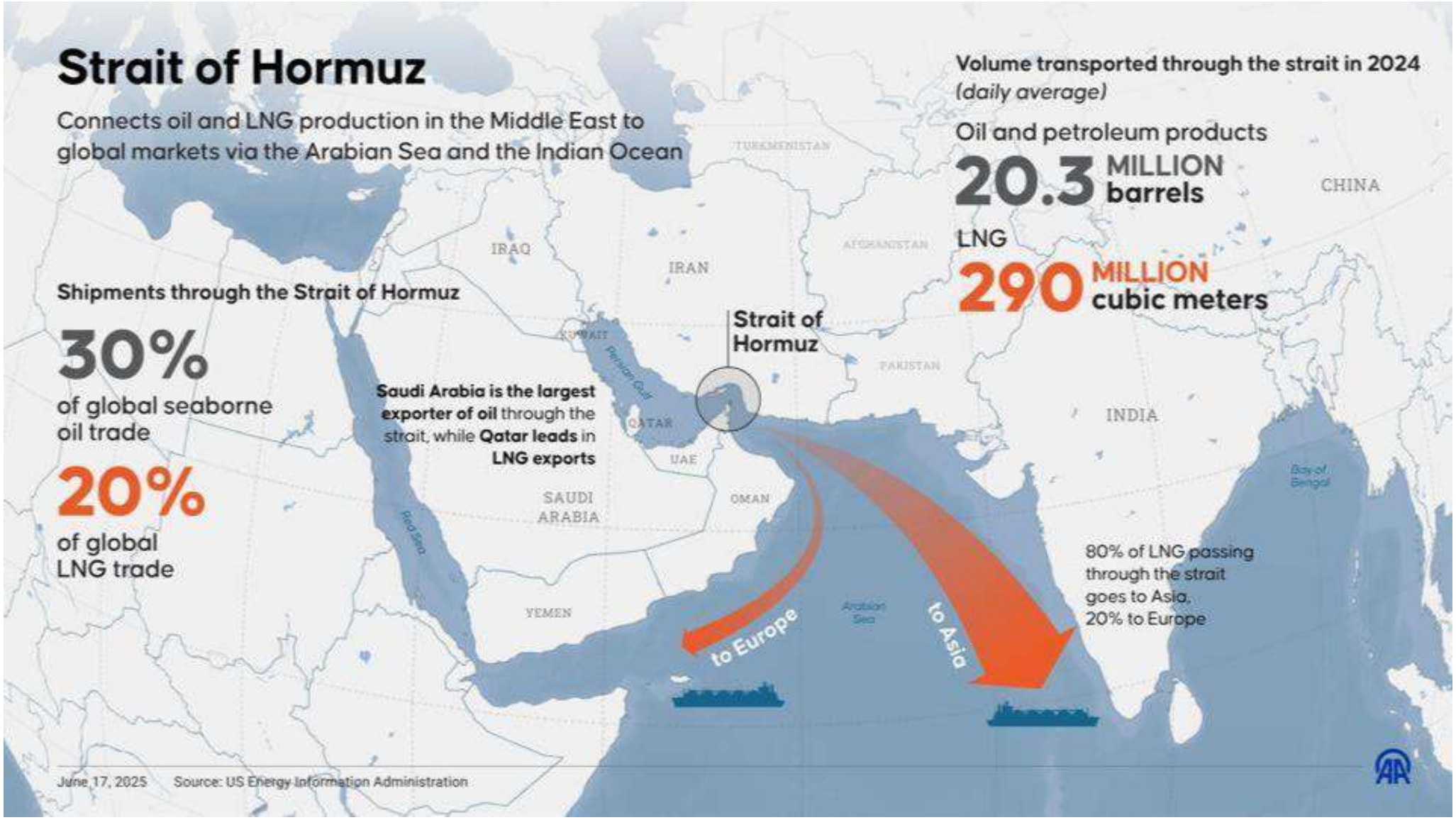


January 2026



September 2025

“The worse energy crisis in history”, Fatih Birol



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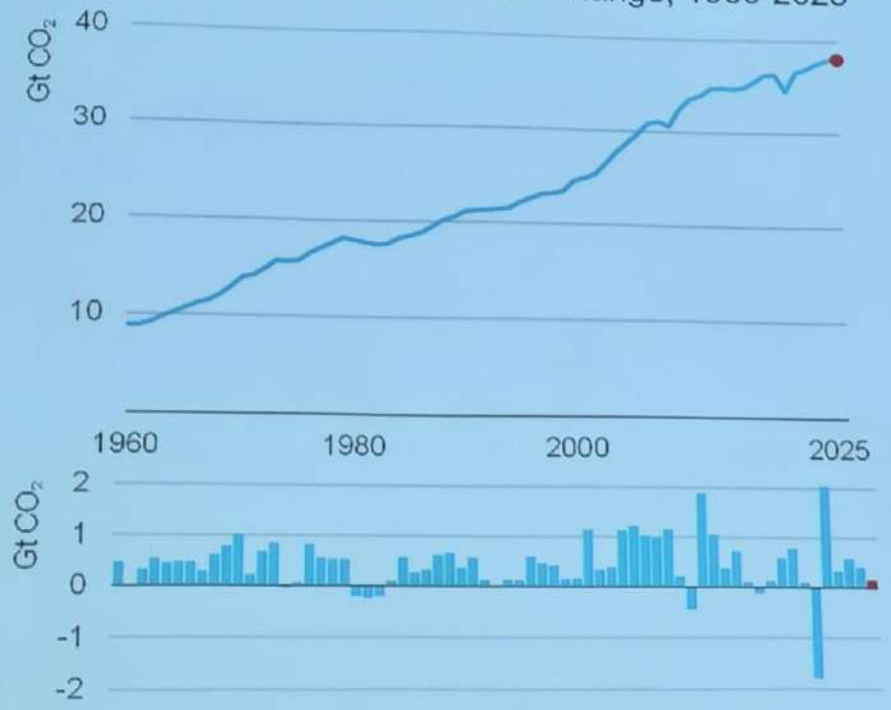
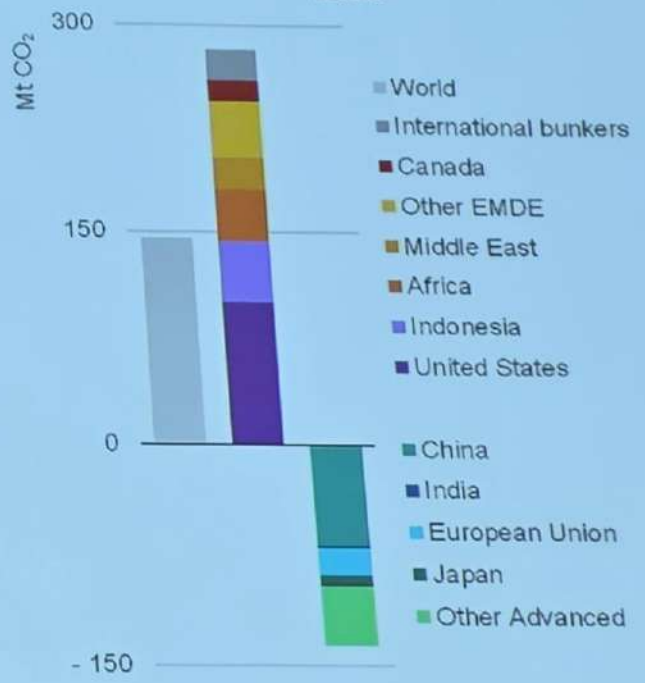
Another year, another record for CO_2 emissions

iea

Global CO_2 emissions from fuel combustion and industrial processes, and their annual change, 1960-2025



Annual change in CO_2 emissions by region, 2025



Despite the slowest growth since the post-Covid rebound (+0.4% in 2025), CO_2 emissions hit a new record high – now 5% above pre-pandemic levels. Emissions grew faster in advanced economies than emerging economies.

IEA presentation at 11th IEEJ International Symposium, Tokyo, Japan, April 24, 2026

Energy is the engine of prosperity, growth and socio-economic development

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Nuclear is the 2nd largest source of low carbon electricity
The 1st in OECD countries

438

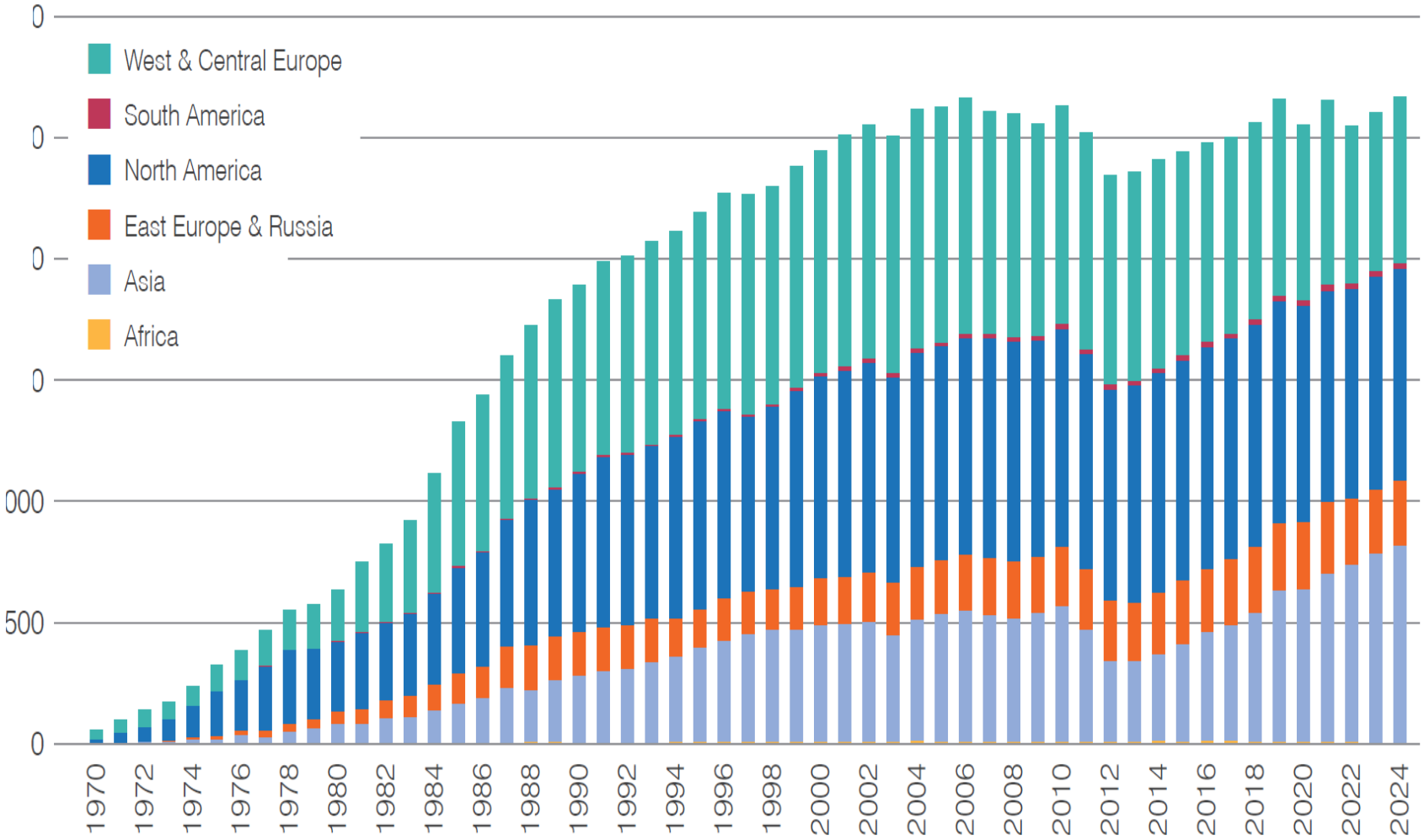
OPERABLE REACTORS

400,680 MWe

79

REACTORS UNDER CONSTRUCTION

80,106 MWe



World Nuclear Association and IAEA Power Reactor Information Service (PRIS)

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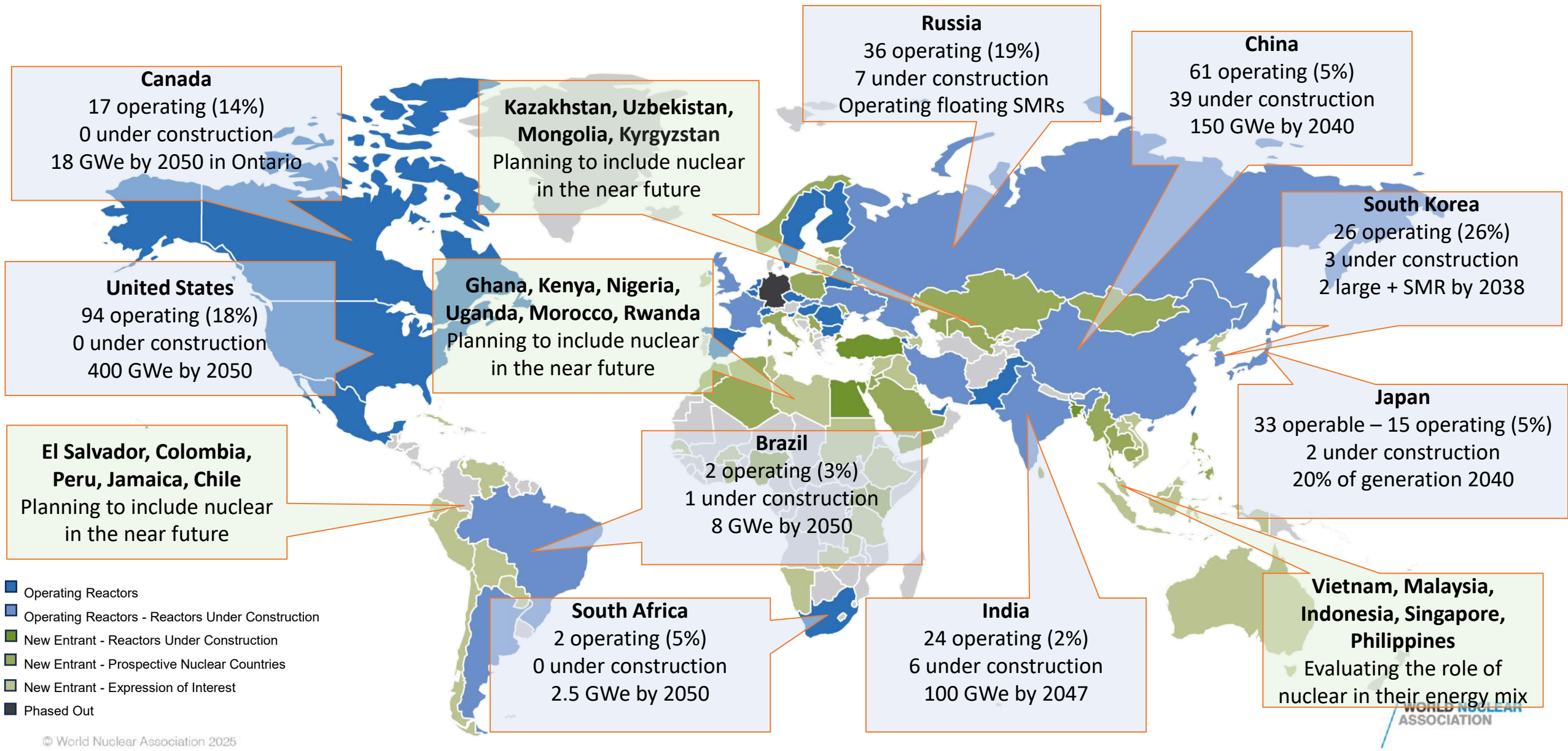
THE ESSENTIAL ROLE OF NUCLEAR ENERGY IS GLOBALLY RECOGNIZED



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China
61 operating (5%)
39 under construction
150 GWe by 2030

Bangladesh
0 operating (0%)
2 under construction
7.5 GWe by 2050

India
24 operating (2%)
6 under construction
100 GWe by 2047

Japan
33 operable – 15 operating (5%)
2 under construction
20% of generation 2040

South Korea
26 operating (30%)
3 under construction
2 large + SMR by 2038

Philippines
1.2 GW by 2032
2.4 GW by 2035
4.8 GW by 2050

Vietnam
4 GW by 2034
14 GW by 2050

Thailand
600 MW by 2037

Indonesia
8 GW by 2035
21 GW by 2050
50-60 GW by 2060

Sweden
6 operating (40%)
0 under construction
2 by 2035 + 10 by 2045

Finland
5 operating (33%)
0 under construction

Estonia
0 operating (0%)
0 under construction
1 SMR

Belarus
2 operating (14%)
0 under construction

Russia
36 operating (19%)
4 under construction
14 new

United Kingdom
9 operating (15%)
2 under construction
24GW new by 2050

Czech Republic
6 operating (33%)
0 under construction
1 by 2035 + 3 new

Norway
0 operating (0%)
0 under construction
SMR under consideration

Poland
0 operating (0%)
0 under construction
3 by 2035

Ukraine
15 operating (50%)
2 under construction
9 new

Belgium
2 operating (35%)
0 under construction

Netherlands
1 operating (3%)
0 under construction
2 new

Denmark
0 operating (0%)
0 under construction
Policy Review

Slovakia
5 operating (50%)
1 under construction
1 new

Romania
2 operating (20%)
0 under construction
2 by 2035 + 6 SMRs

France
56 operating (70%)
1 under construction
6 (+8) new by 2050

Italy
0 operating (0%)
0 under construction
Policy Review

Slovenia
1 operating (41%)
0 under construction
1 new

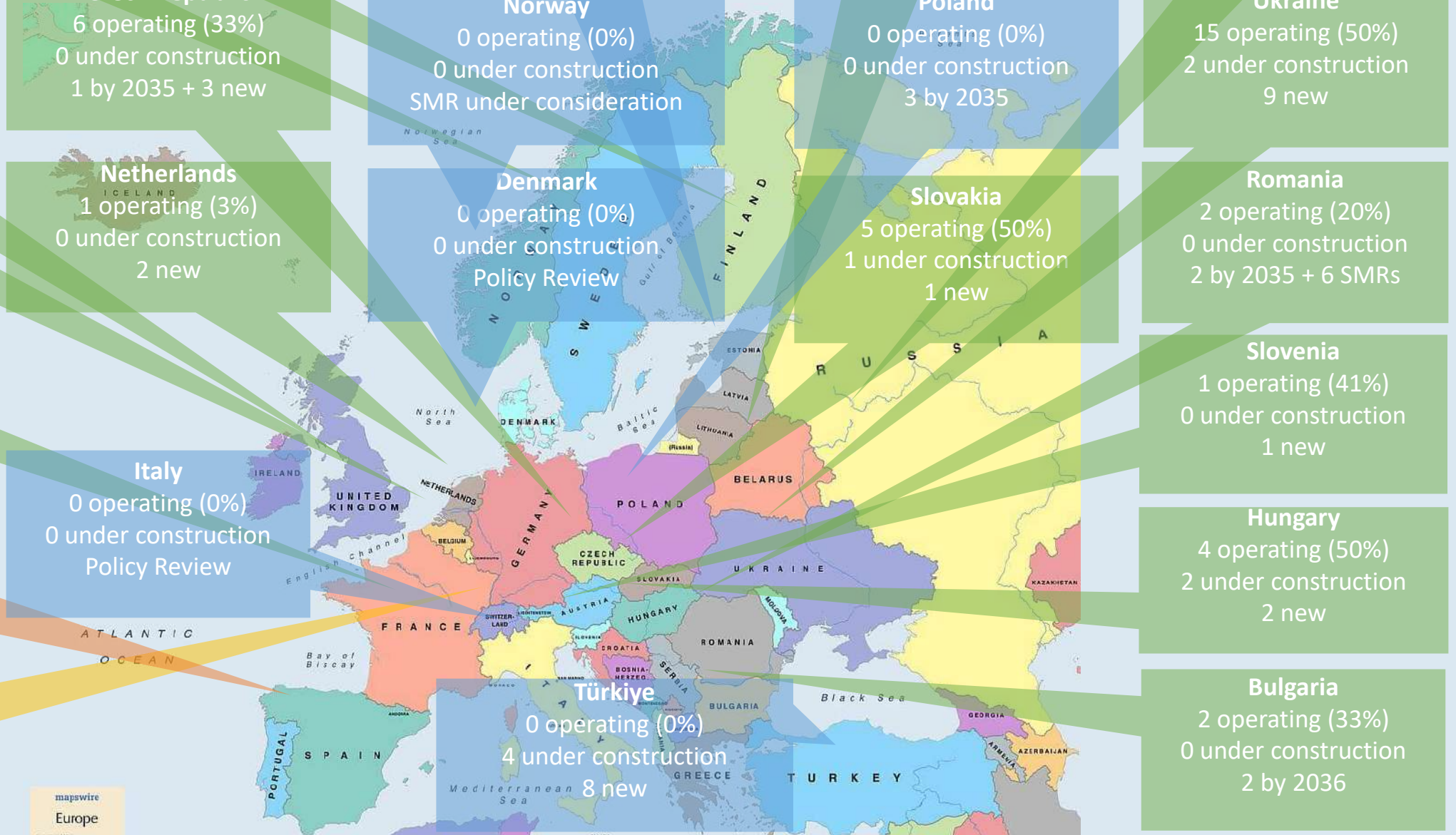
Spain
7 operating (21%)
0 under construction
Full Shutdown 2035

Hungary
4 operating (50%)
2 under construction
2 new

Switzerland
4 operating (40%)
0 under construction
Policy Review

Türkiye
0 operating (0%)
4 under construction
8 new

Bulgaria
2 operating (33%)
0 under construction
2 by 2036



38 Governments have committed to tripling global nuclear capacity by 2050

50 Countries have included nuclear in their energy plans

ARES

BANK OF AMERICA

BARCLAYS

BNP PARIBAS

بنك أبوظبي التجاري
ADCB

Brookfield

Morgan Stanley

citi

GUGGENHEIM

CRÉDIT AGRICOLE

Rothschild & Co

SEGRA
CAPITAL MANAGEMENT

SOCIETE GENERALE

Goldman Sachs

16 Large Energy Users support tripling global nuclear capacity by 2050

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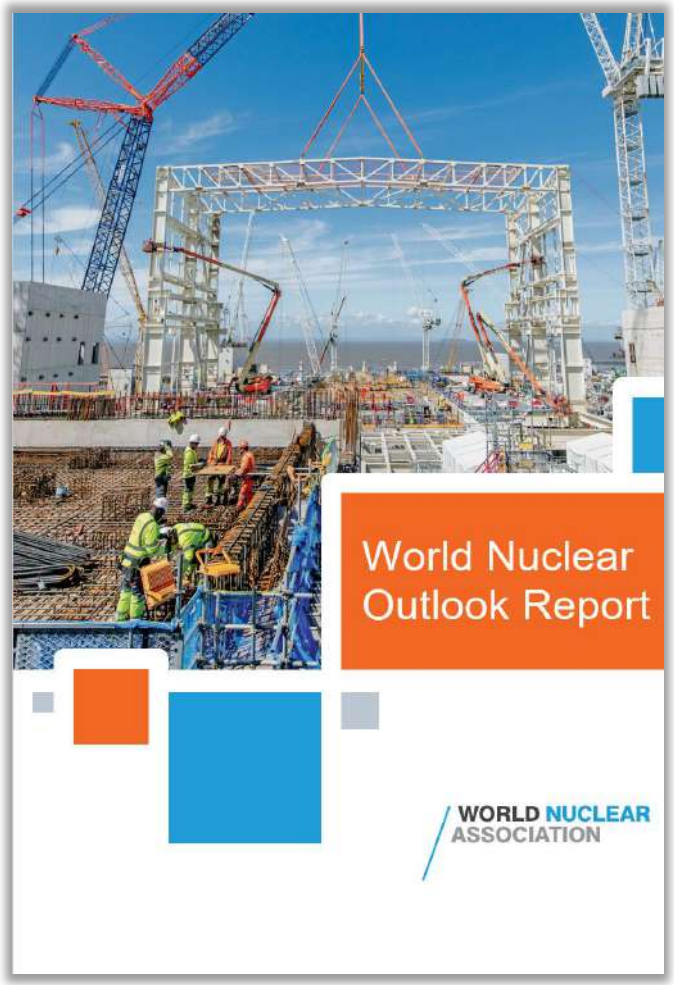
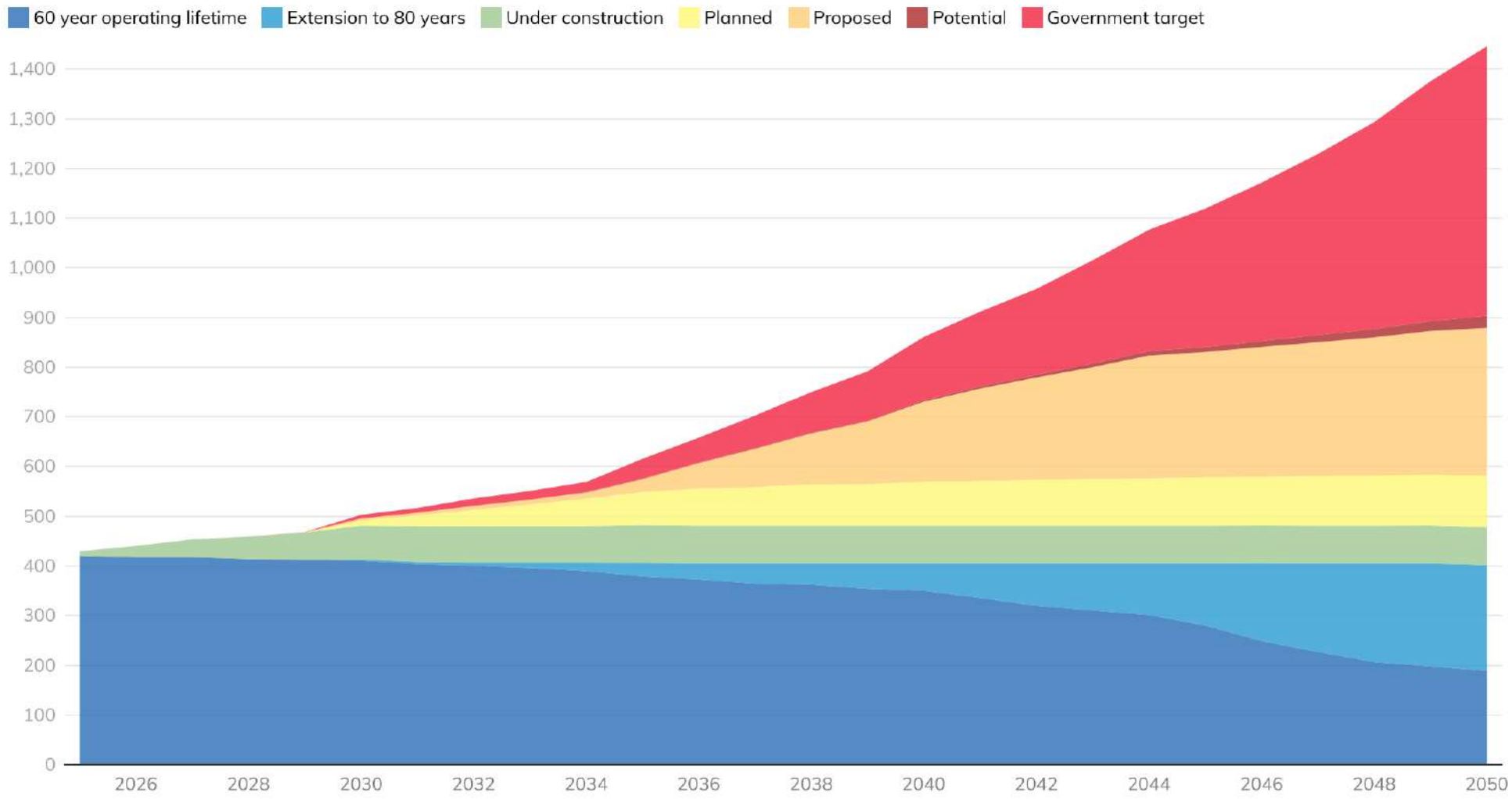
World Nuclear Outlook Report released at Davos



- Provides a summary of the current status of nuclear energy worldwide, the technology options available and current and future applications
- Reviews national policies and statements from governments, ministers and associated institutions to assess political ambitions and objectives for nuclear energy until 2050.
- Provides an assessment of the national policies collectively, similar in definition to the IEA's Stated Policies Scenario, to act as a base case to track future progress.
- Examines the collective policy goals in the context of the Declaration to Triple Nuclear Energy

Total capacity in 2050 would reach 1446 GWe by 2050, surpassing the approximately 1200 GWe target established under the *Declaration to Triple Nuclear Energy,* if national goals and targets are met.

World Nuclear Outlook Report, Jan 2026



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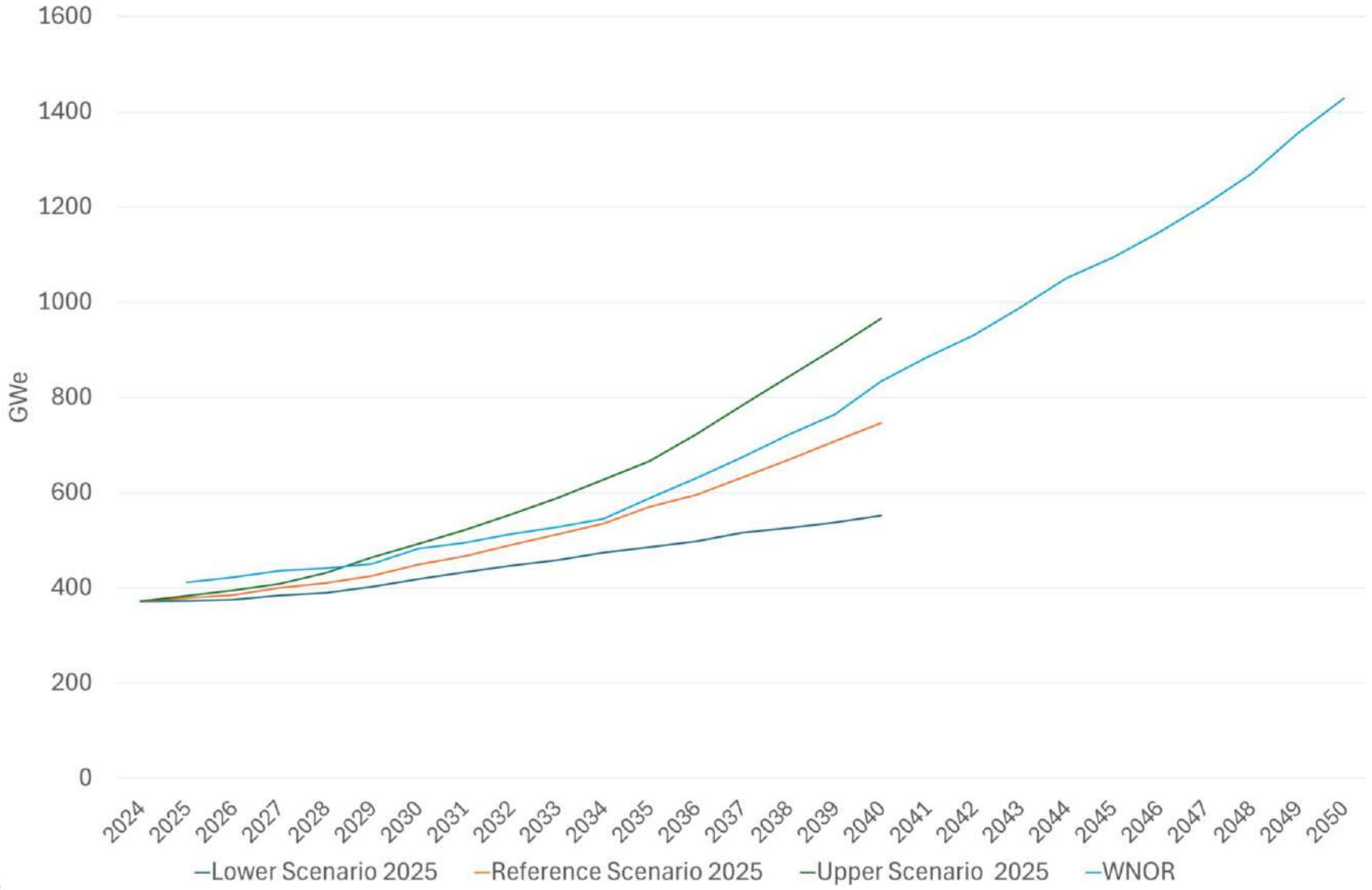
Comparison of World Nuclear Outlook Report and World Nuclear Fuel Report



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The 542 GWe of additional capacity associated with government targets beyond projects planned, proposed or potential is not yet supported by identified projects, and the level of commitment through policy or other governmental measures varies significantly from country to country.

World Nuclear Outlook Report, Jan 2026

Figure 3.CH1 Projection of future nuclear capacity in China

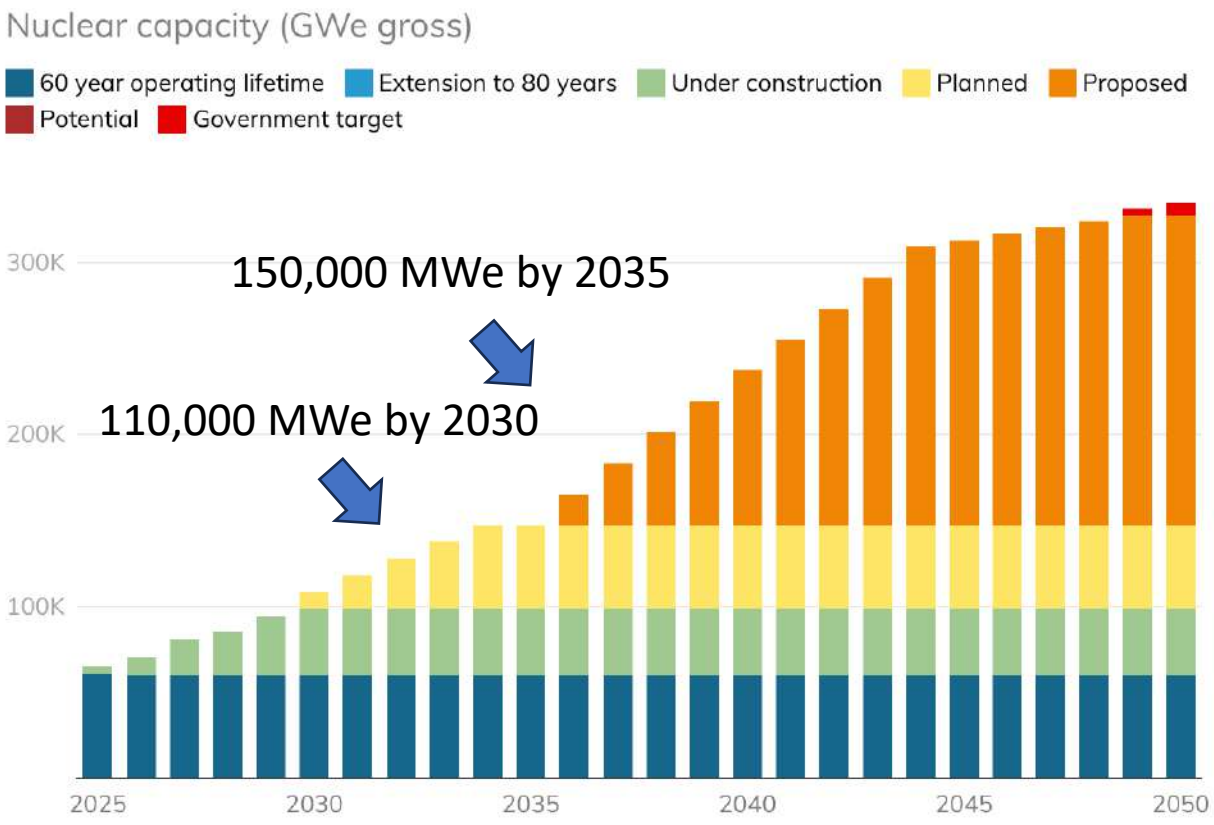
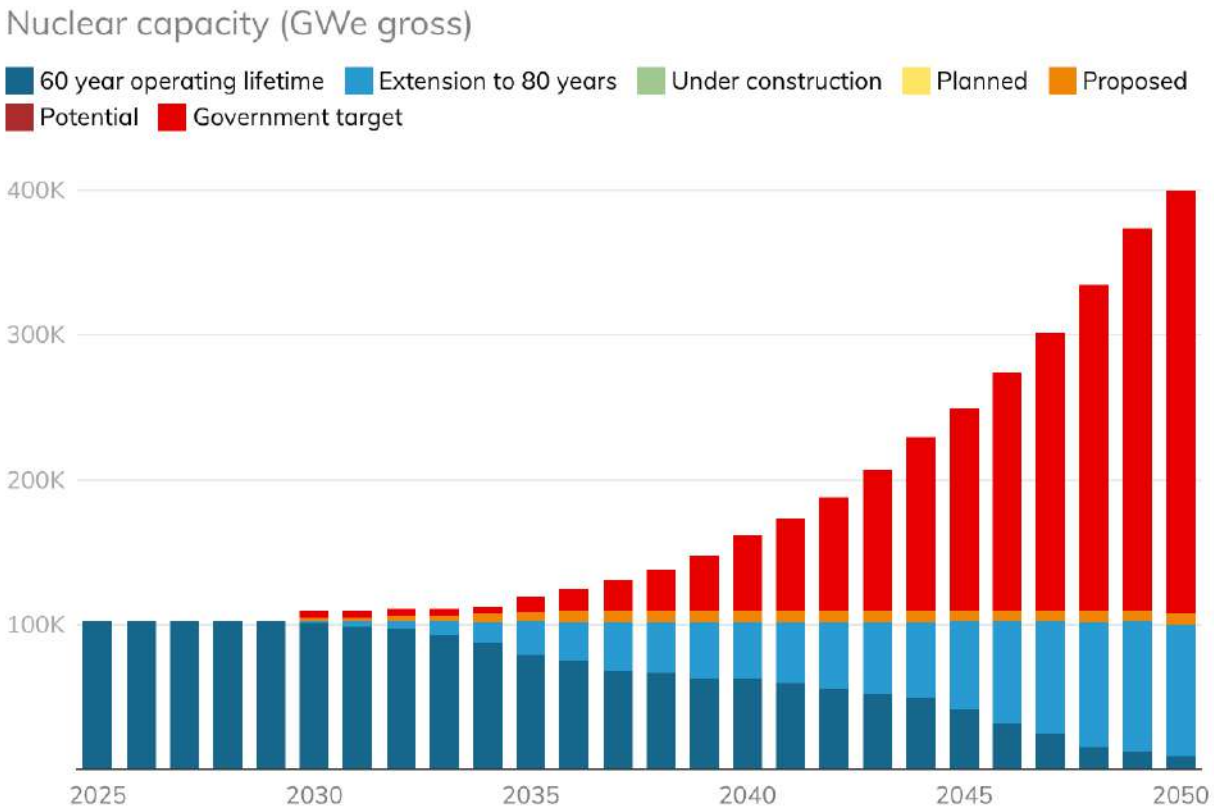


Figure 3.US1 Projection of future nuclear capacity in the USA



New entrant countries

Countries with nuclear targets

- Bangladesh
- Ecuador
- Egypt
- Estonia
- Ghana
- Indonesia
- Italy
- Kazakhstan
- Kenya
- Nigeria
- Philippines
- Poland
- Saudi Arabia
- Serbia
- Sri Lanka
- Thailand
- Turkey
- Uganda
- Uzbekistan
- Vietnam

Countries evaluating nuclear

- Algeria
- Jamaica
- Jordan
- Malaysia
- Moldova
- Myanmar
- Norway
- Peru
- Rwanda
- Singapore

The value of the existing fleet is well recognized

Palisades on schedule for repowering, NRC considers restart regulations

The programme to restart the Palisades nuclear power plant in Michigan is now in the inspections and maintenance phase and remains on schedule, Holtec International said in its latest update. Meanwhile, the US regulator has been petitioned to codify regulations for restarting shuttered nuclear power plants.

Corporate · Thursday, 19 September 2024

World Nuclear Performance Report

Second phase of uprates at Dukovany

At Dukovany, ČEZ are producing more power without increasing fuel consumption.

NRA approves use of Japanese reactors beyond 60 years

14 February 2023

Share

Japan's Nuclear Regulation Authority (NRA) has approved draft legislation to extend the operating life of the country's nuclear power reactors beyond 60 years. It also approved an amendment to the Nuclear Reactor Regulation Law to remove the rule specifying the operational periods of reactors.

Constellation to restart Three Mile Island unit, powering Microsoft

Constellation has signed a 20-year power purchase agreement with Microsoft that will see Three Mile Island unit 1 restarted, five years after it was shut down.

Corporate · Friday, 20 September 2024

Surry units cleared for 80-year operation

Wednesday, 5 May 2021

The US Nuclear Regulatory Commission has approved an application by Dominion Energy's Virginia subsidiary for a 20-year extension to the operating licences of the twin-unit Surry nuclear power plant. This will enable the two pressurised water reactors to operate until 2052 and 2053, respectively.

Nuclear energy's value chain moves forward globally

world nuclear news

Uprated NuScale SMR design gets US approval

Friday, 30 May 2025

The US Nuclear Regulatory Commission has approved the 77 MWe version of NuScale Power's NuScale Power Module small modular reactor design. The regulator had previously approved a 50 MWe version of the design.

world nuclear news

Korean SMR-powered container ship design revealed

Thursday, 13 February 2025

South Korea's HD Korea Shipbuilding & Offshore Engineering has unveiled a nuclear-powered container ship model utilising small modular reactor technology.

world nuclear news

First phase of US enrichment plant expansion starts up

Tuesday, 20 May 2025

Production of enriched uranium has begun in the first new gas centrifuge cascade installed as part of Urenco USA's expansion of its plant in New Mexico.

world nuclear news

India and France sign SMR and AMR partnership letter of intent

Wednesday, 12 February 2025

French President Emmanuel Macron and India's Prime Minister Narendra Modi have agreed a Declaration of Intent for establishing a partnership on advanced modular reactors and small modular reactors after talks in France. They also visited the multinational ITER nuclear fusion project.

world nuclear news

European business nuclear alliance launched

Wednesday, 12 February 2025

A group of 14 European business federations have published a joint declaration announcing their joint commitment to strengthening the European nuclear industry. The declaration highlights four priority areas.

world nuclear news

Finnish regulator on track for repository decision by year-end

Friday, 23 May 2025

Finland's Radiation and Nuclear Safety Authority has said it remains on track to complete its assessment of Posiva Oy's operating licence application for the world's first used nuclear fuel repository despite deficiencies in the materials submitted for review.

world nuclear news

Ceremony marks first concrete for Pakistan unit

Thursday, 2 January 2025

Senior officials from China and Pakistan witnessed the ceremonial start of construction at Chashma unit 5, days after Pakistan's nuclear regulator issued a construction licence for the Hualong One unit.

world nuclear news

Japan aims for increased use of nuclear in latest energy plan

Tuesday, 18 February 2025

Japan is to "make maximum use of nuclear power", with about 20% of the country's total electricity generation in fiscal 2040 coming from nuclear, according to the government's latest Basic Energy Plan. Previous plans have called for a reduction on its dependence on nuclear power.

world nuclear news

Brazil's INB gets approval to seek export of enriched uranium

Monday, 10 February 2025

The National Nuclear Energy Commission has given authorisation for Indústrias Nucleares do Brasil to seek an international buyer for 5.7 tonnes of U3O8 enriched to 3.2% uranium-235.

world nuclear news

Zhangzhou unit 1 enters commercial operation

Thursday, 2 January 2025

Unit 1 of the Zhangzhou nuclear power plant in China's Fujian province - the first of six Hualong One (HPR1000) reactors planned at the site - has been put into commercial operation, China National Nuclear Corporation has announced.

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SMRs are an attractive complement to GW-size reactors

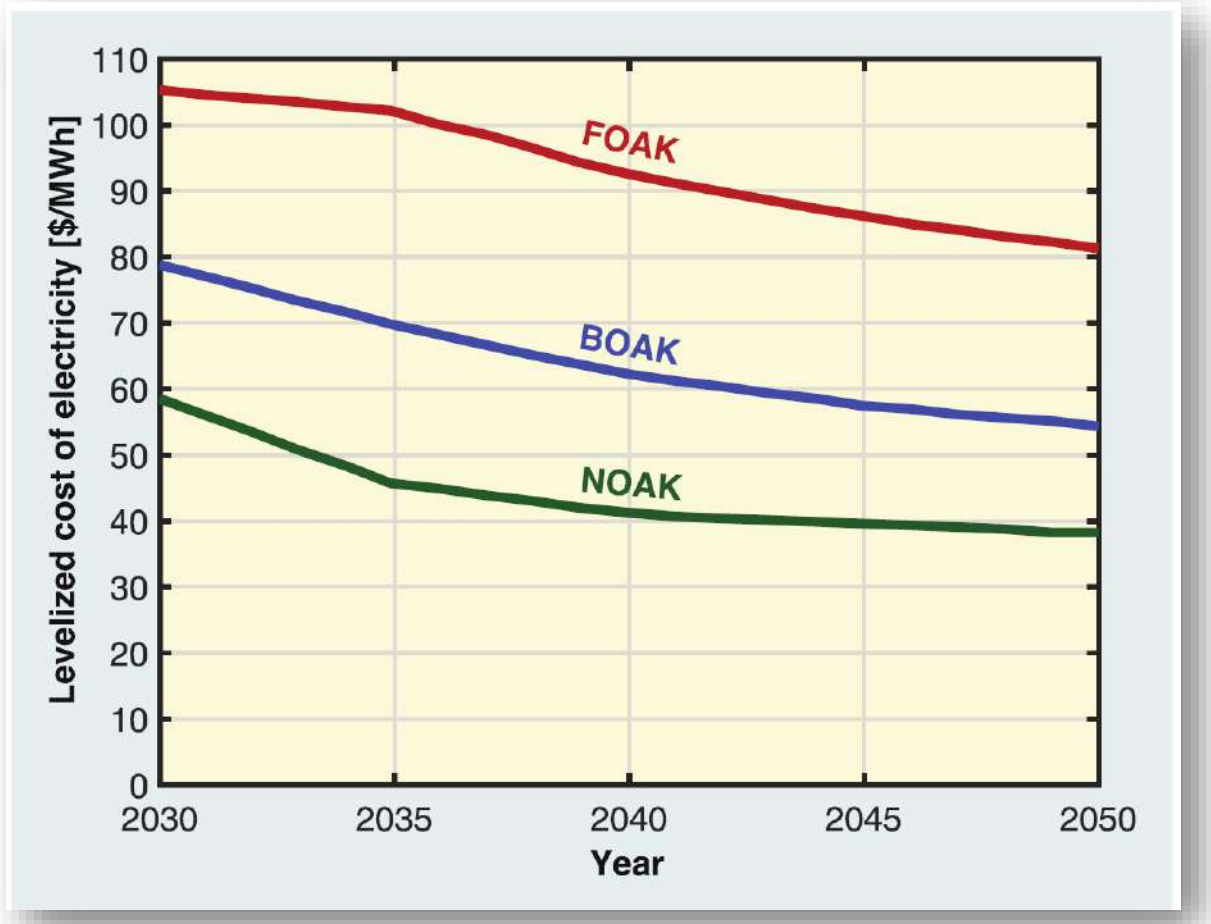

Figure 27. FOAK, NOAK, and BOAK cost projections with 60-year capital recovery for 300-MW small modular reactors based on the technology-neutral market-based scenario of the National Renewable Energy Laboratory's ATB (NREL, 2024c). FOAK: first of a kind; NOAK: Nth of a kind; BOAK: between FOAK and NOAK; ATB: Annual Technology Baseline.

Source: Understanding the Full System Costs of the Electricity System, UNECE, 2025

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Nuclear energy could be a game changer for AI and data centers

Constellation to restart Three Mile Island unit, powering Microsoft

Constellation has signed a 20-year power purchase agreement with Microsoft that will see Three Mile Island unit 1 restarted, five years after it was shut down.

Corporate · Friday, 20 September 2024

Meta, Constellation sign 20-year clean power deal

A 20-year power purchase agreement between Meta and Constellation will secure the long-term operation of Constellation's Clinton Clean Energy Center, while the tech company is also moving forward with its process to develop nuclear capacity at new US locations.

NUCOR

Google Microsoft

Google, Microsoft and Nucor team up on clean energy development

North American steel manufacturer Nucor Corporation and US tech giants Google and Microsoft Corporation are to work together across the electricity ecosystem to develop new business models and aggregate their demand for advanced clean electricity technologies, including advanced nuclear.

Energy & Environment · Wednesday, 20 March 2024

ubitus

Japanese data centre seeks nuclear electricity supplies

The head of cloud-based gaming services provider Ubitus KK has said the Tokyo-based company is planning to construct a new data centre in Japan and is specifically looking at areas with nearby nuclear power plants.

Corporate · Friday, 18 October 2024

Investing in the clean energy future.

ENERGY NORTHWEST amazon energy

Amazon invests in X-energy, unveils SMR project plans

Amazon has announced it has taken a stake in advanced nuclear reactor developer X-energy, with the goal of deploying up to 5 GW of its small modular reactors in the USA by 2039.

New Nuclear · Wednesday, 16 October 2024

Google

Kairos Power

Google and Kairos Power team up for SMR deployments

Google has agreed to purchase energy from small modular reactors under a deal that will support the first commercial deployment of Kairos Power's reactor by 2030 and a fleet totalling 500 MW of capacity by 2035.

Corporate · Tuesday, 15 October 2024

Typical Power Densities

- Traditional Data Center: 4 to 6 kW per rack
- Cloud Service Providers: 10 to 14 kW per rack
- High-density AI: more than 20 kW per rack

Nuclear can help decarbonize the entire economy

China's first commercial nuclear district heating scheme expands

Thursday, 21 November 2024

China's Haiyang nuclear power plant in Shandong province has begun its sixth heating season, covering an area of nearly 13 million square metres - 500,000 square metres more than last year.

Korean SMR-powered container ship design revealed

Thursday, 13 February 2025

South Korea's HD Korea Shipbuilding & Offshore Engineering has unveiled a nuclear-powered container ship model utilising small modular reactor technology.

A rendering of a 15,000 TEU-class SMR-powered containership (Image: HD KSOE)

'Megatonne' CO2 capture plant plan for Sizewell C

Monday, 13 June 2022

A consortium hoping to use heat from the UK's proposed Sizewell C nuclear power station to capture carbon dioxide from the air on a giant scale say they have successfully completed a research and development project and are ready to construct a demonstration plant.

SMRs considered for Indonesian fertiliser plant

Friday, 19 May 2023

A collaboration between Danish and Indonesian companies will study the operational and regulatory conditions for constructing an ammonia production facility in Indonesia powered by Copenhagen Atomics' small and modular thorium molten salt reactors.

The signing of the MoU in Copenhagen (Image: Copenhagen Atomics)

Chinese industrial nuclear steam project commissioned

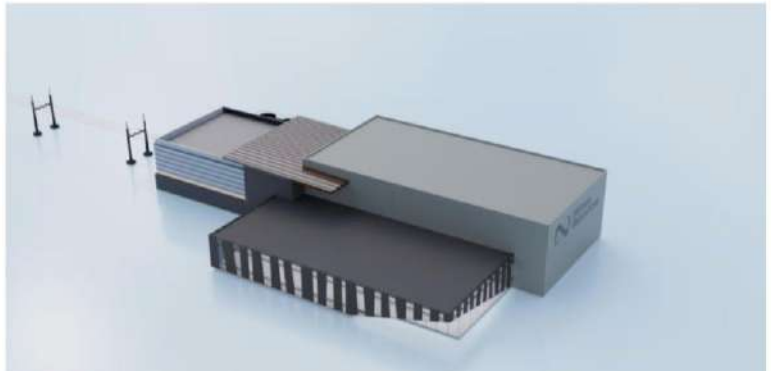
Thursday, 20 June 2024

China's first industrial-use nuclear energy steam supply project, at the Tianwan nuclear power plant in China's Jiangsu province, has entered operation following commissioning tests. The project will supply steam to a nearby petrochemical plant.

Texas partnership evaluates SMR use for water desalination

Wednesday, 19 February 2025

Natura Resources has entered into a memorandum of understanding with Texas Tech University and Abilene Christian University to evaluate integrating Natura's molten salt small modular reactor technology with water desalination systems.



Nuclear energy can help decarbonize Oil & Gas Industry

Nuclear is well suited for cogeneration applications

Akademik Lomonosov
KLT-40S – Russia In operation

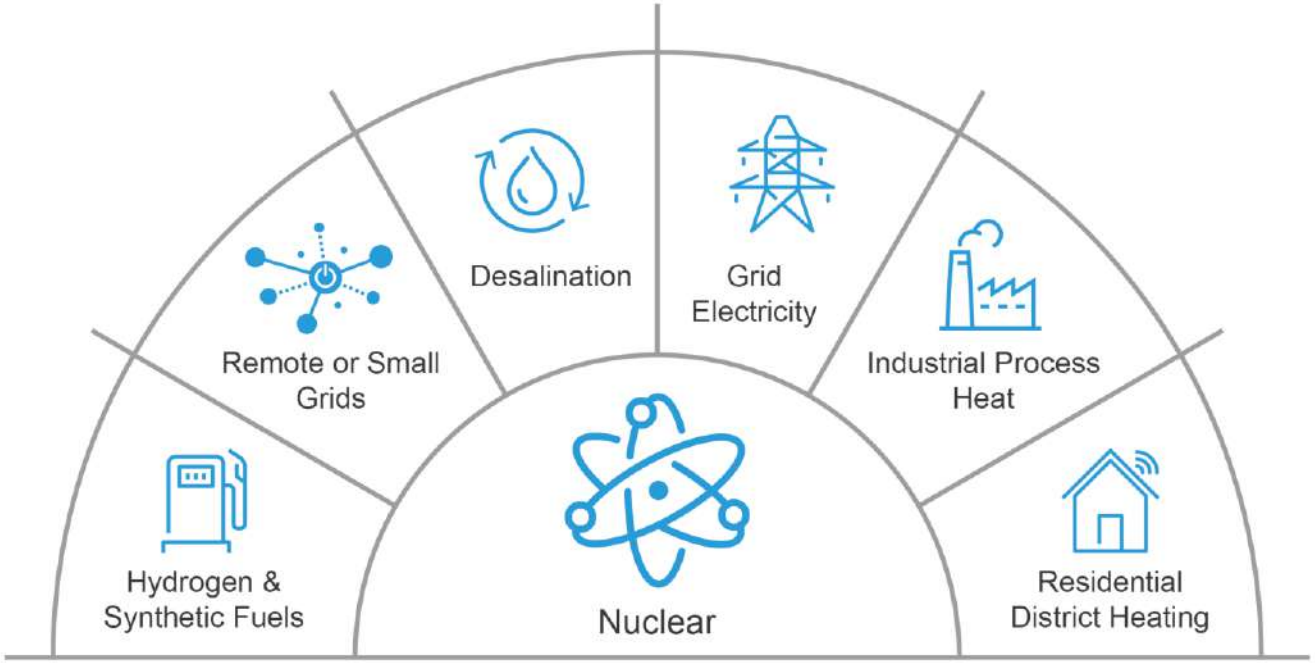
Xe-100, X-energy, USA, Canada, UK
80 MWe HTGR Under Development

NuScale VOYGR, US, 77 MWe
PWR, Design Licensed

GEH BWRX300, US, 300
MWe BWR, Under Review

Nuward , France, 300-400
MWe PWR in development

Rolls Royce SMR, UK, 470
MWe PWR, in development



Aurora/Oklo, US
1.5 MWe Heatpipe FNR
Under Review

Terrestrial, Canada, 190
MWe IMSR Under
Development

HTR-PM, China, 2x110
MWe HTGR in operation

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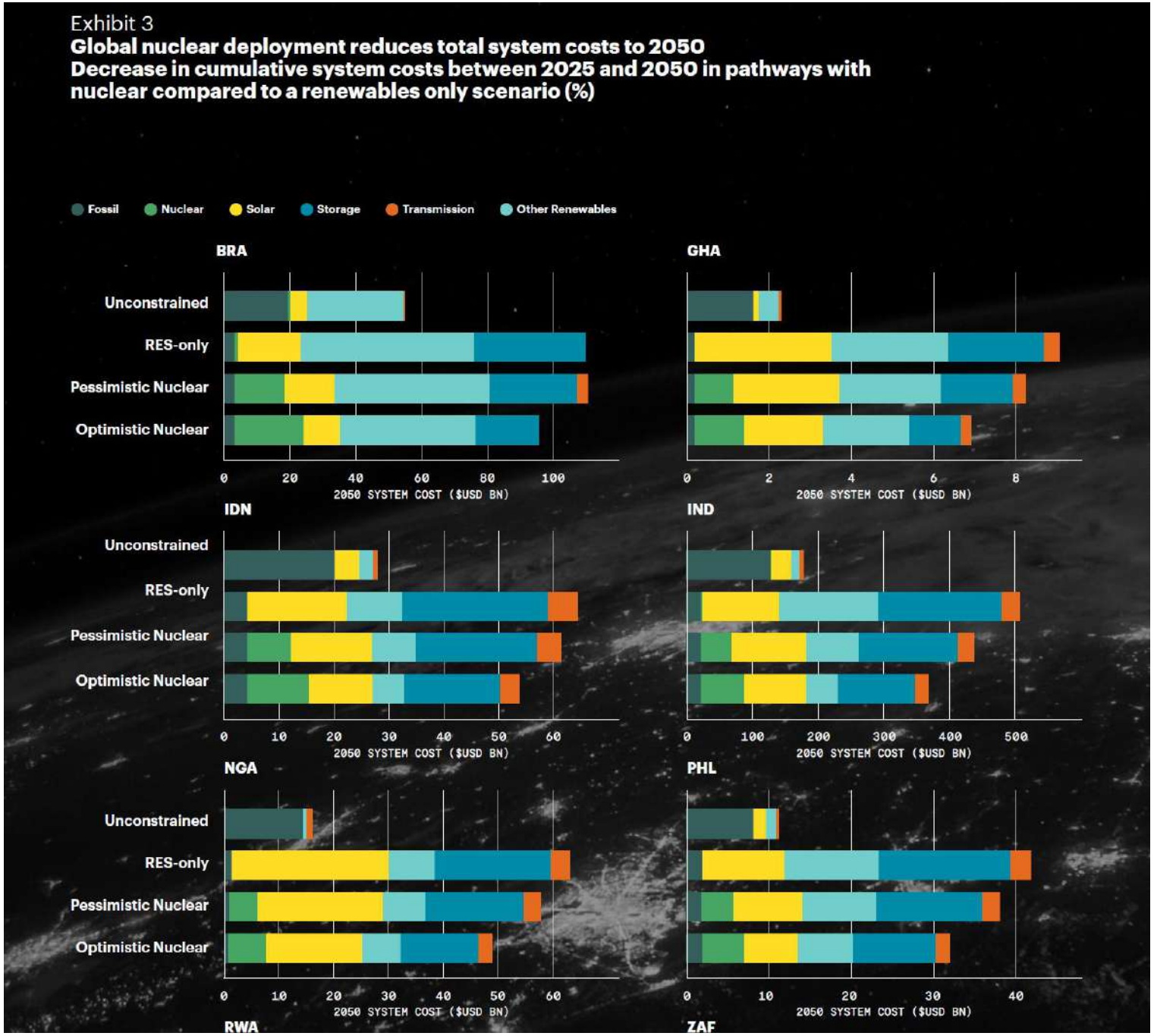

Nuclear energy contributes to more stable and efficient energy systems

Scenario	Description
Unconstrained	A control case with no emissions limits. This scenario does not account for future carbon pricing, fossil fuel volatility, or the environmental and social externalities associated with the different generation technologies.
RES-only	Rapid decarbonisation using only renewables and storage.
Pessimistic Nuclear	Allows for nuclear expansion assuming "worst case" cost curves.
Optimistic Nuclear	Allows for nuclear expansion assuming "expected" cost curves.

Source: The Role of Nuclear Energy in Powering Universal Energy Abundance in Emerging Economies, Rockefeller Foundation, December 2025

Source: Understanding the Full System Costs of the Electricity System, UNECE, 2025

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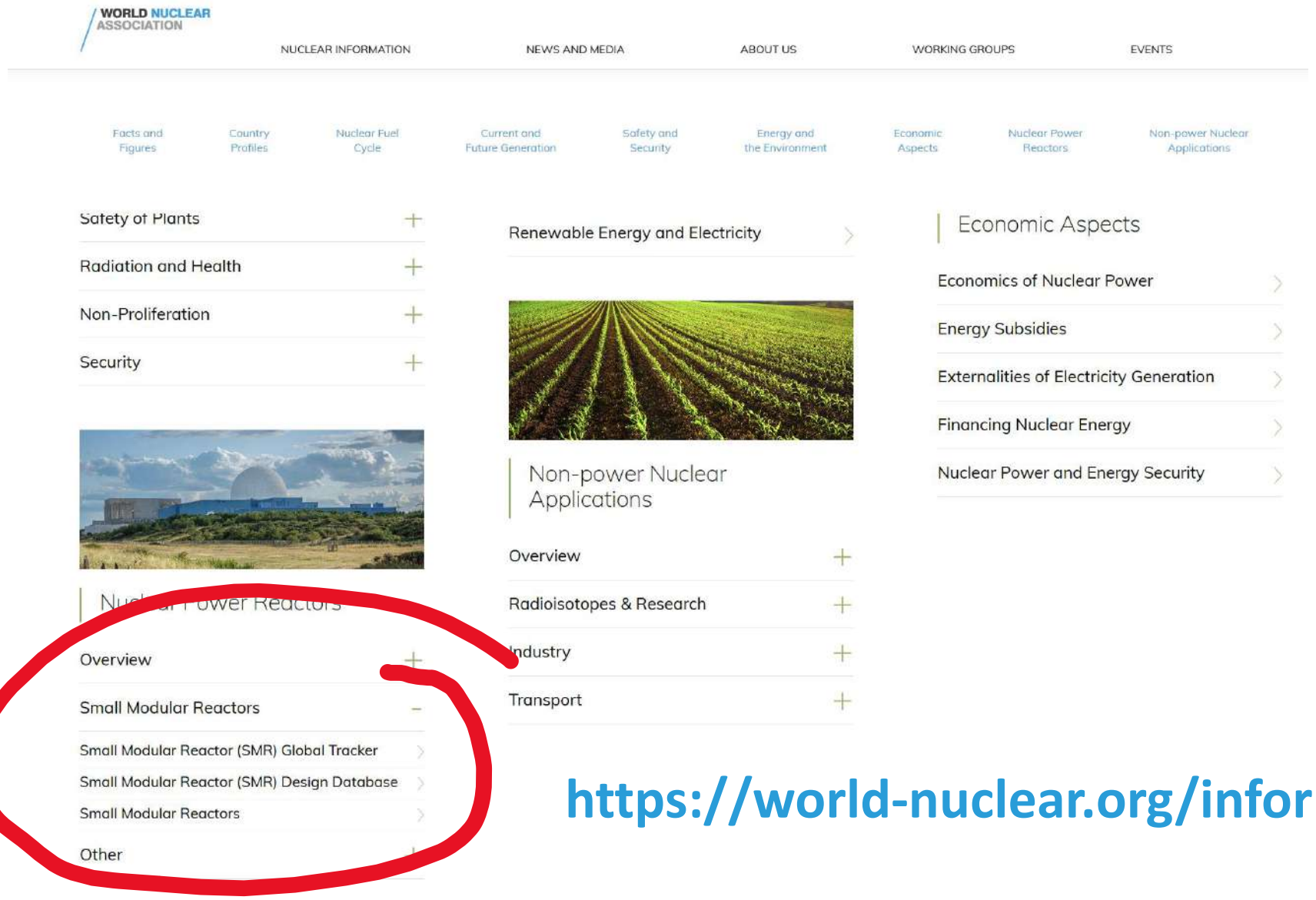
World Nuclear Information Library



https://world-nuclear.org/information-library

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Celebrating 25 Years

world nuclear news

WORLD NUCLEAR UNIVERSITY
Established 2003

net zero nuclear