

Nuclear Energy Outlook

Global Installed Capacity to 2050 and Beyond

Tokyo
20 October 2026

Towards a Nuclear Resurgence?

Nuclear energy is once again at the forefront of global energy policy priorities

Count of nuclear policy reforms worldwide since 2022

2022

2023

2024

2025



- Regulatory framework / new nuclear laws / governance reforms
- Financing, state aid, investment support
- Nuclear safety, regulator reform, liability regime

- Licensing, permitting, approval streamlining
- Phase-out reversal or enabling nuclear reintroduction
- Nuclear market liberalisation / private sector participation

The Nuclear Energy Outlook

Four scenarios to explore the future of nuclear energy

	Low Scenario	Current Trends Scenario	Ambitious Scenario	Transformative Scenario
LTO	Existing LTO Programmes	60-80 years	80 years	100 years
Large Scale New Build	Under Construction	Under construction	Under construction	Under construction
	Planned	Planned	Planned	Planned
		Proposed	Proposed	Proposed
			Prospective	Prospective
SMR	Under-construction	Programmatic Approach	Advanced Modular Manufacturing	Next Generation Mass Manufacturing

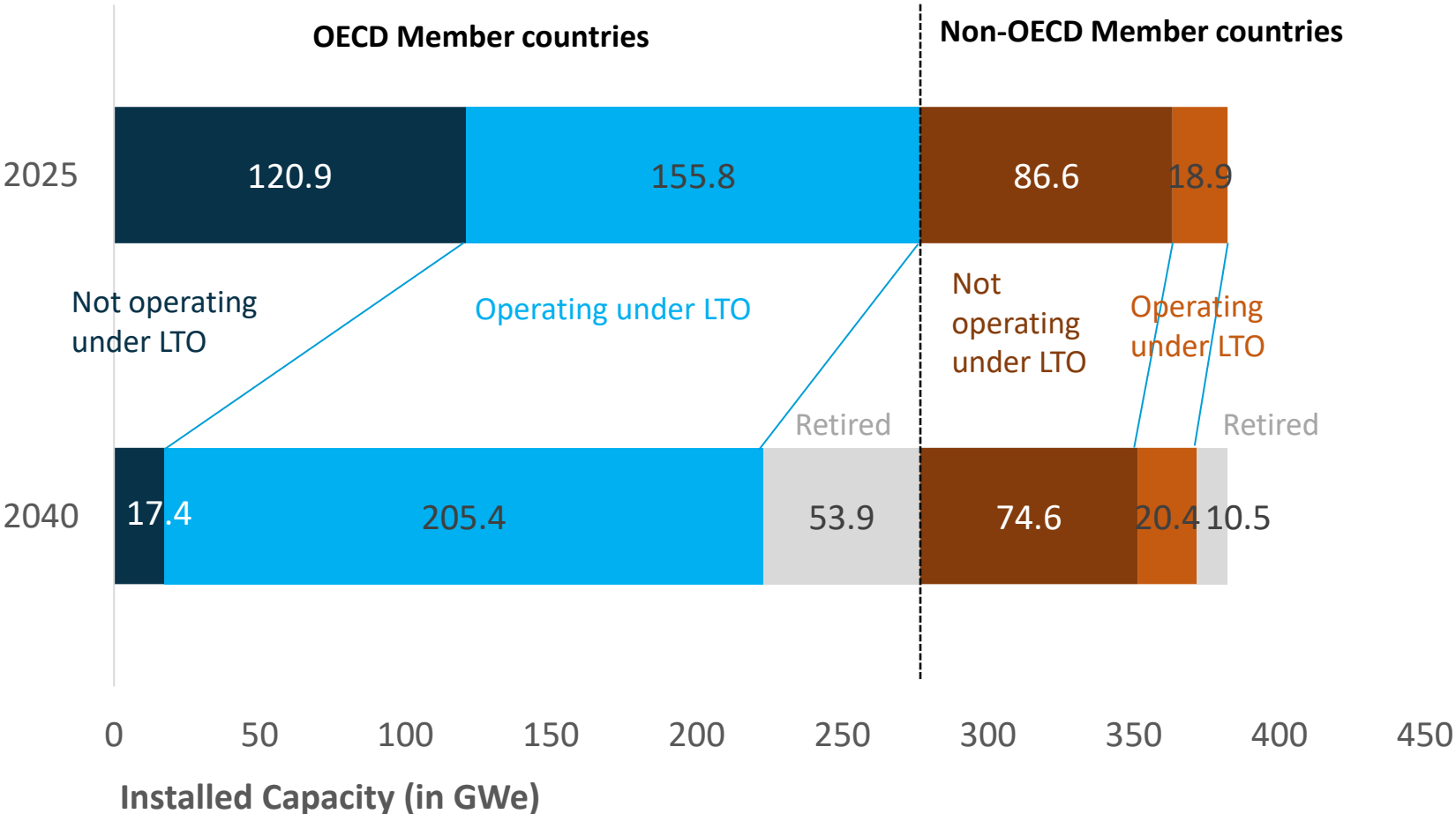


Taking Stock of Existing Nuclear Capacity and the Status of Nuclear New Builds

Securing the Existing Nuclear Fleet

Long-term operation is essential to meet future nuclear energy targets

Expected changes in capacity due to long-term operation in OECD and non OECD countries

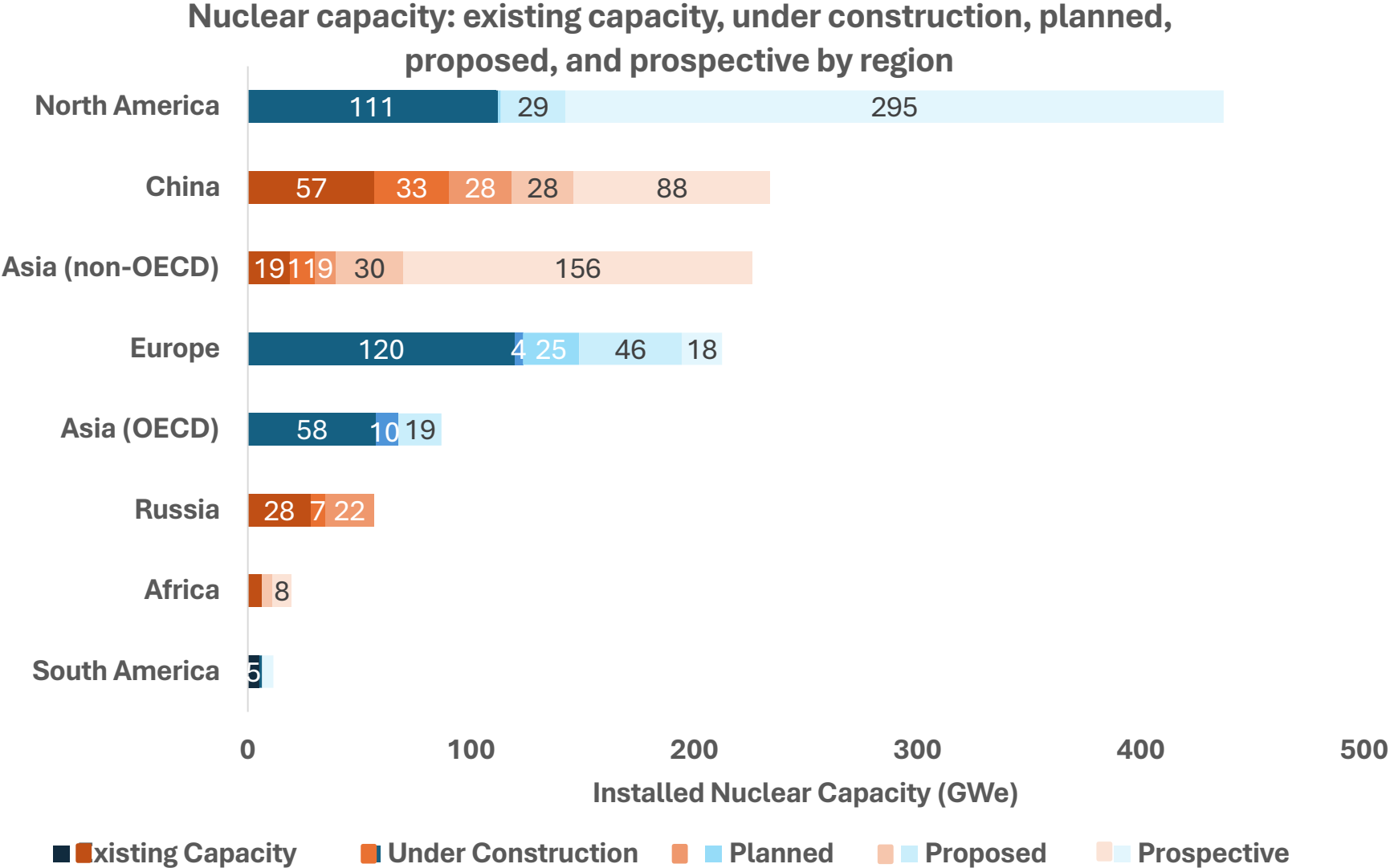


54 GWe

OECD nuclear capacity that has not yet secured licences for operation beyond 2040.

Pipeline of New Nuclear Energy Projects

The near-term pipeline suggests a shift in the centre of gravity towards non-OECD countries

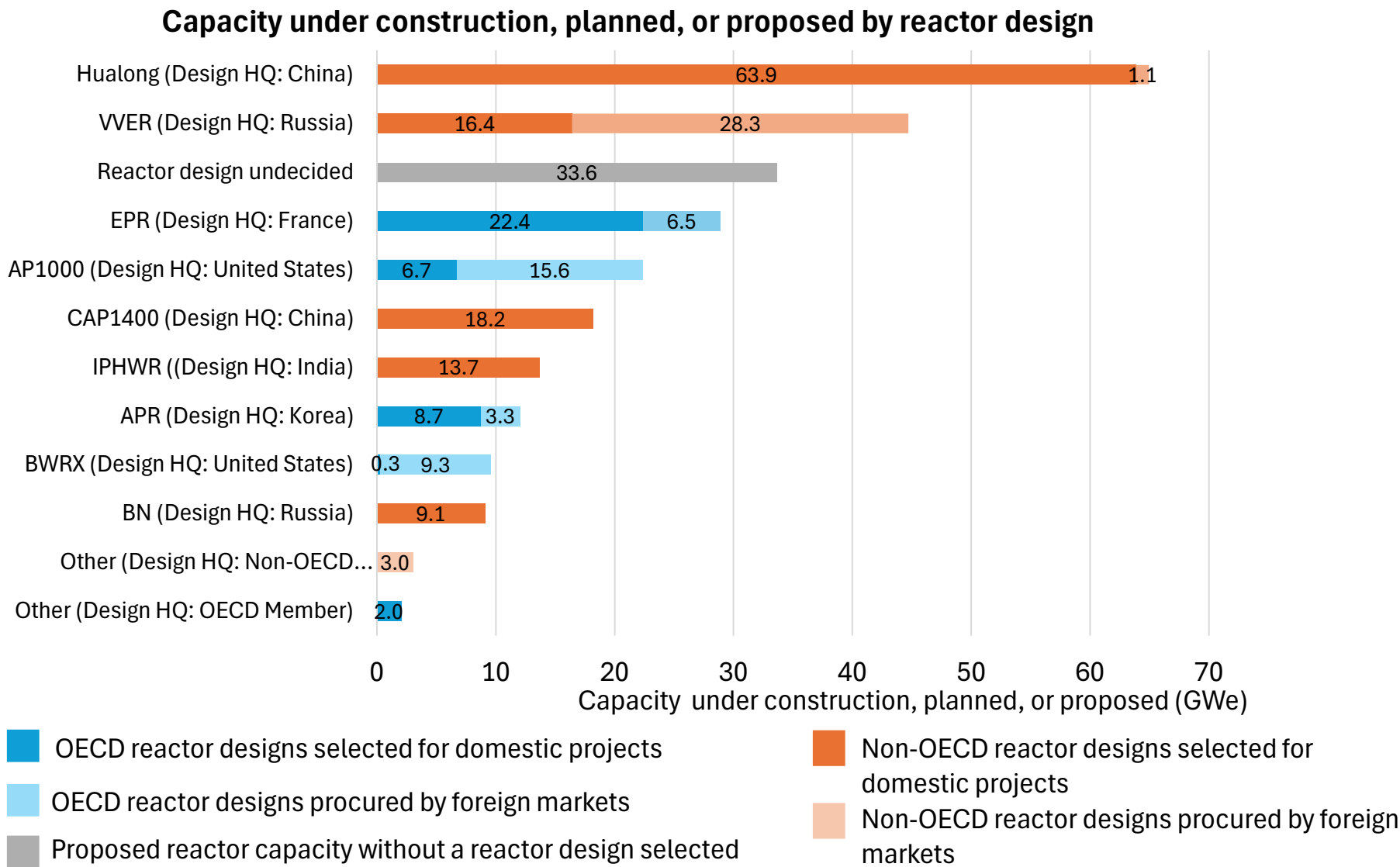


313 GWe

of new nuclear projects under construction, planned or proposed

Pipeline of New Nuclear Energy Projects

Chinese reactor designs lead globally, driven primarily by domestic projects, while Russia dominates the international nuclear market



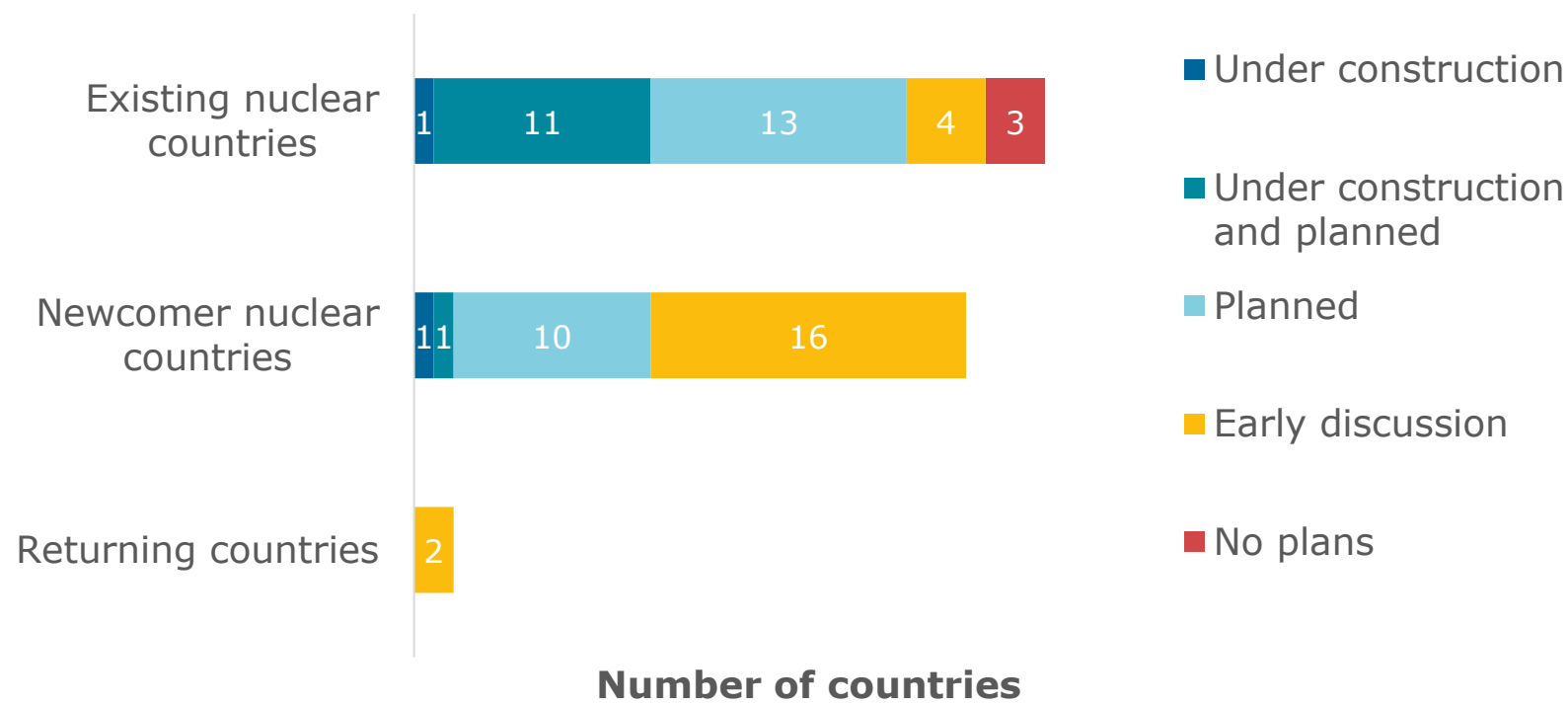
33 GWe

Proposed reactor capacity without a reactor design selected

Pipeline of existing and newcomer nuclear countries

Technology and supplier choices will shape the sector and long-term strategic relationships

New nuclear construction plans in existing and newcomer countries



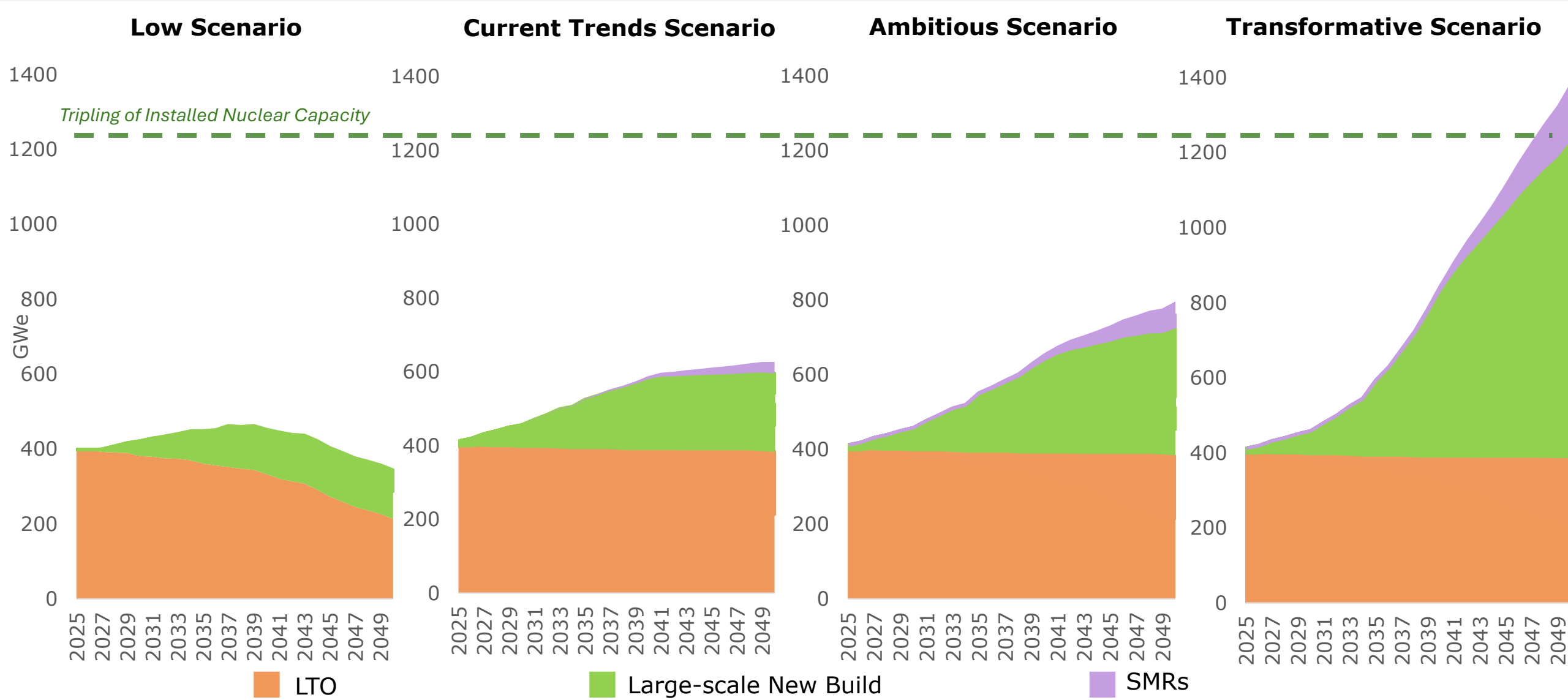
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Newcomer countries advancing plans to installing nuclear capacity in the next two decades

Tracking Global Progress Towards Nuclear Energy Targets

Four NEO Scenarios to 2050

Tripling is possible in a Transformative Scenario when deployments exceed historical rates



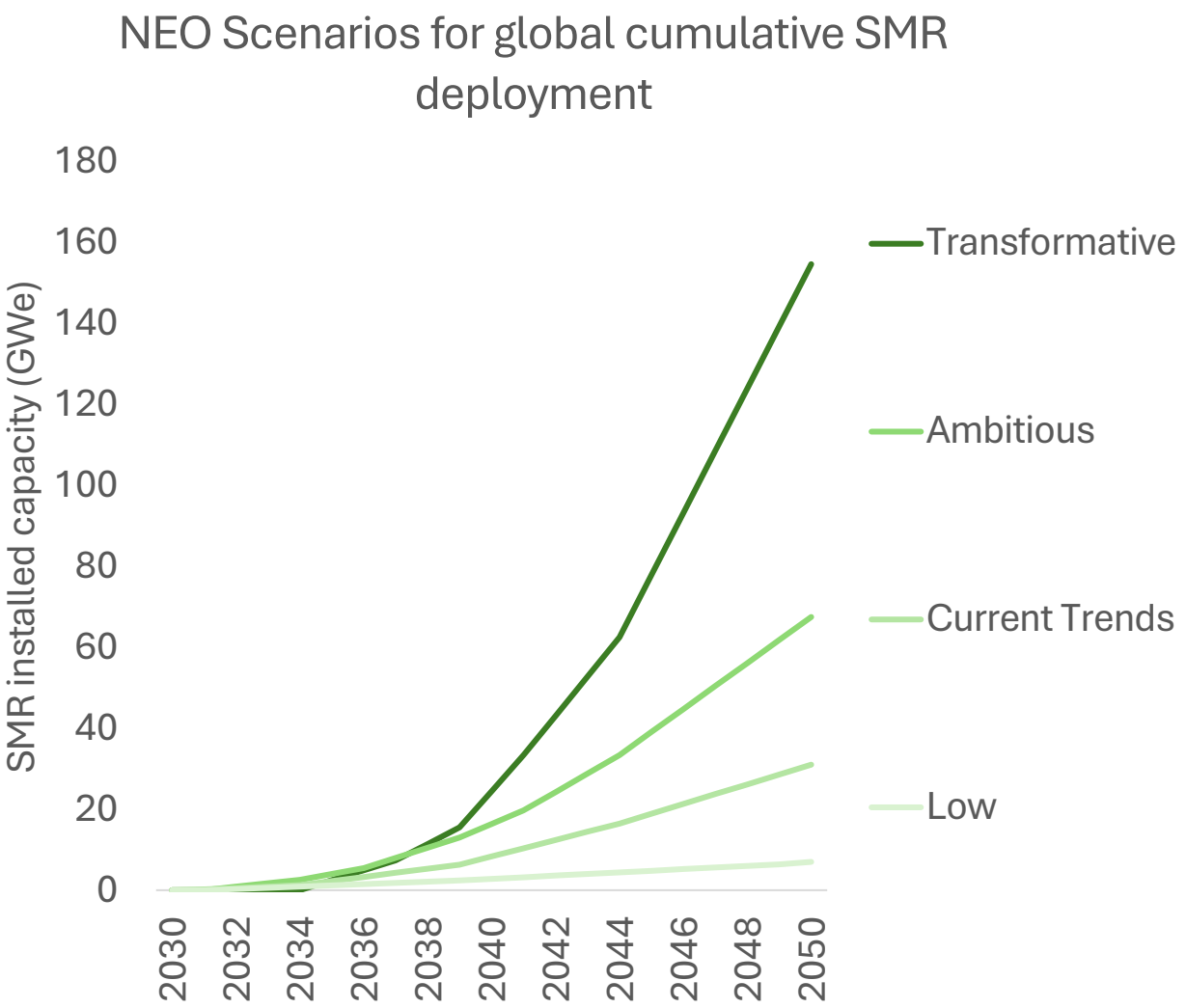
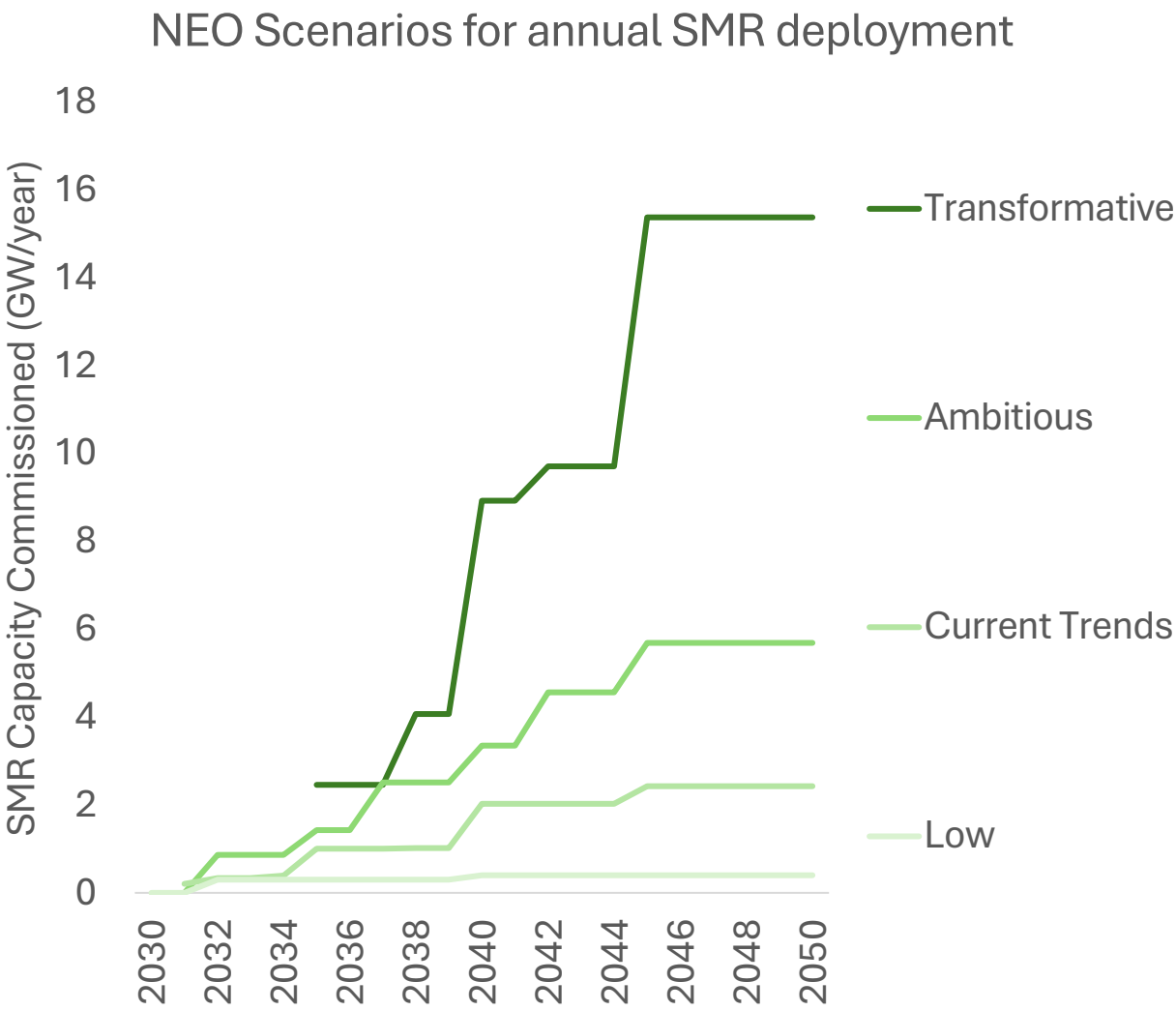
Long-term delivery models for SMRs

Deployment of SMRs at speed and scale will require transformative manufacturing models

Scenario	SMR Delivery model	Long-term SMR Deployment Rate	Assumptions
Low Scenario	Demonstration projects only	0 GW / year	Only the SMRs under construction are completed, with limited further deployment outside of demonstrators.
Current Trends Scenario	Onsite construction (EPC/programmatic)	~2-3 GW / year	Assumes coordinated, government-led SMR strategies, similar to France's 1980's nuclear programme or the Barakah project in the UAE.
Ambitious Scenario	High modularisation (shipyard style manufacturing practices)	~5-8 GW / year	Assumes delivery at rates similar to the shipbuilding industry by leveraging greater modularity and off-site construction.
Transformative Scenario	Mass manufacturing	~12-16 GW / year	Assumes mass production similar to the aircraft/aerospace industry, leading to competitive unit economics and timelines

Long-term delivery models for SMRs

Over 150 GWe of SMR capacity could be deployed by 2050 in the Transformative Scenario*

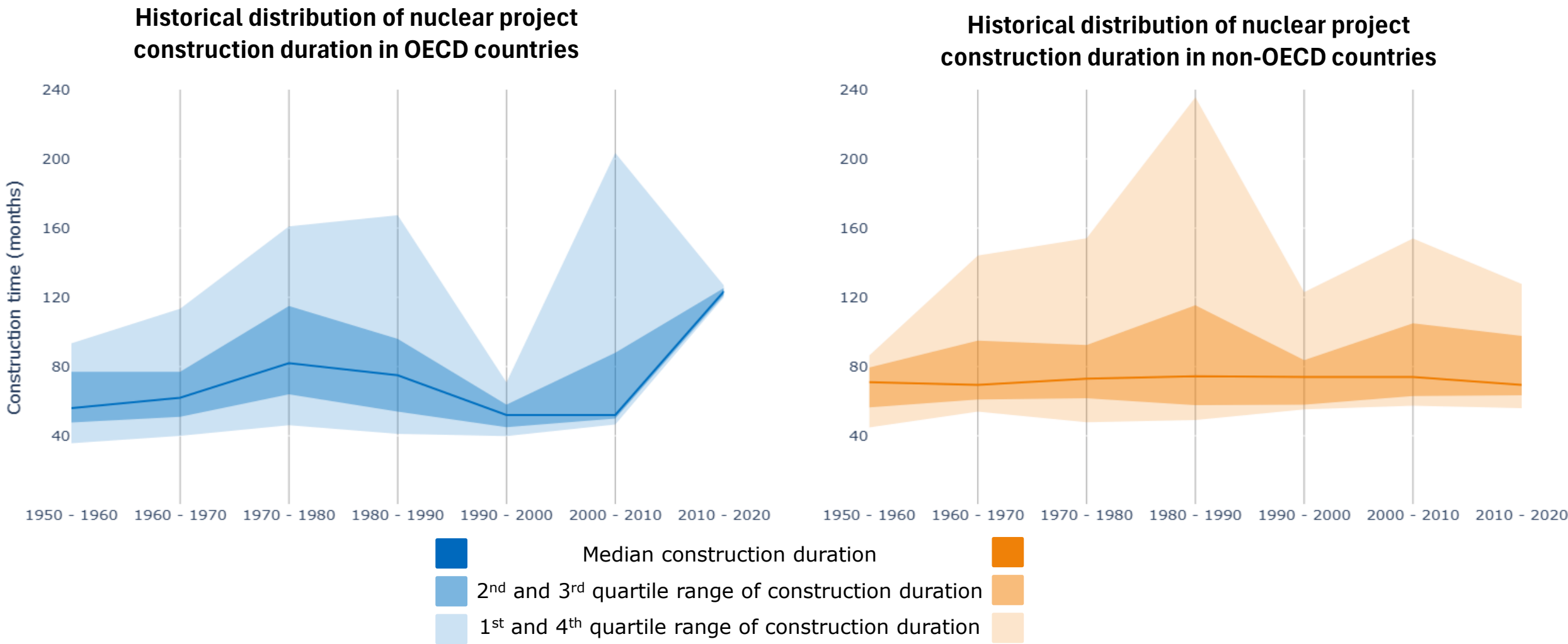


* Note: LWR SMRs are included as SMRs in NEO analysis

Nuclear Energy Outlook Policy Takeaways

Nuclear Construction Duration (i.e., time to complete project)

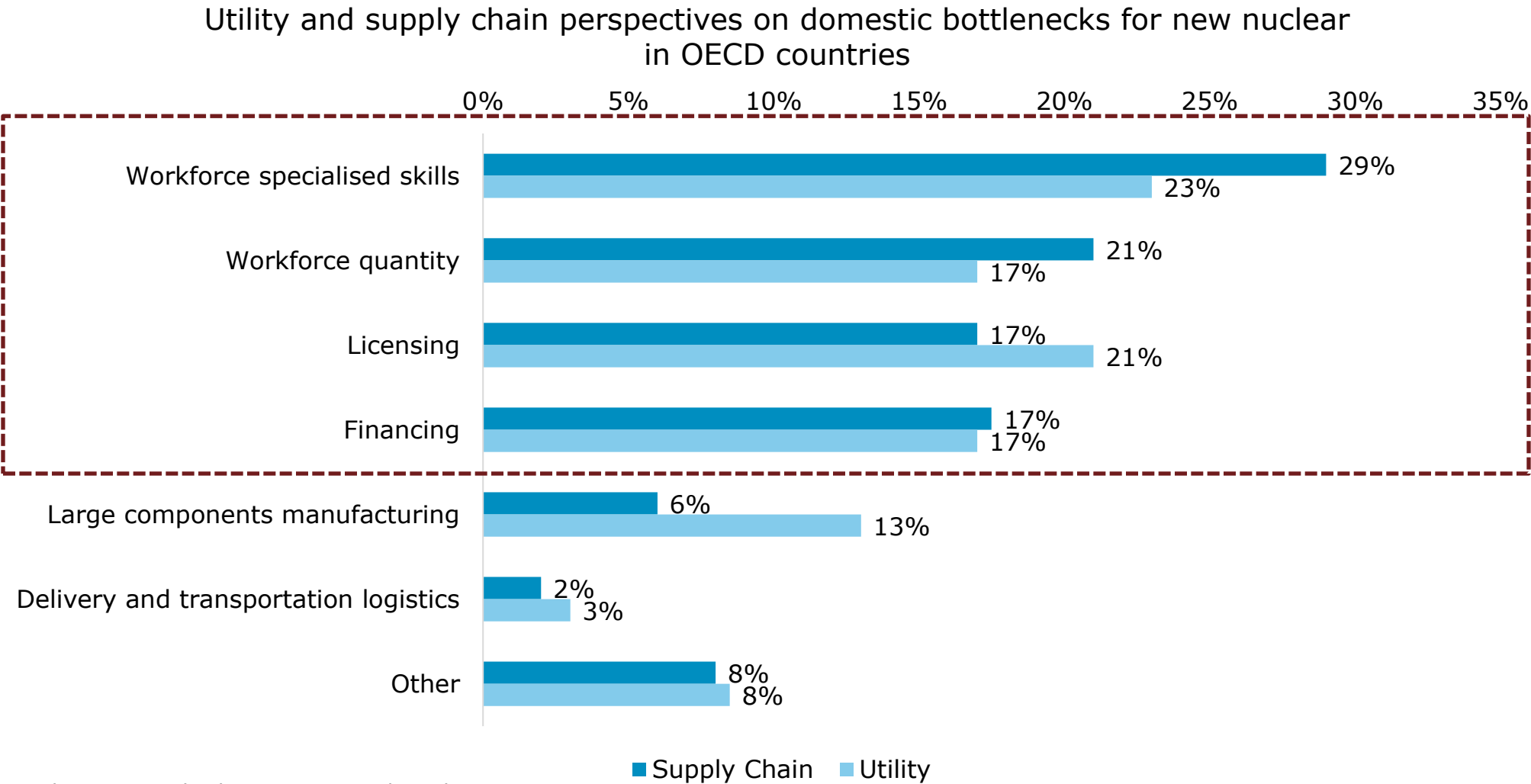
OECD countries must rebuild capabilities to deliver new nuclear at pace not seen since 1990s



Source: NEA based on data from IAEA PRIS as of 27 June 2025 (Construction duration <= 240 months).

Industry perspectives on bottlenecks to nuclear new builds

Utilities and supply chain identified workforce, financing, and licensing as top issues

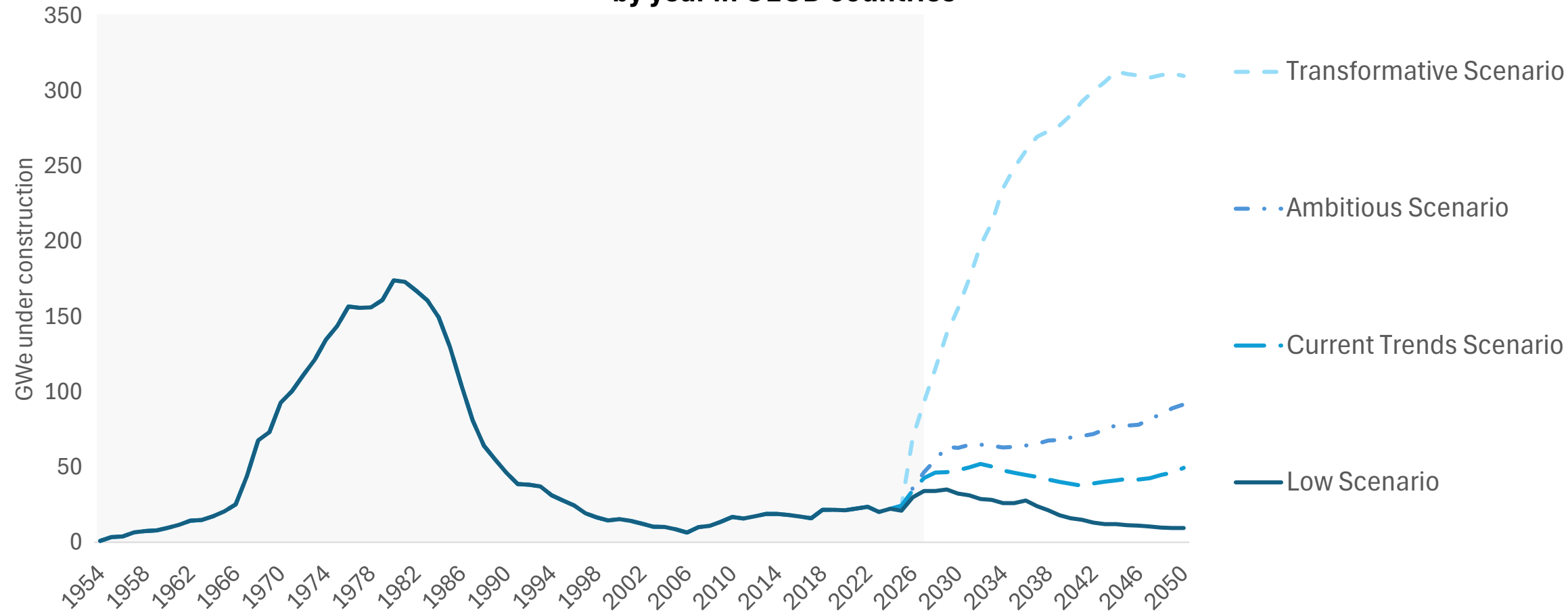


Source: Data from the NEA supply chain survey conducted in 2024

Workforce and supply chain capabilities

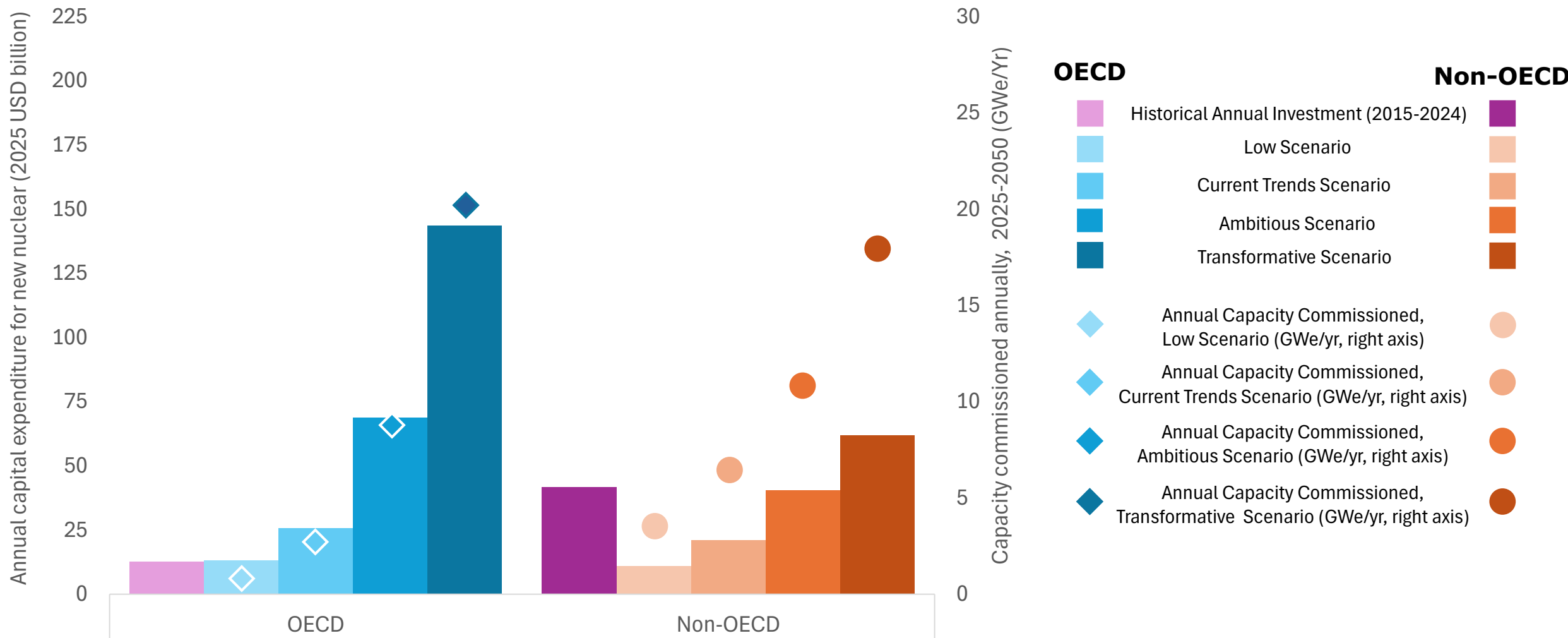
Supply chain and workforce capacities in OECD countries need to grow rapidly

Historical trend and outlook for total nuclear capacity under construction
by year in OECD countries



Financing Requirements for Nuclear New Build

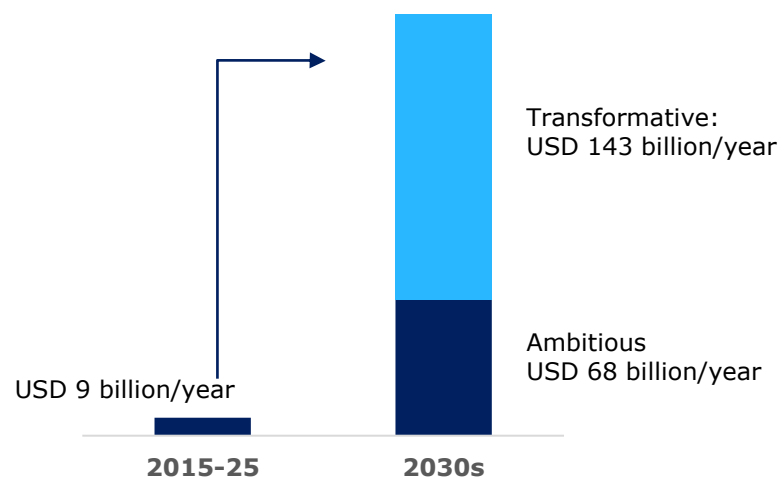
OECD countries face financing needs up to 180 Billion USD/yr by the 2030s



Priority Areas and Policy Recommendations

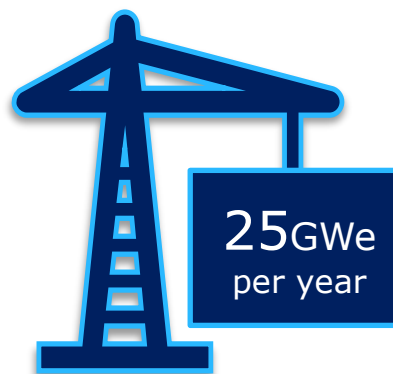
Priority area 1: Meeting financing requirements

OECD Countries financing requirements



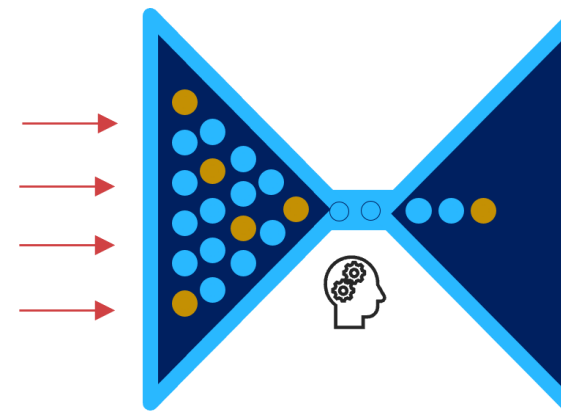
Effective financing frameworks are needed to attract private capital with both debt and equity to meet financing requirements

Priority area 2: Meeting supply chain requirements



OECD governments and industry should commit to standardised programs to give the certainty for supply chain investments

Priority area 3: Ensuring workforce readiness



OECD governments and industry should collaborate on workforce expansion to attract and retain talent across multiple pipelines



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your attention!**

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