NEA
NUCLEAR ENERGY AGENCY

Leadership Needs in the New Nuclear Energy Era

Nuclear Innovation Conference 2024

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The NEA: 34 Countries Seeking Excellence in Nuclear Safety, Technology, and Policy

- The premier international platform for cooperation in nuclear technology, policy, regulation, research, and education.
- 34 member countries + strategic partners (e.g., China and India).
- More than 3500 experts from countries all over the world are participating in NEA activities.
- Global relationships with industry and universities.

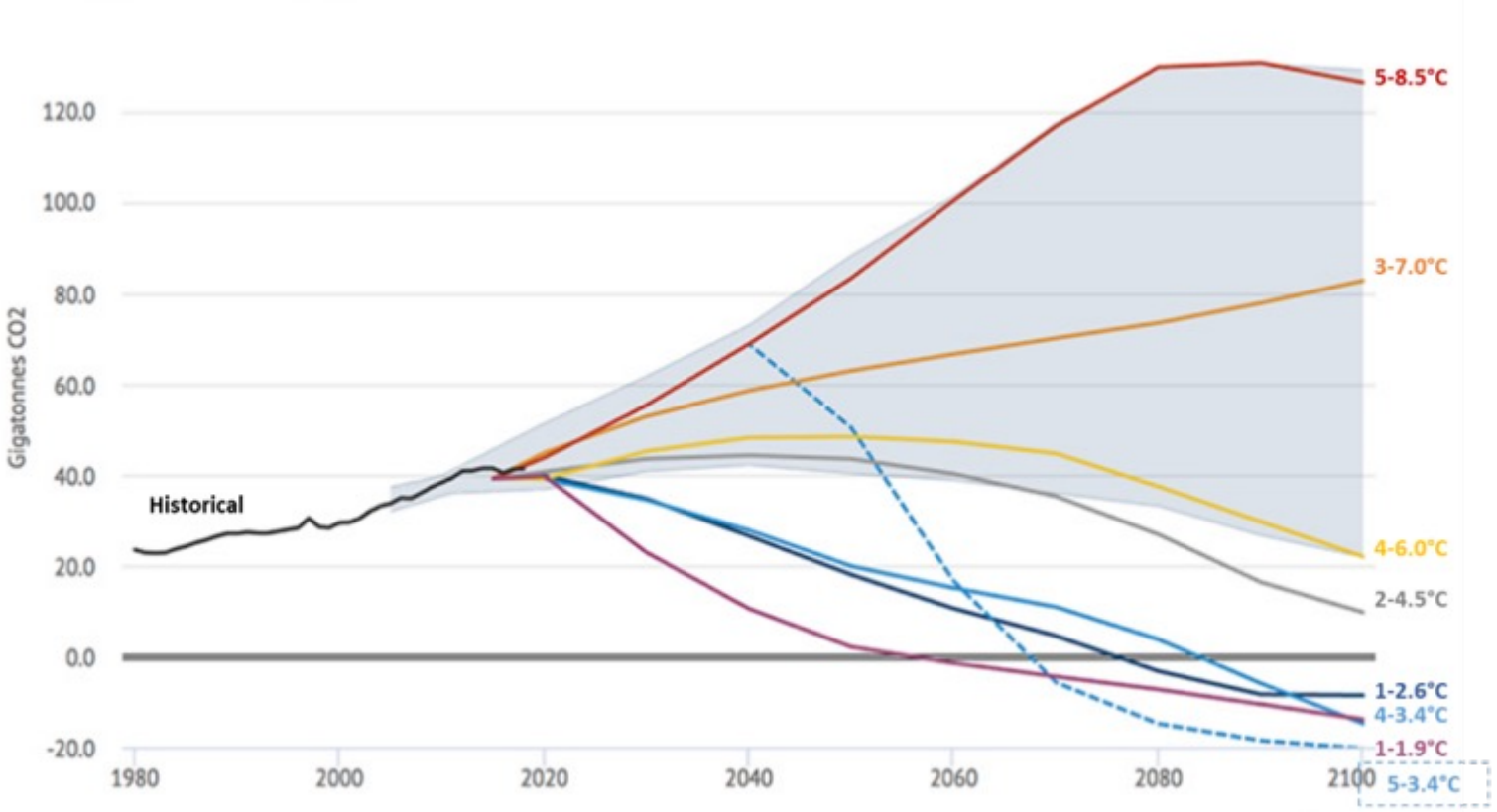
Argentina	Australia	Austria	Belgium
Bulgaria	Canada	Czech Republic	Denmark
Finland	France	Germany	Greece
Hungary	Iceland	Ireland	Italy
Japan	Korea	Luxembourg	Mexico
Netherlands	Norway	Poland	Portugal
Romania	Russia (suspended)	Slovak Republic	Slovenia
Spain	Sweden	Switzerland	Turkey
United Kingdom	United States		

NEA countries operate about 81% of the world's installed nuclear capacity

Global Action Is Urgently Needed to Meet Climate Targets

- The magnitude of the challenge should not be underestimated
- The planet has a "carbon budget" of 420 gigatonnes of carbon dioxide emissions for the 1.5°C scenario
- At current levels of emissions, the entire carbon budget would be consumed within 8 years
- Emissions must go to net zero, but the world is not on track

Temperature outcomes for various emissions futures



Source: Carbon Brief (2019).

Key Observations

- **With the changes in the geopolitical situation in 2022, energy security became the driving issue in many capitals** as electricity prices rose dramatically around the world. Some of the immediate pressures have eased, but the risk of further disruption is ever present.
- **Coal use is shrinking** in most OECD countries.
- **Focus on 2030 targets for CO_2 reductions** have forced both increased investment in energy and a much larger degree of reality.
- **Roadmaps to New Nuclear 2023** in which the NEA brought together ministers from 20 countries and 40 industry CEOs verified that the global narrative had changed forever.
- **COP28 – the first "Nuclear COP"**:
  - **The Declaration to Triple Nuclear Energy** - 24 nations called for tripling of global nuclear capacity by 2050
  - **The Net Zero Nuclear Industry Pledge -** endorsed by 120 companies, headquartered in 25 countries, and active in over 140 nations worldwide

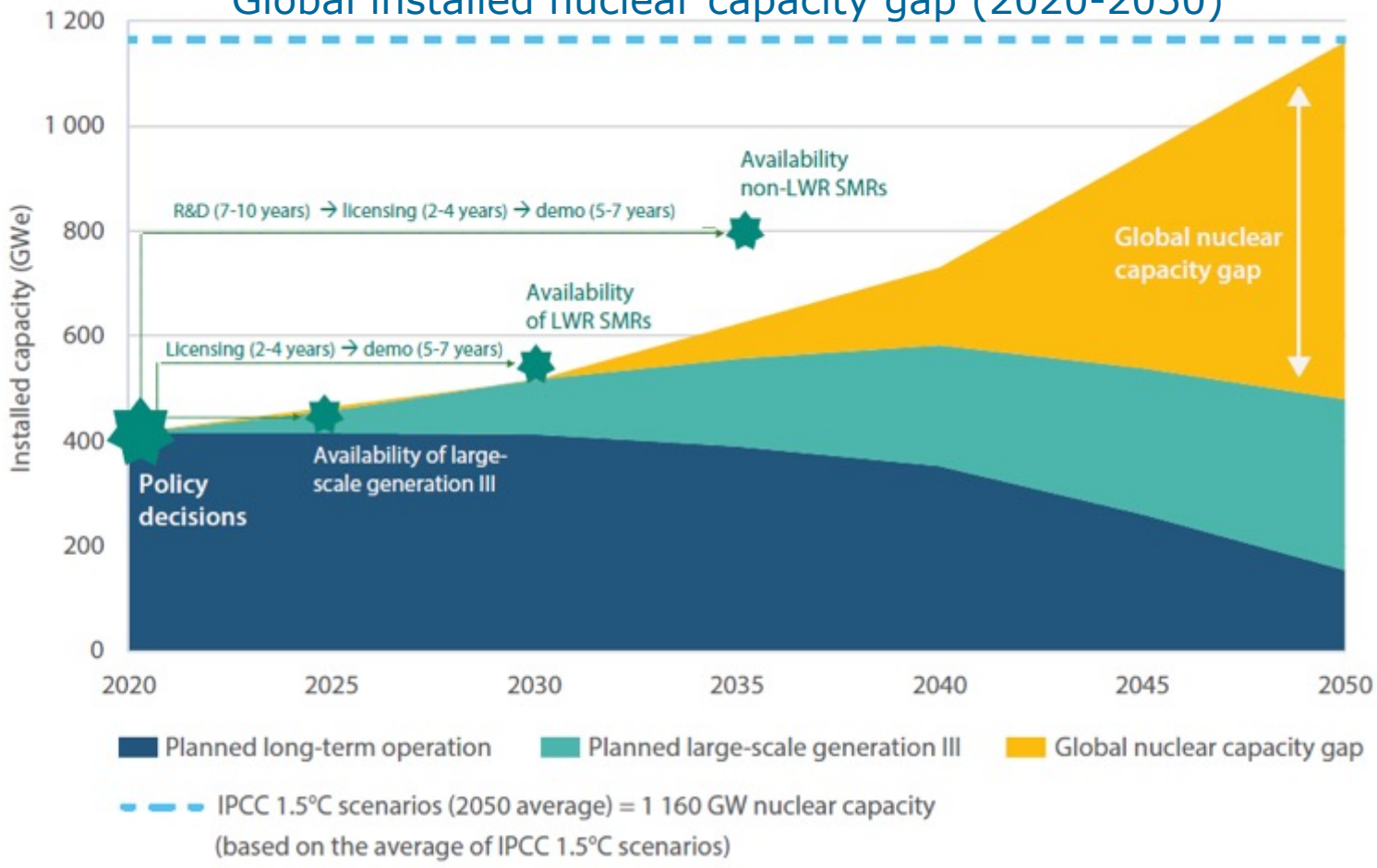
Roadmaps to New Nuclear 2023

The Declaration to Triple Nuclear Energy

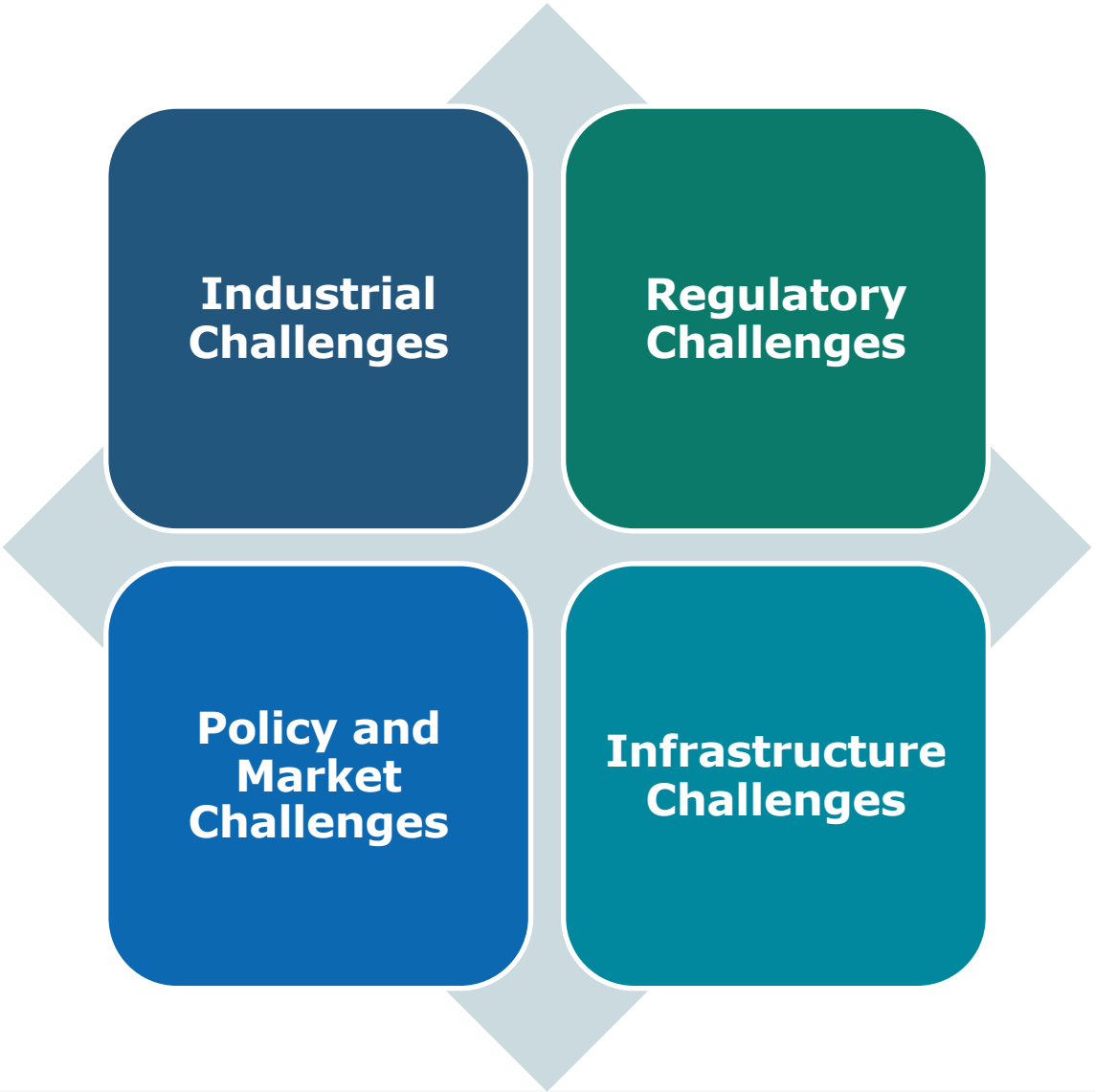
Nuclear Energy is a Vital Part of the Solution, but…

- NEA analysis has highlighted that approximately **1160 gigawatts** of nuclear capacity (for electricity and process heat) will be needed by 2050 to meet environmental goals
- Under current policy trends, nuclear capacity in 2050 is expected to reach only **479 gigawatts**.
- **Urgent action is needed now to close the gap in 2030-2050**

Global installed nuclear capacity gap (2020-2050)



For New Nuclear Energy to be Successful, Key Challenges Must be Addressed



For New Nuclear Energy to be Successful, Key Challenges Must be Addressed

Industrial Challenges

- **Execution**—industry must take breakthrough technologies from the drawing board to commercial reality and deliver projects as promised
- **Operations Models**—industry must present realistic models to operate large numbers of SMRs and microreactors
- **Supply Chain**—past experience demonstrates that the global nuclear supply chain is neither broad nor deep and suppliers are not always as prepared as might be expected

For New Nuclear Energy to be Successful, Key Challenges Must be Addressed

Regulatory Challenges

- **Adaptation to New Technologies**—regulators must not view Gen IV technologies through a Gen II lens and must be prepared to address digital technologies
- **Accept New Paradigms**—new technologies may be game-changers in areas such as EP and security, but regulators must be truly risk-informed
- **Global Thinking**—regulators must act nationally but think globally; otherwise there cannot be a true global market for new technologies

For New Nuclear Energy to be Successful, Key Challenges Must be Addressed

Policy and Market Challenges

- **Financing—**government policies are needed to support financing of new nuclear construction and other high-capital investments needed to reach Net-Zero; change is needed in the International Financial Institutions
- **Outdated Electricity Markets—**today's markets don't support long-term environmental and energy security goals; dispatchability has value!
- **FOAK—**governments must put policies in place to address FOAK risks and costs; policymakers must recognize that first projects will be expensive and challenging

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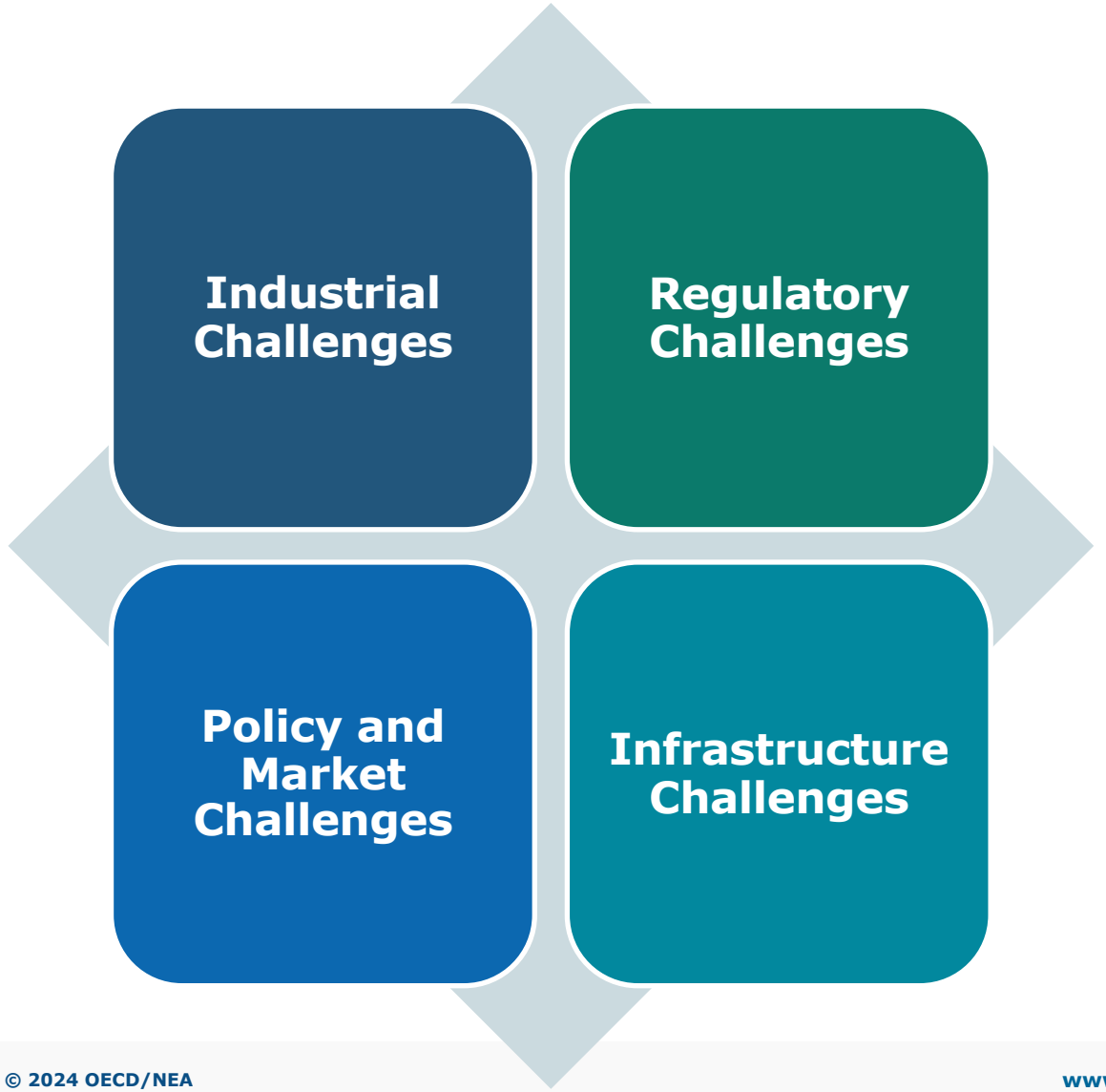
Infrastructure Challenges

- **HALEU**—the lack of a clear path to a reliable supply of high assay LEU is a barrier to new technologies
- **Legal Frameworks**—new technologies—especially mobile reactors—will require updates to existing legal and regulatory frameworks to address liability, safety and other considerations
- **Human Resources**—more must be done to promote a new generation of nuclear experts while promoting greater diversity and gender balance

None of These Challenges Can be Solved without Effective Leadership



- Failure isn’t an option, but it is likely without dynamic leadership
- Leadership means taking risks and embracing uncertainty
- This type of leadership is not always encouraged in the nuclear sector

What do we need from Nuclear Leaders?

Industry

- Acknowledge the realities we know exist
- New contracting paradigms are needed; project success must be the goal for all parties
- Realism vs Marketing
- Prioritise based on end goals, not short-term profits

What do we need from Nuclear Leaders?

Regulators

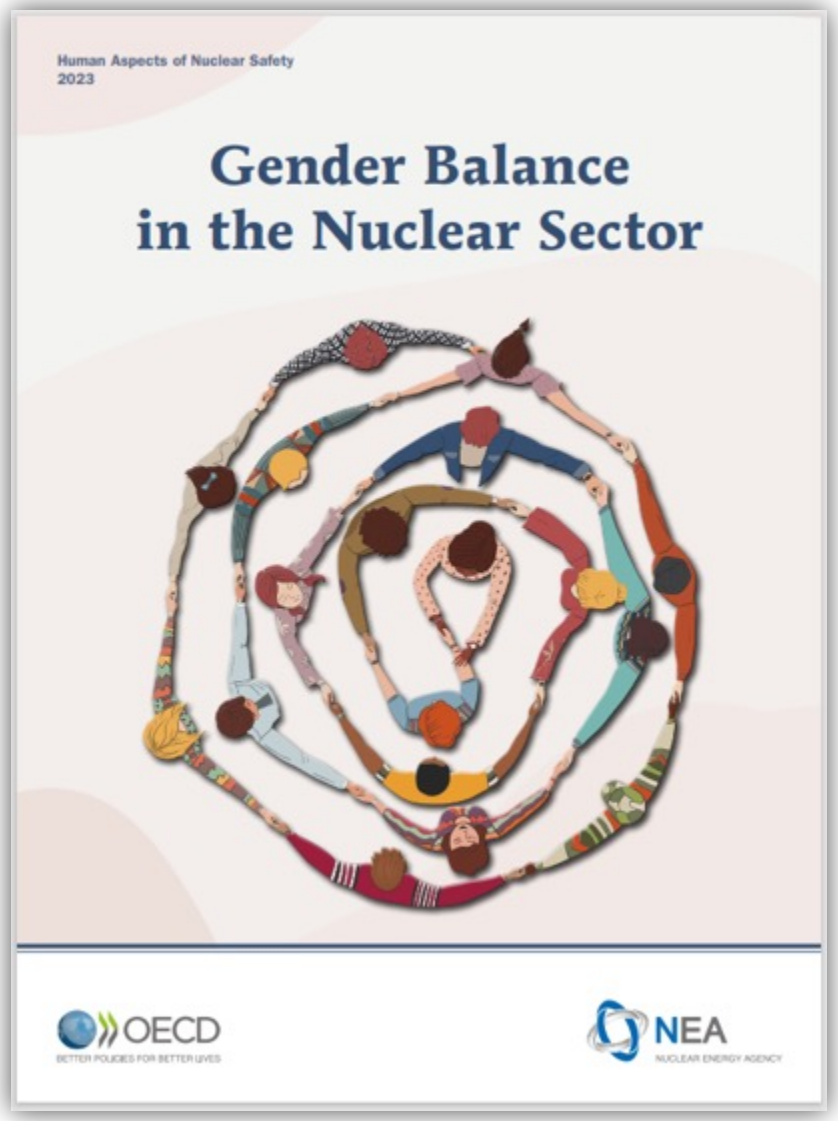
- **Be open to outside ideas and expertise; independence is not isolation**
- **Gain a global mindset**
- **Recongise that new technologies challenge everything you know and do; maintaining cherished status quos will lead to failure**

What do we need from Nuclear Leaders?

Governments

- **Get serious**
- **Revamp international financial institutions**
- **Force change in the industry and the entire nuclear sector**
- **Adopt & apply NEA recommendations on Gender**

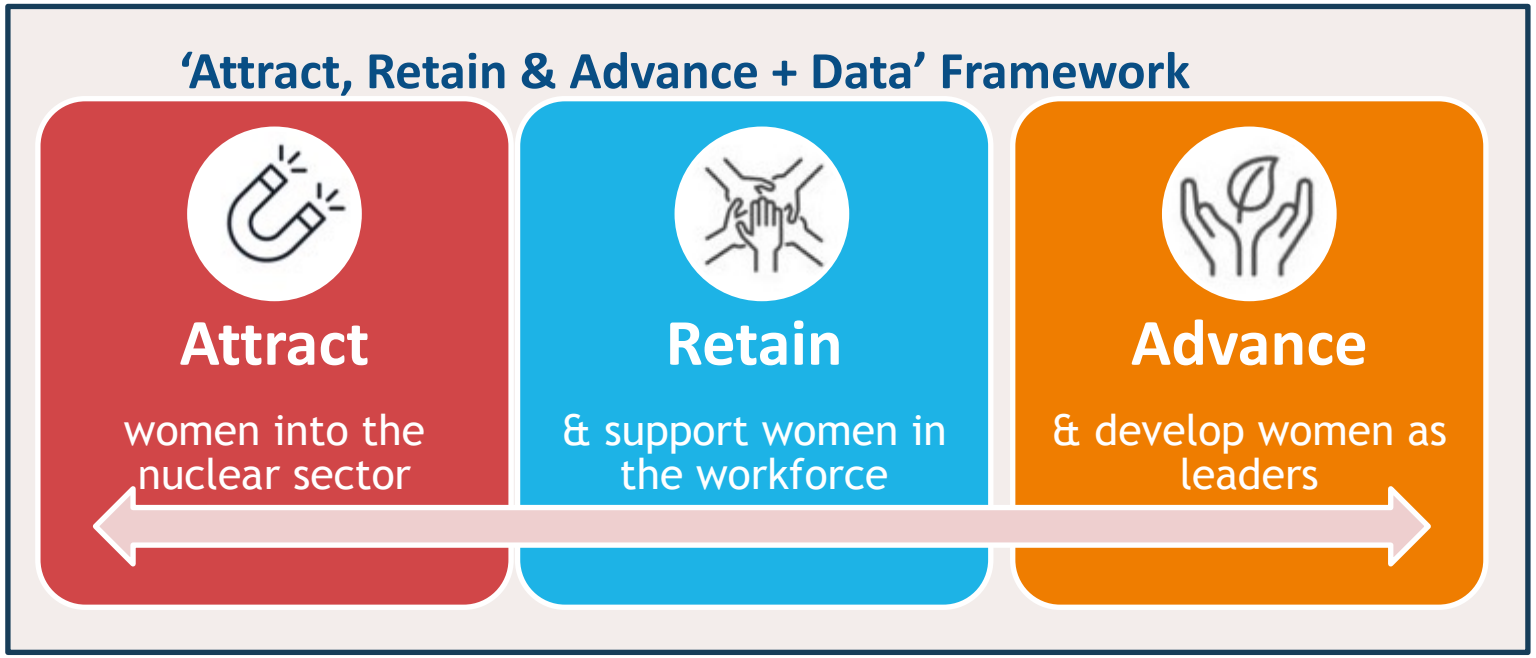
NEA Work towards Gender Balance in the Nuclear Sector



Flagship Report Launched on 8 March 2023

- **Takes stock** of current gender balance in nuclear sector in NEA countries
- Provides **first public, international data**
- Objective: To establish policy framework with **recommendations**.

Recommendation on Improving the Gender Balance in the Nuclear Sector adopted by 38 countries on 8 June 2023



→ **Download the report:** *http://www.oecd-nea.org/gender-balance*

Important NEA initiatives – Changing the Game

Project 2035


International Mentoring Workshop in Texas

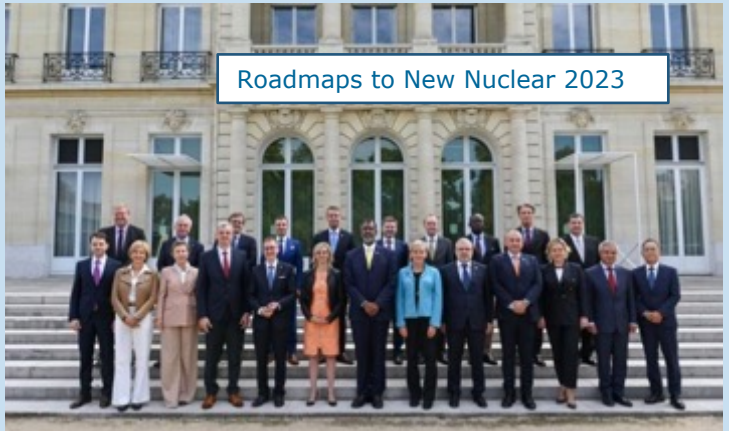
Responding to the outcomes of Roadmaps for New Nuclear 2023, **Project 2035** is designed to work with educators, industry and governments to increase the pipeline of new talent into the nuclear sector.

Common Journey


Nuclear Energy Side-Event at the African Union Summit

Recognising that nuclear energy is part of the solution to global challenges of economic growth, energy security and climate change, African nations are building nuclear energy programs—**Common Journey** is a framework for cooperation with OECD countries.

Roadmaps to New Nuclear 2024


Roadmaps to New Nuclear 2023

2nd Roadmaps For New Nuclear Ministerial

and

Accelerating SMRs for Net Zero Summit

Paris - September 19-20, 2024

For Climate Action to be Successful, Leaders Must Establish a New Vision for the Future

If action on climate is associated with limits to life, economic growth, and freedom, the energy transition will stall.

Innovative Nuclear Technologies Help Provide a Solution Set—but Leadership will be Essential to Realise this Vision

Thank you for your attention

www.oecd-nea.org/SMR-Dashboard-2nd-edition