

NEA SMR Dashboard

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Head of Division

Nuclear Technology Development and Economics

The Nuclear Energy Agency

34 countries seeking excellence in nuclear safety, technology, and policy

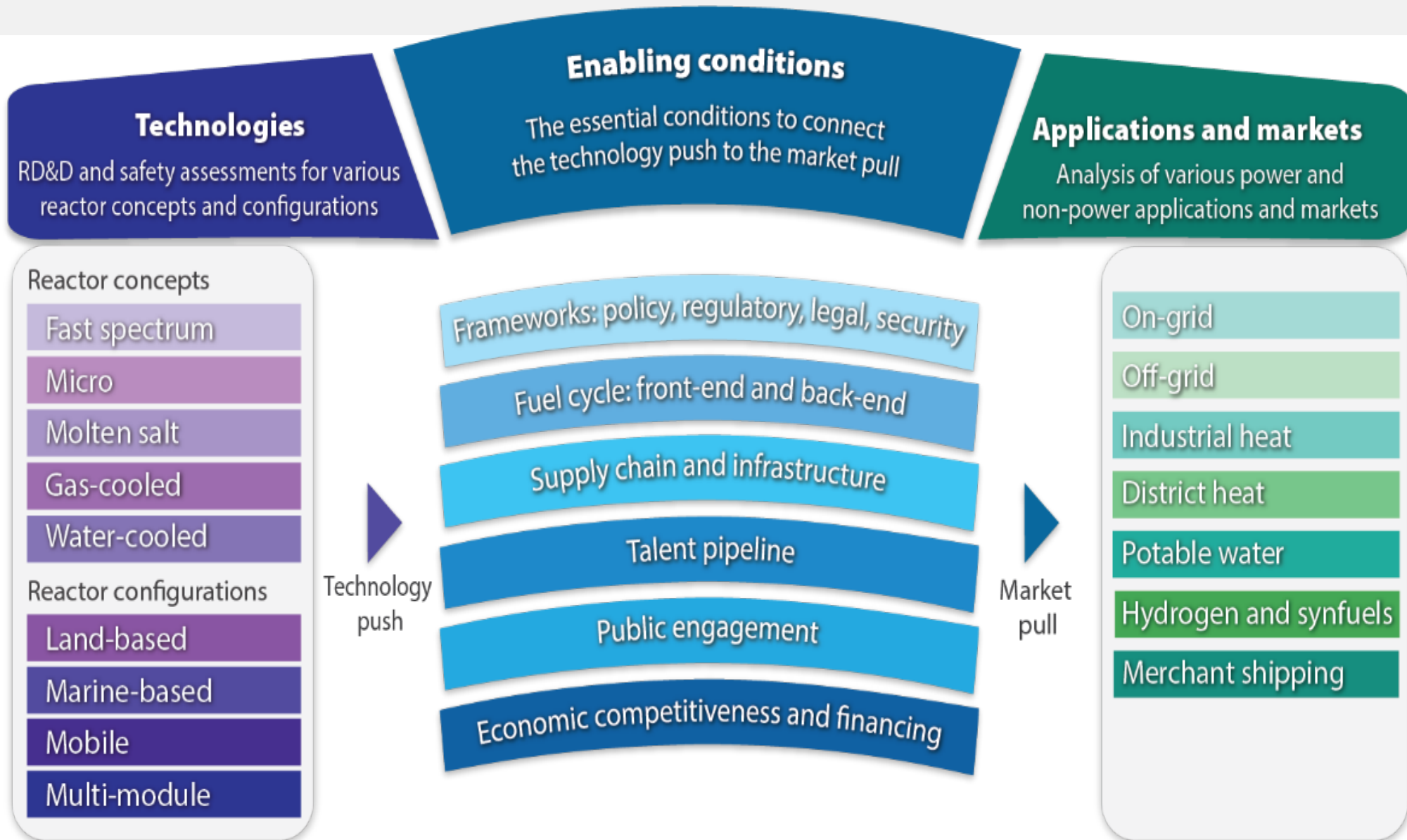
- The premier international platform for cooperation in nuclear technology, policy, regulation, research, and education
- 34 member countries plus strategic partners (e.g., China and India)
- 8 standing committees and more than 80 working parties and expert groups
- 20 joint undertakings
- Global relationships 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*	 Slovak Republic	 Slovenia
 Spain	 Sweden	 Switzerland	 Turkey
 United Kingdom	 United States		

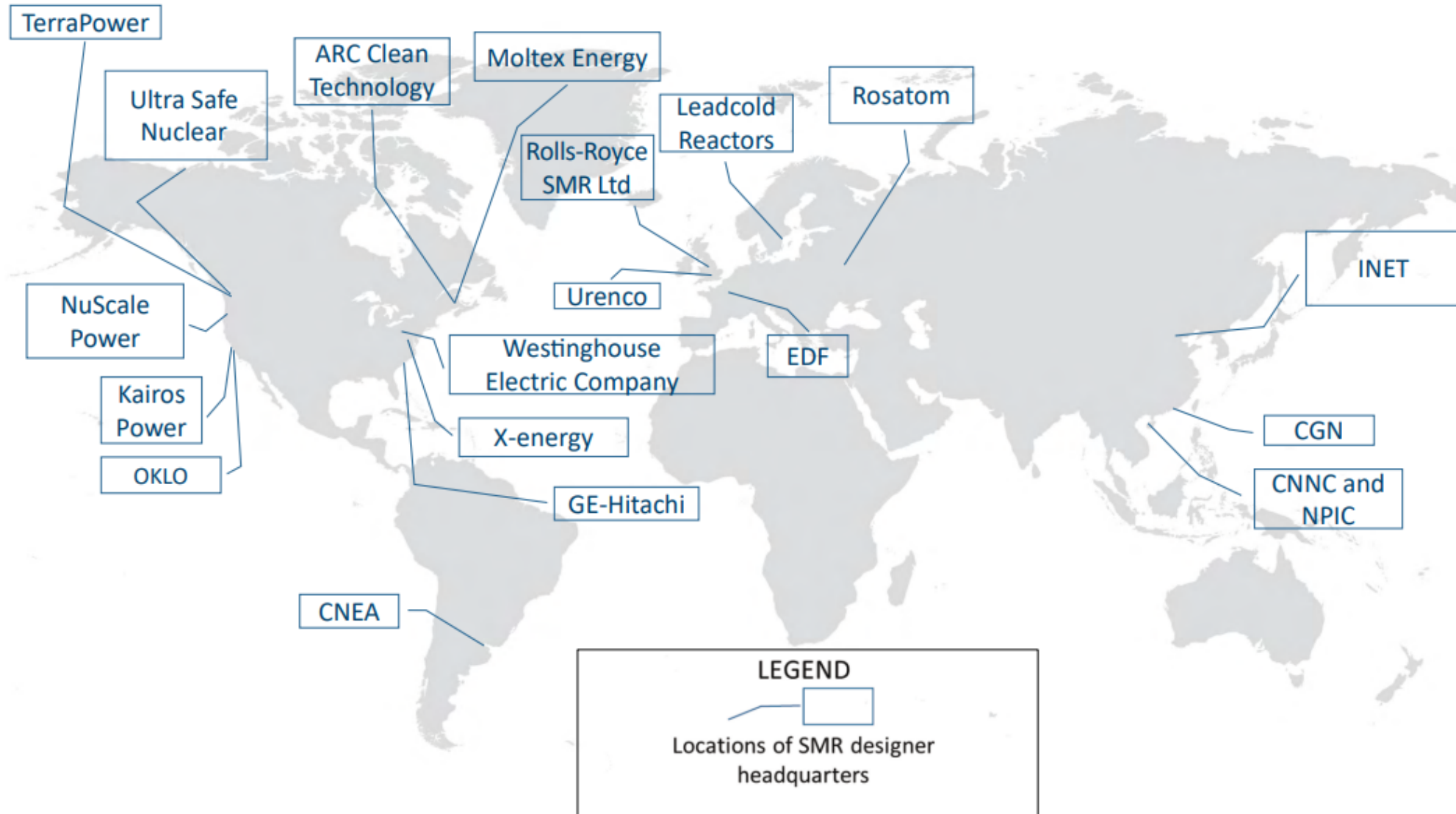
**Suspended*

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

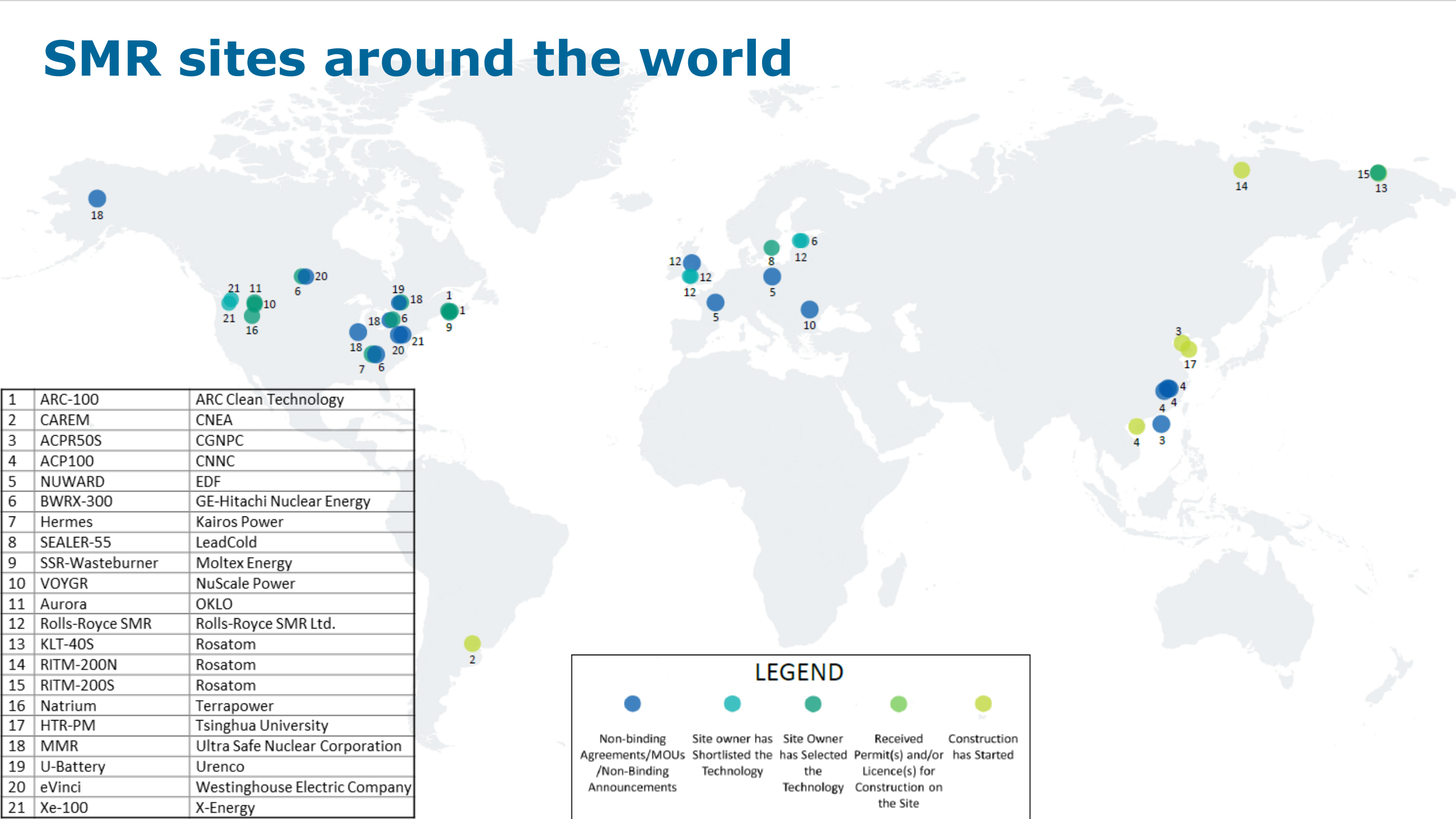
NEA SMR Strategy



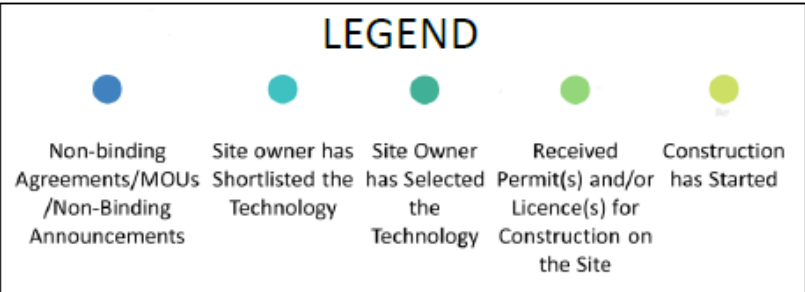
SMRs under development around the world



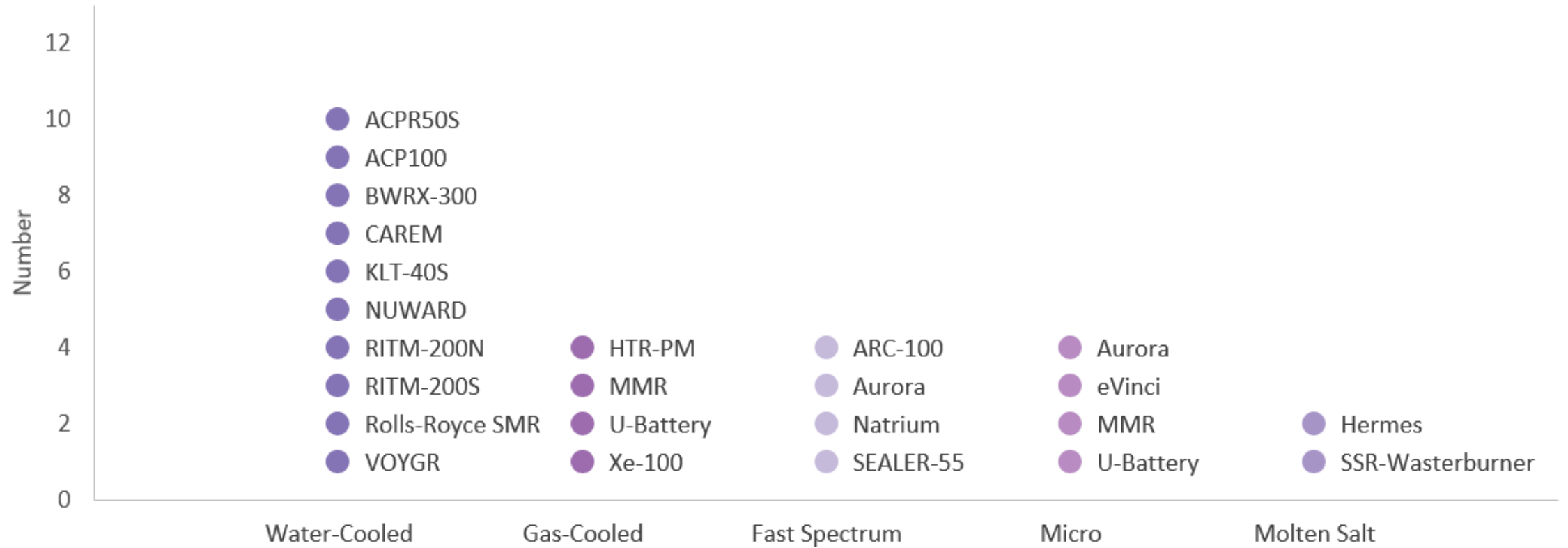
SMR sites around the world



1	ARC-100	ARC Clean Technology
2	CAREM	CNEA
3	ACPR50S	CGNPC
4	ACP100	CNNC
5	NUWARD	EDF
6	BWRX-300	GE-Hitachi Nuclear Energy
7	Hermes	Kairos Power
8	SEALER-55	LeadCold
9	SSR-Wasteburner	Moltex Energy
10	VOYGR	NuScale Power
11	Aurora	OKLO
12	Rolls-Royce SMR	Rolls-Royce SMR Ltd.
13	KLT-40S	Rosatom
14	RITM-200N	Rosatom
15	RITM-200S	Rosatom
16	Natrium	Terrapower
17	HTR-PM	Tsinghua University
18	MMR	Ultra Safe Nuclear Corporation
19	U-Battery	Urenco
20	eVinci	Westinghouse Electric Company
21	Xe-100	X-Energy



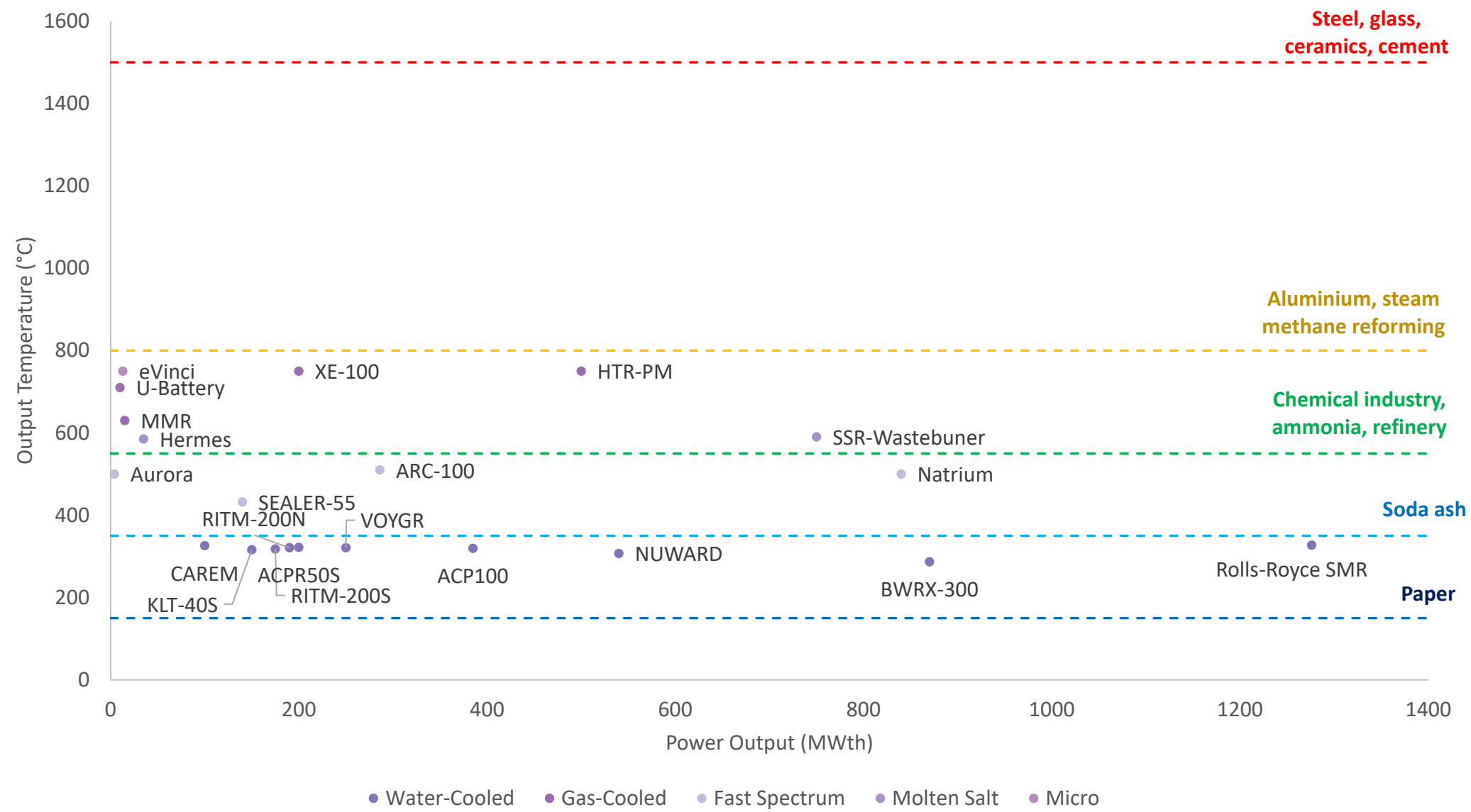
Reactor concepts



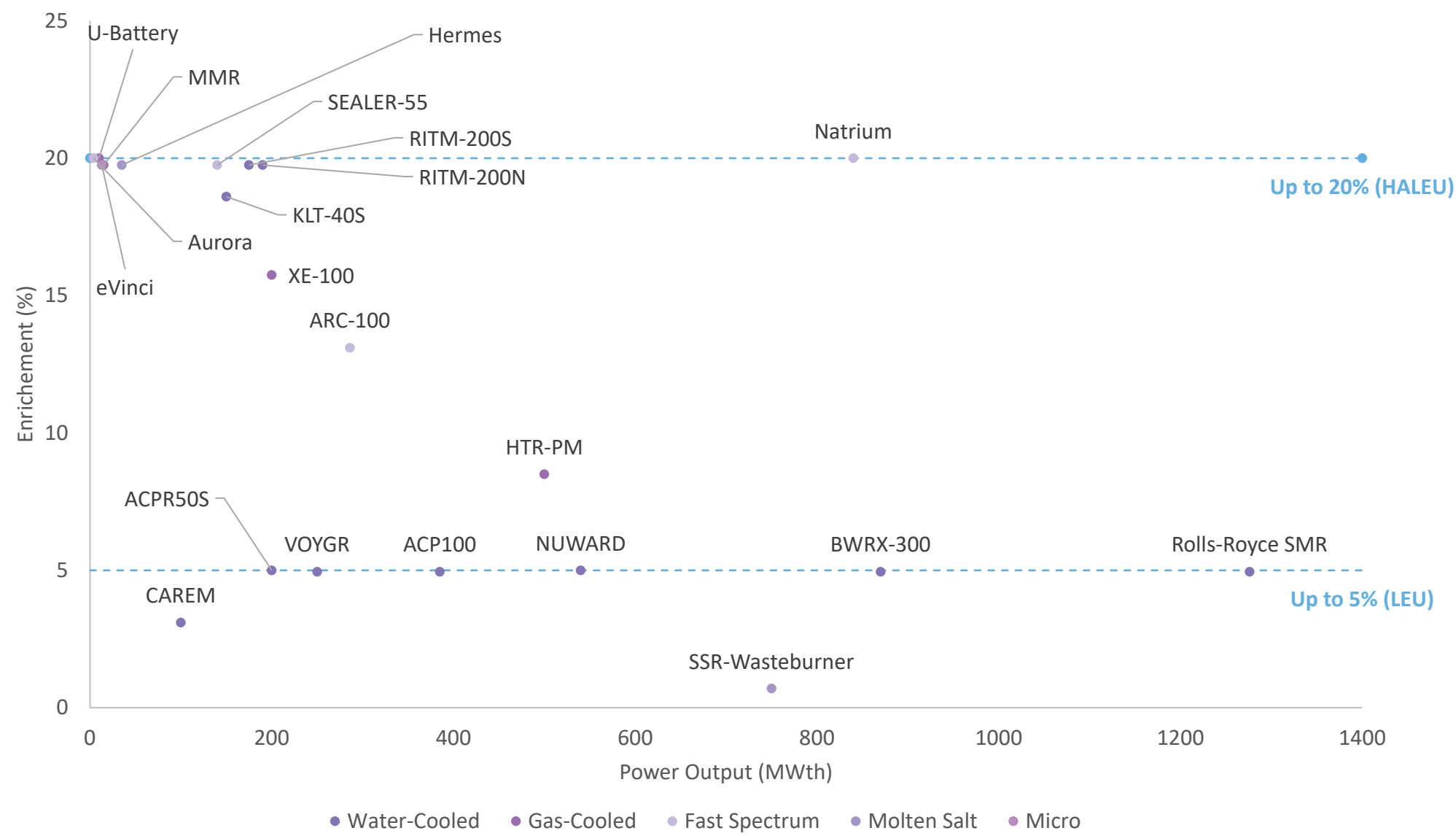
Reactor configurations



Sizes and temperatures

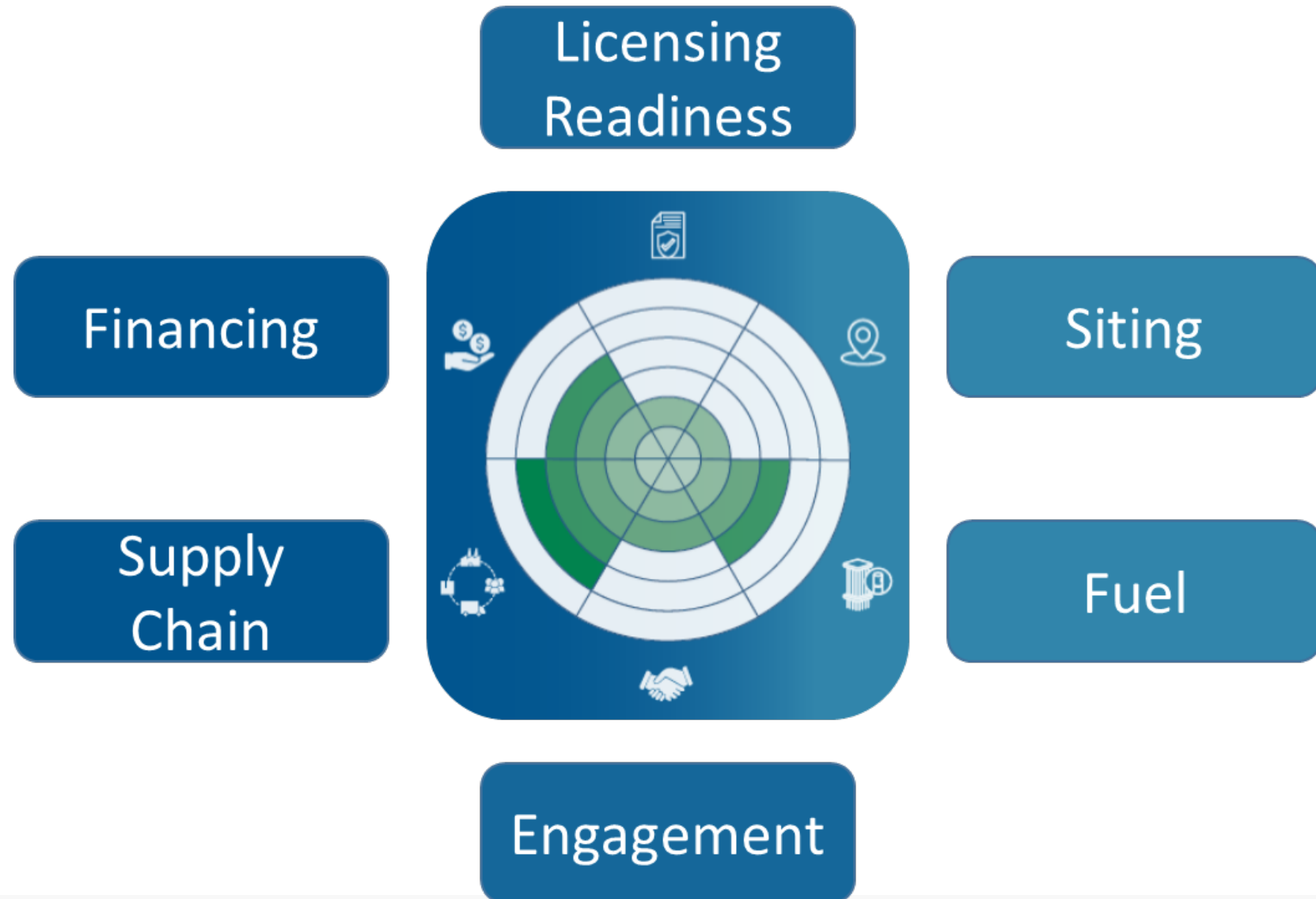


Sizes, temperatures, enrichment requirements



Tracking progress: *Six new indicators by NEA*

- “Technology readiness level” is useful, but only reveals part of the picture
- NEA defines six additional indicators of progress
- With NEA’s new indicators, the picture becomes more clear



Tracking progress with criteria-based indicators

Licensing	No information	Pre-licensing	Licence/construction/design certification application submitted	Design approved	Licence to construct approved	Licence to operate approved
* Bonus for multiple jurisdictions						
Siting	No information	Non-binding agreements /MOUs/non-binding announcements	Site owner has shortlisted the technology	Site owner has selected the technology	Received permit(s) and or licence(s) for construction on the site	Construction has Started on the site
* Bonus for multiple sites						
Financing ⁽¹⁾	No information	At least one announcement	Five or more announcements or USD100 million	Ten or more announcements or USD500 million	FOAK is fully financed	FOAK financed + progress for NOAK finance
Supply Chain ⁽²⁾	No information	Supplier days /events/workshops/trade shows/non-binding agreements/MOUs/non-binding announcements	Binding contracts for services & materials	Partnerships/joint ventures/consortia - all with EPCs	FOAK construction ongoing/complete	NOAK construction ongoing
Engagement ^(3, 4)	No information	One or more engagements	Three or more engagements	Five or more engagements	Seven or more engagements	Ten or more engagements
Fuel	No information	Non-binding agreements & studies with national labs for RDD/Lab-scale production of fuel	Contracts/agreements with fuel supply chain (uranium/conversion/enrichment/fabrication)	Operating fabrication facility producing fuel, or uses same fuel as existing/generation-III commercial reactors	Contracts for fuel for FOAK	Fuel loading has begun


(1) Types of financing announcements in scope: Funding from private investors; government grants; loans; loan guarantees; cost sharing agreements; public-private partnerships; equity partnerships; announcements of becoming publicly traded; announcements of sizeable investments; power purchase agreements; financing approval from rate payers; export credit financing; bank financing; multilateral development bank financing.

(2) Types of suppliers of interest in scope: Engineering, procurement and construction organisations; universities, labs and research institutions when they are supplying research and development services to an SMR project.

(3) Types of stakeholders for 'Engagement' in scope: Subnational governments; Indigenous governments; labour unions; non-governmental organisations; civil society organisations; community organisations; universities; end users and customers; advisory boards.

(4) Types of announcements for 'Engagement' in scope: Memorandums of understanding; endorsements; town hall meetings; benefit-sharing agreements.

Our approach

- ✓ Objective criteria
 - ✓ Applied consistently
 - ✓ Verifiable public sources
 - ✓ Validation with vendors
 - ✓ Independent verification
 - ✓ Fully referenced
- 
- A faint, light gray world map is visible in the background of the slide, centered behind the list of criteria.

The first edition launched on March 13, 2023

21 SMRs

The NEA Small Modular Reactor Dashboard




 **OECD**
BETTER POLICIES FOR BETTER LIVES

 **NEA**
NUCLEAR ENERGY AGENCY


arc
CLEAN TECHNOLOGY

 **CAREM25**

中广核  **CGN**

 **中核集团 CNNC**



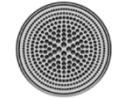
HITACHI



INET



Kairos Power



LeadCold

 **moltex**
clean energy

OKLO

NATRIUM

 **NUSCALE**
Power for all humankind

nuward



ROSATOM



SMR

 **UBATTERY**
Local Modular Energy



ULTRA SAFE NUCLEAR

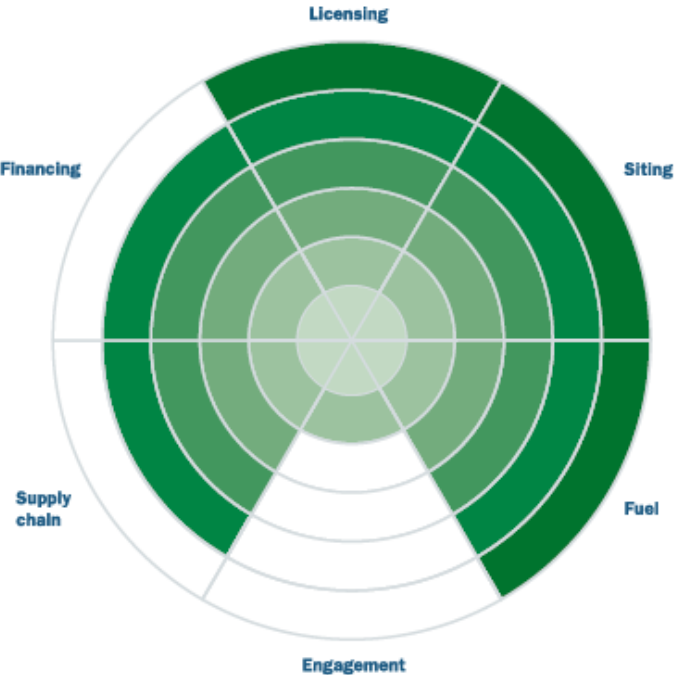


Westinghouse



energy

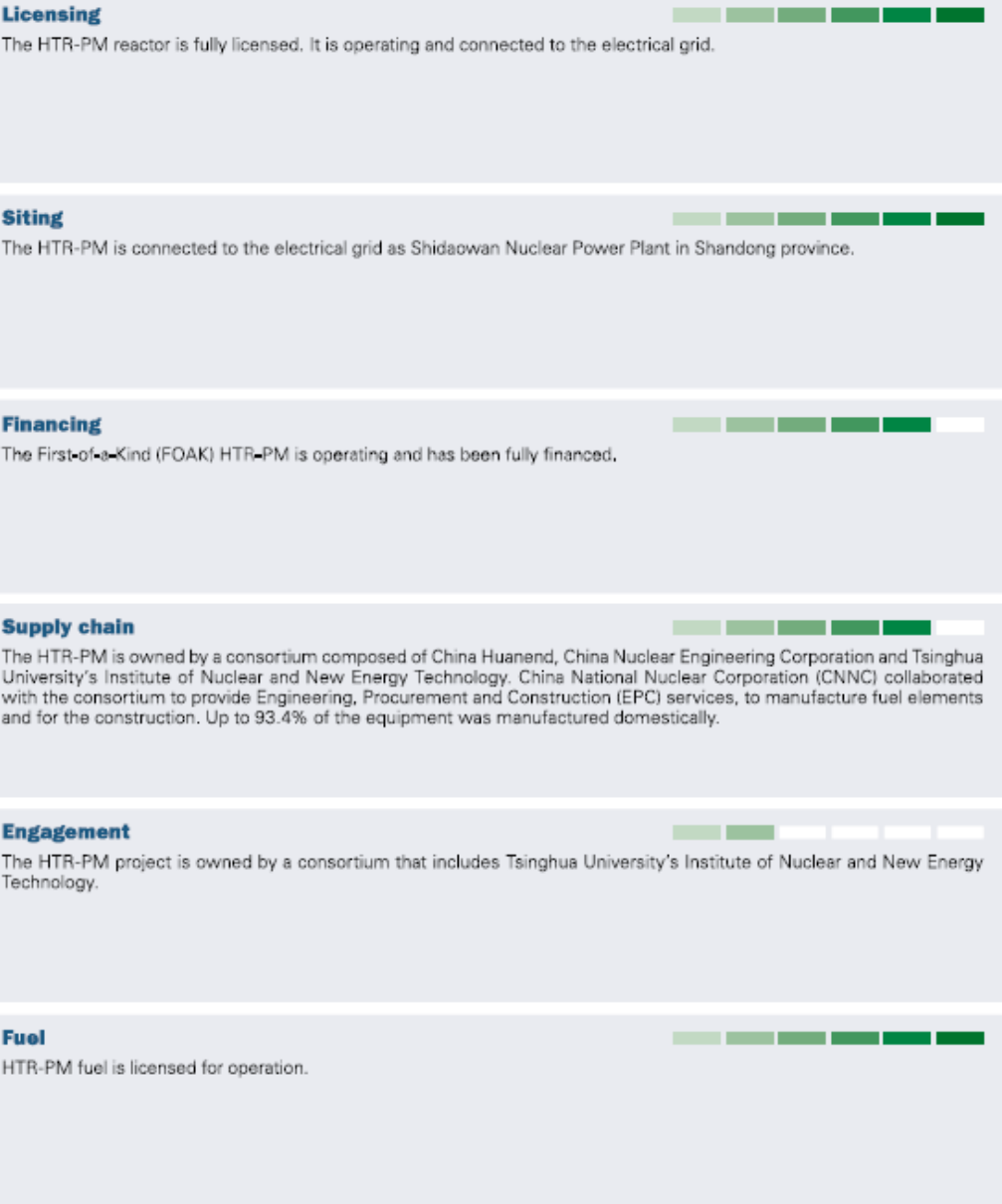
HTR-PM



Design organisation	INET
Thermal Power (MWth)	500
Outlet Temperature (°C)	750
Spectrum (thermal/fast)	Thermal
Fuel type	TRISO pebble
Fuel (LEU/HALEU/HEU)	HALEU



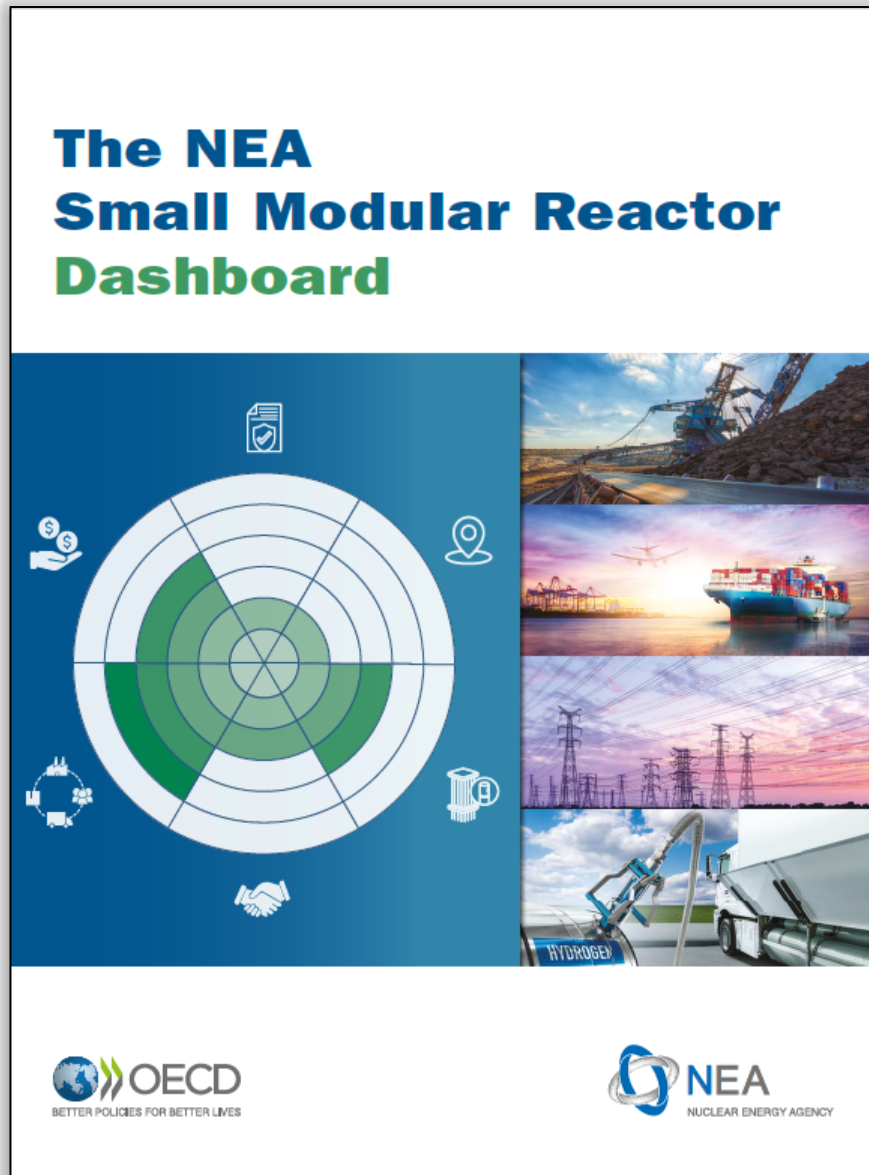
Assessment of HTR-PM's progress to deployment



Key learnings

- ✓ Six new indicators by NEA contribute to evidence-based situational awareness
- ✓ Variety of SMR concepts, configurations, applications and markets is an asset and a challenge
- ✓ Russia and China leading on deployment with multiple land and marine-based SMRs already in operation
- ✓ Real and rapid progress towards deployment in North America and Europe
- ✓ Timelines are near-term and accelerating
- ✓ Many business models and financing strategies, public and private financing are unlocking and accelerating
- ✓ Fuel qualification and commercial availability is critical path
- ✓ Readiness of regulators, supply chain, and fuel suppliers may become limiting factors
- ✓ Many developers are focused on first-of-a-kind, the paradigm shift to fleet deployment has not started yet

Download the NEA SMR Dashboard today



www.oecd-neo.org/SMR-dashboard



Thank you

