

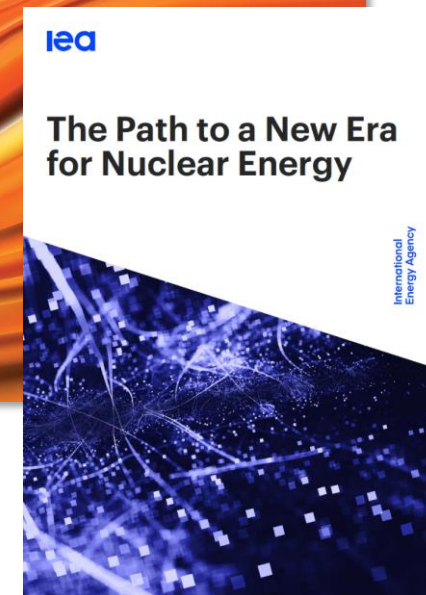
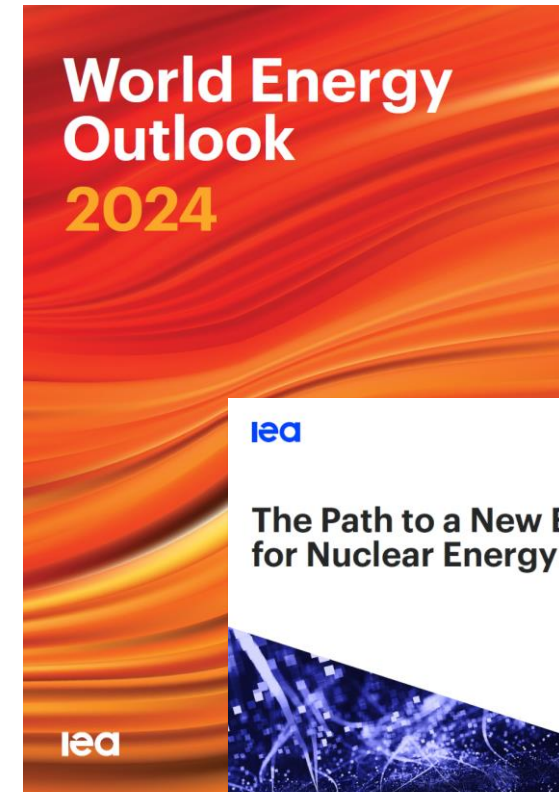
Preparations for new nuclear power in Sweden

Belgian Nuclear Society, Evening lecture
Virtual participation, June 26, 2025

Carl Berglöf, National Nuclear New-build Coordinator
Inquiry assigned by the Ministry of Climate and Enterprise

Nuclear Power - A Key Technology

- IEA: Nuclear power is one of seven “key technologies” for the transition
 - “Overcoming barriers to their deployment should be a priority worldwide”
 - +40 include nuclear power in their energy policies
- COP28 Global Stocktake
 - Calls on parties to accelerate nuclear technology



- Wind
- Solar PV
- Nuclear
- Electric vehicles
- Hydrogen
- Heat pumps
- CCUS

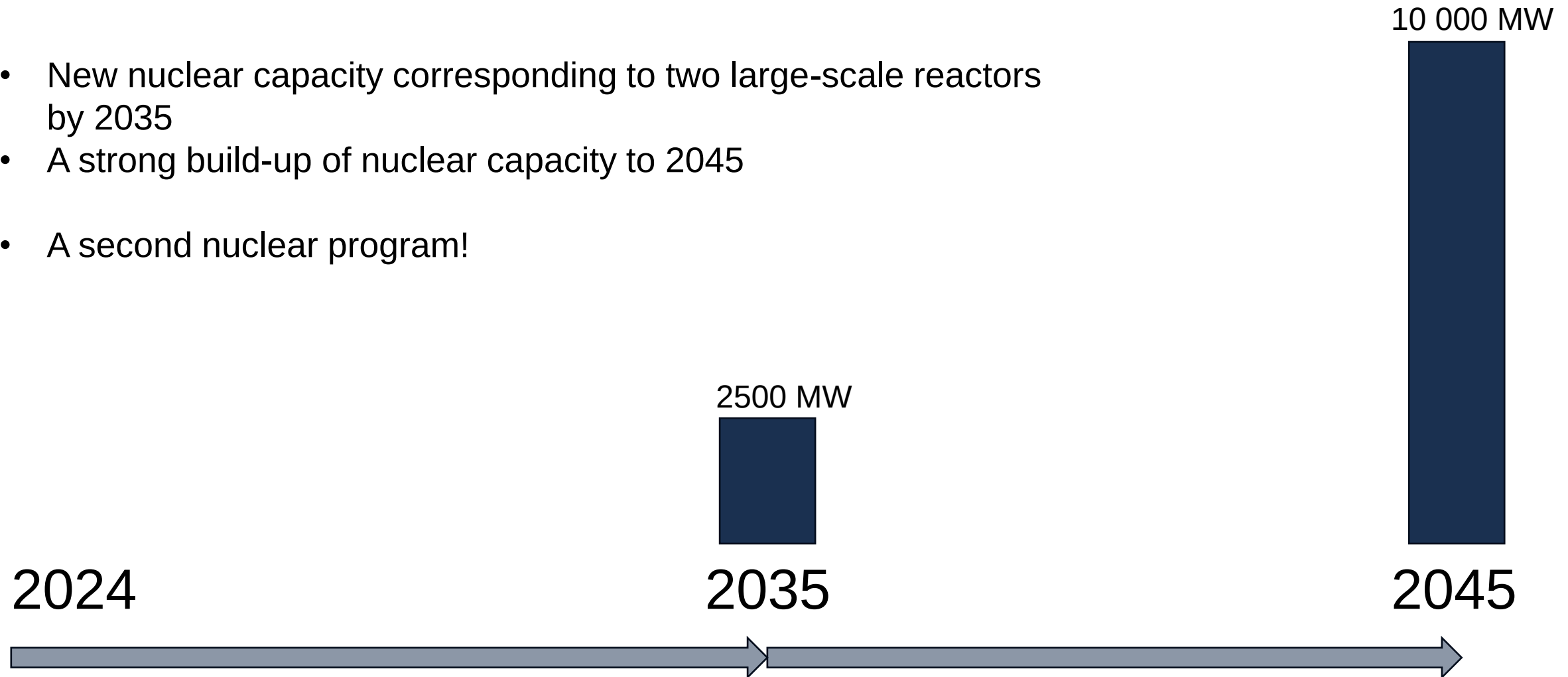
Nuclear policies approved by parliament

- 100% fossil free power production
- Removed limitations on location and number of units
- Nuclear power roadmap
 - 2035: 2 500 MW
 - 2045: up to 10 000 MW
- Financing model



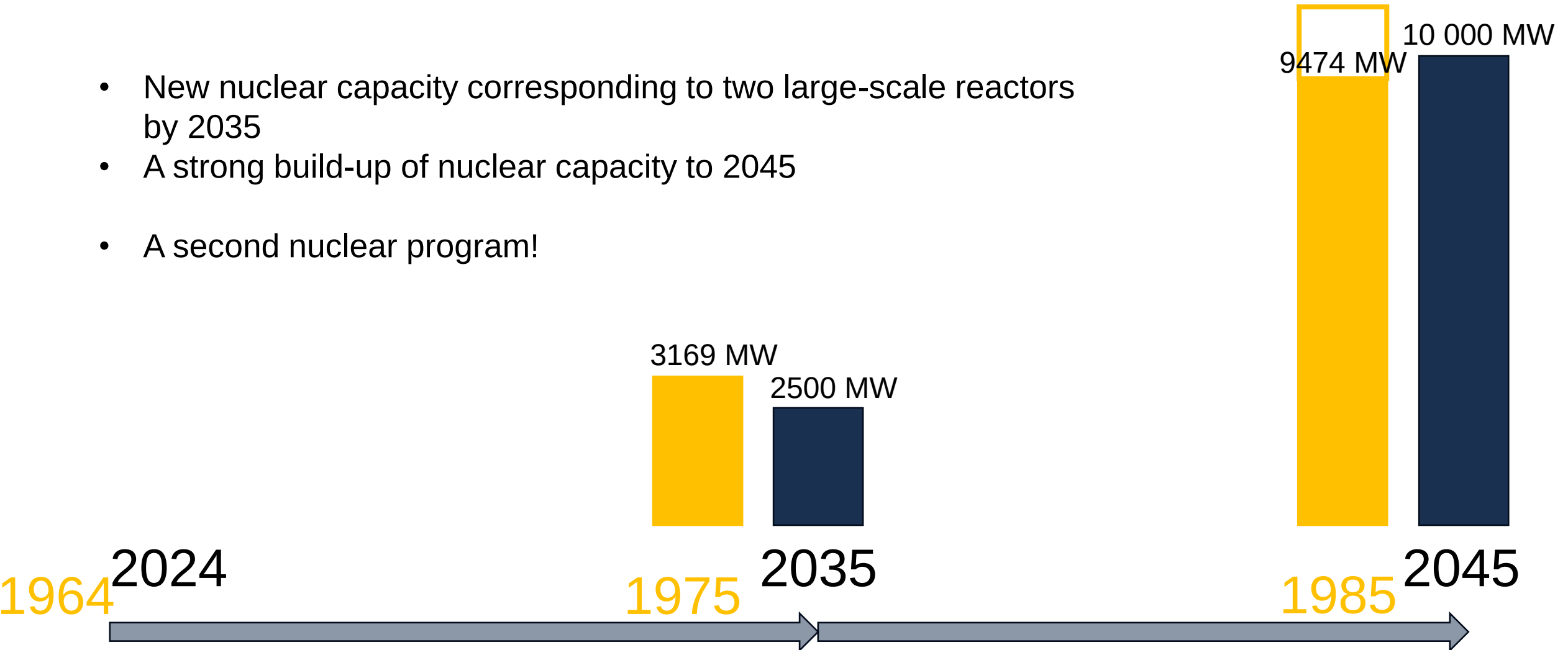
Roadmap for New Nuclear Power

- New nuclear capacity corresponding to two large-scale reactors by 2035
- A strong build-up of nuclear capacity to 2045
- A second nuclear program!

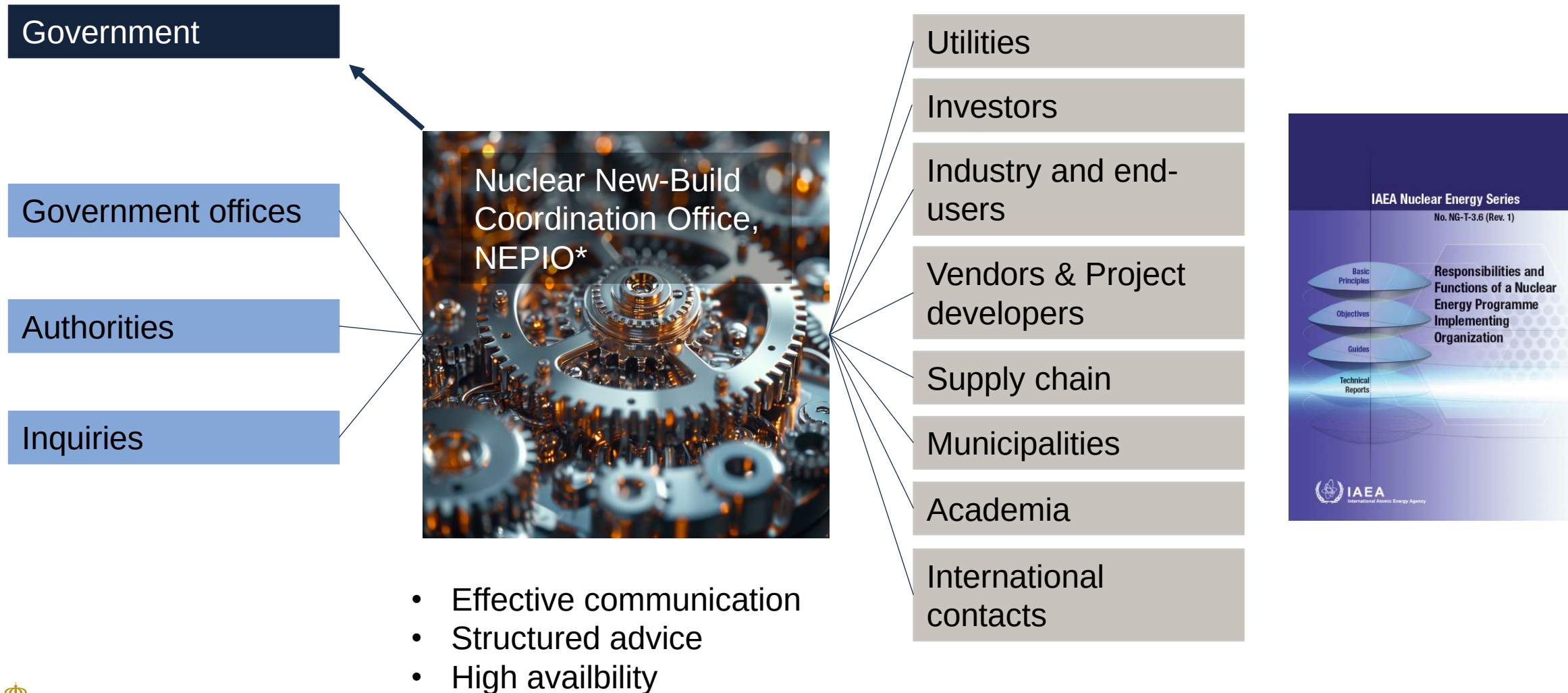


Roadmap for New Nuclear Power

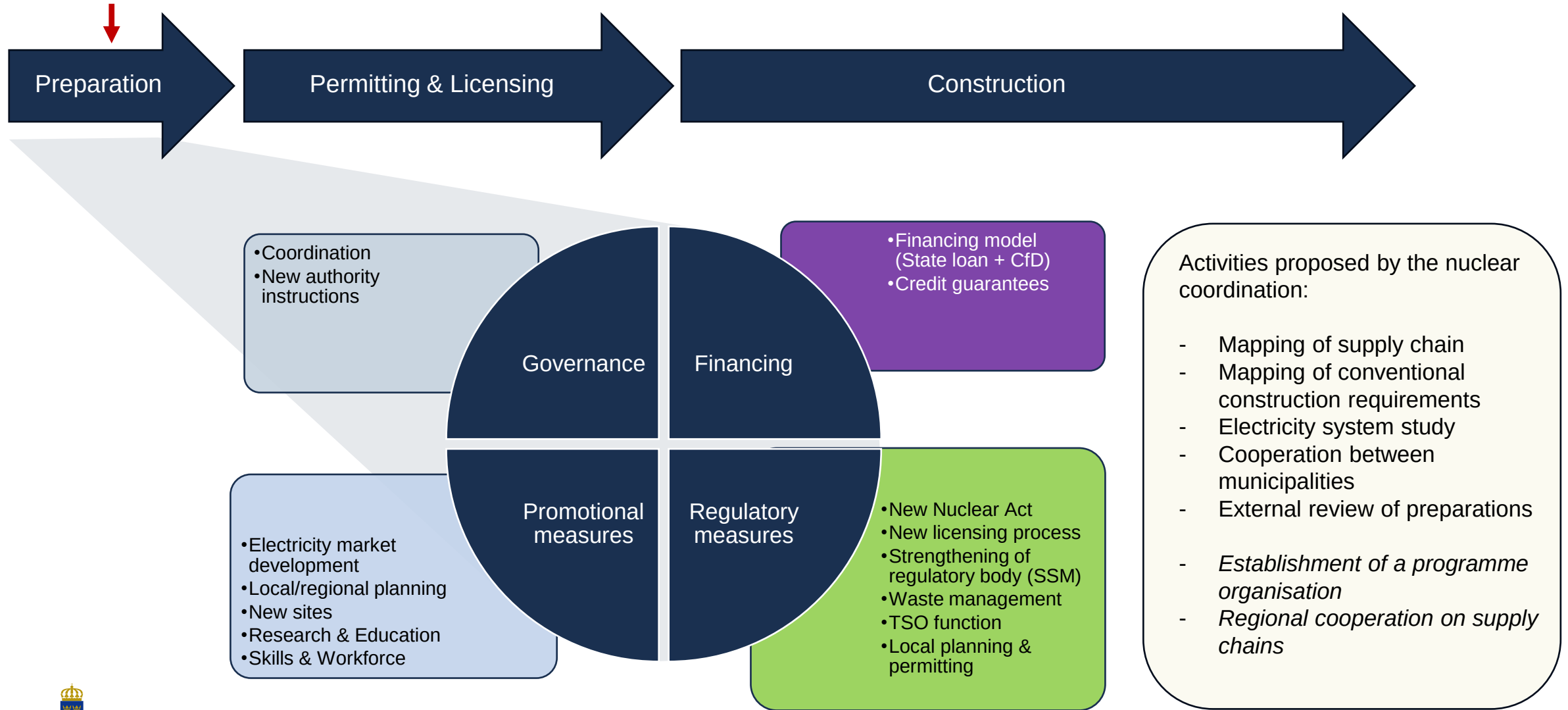
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A coordinated approach to programme development



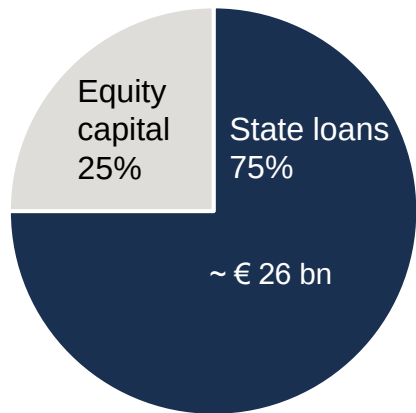
Critical path to first grid connection



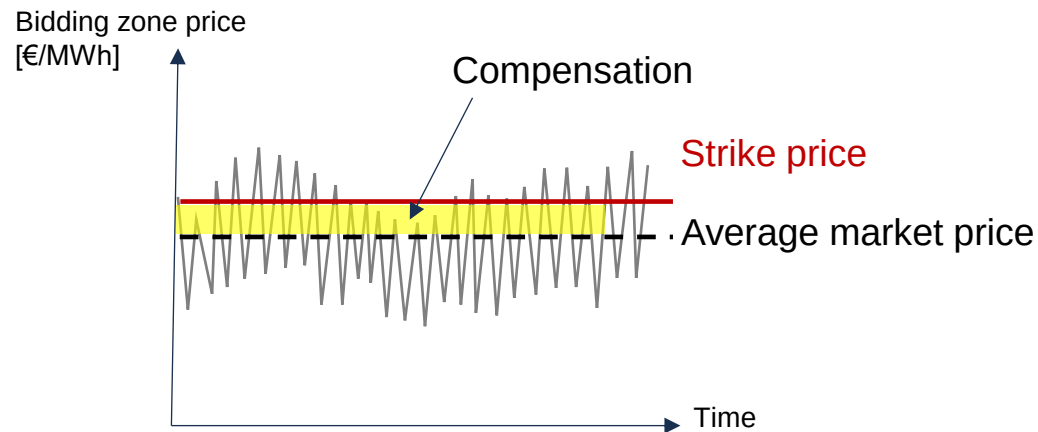
A national coordinator for the expansion of nuclear energy

Proposed Financing Model (4-6 GW)

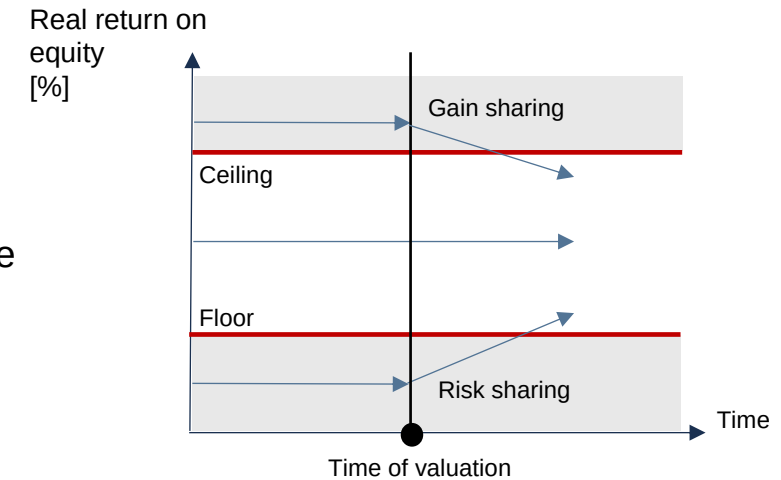
1. State loans



2. Contract for Difference (CfD)



3. Risk- and gain-share mechanism



Construction phase

Political risk

Construction risk

Operation phase

Political risk

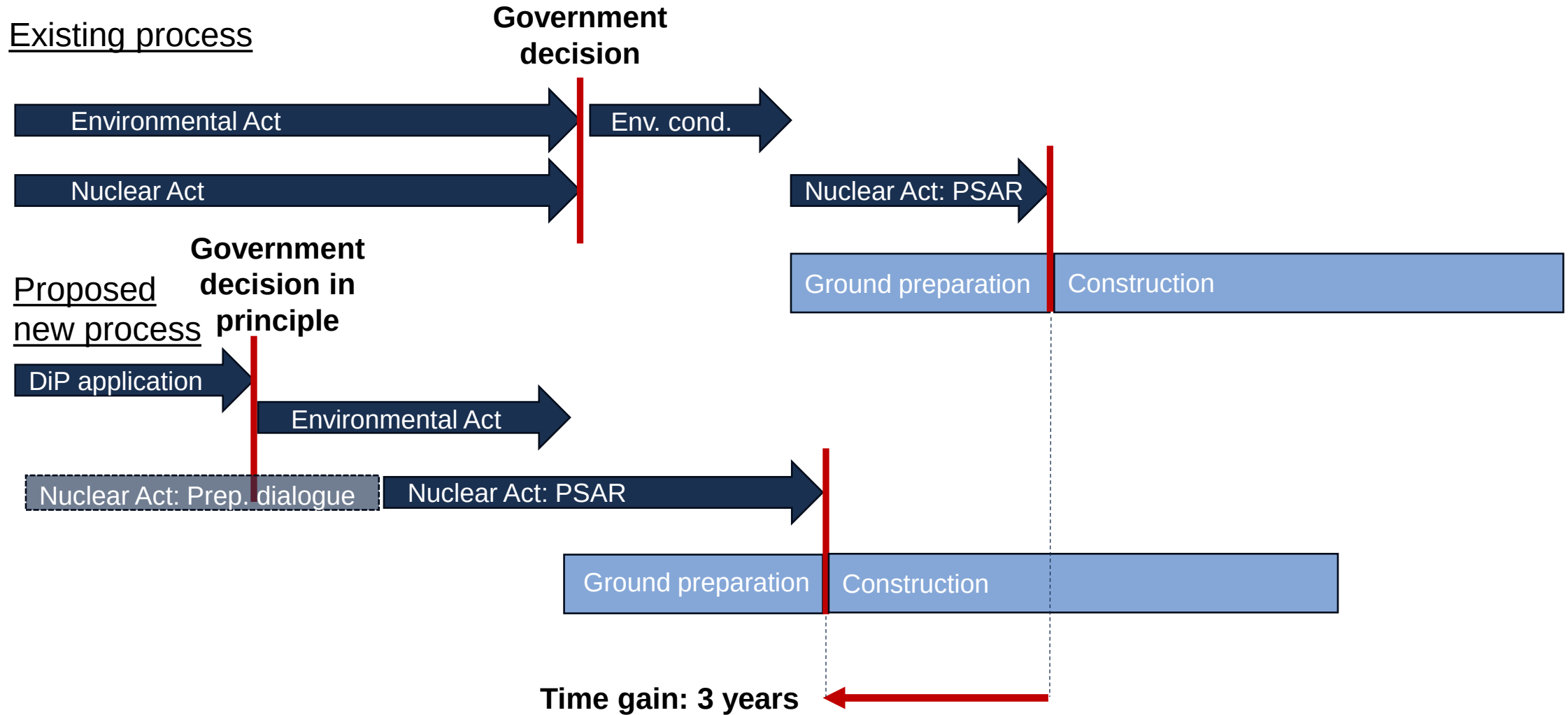
Market risk

After two years of operation

Regulatory risk

Construction risk

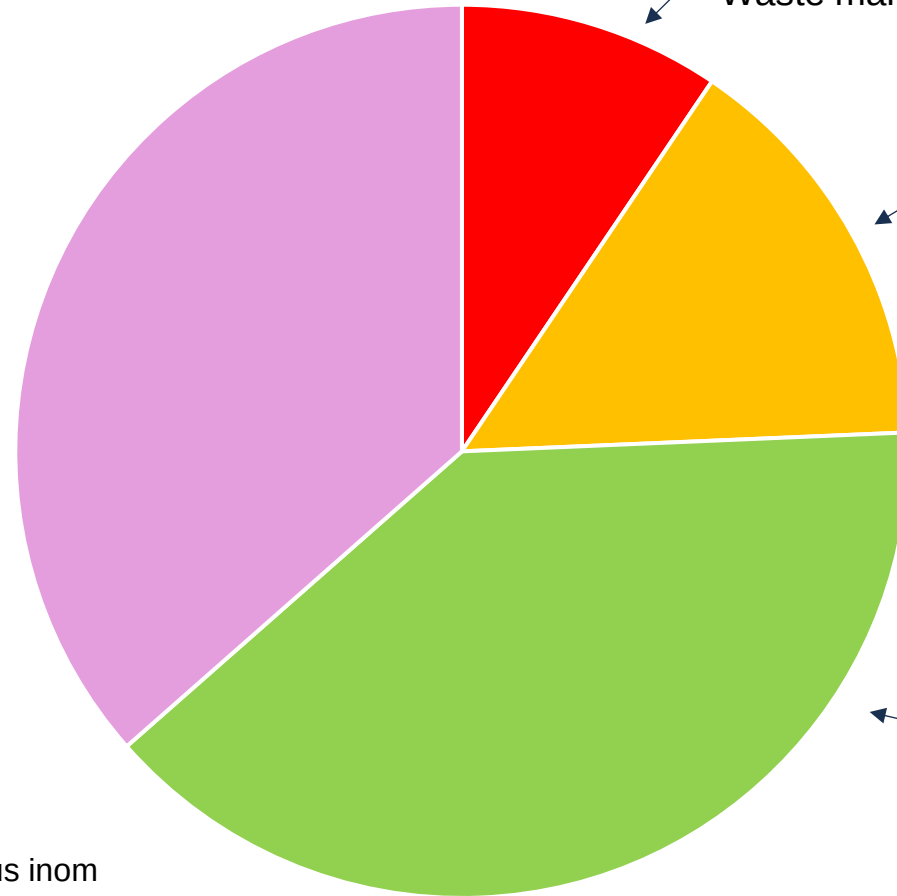
Proposed new licensing process



How ready is Sweden?

*Self-evaluation based on
19 IAEA INIR criteria
(up until procurement,
April 2025)**

Require private
sector activity



National strategy, HR development,
Waste management, Emergency planning

Political clarity, Industrial involvement,
Site and supporting facilities

Funding and financing, Stakeholder
involvement, Nuclear fuel cycle

Regulatory framework
(nuclear safety, nuclear security,
safeguards, radiation protection,
environmental protection)
Electrical grid

*AFRY (2025): Självutvärdering av aktuell status inom
svensk kärnkraftsinfrastruktur för utveckling av ny kärnkraft

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Examples of potential projects in Sweden



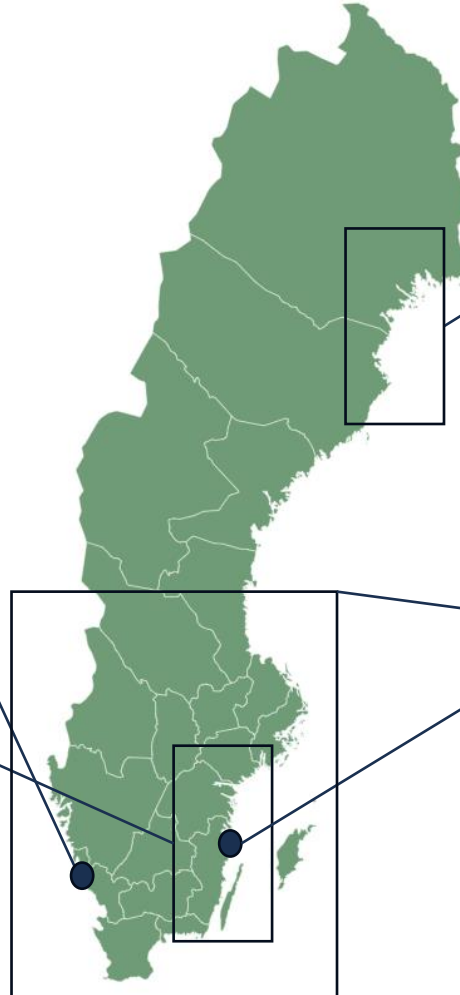
Videberg Kraft AB

- Established by Vattenfall



Re:fir South

- Four sites investigated by Kärnfull Next



FÖN – Fossilfritt Övre Norrland

- Area indicated by TSO as suitable for firm power production



Pilot Ävrö

- One of 13 municipality-driven pilots in southern SE

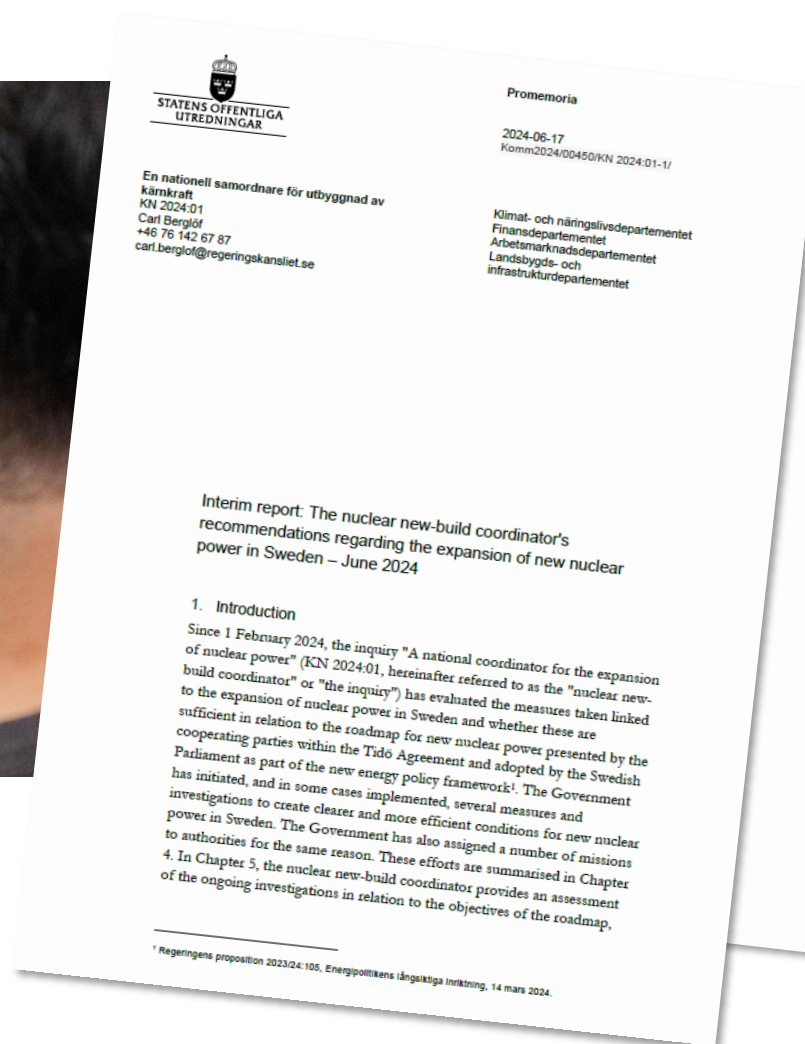
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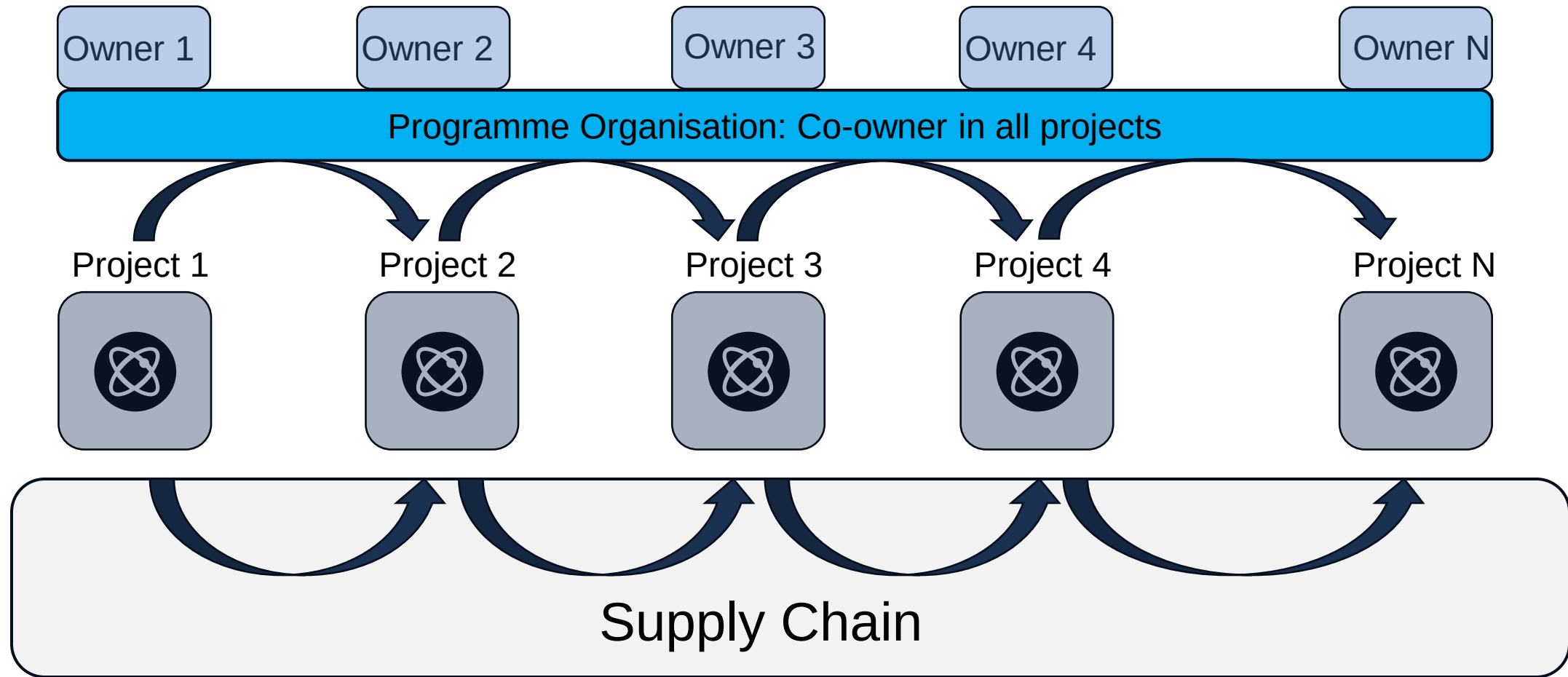
Test facility for lead-cooled reactors

- Operated by Blykalla

Two interim reports published



A missing piece: Knowledge management



The three components of the electricity system

Energy [TWh]



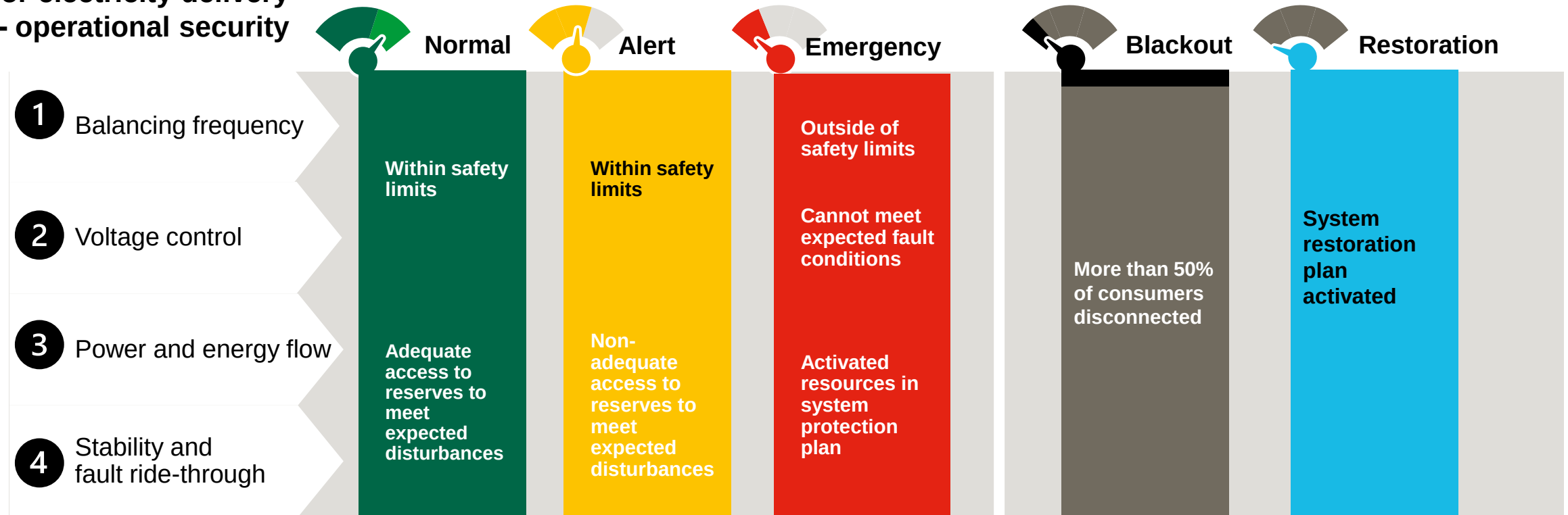
Operational security
& security of supply

Power [MW]

The five system states

– Based on System Operations Guideline (SOGL)

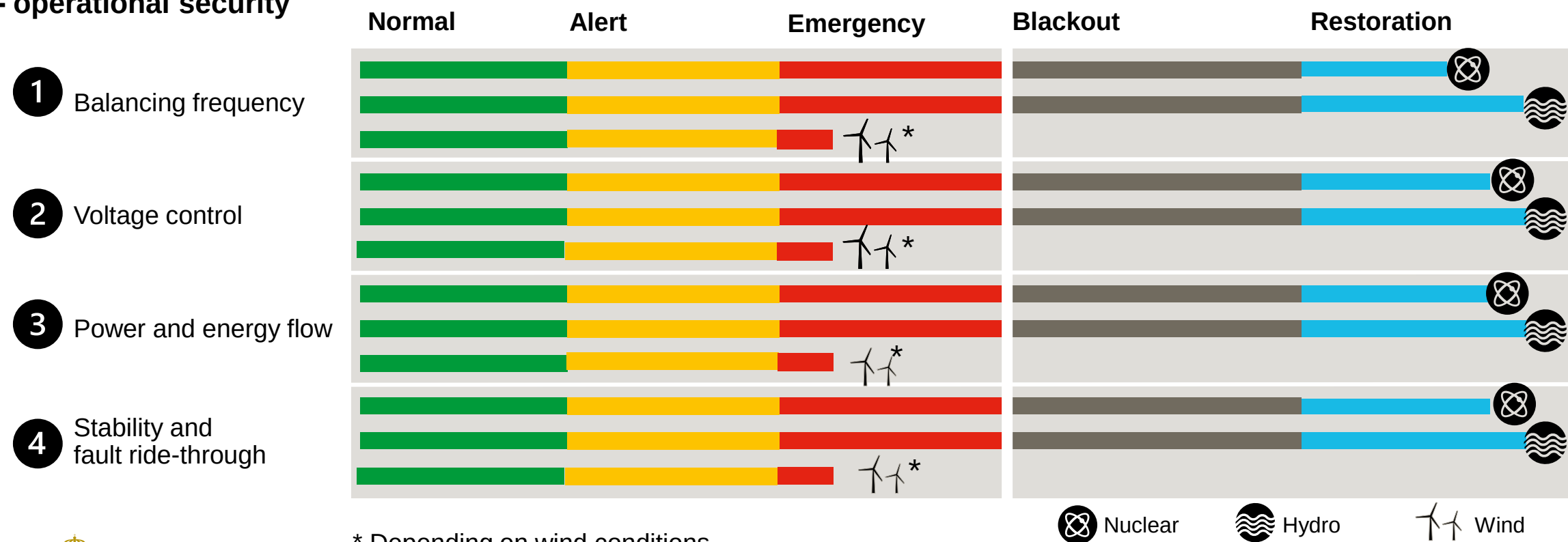
Physical conditions
for electricity delivery
– operational security



Contribution from various power sources

- Based on Requirement for Generators (RfG) and System Operations Guideline (SOGL)

Physical conditions for electricity delivery – operational security



The three components of the electricity system

Energy [TWh]



Power [MW]

Firm capacity
contributes to all
three components
of the electricity
system

Operational security
& security of supply

Aim: A clear path forward

- Lower the thresholds
- Mitigate risks
- Establish structures



A national coordinator for the expansion of nuclear energy