

INTERNAL

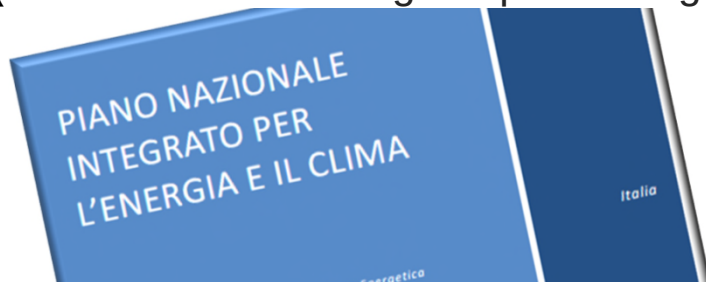


Nuclitalia and the Italian framework for a new nuclear

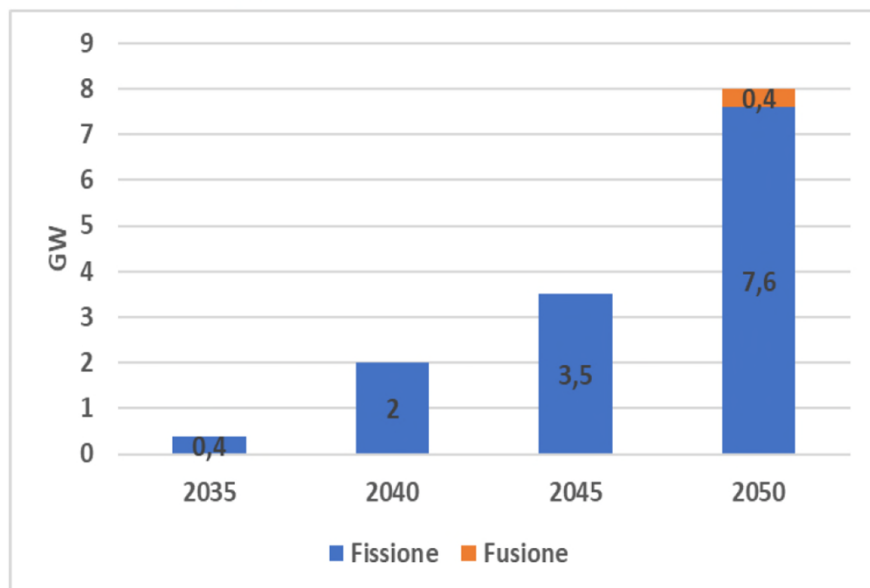
Aiden Conference. June the 23^o 2025, Milan, Italy

Nuclear Scenario in the update of «PNIEC 2024»

(Piano Nazionale Integrato per l'Energia e il Clima – *National Integrated Plan for Energy and Climate*)



PNIEC June 2024 – NUCLEAR «esplorative» scenario



HIGHLIGHTS

- **Nuclear Scenario** is just a «test one» that highlights the **potential role of Nuclear Energy** in «NET Zero 2050» ; **it is not included in the official plans** at this stage
- They set a «**conservative nuclear scenario**» of «**8 GW**», **11% of total energy demand**: this is **half of the value** of what would be considered profitable by the model itself (**16 GW, 22%**).
- **Nuclear Scenario (8 GW)** would **reduce use of natural gas** (from 11,5 to 4 TWh) and **bio-energies** (from 12,5 to 6 TWh)
- It considers that 1,3 GW out of the 8 GW would be used as co-generative mode (**16 TWh** of thermal energy for industry needs)
- **Nuclear scenario is quite challenging** for :
 - First SMR in 2035
 - Growing rate (8 GW in 20 years)
- Nuclear scenario get to Net Zero targets with **17 Billion € savings in comparison with scenario without nuclear**

NEWCO – A systemic approach to master the Italian nuclear program...

Ownership

- ENEL (51%)
- Ansaldo (39%)
- Leonardo (10%)

Core activities

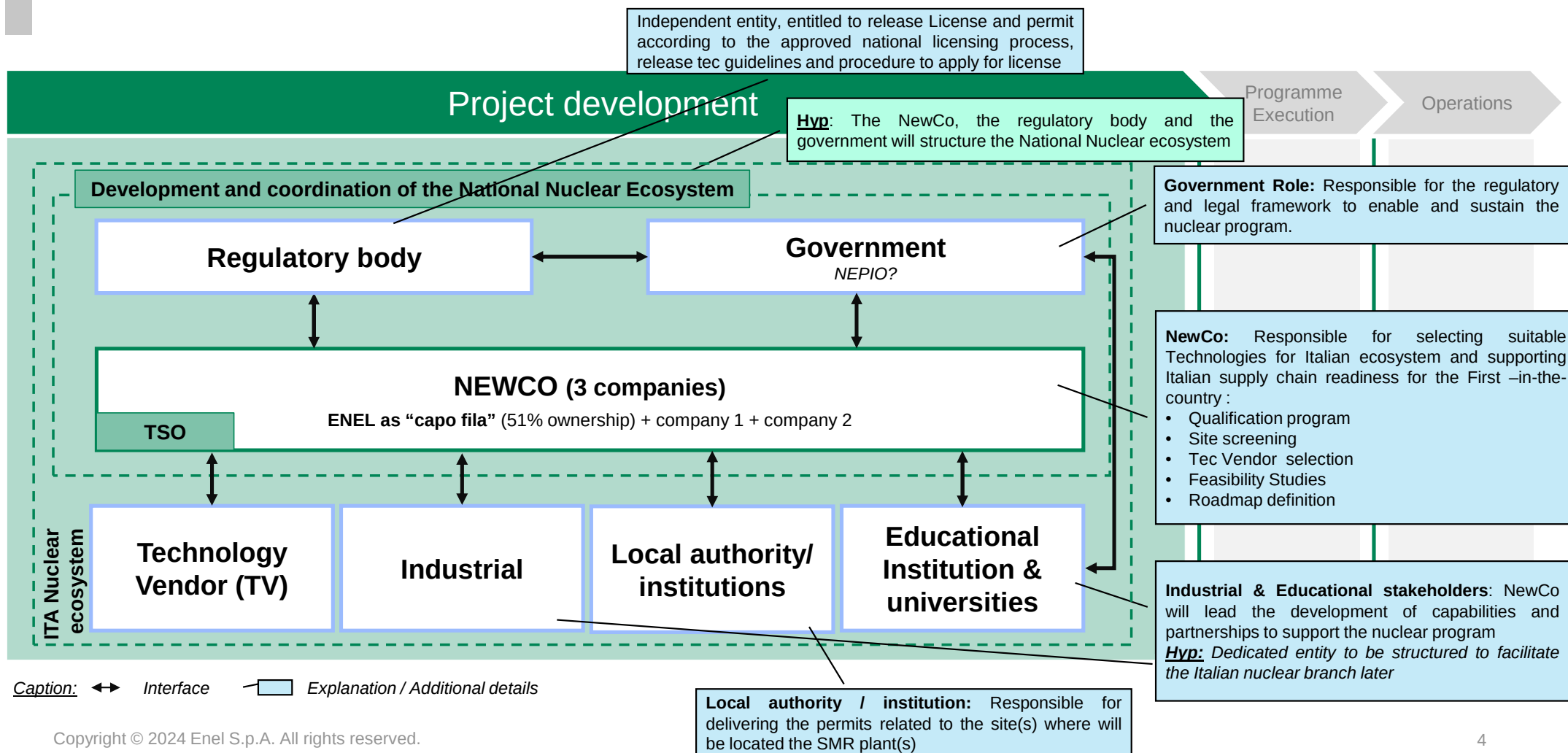
- Project requirements
- Technology selection
- Pre-qualification program
- Pre-Nuclear Safety Assessment
- Site screening
- Business model and scenarios
- Partnership & Financing Model



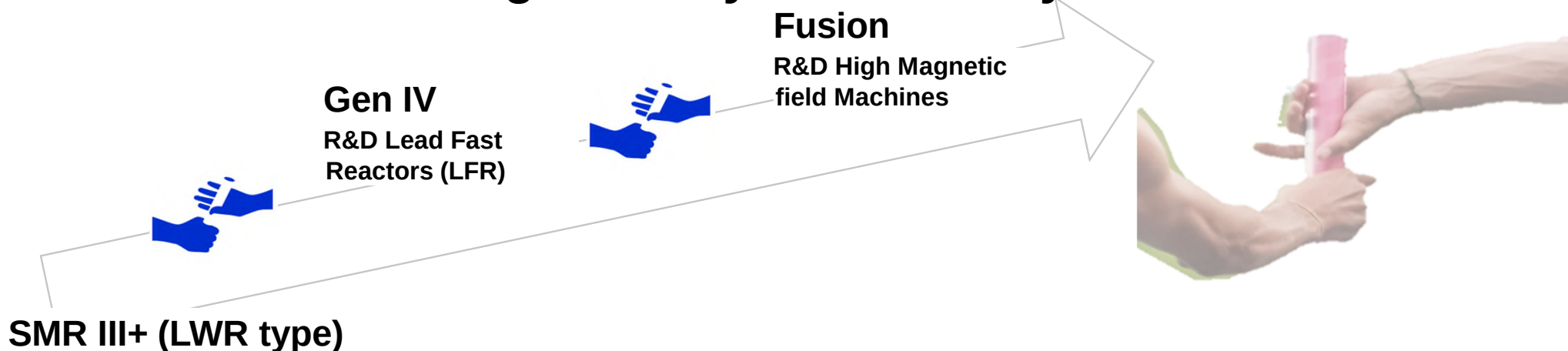
Mission

- Selecting Technologies for Italian ecosystem (technical, economics, Industrial)
- Italian supply chain readiness for the First-in-the-country Nuclear reactor

...and interfaces to develop National program



Our vision: technological relay and maturity level watch



Overcoming the still unsolved challenges of a specific technology at a high level of maturity (SMR III+): **engineering development, supply chain qualification and confirmation of cost target (5 M€/MW at full capacity) in the next 3 years**, subsequent construction of a demonstrator prototype of a complete plant in Italy with a public-private financing mechanism (with an economic-technological-regulatory sandbox function)

1

Technological Screening

SMR (LWR) identification among the western ones: Nuward (France), AP300, Nuscale, BWRX (USA), Rolls Royce (UK)

2

Technological / Commercial Partnership

Partnership agreement, technology transfer and commercial rights to the leading Italian industrial entity

3

Design to Cost

Co-development of some modules of the selected technology by the Italian industry (Security Systems, BOP), target 3-5M€/MW

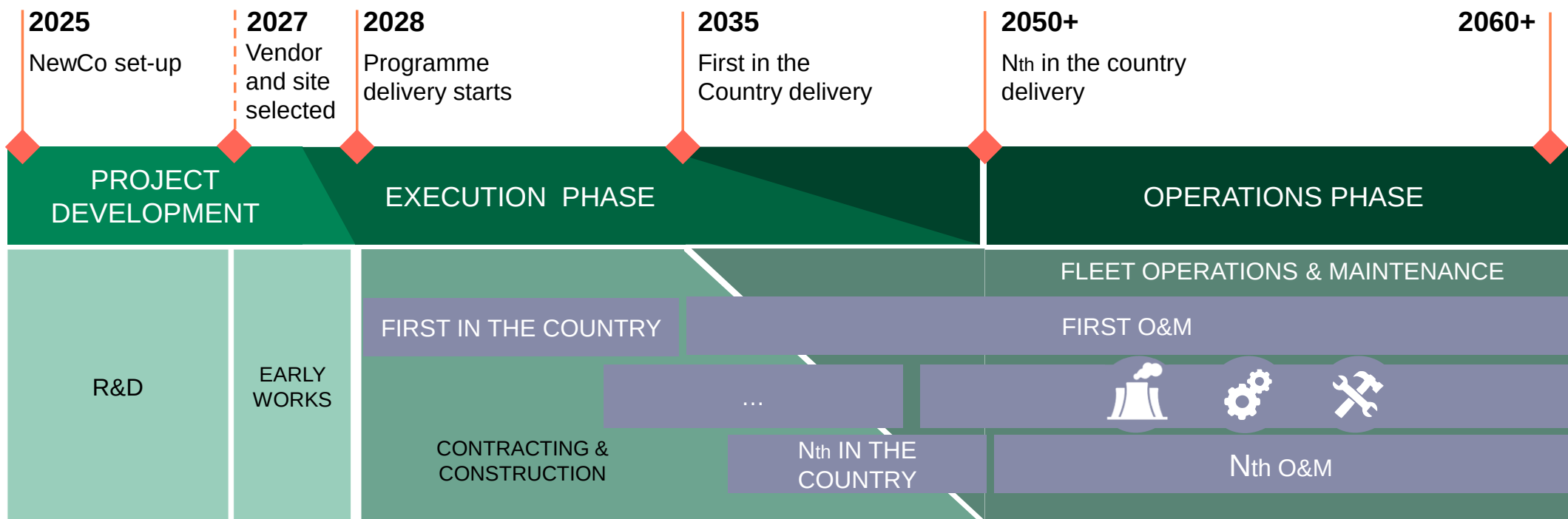
4

Licensing & Regulatory

Adequate definition of the regulatory system, in line with the new implementation criteria of the SMR and in collaboration with the European authorities

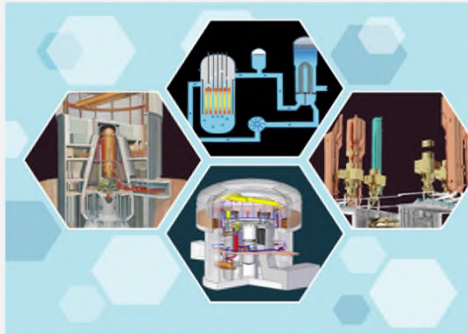
NEWCO - High level roadmap

Overall project according to PNIEC 2024 targets



Methodology adopted: EPRI - *New Build Nuclear Plant Development and Technical Assistance* and IAEA - «milestone approach»

We are working on a methodology to select Technology...



IAEA IRIS DATABASE

Sorting criteria

SMR with higherTRL
AMR with higher Italian R&D and supply chain involvement

Reference:

- Public data
- Official publication
- Vendor declaration



PROPOSED TECHNOLOGIES

Tec & Economics data compared by Topic area (A) e questions (D):

- A1) Italian system (D.n9)
- A2) Maturity grade (D.n14)
- A3) Funcnality (D.n12)
- A4) Safety approach(D.n3)

Reference:

- National safety Authorities database
- NDA and deep dove with Vendors
- Scientific publication/engineering docs



Ranking to identify best options for italian energy system

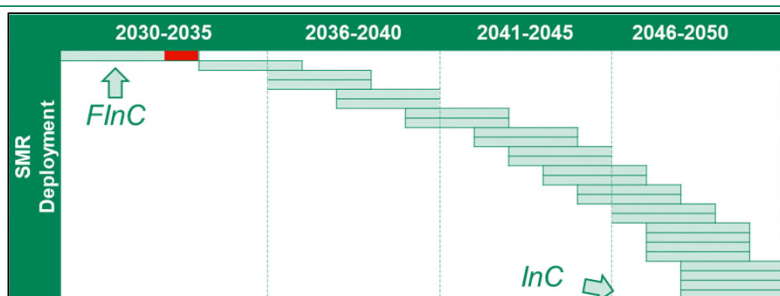
Final report available to start technical and economical due diligence with vendors

Ranking methodology based on

- EPRI - *New Build Nuclear Plant Development and Technical Assistance*
- IAEA – *Nuclear reactor technology assessment for near term deployment*

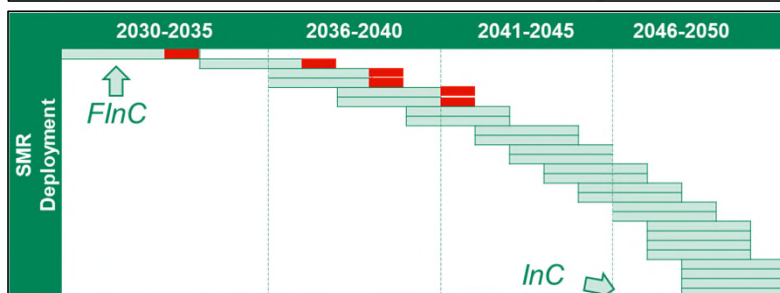
...setting assumptions to develop a Business model...

delivery models as PNIEC2024 (8 GW@2050)



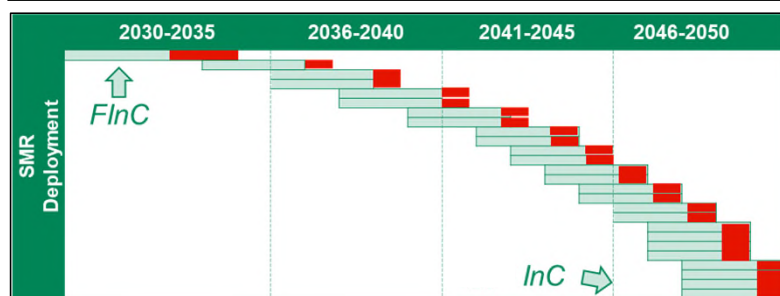
BASE CASE - BASELINE

Construction time & CAPEX according Vendors declaration except for the first Plant (FInC) CAPEX + 30% & time + 1 year



CONSERVATIVE CASE

First 6 reactors with Vendor CAPEX + 30% & time + 1 year malus other reactors as for Vendor declaration



WORST CASE

Vendor CAPEX + 50% & time + 2 years malus on first Plant (FInC) and CAPEX + 20% & time + 1 year malus on the whole fleet