



Industrial Involvement Policy

IAEA National Workshop on Industrial Involvement

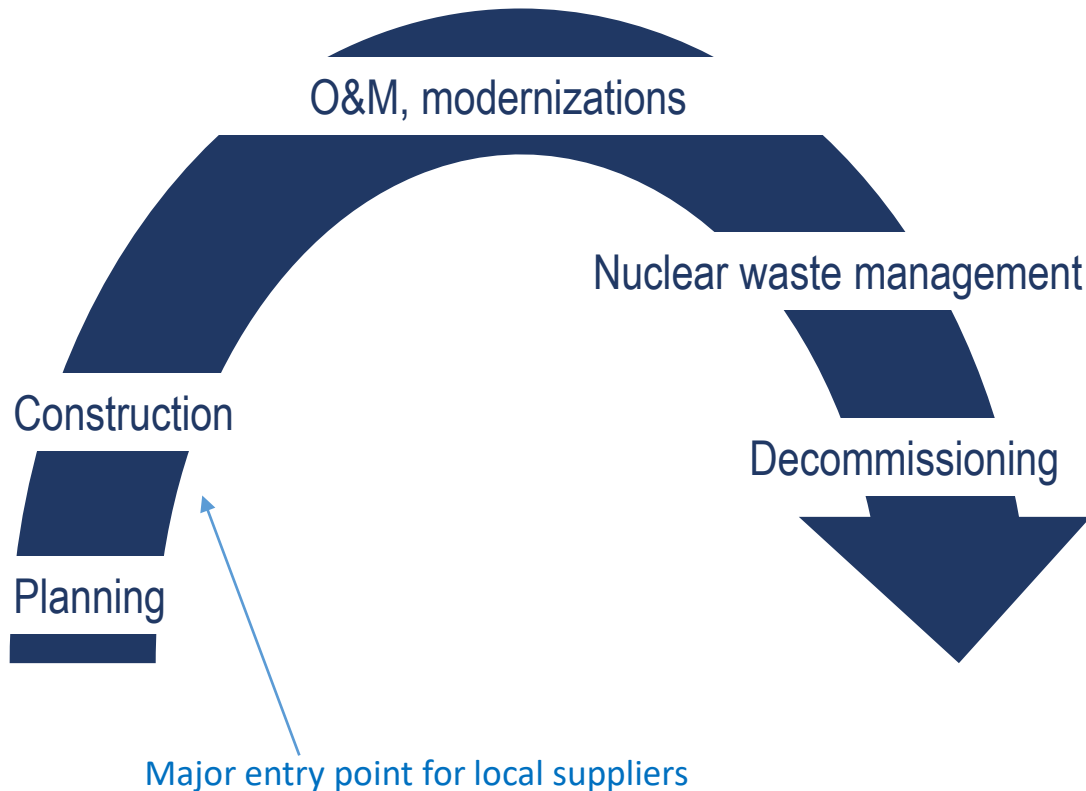
25-27.2.20, Jakarta, Indonesia

Leena Jylhä, COO, FinNuclear Ltd

Outline

- **Introduction**
 - Drivers and benefits
 - Considerations
- **Case Finland**
 - Introducing nuclear energy - with policy
 - New nuclear builds 40 years later – no policy
 - Lessons learnt
- **Nuclear industry coordination organization**
 - Position and role
 - Examples

Drivers of the Industrial Involvement Policy



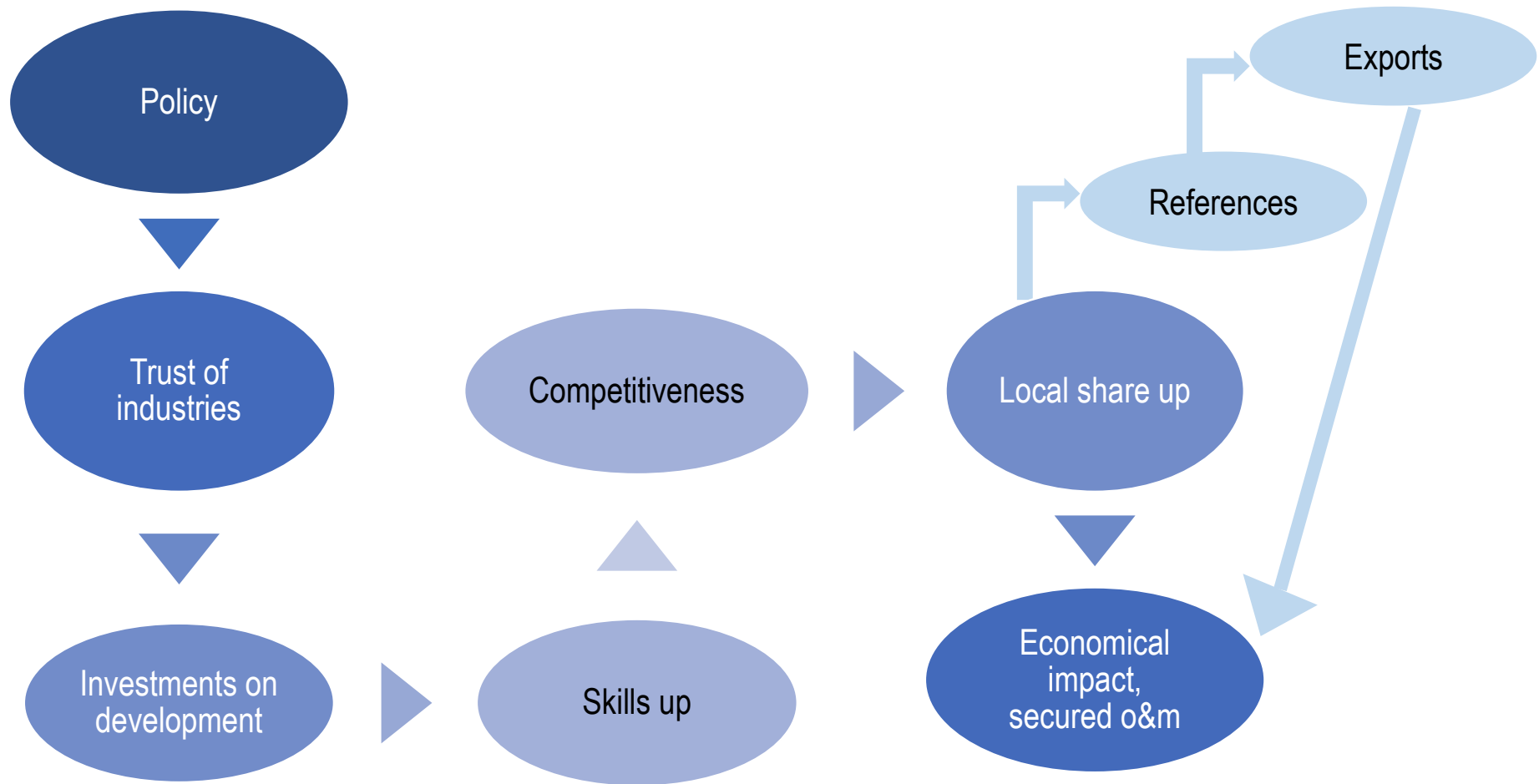
Short-term:

- Employment
- Public acceptance

Long-term:

- Employment
- Public acceptance
- Importance in the energy mix; secured operation
 - Availability of skills
 - Availability of spare parts
 - Logistics
- Self-reliancy
- Spin-offs sought

Industrial Involvement Policy, Benefits



Considerations

- Capacities of the existing industry
 - Industrial standards in use
 - Qualifications
- Safe and efficient use of the plants
 - Availability and need of local support
- Economical impact sought
 - Employment
 - Skills
 - International networks (multinational projects)
- Following life-cycle projects
 - Modernizations
 - Nuclear waste management
 - New builds
- Spin-offs sought
- National interest/ability to invest in R&D

Assessment of needs in the long run

>> Strategy and Policy



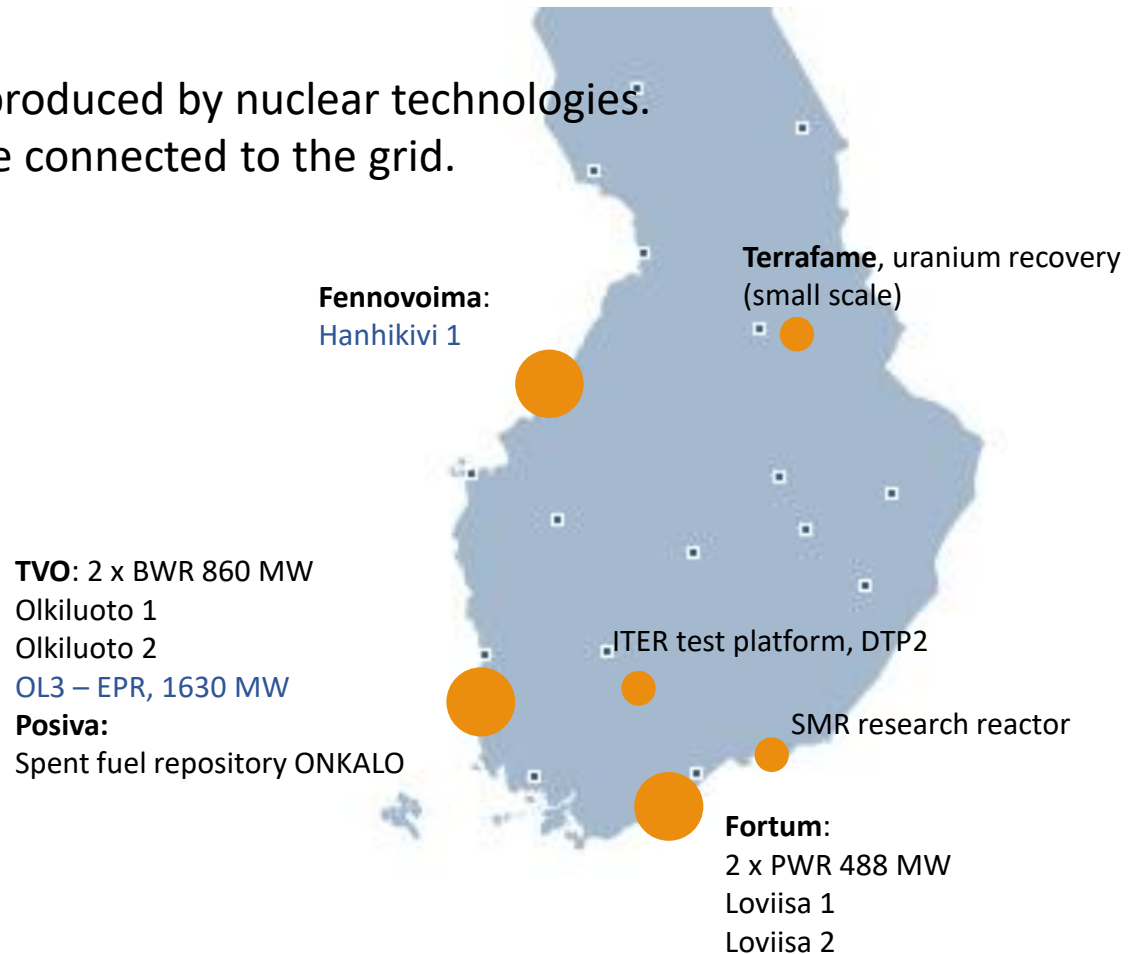
Case Finland

History behind the Finnish Nuclear Industry

- Finland was a poor country until 1960ies
 - Civil War 1918 and World War II 1939-1944
 - Broad industrialization began sparked by the reparations that Finland was forced to pay to the S.U. (*)
 - Strategic goal since the late 1940s: high level of self-sufficiency in energy production → nuclear energy was introduced into the energy mix
- Atomic Energy Commission, similar organization to NEPIO (Nuclear Energy Programme Implementing Organization) was established in Finland in 1957, and preparations started
 - Large supply chain of manufacturers was ready (*)
 - Whole new industry, nuclear, was developed
 - Nuclear energy boosted transition from the agrarian society into modern industrial society

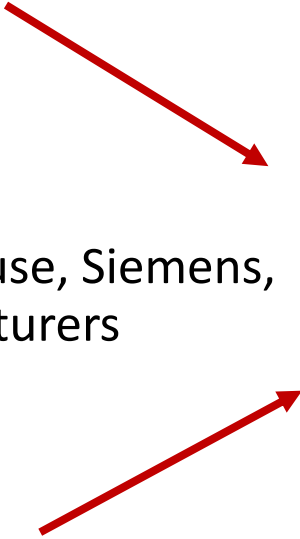
Nuclear Energy Facilities in Finland

About 30% of electricity is produced by nuclear technologies.
Even more when OL3 will be connected to the grid.



Fleet of first 4 units in 1970ies

- Loviisa 1-2: **split package**
 - Connected 1977 and 1981
 - Owner – architect engineer
 - Reactor and turbine: Russian
 - Other components: Westinghouse, Siemens, also a lot from Finnish manufacturers
- Olkiluoto 1: turn-key
- Olkiluoto 2: **semi turn-key**
 - Buildings and BoP by local companies
 - Connected 1978 and 1980



High domestic share during the construction, following O&M phase and nuclear waste management

National Nuclear Industry Landscape Today

Ministry of Economic Affairs and Employment

MEAE - Prepares licence decisions, drafts proposals to improve legislation and steers the planning and implementation of nuclear waste management. The **State Nuclear Waste Management Fund** is connected.

Radiation and Nuclear Safety Authority

STUK - Responsible organization for regulations and supervising radiation and nuclear safety

Licencees

Fortum, Teollisuuden Voima, Fennovoima – NPP operators.
Posiva – expert organisation responsible for the final disposal of spent nuclear fuel of the owners.

Supply Chain

Engineering, consulting, *some* manufacturing still, site service, inspection and testing companies

RDI

VTT Technical Research Centre of Finland, GTK Geological Survey of Finland and universities with nuclear technology focus.

Others

Finnish Nuclear Industry Association (FinNuclear), Technology Industries, Energy Industries etc

New Builds 2003 -

1/2

- Many new nuclear projects were planned
 - 1) Olkiluoto 3
 - 2) Olkiluoto 4, Loviisa 3, Hanhikivi 1
 - 3) Onkalo
- Long gap since the last new builds
- **Assumed** localization ratio 50% and private investments-
no policy established
- Statement regarding the Governmental Decision in Principle given to Hanhikivi- 1 and Olkiluoto 4 (cancelled later) says that use of domestic competencies in new NPP projects is *expected*

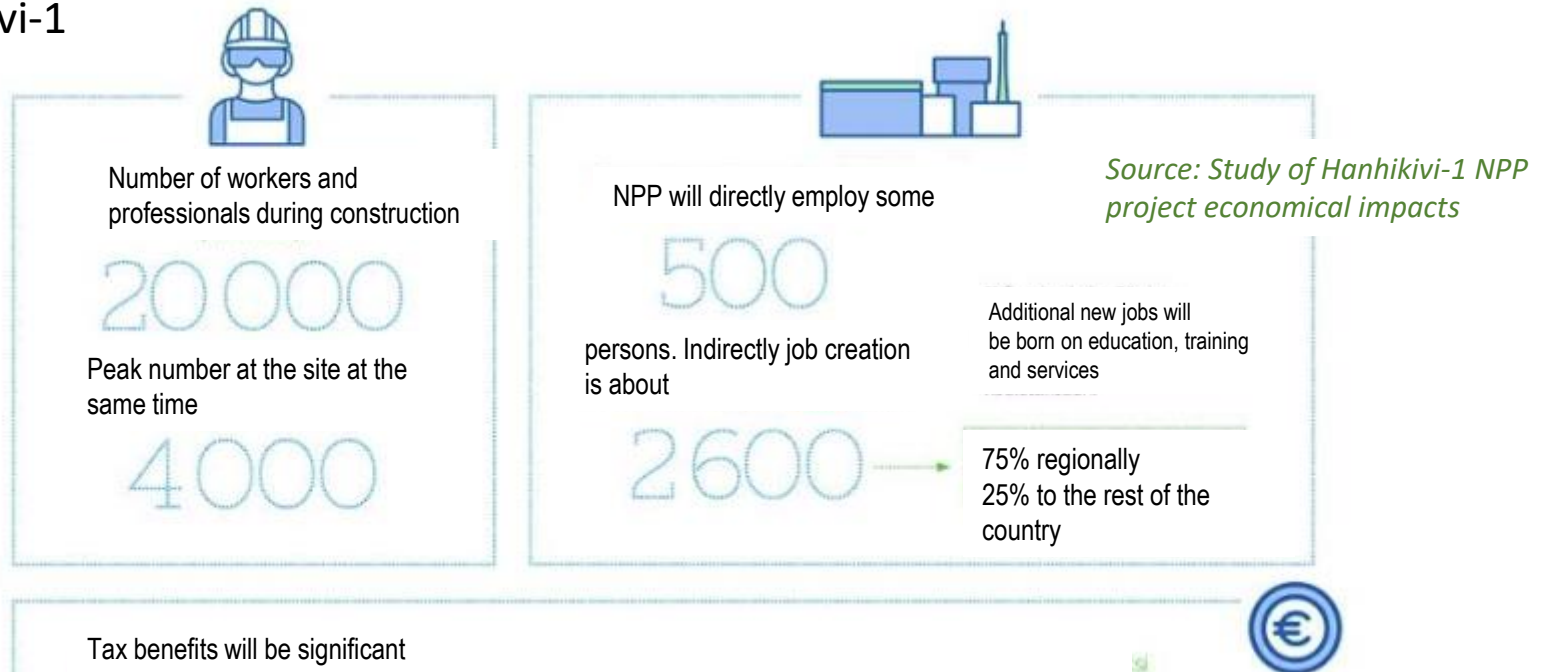
New Builds 2003 -

2/2

- **Olkiluoto 3: turn-key**
 - Areva-Siemens
 - No major components or systems procured from Finland
 - Locally under 30% (even being an "old" nuclear country):
 - Miscellaneous sub-components in lower safety classes
 - Plenty of local work-force employed
 - Inspection services
 - Engineering and design services
 - HSQE –management, QA-support
 - Site services: welding, installation, scaffolding, site supervision, logistics etc
 - Huge economical impact regionally though
 - Not much of safety-classified supplies
 - Some local companies had invested significantly
- **Hanhikivi 1: turn-key**
 - Rosatom (RAOS Project Oy)
 - NPP –vendor is also a co-owner and investor
 - Expected localization rate similar to OL3; could be more though
- **Posiva Spent Nuclear Fuel Repository: multi-package**
 - Developed by and for domestic NPP owners
 - Expected high domestic share in construction

Figures from Regional Impacts

Hanhikivi-1



Olkiluoto 3:

- Unemployment rate significantly down
- Regional companies turnover +50-100%
- Creation of new jobs, internationalization

Not much demanding supplies though.

If the strategy is to obtain new skills, competencies and knowledge and/or to secure the self-reliance over the life-cycle, industrial involvement policy with associated resources is a must




Nuclear Industry Involvement
Coordination Organization

Position and Role

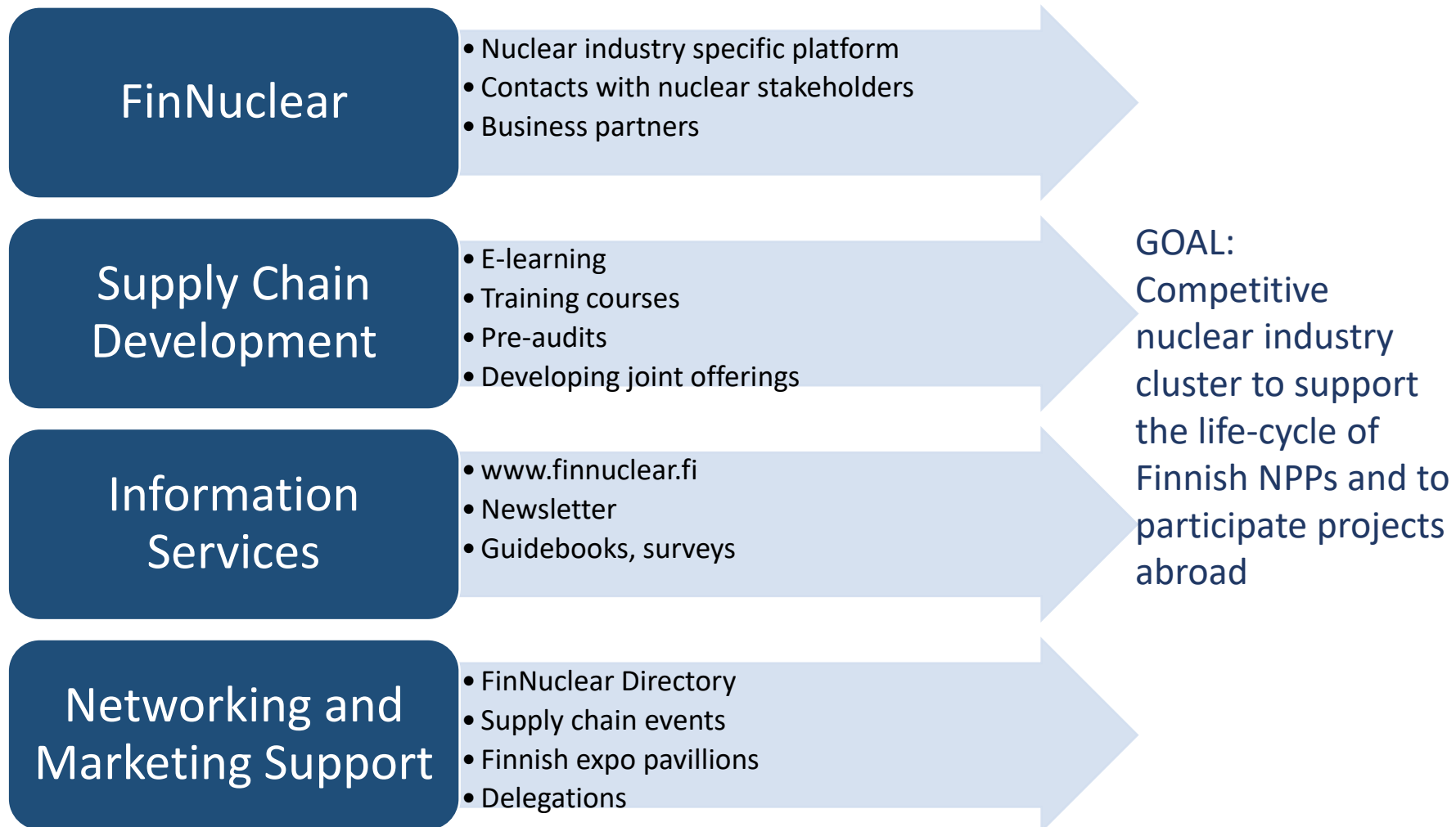
- Industrial Involvement Policy could include establishing such a structure
- Potential implementing organization regarding industrial development actions and supporting involvement
- National nuclear industry coordination organization may support the local supply chain in many ways **(ref.IAEA publication)**
 - Studies, surveys, information sourcing
 - Networking, matchmaking
 - Joint marketing
 - Training
 - RDI activities and –facilities
- Results require proper resourcing

Benefits

- Joint, systematic, coordinated (and therefore more efficient) development actions
- Brings industries together
- Particularly for the SMEs it may be cost saving
- Governmental RDI funding may be channeled unbiased way to the industries

- 
- Increasing competitiveness by having adequate skills
- regulated nuclear safety framework
 - requirements of EPC contractor/high tier suppliers

Example Finland: FinNuclear



Example United Kingdom: NAMRC and NIA



NUCLEAR **AMRC**

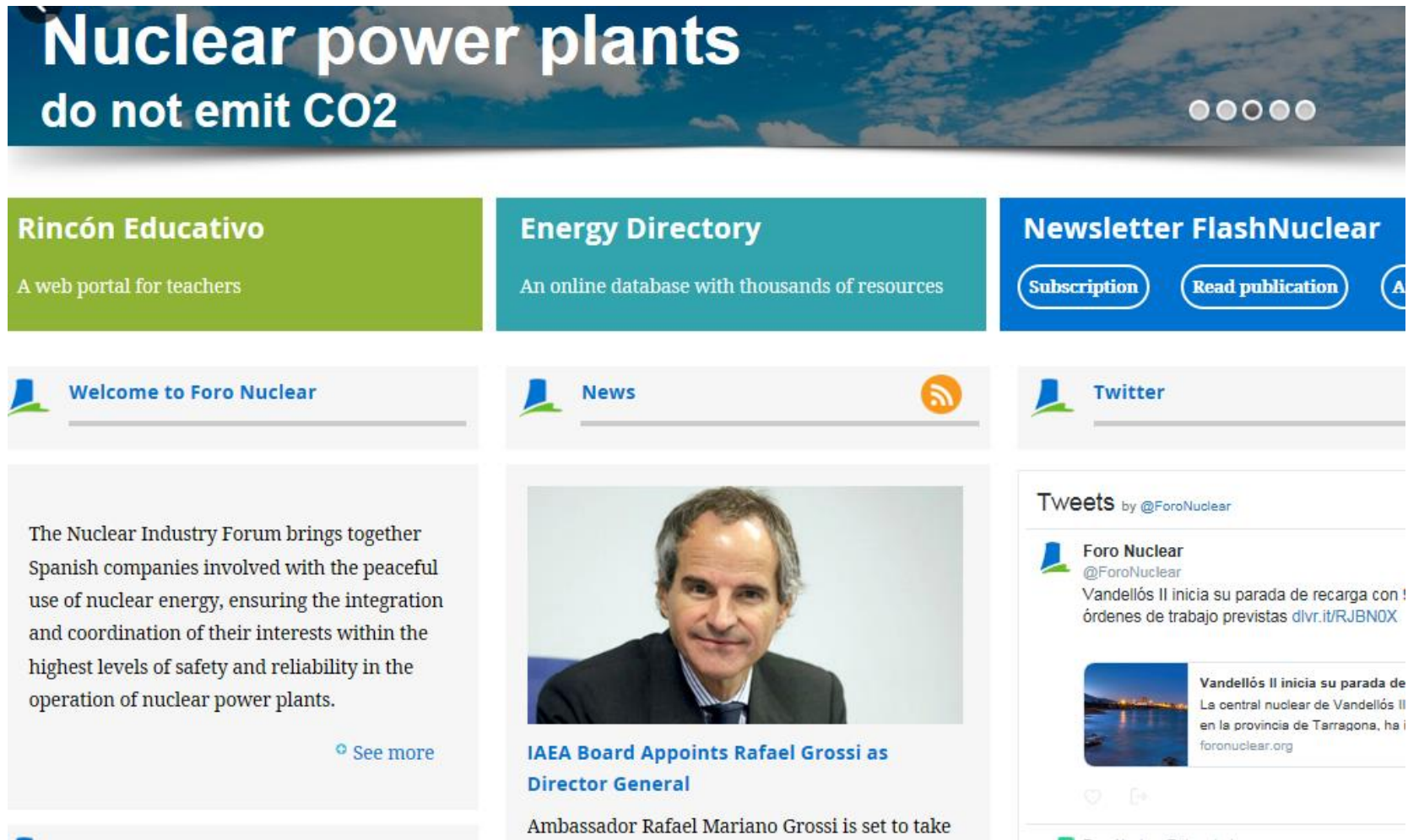
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The Nuclear Advanced Manufacturing Research Centre helps UK manufacturers win work in nuclear

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Example Spain: Foro Nuclear



Nuclear power plants do not emit CO2

Rincón Educativo
A web portal for teachers

Energy Directory
An online database with thousands of resources

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The Nuclear Industry Forum brings together Spanish companies involved with the peaceful use of nuclear energy, ensuring the integration and coordination of their interests within the highest levels of safety and reliability in the operation of nuclear power plants.
[See more](#)

IAEA Board Appoints Rafael Grossi as Director General
Ambassador Rafael Mariano Grossi is set to take

Tweets by @ForoNuclear

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Vandellós II inicia su parada de recarga con ! órdenes de trabajo previstas dlvr.it/RJBNOX

Vandellós II inicia su parada de
La central nuclear de Vandellós II en la provincia de Tarragona, ha i
foronuclear.org

Action Plan - Example

Action	Outcome
Study of industrial competencies	Defined existing competencies on technological fields that NPP programme requires, key companies
Gap analysis	Defined missing competencies reflecting the regulatory framework and requirements in various safety classes
Setting realistic target	Preliminary idea of supplies that local industries could aim to. Planned potential to increase by technology transfer or strategic partnerships.
Survey of industrial interest	Companies' interest to participate nuclear programme and invest in developing the needed competencies
Establishing joint forum to provide:	Getting local companies under one umbrella for joint visibility and shared costs
Training	Joint efforts to overcome the gaps
Networking opportunities	Establishing connections toward the clients, partners. Obtaining information.
Alliances	Increasing competitiveness
Information sourcing	Increasing awareness of the global nuclear industry field



Thank you!