IEA/NEA Nuclear Roadmap 2014 update Stakeholder engagement workshop

Session 2:

Overcoming barriers to nuclear build (other than financing)

Barriers to Nuclear Projects

Industrial issues

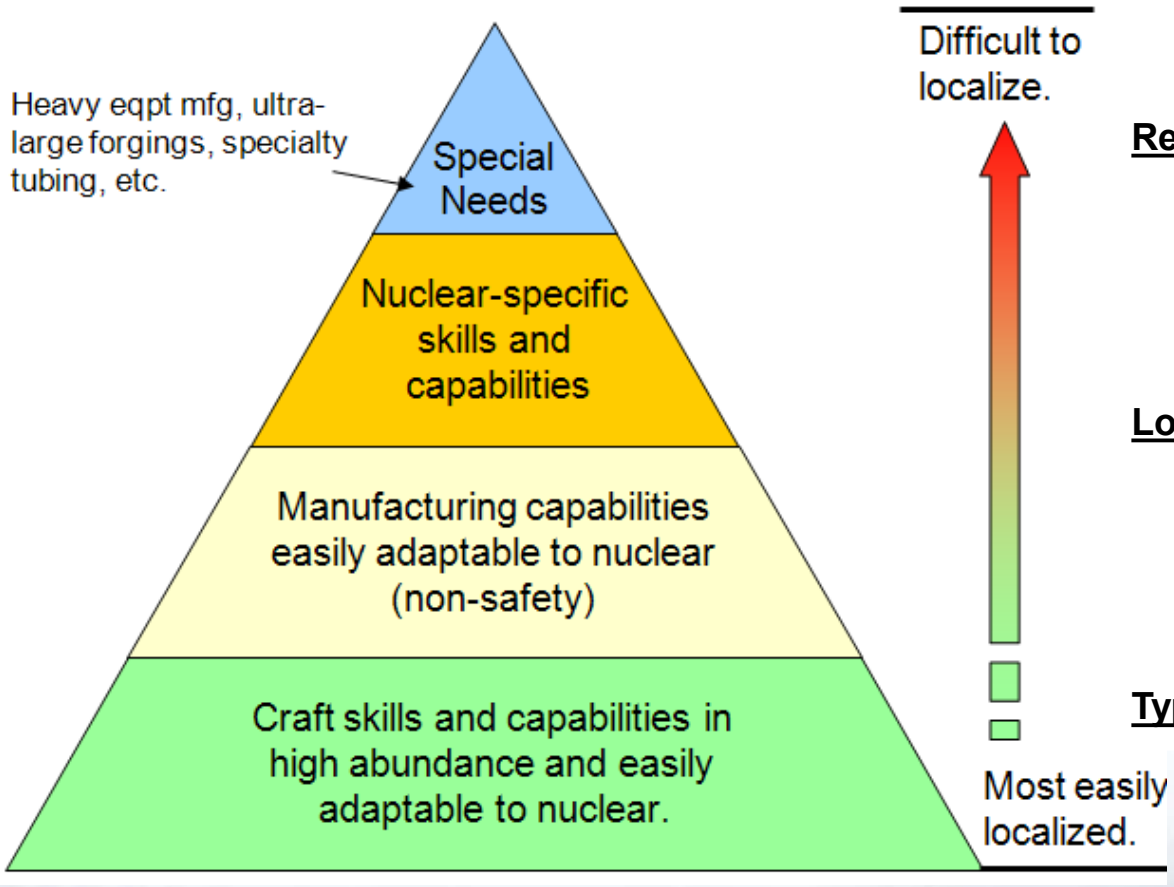
- Supply chain bottlenecks (large heavy forgings), localisation
- Codes and standards
- Licensing - harmonisation
- Building on time and on budget

Supply chain bottlenecks (large heavy forgings), localisation

To be considered:

- Utilise local / regional supply chain (technology to be evaluated)
- Meet quality and safety requirements, long term reliability
- Meet Cost and schedule objectives

Localized Supply Chain Vision



Regionalization when Possible: Qualified safety-related, could require Tech-Transfer (TT), or licensed technology. Usually viable only for national fleet program aspirations.

Localization when Possible: Localization of equipment by qualified local industries. Mainly off the shelf, build-to-spec, non-safety, but need to be commercially competitive.

Typically Localized: Construction labor and construction commodities.

Investment in local skills and capacity must begin at an early stage.

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Codes and standards

- Long term goal: harmonisation of regulatory & codes requirements for design / construction (MDEP, SDOs, CORDEL)
  - Improve regulator ability to make safety decisions,
  - Increase quality of safety assessment
  - Decrease cost & schedule uncertainty
- Simplification & standardisation are already key for the plants launched (design, safety, construction, procurement, consequence on cost & schedule)
  - Harmonisation is a goal for the industry globally : in the past, localisation of codes & standards has been used to protect from competition
  - Industry involvement is key to reach convergence & acceptability of the differences

Harmonisation is the goal. Acceptability of the differences is needed as a 1st step
Important to competitiveness of nuclear energy, to training & qualification of subs (incl. entrants)

Licensing - harmonisation

- The total life cycle of a nuclear plant is under license:
  - Design
  - Construction on the specific site
  - Operation
- "International licensing" vs. local responsibility of the Regulator in front of the local government & public
  - Design competencies can be "shared"
  - Construction & operation competencies must be local
- Evolution from a 2-step licensing process to a one step licensing:
  - introduce confidence and certainty to stimulate new projects
  - Engage stakeholders at the early stage (public inquiry)
  - But it is a process New to Regulators
- Licensing harmonisation increases safety
  - Facilitates learning curves for new entrant countries (licensing process and Safety demonstration)
  - Facilitates matching of milestones : construction vs regulators surveillance
  - Facilitates Peer reviews and resulting action plans (Regulators, Operators)

Licensing harmonisation is on track
Day to day work with the Regulator will remain local

Building on time and on budget

- Based on the following assumptions:
  - Standardisation & Modularisation
  - Quality of supply
  - One step Licensing certainty
  - Same Codes & Standards used in every countries
- Lessons learned
  - Supply chain surveillance: ensure clarity of requirements, maturity of quality process & traceability, schedule anticipation & revision
  - Project management: integrated project schedule, efficient change notice process, Project Command Center
  - Organisation of the tasks: adjust to the contractual agreements (partners, subs) and also to the licensing/regulatory milestones

Integration of the lessons learned from FOAK is key to reach a standardized construction process, on time & on budget

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AP1000 Plant Value Proposition

Passive Safety Systems

Simplified Design with Modular Construction

Reviewed in Multiple Countries by Independent, Technically Rigorous and Transparent Regulators

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