

# Understanding the Impact of the Nuclear Supplier Evolution

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# The Overall Picture

- Nuclear energy is free fall in all but parts of Asia:
  - Little new construction of NPPs
  - Serious delays and cost overruns in many projects underway
  - Existing fleet in Europe and the US is ageing and shrinking. Functional NPPs are retired due to poor economic outlook
  - NPPs cannot compete with other sources of energy without some form of state subsidies
  - And the political appeal of extending such subsidies to nuclear energy is largely non-existent, notwithstanding Paris
  - Private sector financing for nuclear energy is practically non-existent due to risks, size, long time lag for payoff, and image

# The Vendors

- Are struggling to survive the harsh economic realities
- Almost all lack economies of scale and standardization
- The supply chain is very thin; cannot ramp up/adjust quickly
- Most remaining vendors are pinning their survival hopes on:
  - Large governmental subsidies in some form (because of their appeal for energy security, prestige , and carbon footprint)
  - Integrated construction and operation model
  - Fuel services, decommissioning, subcontracting work
  - Ascendancy of SMR's as a panacea
  - Hunkering down (myopia, writing off skepticism and concerns)
  - Undertaking risky contracts (core provisions, challenging infrastructure, financing arrangements)



# Several Illustrative Cases

- Most worrisome:
  - India (liability, safety-regulatory)
  - Iran (safety, security, liability, non proliferation)
  - Turkey (safety-regulatory, security)
  - Bangladesh (infrastructure)
  - Russia (export policy)
  - IAEA (post Fukushima nuclear ambivalence)
- Bear in mind the traumatic incidents have occurred in advanced experienced nuclear states (Japan, RF, USA)
- And serious recent setbacks have taken place in similarly mature nuclear states (ROK, Finland, France)
- By what rules will Chinese exports be governed? SMRs?



# The Impact of These Trends

- Accelerating the demise of nuclear power
- Running real risks of other serious incidents
- Diverting attention from confronting pre-existing challenges (irradiated fuel and nuclear waste)
- Failing to generate constructive concerted action toward customers (operators), customer states (regulators, politicians), international organizations, and civic society (NGOs)
- Imminent demise of NuPoc

**acute crisis of nuclear governance is upon us**

