Cage or catapult?
The importance of institutional factors in shaping public perception

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The concept of path dependency & “lock-in”

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The concept of path dependency/lock-in

- An explanatory approach as to why certain technologies or institutional setups are chosen over others, and the notion that “history matters”.
- Institutional commitments – i.e. choices – are an essential but dangerous facet of complex infrastructural innovation that tend to remain entrenched for long periods of time, aided by institutional inertia.
- Heavily regulated and politically sensitive industries, like nuclear, are especially driven by the institutional environments from which they emerged, and within which they operate
Case 1

ACHIEVING DESIGN HARMONY
Current situation and challenges

• The **major challenges** of international harmonization
  - Different regulatory approaches and regulations, standards frameworks and nuclear policies → design changes, cost increase, unpredictability of licensing and deployment time across countries

• Efforts to overcome these challenges
  - **Regional level**: WENRA, EC ERDA, European Utility Requirements (EUR), MoC CNSC/US NRC and CNSC/UK ONR
  - **International level**: MDEP, INRA

• **A new regulatory paradigm is necessary** to minimize duplication of certification effort and major design changes, and to improve nuclear power’s competitiveness
Cooperation in Reactor Design Evaluation and Licensing (CORDEL) Working Group

- **Established in 2007 as an industry counterpart of MDEP**
- **Main Objectives** are to promote
  - International standardization of reactor designs
  - International harmonization of regulatory requirements
  - International design approval/certification
- **Six Task Forces**
  - Codes and Standards [SDOs, OECD/NEA]
  - Nuclear Safety Standards [IAEA, ENISS, EUR, WANO]
  - Small Modular Reactors [IAEA, OECD/NEA]
  - Licensing & Permitting [IAEA, OECD/NEA]
  - Digital I&C [OECD/NEA, IAEA, IEC]
  - Design Change Management [WANO, IAEA]
- **Membership**
  - Almost all major vendors and many utilities interested in new build, service companies, etc.
Benefits of harmonization

- Boost the investment attractiveness of nuclear new build through greater predictability of licensing and deployment time across countries
- Improve economic competitiveness
- Enable a strong supply chain and knowledge base that support long-term power plant operation
- Increase ease of export
- Increase market share of nuclear energy generating capacity
- And...
LINK TO PUBLIC ACCEPTANCE?
“Too slow, too expensive”?

• A very small number of first-of-a-kind projects have suffered from cost and schedule overruns.
• These overruns have in many ways been caused by each project being de facto first-of-a-kind projects due to lack of international harmonisation and standardisation of designs.
• These projects have been used to portray nuclear power as being “too slow, too expensive” – with partial success.
• This has negatively impacted support for new build in certain countries.
• **Conclusion:** institutional innovation within the regulatory space would likely have a positive impact on public acceptance.
Case 2

GETTING THE RIGHT MESSAGE
Institutional innovation: communication

• There is a strong and well-established link between public acceptance and communication.
• Effective communication strengthens trust, decreased risk perceptions (whilst increasing benefits perceptions), and is central to a social license to operate.
• However, nuclear communication exhibits very evident signs of path dependency and lock-in
• An example…
"Anti-nuclear sentiments are irrational"

"Give them facts"
Institutional innovation: communication

• Key drivers of public perception of nuclear power:
  • Imagery
  • Emotions
  • Mental shortcuts (heuristics) and biased (e.g. confirmation bias, availability heuristic)

• Facts only amounts for ~5% of human decision- and sense-making – so why focus only on “educating the public” and “give them the facts and they’ll love nuclear”?

• Failing to integrate scientific breakthroughs within communication has resulted in:
  • Radiophobia (especially following accidents)
  • Less public and political support (let alone enthusiasm)
  • Undermining long-term prospects for nuclear energy
Conclusions

• Institutional innovation and public acceptance are closely intertwined – however, further attention must be dedicated to it.

• Design streamlining/harmonization can play an important role in combating public perception of nuclear power being “slow” and “expensive”.

• However, institutional path dependence can act as a significant barrier and needs to be fully explored.

• Nuclear communication exhibits very clear signs of institutional “lock-in”, and partially explains the nuclear community’s lack of progress in terms of modernising communication strategies.
Thank you:
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