

# Nuclear business: shifting from a supply chain to an ecosystem configuration

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## Abstract

- The potential market for small modular reactors (SMR) is up to 375 GW of installed capacity by 2050.
- Crucially the linear “supply-buy” relations in the nuclear industry do not allow the flexibility and scalability required for large scale SMR deployment.
- Nuclear sector needs to reach a balance between the nature of the business the openness of ecosystem business model.
- Embracing an ecosystem perspective requires a shift from “one-off projects” to a “program” leveraging an ecosystem business model.
- Therefore, the question is not if the nuclear industry should follow a similar path, but how to create nuclear ecosystems?

## Introduction

### Area of investigation & Research Question

#### Reactors currently under construction



#### Nuclear business is in decline WHY?

Focus at large scale NPPs and electricity production

#### Nuclear business has to change perspective HOW?

Flexible, scalable, carbon-neutral electricity and heat for various applications

Our key question: How to foster a “programme” approach when governments are less and less involved in electricity provision?

## Supply chain v. Ecosystem approach

Ecosystem is defined by the “alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize” [1]

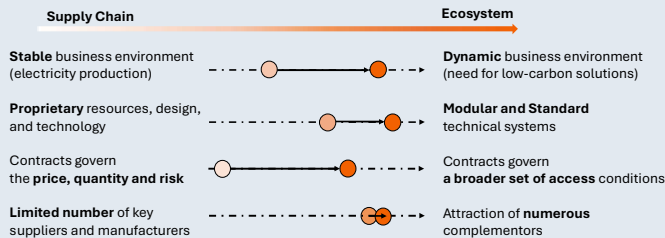


Figure 1 – Difference between supply chain and ecosystem configuration (adapted from [3])

## Ecosystems enabled by Platforms

Technological platforms defined as “products, services, or technologies that are similar in some ways, but provide the foundation upon which outside firms (in the ecosystem) can develop their own complementary products, technologies, or services” [2]

	Standardized	Mass-customized	Customized	
Degree of design complexity	Standardized CoPS e.g. CCGT power plants	Platform-based CoPS e.g. SMR, CCS, aircraft	Complex product systems (CoPS) e.g. NPP	Complex
	Mass-produced complex products e.g. electric vehicles	Platform-based complex products e.g. wind turbines, CSP	Complex-customized products e.g. biomass plant	Design intensive
	Mass-produced products e.g. solar PV modules	Mass-customized products e.g. rooftop solar PV	Small-batch industrial products	Simple
	Degree of customization			

Figure 2 – Complex Products and Systems platform logic (adapted from [4])

## Methodology

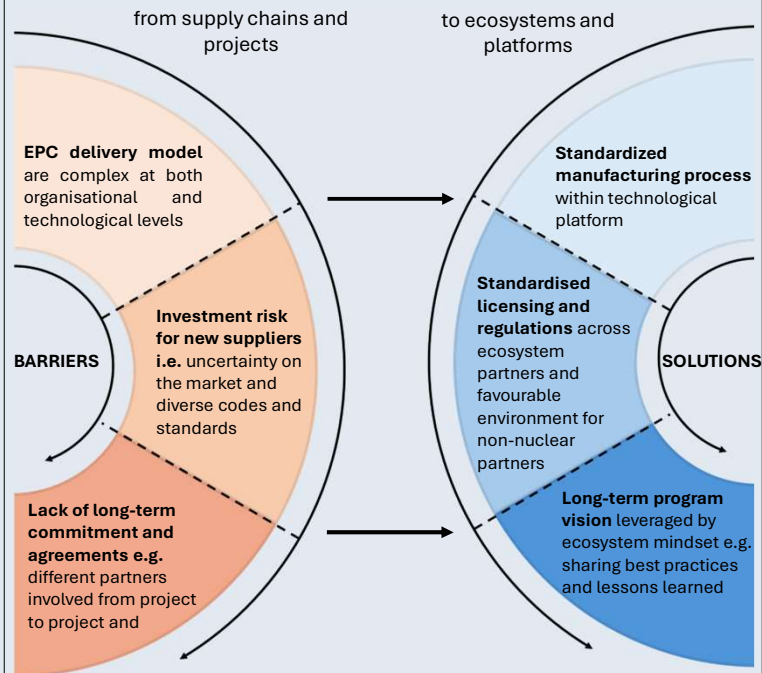
**Data collection:** in-depth discussions with industrial experts & secondary data (e.g. industry reports) to strengthen the triangulation of the primary data.

**Data analysis:** by analyzing the interview transcripts and summarizing each section of data, the different categories and themes were identified. To facilitate the “how” question, this paper focuses on the main barriers of the project to program transition and the role of platforms and ecosystem to tackle these barriers.

## What hinders adoption of “programme-like” approach?

- Heritage of the EPC delivery model
- Investment risk for suppliers
- Lack of long-term commitment

### Nuclear business



## Conclusion

This paper addresses the RQ by analyzing how SMRs with standard module can be a precondition to create, what in business and management studies is called an “ecosystem”. Our findings suggest that establishing the programme-like approach requires tackling (1) heritage of the EPC delivery model, (2) investment risk for new suppliers, and (3) lack of long-term commitment and agreements.

## References

- [1] R. Adner, “Ecosystem as Structure: An Actionable Construct for Strategy”, J. Manag., 2017
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