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CENTRE FOR RESEARCH INTO ENERGY DEMAND SOLUTIONS

Policy & governance

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Why don’t governments pay more attention to energy demand?

Investigating systemic reasons for the supply/ demand asymmetry in energy policy

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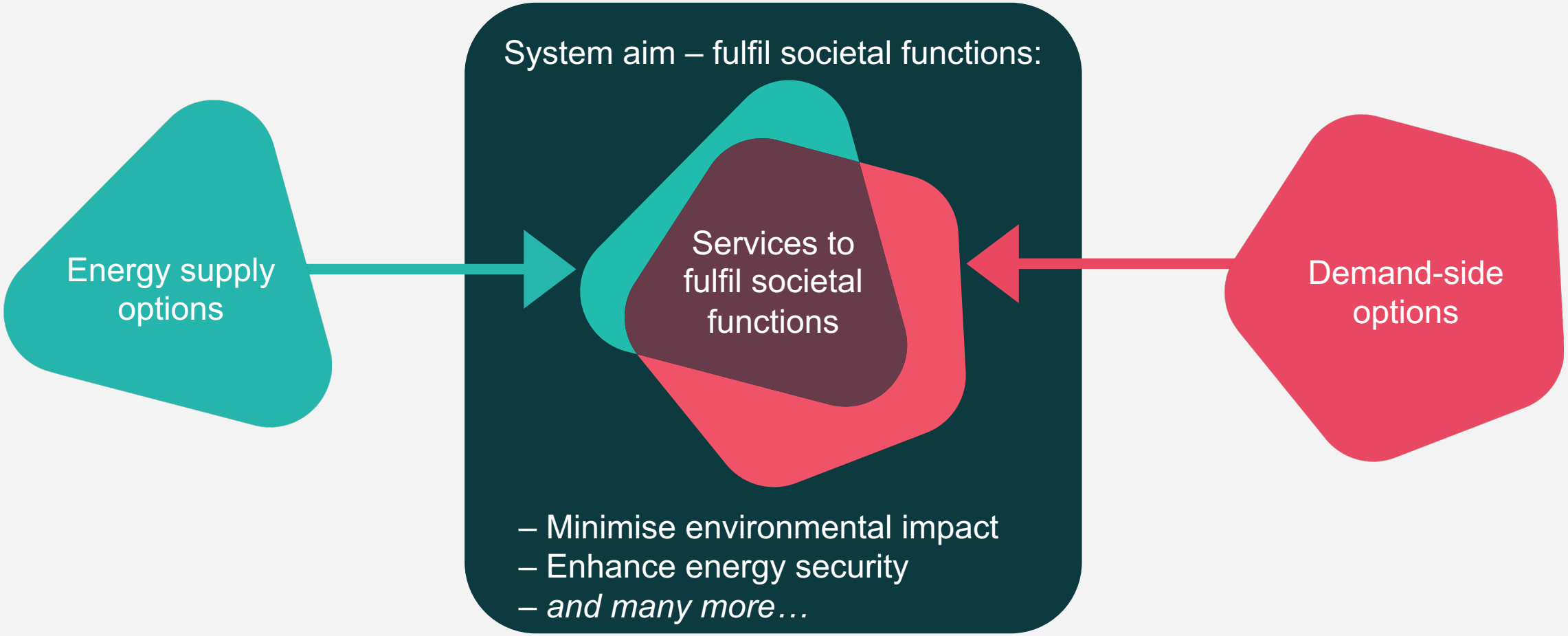
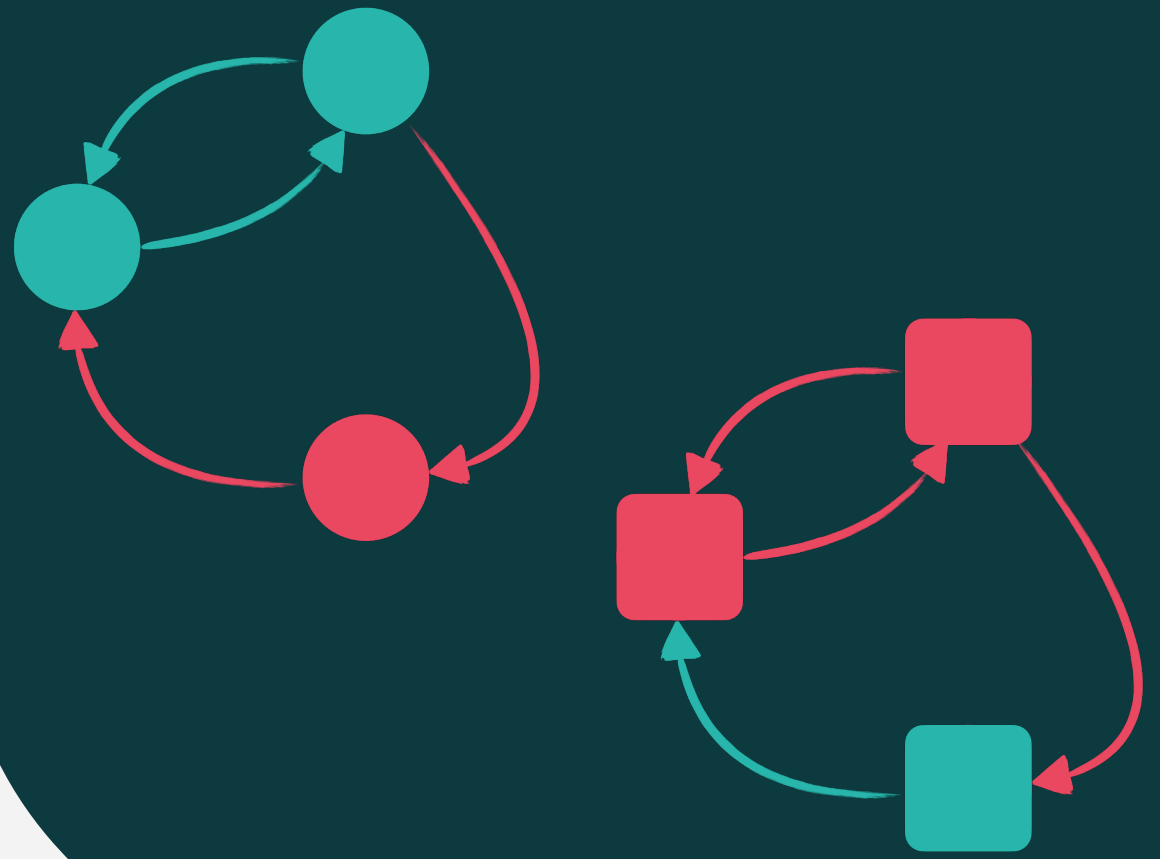
Supply/demand policy asymmetry



Systemic problem

Four main elements of **dynamic complexity**: accumulations, rates of change, feedback processes, nonlinear relations.

Even if system purposes and elements are different, the interconnection of elements (**structure**) might be similar enough to make transferable insights possible.



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Rapoport, A., 1968. Foreword, in: Buckley, W. (Ed.), Modern Systems Research for the Bahavioural Scientist. Aldine Publishing Company, Chicago.

Sterman, J.D., 2002. All models are wrong: reflections on becoming a systems scientist. *System Dynamics Review* 18, 501–531.

Socio-technical system

Three ontological dimensions:

- Actors
- Rules
- Material reality

Geels, F.W., 2004. From sectoral systems of innovation to socio-technical systems. *Research Policy* 33, 897–920

Geels, F.W., Bruno Turnheim, 2022. *The great reconfiguration: a socio-technical analysis of low-carbon transitions in UK electricity, heat, and mobility systems*. Cambridge University Press, Cambridge.

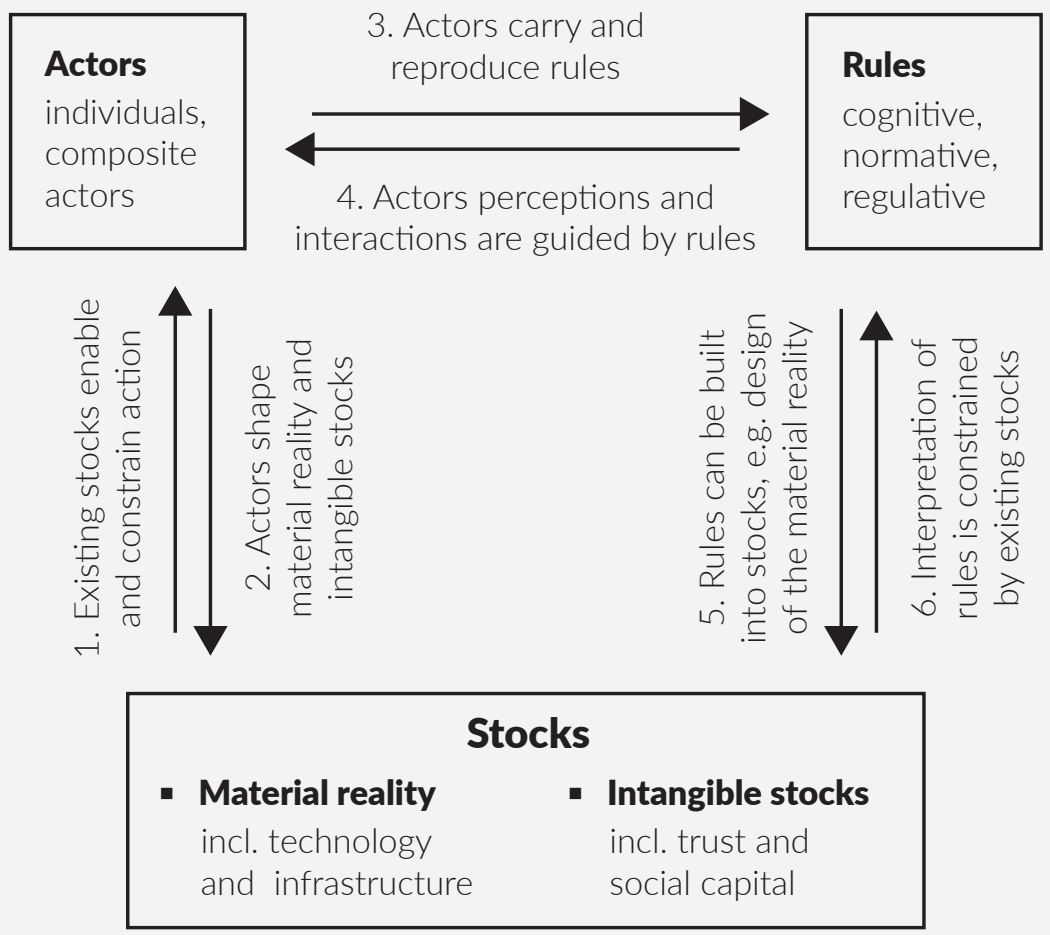

Figure 1. Three ontological dimensions of socio-technical systems (based on Geels 2004, p.903 and Geels and Turnheim, 2022, p.9)

Reasoning by analogy

Isomorphism – mapping that preserves structure (relations among elements)

Langley, A., 1999. Strategies for theorizing from process data. The Academy of Management Review 24, 691–710.

Peirce, C.S., 1903. Sundry logical conceptions, in: Houser, N., Kloesel, C. (Eds.), The Essential Peirce: Selected Philosophical Writings. Volume 2 (1893–1914). Indiana University Press, 1998, Bloomington, pp. 267–289.

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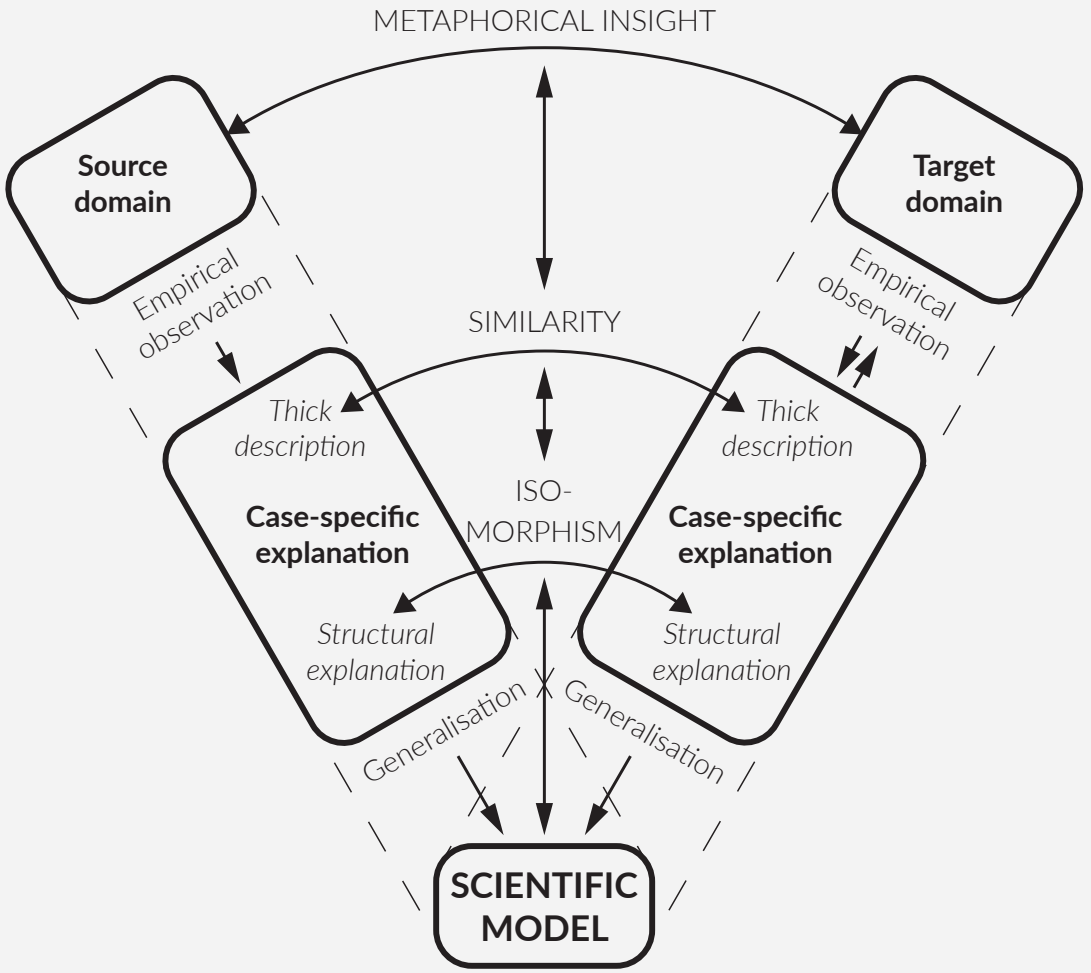


Figure 2. Reasoning by analogy (based on Tsoukas, 1991)

Meta-narrative systematic review

Learning from other social systems that exhibit similar asymmetry, e.g., asymmetry in healthcare between curing illness and investing in preventive healthcare.

Gough, D., 2013. Meta-narrative and realist reviews: guidance, rules, publication standards and quality appraisal. BMC Med 11, 22.

Gough, D., Oliver, S., Thomas, J., 2017. An introduction to systematic reviews, 2nd ed. SAGE, Los Angeles

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., Kyriakidou, O., Peacock, R., 2005. Storylines of research in diffusion of innovation: a meta-narrative approach to systematic review. Soc Sci Med 61, 417–430.

Kuhn, T.S., 1962. The structure of scientific revolutions. University of Chicago Press, Chicago.

Wong, G., Greenhalgh, T., Westhorp, G., Buckingham, J., Pawson, R., 2013. RAMESES publication standards: meta-narrative reviews. BMC Med 11, 20.

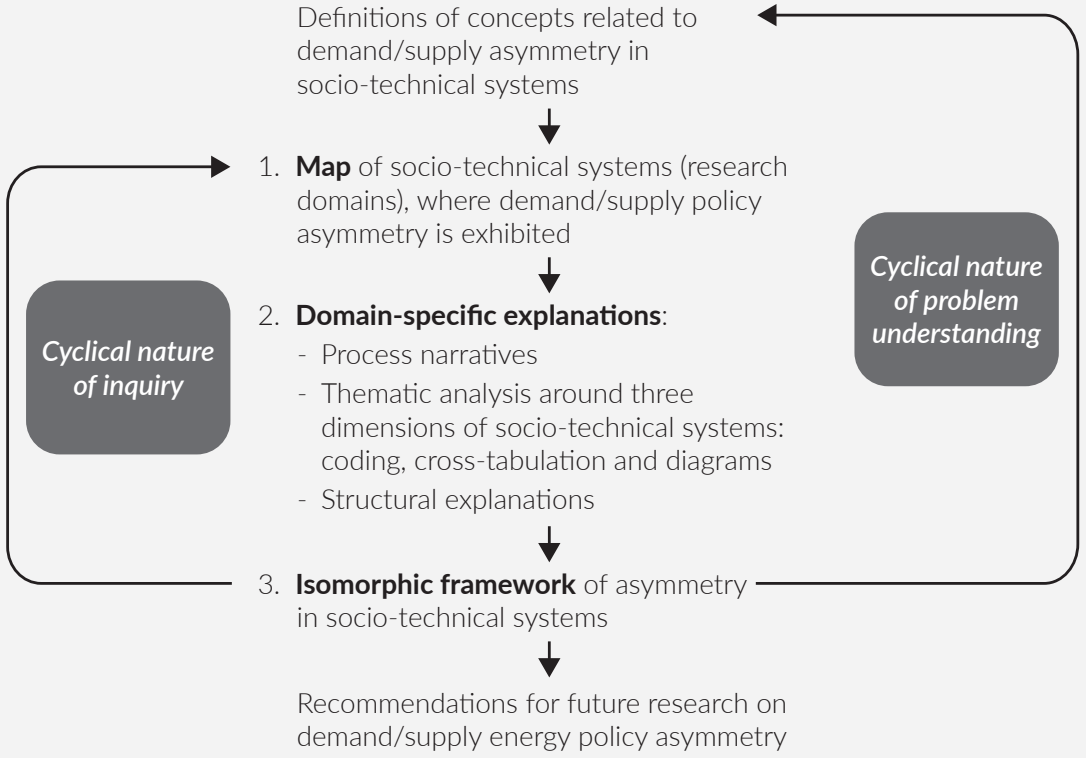


Figure 3. Meta-narrative steps

Systems in the review

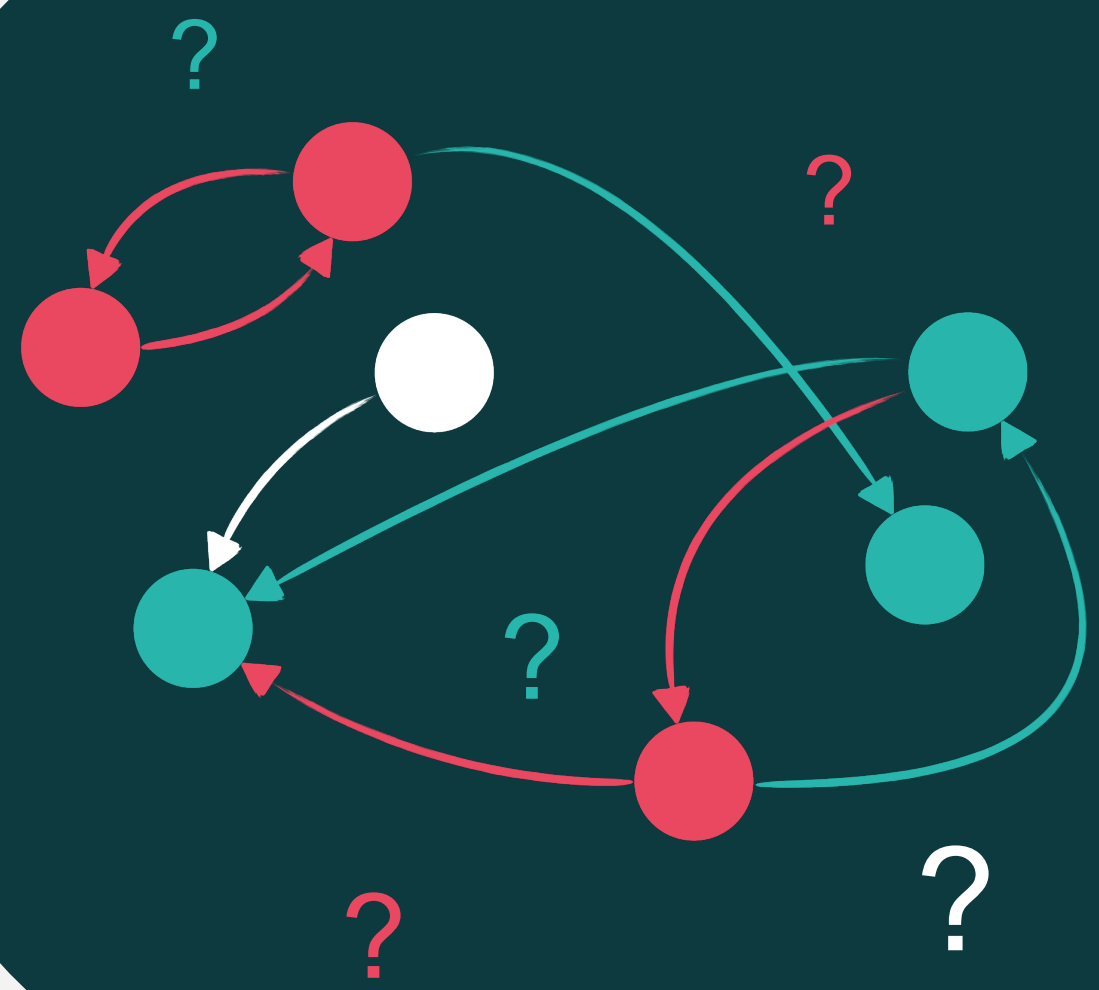
Socio-technical systems	Research scope for asymmetry	Demand/supply symmetry terminology
1. Energy system	Production and use of energy	Demand vs supply
2. Water system	Supply and use of water	Demand vs supply
3. Food system	Production and use of food	Demand vs supply
4. Transportation system	Transport control	Demand management vs ‘predict and provide’
5. Industrial production system	Pollution control	Integrated vs reactive control; wholistic vs end-of-pipe regulation
6. Material production system	Waste control	Waste reduction vs waste management
7. Healthcare system	Population health	Prevention vs cure
8. Management system	Organisation management	Investment vs operation; improvement vs production
	Infrastructure management	Proactive vs reactive maintenance; preventing vs correcting defects

Hierarchy of solution strategies

Energy system		Energy system	Industrial and material production systems		Health system
Energy	**Carbon**	**Food waste**	**Biodiversity**	**Material waste**	**Healthcare**
Avoid	Wasted energy avoidance	Prevention	Avoid	Prevent	Primary prevention
Shift				Reduce	Secondary prevention
Improve	Efficient conversion	Redistribution	Minimise	Reuse	
Renewables	Renewable energy	Animal feed/ compost	Restore	Recycle	
	Offset	Energy recovery	Offset	Recovery	Tertiary prevention
		Disposal		Landfill	

Insights and further steps

1. We can see policy asymmetry in other social systems (and can hopefully learn from them).
2. Identifying structural reasons for asymmetry is difficult. However, some preliminary insights are drawn.
3. A new systemic conceptual lens for the problem of demand/supply asymmetry in energy system and its policies



Thank you for listening

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