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Providing modelling and analytical capabilities for evidence-based national infrastructure planning

Dr Matthew Ives, University of Oxford

matthew.ives@ouce.ox.ac.uk

City Conversations: How Are Infrastructure Decisions Made?

Wednesday 11 May 2016

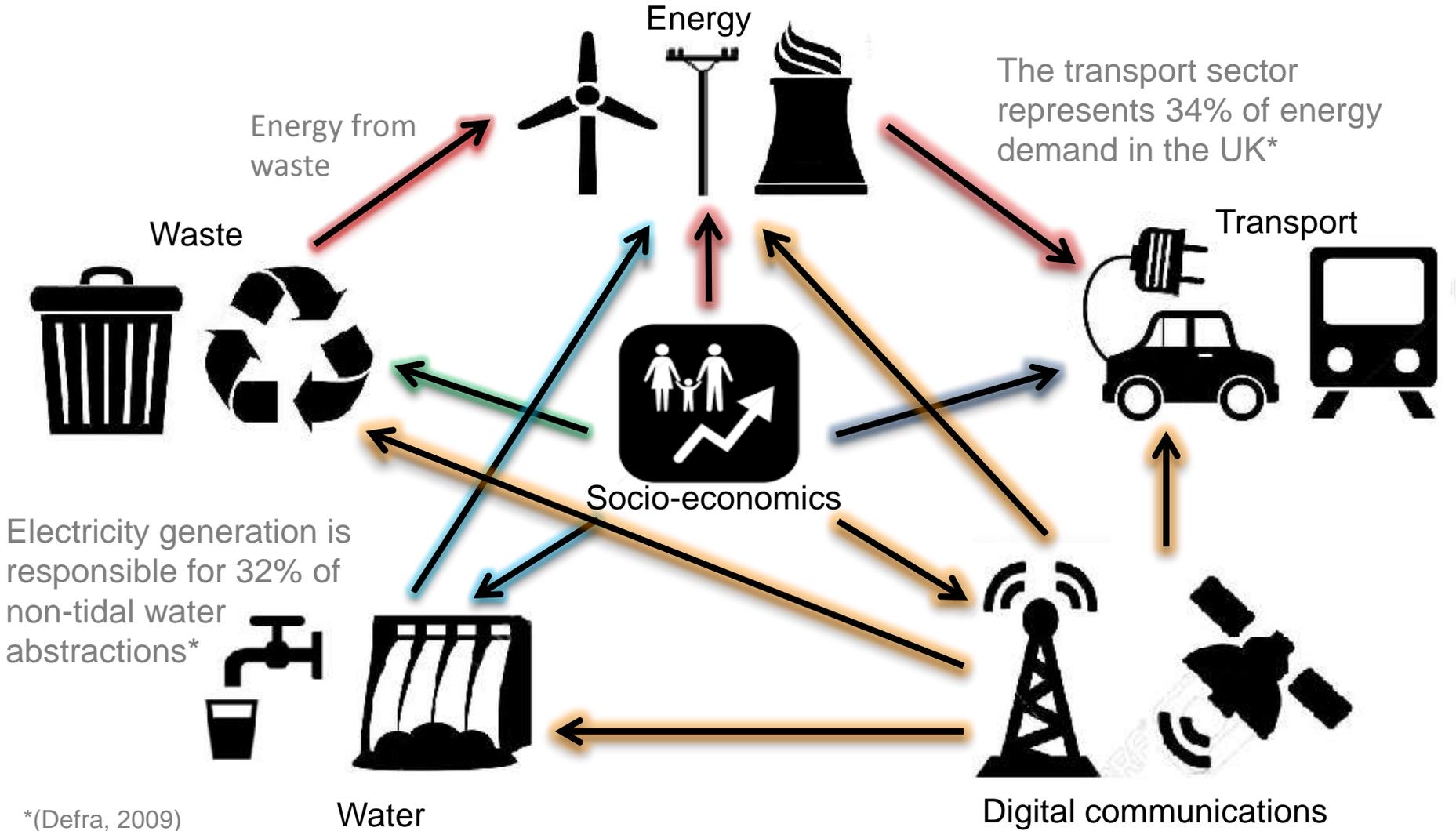


The UK Infrastructure Transitions Research Consortium (ITRC) was launched in 2011 with the aim *“to develop and demonstrate a new generation of system simulation models and tools to inform analysis, planning and design of national infrastructure.”*

Four years later the ITRC has:

- Conceptualised, developed and implemented a national infrastructure planning model, for development and testing of a long-term strategic approach to infrastructure provision, which is integrated across infrastructure sectors and across all of Britain.
- Developed models of interdependent failure in national infrastructure networks and used them to demonstrate hotspots of national infrastructure criticality and the economic consequences of systemic failure.
- On the basis of in-depth case studies, proposed new approaches for the governance of interdependent infrastructure systems.

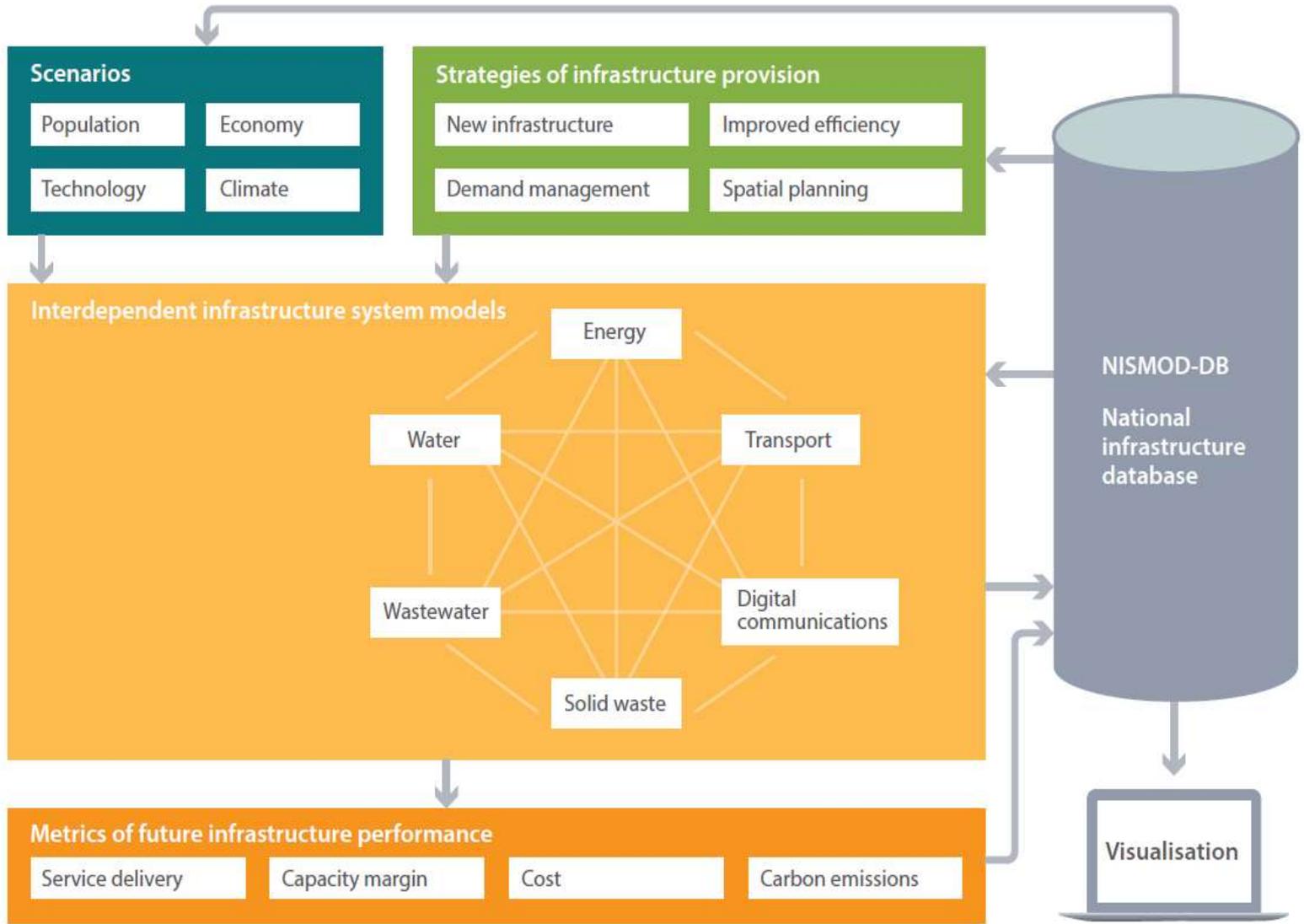
A system-of-systems modelling framework



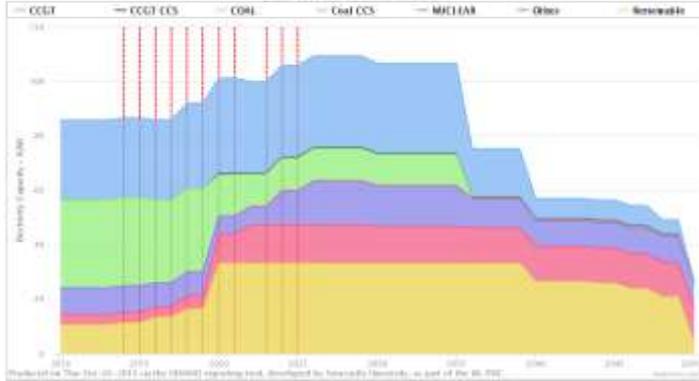
*(Defra, 2009)



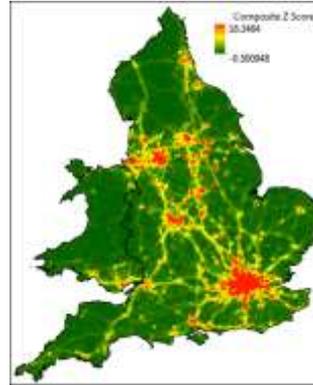
The methodology for long term planning analysis



Generation capacity of existing plus new national infrastructure pipeline energy projects



Composite criticality map of infrastructure risks



National Infrastructure Commission



Infrastructure UK



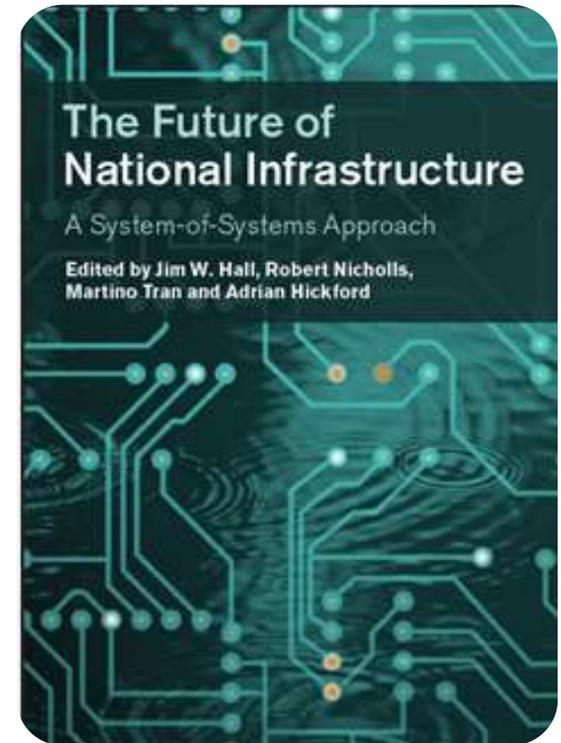
National Rail

nationalgrid

Outputs from four alternative infrastructure provision strategies under central scenario



- Minimum Intervention (MI)** – historical levels of investment, continued maintenance and incremental system change.
- Capacity Expansion (CE)** – large scale, long-term investment into physical capacity expansion.
- System Efficiency (SE)** – technological and policy interventions to increase system throughput targeting supply and demand.
- System Restructuring (SR)** – rethinking the system through innovation, design, new service delivery models, demand reduction.





Thank you

Dr Matthew Ives, University of Oxford
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