

Briefing: Infrastructure business models, valuation and innovation for local delivery

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The UK's Engineering and Physical Sciences Research Council and the Economic and Social Research Council have launched a £3.5 million, 4-year research programme to develop innovative business models for delivering infrastructure. Richard Dawson, Claire Walsh, Phil Purnell and Chris Rogers introduce infrastructure business models, valuation and innovation for local delivery (iBUILD).

A growing population, extreme weather, decarbonisation, a proliferation of new technologies and their integration with ageing, existing systems are just some of the pressures on modern infrastructure. Unfortunately, the rate of investment in infrastructure has not kept up with the pace of change, and this is further complicated by fragmented, often reactive, regulation and governance arrangements. The UK Treasury Select Committee noted that existing infrastructure business models provide poor value (HM Treasury, 2011), but few alternatives are available; a point picked up by Infrastructure UK (Infrastructure UK, 2011) who called for research centres to be founded to address this. The iBUILD Centre will address this through development of a suite of alternative infrastructure business models, ranging from reforms to existing approaches to radical new models, each enabling more effective delivery of local infrastructures (Figure 1).

A systems view

Some of the limitations of existing business models stem from a narrow definition of infrastructure that typically focuses on the physical artefacts. Yet, these rely on a series of processes (e.g. design, finance, operation) that enable the movement of resources (data, energy, people etc.) to provide the services that maintain (and ideally enhance) security, health, economic growth and quality of life for users and society at large. A systems approach helps identify the multiple ways these aspects are interconnected, thereby illuminating an extensive set of possible mechanisms for capturing economic as well as social and environmental value. Physical dependencies between infrastructure systems are increasingly recognised; however, socio-economic dependencies, arising from investment cycles, funding and finance practices, valuation techniques, policy, regulation of pricing or major external shocks such as a 'credit crunch', are less well understood.

A focus on local infrastructure

National infrastructure plans and projects provide strategic context for local development, but poor local infrastructure inhibits growth and other activities (McKinsey Global Institute, 2011). Moreover, balancing growth across regions and scales is crucial to the success of a national economy (IPPR, 2011). The UK's localism agenda is encouraging new approaches to local infrastructure provision by devolving funding powers. 'City Deals' (DCLG, 2011) are using mechanisms such as tax increment financing to fund local infrastructure, but these approaches have had mixed results in the USA, with some cities filing for bankruptcy (Strickland, 2013), and remain unproven in the UK. Yet, local scale infrastructure development has the potential to be accessible to many more agents (e.g. SMEs, community groups) as upfront investment is lower, enabling innovation, entrepreneurialism and novel delivery models. Furthermore, as many systems decentralise, the role of community or household measures (e.g. small-scale generation or demand management) and associated agents will provide further opportunities for innovation.

Research themes

The iBUILD research programme is structured around three major research activities to stimulate innovative thinking around infrastructure business models.

- The business of interdependence: identifying how to 'unlock' the technical and market opportunities while managing the associated risks that emerge from the increased interdependence of modern infrastructure systems.
- Re-thinking value: challenging and enhancing current approaches to assessing infrastructure value to enable leveraging of economic, social, environmental, aesthetic and other dimensions of value.



Figure 1. Balancing growth across regions and scales is crucial to the success of a national economy. The UK's localism agenda offers opportunities to develop new approaches to local infrastructure provision.

- Issues of scale in local delivery: reconciling the local scale at which infrastructure services are provided with regional, national and global scale priorities around strategic planning, financing, procurement and operation.

New business models that emerge from these activities will be stress tested, in partnership with stakeholders, on a series of case studies to provide crucial evidence on their practicality and benefits.

Four-year programme

Following an announcement by Lord Deighton, Commercial Secretary to the Treasury, the research programme began in Autumn 2013 and will last for 4 years. The iBUILD Centre comprises a multidisciplinary team that includes civil engineers, economists and social scientists from Newcastle, Leeds and Birmingham Universities and is led by Richard Dawson from Newcastle University.

iBUILD aims to develop and demonstrate a suite of infrastructure business models for local and urban infrastructure.

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