



Knowledge Summary **UK Infrastructure Challenges**

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The Modern Built Environment Knowledge Transfer Network (MBE KTN) is delivered by a partnership between Arup, BRE, BSRIA and CIRIA. This Knowledge Summary was delivered by Ben Kidd at CIRIA.



Introduction

The 2010 National Infrastructure Plan (HM Treasury) highlighted the importance of coordinated and sustained investment in infrastructure, stating that:

“infrastructure forms the economic backbone of the UK. It is the fabric that defines us as a modern industrialised nation. The standard and resilience of infrastructure in the UK has a direct relationship to the growth and competitiveness of our economy, our quality of life and our ability to meet our climate change objectives and commitments.”

The performance of UK’s infrastructure affects society, business, and the wider economy at a number of levels. Delivering this performance against increases in demand, often with ageing structures and limited budgets pose challenges for infrastructure owners and operators. This summary paper, adapted from the MBE KTN Knowledge Summary “UK Infrastructure Research Activities” (May, 2012), outlines the challenges facing UK infrastructure delivery.

Major challenges

The challenges facing the UK’s infrastructure include:

- Poor resilience to systemic failure caused by:
 - Age of much of the infrastructure
 - Increasing interconnection and interdependence of infrastructure systems
 - Systems near maximum capacity due to economic growth, demographic and social changes
 - Lack of detailed data on location and particularly the condition of legacy infrastructure assets, and lack of central data repositories.

- Need to adapt to environmental change:
 - Need for low carbon infrastructure solutions to meet 80 per cent reduction target as defined in the progress report of the Strategy for Sustainable Construction (2009)
 - Need to future-proof core components against extreme weather events to minimise “downtime” and maximise business continuity
 - Need to cope with future demographic and social change.
 - Resource and material constraints (including geopolitics of material procurement)

- The fragmented nature of the infrastructure in terms of:
 - Decision making
 - Delivery
 - Governance.

Wider cross-disciplinary/ institutional challenges

The solutions to many of the infrastructure sector's challenges such as those posed by ageing infrastructure, maintenance and repair are likely to require contributions from a range of engineering and scientific disciplines.

An increasing number, however, are likely to draw expertise from specialised scientific input as well as from the social and economic sectors:

- Risks and uncertainties for example from climate change scenarios
- Implications arising from policies relating to demand management and pricing
- New business models for infrastructure delivery and management (attracting private investment)
- User awareness and behaviour
- New technology and innovation for systems modelling and methods for data capture/management and remote monitoring.

National Infrastructure Plan

The National Infrastructure Plan 2011 sets out a new approach to meeting the infrastructure needs of the UK economy. Ensuring the UK's infrastructure networks receive the investment they need is essential for the future growth and productivity of the UK economy.

The National Infrastructure Plan has three elements:

1. Effective planning for the medium term across all sectors;
2. Mobilising financing and funding for infrastructure investment; and
3. The Government taking an active role in ensuring the infrastructure in the plan is delivered.

Chapter 3 of the National Infrastructure Plan includes detailed commitments in the following areas:

- Improving the performance, capacity, connectivity and environmental impacts of the UK's transport networks including maintaining the status of the UK as an international hub for aviation;
- Achieving a secure, diverse and reliable energy supply for the UK while reducing the carbon intensity of electricity generation at least cost to consumers;
- Increasing superfast broadband and mobile coverage, and ensuring adequate spectrum availability to support a thriving communications industry;
- Maintaining the security and performance of the water and sewerage system while reducing its environmental impacts;
- Mitigating the impacts of flooding and coastal erosion as part of a well-managed, coordinated and affordable risk management system; and
- Reducing waste sent to landfill, increasing recycling rates and moving towards a zero-waste economy.

An update, published in December 2012, outlines the progress made with 40 priority infrastructure projects identified in the 2011 plan, and provides updates against broader commitments made in the 2011 plan.

Links

- MBE KTN Knowledge Summary “UK Infrastructure Research Activities”, May 2012
<https://connect.innovateuk.org/web/infrastructure-working>
- National Infrastructure Plan 2010
http://www.hm-treasury.gov.uk/ppp_national_infrastructure_plan.htm
- National Infrastructure Plan 2011
http://www.hm-treasury.gov.uk/national_infrastructure_plan2011.htm
- National Infrastructure Plan: update 2012
http://www.hm-treasury.gov.uk/d/national_infrastructure_plan_051212.pdf