UK-India Workshop on “Future Cities”

The UK in context

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The importance of cities

Cities are uniquely important
- Majority of the world’s population live in cities, trend is accelerating
- Cities directly and indirectly account for ~70% of CO₂ emissions
- Cities are crucibles of economic, institutional and cultural value

Cities are uniquely vulnerable
- Growing and ageing populations
- Ageing infrastructure and supply networks
- Global/regional competition & impact of Internet
- Hostile threat and natural hazards

Cities are under enormous pressure to change
- Fiscal, Balance of Payments etc
- Fragmented functions & governance (transport, healthcare, water resource management)
- Energy - prices, environment/health, security
- Mitigation and adaptation to climate change
“Cities admit innovation, indeed they are the crucibles of innovation, they generate surprise, they display catastrophes.”

M Batty, Building a science of cities, Cities Vol 29 (2012)

- Complex systems – self-organising
- Far from equilibrium, open systems
- Display both persistence and change
- Fractal – e.g. London’s population in picture
- Scaling reflects benefits and costs of agglomeration (e.g. congestion) and competition
UK population growth projections

Note: Mid year estimates for Scotland for 2002-2010 are due to be revised to take account of the 2011 Census

UK population density and economic activity

Population density in UK & Ireland

Regional GVA (£m). Source: ONS
An outlier: London’s position in the UK

Distribution of size of cities

Regional GVA per head

From “There is More than a Power Law in Zipf”, Matthieu Cristelli, Michael Batty & Luciano Pietronero, Scientific Reports 2

Source: ONS
Dense, coupled transport networks

Road connectivity

Long distance and overground rail (green) and tube (blue)

Crossrail - major new heavy-duty suburban rail service will connect the City, Canary Wharf, the West End and Heathrow Airport to commuter areas east and west of the capital. From late 2018.
Statement by the United Nations Special Rapporteur on adequate housing, Sep 2013

• The UK “has much to be proud of in the provision of affordable housing ... “

  BUT

• “Increasingly, people appear to be facing difficulties to accessing adequate, affordable, well located and secure housing.”
“Human scale development”, Crown Street, Glasgow

Comprises over 1,270 private sector homes, 600 socially rented homes, 80 student flats, 12 local shops and a supermarket, along with a hotel, library, a local park and 5,000m² of office space. The housing blocks are largely three and four-storey modern tenements.

The regeneration project in 1990 was the second round of redevelopment after a failure in the 1960s. Provision of community facilities was vital in an area traditionally under-served by community services. The area has three separate health centres, a local police station and a flagship library with free internet access that has become the most popular in Glasgow. Green spaces are also available for residents without access to the communal gardens.

Drawn from Commission for Architecture and the Built Environment
Barriers to city scale innovation

- **Fragmented governance** – city systems not interconnected without clear responsibility or ownership of solutions.

- **Lack of integration** – focus by cities, businesses and academics on specific city subsystems, such as transport, water, waste and energy.

- **Many providers needed** – No single company has the skills and capability to deliver the requirements of cities in the future.

- **Missing fora** – No neutral space for city governments, business and the knowledge base to collaborate on endeavours to build integrated solutions.

- **Inadequate test beds** – Investment will be limited until market solutions for integrated systems can be demonstrated and validated at scale.

- **Need for deep innovation** – Not just technological innovation – new business models and new ways of working
Transition Experiments: Exploring societal changes towards sustainability
Suzanne van den Bosch 2010

Figure 3.3 Deepening, broadening & scaling up transition experiments in niches in relation to multi-level perspective (based on Geels and Kemp 2000, De Haan and Rotmans, 2009)
Improving cities

- Technology Strategy Board’s **Future Cities Programme** award to Glasgow (£24m) to show at scale the benefits of integrating services.
- Focus on utilising open data platforms to improve access to information, facilitating delivery of new, better or more efficient services.

**Challenges identified by cities**

- **Economy**
- **Environment**
- **Transport**
- **Health & Wellbeing**
- **Social**
- **Energy**
- **Governance**
- **IT & Communications**
- **Safety & Security**

**Local Authority**
- Cost Reduction
- Improved Government Transparency
- Increased Collaboration
- Improved Decision Making
- Disseminating Knowledge and Expertise
- Improved Work Efficiency

**Citizens**
- Participation in Public Life
- Resilient Public Services
- Social Equality
- Flexibility
- Social Cohesion
- Life Long Learning Opportunities
- Improved Health Conditions and Independence
- Better Community Connectivity
- Increased Employment Opportunities
- Increased Economic Activity

**Local Economy**
- Leveraging Private Funding
- Increased Investment Inward
- Promote Innovation
- Catalyse Development of New Products and Services
- Engage and Leverage SME Community
- Accelerating New Business Start-Up
How will cities respond?

“The social fabric of Britain is changing; our population is both growing and ageing – an unprecedented phenomenon - but how will our towns and cities change in response?”

Foreword from “Silver Linings: The active third age and the city” by Building Futures (the think-tank of the Royal Institute of British Architects)

• TSB’s Future Cities Catapult aims to address the major challenges facing cities in the future.
• It will create new partnerships of cities, firms and academics to:
  ✓ Enable innovation through partnerships
  ✓ Demonstrate what works
  ✓ Remove barriers to scaling
• For the benefit of citizens, the economy and environment
Urban Energy Systems

- **Vision**
  - 5 year research programme, funded by BP
  - Create integrated model of energy supply, distribution and use in a city
  - Quantify benefits of integrated design
  - Identify pathways to implementation

- **Implementation**
  - Develop novel agent-oriented model linked to design optimiser
  - Leveraging state of the art methods in transport, land use and energy systems modelling

- **Application**
  - A number of case study applications are underway both ‘new build’ and existing cities (including London, Atlanta, Beijing and Lingang)
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Identifying innovation in the UK

Innovation not limited to traditionally high-performing business sectors or geographic areas of economic activity

Key findings

- Six business industries are found to be persistently high performing:
  - medicinal and pharmaceutical manufacturers
  - electronics manufacturers
  - research and development on natural sciences and engineering
  - labour recruitment and provision
  - software consultancy and supply
  - other computer-related activities

- Two locations are identified as innovation hotspots: Cambridge and London NW

- Up to ten per cent of firms in sectors traditionally thought not to be innovative are found to be high performers