

Re-engineering the City: Retrofit, Governance and Strategic Navigation

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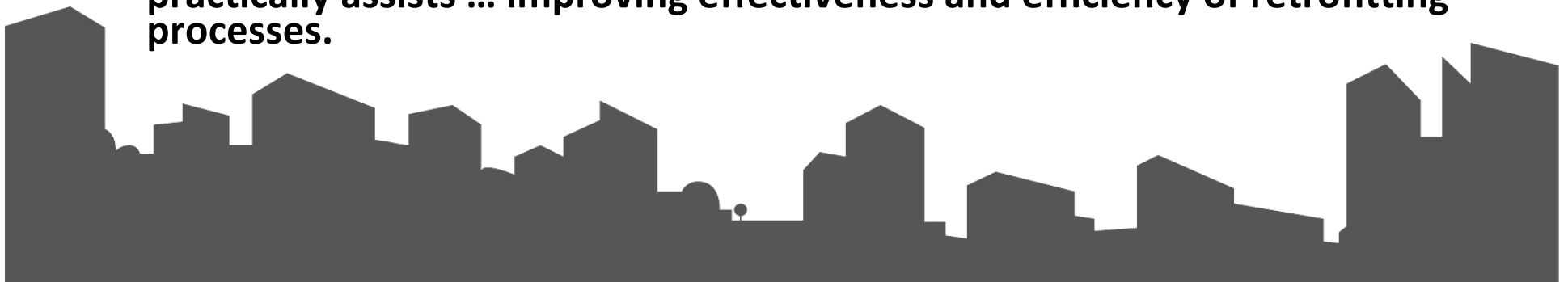
Outline

- 1. Overview of Retrofit 2050 project**
- 2. Cities, transitions and urban retrofit**
 - Key concepts, challenges & heuristics
- 3. Developing a conceptual framework for urban retrofit**
 - Urban retrofit regimes and city visions
- 4. Regional case studies - grounding & evaluation**
- 5. Conclusions**

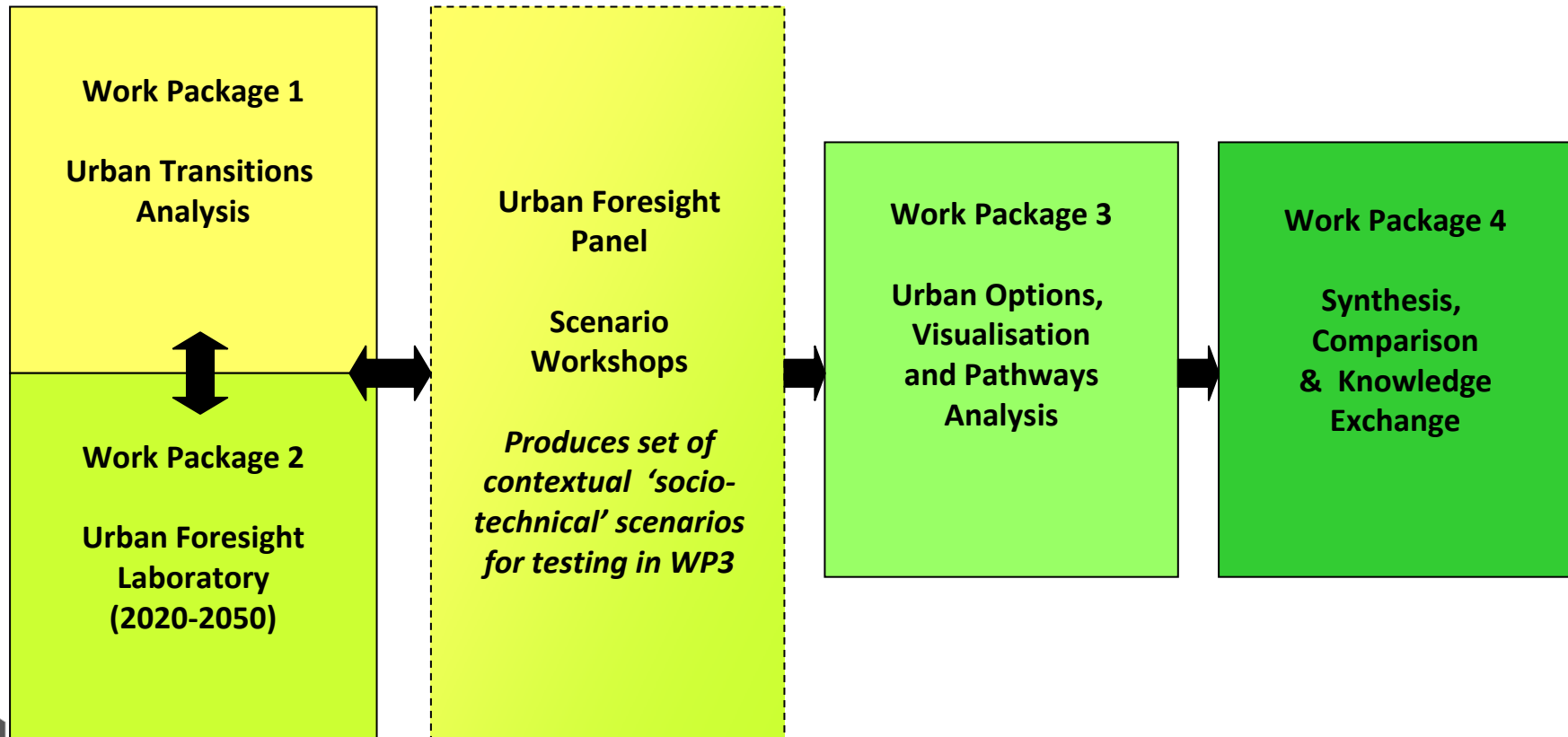


Objectives

- **Explore and advance both theoretical and practical understandings of processes of systems innovation and transition in an urban context.**
- **Analyse through case studies, modelling and international comparison, the technical and social processes underpinning such transitions.**
- **Identify and characterise prospective disruptive technologies and systems innovations which will underpin a transition to sustainability in the built environment (over the period 2020-2030)**
- **Articulate and appraise regionally specific visions and prospective pathways for urban scale retrofitting of the built environment.**
- **To develop and test an integrated socio-technical support system that practically assists ... improving effectiveness and efficiency of retrofitting processes.**



Project Structure



Cities, transitions & urban retrofit

- Drawing upon MLP, together with models of the city as complex adaptive system we seek to conceptualise urban retrofit as a socio-technical process
- Propose a normative definition of sustainable urban retrofit
- Question how notion of regime can be applied to retrofit of urban environments which fulfils multiple societal functions integrated across multiple scales and domains



Defining 'Sustainable Urban Retrofit'

*"...the **directed** alteration of the fabric, form or systems which comprise the built environment in order **to improve energy, water and waste efficiencies.**"*



Developing the conceptual framework for urban retrofit

- **Participatory backcasting approach**
- **To develop and test set of socio-technical transitions scenarios for systemic urban retrofitting of core UK city regions (for period to 2050)**
- **Initial work with interdisciplinary panel of 32 national experts**



The Retrofit 2050 Scenarios Process

	Step	Focus	Participants
Phase 1 October 2011 – September 2012	1. Problem Framing & Structuring	Practices, drivers and expectations	Urban Foresight Panel of national experts
	2. Visioning	Radical & disruptive innovation across scales and domains (Indicator development)	
	3. Pathway Analysis	Transition dynamics (Indicator development)	
Phase 2 October 2012 – June 2013	4. Regional Implementation	Grounding and visualisation (Modelling)	Key regional stakeholders
Phase 3: June 2013 – September 2013	5. Evaluation & Appraisal	Sustainability and resilience under multiple perspectives (Multi Criteria Analysis)	Wider sample of regional stakeholders & societal interests

The Retrofit 2050 Scenarios Process

- **Workshop I: Explored understandings of past, current and future practices of urban retrofit around three broad socio-technical regimes: i) Housing; ii) Non-domestic buildings; and iii) Urban infrastructure.**
- **Workshop II: Explored prototype set of long-term (2030-2050) visions for retrofit UK sustainable city regions.**
- **Workshop III: Used the notion of '*Innovation Stories*' (What, When, Why, How, Who) to illuminate prospective pathways from the present to the Retrofit 2050 visions**



Urban Retrofit Regimes: Integrating across scales & domains

	What?	Who?	Why?	How?
Regime	Artefacts and technological history	Key actors and networks	Individual, organisational and cultural drivers and expectations	Financial, institutional and policy framework
Housing	<ul style="list-style-type: none"> - Private and social housing - Extensions & conservatories - Cavity wall & loft insulation 	<ul style="list-style-type: none"> - Householders - Building control officers - Landlords & tenants 	<ul style="list-style-type: none"> - 'Hassle' factor - Expectations of comfort - Fuel poverty & health 	<ul style="list-style-type: none"> - Ownership life cycle - Building regulations - Grant and subsidy schemes
Non-domestic buildings (Commercial and public sector estate management)	<ul style="list-style-type: none"> - Repurposing buildings - ICTs - Open plan offices 	<ul style="list-style-type: none"> - Property developers - Professional institutions - (Commercial) tenants 	<ul style="list-style-type: none"> - Financial drivers - Landlord/tenant relationship - Need for flexibility 	<ul style="list-style-type: none"> - Commercial finance and interest rates - Leasehold agreements - Energy certificates
Urban infrastructure and land use (Energy, water, waste, transport & ICT systems; changing land use patterns)	<ul style="list-style-type: none"> - Water supply & sewage - Broadband & phone masts - Out-of-town developments 	<ul style="list-style-type: none"> - Local authority planners - Utility companies - Property developers 	<ul style="list-style-type: none"> - Car ownership - EU & national policy drivers - Public health 	<ul style="list-style-type: none"> - 'Silo'-ed decision making - PFI - Planning policy and controls

Structure of the Retrofit 2050 Visions

- Title
- Guiding vision
- Narrative account of
 - Basis/rational for each vision
 - Key social and technological innovations in energy, water and waste & resource use sectors
- Indicative indicators
- Key dimensions of change

The Retrofit 2050 Visions

Vision I: Smart-Networked City:

A hub within a highly mobile and competitive globally networked society

Pervasive, information-rich virtual environments integrated with the physical world, driving efficiencies through automation with market oriented solutions.

Vision II: Compact City:

A site of intensive and efficient urban living

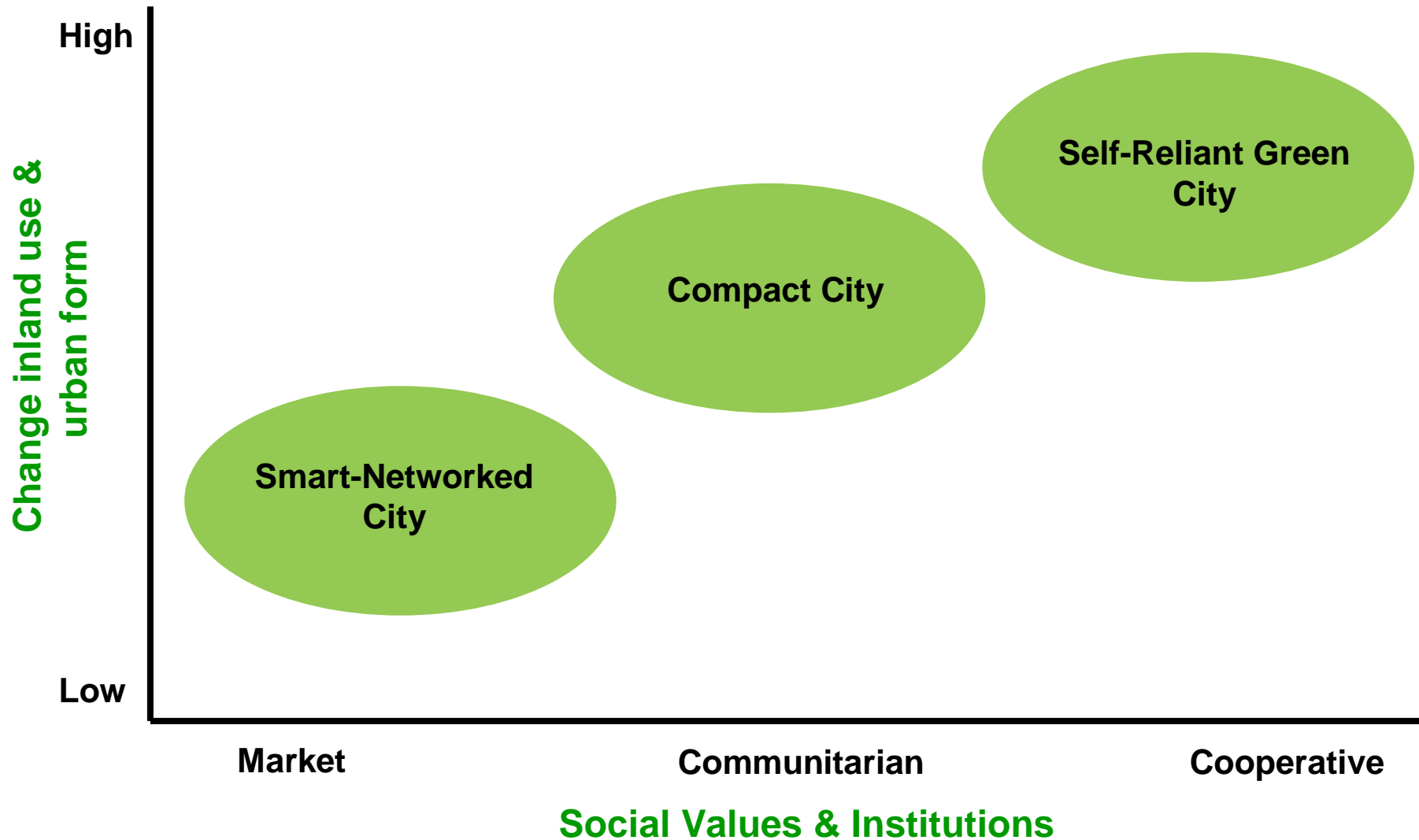
Urban land-use and infrastructure provision are optimised into dense urban settlement forms to reduce demand and improve use of energy and resources.

Vision III: Self Reliant-Green City:

A self-reliant bio-region, living in harmony with nature

A self-reliant system of circular metabolism, where resources are local, demand is constrained and the inputs and outputs of the city are connected (cradle to cradle).

Locating the Retrofit 2050 Visions



Key Characteristics & Indicators

	Smart-Networked City	Compact City	Self Reliant-Green City
Change in land-use and urban form	Low – moderate	Moderate (densification)	High (extensification)
Social Values & Institutions	<i>Market</i> oriented values, with emphasis on private consumption. Light touch, networked governance with public sector, local authority and intermediary organisations acting as facilitators for business.	<i>Communitarian</i> and localist values expressed at a city and neighbourhood level, coupled with strong local governance and planning systems and an emphasis on social investment.	<i>Cooperative</i> and collectivist values underpin new models of participation and shared ownership, in which mutualism and local self-reliance are coupled with strong concerns for social equity and a questioning of materialism.
Economic Growth	3.0% pa	2.3% pa	<1.6% pa
UK Population by 2050	86.4 million	76.4 million	66.8 million
Urban Density (2050) (assuming a large city)	No significant change 40 dwellings per ha (or 160 people/ha)	Dense 70 dwellings per ha (or 275 people/ha)	Less dense 30 dwellings per ha (or 120 people/ha)

Note: Under each of the visions we start with a working assumption that the UK will meet its 80% carbon reduction target by 2050 (against a 1990 baseline), alongside very significant improvements in water use and waste and resource efficiency.

Key Characteristics: Water

Smart-Networked City	Compact City	Self Reliant-Green City
Smart metering and appliances coupled with market instruments drive improvements in efficiency. Continued capital intensive investment in centralised infrastructure systems.	Area based initiatives link deployment of Rain Water Harvesting (RWH) technologies and investments in SUDS with stricter regulation of individual consumer behaviour.	Holistic, decentralised approach integrates water management into urban design. Changing social norms support demand reduction. Decentralisation of water treatment and provision.

Working with the Retrofit 2050 futures

- **Further develop pathways**
- **Understand how these contextual futures ‘touch down’ in specific contexts**
- **Regional implementation, modelling and evaluation of the scenarios in Greater Manchester & Cardiff/SE Wales (Oct 2012 – June 2013)**



Regional Case Studies: Transitions in Place

Greater Manchester



Regional competition in the carbon economy, with a focus on the creation of retrofit market and economic benefits, disconnected from 'bottom-up' initiatives

South East Wales



More socially orientated, government led approach with key SD policy drivers including fuel poverty

Conclusions

- **Adapting MLP notion of regime to include elements of material and spatial arrangements of cities provides an accessible framework through which to explore socio-technical construction of both emergent and purposive retrofit processes across multiple scales and domains**
- **The Retrofit 2050 visions highlight three distinctive and competing articulations of urban sustainability**



Conclusions

- Each associated with differing governance structures/social values and changing patterns of land use/urban form
- Describe alternate portfolios of technological & social innovations
- Not predictions but provide opportunity to open up dialogue and make explicit societal choices
- As such provide practical tools to aid governance and strategic navigation of urban transitions



For more information

www.retrofit2050.org.uk

