Retrofit2050

Re-engineering the city 2020-2050: urban foresight and transition management

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The Role of Commercial Property Retrofitting in Low Carbon Urban Transitions

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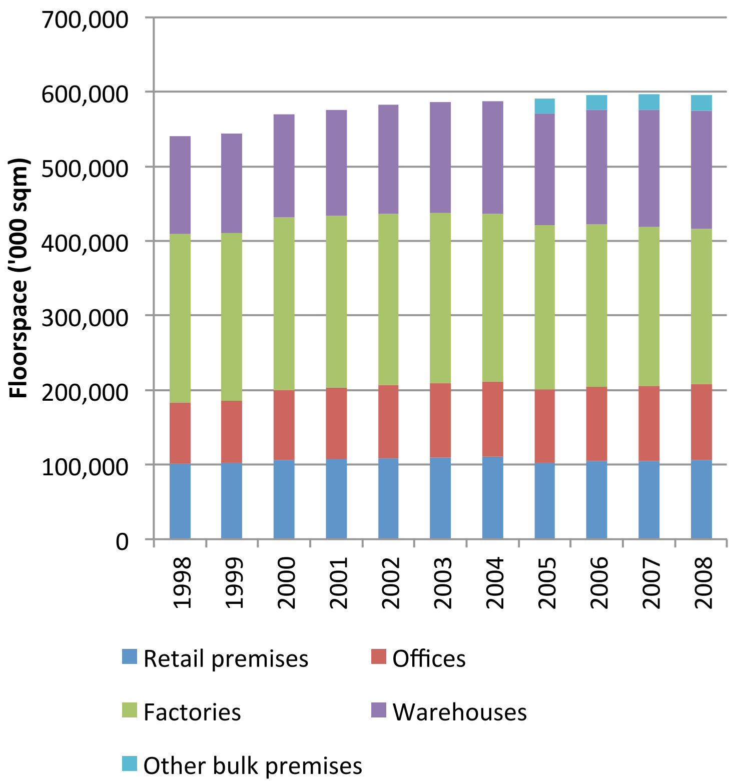
Gaps in Knowledge: Our Research

- Key trends
- Drivers and inhibitors of change
- What specific technologies are emerging?
- What will help scale up change at city level?

- Our research:
  - Expert reviews
  - Online survey
  - 45 structured interviews with ‘end users’ and ‘supply side’ stakeholders.

Commercial Property: A Diverse Sector

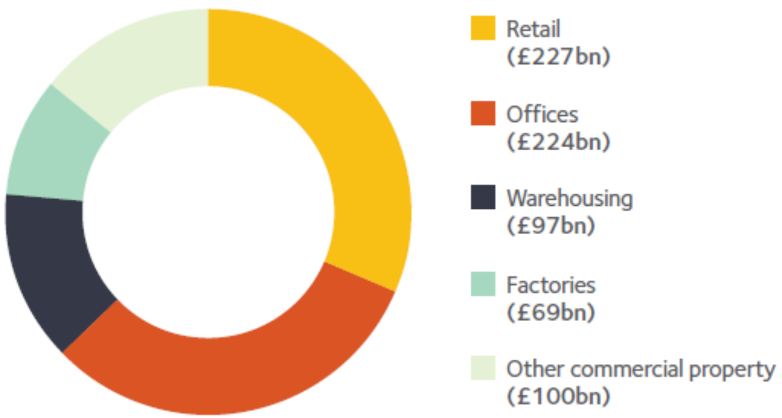
Floorspace (England and Wales, 1998-2008)



Source: data from CLG

UK Commercial Property (by value, 2011)

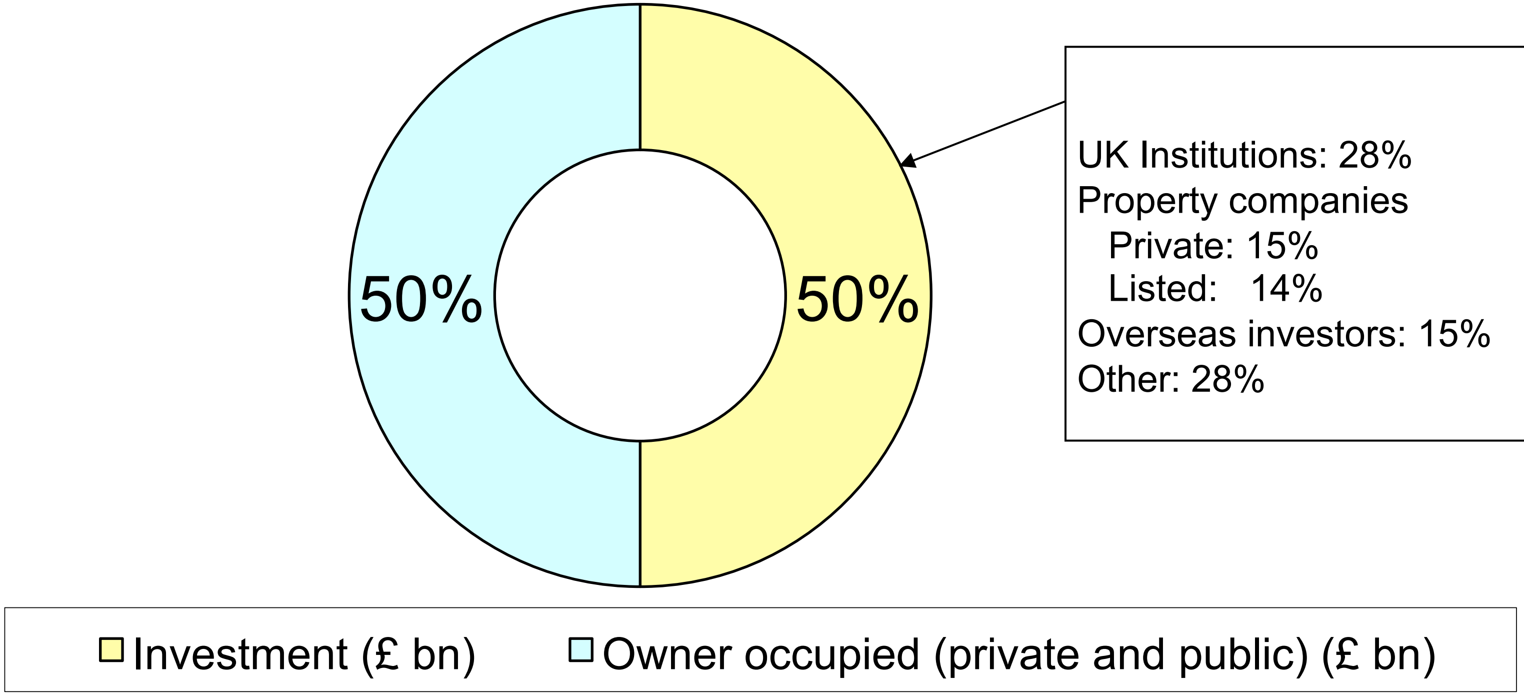
Retail, at £227 billion, is the largest commercial property sector. Offices are catching up with retail, having seen greater capital value growth in 2011.



Hotels and catering are the largest part of the diverse 'other commercial property' sector.

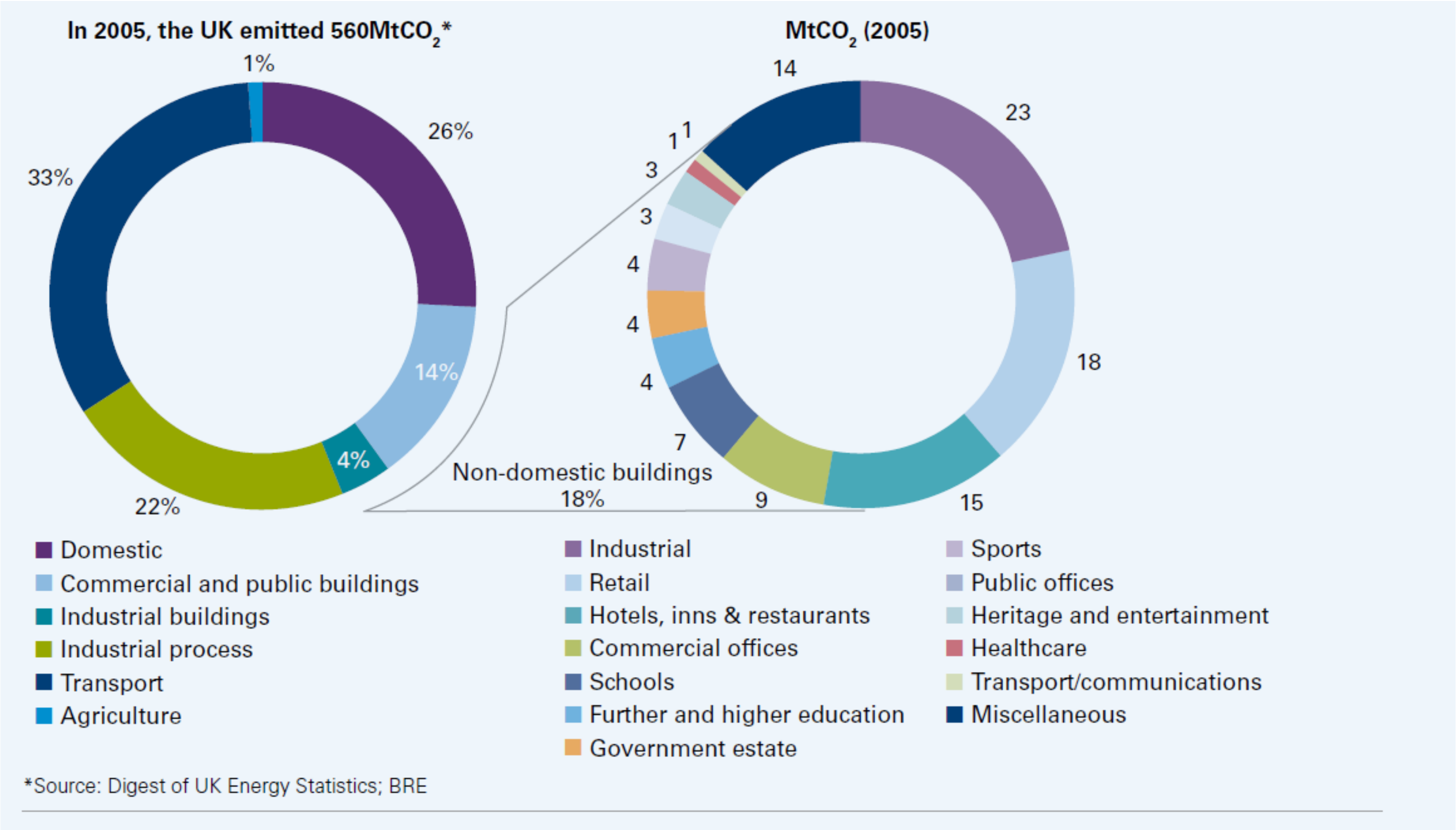
Source: BPF, 2012

UK 'Core Urban' Commercial Property Ownership by Value

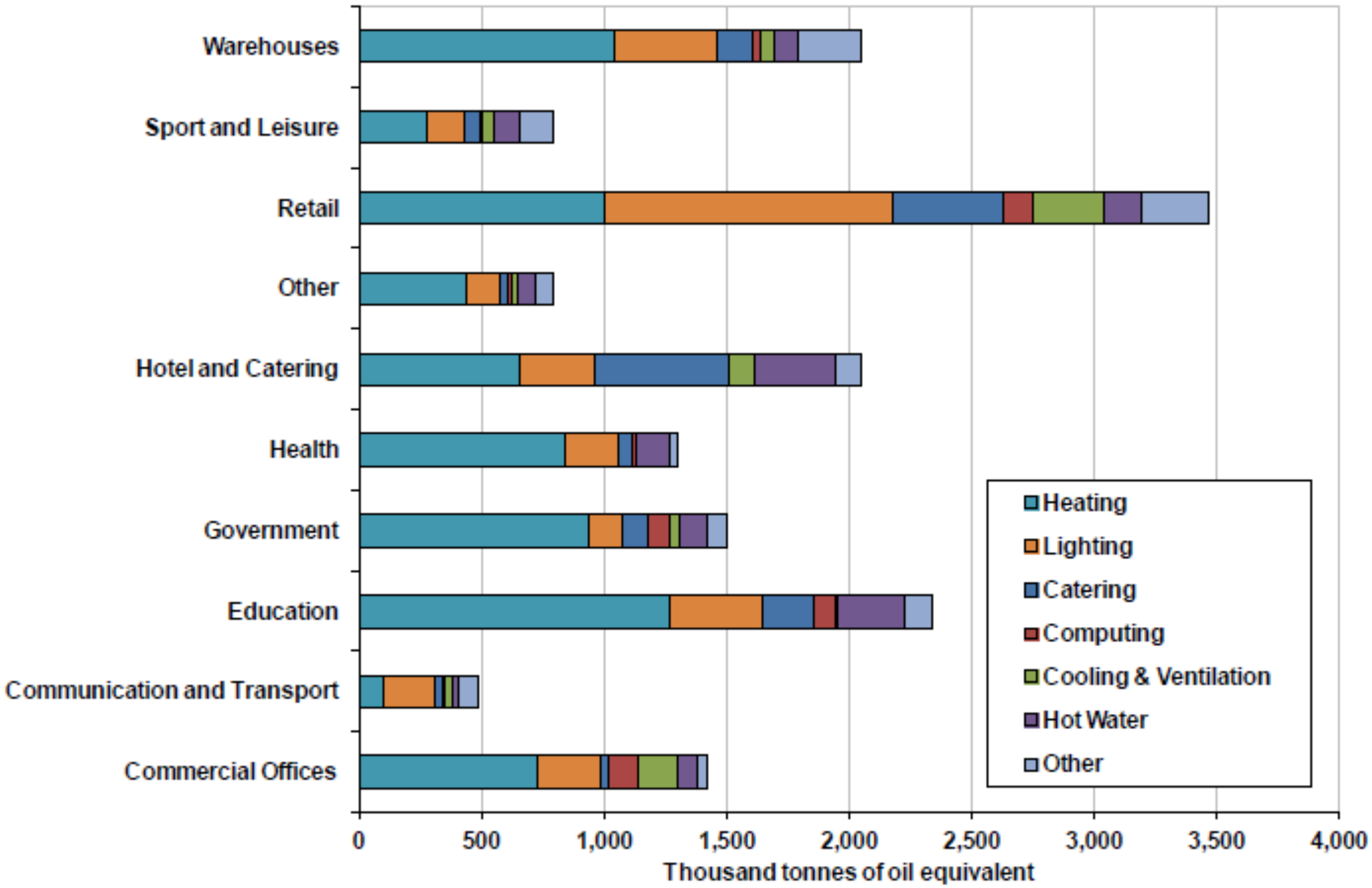


Dixon, 2010 (adapted from IPF, 2007 data)

Breakdown of UK Buildings Emissions

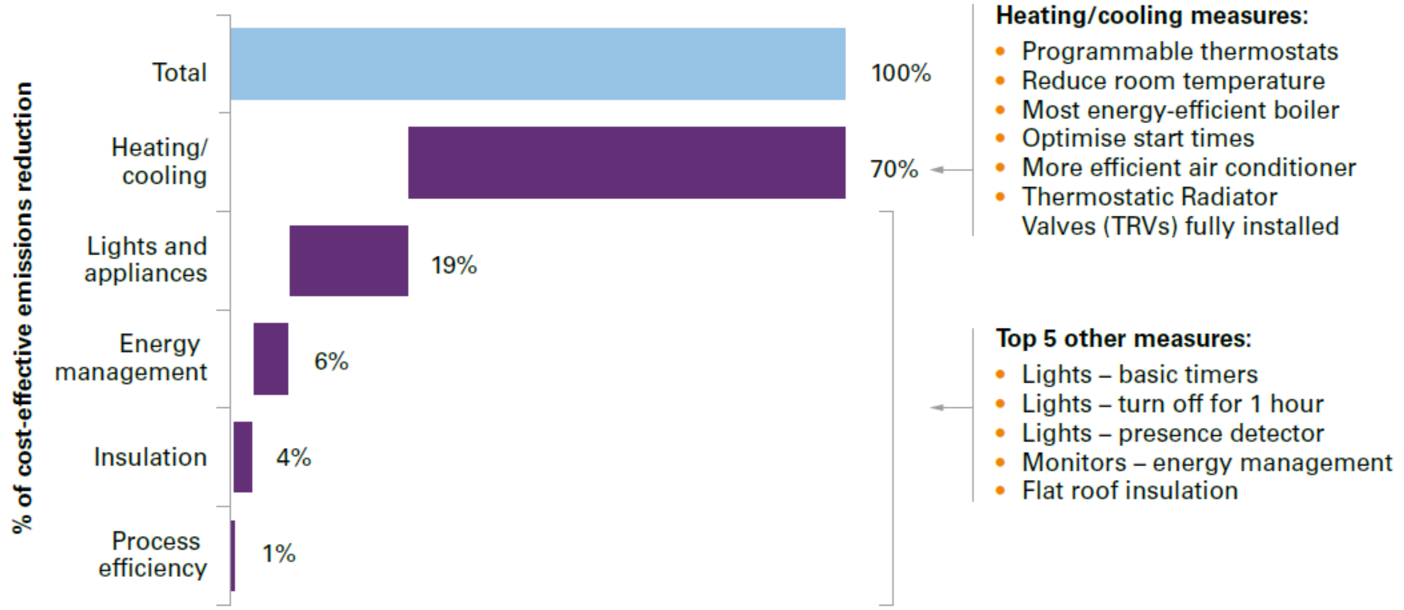


Service Sector Energy Consumption UK: 2011



Source: DECC, ECUK Table 5.5a

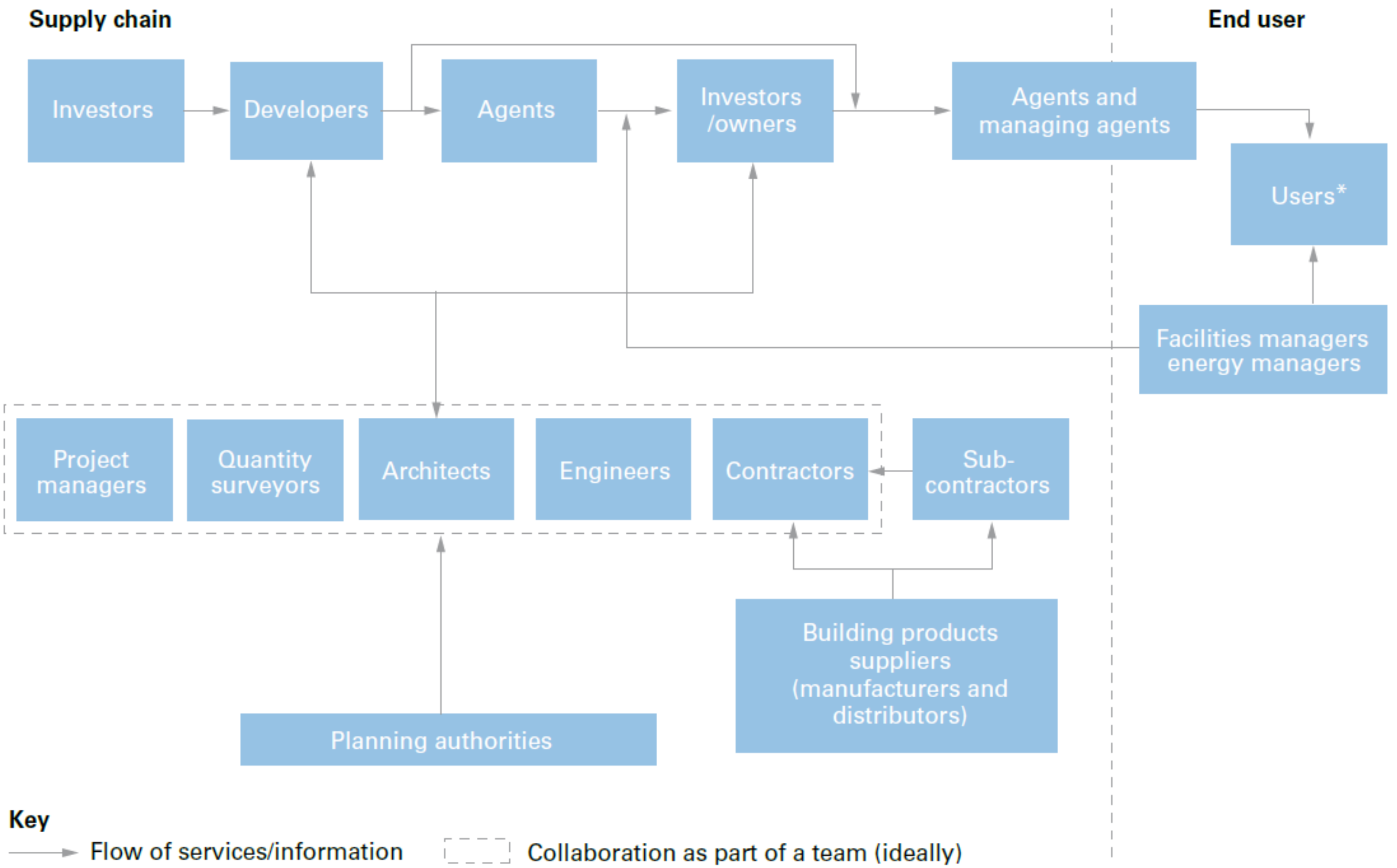
Cost Effective Energy Abatement?



Note: 'cost-effective' defined as measures with negative £/ton CO_2 abatement over their lifetime (upfront and ongoing costs offset by energy savings) using a discount rate of 10%. Carbon reduction potential includes impact of interaction between measures, for example more efficient lights combined with timers.

Source: Committee on Climate Change data for public sector and commercial buildings (i.e. excluding industrial); Carbon Trust analysis

Complexity



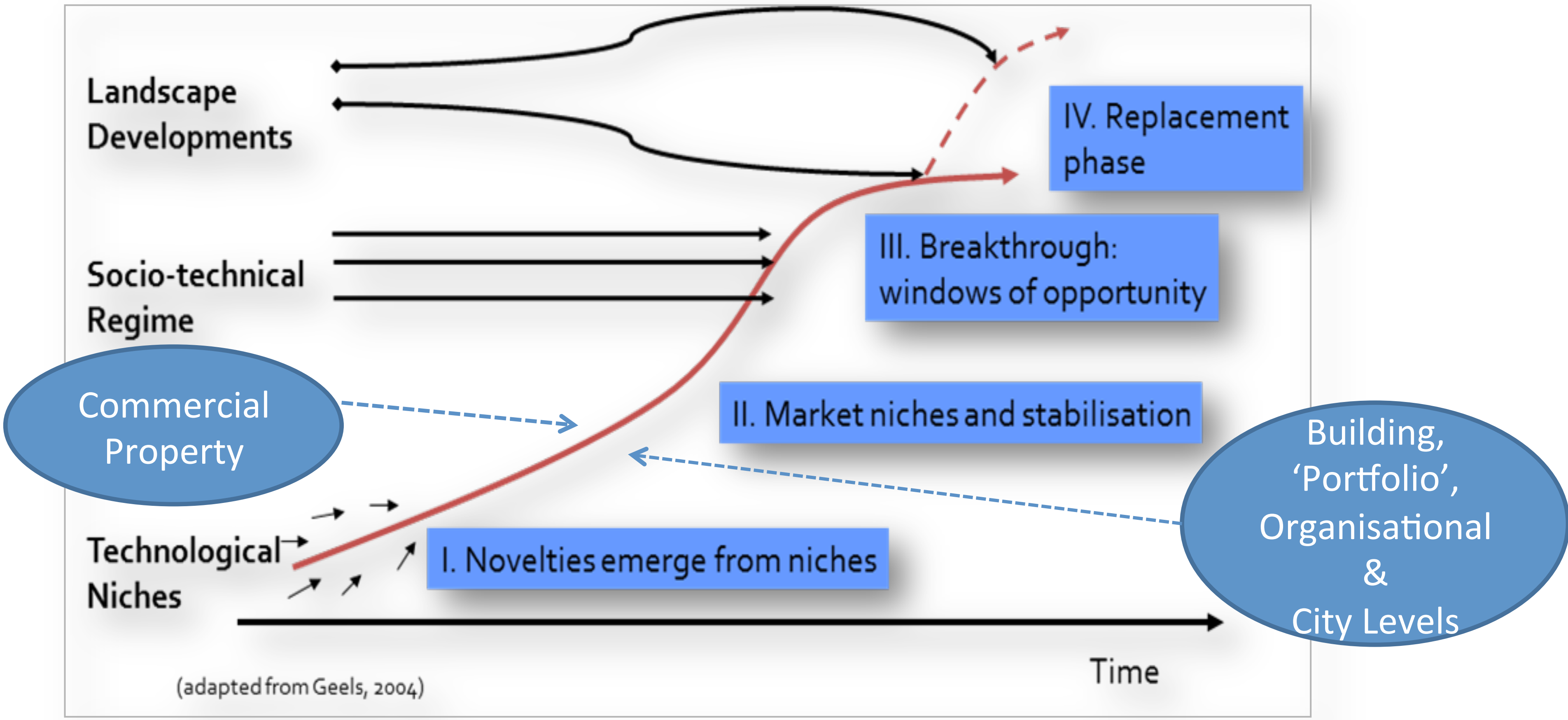
*Tenants or owner occupiers.

Source: Carbon Trust analysis

Drivers and Barriers: Examples

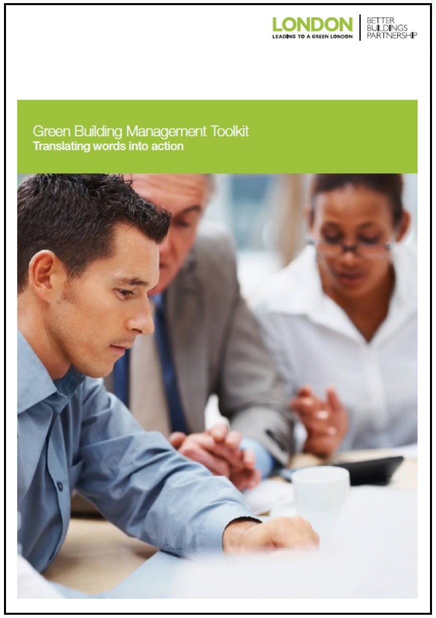
Drivers	Barriers (GENERIC)
OCCUPIERS: Lease renewal/asset management	Financial (cost and value)
Cost savings	Split incentive and lease structures
Green credentials (CSR) and shareholder value	Data limitations
OWNERS: Legislation (eg CRC, Energy Act)	Complexity in commercial property sector
Improved value	Knowledge and skills
Improved lettability	

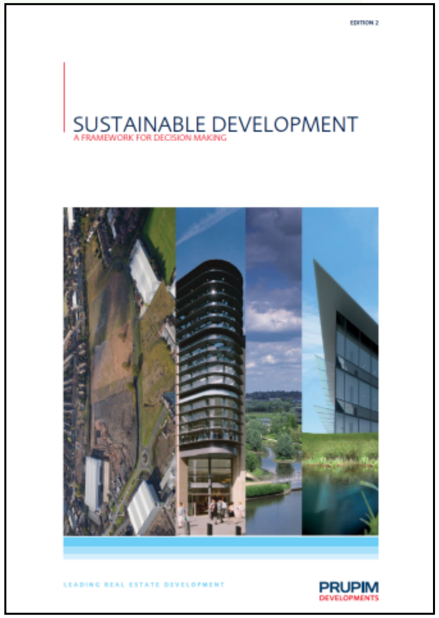
‘Experiments’ and ‘Niches’



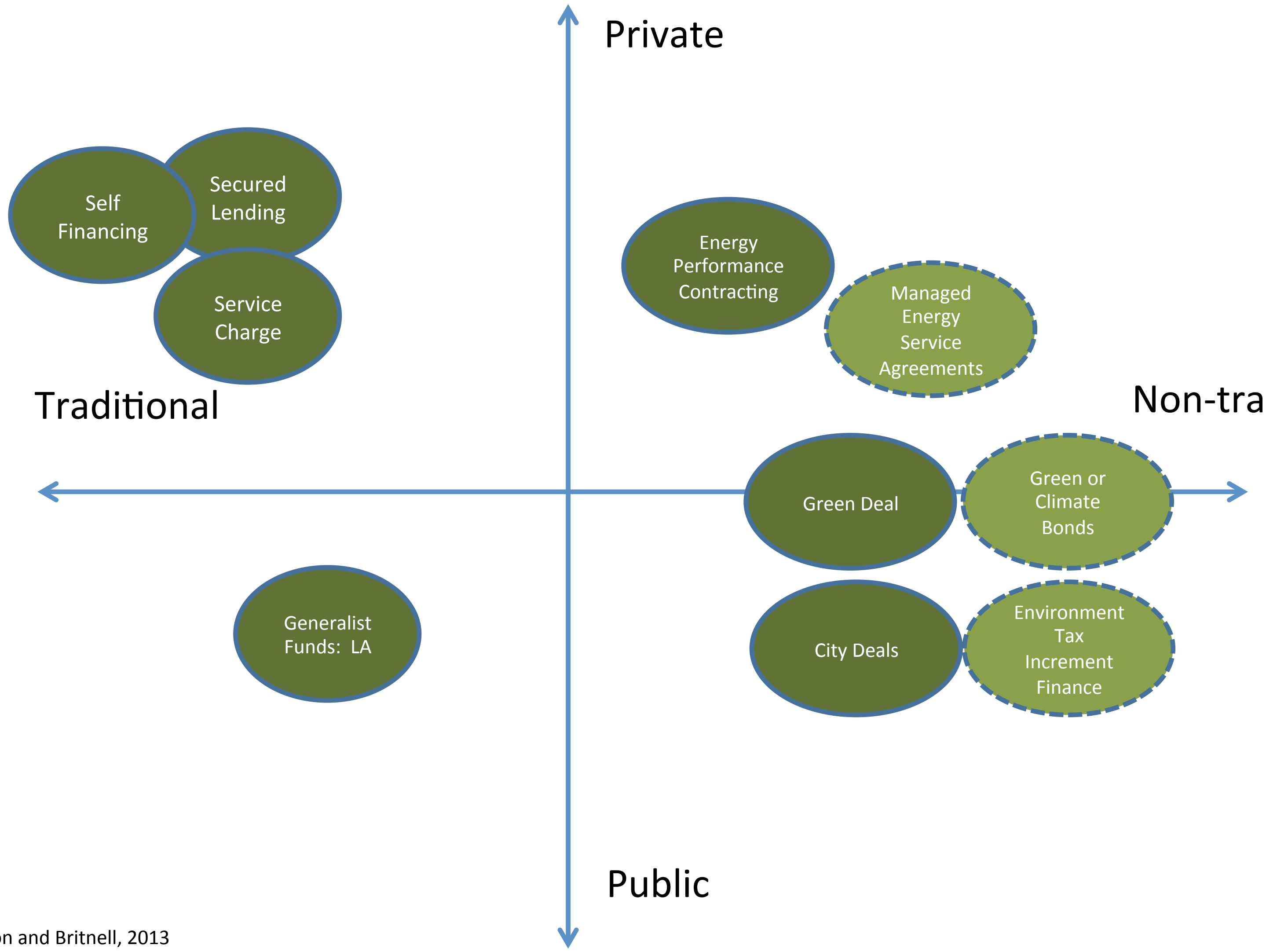
Corporate-level 'Experiments': Some Examples

- Leading by example:
  - M & S: Plan A
  - PRUPIM: Sustainable Refurbishment Framework
- Green Building Management Groups and Green Leases
- Finance models: self-financing?





Commercial Retrofit Finance Models



Source: Dixon and Britnell, 2013

City-scale 'Initiatives': Commercial Property Focus

- Energy Plan
- District Heating
- Economic Benefits
- Low carbon investment
- Mini-Stern
- City Deal & Green Deal

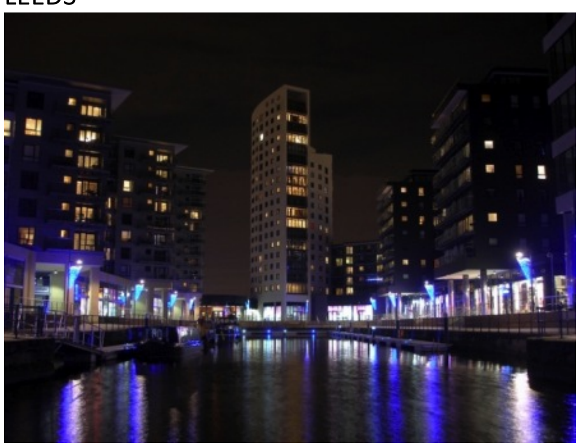
MANCHESTER

LONDON

- RE:FIT
- BBP
- London Green Fund (JESSICA)
- Energy Plan
- Decentralised Energy
- District Heating

- District heating
- 'Mini-Stern'
- Commercial Property Retrofit Model
- City Deal & Green Deal

LEEDS



GLASGOW

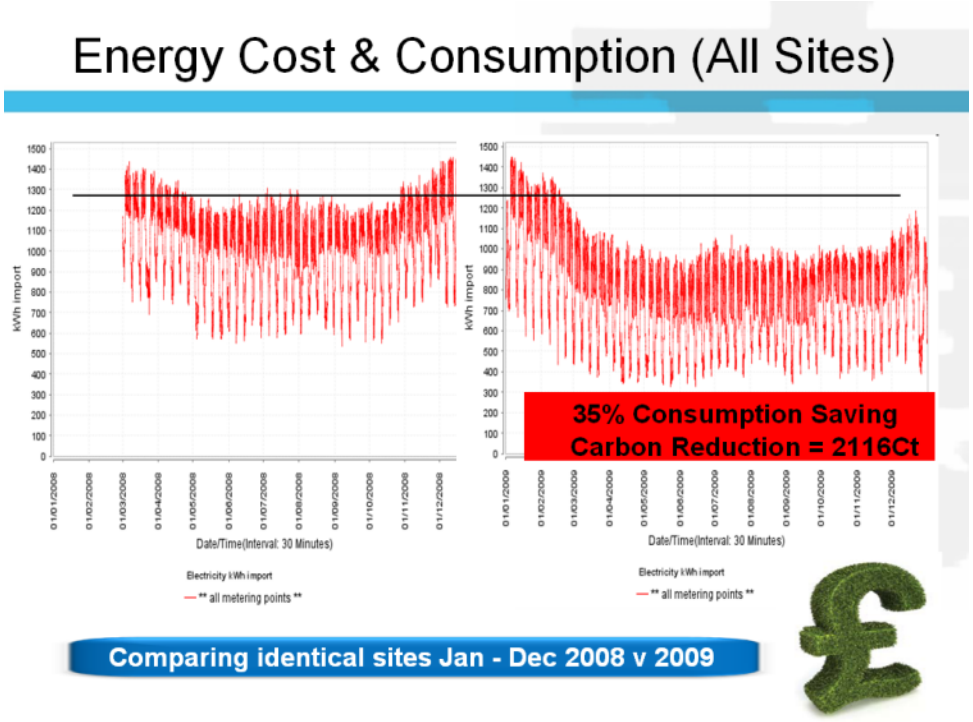
- Sustainable Glasgow
- Smart grids
- District heating
- TSB Future City Demonstrator

Source: Dixon and Britnell, 2013

'Sustaining' Technologies

'Sustaining' technology involves incremental improvement of existing technologies with better value.

- 'Low hanging fruit'
- Building management
    - Smart controls
    - Daylight controls
- Boilers
- Air tightness
- T5 lighting
- Heat recovery

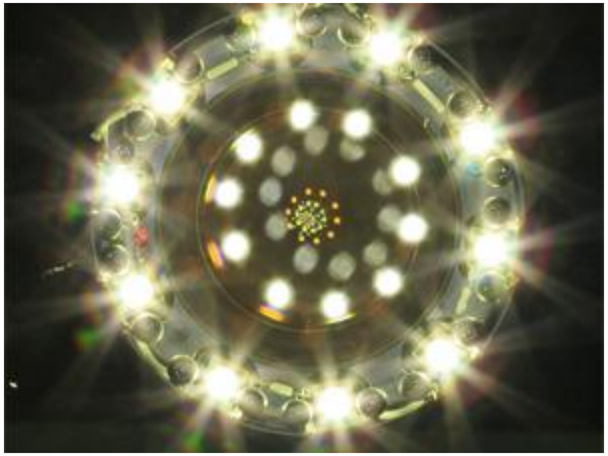


Courtesy: Prologis

‘Disruptive’ Technologies

‘Disruptive’ technology involves new knowledge bases that replace existing ways of doing things, but do not require significant regime change.

Examples taken from the workshops, insights from expert reviews
and an online national survey:



Building Scale	Neighbourhood	City Regional
Solid State Lighting	Community heat and power networks	City scale heat and power networks
High performance thin insulation (vacuum)	Heat capture and storage materials	Waste water to heat technologies
Phase change materials	Hydrogen networks	Rainwater and grey water harvesting

Emerging Challenges

- Investors and occupiers focus on asset management
- Heterogeneity/diversity in sector
- SMEs – ‘long tail’?
- Energy Act and letting requirements
- Roll-out of DECs needed
- Lease length and payback period

Source: http://www.ribajournal.com/pages/july_aug_review2_184142.cfm

The next 10 years……and beyond?

- Growing market
- City-level actions: ‘sticky’ infrastructure
- New financial models – ‘carbon bonds’?
- ‘Bundling’ of retrofit services
- Preferred suppliers and scalable technologies
- Better data (DECC)