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Exploring the Economic Case for Climate Action in Cities

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The Significance of Cities

- Of the 7.1 billion people alive today, more than 3.6 billion live in cities. By 2050 the urban population is predicted to pass 6.7 billion (UNDESA, 2014).
- Forecasts suggest that 5.2 billion people will live in urban areas in low- and middle-income countries, where the number of city-dwellers is increasing by 1.2 million people per week (WHO, 2014).
- The urban population in high-income countries is growing more slowly, but it is still forecast that around 1.2 billion people will be living in cities in high-income countries by 2050 (WHO, 2014).
- The IPCC (2014) estimates that 71–76% of the global CO2 emissions from final energy use (inc. electricity) can be attributed to cities.
- Wider consumption-based impacts are higher still (Satterthwaite, 2008; Khan, 2012; Hoornweg et al., 2011; GEA, 2012; Feng et al., 2014).

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The Economics of Climate Change

The Stern Review changed the dynamics of the debate on climate change by claiming that:

- The costs of avoiding dangerous climate change (1-2% of GDP)

are much less than

- The costs of dangerous climate change (5-20% of GDP).

Is there a similarly compelling economic case for action on climate change in cities?

Focus not on the long term, global, social case but on the medium term, local, direct case

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The Global Case for Ambitious Climate Action in Cities

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Press release: Low-carbon cities are a US$17 trillion opportunity worldwide

News Article / September 8, 2015

Washington/London, September 8, 2015: New research from the New Climate Economy finds that investing in public and low emission transport, building efficiency, and waste management in cities could generate savings with a current value of US$17 trillion by 2050. These low-carbon investments could also reduce greenhouse gas emissions by 3.7 Gt CO_2e per year by 2030, more than the current annual emissions of India.

With complementary national policies such as support for low-carbon innovation, reduced fossil fuel subsidies, and carbon pricing, the savings could be as high as US$22 trillion.

"The steps that cities take to shrink their carbon footprints also reduce their energy costs, improve public health, and help them attract new residents and businesses," said **Michael R. Bloomberg, UN Secretary-General's Special Envoy for Cities and Climate**

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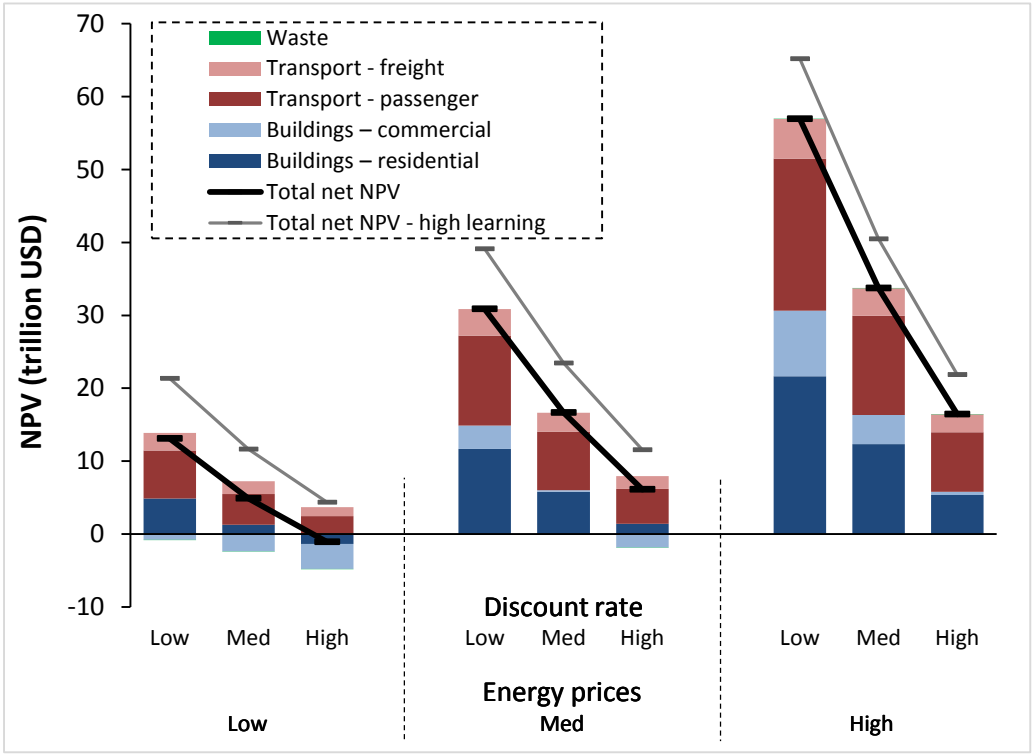
The Global Case for Ambitious Climate Action in Cities



Under the 'low', 'medium' and 'high' scenarios, the real discount rates used are 1.4%, 3% and 5%, and the increases in real energy prices are 1%, 2.5% and 4%.

- Cities could make a major contribution to the delivery of a 2DS trajectory.
- The net present value of the savings stream from 2DS oriented low carbon investments in cities to 2050 is $16.6 trillion.
- The gross global costs would be cUS$1 trillion p.a. to 2050, but they would reduce annual energy expenditure by US$1.6 trillion in 2030 and US$5.9 trillion in 2050.

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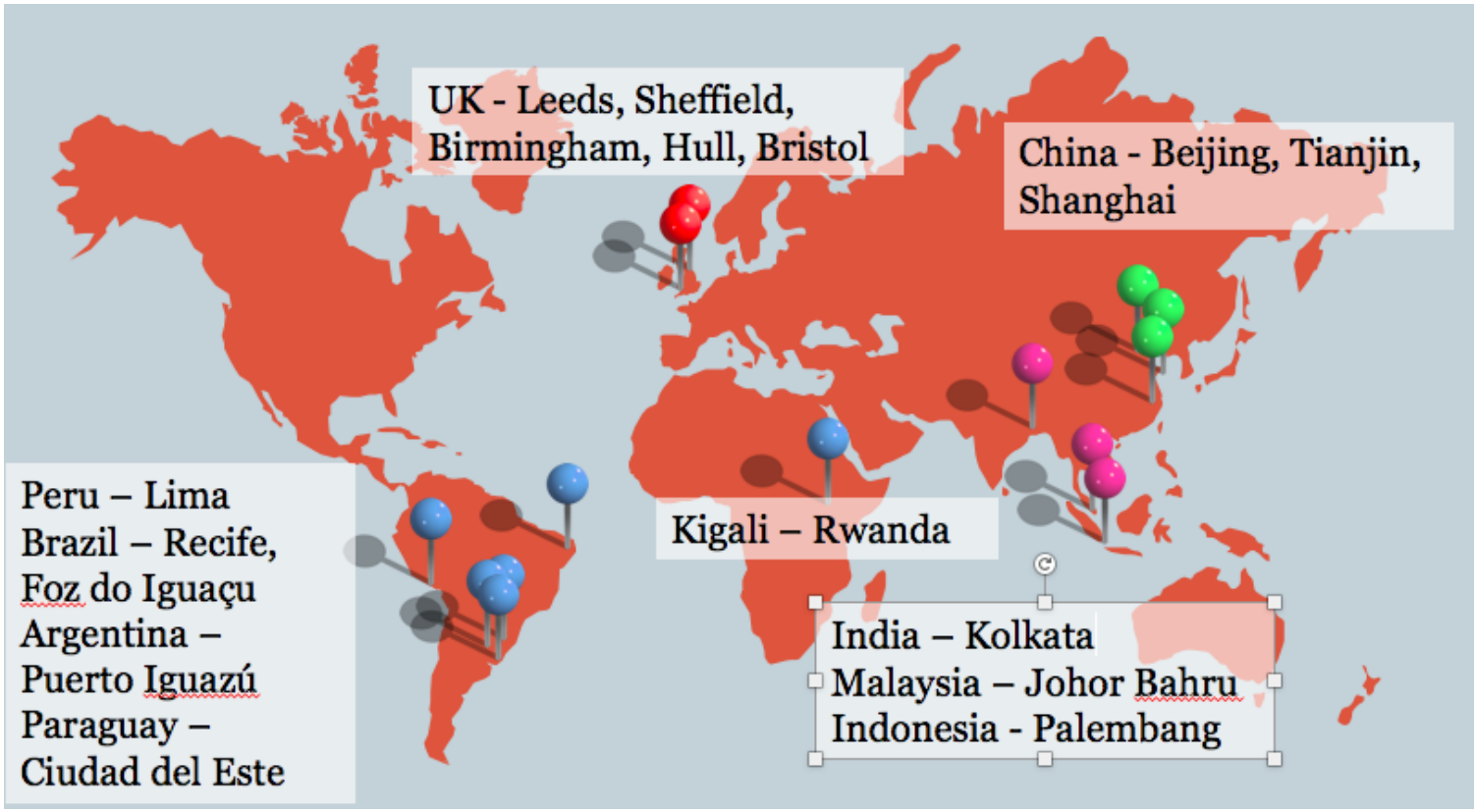
The Climate Smart Cities Programme



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Methods

- An assessment of recent trends in the city's energy use, energy expenditure and GHG emissions, and projection of these trends (including for different sectors) over the next 10-15 years (the business as usual (BAU) baselines);
- An evaluation of the marginal costs, direct benefits and carbon saving potential of a wide range of the low-carbon measures that could be adopted in different sectors in the city in the next decade (with 5% real interest rate); and
- An aggregation of the findings and the presentation of the economic case for investment in these options at scale in different sectors in the city over the next 10-15 years.

- All based on a form of iterated participatory appraisal
- Geographical, temporal, technical and economic boundaries

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Broader Summary of Results

- To exploit the cost-effective measures, 0.4-2.0% of city-scale GDP could be invested each year for the next ten years.
- This would generate direct savings of 2.1-8.7% of city-scale GDP in 2025.
- It would also generate carbon reductions of 15-39% relative to BAU trends.
- *If* these findings were replicated and similar investments were made in cities globally, then they could generate reductions equivalent to 10– 29% of global energy-related GHG emissions in 2025.

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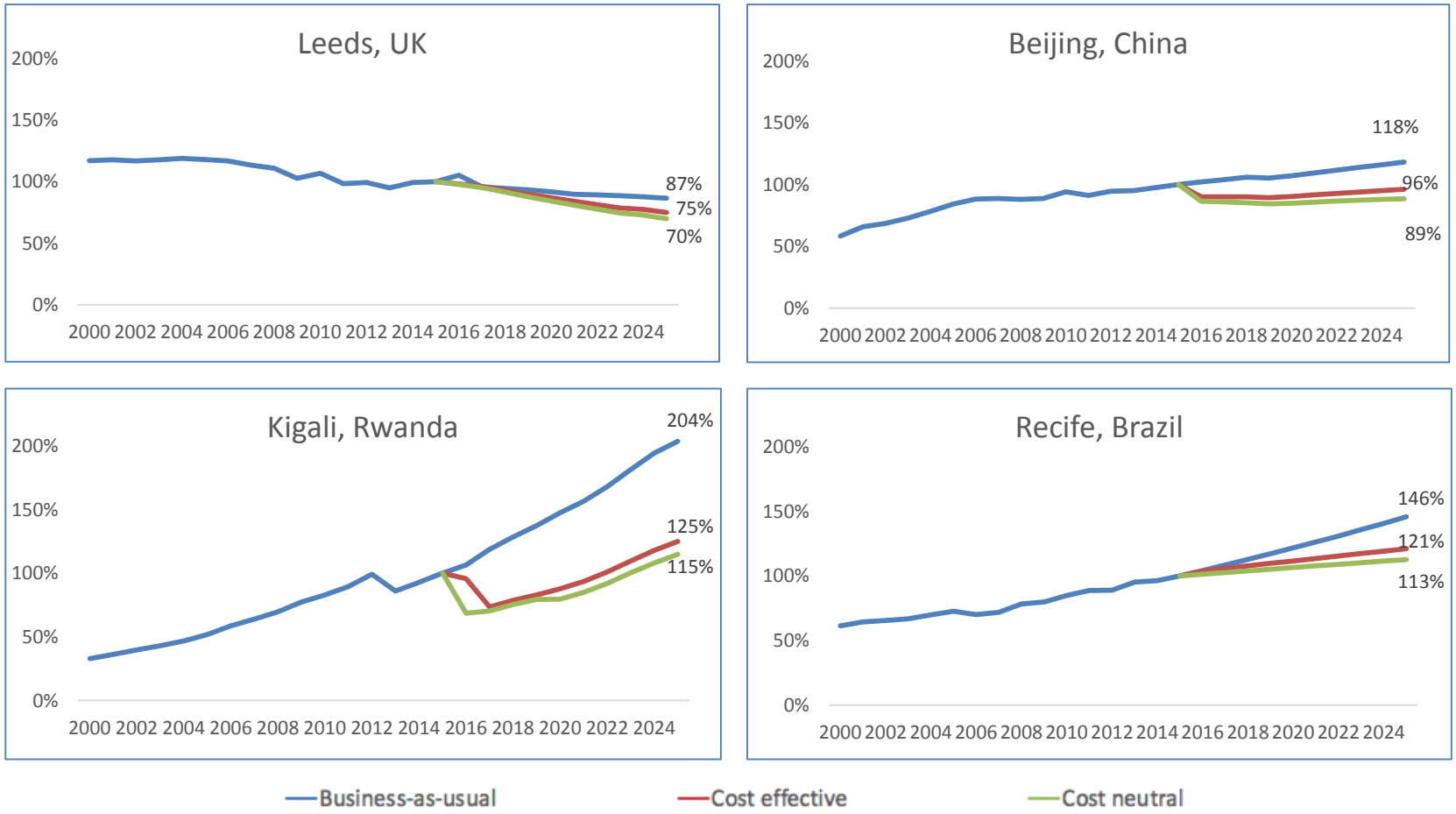
Selected City-Level Results



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Selected City-Level Results: Leeds City Region

- **£5.4 billion (c10% of city-scale GVA)** left the LCR economy in 2010 through payment of the energy bill.
- Exploiting cost effective low carbon options would bring **£4.9 billion** of investment into the LCR economy.
- Such investments would pay for themselves in 4 years, cutting LCR energy bills by **£1.2 billion** a year.
- They would also create **4,400 jobs** and an extra **£200 million** in wider economic benefits to the LCR every year.

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Impacts (1): Governance

- Enables engagement and changes balance of the debate
- Promotes ‘mainstreaming’ and policy integration
- Strengthens the case for multi-level coordination
- Can lead to emergence of new public, private, civic governance arrangements.

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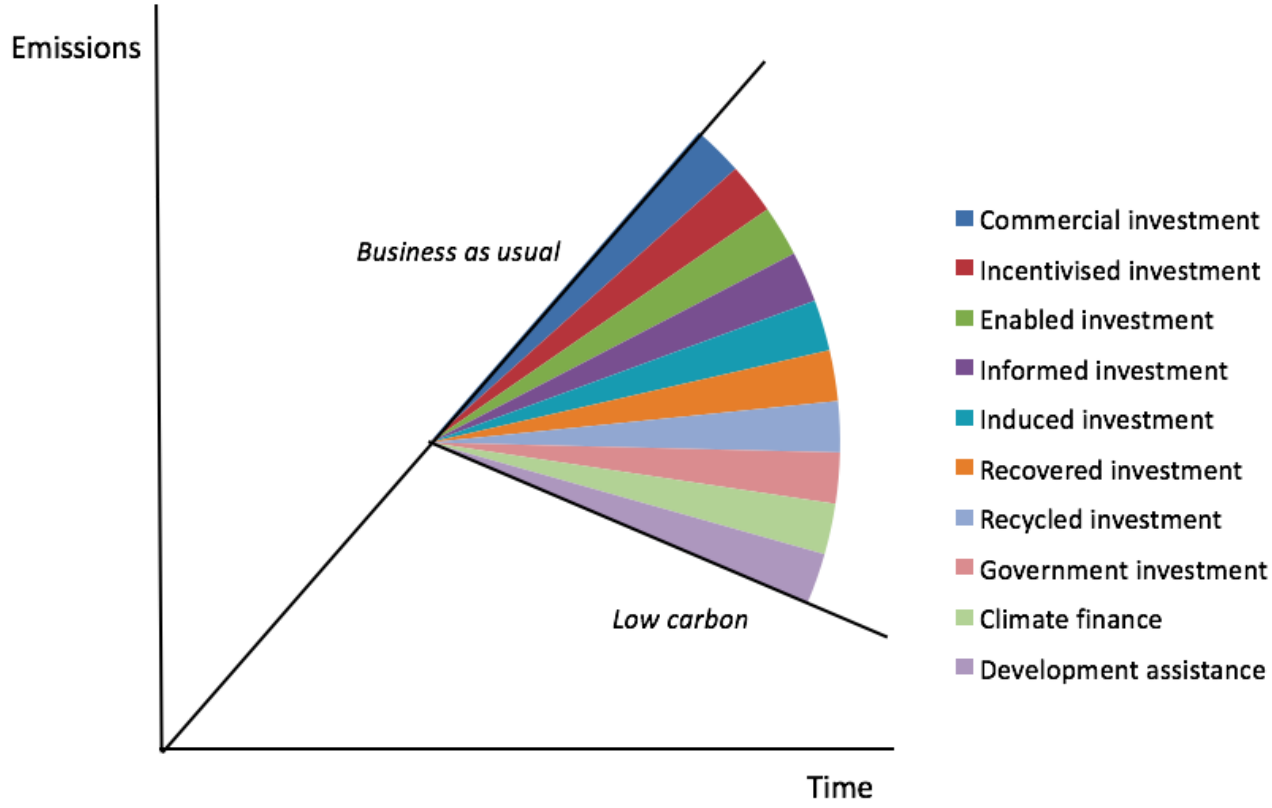
Impacts (2): Policy-induced Investment



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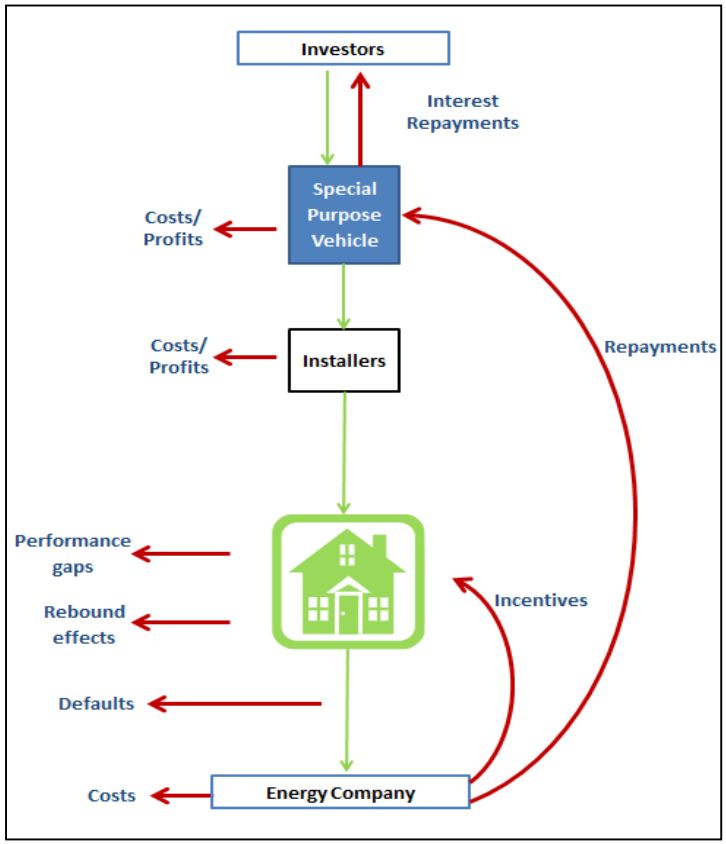
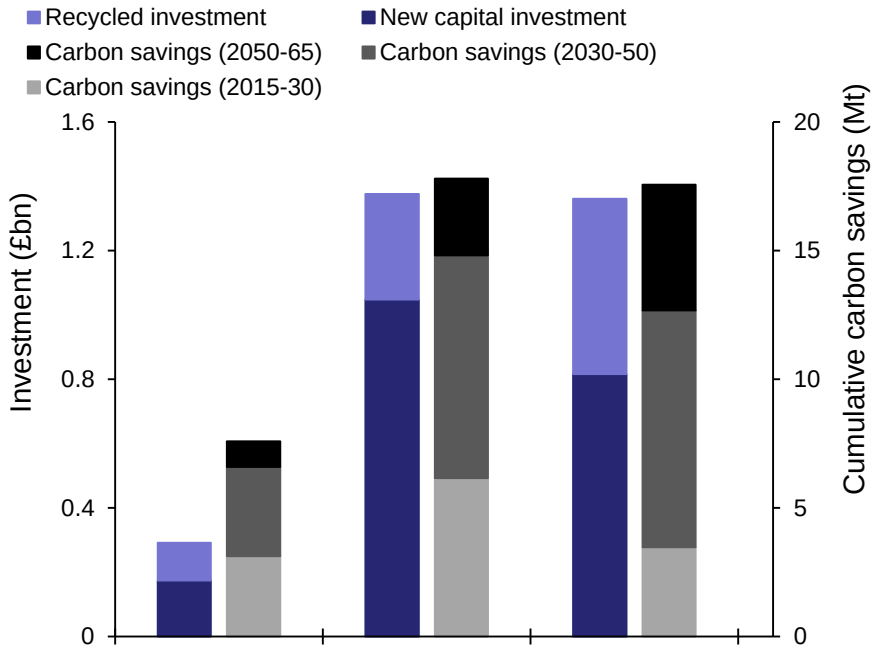
Impacts (3): New Delivery Models





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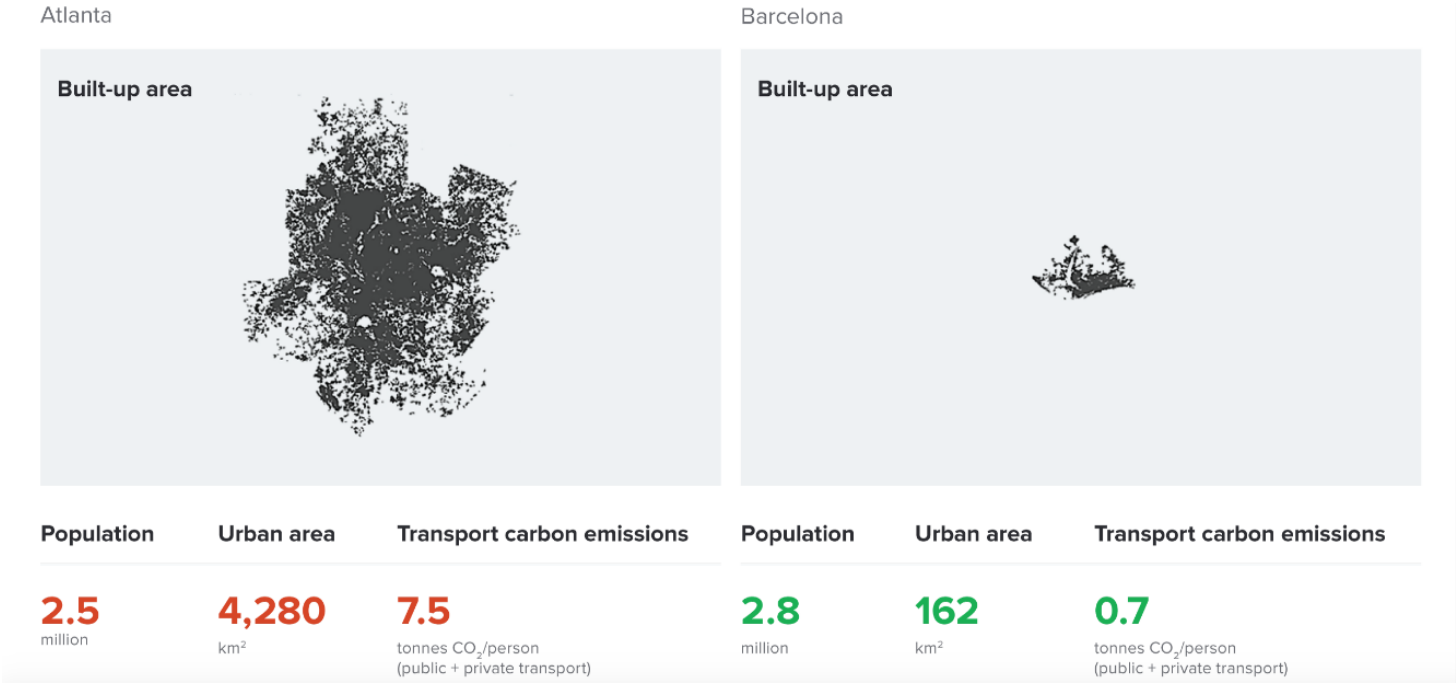
Limits (1): Spatial Dimensions



Source: Bertaud, A. and Richardson, A.W (2004), Transit and Density: Atlanta, the United States and Western Europe. Available at: http://courses.washington.edu/gmforum/Readings/Bertaud_Transit_US_Europe.pdf. Cited in NCE (2014)

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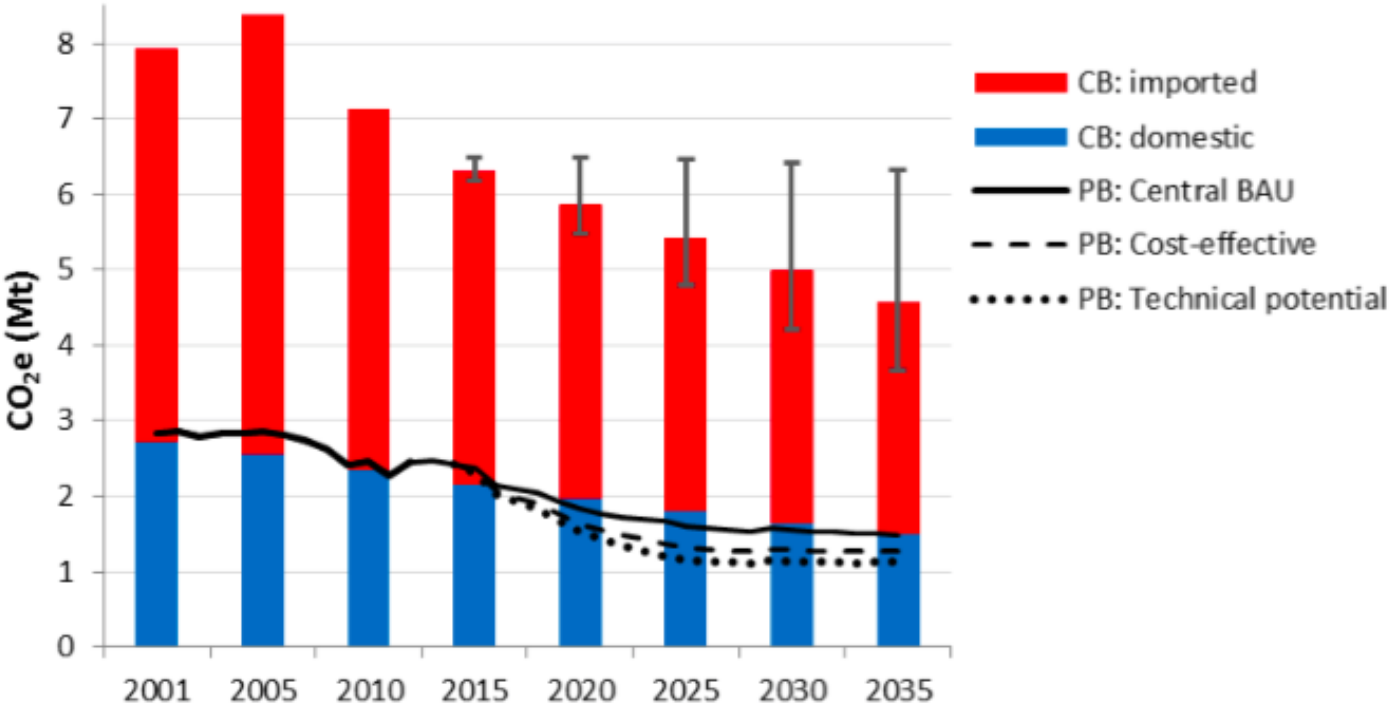
Limits (2): Carbon ‘Blind Spots’



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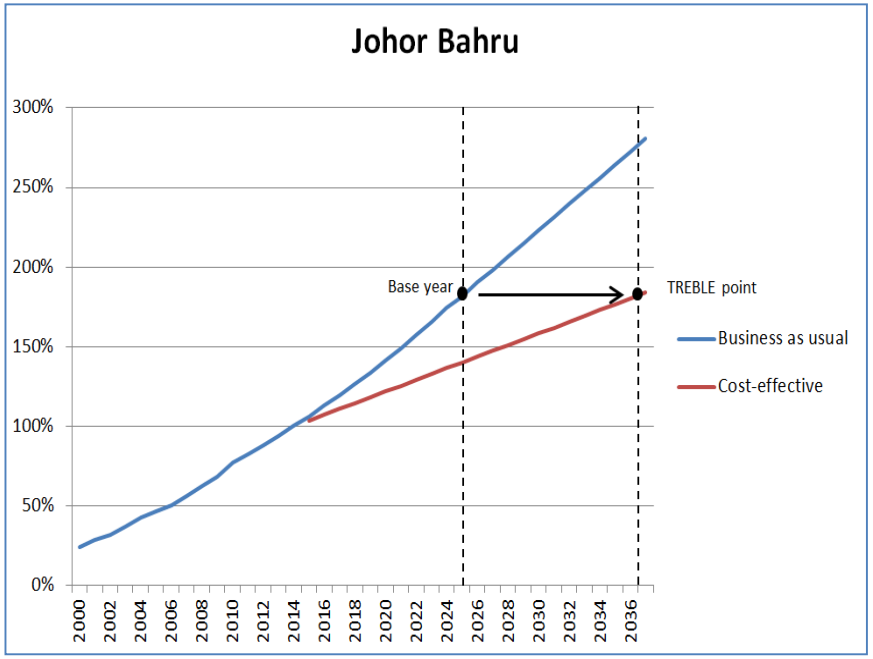
Limits (3): The Dynamics of Green Growth

The Time to Regain BAU Levels of Emissions (The TREBLE Point): The number of years for carbon emissions to reach the BAU level predicted for 2025 after investment in low carbon measures has taken place.

In rapidly growing cities in the global south, carbon reductions achieved by exploiting cost effective options are forecast to be off-set by on-going (lower carbon) growth in 5-15 years.



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Conclusions

- There is frequently a compelling economic case for ‘early stage’ low carbon transitions in cities.
- Analysis of co-benefits may strengthen this case further, but we need to understand contingencies and sensitivities.
- Presenting an economic case can play a vital role in breaking inertia, enabling engagement, mainstreaming activities, developing new policies, stimulating investment, targeting interventions.
- Exploiting early stage options can build capacities, change cultures and reduce costs of later stage transitions.
- But the dynamics of green growth are key – early stage transitions must evolve into later stage transitions otherwise cities will lock into a mildly decarbonised future.

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Supporting Papers

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7. Jiang X, Hong C, Zheng Y, Zheng B, Guan D, Gouldson A, Zhang Q, He K (2015) Can China's near-term air pollution control policy protect air quality and human health? A case study of the Pearl River Delta region, *Environmental Research Letters*.
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