



Driving low carbon cities in the UK

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Association for Public Service Excellence, May 2015



Introduction to the Carbon Trust



Our mission is to accelerate the move to a sustainable, low carbon economy

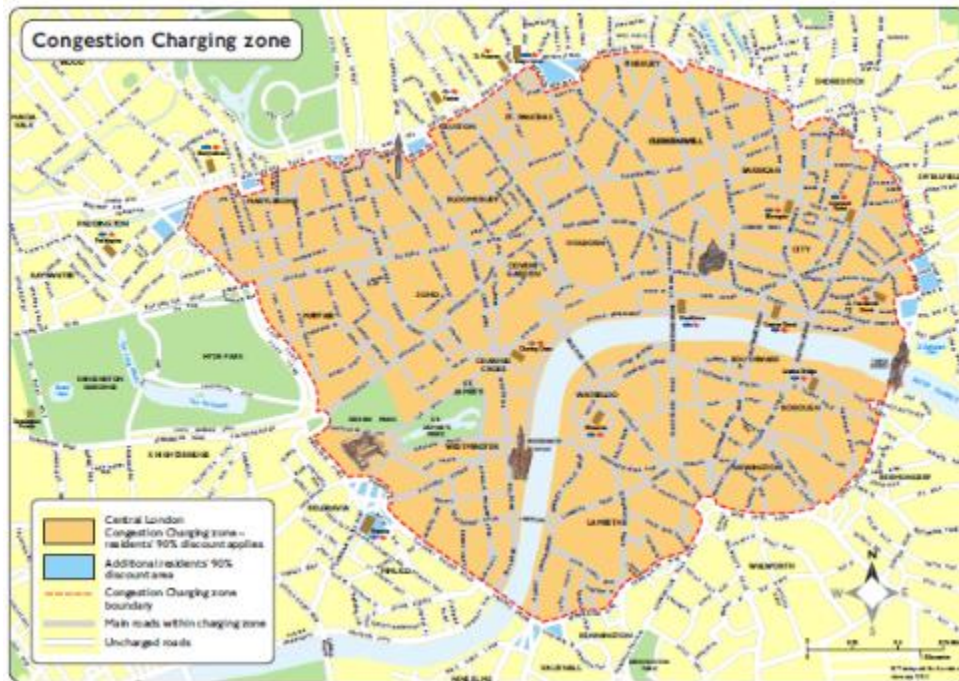


Agenda



1. Why sustainable cities – the business case

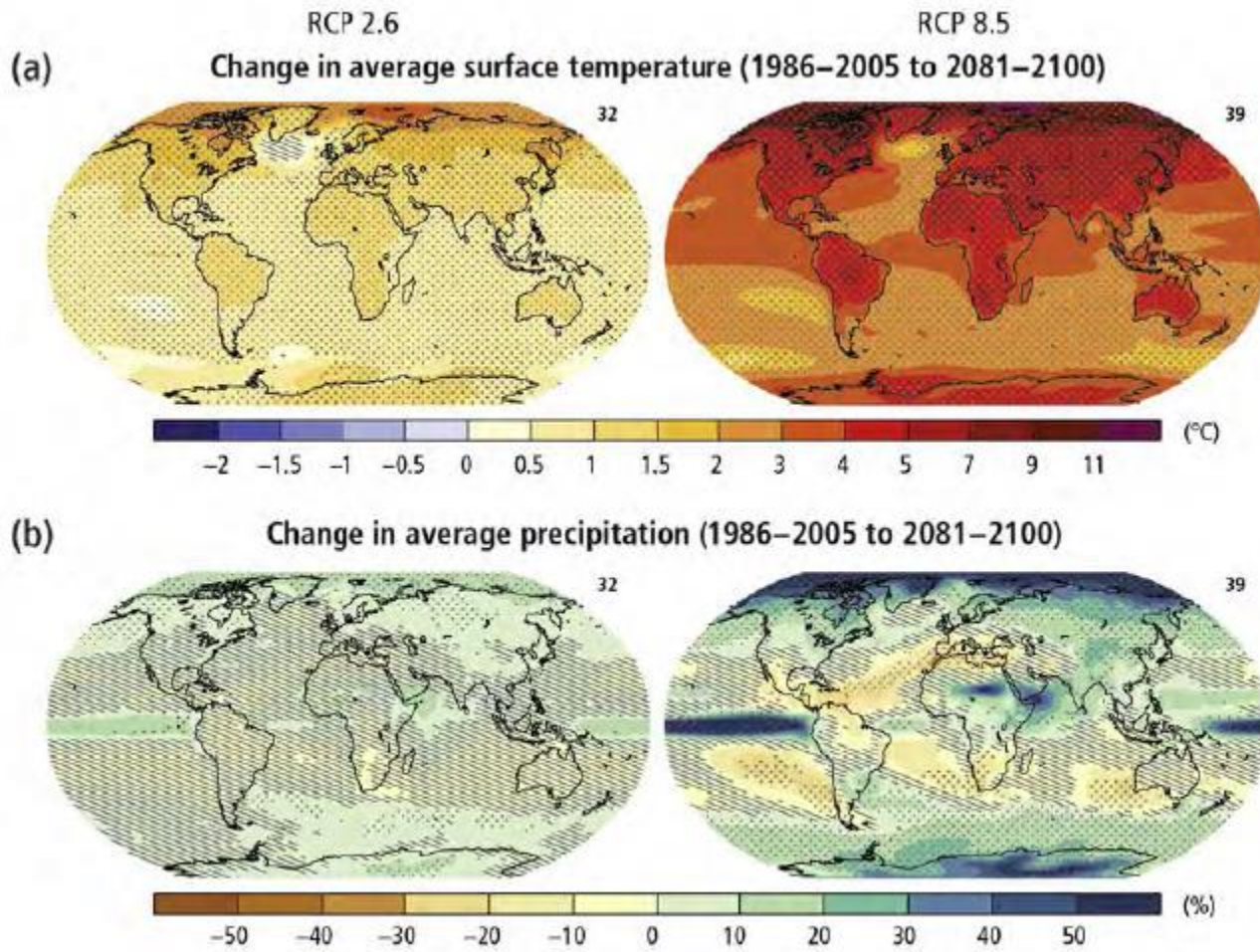
2. Actions to drive the transition to low carbon urban economies



1. The business case

why should cities act?

Climate change is real and will cost us billions under Business As Usual



One example - assets at risk of flooding

| Rank | Country | Urban Agglomeration | Exposed Assets Current (\$Billion) | Exposed Assets Future (\$Billion) |
|------|-------------|---------------------|------------------------------------|-----------------------------------|
| 1 | USA | Miami | 416.29 | 3,513.04 |
| 2 | CHINA | Guangzhou | 84.17 | 3,357.72 |
| 3 | USA | New York-Newark | 320.20 | 2,147.35 |
| 4 | INDIA | Kolkata (Calcutta) | 31.99 | 1,961.44 |
| 5 | CHINA | Shanghai | 72.86 | 1,771.17 |
| 6 | INDIA | Mumbai | 46.20 | 1,598.05 |
| 7 | CHINA | Tianjin | 29.62 | 1,231.48 |
| 8 | JAPAN | Tokyo | 174.29 | 1,207.07 |
| 9 | CHINA, | Hong Kong | 35.94 | 1,163.89 |
| 10 | THAILAND | Bangkok | 38.72 | 1,117.54 |
| 11 | CHINA | Ningbo | 9.26 | 1,073.93 |
| 12 | USA | New Orleans | 233.69 | 1,013.45 |
| 13 | JAPAN | Osaka-Kobe | 215.62 | 968.96 |
| 14 | NETHERLANDS | Amsterdam | 128.33 | 843.70 |
| 15 | NETHERLANDS | Rotterdam | 114.89 | 825.68 |
| 16 | VIETNAM | Ho Chi Minh City | 26.86 | 652.82 |
| 17 | JAPAN | Nagoya | 109.22 | 623.42 |
| 18 | CHINA | Qingdao | 2.72 | 601.59 |
| 19 | USA | Virginia Beach | 84.64 | 581.69 |
| 20 | EGYPT | Alexandria | 28.46 | 563.28 |

Table 2: Top 20 cities ranked in terms of assets exposed to coastal flooding in the 2070s (including both climate change and socioeconomic change) and showing present-day exposure (Source: Nicholls et al (2007), OECD, Paris)

Local governments and cities can drive significant change

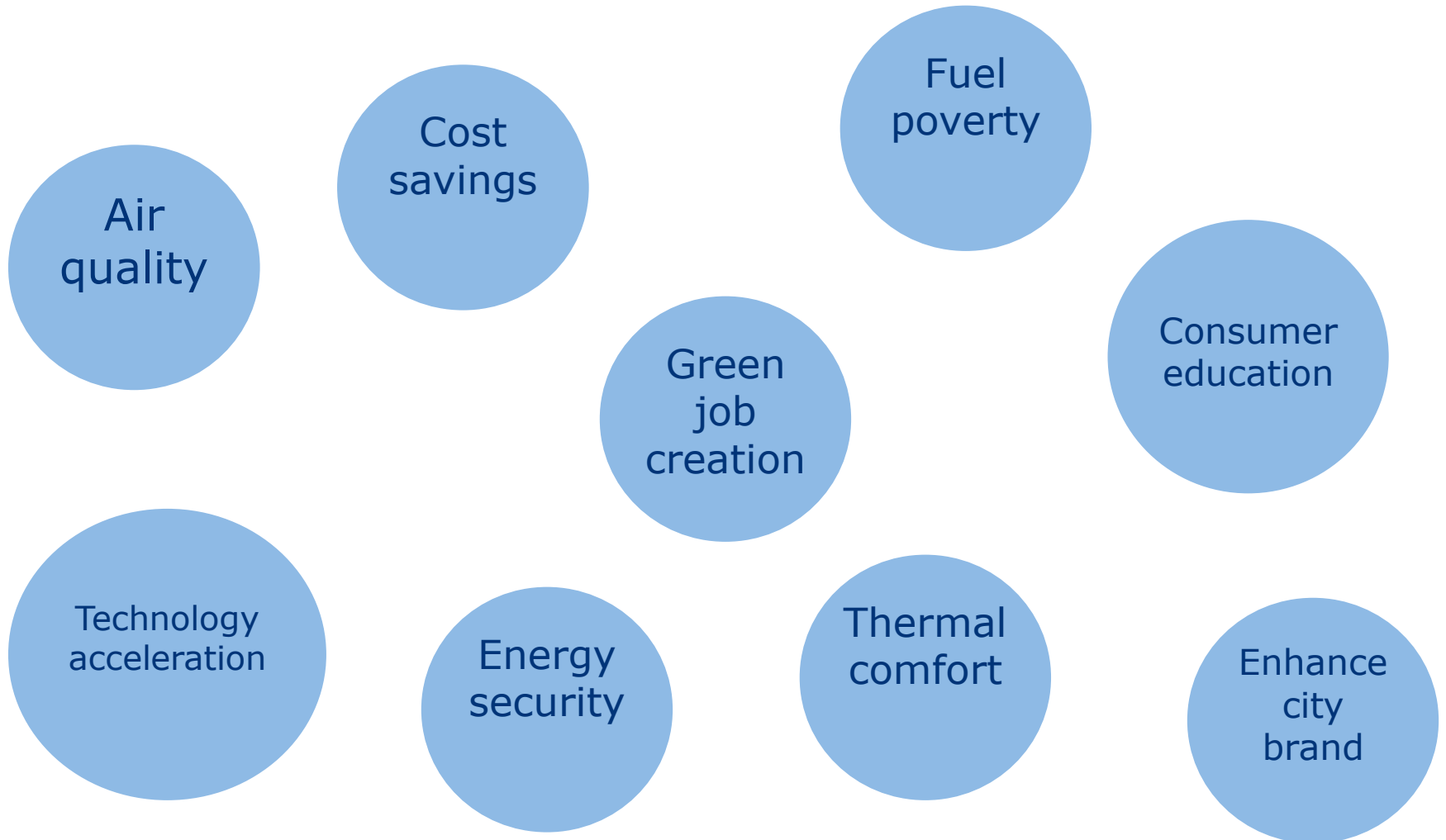
Cities can and do drive changes to buildings, transport and energy systems:

- › Bristol – cut emissions by 15% 2005 – 2009; projects include solar energy, community energy funds, council building retrofit, district heat
- › Leeds 80% by 2050 carbon target - energy mapping, district heating, housing retrofit
- › Manchester 41% by 2020 carbon target – Velocity, heat networks, housing retrofit, citizen engagement, public transport

And not just in the UK!

- › Tokyo – city emissions cut 25% by 2020, cap and trade programme
- › Beijing – cutting city government emissions by 10%, lighting retrofit, trigeneration, public transport, citizen engagement
- › Vancouver – 33% cut by 2020, carbon neutral new build, cut car use
- › New York – 80% cut by 2050 focussing on buildings, on site renewables

And there are many co-benefits.



2. What can city governments do?

governance structures for sustainable city economies



Lead by example – get your own house in order

To lead credibly, cities must set up and implement a carbon management strategy across their own assets - buildings, streetlighting, transport:

- › Active senior governance
- › An organisation trained and engaged in cutting carbon
- › Carbon baseline, future projections and target
- › Identified, quantified and prioritised carbon reduction projects
- › Financial business case to secure funding
- › Five-year carbon management plan

Then you are well placed to lead and enable your wider area

But where do you start on external engagement...

The first steps



1. Measure the **area footprint**

- › Map your area emissions so as to understand the potential – Global Protocol for Community Scale Emissions (GPC)

2. Prioritise **target sectors**

- › Don't try and take on the whole borough in phase one

3. Develop your **financial strategy**

- › A crucial part of the business case for action

4. Develop your **engagement strategy**

- › Base this on simple and realistic commitment from both you & stakeholders

Areas that local governments can influence

Cities have many levers to pull:

- › Citizen, school, business engagement – in both directions
- › Driving low lifecycle cost, low carbon procurement
- › Leading the development of local energy schemes
- › Convenors and enablers of infrastructure finance
- › Develop **integrated** transport authorities and planning authorities



Harder projects...

- › Incentivise density and low carbon buildings via the planning system
- › City as test bed for new tech (e.g. smart grid, incubating low carbon startups)
- › City resilience - planning for climate change

Building skills for low carbon cities

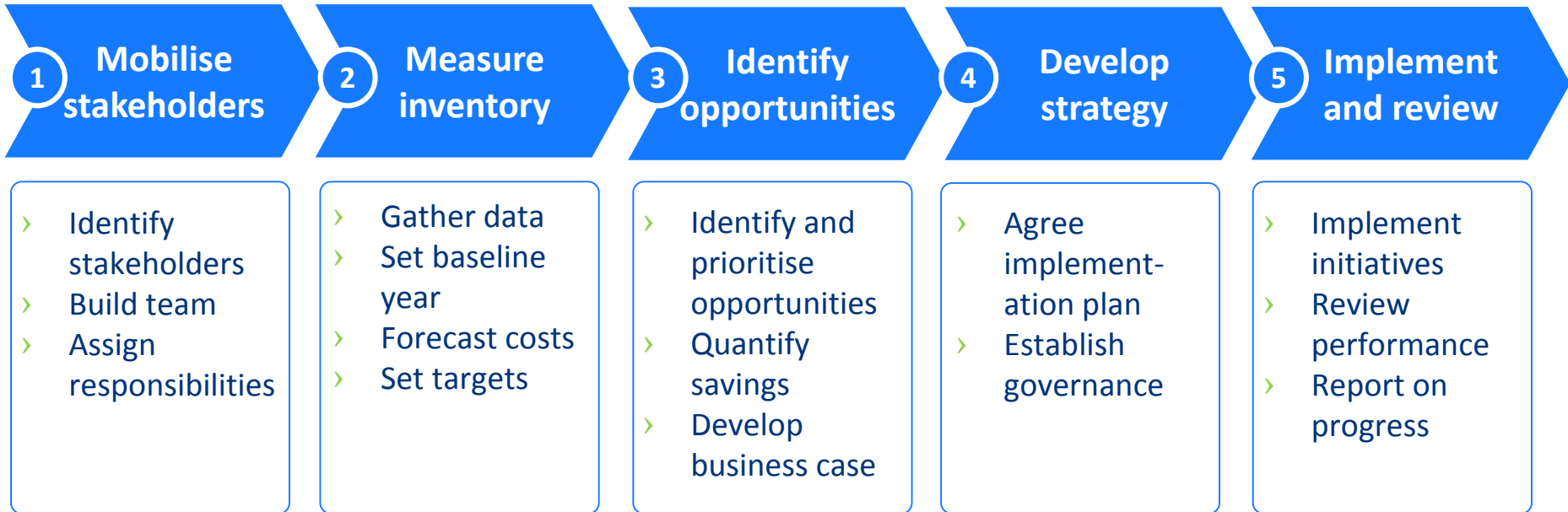
- › Carbon accounting and reporting
- › Smart cities – data, technologies...
- › Resilience and adaptation
- › Project finance and discounted cashflow analysis
- › Stakeholder engagement....

- › ***City climate planning!***



'City Climate Planner' Professional Certification Program

Our Low Carbon Cities programme helps cities to get to grips with this agenda:

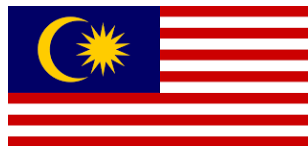


www.lowcarboncities.co.uk

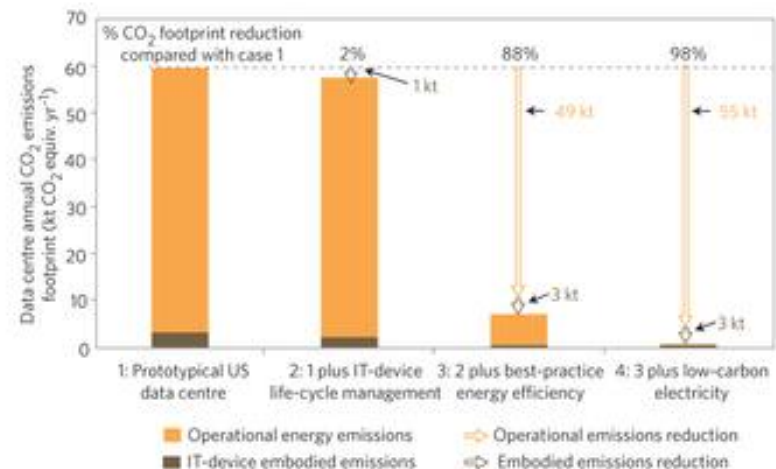
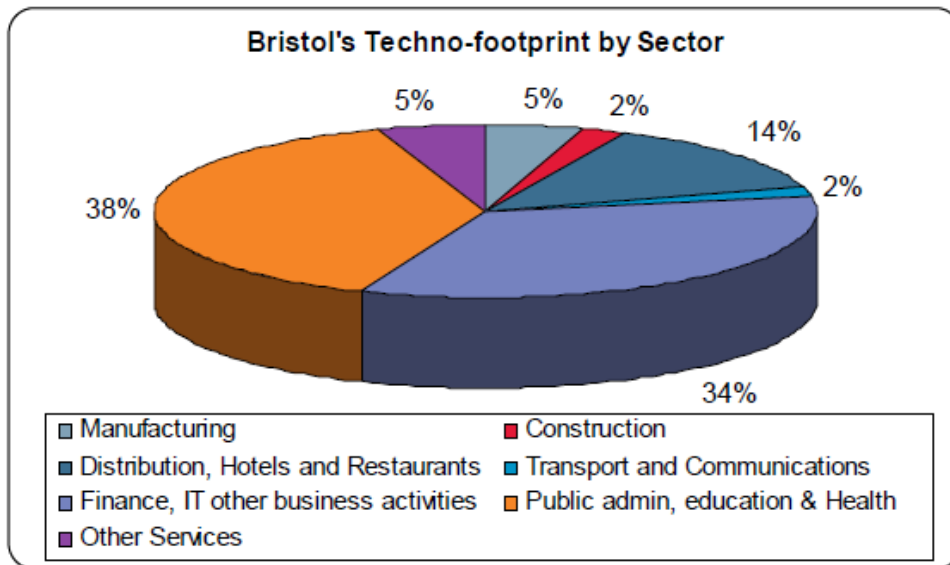
We have worked with cities from the UK,
China, Mexico and Malaysia



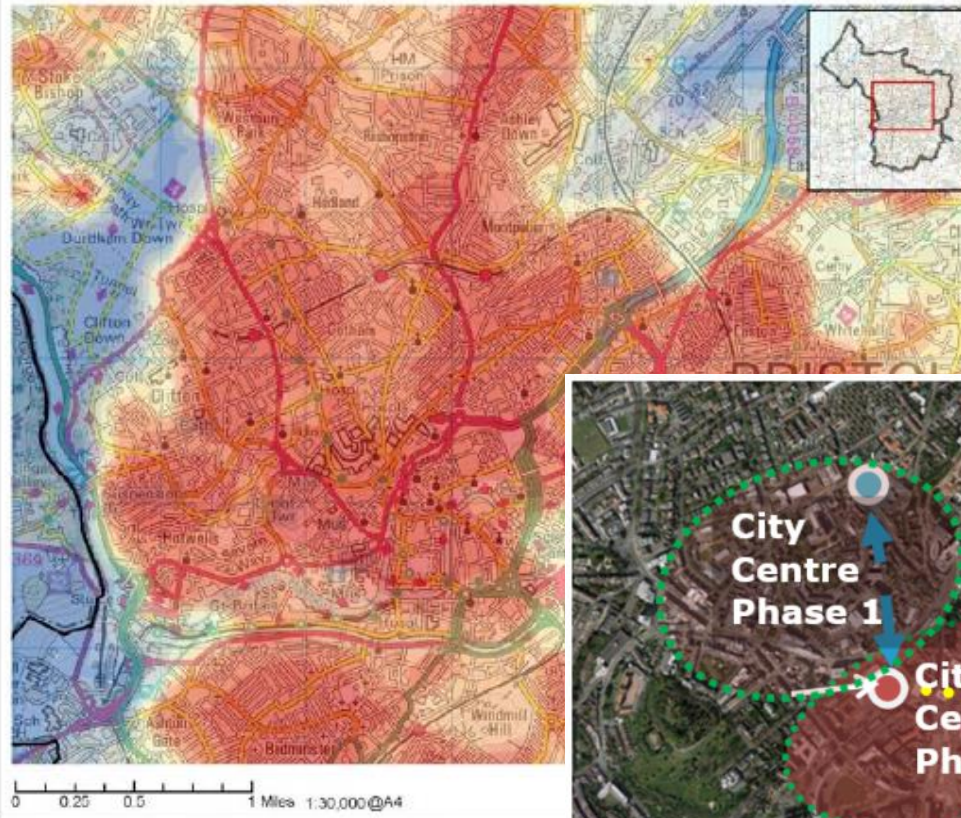
Foreign &
Commonwealth
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A case study....low carbon Bristol



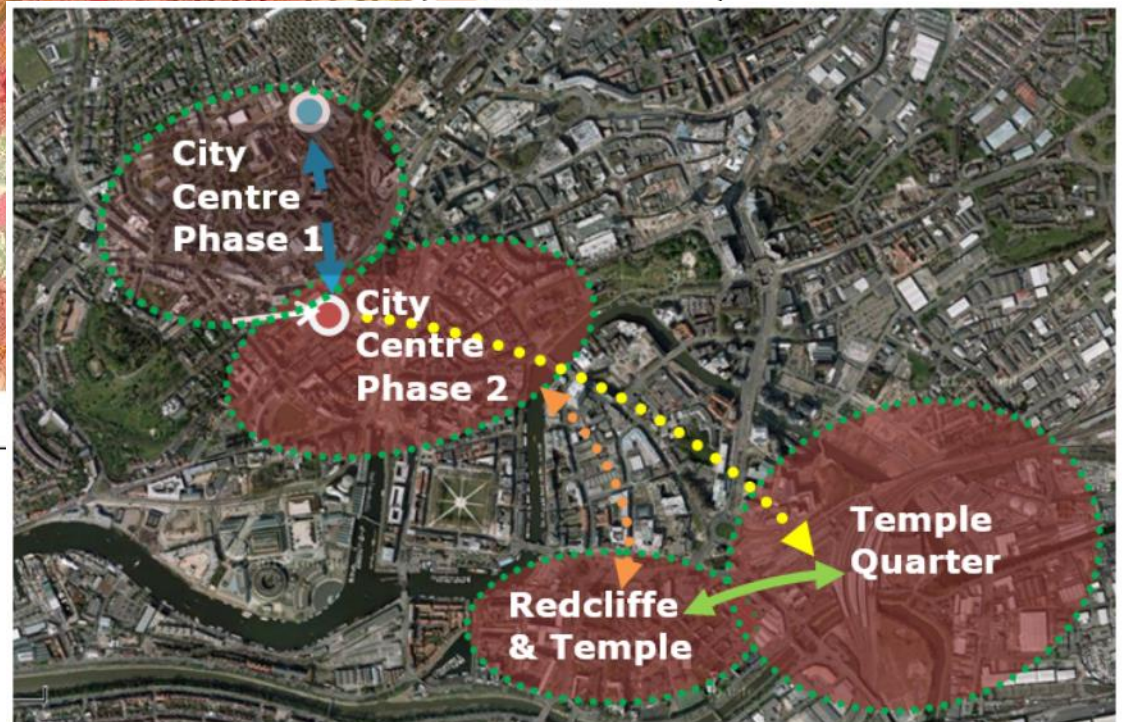
Heat Demand Density Contours, City Centre detail



BRISTOL SUSTAINABLE ENERGY SURVEY 2009
 CSE on behalf of Bristol City Council

Heat Density Deciles
 kWh/m²/year

| |
|---------------|
| 0.19 - 5.02 |
| 5.02 - 12.87 |
| 12.87 - 20.89 |
| 20.89 - 27.92 |
| 27.92 - 34.22 |
| 34.22 - 41.74 |
| 41.74 - 47.40 |



Decentralised Energy Programme

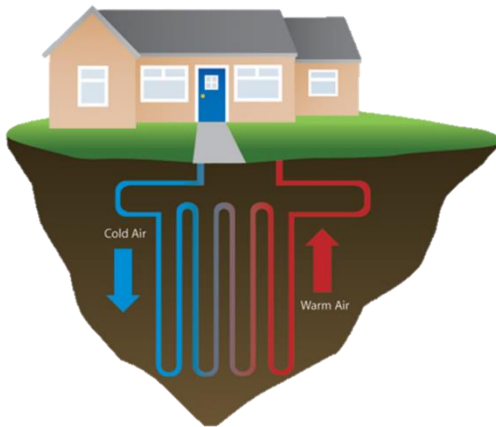


The Carbon Trust provides independent, technology agnostic advice to help local government officers and politicians take decentralised energy projects from initial opportunity through to implementation.

The Carbon Trust has undertaken numerous projects across the UK on local authority heat networks. Some of these include Oldham, Stockport, Manchester and Bury where we helped projects reach the **technical feasibility stage**.

The Carbon Trust has also worked with Crawley, Coventry, Bristol and Leeds to help get their projects from the high level feasibility stage to the **procurement stage**.

The Carbon Trust also has extensive knowledge in biomass including the Biomass Heat Accelerator Project and has published biomass heating tools and guidance for initial assessments, fuel supply mapping and end-user guides.



Carbon Trust support can be funded using HNDU grants

How?

Increasing internal knowledge on project technical, financial and risk issues

Provide independent advice on governance models and financing structures

Facilitate engagement with potential customers and other stakeholders

Improve market awareness through advice on available technologies, and planning & policy structures

Green city brand



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Our mission is to accelerate
the move to a sustainable,
low carbon economy

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