

**From green to smart: 25 year experience of
sustainable energy planning in Leicester**

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Reducing Greenhouse Gas Emissions

- Reducing our carbon footprint
 - New employment opportunities
 - Health and pollution
 - Quality of Life
-
- Data security, ethical and privacy issues

Ambitious vision

- Leicester as a low carbon city
 - homes
 - Non domestic buildings
 - Waste
 - Transport
 - Public engagement

A low carbon city

Climate Change –
Leicester's Programme
of Action

Update – September 2013

Citywide Actions

- Planning Regulations
 - Combined heat and power
 - Cavity wall insulation
 - External wall insulation
 - Solar thermal
 - Solar photovoltaic
 - LED streetlights
-
- Smart grids
 - Attitudes and behaviour
 - Public engagement



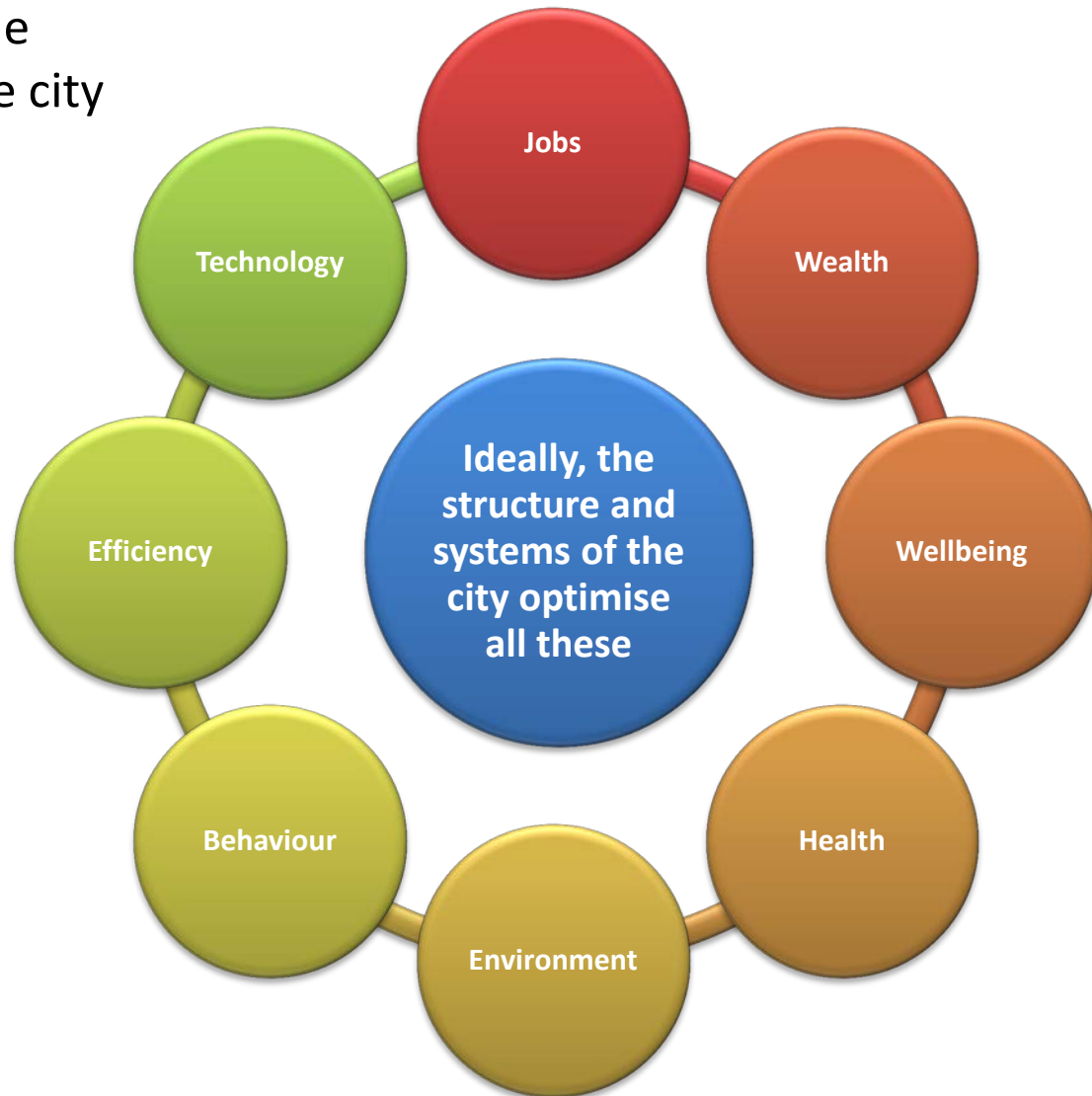






Smart Cities: Integrative Approach

- Focus on the data on the physical structure of the city
 - Buildings
 - Residential
 - Commercial
 - Industrial
 - Public
 - External Spaces
 - Functional
 - Wellbeing
 - Aesthetic
 - Environment
 - Thoroughfares
 - Location
 - Layout
 - Access
 - Mobility



ENERGY?

- Heat and power our homes
 - Heat and power businesses
 - Move us around
 - Produce goods and services
-
- Linked to most things we do
 - Not just technical problem

ENERGY SERVICES

- We do not want gas or electricity – we want heat, light, power and mobility
- Low unit energy costs
- Affordable energy service

Conflicts

- Local renewable (biomass) and local air quality?

Detailed data

- Energy and water meters
 - Remote switching of “non essential loads”
 - Automatic, remote charging of electric vehicles.
- Data for homes and businesses
 - Temperature data from bedrooms
 - Smart spaces example, engaging with non domestic building users via social media
- Transport
 - Vehicle and bus movements, traffic flows and car parks etc
- Air Quality
 - Satellite data, providing local information

Links to Other Data

- Health
 - Energy poverty, air quality, room temperatures
- Economy
 - Leicester the place to invest for low carbon technologies
 - Businesses more energy efficient –so running costs lower
- Education
 - All local schools are “outstanding schools”, so pupils walk to their local school so reducing transport energy and local pollution

Smart Cities: Jobs and Wealth Creation

- Business opportunities
 - Growing cleantech sector
 - Construction (and operation)
 - Service orientated (more people, less materials)
 - International markets
 - Leadership
- New business models
 - Services
 - Energy services
 - Car clubs, etc
 - System integration
 - Operation and maintenance
 - Skills and training
 - Free Electric Vehicle ownership is even being used as a sales incentive in the property market!
 - Manufacture
 - High tech (high added value)
 - Offsite construction of buildings
 - Offsite production of bespoke, modular, retrofit assemblies for low-carbon refurb.
 - Series production of low carbon vehicles
 - Existing local expertise, plus interested in-comers



Most important successful element of your improvement?

- Leadership and partnership. Key technical knowledge and ability to deliver at scale

What obstacles / barriers did you have to overcome?

- Lack of interest, knowledge, awareness, lack of priority

Who or what internal and external factors triggered the process? Did these persons / factors change over time?

- External – relevant international or govt policy framework
- Internal – political and professional support and capacity
- Adapt to changing priorities over time (cost to carbon)

Significance of the technical, economic, management- related and social factors? Did they change over time?

- Technology improving (half hourly meters to sensors and computational power)
- Economic value to the work
- Social value to the work
- Need to adapt to changing priorities

Technical, organisational and behavioural energy efficiency measures?

- Inter linked
- Need to address all, understand all
- Partnership working

Did the community play a role?

- Pressure groups
 - Campaigns
 - Started as a response to a Friends of the Earth request for information for their Environmental Charter for Local Government in 1989
- Comparison with other cities
- On going community group pressure
 - Supporting community groups

What role did participation play within your process? Did your sustainability strategy work more top down or bottom up?

- Top down, middle out and bottom up
- Quality knowledge and experience is needed
- Participation that changes things on a large scale.
- Participation is key to putting pressure on policy makers

Staff and Student Training



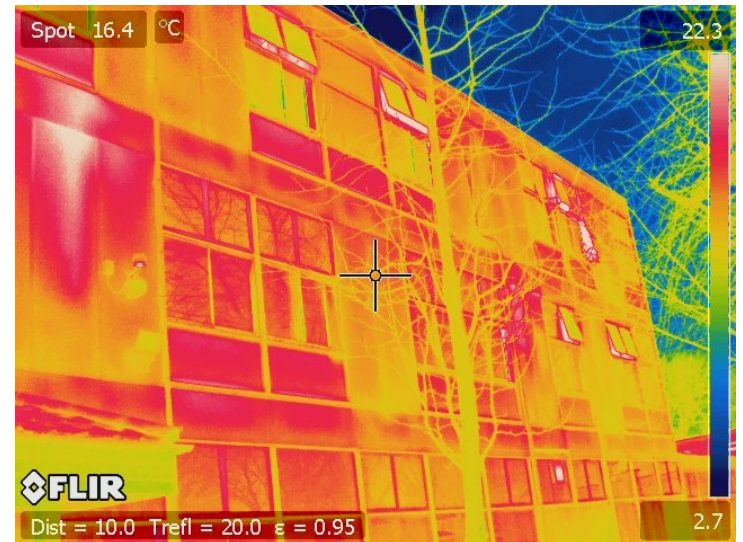
Inspirational Visits



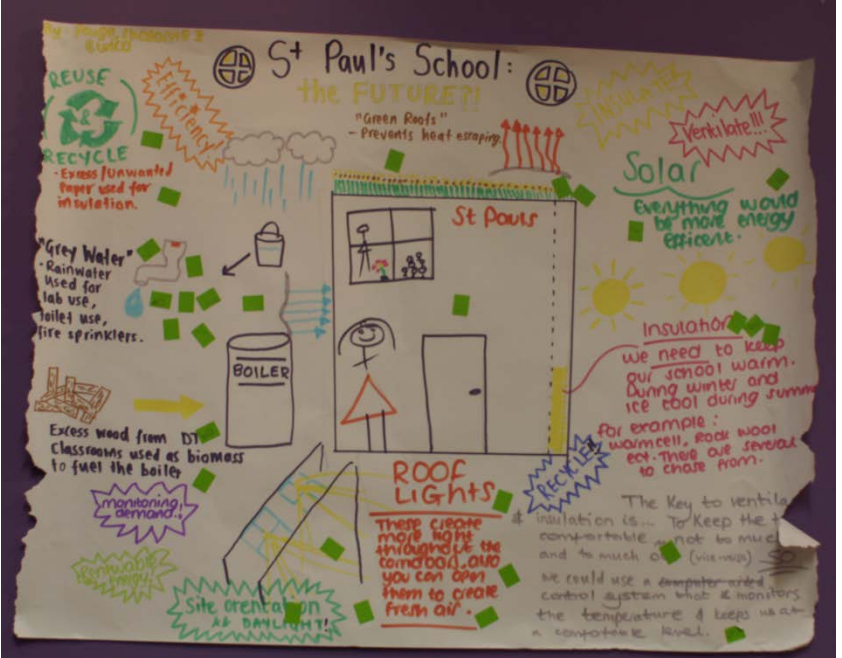
Workshops



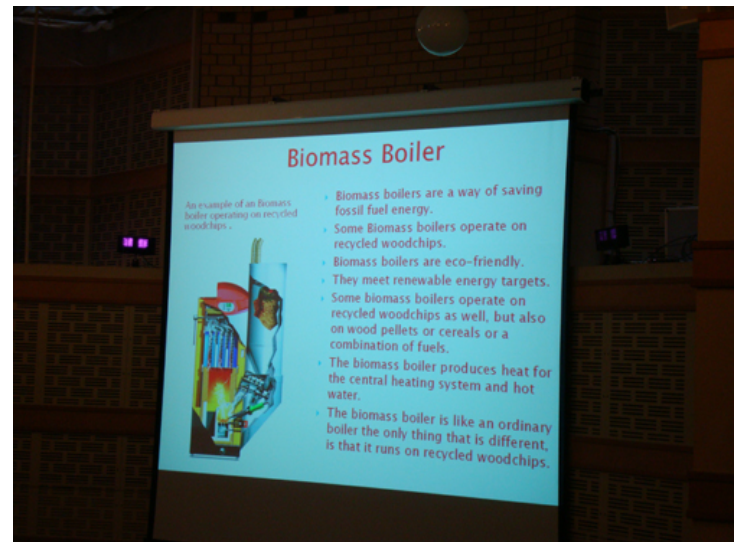
Thermal Imaging



Capturing Design Requirements



Discussing Ideas with Experts



Results of Engagement





FACE YOUR ELEPHANT

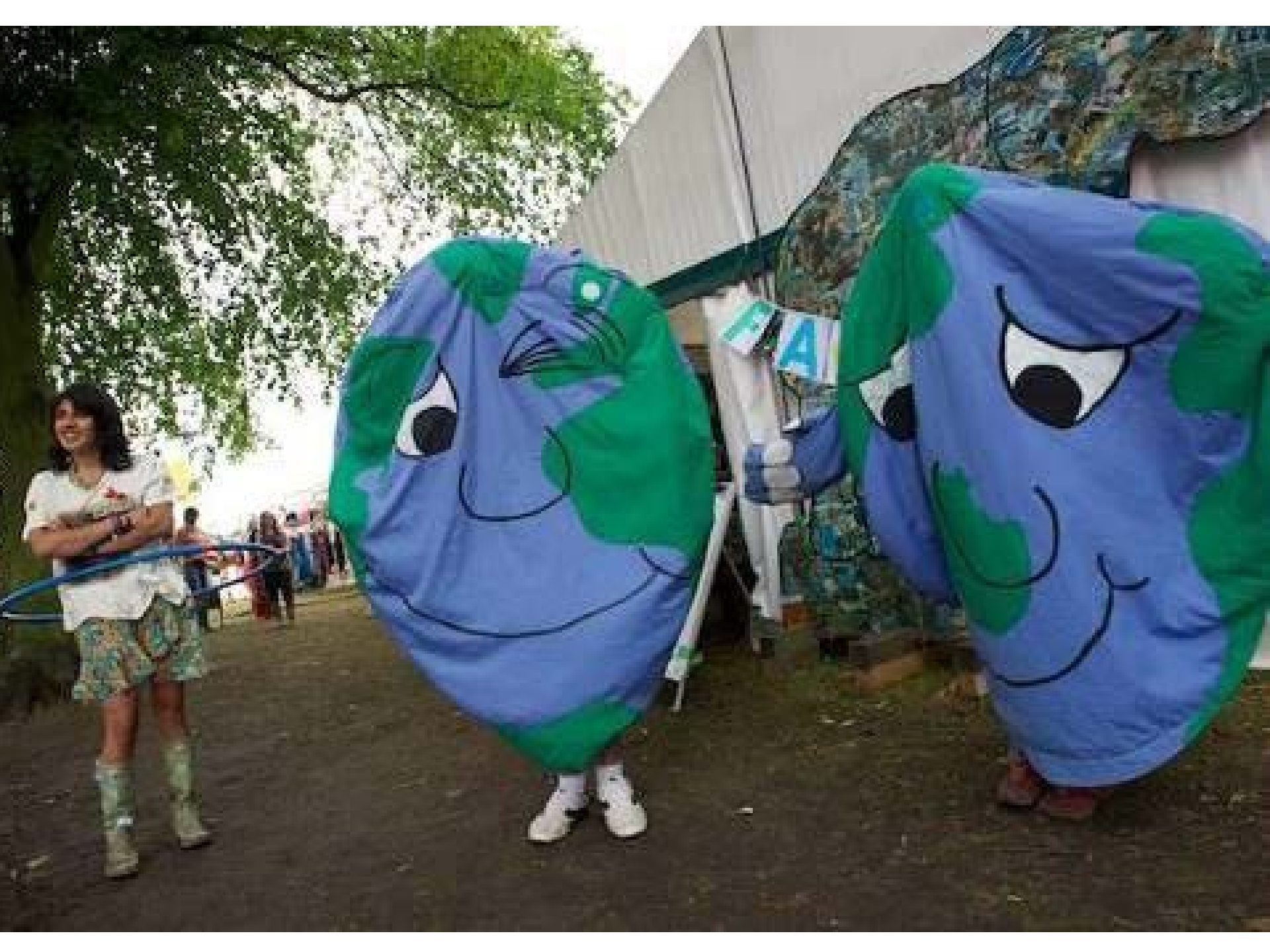
THE SCIENCE OF USING LESS CARBON

How are we?

We are a peer education project engaging festival-goers in the science and engineering of reducing their carbon dioxide emissions.

We are a partnership between De Montfort University, the Centre for Alternative Technology and the Woodcraft Folk.

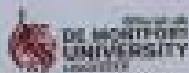






FACE YOUR ELEPHANT

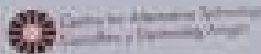
The science and engineering of reducing carbon emissions



supported by



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Woodcroft Park



Special thanks to the people who made this event possible: Leicester City Council and Leicester City Council

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YOUR ANNUAL CARBON EMISSIONS WEIGH AS MUCH AS TWO ADULT ELEPHANTS



FOR A SUSTAINABLE WORLD THIS NEEDS TO BE MORE LIKE A SANDY ELEPHANT. FROM TEN TONNES TO TWO



What do we do?

Solar Toys

Outdoor display to attract guests in.

Survey Station

Guests are assigned a peer educator, who acts as their guide.

Interactive House

Used to help users with calculating their carbon footprint.

Chill Out Area

A chance to talk to a DMU researcher.

Graffiti Wall

Visitors provide a creative response to sustainable issues.

Bicycle Smoothies

A sustainable treat as thanks







<http://faceyourelephant.org>
<http://twitter.com/fyelephant>

THE CHALLENGE

- Deep cuts in greenhouse gases
- Deep cuts in carbon dioxide
- Deep cuts in energy use
 - Insulation
 - Heating system
 - Heating control
 - Travel
 - Waste
 - Purchasing
- Renewable energy
- Behaviour change

BENEFITS OF ENERGY EFFICIENCY

- **Multiple benefits**
 - energy
 - CO₂ emissions
 - comfort
 - businesses more competitive
 - quality of life

CONCEPTUAL SHIFT

- Not a single issue
- Multi disciplinary
- Multi organisational

- Wait for Government?
- Reallocate resources?

PARTNERSHIP

- **Can't do it alone**
 - Regional, national, European and international networks
 - Local Enterprise Partnerships
 - Key local stakeholders