EVALOC
International Energy and Communities Conference

12th September 2012
TS Eliot Theatre, Merton College

EVALOC
EVALUATING LOW CARBON COMMUNITIES

What is the purpose of today?

- Conference is part of an ongoing research project **EVALOC (EVAluating LOw carbon Communities)**
- **Funded** by the **RCUK** (Research Council UK) through the **Energy and Communities** programme
- Oxford Institute for Sustainable Development (OISD), **Oxford Brookes University** and the Environmental Change Institute (ECI), **University of Oxford**
- Today is about **international learning** and **sharing experiences** of making our **communities low carbon** and **sustainable**
- The **importance** of **community energy action** and the **challenges** of **creating** and **sustaining low carbon communities**

Share **Discuss** **Learn**

Introduction to the conference and EVALOC project

Professor Rajat Gupta

12th September 2012
TS Eliot Theatre, Merton College

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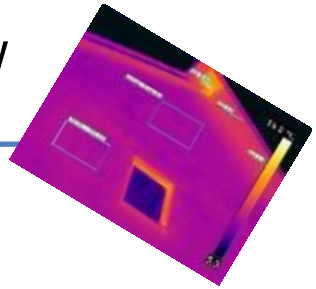
Today's programme

- 10:00am Session 1: Inaugural session
- 11:10 Refreshment break and viewing of posters
- 11:40 Session 2: Global vs community-scale approaches for tackling the climate crisis
- 13:00 Lunch and viewing of posters
- 14:00 Session 3: Innovating at the grassroots level: creating low energy communities
- 15:00 Refreshment break and viewing of posters
- 15:30 Session 4: Parallel workshops
- 16:40 Session 5: Closing plenary
- 17:30 Drinks and networking

The workshops

Workshop 1

Learning from monitoring and evaluation of low energy housing refurbishments



- 21 attendees
- David Harvey Room

Workshop 2

Researching and evaluating low carbon communities

- 21 attendees
- Ian Taylor Room

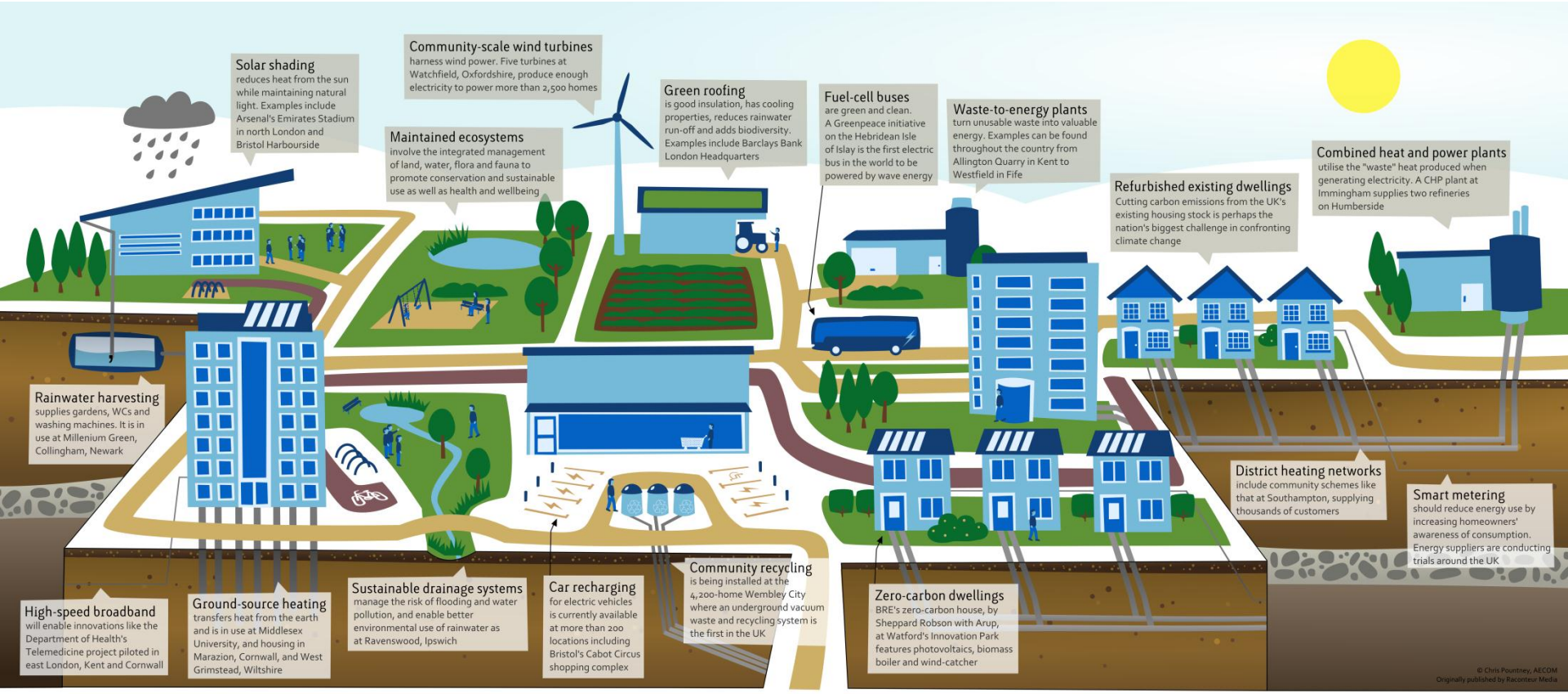
Workshop 3

Communities and Green Deal: challenges and opportunities

- 35 attendees
- TS Eliot Theatre

discussion **debate**

Energy and communities: why?



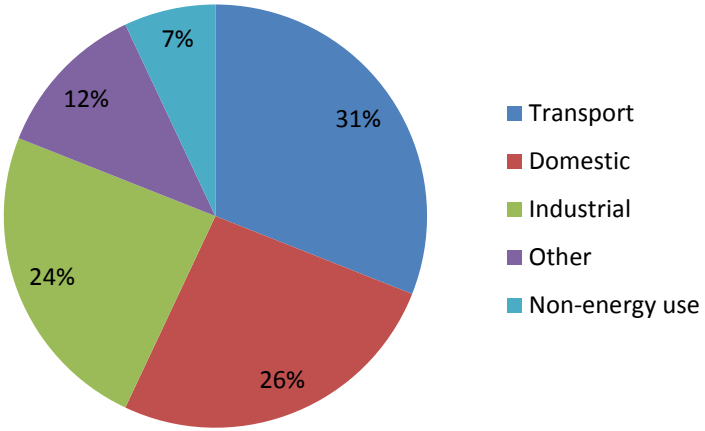
AECOM UK GREEN BUILDING COUNCIL

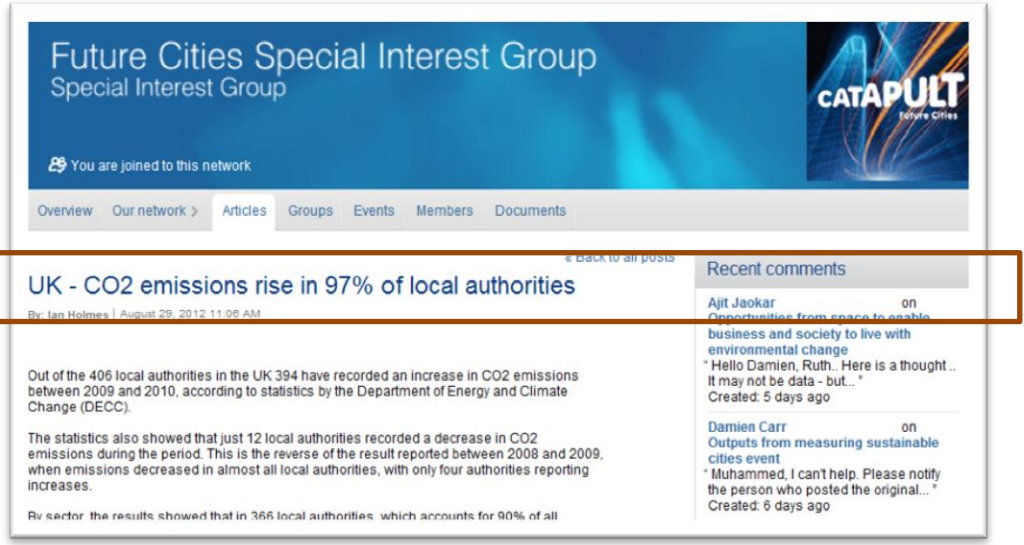
A quiet revolution is happening…

Energy and communities: why?

- Energy consumption in the **domestic sector** accounts for **26%** of the total UK final consumption.
- Household **electricity use** has **increased** by **10%** from 2000 to 2009
- National target of **80% reduction** of CO_2 emissions by 2050. (**34%** reduction by 2020; **50%** by mid-2020s)
- However **CO_2 emissions** have risen in **97% of UK local authorities**
- **Less than 6%** of **local authorities** have **adequate climate change policies** to meet the emissions reduction needed by 2020.

Final energy consumption by sector, UK, 2011 (DECC, 2012)





Why are communities important?

- Community groups as **agents of change**
- More **familiar** with **contextual factors** that shape individual behaviours
- **Trusted messengers**
- **Encourage localised trials** and **increased awareness**
- **Collective action** over **individual action**

Catalyse action within the community

Communities and national energy policy

- **Green Deal**
  - To improve **energy efficiency** of our **homes, schools and businesses by offering up-front loans** paid for by energy savings (Golden Rule)
  - Communities have a potential role in signing up people for Green Deal

- **Consultation on Heat Strategy**
  - Need to drive down carbon emissions from buildings to zero by 2050
  - **National heat map** – heat demand intensity map

Physical improvement of our homes

Communities and national energy policy

- **Smart meter rollout**
  - EU requirements on energy use visibility (Electricity and Gas Directives, 2009)
  - Roll-out of smart meters to all homes by 2019

- Smart meters could **change people's habitual energy use** in two ways:
  - **Reducing overall energy consumption**
  - **Shifting energy consumption**

- Can have **'lightbulb'** effect, **raising awareness** and **altering usage patterns**

Consumers are empowered to act. But will they, and for how long?

What impact does user behaviour have on energy use?

- Impact of **behaviour change** on energy use – **Committee on Climate change** suggests changes in habitual behaviours by 4.5MtCO_2
- Energy-using behaviours are generally **habitual behaviours** (**or one-off behaviours** such as buying insulation)
- Individuals respond to **social factors** such as:
  - **personal identity** (how they view themselves and how they feel society views them)
  - **social norms** (how they act within society)

What types of community energy projects are there?

- Research into community energy projects
- **Supply side** activities, eg community wind turbine, Solar Photovoltaics
- **Demand side** activities, eg behaviour change programme or installing insulation
- **Combined supply and demand** side activities

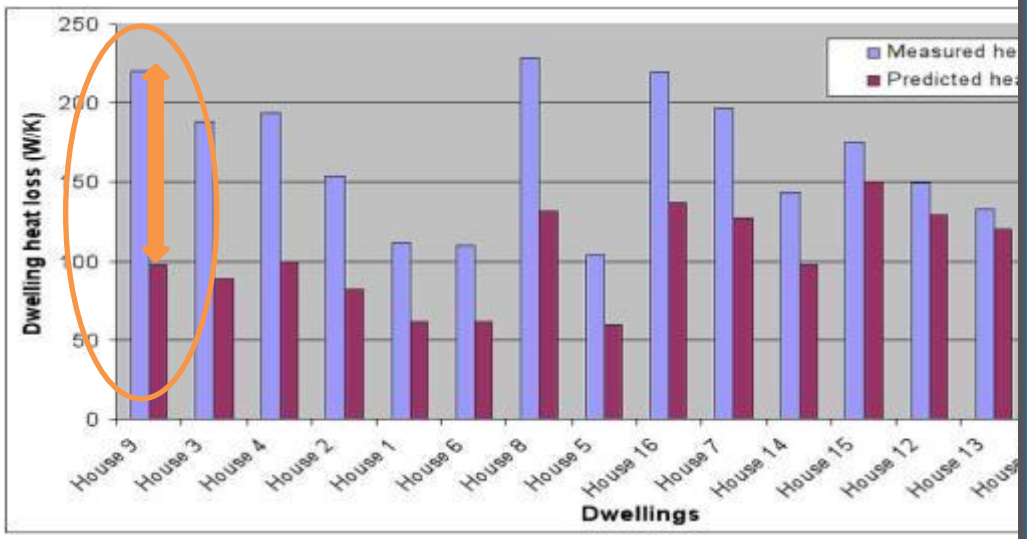
Are there any unintended consequences?

- Improving energy performance of our homes, offices and community buildings is NOT easy!

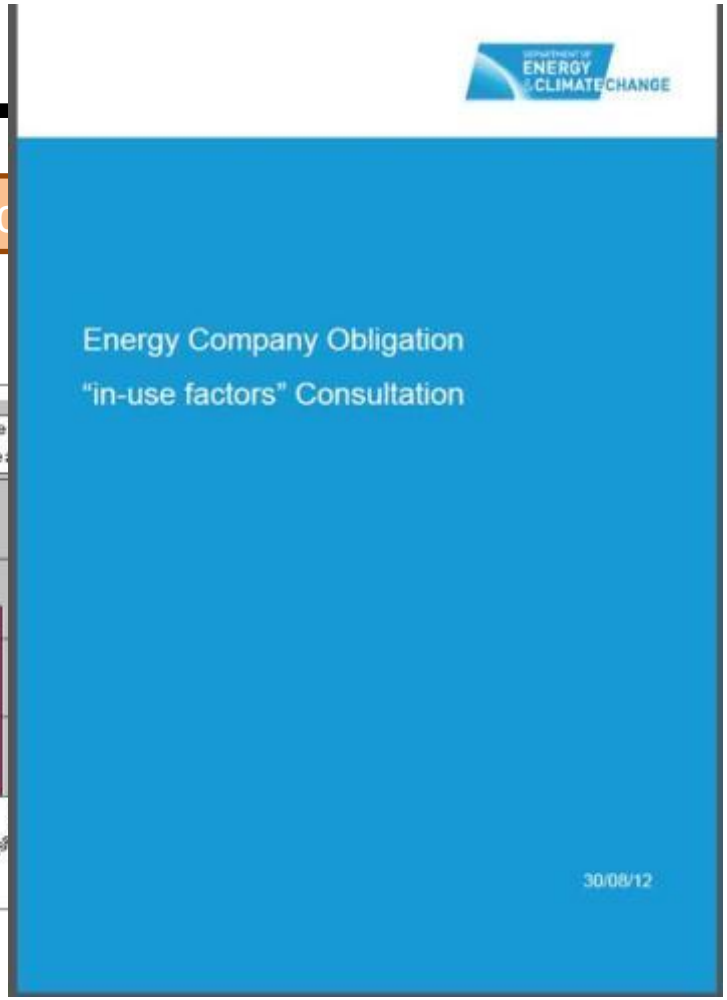
‘A performance gap..

Predicted energy use | Ac

Construction/refurbishment



Measured versus predicted whole house heat loss for 16 dwellings
(Source: Zero Carbon Hub, 2010)



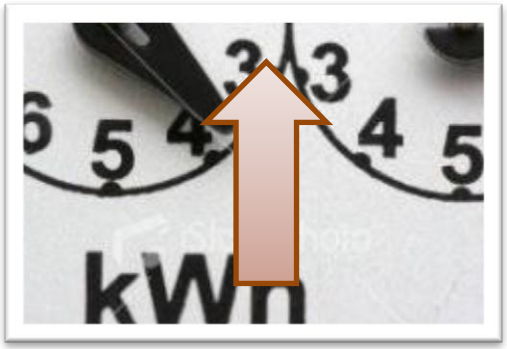
‘or a credibility gap?’

What about the role of design and place-making?

- People
- Buildings
- Services
- Energy
- Environment
- Community
- PLACE

How do communities currently monitor and evaluate their energy projects?

- Aims and targets vary between communities; most common are:
  - **cutting CO_2**
  - **generating kWh**
  - **raising money**
  - **(raising awareness)**
  - **(enabling behaviour change)**
- Most use some form of **measured performance data:**
  - **kWh**
  - **savings in CO_2**
  - **number of participants**
  - **financial impact**



Monitoring and evaluating is challenging…

Are there other challenges to community action work?

- Lack of individual household level baseline data
- Partnerships: Co-production of knowledge, Co-ownership
- Engaging with policy
- Replicability of community action
- Scalability
- Social values and universalism
- Lack of precedents
- Financing
- Lack of skills
- Lack of expertise

But amongst these challenges…

So what is EVALOC?

- **Three and a half year** research project developed in **response** to the **ESRC/EPSRC's Energy and Communities call**
- Runs from 2011 to 2014
- One of **7 projects** funded out of **82 submitted**
- EVALOC received grant of **£1.14million** (Total project value: £1.37 million)

EVALOC
EVALUATING LOW CARBON COMMUNITIES

What is EVALOC?

- EVALOC brings together an **interdisciplinary** team of researchers from **social science** and **building science** based disciplines from **Oxford Brookes University** and **University of Oxford.**
- **Evaluate six selected low carbon communities** funded under the DECC's **Low Carbon Communities Challenge** (LCCC) in terms of their:
  - **IMPACTS** (on changing individual and community energy behaviours)
  - **EFFECTIVENESS** (on achieving real-savings in energy use CO_2 emissions)
  - **SUCCESS** (in bringing about sustained and systemic change).

Who is involved in EVALOC?

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Expert Consultants Capacity Global (Community capacity building)

International visiting experts from academia and practice

Advisory Board

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Who is involved in EVALOC?

6 case study low carbon communities

Sustainable Blacon
(Community-led)
- 2 Eco-Homes
- Energy management scheme

Low Carbon Hook Norton
(Community-led)
- Community-renewables
- Interest-free loans incl. 6 whole-house retrofit

Awel Aman Tawe
(Community-led)
- Proposed community wind turbine scheme

Eco-Easterside
(Community and Council)
- 2 wind turbines in schools
- 600 homes with energy monitors and insulation
- Solar thermal and PV & ASHP in 20 homes

Kirklees
(Council-led)
- Community and domestic solar PV
- Energy awareness schemes

Low Carbon West Oxford
(Community-led)
- Community and domestic solar PV
- Energy awareness scheme

Low Carbon Communities Challenge (LCCC)

- **Twenty two** communities (England, Wales and Northern Ireland) received grant of about **£450k each February 2009 - March 2011**

- LCCC was designed to test the **effectiveness of community-scale approaches that combine low carbon technologies with engagement and behavioural change activities**

- **Diverse projects**, but **three characteristics** intended to be common to all:
  - **Geographically targeted**, area-based initiatives
  - Involve **integrated packages** of measures
  - Draw upon **sociological models** of **behaviour** that emphasise the **potential** for **social norms** to **'nudge'** and **trigger community-wide change**

Funding:
90% - physical
10% - behaviour

What questions are we trying to answer?

- How can community-based organisations best **monitor** and **communicate** their own **effectiveness** at **energy demand reduction**, and learn from their work? What are the **limits** and **barriers**?

- What are the **effects** and **impacts** of the LCCC interventions on **behaviour change**, **energy use** and **CO_2 reductions**, and how sustainable are they?

- How useful is **DECoRuM** for communities and policy makers in **measuring**, **tracking**, **visualising** and **communicating CO_2 savings** to communities?

- How are **energy displays** used in a social context, and how can they be used to best effect to **raise awareness** and **change practices**?

- What is the **role of social networks** in promoting or suppressing the communication and take-up of new energy technologies, and how far do these interconnect with local community networks?

- What is the **role of cross-learning** within a broad **'community of interest',** for energy-related change?

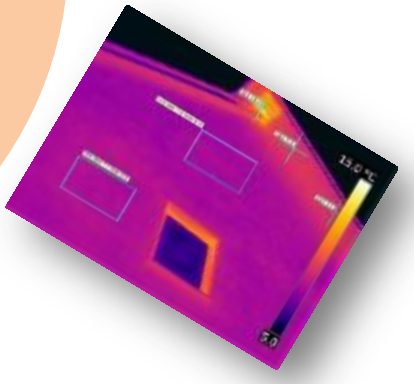
Strands of research enquiry

Community Level

- Focus groups
- Community events
- WP1

Household Level

- Carbon mapping
- Monitoring and evaluation of household energy use
- Occupant feedback surveys
- Energy display library & household trials
- Social network analysis
- WP2 & WP3a



Dissemination/ Knowledge Transfer

- Knowledge and policy transfer workshops
- WP3b

What do we expect to achieve from EVALOC?

- To **generate evidence** about:
  - **Role, effects, impacts** and **limits** of 6 low carbon communities in **motivating energy reduction** and **renewable investment amongst local residents**
  - Importance of **informal learning within** and **between communities**
  - **Energy monitoring** for **individual** and **community wide energy reduction**

What outputs will be relevant for communities?

- **Materials and guidance for community energy projects, covering engagement, methods and evaluation**
- **Community energy monitoring data, materials and map based tools**

OXFORD BROOKES UNIVERSITY

Environmental Change Institute

eci UNIVERSITY OF OXFORD

Research Councils UK Energy For a Low Carbon Future

Thank you!

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