EVALOC
EVALUATING LOW CARBON COMMUNITIES

Sustainable Blacon | Hook Norton | Awal Aman Tawe | Eco-Easterside | Kirklees | West Oxford

Evaluating the **impacts, effectiveness,** and **success** of Department of Energy and Climate change (DECC) funded low carbon communities on **localised energy behaviours**

EVALOC is an exciting, novel and collaborative three-year Research Councils UK funded research project which brings together an interdisciplinary team of researchers from building science and social science disciplines .The project seeks to assess, explain and communicate the changes in energy use due to community activities within six selected case study projects under the Department of Energy and Climate Change's (DECC) Low Carbon Communities Challenge.

The Governemment initiated 'Low Carbon Communities Challenge' awarded Capital Funding to 22 community groups, to encourage and support sustainable ways of living within communities.

EVALOC researchers are working with these community groups to evaluate their impact on changing individual and community energy behaviours, effectiveness in achieving cuts in energy use and carbon emmissions, and success in bringing about a sustained and systemic change.

Core research questions

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 CO2 reductions, and how sustainable are they?

How useful is DECoRuM for communities and policy makers in measuring, tracking, visualising and communicating CO2 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?

Approach and methodology

Action research approach is adopted and involves working **interactively** at both **community level** and **household level** in order to empower communities to become low carbon.
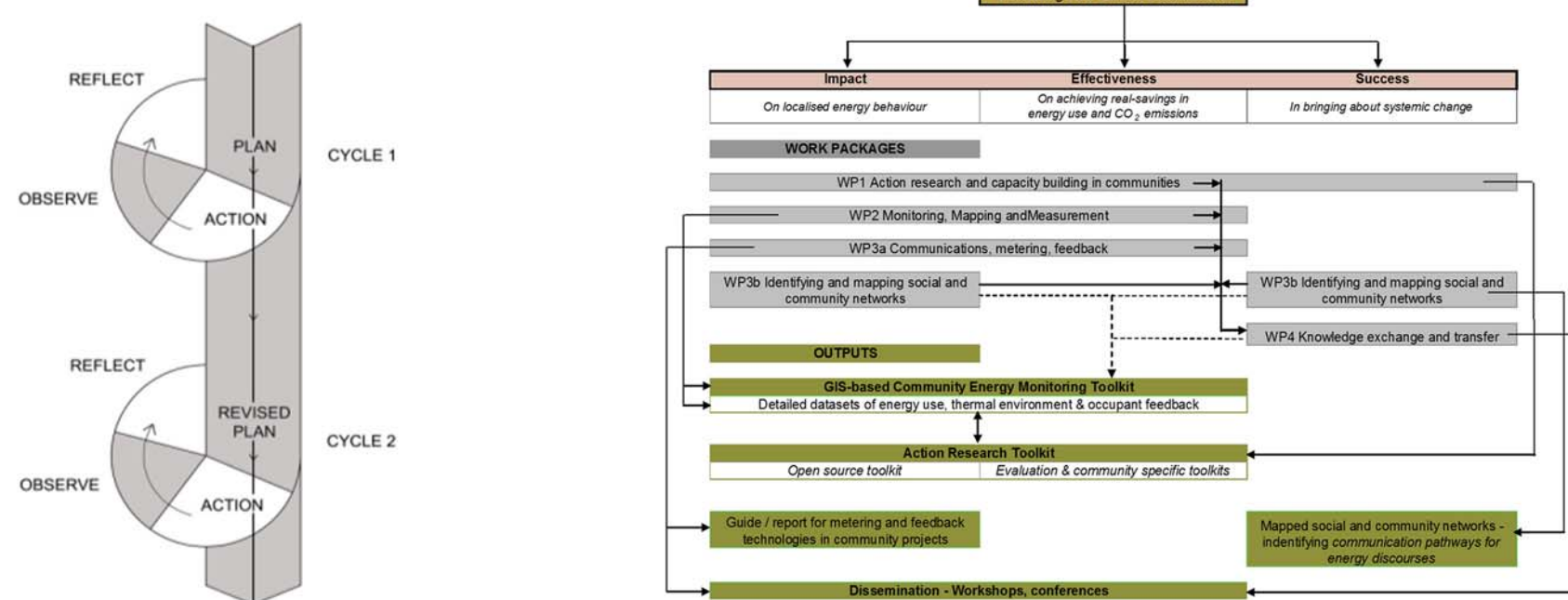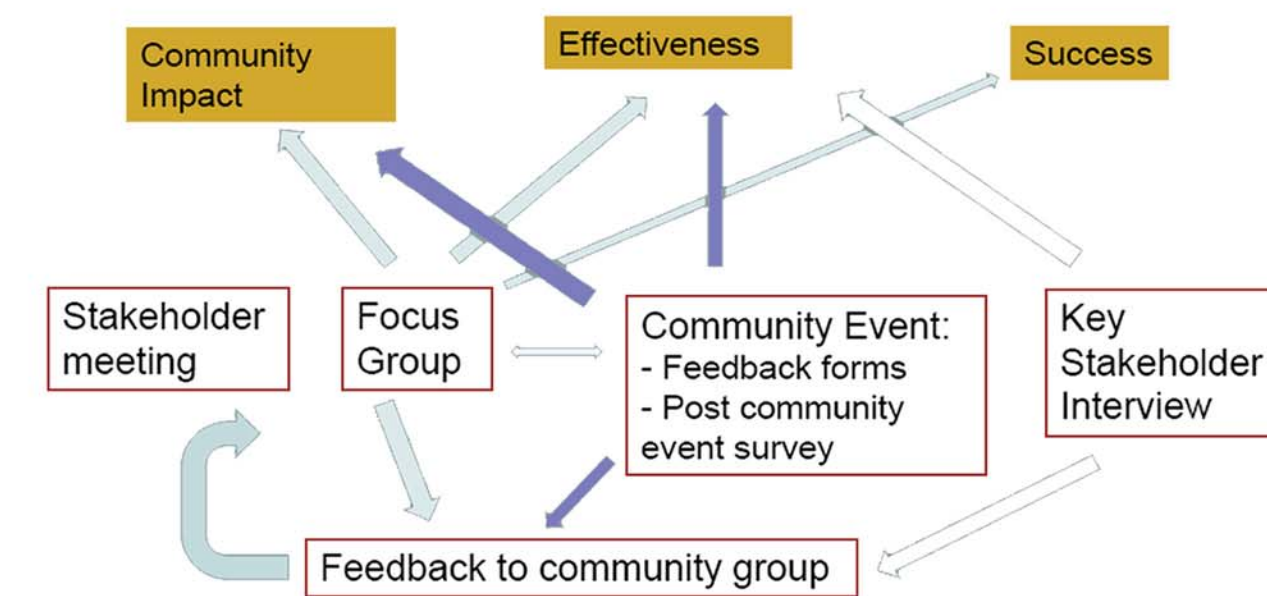

Two levels of reseach enquiry
1. **Community level**
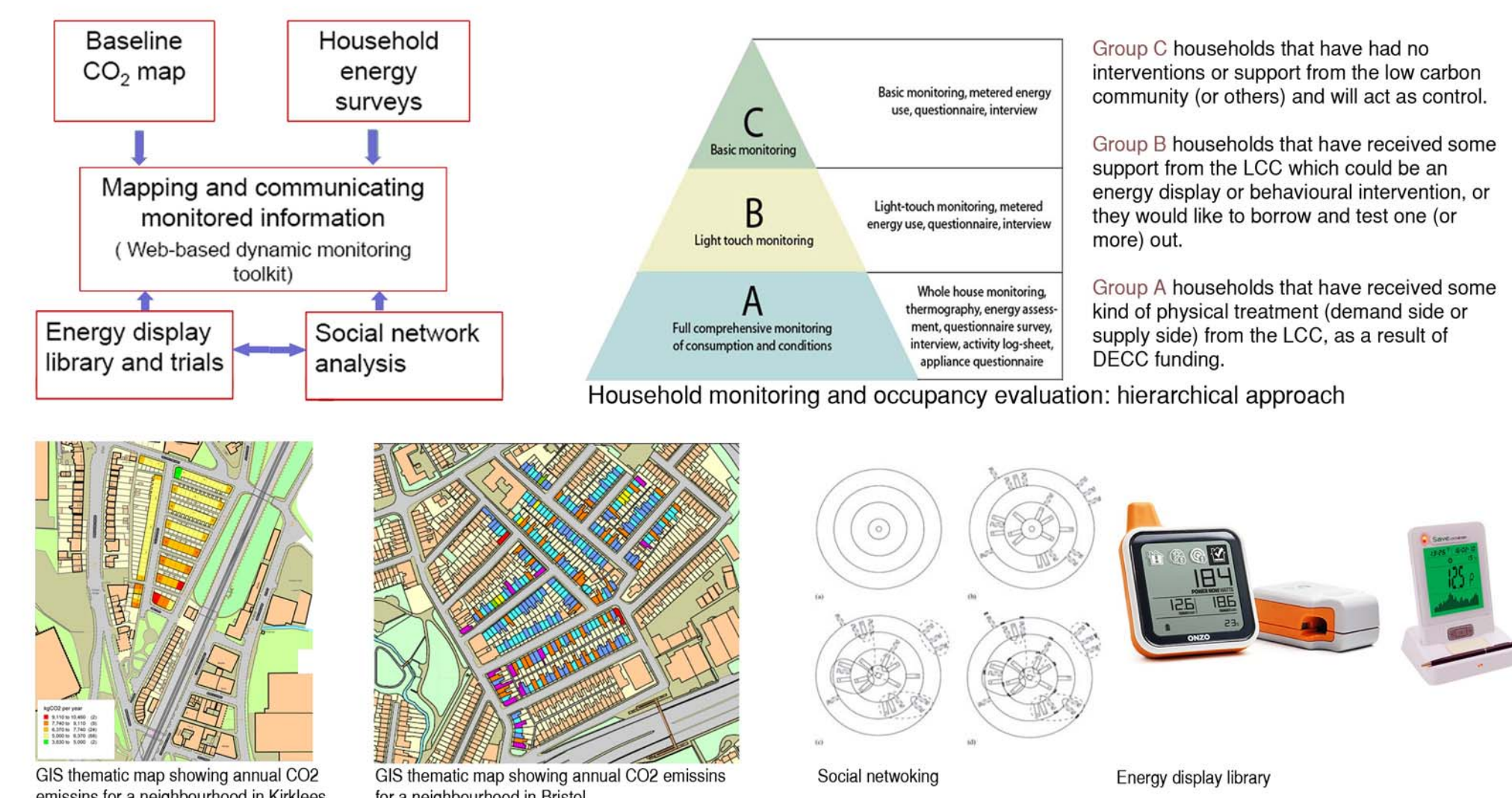   Focus groups (three) and community events (four) (WP1)

2. **House hold level**
Carbon mapping, Household level monitoring, occupancy feedback surveys (WP2), Energy display library and trials in households (WP3a), Social network analysis: mapping individual and community networks and their role in information exchange (WP3b)

Dissemination/ knowledge exchange Knowledge and policy transfer workshops (WP4)

Case study low carbon communities

Sustainable Blacon
- Two homes to be retrofted to level 3 of CSH
- Energy management (active and passive) in 50 household

Hook Norton
- Community Renewables in schools and installation of solar thermal panels on further 20 homes
- Whole- house retrofit of 6 homes and insulation for 40 homes

Awel Aman Tawe
- Two wind turbines to be installed to generate electricity to meet the needs of 2000 homes, and generate income for the community

Eco-Easterside
- Two wind turbines in Primary Schools
- 600 homes with energy monitors and insulation
- Solar hot water and air source heat pumps to be fitted in 20 homes

Kirklees
- Retrofit of 3 community centres and 30 domestic properties (fabric and system)
- Detailed energy awareness-energy displays, softwares in schools and community centres

West Oxford
- Installation of a wind turbine and,
- Solar PV panels for local secondary school (100kWp system), supermaket, a not for profit organisation, Social Housing (10kWp systems over 5 houses) and 5 private homes
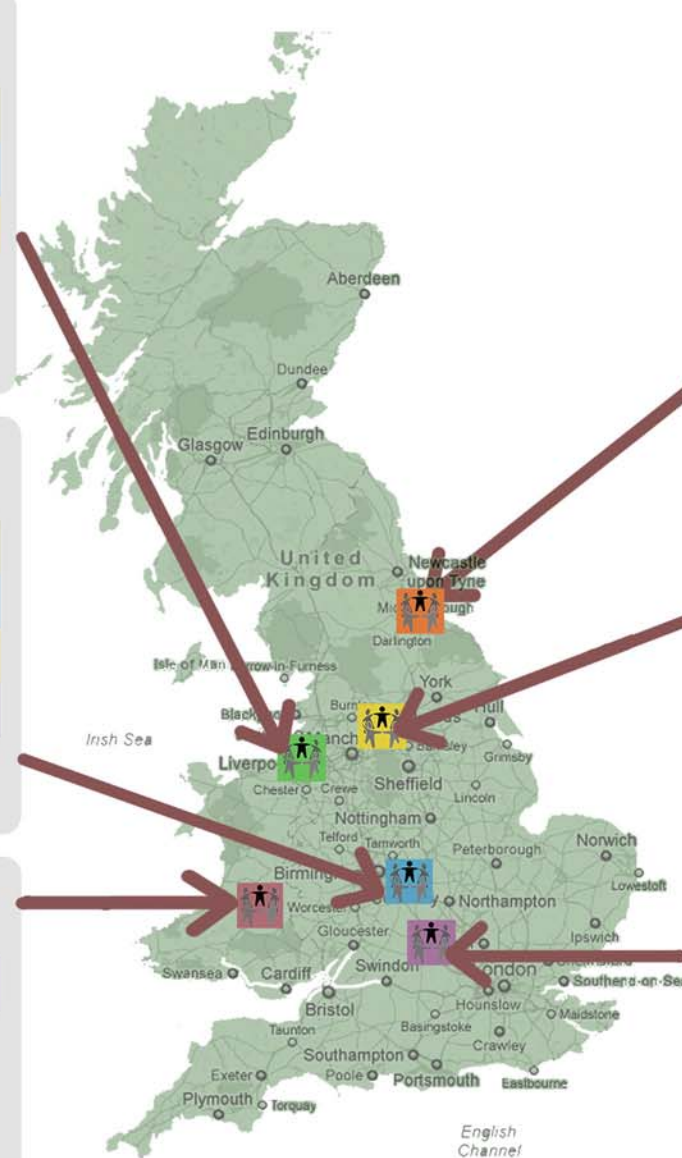
Type of low Carbon Intervention in Communities:
- Technological Building Level-demand side Fabric
- Technological Building level- supply side LZC technologies
- Behaviour Change- use of smart meters/ feedback
- Community Renewable- Wind Turbine, PV Arrays

Community Events as part of the approach at community level

Action research with communities

Household level research

Group C households that have had no interventions or support from the low carbon community (or others) and will act as control.

Group B households that have received some support from the LCC which could be an energy display or behavioural intervention, or they would like to borrow and test one (or more) out.

Group A households that have received some kind of physical treatment (demand side or supply side) from the LCC, as a result of DECC funding.

Household monitoring and occupancy evaluation: hierarchical approach

GIS thematic map showing annual CO2 emissins for a neighbourhood in Kirklees | GIS thematic map showing annual CO2 emissins for a neighbourhood in Bristol | Social networking | Energy display library

EVALOC outputs relevant for communities

Community engagement toolkit

Practical, readable guide to the use of metering and feedback technologies

Community energy monitoring toolkit

'Communication pathways' for rolling out energy discourses

Monitored dataset

Experts construction workshop; dedicated website, final end-of-project conference

Emerging findings

Action research is appropriate for the evaluation and improvement of energy use in a community level.

Need for frequent negotiation and adjustment.

Methods, approaches and research outputs are relevant for communities.

Data protection of energy data and privacy of households needs to be carefully considered.

Leads to co-production of evidence-based knowledge on energy reduction by Communities and Universities

Use of feedback at a number of levels tends to develop a shared language, based on experience and 'reality checks'.

Understanding of resident behaviour could be used to inform briefing and solutions for low carbon refurbishment of UK homes

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