Overview of Building Performance Evaluation research
OISD: Low Carbon Building Group, 26 November 2015

Professor Rajat Gupta, Conference Convener
Director of Oxford Institute for Sustainable Development and Low Carbon Building Group
rgupta@brookes.ac.uk
Oxford Institute for Sustainable Development (OISD)

Multi-disciplinary research institute in the Faculty of Technology, Design and Environment comprising eight research groups, with cross-cutting research themes.

Help create a sustainable future by undertaking cutting-edge research on sustainability in the built and natural environments at all scales.

www.oisd.brookes.ac.uk
OISD: Low Carbon Building Group

• About 13 academics and researchers
• Current portfolio of work funded through
  • Research Councils: ESRC, EPSRC
  • Government (Innovate UK)
  • European Commission
  • Industry
  • UNEP, World Bank
• Ongoing projects worth nearly £5 million
• MSc Sustainable Building programme
• Honours/awards: RIBA President’s award, AJ Retrofit award 2011

http://architecture.brookes.ac.uk/research/lowcarbonbuilding/
Our BPE research portfolio
BPE research portfolio

- BPE studies of domestic, non-domestic, (new-build and refurbishment) over 15 years.
- Flagship PGT module on POE: 12 years
- Case studies investigation of building performance to understand cause and effects.
- Period of investigation: construction stage through to in-use
- Socio-technical research using mixed-methods approach.
- Externally-funded research:
  - Innovate UK
  - Research Councils (EPSRC/ESRC)
  - EU Horizon 2020
  - Industry
Appointed by Innovate UK as building performance evaluator to provide technical advice and peer review at the project and programme level.

Meta-study on characteristics and performance of MVHR systems
(with Glasgow School of Art and Four Walls Ltd.)

Funded by: Innovate UK Building Performance Evaluation programme
BPE: advanced low carbon domestic retrofits

BPE studies of retrofits helped to establish a baseline (before retrofit) performance against which the post-retrofit performance was evaluated.

Funded by: Innovate UK Retrofit for the future programme
BPE: innovate non-domestic retrofits

Oldbury house (Bristol): Monitoring and evaluation of an innovative glazing and ventilation package for a historic building used as offices.

Garth house (Bicester): Monitoring and evaluation of a low-energy, in-situ retrofit of a historic building used as offices.

Funded by: Innovate UK Invest in Innovative Refurbishment programme
EVALOC: evaluating community-led retrofits

- Four-year research project funded by ESRC/EPSRC. Grant: £1.14million
- Partner institution: ECI, University of Oxford.
- Interdisciplinary evaluation of six selected low carbon communities in terms of their IMPACTS and EFFECTIVENESS on changing behaviours and achieving energy savings.
- Socio-technical monitoring and evaluation of 90 dwellings having community-led energy efficiency, renewable systems and behavioural change interventions across six communities.
- Final report available on www.evaloc.org.uk
EVALOC Toolkit (ENACT): M&E theme

Welcome to the EVALOC Energy and Communities Toolkit (ENACT)

Summary of findings

to provide quick overview of main findings

Case study:
to provide insights about a specific case study

Tools:
to provide specific guidance / tools for communities

Report:
detailed description about a certain topic

www.evaloc.org.uk
BPE and climate change adaptation
Summer overheating in Care homes

• Measuring risk and experiences of overheating in care settings, and preparedness of care sector in tackling overheating.

• Joseph Rowntree Foundation (JRF) funded study, which involves
  • Environmental monitoring
  • Climate change modelling
  • Interviews with designers, managers, care staff and residents.

• Partners: Lancaster University, University of Manchester.

• Discovering mismatch between climate change modelling and environmental monitoring of care and extra care homes.
Next generation BPE research

• **I-Life:** insurance-backed warranty for whole life housing energy performance
  - Duration: 2.5 years (2015-2018)
  - Funded by: Innovate UK’s Building Whole-Life Performance Programme
  - **Partners:** Encraft Ltd (lead); Willmott Dixon Energy Services Ltd; Building LifePlans Ltd; Virtechs, Amberley Advisers
  - Funding: £552,000

• **Management of housing performance information (HAPI)** through hindsight, insight and foresight
  - Duration: 1 year (2015-2016)
  - Funded by: Innovate UK’s Innovate UK’s Supply Chain Integration in Construction competition
  - **Partners:** Zero Carbon Hub (lead), Joseph Rowntree Housing Trust
  - Funding: £125,000

• **ZERO PLUS:** Achieving near Zero and Positive Energy Settlements in Europe using Advanced Energy Technology
  - Duration: 4 years (2015-2019)
  - Funded by: European Union Horizon 2020 programme (GA No. 678407)
  - **Partners:** Sixteen academic and industry partners from Cyprus, France, Germany, Greece, Israel, Italy, Switzerland and the UK. Coordinator: National & Kapodistran University of Athens
  - Funding: €3.6m (£2.7m)

• **WLP+:** Whole Life Performance plus
  - Duration: 2 years (2015-2017)
  - Funded by: EPSRC (Oxford Brookes) and Innovate UK (industry partners)
  - **Partners:** Low Carbon Maintenance and Buildings (LCMB - lead); British Council for Offices (BCO); Constructing Excellence; King’s College London (Estates Department); Emcor FM; Argent
  - Funding: £371,000
Our new BPE research booklet launched today summarises our research in this area.
Thank you!

Professor Rajat Gupta
Matt Gregg
Laura Barnfield
Dr Adorkor Bruce-Konuah
Dr Bob Irving
Chiara Fratter

http://architecture.brookes.ac.uk/research/lowcarbonbuilding/