



emBRACE

Building Resilience Amongst Communities in Europe



Identify key dimensions; Develop indicators & models; Provide a conceptual framework; Build networks

emBRACE Field Study: London, UK. King's College London + University of Reading, UK

emBRACE Building Resilience Amongst Communities in Europe

London Case Study Aims

To understand how vulnerability and resilience to heatwaves are shaped by local-level behaviour and decision making.

- Explore the socio-cultural aspects of resilience by focusing on learning, decision events, and social networks of vulnerable individuals and their carers
- Develop and evaluate a biophysical model which can relate model parameters (that are related to decisions) to thermal outcomes so the impact of decisions can be compared

University of Reading | www.reading.ac.uk | www.embrace-eu.org | www.kcl.ac.uk

emBRACE Building Resilience Amongst Communities in Europe

London Geographical Context

Focus: **Borough of Islington, Waltham Forest/Stratford and the City of London**

The Barbican, City of London | Islington | Waltham Forest

University of Reading | www.reading.ac.uk | www.embrace-eu.org | www.kcl.ac.uk

emBRACE Building Resilience Amongst Communities in Europe

London Hazard Context

London

- Urban heat island: up to 10° C warmer than surrounding countryside
- Four heatwave events over the last ten years

Heat July 2013

| Heatwave Year | Death toll |
|---------------|------------|
| 2003 | 2000 |
| 2006 | 680 |
| 2009 | 300 |
| 2013 | 760* |

Case Study

- High % of +65 age group
- High + low income population
- 2nd highest population density in the UK (Islington)

University of Reading | www.reading.ac.uk | www.embrace-eu.org | www.kcl.ac.uk

emBRACE Building Resilience Amongst Communities in Europe

Preliminary findings: Indicators

Case study priority themes – emBRACE Framework

- CAPACITIES LOOP**
 - Social capacities
 - Physical capacities
- ACTION LOOP**
 - Preparedness
 - Response
- LEARNING LOOP**
 - Dissemination
 - Risk perception

Qualitative analysis, informed by emBRACE resilience components and framework

- Focus on behavioural indicators of resilience and on decision making
- Quantitative analysis of biophysical data

University of Reading | www.reading.ac.uk | www.embrace-eu.org | www.kcl.ac.uk

emBRACE Building Resilience Amongst Communities in Europe

Stakeholder Engagement

Engagement with elderly and vulnerable individuals at:

- Peel Centre, the St Luke Community Club and the Clerkenwell Lunch Club
- Barbican Residents Association
- Barbican gardening club and Barbican breakfast club
- Age UK Stratford

University of Reading | www.reading.ac.uk | www.embrace-eu.org | www.kcl.ac.uk

emBRACE Building Resilience Amongst Communities in Europe

London Methods: Project Team – data collection

- ~70 interviews semi-structured/structured interviews
- Personal diaries
- Temperature and humidity sensors in homes, summer and winter
- Local scale flux observations
- Model development, evaluation and application (SUEWS)

| Site | Semi-structured interviews | Structured interviews | Diaries |
|-------------------|----------------------------|-----------------------|----------|
| Barbican | 8 | 0 | 4 |
| Islington | 25 | 13 | 4 |
| Waltham/Stratford | 0 | 30 | 0 |
| TOTAL | 33 | 43 | 8 |

embrace-eu.org | www.kcl.ac.uk

emBRACE Building Resilience Amongst Communities in Europe

Preliminary findings

Our findings challenge the focus on medical and epidemiological drivers of resilience...

| Level | Description |
|---------|-----------------------|
| Level 0 | Long-term planning |
| Level 1 | Heat Preparedness |
| Level 2 | Heat forecast - Alert |
| Level 3 | Heat Action |
| Level 4 | Major Incident |

University of Reading | www.reading.ac.uk | www.embrace-eu.org | www.kcl.ac.uk

emBRACE Building Resilience Amongst Communities in Europe

...with a new framework on assessing community resilience to heat stress

- Focus on **socially resilient behaviour** supplements medical vulnerability characteristics
- Social isolation** as a risk factor among both, high and low income residents
- Trusted sources of information:** social networks of family and friends vs. expert knowledge

University of Reading | www.reading.ac.uk | www.embrace-eu.org | www.kcl.ac.uk

emBRACE Building Resilience Amongst Communities in Europe

Preliminary Findings: Community Resilience

- Medical and technical determinants of vulnerability interact with social dimensions of resilience
- Affluence and income status relate to low risk perceptions, but can also be associated with constraints on resilience through lacking social networks

embrace-eu.org | www.kcl.ac.uk