Linking community resilience and infrastructure resilience

Sarah Bell
s.bell@ucl.ac.uk
Community and infrastructure resilience

- A research gap?
- Community resilience
- Bottom-up infrastructure
- Floods and drainage
Resilience

- Ecology
- Engineering
- Psychology
- Social work
- Community development
Social resilience

the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change.

(Adger, 2000)
Resilience

The capacity of an individual, community or system to adapt in order to sustain an acceptable level of function, structure, and identity.

(Cabinet Office [after Demos, 2009], 2011)
Community resilience

Communities and individuals harnessing local resources and expertise to help themselves in an emergency, in a way that complements the response of the emergency services.

(Cabinet Office, 2011)
Community resilience

• Adapt to changing environment
• Bounce back from extreme events
• May emerge or transform under changing conditions
• More than the sum of individual actions and behaviours
• Beyond formal institutions
Community resilience

- Disaster preparedness
- Disaster response
  - Emergent responses
  - Social networks
  - Key social actors
- Disaster recovery
Community resilience

- Critical infrastructure planning
- Vulnerable communities and individuals
- Urban planning
- Building design
- Citizen science and co-design
National resilience planning

- Category 1 and 2 responders
- Emergency preparedness
- Local resilience forums
- Infrastructure resilience
- Community resilience
Community flood resilience

- Lead Local Flood Authorities
  - Public consultation and engagement in defence schemes
- Local flood forums
- Voluntary sector
- Community engagement?
  - Local resilience forums and local communities?
Bottom-up infrastructure

Infrastructure provision based on direct engagement of communities in engineering design and decision-making to deliver resilient, sustainable systems that meet the needs of people and the environment under conditions of uncertainty.
Bottom-up infrastructure

- LWEC Challenge Fellowship
- 5 year programme
- Repowering, Tideway, HS2, TEAM2100, Arup, Crossrail, Thames Water, Greater London Authority
Bottom-up infrastructure

- Case studies
- Community of practice
- Document best practice
- Appraisal and decision support tools
- Standardised engineering methods
Community engagement in planning and design for flood resilience

- Engagement throughout the infrastructure lifecycle
- Modelling
- Options generation and assessment
- Multiple benefits
- Funding
Chart 9.A: Properties at risk from flooding, by type of property and source of risk

Probability of flooding, 2013


National Infrastructure Plan 2014
Community engagement in flooding defence

• Competency groups
  – Whatmore et al
  – Flood modelling and catchment based defence
  – Drought responses
Community SuDS

- Engineering design
- Community engagement
  - Environmental education
  - Multiple benefits
  - Acceptability and planning
- Can we do both, together?
Infrastructure and community resilience

• Can infrastructure planning and design enhance community resilience?
  – process and outcome

• Does community engagement deliver more resilient infrastructure and communities?
  – Different infrastructure?
  – Different communities?
  – Different engineering?
Linking community and infrastructure resilience

- Upstream engagement
- Learning from local experience
- Support and build resilient social networks
- Guiding science and engineering
- Document and standardise engineering methods