The role of built environment professionals in disaster management

Prof Dilanthi Amaratunga
Overview

• Background concepts
  – Defining a disaster
  – Scale of the challenge
  – Disaster management lifecycle

• Construction’s role in disaster management
  – Built environment professions and the lifecycle
  – Skill gaps

• Existing and future research
Role of built environment professionals in disaster management

Disaster management lifecycle

- Mitigation
- Disaster
- Relief
- Transition
- Reconstruction

CENEAST
Lithuania, March 2014
Prof Dilanthi Amaratunga

University of Salford
MANCHESTER
Disaster management lifecycle

- Disaster
- Sustainable development
- Medium term recovery
- Transition
- Humanitarian aid
- Anticipate, assess, prepare and prevent
Disaster management lifecycle

- Continuous
- Many years
- Months
- Weeks
- A few days to a few weeks
Reconstruct community so that it is better prepared for future disasters.
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Increased community resilience

Disaster

Disaster

Disaster

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Resilience

• “the ability of the community to recover following the impact of a disastrous event” (Fox, 2002)
• “the capacity to use change to better cope with the unknown: it is learning to bounce back” Douglas and Wildavsky (1982)
• Emergent behaviour which is improvised and adaptive (Dynes, 2003)
• Creativity is vital (Kendra and Wachtendorf, 2003)
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What is the built environment professional’s role in the disaster management lifecycle?

- Mitigation
- Transition
- Relief
- Reconstruction
Discussion

What built environment related challenges do communities face during the disaster management lifecycle?

What skills can built environment professionals contribute to address these challenges?

- This will help us to critically think about your contribution in tackling/managing disasters
Construction’s role

Typically engaged in a range of critical activities:
• temporary shelter before and after the disaster;
• restoration of public services such as hospitals, schools, water supply, power, communications, and environmental infrastructure, and state administration;
• and, securing income earning opportunities for vulnerable people in the affected areas

Building a dyke to protect against flooding and landslides
Copyright: Felipe Parado (PREDES), Peru
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Disaster

Mitigation

Relief

Transition

Reconstruction

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Disaster Mitigation

Reconstruction

Relief

Transition

Business continuity planning
Damage assessment models
Capacity building
Secure design
Materials to reduce explosion-induced projectiles
Identify, source and secure land for safe housing
Advise on new and revised building codes
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Needs assessment of survivors

Rapid mapping of affected areas – remote sensing and GIS

Plan recovery effort and logistical planning - computerised building plans, structural analysis tools

Restoration of essential services

Housing needs assessment

Plan and construct transitional/temporary shelter

Support community surveys and mapping exercises

Repair lightly damaged property

Project planning and contract management
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Sustainable development
Training on safe, sustainable and appropriate building and construction methods

Financial planning and management
Development finance advice
Project management

Plan and rebuild damaged and destroyed homes
Identify, survey and procure safe land for new housing
Re-establish damaged major infrastructure
Assist in property rights and claims

Mitigation
Disaster
Relief
Transition
Reconstruction
Traditional role of built environment ‘discipline’

Max Lock Centre (2006)

In the longer term, improved governance, policies, planning, management and capacity-building can provide the framework for better access by households and local communities to the professional expertise and knowledge within business, local government and civil society.
Where property and construction skills can add value to disaster mitigation and reconstruction...
The role of built environment professionals and the need for inter-disciplinary collaboration

“At every stage, the built environment professions have invaluable expertise and a key role to play. Working in multi-disciplinary teams and with local partners and intermediaries is essential. This kind of activity requires a special and new set of professional skills that need to be shared across all the built environment professions”

RICS, 2007
Where professional expertise is needed......

*In the foreseeable future, in most low-income developing countries, professional skills and expertise in the built environment will remain a scarce resource, particularly in the more remote regions*”

RICS, 2007
“This requires trained surveyors and other built environment professionals to ‘think outside the box’ and to work with each other, with other professional intermediaries (e.g. the medical profession) and with skilled, non-professional intermediaries, to make the most cost effective use of their existing skills and knowledge”

“In addition, new skills are needed to work with the very poor communities who are worst affected by disasters, or with the agencies and intermediaries who are engaged with them. Major disasters hit poor communities hardest, both in terms of numbers immediately affected, and through prolonged suffering during reconstruction”

RICS, 2007
“Along with the better use of local human resources, reconstruction should maximize the use of locally-sourced materials, including, in particular, recycling the debris of the disaster. The challenge for reconstruction is to ensure that what is built is better than what it replaces, without sacrificing cultural appropriateness and support for local economic recovery, for the sake of technical efficiency and expediency”

“Establishing and restoring property rights can be a major hurdle to locally appropriate reconstruction, and there is a huge demand for professional support in this area”

RICS, 2007
Skills gaps

- Lack of capacity for needs assessment and requirements capturing
- Lack of capacities for Inefficient Management & Coordination, construction management – a key professional issue
- Lack of focus on disaster prevention (e.g. in Sri Lanka, planning culture is not strong)
- Capabilities for immediate responses
- Skills to concentrate on re-construction efforts – at the same efficient and effective rate associate with the distribution of general humanitarian aid
What hinders the full potential of construction industry’s contribution in managing disasters?

- Lack of institutional capacity in delivering adequate training
- Problems associated with regulatory and legal powers
- Security problems/communication barriers
- Equity problems, procurement delays, non-availability of materials and the lack of suitable and new procurement methods
- Local contractors’ lack of capacity
- Achieving the balance between immediate and long term reconstruction activities
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• Assessing disaster-related damage
• Land surveying, GIS and rapid mapping of disaster impacts and risks
• Monitoring funding
• Valuation, cost planning and spending priorities; development finance
• Procurement and project management
• Sourcing construction materials and equipment
• Building quality audits pre- and post-disaster, particularly resistance to disaster risks
• Aiding logistical planning
• Aiding local government land administration, cadastral mapping
• Knowledge of land and property legislation, providing support on land rights and claims
• Knowledge of local regulatory frameworks and ways they could be improved
• Training and knowledge transfer
• Disaster risk assessment
• Links with other built environment professions; inter-disciplinary and team working
• Contacts with local business and industry; networking
• Knowledge of appropriate forms of disaster-resistant construction and engineering

Source: Max Lock Centre, University of Westminster (2006)
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  – Exercise
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CIB and UN Initiative: Enhancing capacity to tackle disasters
Background

- “In the longer term, improved governance, policies, planning, management and capacity-building can provide the framework for better access by households and local communities to the professional expertise and knowledge within business, local government and civil society, to reduce their risk to natural disasters, and re-build their properties, villages and neighbourhoods when disasters cannot be avoided.”

RICS, 2006
Capacities, Disasters and the Built Environment

• **Aim:**
  - Develop strategies to strengthen the knowledge, abilities, skills and behaviour of individuals and improve institutional structures and processes to ensure that disaster mitigation and reconstruction can efficiently meet its mission and goals in a sustainable way

• **Scope:**
  - Disasters and the built environment
  - Capacity enhancement
  - Mitigation and reconstruction
  - International context
Methodology

• Qualitative methodological approach

• Three main components of data collection
  – Literature review - to identify existing capacities and thereby identify capacity gaps
  – Expert Interviews - to identify existing capacities and capacity gaps
  – Online study
    • Questionnaire - to improve the framework
    • Delphi Study - to identify and prioritise capacity gaps
Methodology

Identification of existing capacity gaps in disaster risk reduction in the built environment & Draft framework for Capacity Development

Finalised Framework for capacity Development & Prioritisation of existing capacity gaps in disaster risk reduction in the built environment

Strategies to Develop Capacities for Disaster Risk Reduction in the Built Environment
### Stages

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Long term capacity development

Analysis  Creation  Utilisation  Retention
Analysis

• The term *capacity building* is misleading

• In practice, improving capacity must take account of the current context

• Capacity development is highly influenced by local context

• The first stage of capacity development focuses on the analysis of existing capacity, and identification and prioritisation of capacity gaps
Creation

• Creating capacity requires enormous efforts and time in understanding the local context

• Facilitate the creation of new capacities through learning opportunities as well as by putting in place processes that enhance adaptability

• Such a foundation is created through formal training, informally through on-the-job training, as well as through accumulation of norms, routines and processes, which promote capacity creation on a continuous basis.
Utilisation

• How developed capacities are mobilised and deployed under realistic conditions

• Efficient and effective use of existing capacities recognises the need to make use of the affected community’s own assets

• Mobilisation of all the creative and innovative capacities that can be found
Retention

• Retain and sustain capacity over time

• Sustainable beyond any initial external intervention

• Sustaining capacity is more likely to occur in the context of stable political, institutional and economic conditions

• Availability of local sources of funding and the capacity to mobilise domestic resources
Stakeholders of DRR in the Built Environment

“Individuals/organisations who are involved in development and implementation of necessary policies, strategies and practices to minimise vulnerabilities, and who are affected by the success or failure of the process of risk reduction”

• Six broad categories of stakeholders