



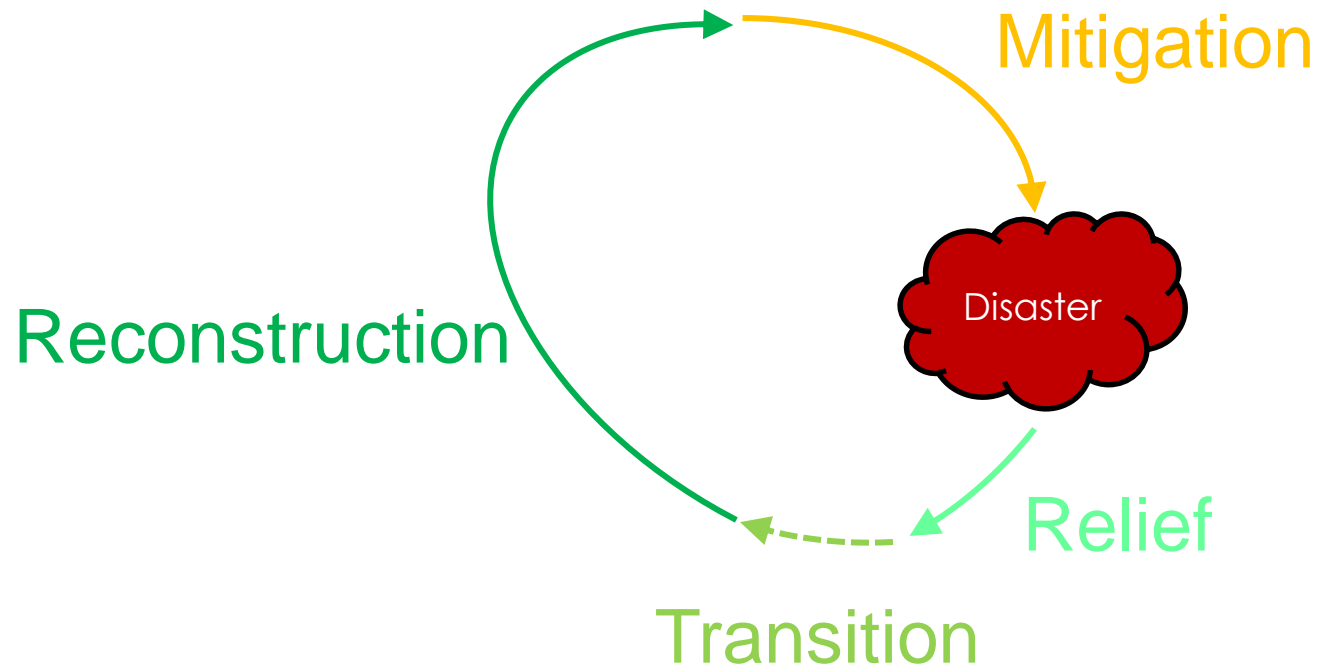
# The role of built environment professionals in disaster management

Prof Dilanthi Amaratunga

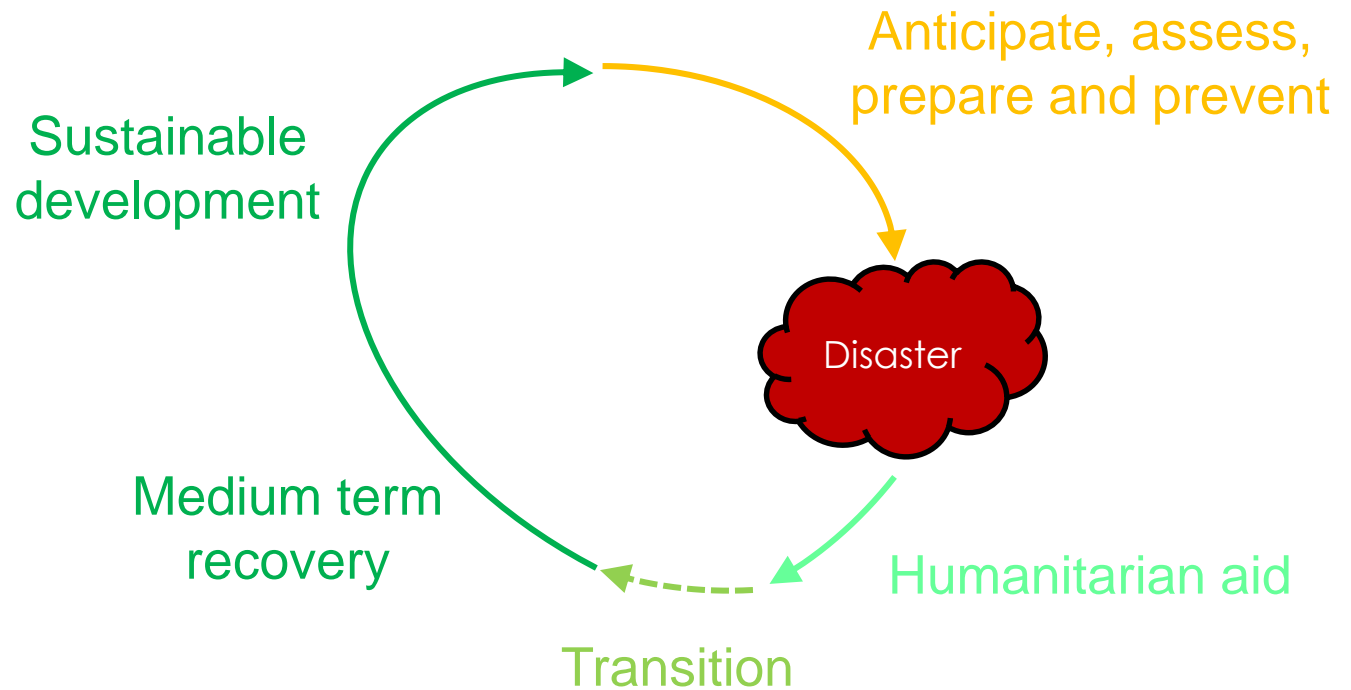
# Overview

- 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

# Disaster management lifecycle

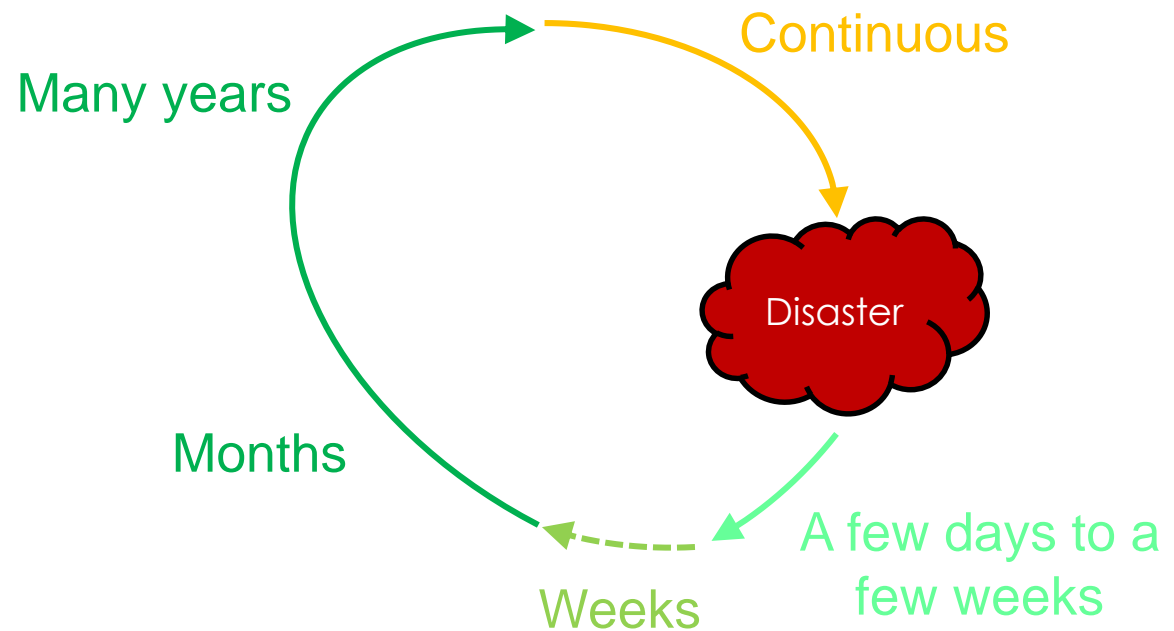


# Disaster management lifecycle





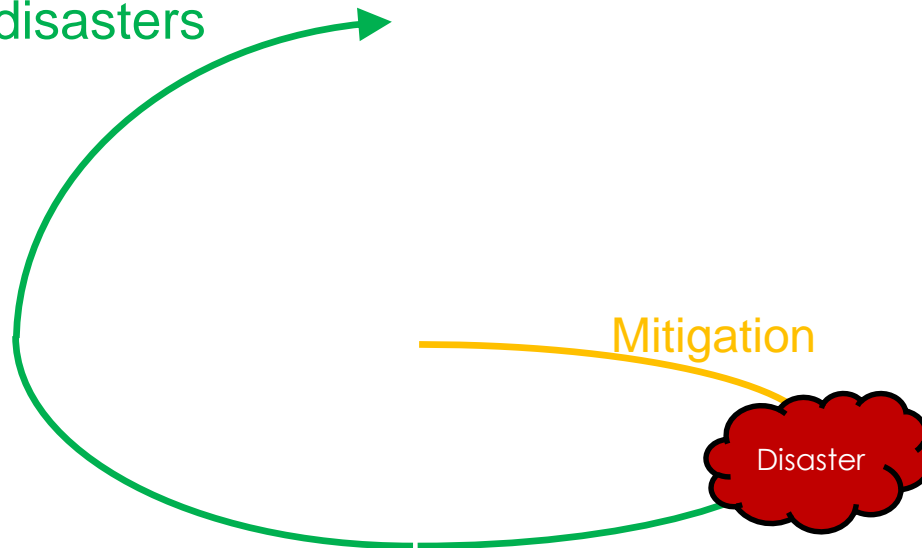
# Disaster management lifecycle



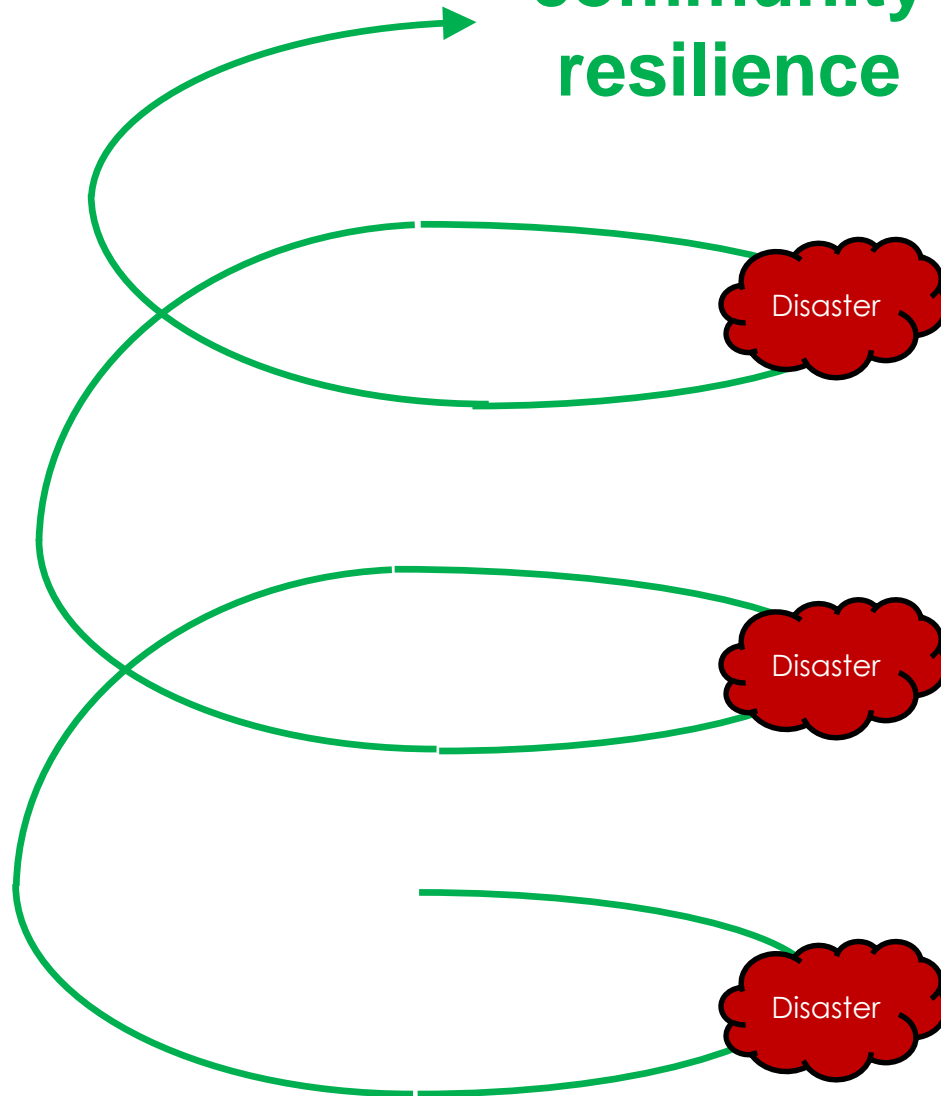
Reconstruct  
community so  
that it is better  
prepared for  
future disasters

Mitigation

Disaster



# Increased community resilience



# Resilience

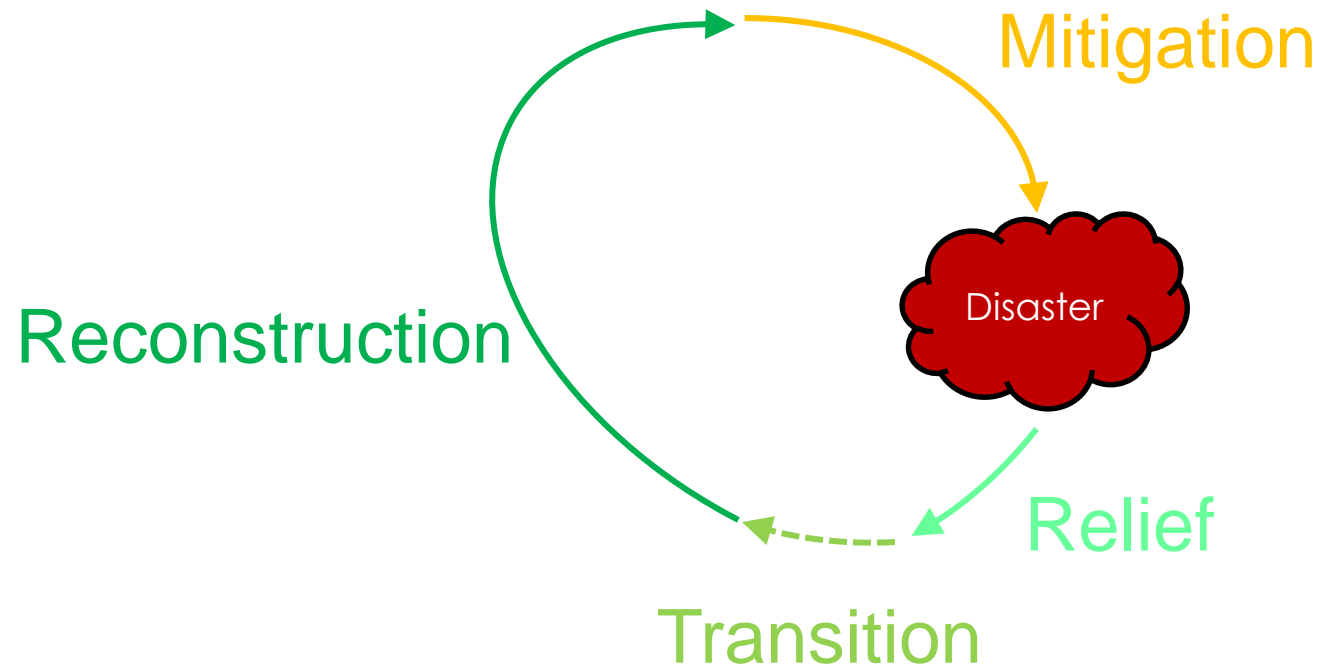
- *“the ability of the community to recover following the impact of a disastrous event”* (Fox, 2002)
- *“the capacity to use change to better cope with the unknown: it is learning to bounce back”* Douglas and Wildavsky (1982)
- Emergent behaviour which is improvised and adaptive (Dynes, 2003)
- Creativity is vital (Kendra and Wachtendorf, 2003)



# 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

# What is the built environment professional's role in the disaster management lifecycle?



# 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

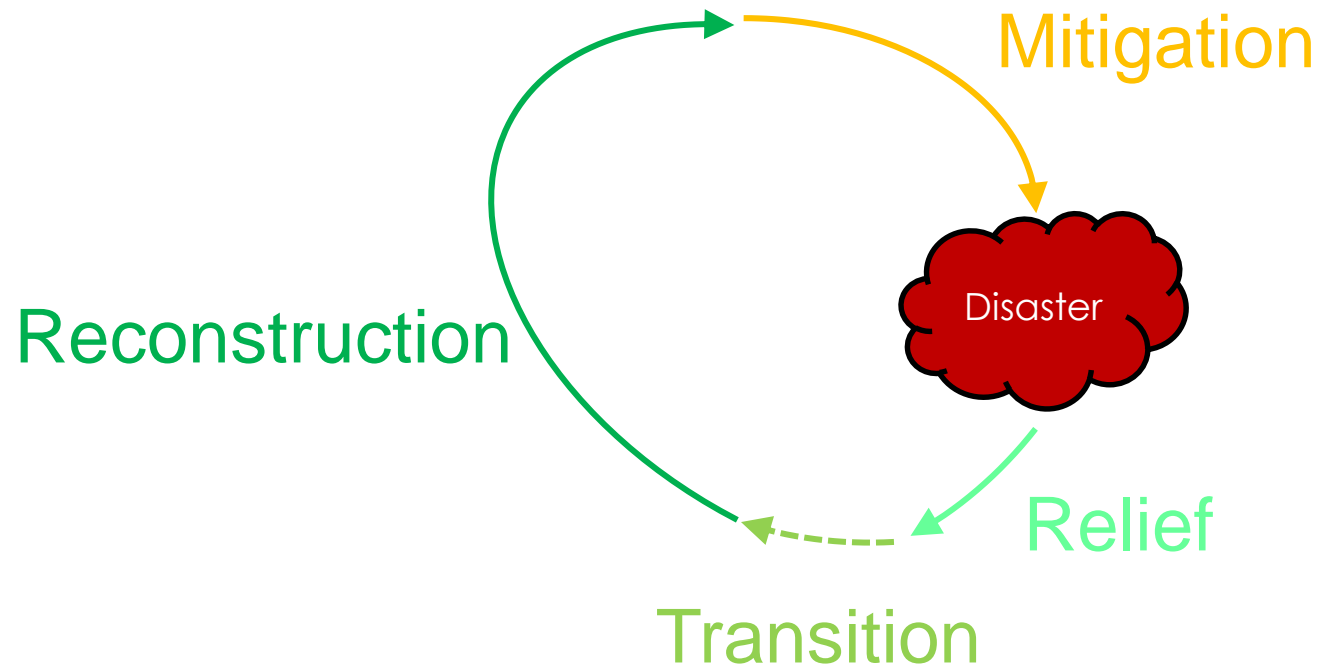
Typically engaged in a range of critical activities:

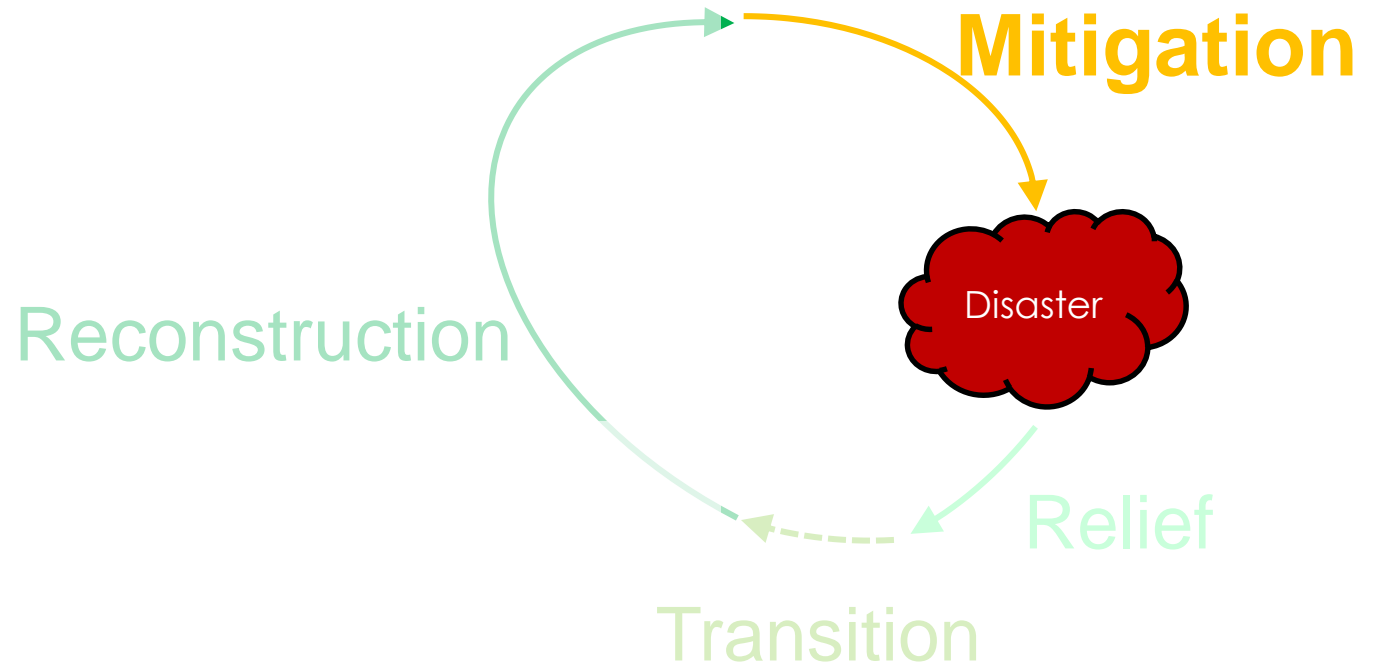
- temporary shelter before and after the disaster;
- restoration of public services such as hospitals, schools, water supply, power, communications, and environmental infrastructure, and state administration;
- and, securing income earning opportunities for vulnerable people in the affected areas

CENEAST  
Lithuania, March 2014

Prof Dilanthi Amaratunga

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





Business continuity planning

Damage assessment models

Capacity building

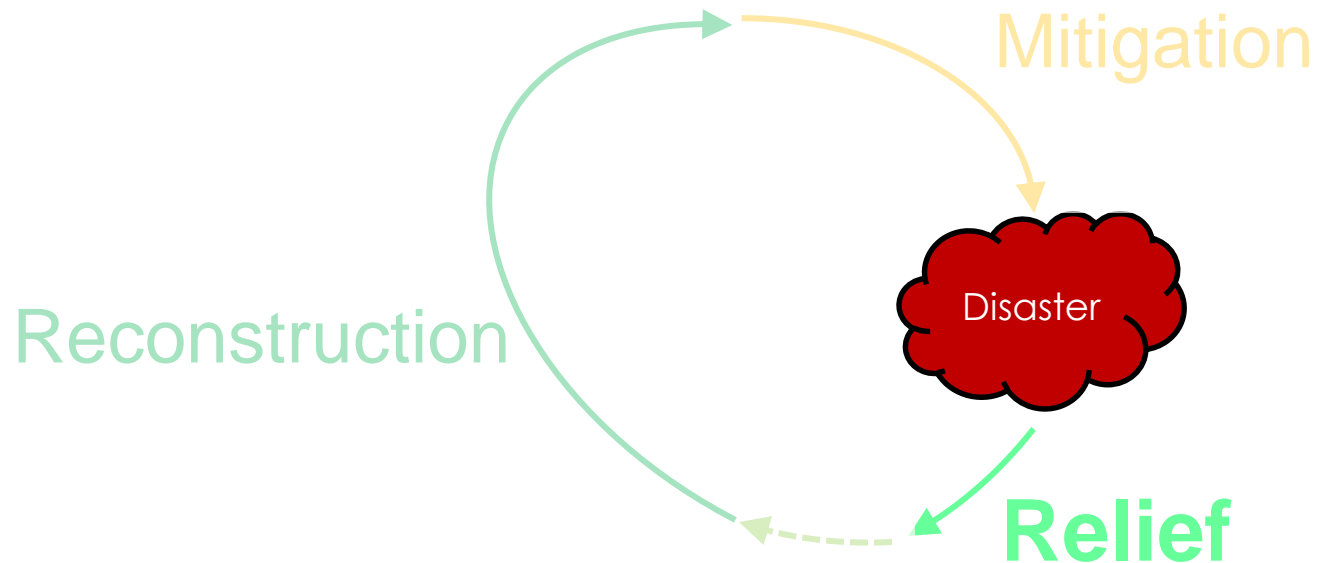
Secure design

Materials to reduce explosion-induced projectiles

Identify, source and secure land for safe housing

Advise on new and revised building codes





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

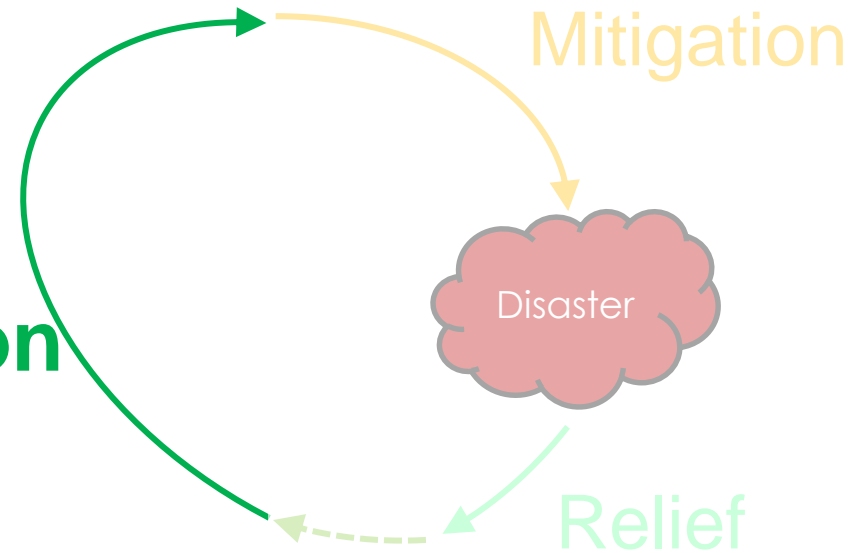
Plan and construct transitional/temporary shelter

Support community surveys and mapping exercises

Repair lightly damaged property

Project planning and contract management

# Reconstruction



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

# Traditional role of built environment 'discipline'

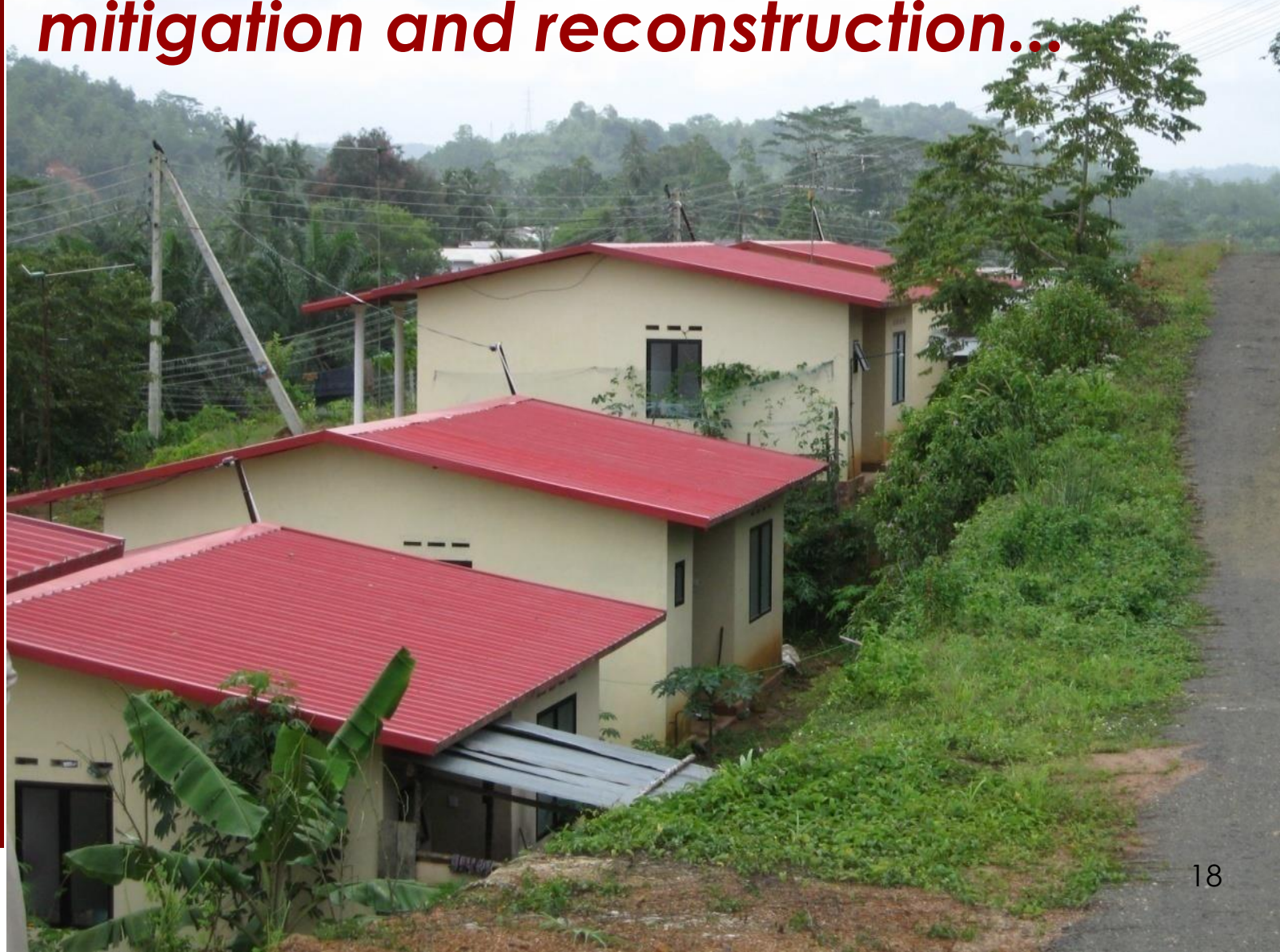
Max Lock Centre (2006)

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

Activities		Key actors/clients:
Phase 1: Relief	Plan recovery effort and logistical planning	UN/IFIs/Government/relief agencies/military/civil defence
	Initial estimation of damage and needs assessment of survivors	UN/IFIs/relief agencies/military/civil defence
	Rapid mapping of affected areas using remote sensing & GIS	Relief agencies/military/civil defence
	Establish information centres	Communities/local NGOs/UN
	Procure and supply emergency shelter	Relief agencies/military/civil defence/private contractors
Phases 2: Transition	Support community surveys and mapping exercises	Communities/local NGOs
	Housing needs assessment and establish baseline and eligibility	UN/IFIs/Government/relief agencies Communities/local NGOs
	Plan and construct transitional shelter/repair lightly damaged property; project planning and contract management	Households/communities/property owners/local NGOs/relief agencies/Government
	Re-establish damaged major infrastructure (road, water, sanitation)	Relief agencies/military/civil defence/private contractors
	Assist in establishing property rights and claims and moderate conflicts	Households/communities/property owners/local governments/local NGOs/relief agencies
Phase 3: Reconstruction period	Assistance and assessment of compensation claims	Households/Government/local NGOs/consultants/insurance companies
	Identify, survey and procure safe land for new housing	Households/communities/property owners/local governments/local NGOs/relief agencies
	Advise on land boundary issues/surveys for cadastral proposes	Local government/ Government/property owners
	Advise on new and revised building codes/land planning regulations	Local government/Government
	Detailed assessment of damage to housing; project planning	Households/communities/property owners/local governments/local NGOs/relief agencies
	Source and procure essential building materials/skilled labour	Relief agencies/military/civil defence/private contractors/communities/local NGOs
	Provide expertise for safe, rapid, sustainable and appropriate building construction	Households/communities/property owners/local governments/local NGOs/relief agencies/Government
	Conduct training on safe/sustainable construction methods	Households/communities/property owners/local governments/local NGOs/relief agencies/ Government
	Financial planning and management; development finance advice; project management	Government/local government/relief agencies/communities/ local NGOs/contractors
	Plan and rebuild damaged and destroyed homes	Relief agencies/contractors/communities/ Government/local NGOs



# *Where property and construction skills can add value to disaster mitigation and reconstruction...*



CENEAST  
Lithuania, March 2014

Prof Dilanthy Amaratunga

## 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*

# Skills gaps

## 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”*

*“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 reconstruction 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



- 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)**

# Overview

- Background concepts
  - Defining a disaster
  - Scale of the challenge
  - Disaster management lifecycle
- Construction's role in disaster management
  - Exercise
  - Built environment professions and the lifecycle
  - Skill gaps
- **Existing and future research**





International Council for Research and  
Innovation in Building and Construction

# CIB and UN Initiative: Enhancing capacity to tackle disasters

CENEAST  
Lithuania, March 2014

Prof Dilanthi Amaratunga



# 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



International Council for Research and  
Innovation in Building and Construction

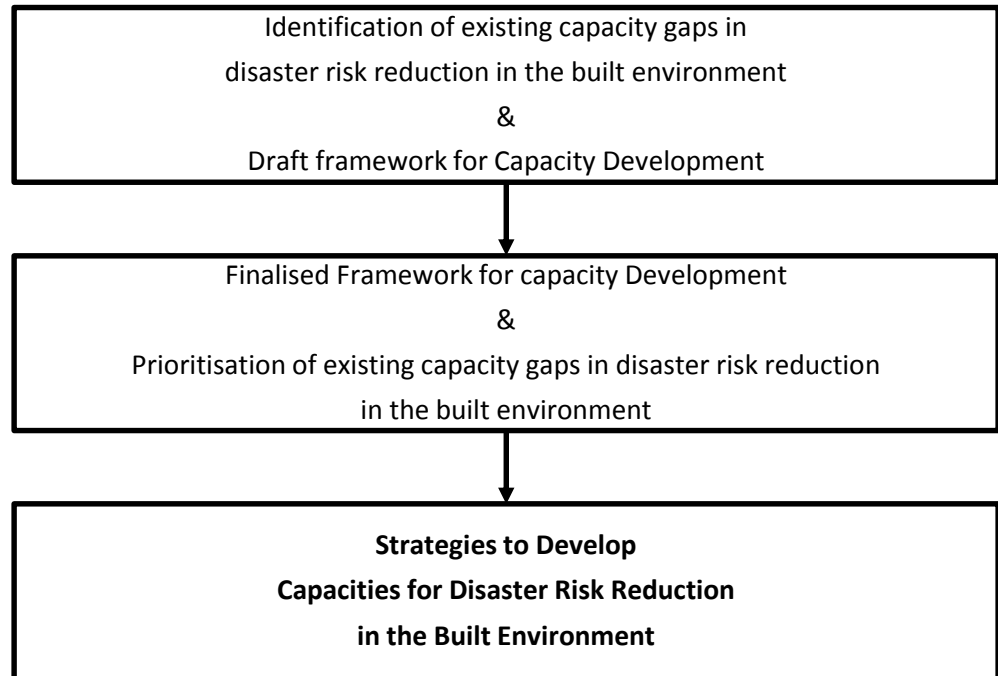
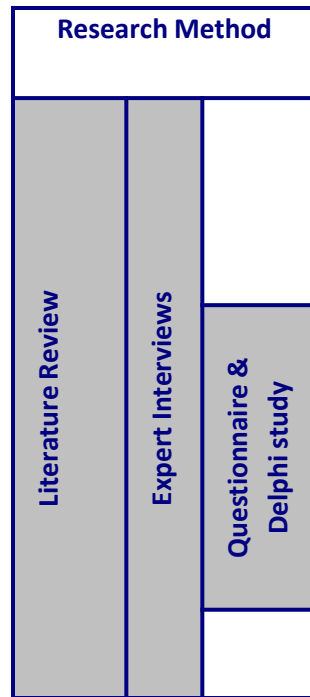
# Capacities, Disasters and the Built Environment

- 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



		Stages			
		Analysis	Creation	Utilisation	Retention
Stakeholders	National and local government:				
	International organisations:				
	Community:				
	Civic society:				
	Private and corporate sector:				
	Academia and professional associations:				



# Long term capacity development

**Analysis**

**Creation**

**Utilisation**

**Retention**

Role of built environment  
professionals in disaster  
management

CENEAST  
Lithuania, March 2014

Prof Dilanthi Amaratunga

# 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