

LSE Cities



The Ove Arup Foundation

LSE Cities public lecture in partnership with Ove Arup Foundation

From Response to Resilience: the role of the engineer in disaster risk reduction

Jo da Silva

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LSE events

Suggested hashtag for Twitter users: **#LSEArup**





Shifting agendas: response to resilience

The role of the engineer in disaster risk reduction

The Institution of Civil Engineers 9th Brunel International Lecture Series

London School of Economics - 4th June 2013

Jo da Silva - Director, Arup International Development

- > Facts and figures
- > An uncertain future
- > Shifting agendas
- > Future horizons

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> A significant issue

Between 2000 and 2009

2 billion people

were affected by natural disasters.

Disaster losses over the last decade averaged almost

US\$100 billion

per annum.

Earthquakes caused

60% of disaster-related deaths

Between 2000-2009.

In 2010 floods in Pakistan affected

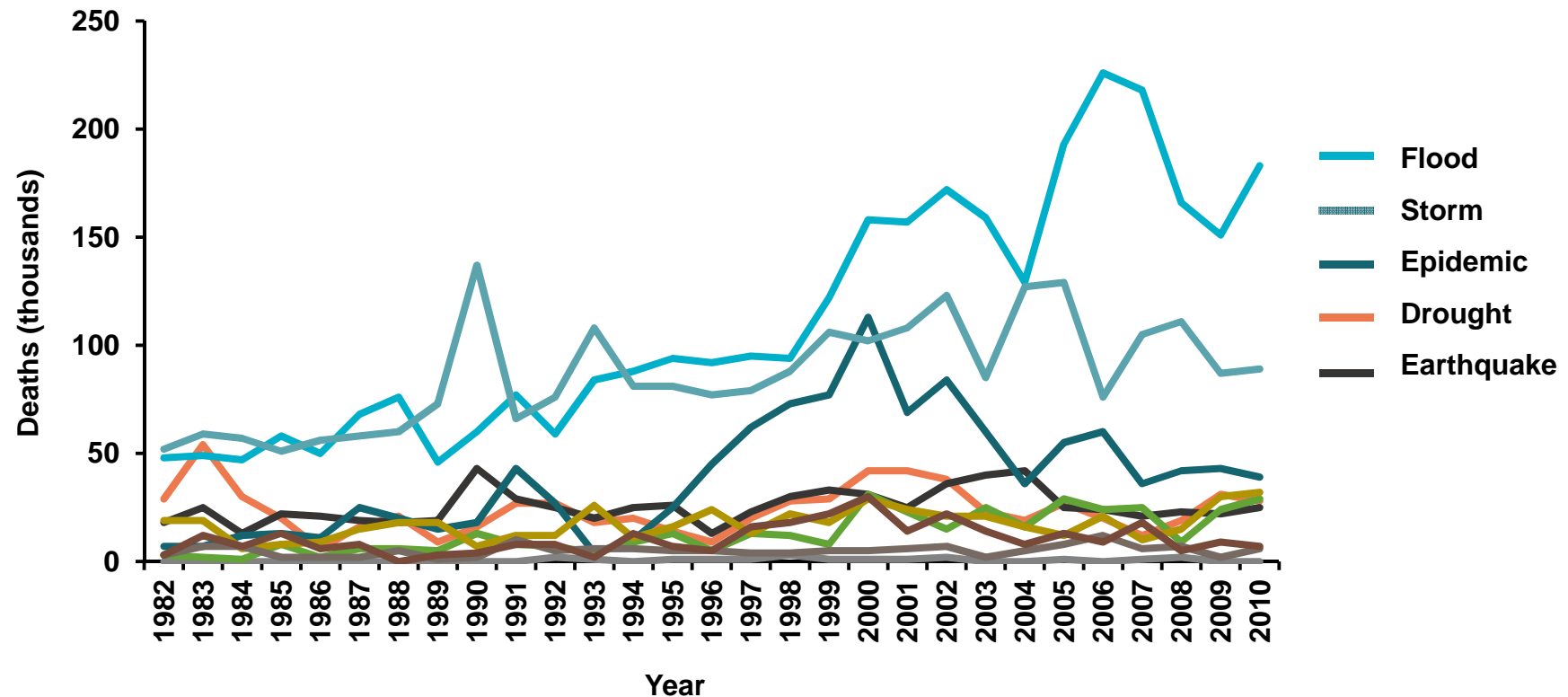
12% of the population

and covered an area the size of Italy.

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> A climatic issue?

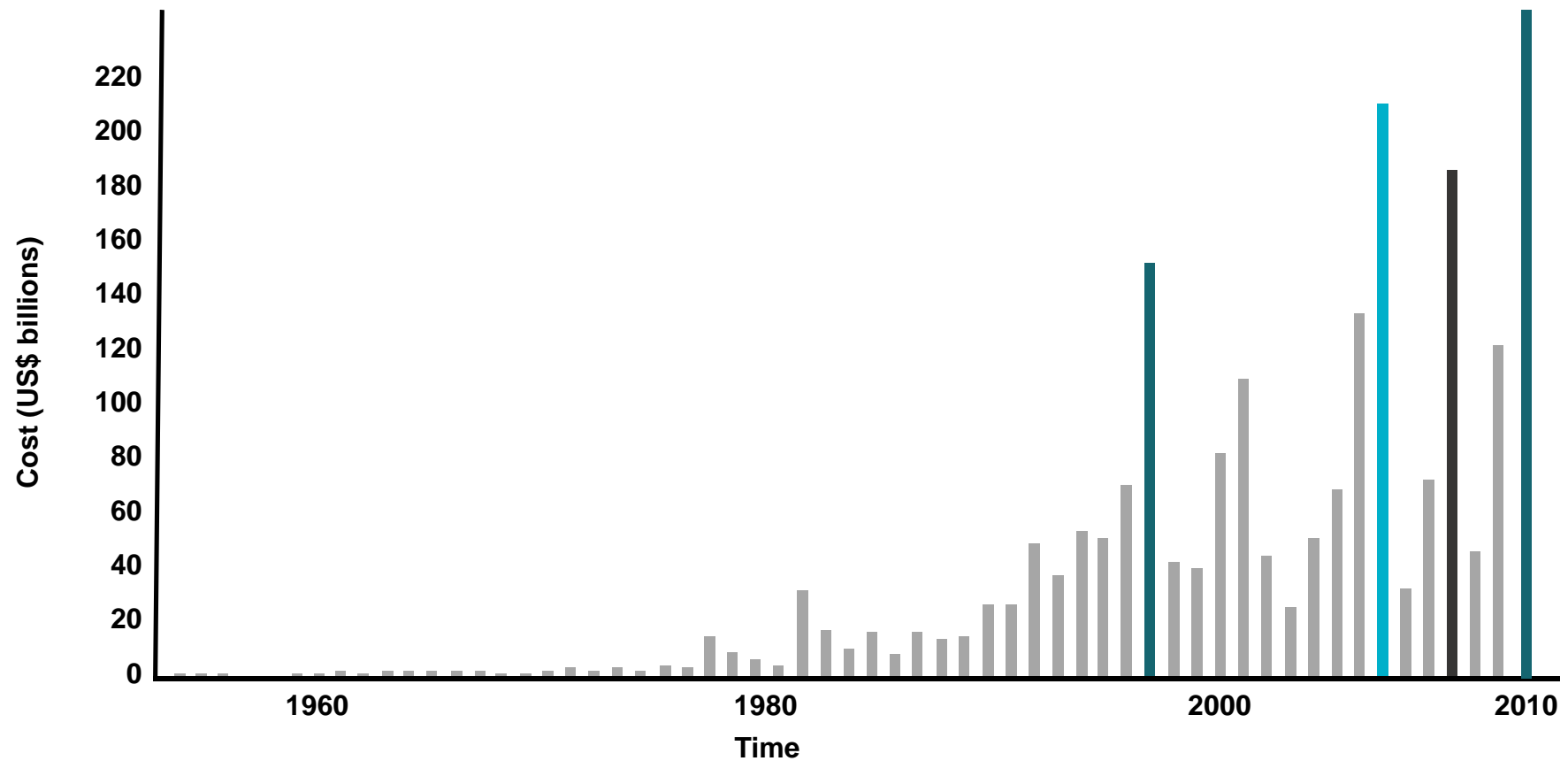
Disasters since 1982



Source: Guha-Sapir et al. (2010) *Annual Disaster Statistical Review 2010: The numbers and trends*. CRED: Brussels

> An economic issue

Estimated damage (US\$ billion) caused by reported natural disasters



Source: EM-DAT (2010)

> A community issue



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> Future challenges



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A humanitarian challenge

‘ a race between the growing size of the humanitarian challenge and our ability to cope; between humanity and catastrophe – and at present, this is not a race we are winning’

The Humanitarian Emergency Response Review (HERR) DFID: 2011

An urban challenge



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Exposure

Top 20 cities for exposed population for weather related hazards



Source: OCED

Vulnerability



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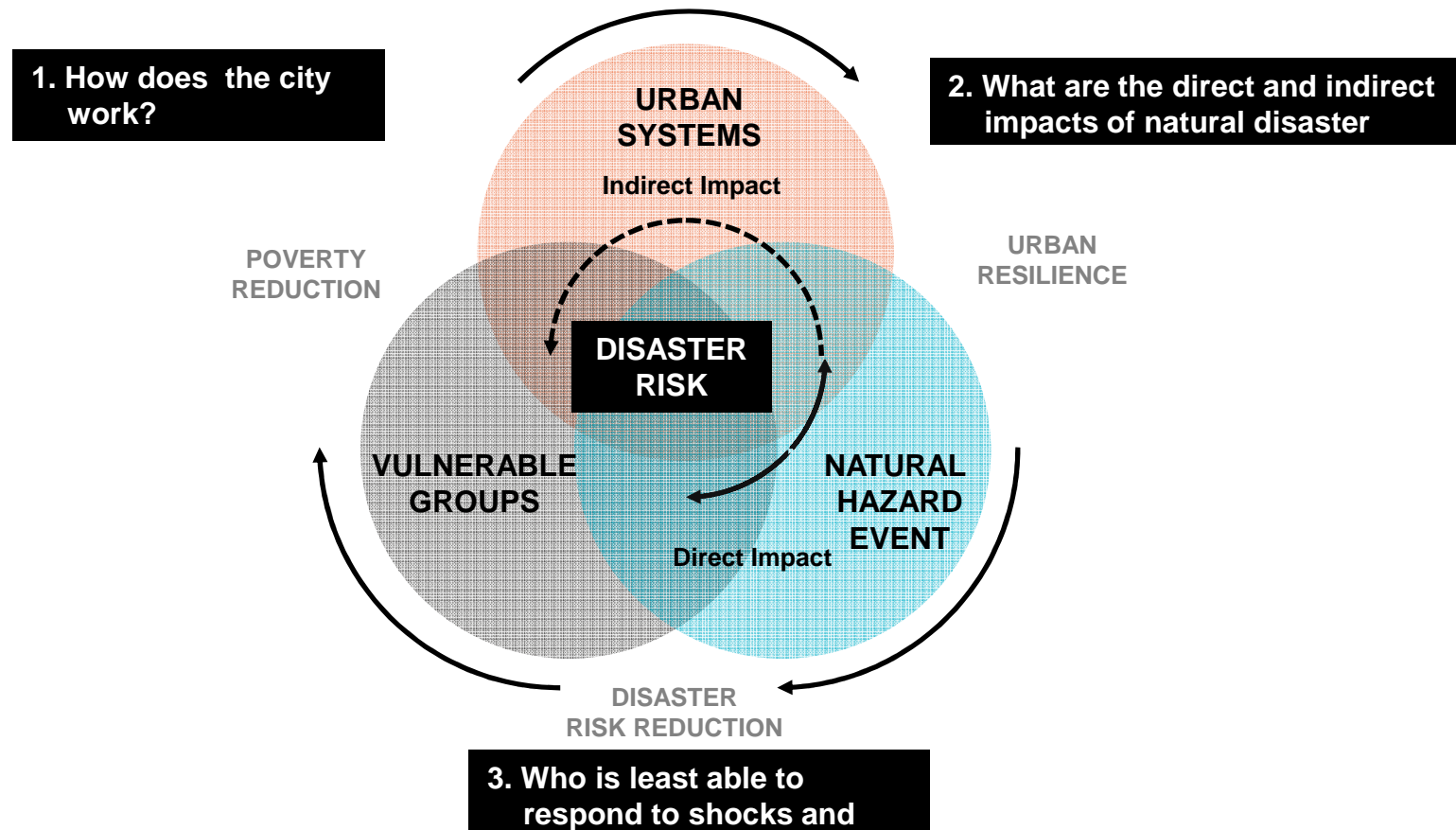
Poverty



© Arup

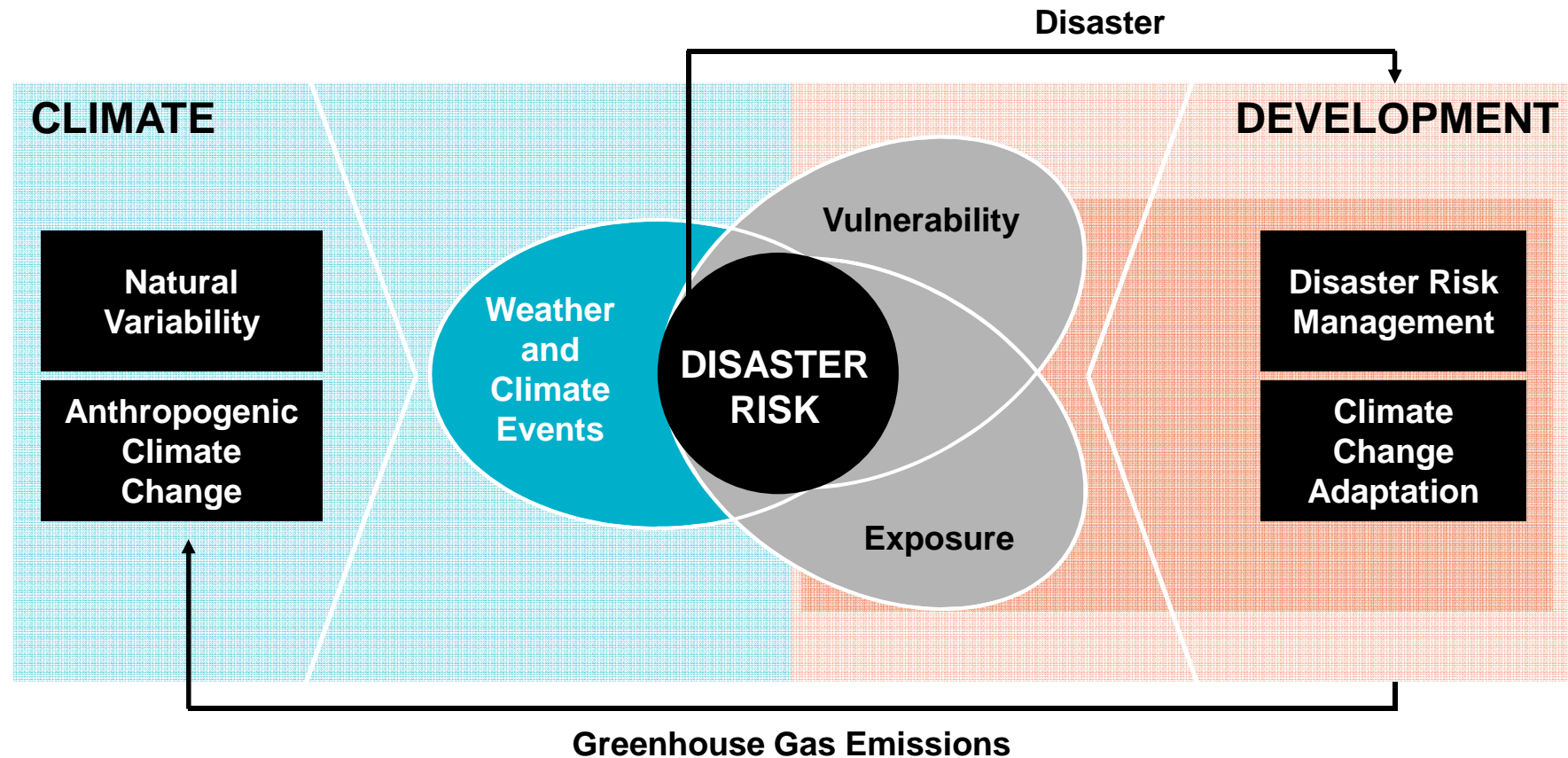
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Cities > a complexity challenge



Source: da Silva et al. (2012) 'A systems approach to meeting the challenges of urban climate change'. FORTHCOMING.

Climate change > an uncertainty challenge



Source: IPCC (2012) Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX). IPCC: Geneva.

> Shifting agendas



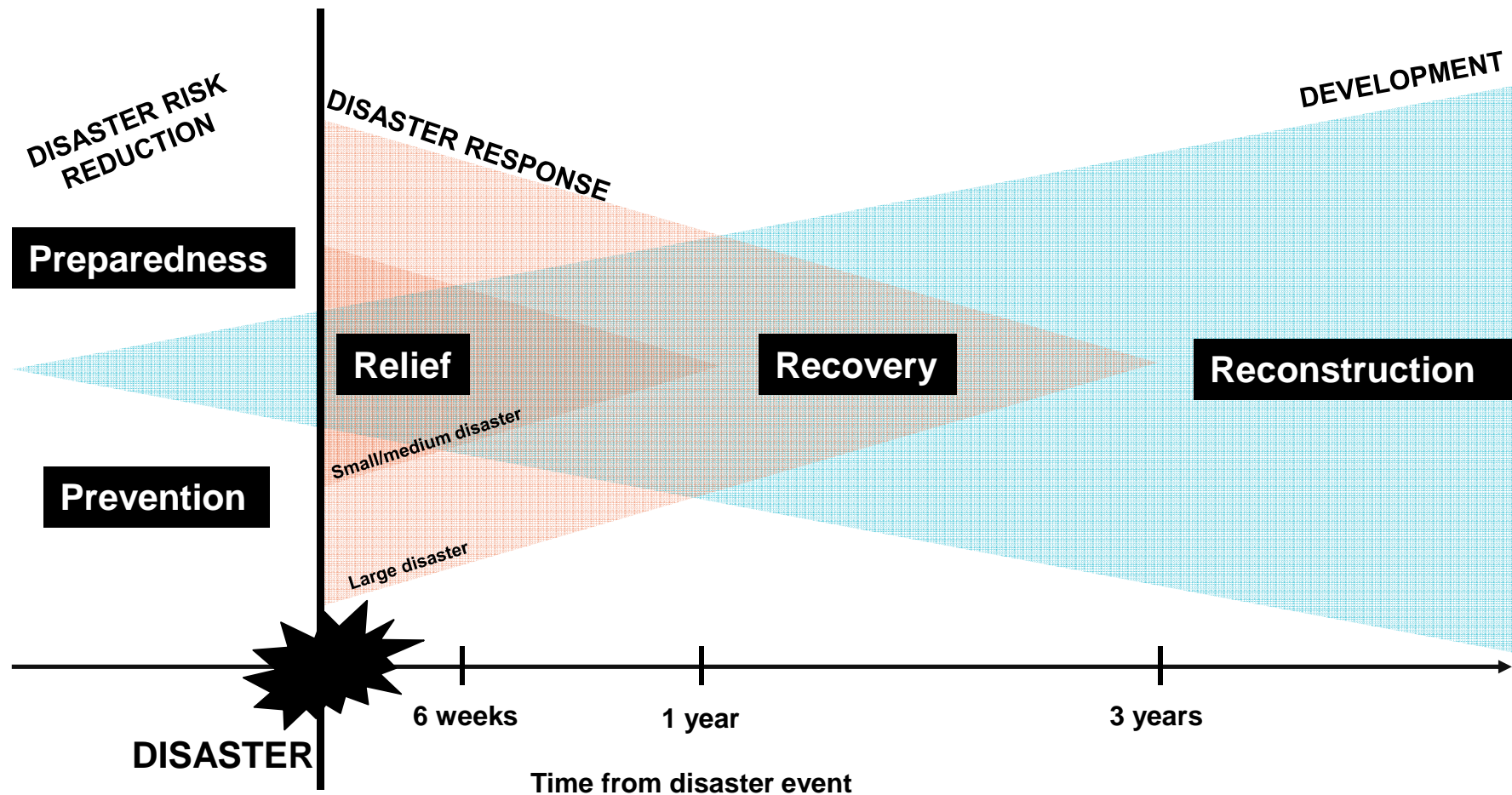
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Haiti > humanitarian + urban



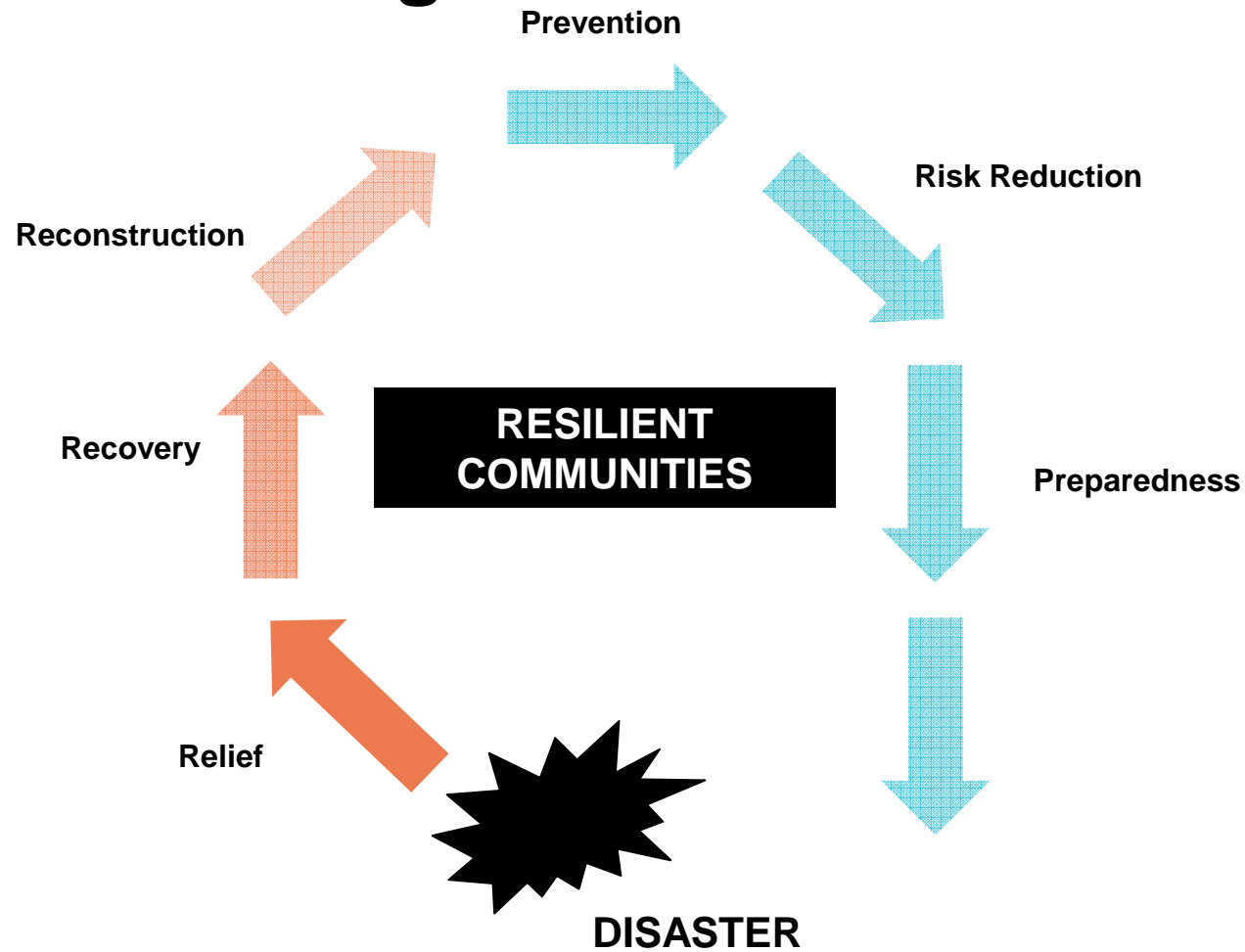
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Response > reaction



Source: diagram adapted from UNDP Policy on Early Recovery

Resilience > integration

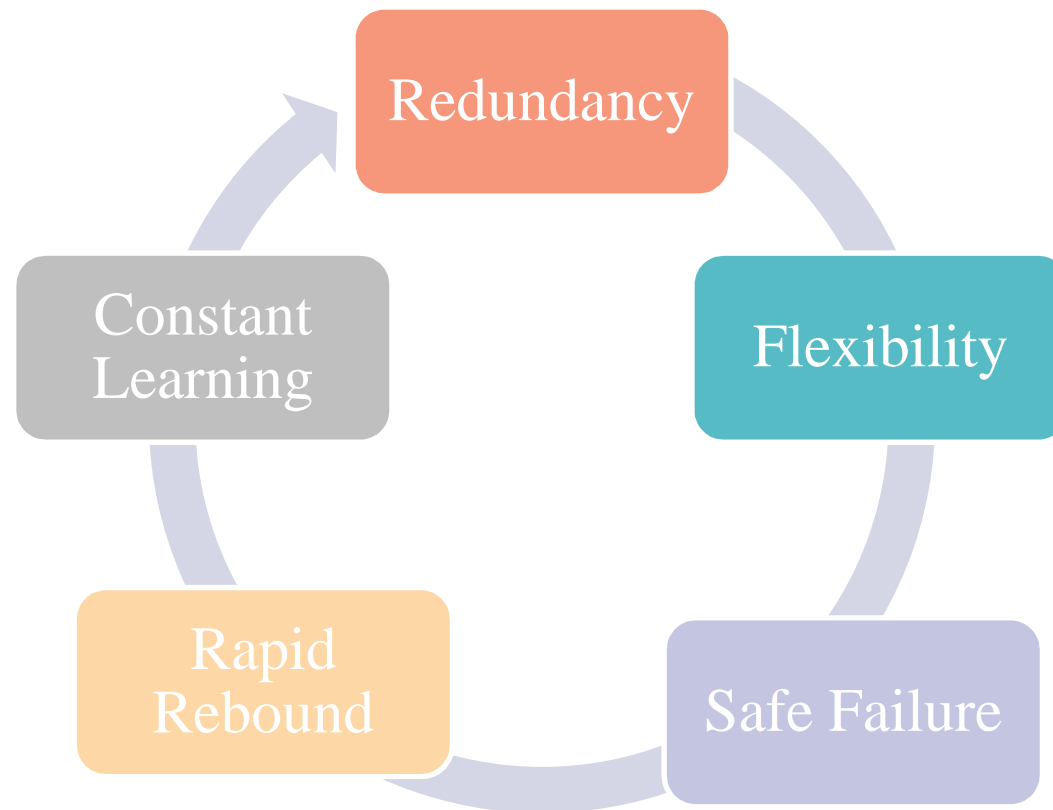


Source: © Arup / Jo da Silva

Defining resilience



Resilient systems



Resilience is the ability of a system to withstand shocks and stresses while **maintaining its essential functions**. Resilient systems are also better able to repair and recover afterwards.

Adapted from: da Silva et al. (2012) 'A systems approach to meeting the challenges of urban climate change' for NYS 2100 Commission.

Resilient communities



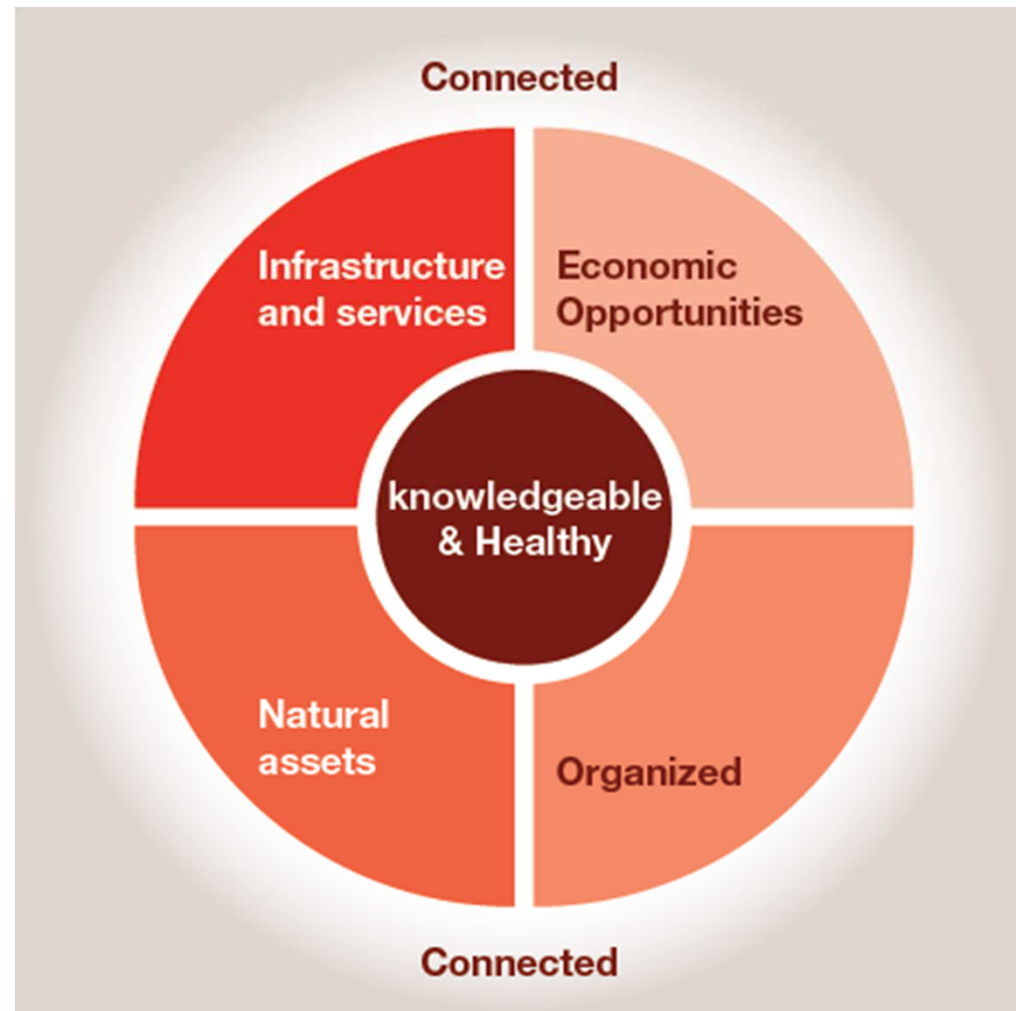
Characteristics of a Safe and Resilient Community

Community Based Disaster Risk Reduction Study

ARUP International Development - September 2011

www.ice.org
Saving lives, changing minds

International Federation
of Red Cross and Red Crescent Societies



Building resilience



Asian Cities Climate Change Resilience Network

Through the actions of the Asian Cities Climate Change Resilience Network by 2012
a network of cities in Asia will have developed robust plans to prepare, withstand
and recover from climate change impacts.



- Local **champions**
- Diverse **stakeholders**
- Peer-to-peer **knowledge exchange**
- Building on ‘**now**’ issues
- Integration into **urban planning and investment**
- Alignment with **national policy**

> Future horizons

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Hyogo Framework for Action 2005-2015

- Integration of risk reduction in **infrastructure** projects is an area that still requires urgent attention;
- Safer **schools and hospitals** remain a critical priority;
- Addressing ‘**urban risk**’ (‘making cities resilient’) is a key focus area.’

The Hyogo Mid-term Evaluation: UNISDR: 2011

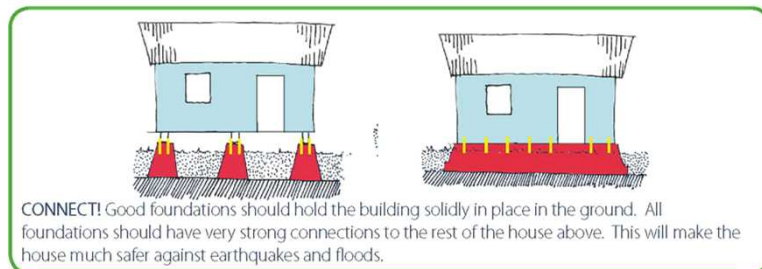
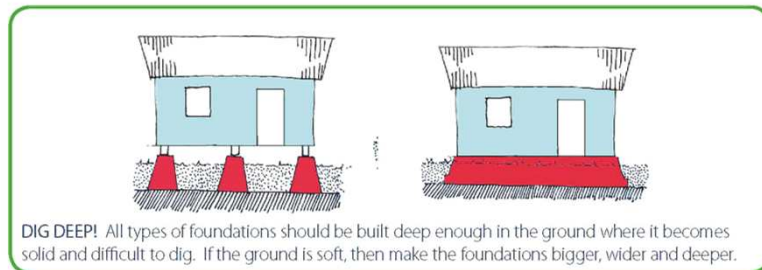
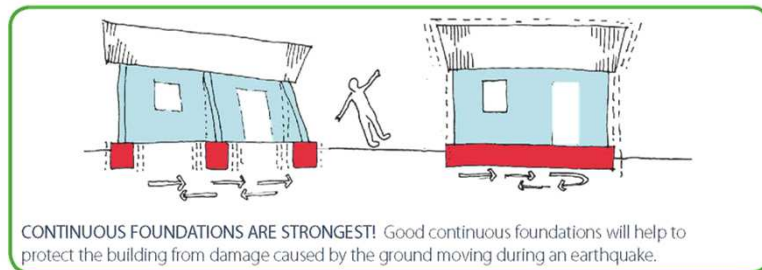
1. A holistic understanding of risk

Recognise the opportunities infrastructure projects afford to reduce or increase vulnerability



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‘Build back better’



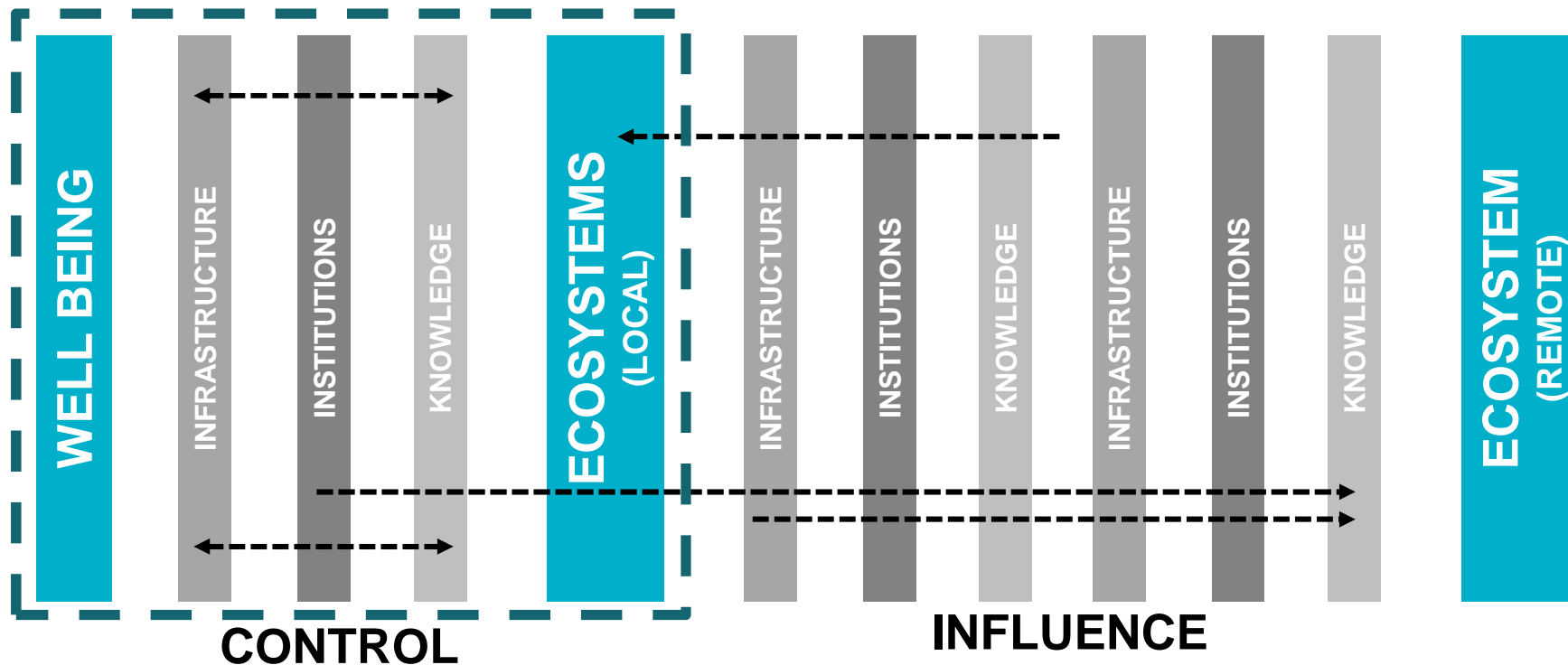
© British Red Cross



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2. A systems perspective

Adopt a systems perspective in designing infrastructure that recognises integration and interdependencies.



Source: da Silva et al. (2012) 'A systems approach to meeting the challenges of urban climate change'. FORTHCOMING.

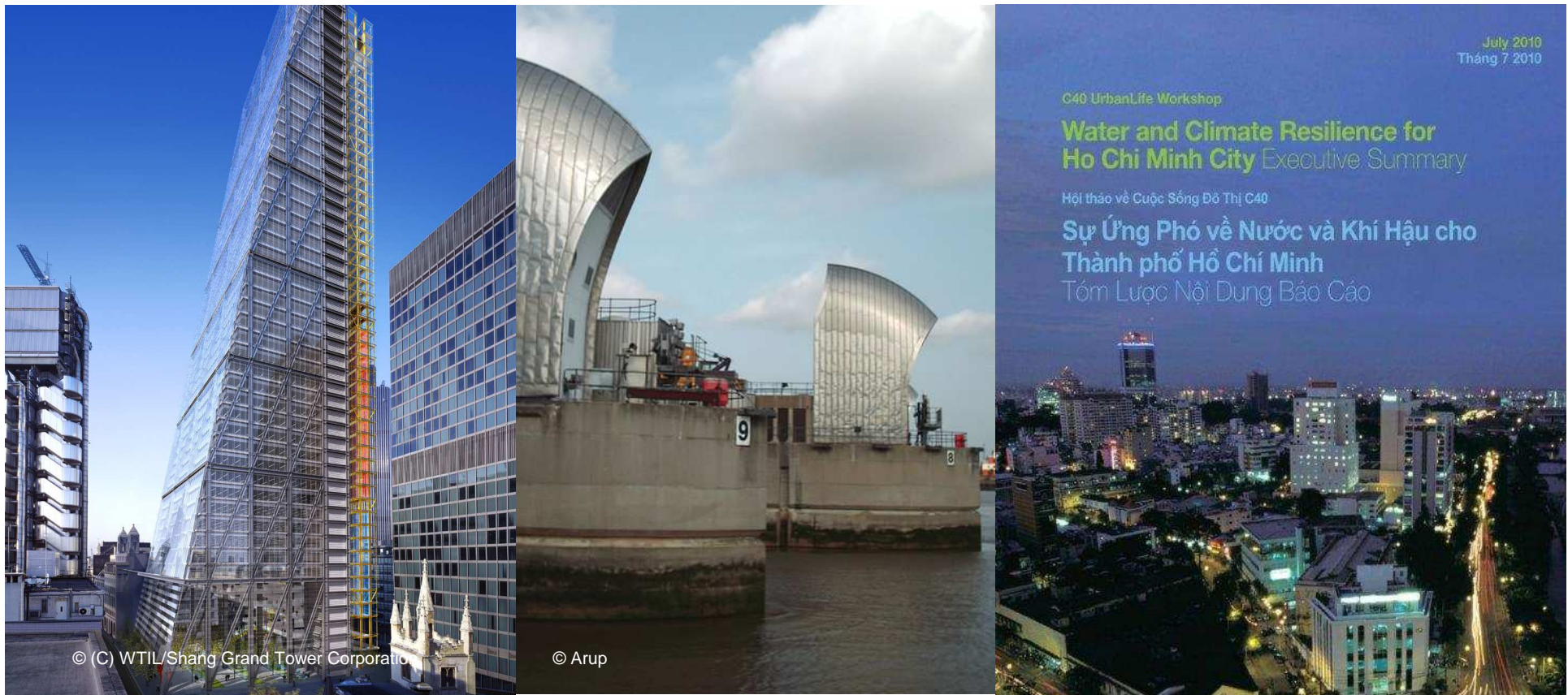
3. A new culture of safety

Acknowledge uncertainty and recognise the possibility of failure.



4. Appropriate strategies

Adopt strategies that reflect local perceptions of risk, and availability of financial and technical resources.



5. Safer construction practices

Promote safer construction practices alongside the introduction of codes of practice.



Vernacular construction



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6. Effective humanitarian response

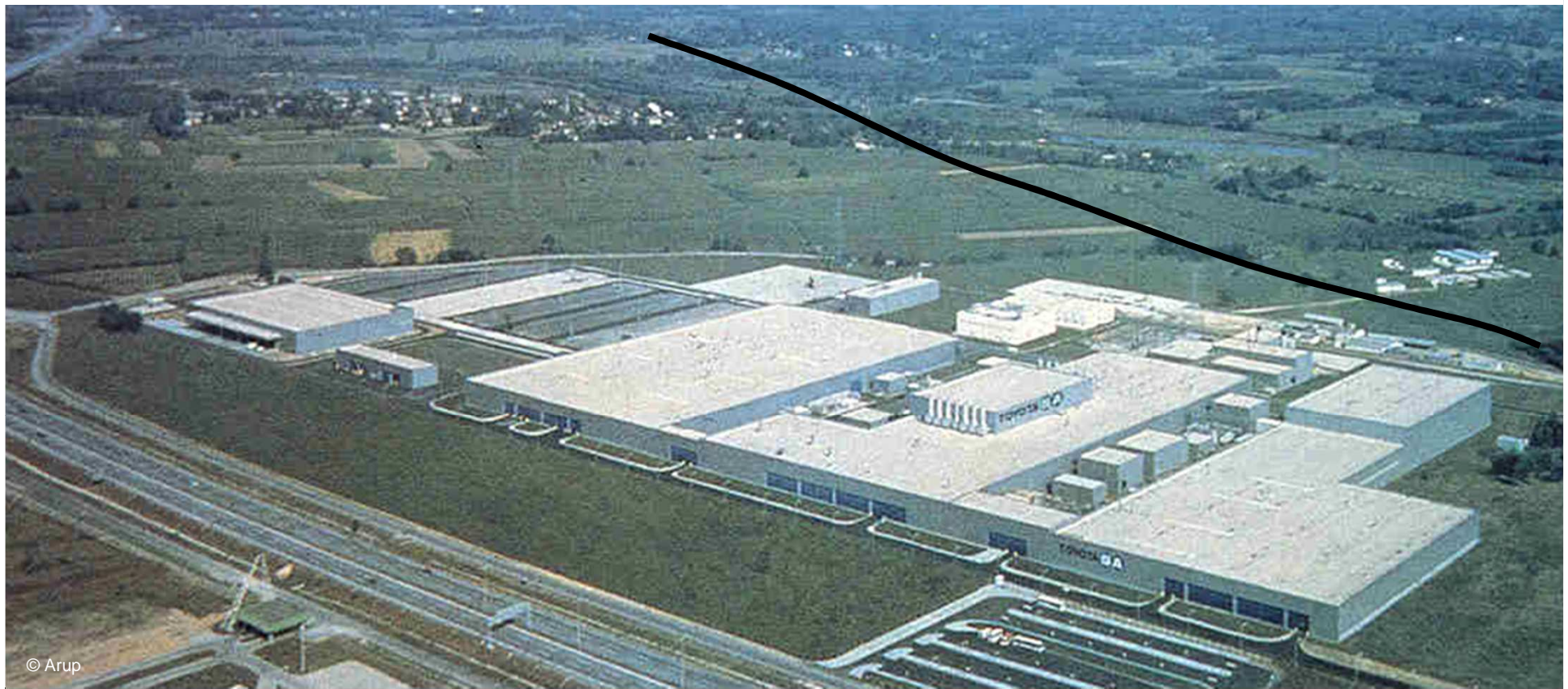
Provide technical and project management expertise to improve the effectiveness of humanitarian response.



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7. A business case for DRR

Engage the private sector by demonstrating the business case for disaster risk reduction



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- > A holistic understanding of risk**
- > A systems perspective**
- > A new culture of safety**
- > Appropriate strategies**
- > Safer construction practices**
- > Effective humanitarian response**
- > A business case for DRR**

**‘By our actions we either
compound disasters or
diminish them.’**

Ban Ki Moon, Global Platform for Disaster Risk Reduction, 2011

Thank you

For further information on The Institution of Civil Engineers 9th Brunel International Lecture
please see: <http://www.ice.org.uk/brunel> or www.jodasilva.me

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