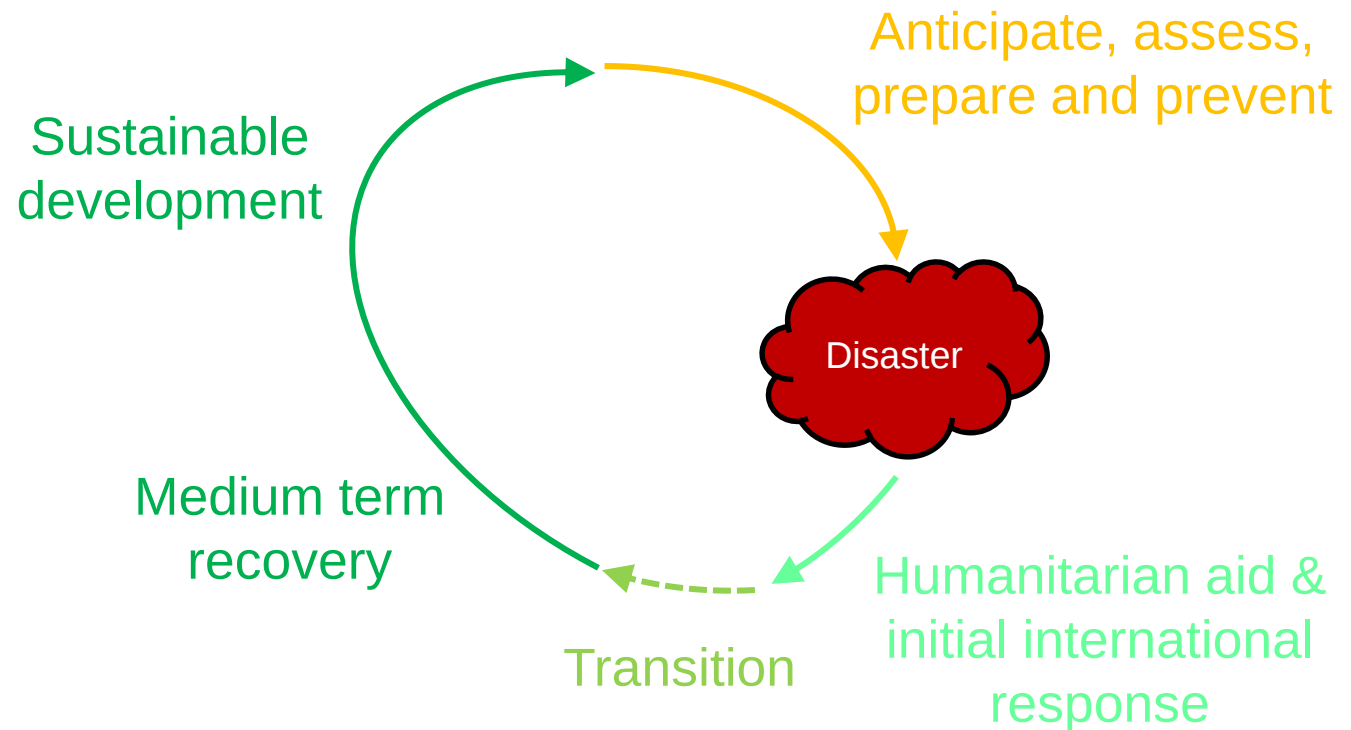
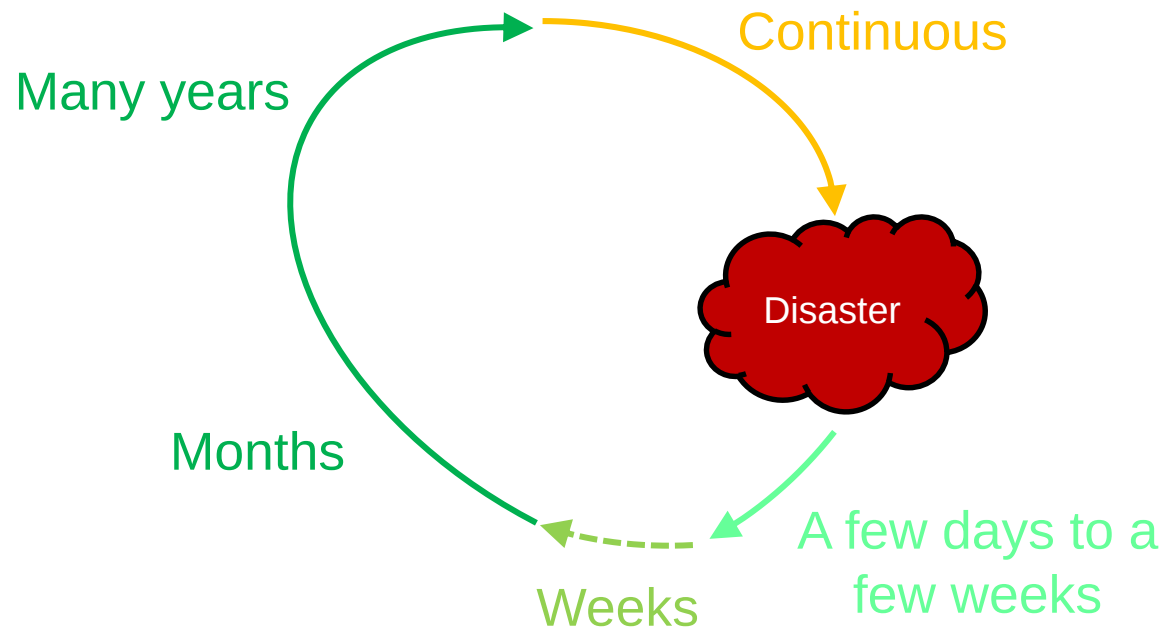


Disaster management lifecycle

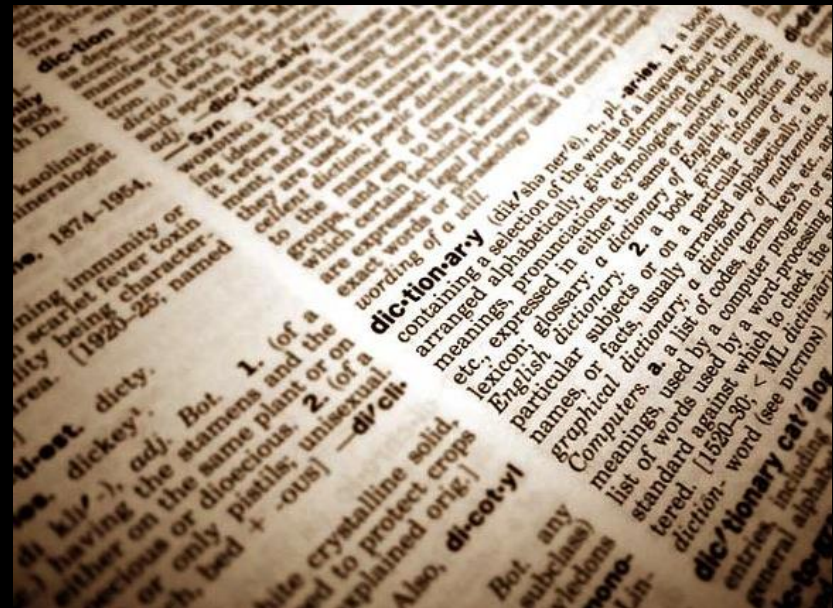


Disaster management lifecycle



resilience

from Latin *resilire*, 'to recoil'



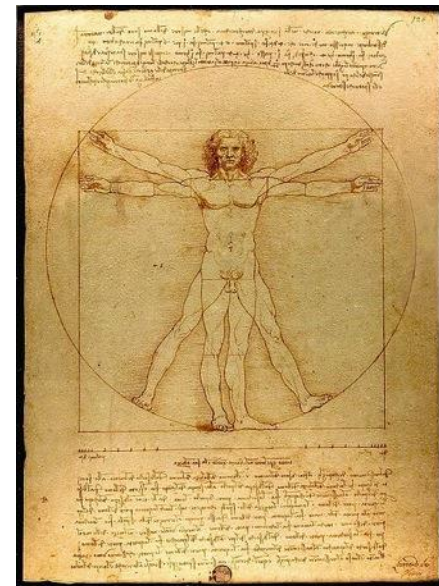
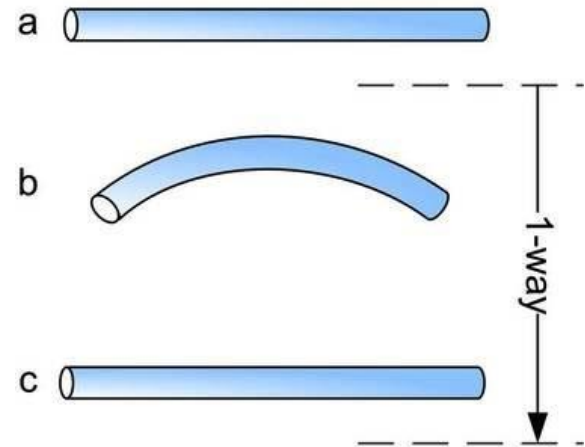
re·sil·ience

Function: n

1: the power or ability to return to the original form, position, etc., after being bent, compressed, or stretched; elasticity.

2: ability to recover readily from illness, depression, adversity, or the like; buoyancy.

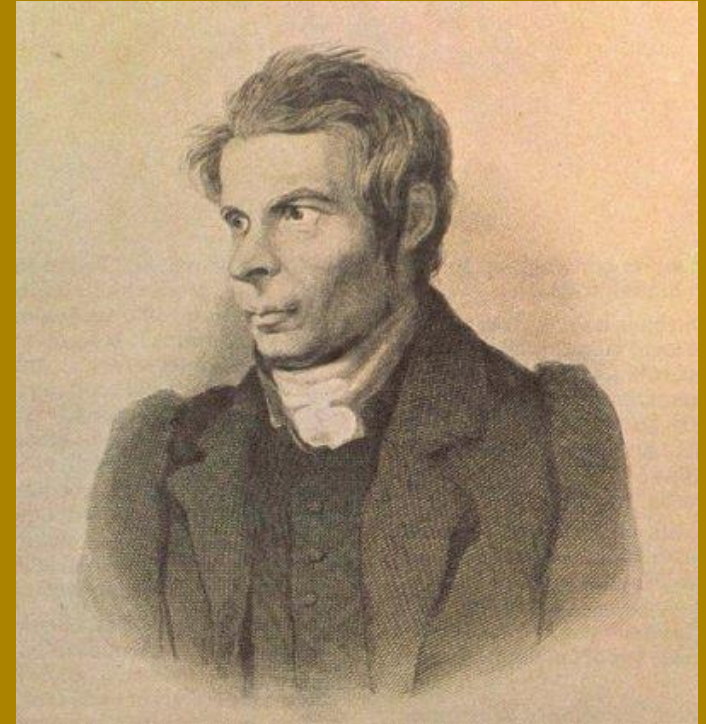
Collins English Dictionary



“Resilience, or the power
of resisting a body of
motion”

Thomas Tregbold

Elementary Principles of Carpentry, 1853, p78





"the capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes. A resilient ecosystem can withstand shocks and rebuild itself when necessary"



Crawford Stanley Holling
"Resilience and stability of ecological systems". in: Annual Review of Ecology and Systematics. Vol 4 :1-23, 1973

‘Resilience in the
dynamics of economy-
environment Systems’

Perrings (1998)
published in
Environmental and
Resource
Economics 11(3–4),
503–520.





“Social resilience is the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change”

Adgers (2000) Social and ecological resilience: are they related? *Progress in Human Geography* 24(3), 347-364.

"The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures."

Terminology of disaster risk reduction

UNISDR

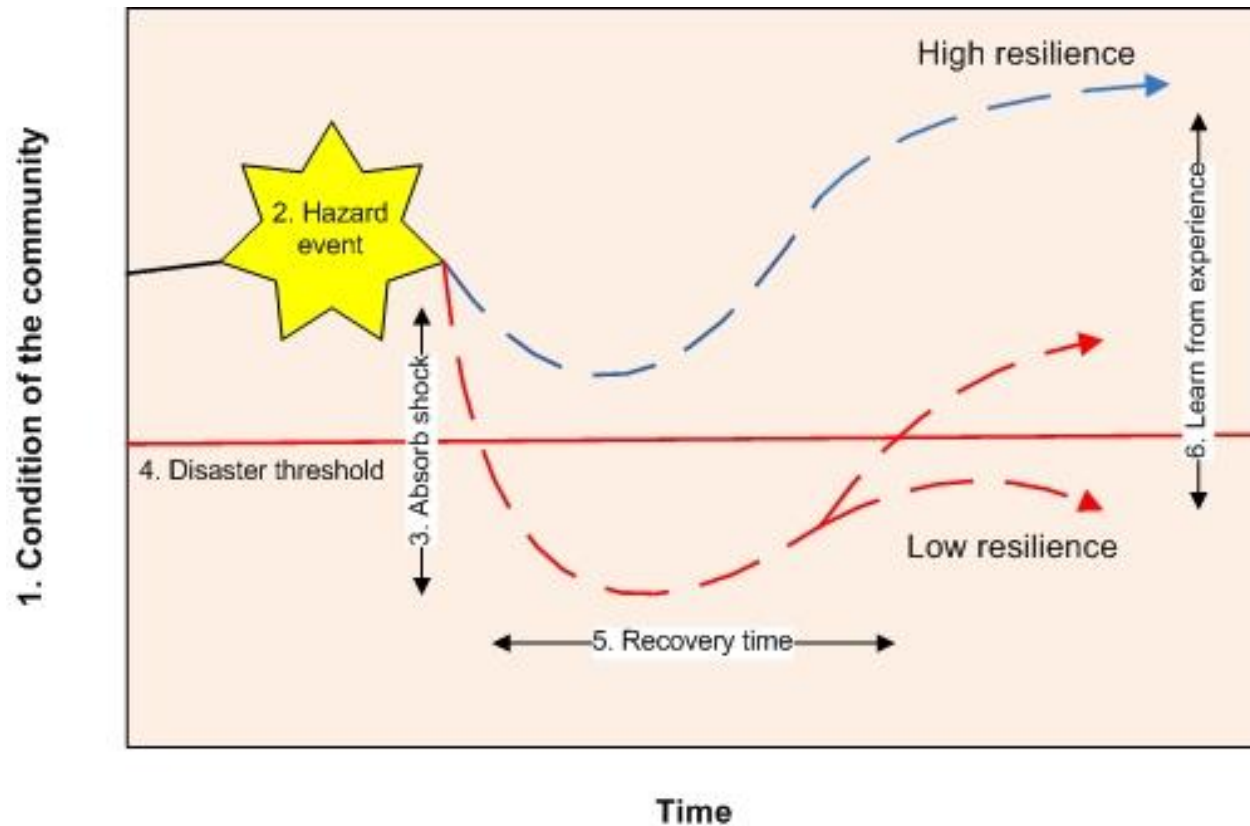


UK Resilience

"The Government's aim is to reduce the risk from emergencies so that people can go about their business freely and with confidence."

UK Cabinet Office

Disaster resilience

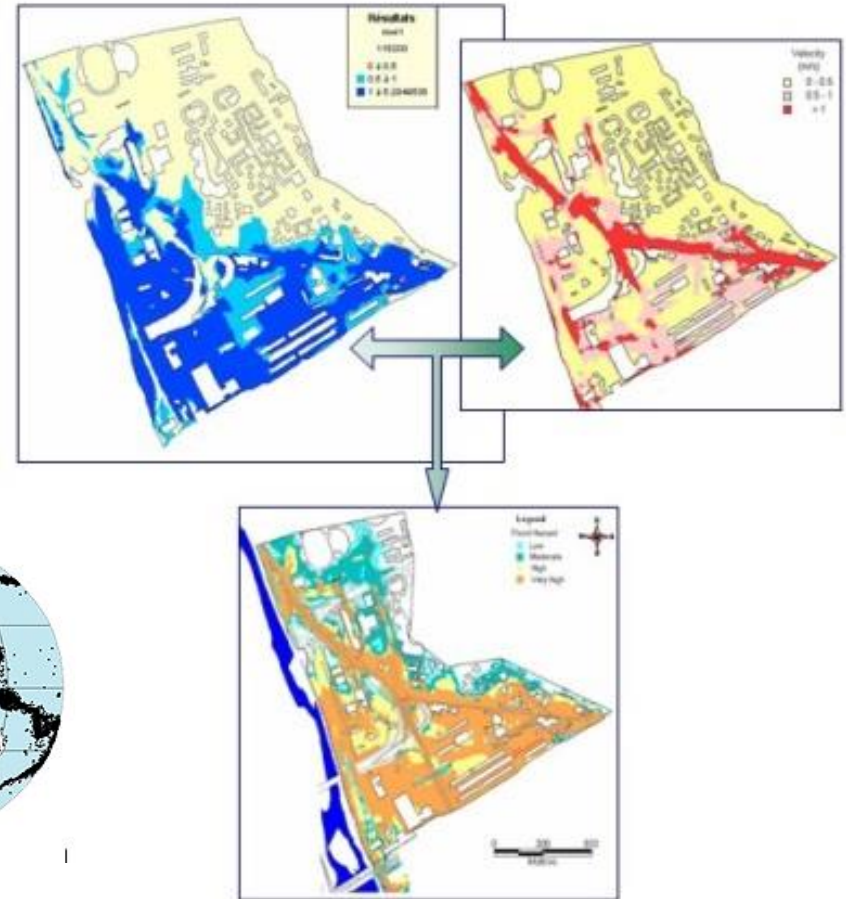
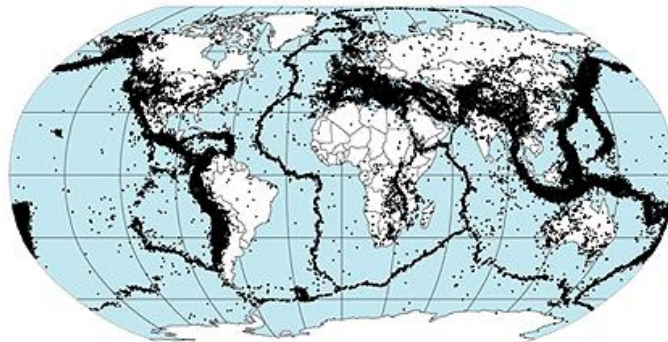


Characteristics of resilience

- Understanding
- Resistance or absorbance
- Redundancy
- Adaptability and tolerance
- Learning
- Coping with the unknown
- Creativity
- Improvisation

Characteristics of resilience

Understanding
Known threats



Characteristics of resilience



Characteristics of resilience

Capacity to resist of absorb
Some physical redundancy



Characteristics of resilience

Functional redundancy



Characteristics of resilience

Adaptability and
tolerance

Loose coupling

Localised capacity



Characteristics of resilience



‘no plan ever survives contact
with the enemy’



Identified a need for quick and appropriate
responses to changing conditions
Sun Tzu, Art of War

An old military adage



Characteristics of resilience

- Understanding
- Resistance or absorbance
- Redundancy
- Adaptability and tolerance
- Learning
- Coping with the unknown
- Creativity
- Improvisation

The built environment

- Attempts to describe in one holistic and integrated concept, the results of human activities
- The 2008 Research Assessment Exercise in the UK describes research in the built environment as, ‘encompassing the fields of architecture, building science and building engineering, construction, landscape, surveying, urbanism’ (HEFCE, 2008)
- In Higher Education, Griffiths (2003) describes, ‘a range of practice-oriented subjects concerned with the design, development and management of buildings, spaces and places’.

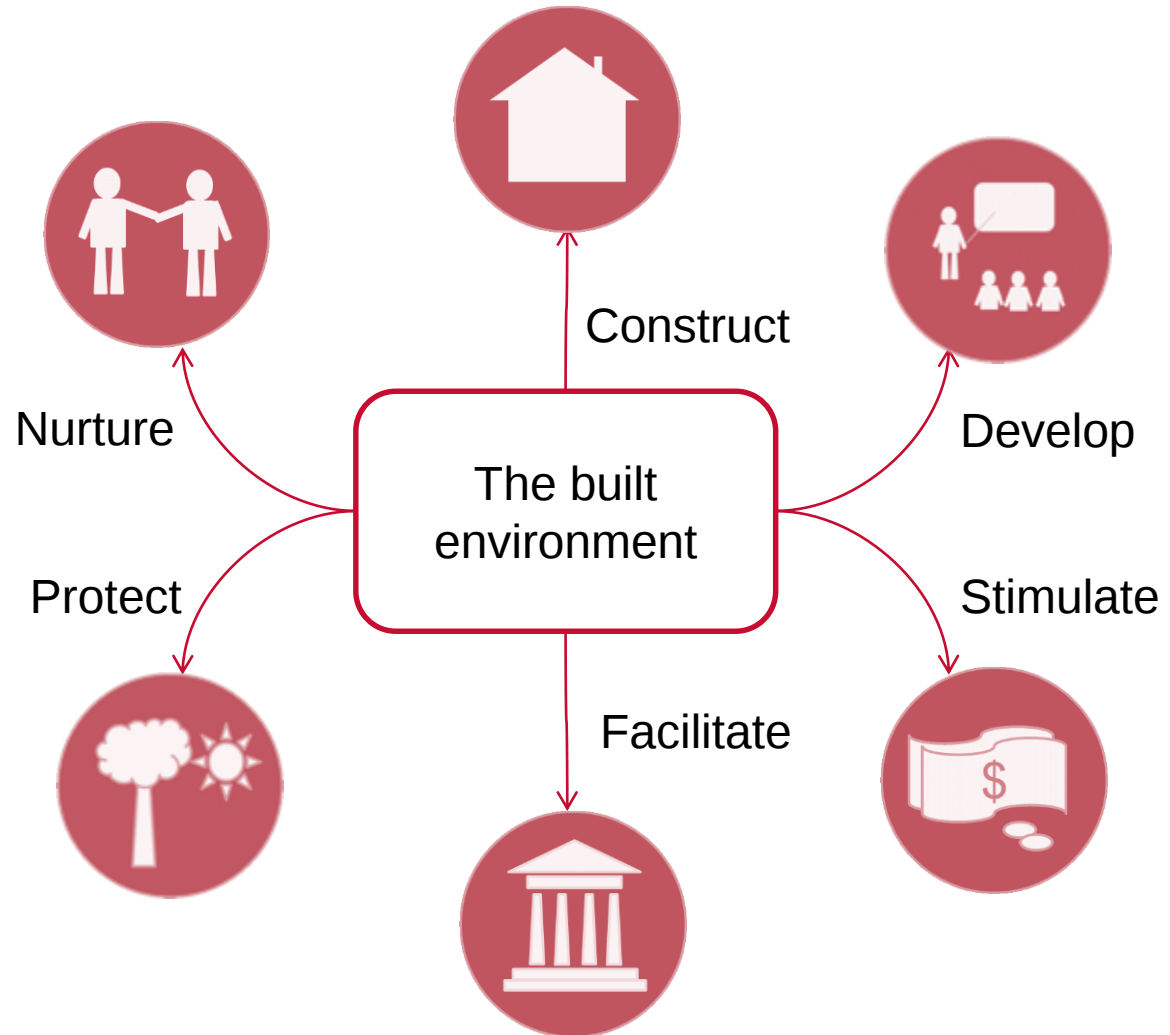
Characteristics of the built environment (Bartuska, 2007)

- It is intended to serve human needs, wants, and values
- Much of it is created to help us deal with, and to protect us from, the overall environment
- Every component of the built environment is defined and shaped by context

Consequences of these characteristics if it is damaged or destroyed

- The ability of society to function – economically and socially – is severely disrupted
- Severely disrupts economic growth and hinders a person's ability to emerge from poverty
- Removes protection from hazards and increases a community's vulnerability
- Individual and local nature of the built environment, shaped by context, restricts our ability to apply generic mitigation and reconstruction solutions

Resilience through the products and processes of the built environment









EASTERN UNIVERSITY, SRILANKA.

VANTHARUMUGLAD









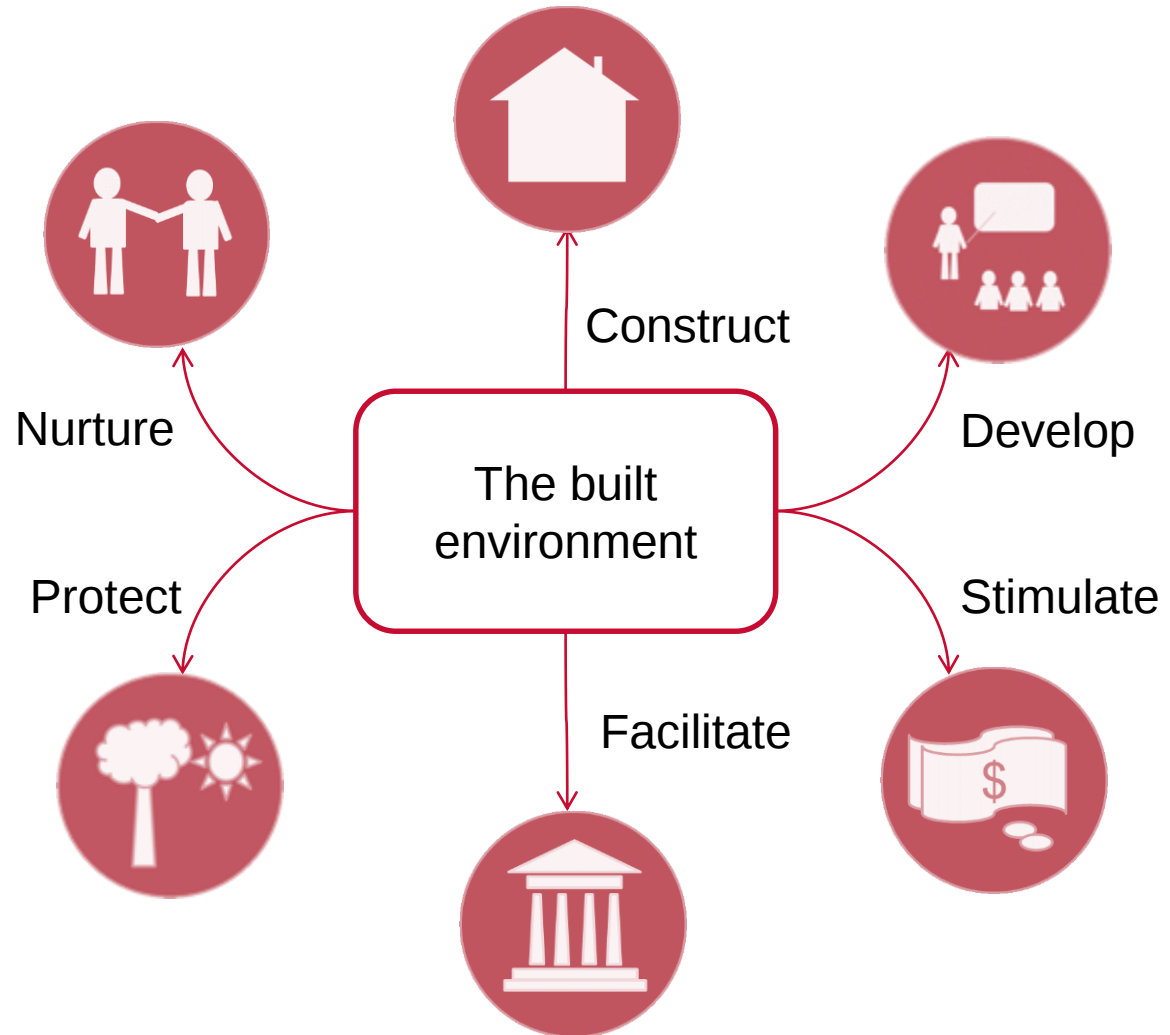
அவன் ஒரு விரிக்கெட்
வீரனாக இருக்கவே
விரும்புகிறான், போரில்
ஈடுபடும் சிறுவனாக அல்ல.

சிறுவர்களை
மீட்போம்
சிறும ஆ.கோட்டை சிறப்பு

பெருத்த சிறுவர்கள் ஆட்சேபத்து மீதமாக, மற்றும் சமீபத்தே நடந்த மூன்றாம்
இந்திய மோசனம், இப்போது இப்போது இப்போது இப்போது இப்போது இப்போது
இப்போது இப்போது இப்போது இப்போது இப்போது இப்போது

unicef

Resilience through the products and processes of the built environment



Adapted by Haigh and Amaratunga (2011) from Kretzmann and McKnight (1993)

A resilient built environment

“design, develop and manage context sensitive buildings, spaces and places, which have the capacity to resist or change in order to reduce hazard vulnerability, and enable society to continue functioning, economically and socially, when subjected to a hazard event”

A resilient built environment

“design, develop and manage context sensitive buildings, spaces and places, which have the capacity to resist or change in order to reduce hazard vulnerability, and enable society to continue functioning, economically and socially, when subjected to a hazard event”

A resilient built environment

“design, develop and manage context sensitive buildings, spaces and places, which have the capacity to resist or change in order to reduce **hazard vulnerability**, and enable society to continue functioning, economically and socially, when subjected to a hazard event”

- Understand hazard threats

A resilient built environment

“design, develop and manage context sensitive buildings, spaces and places, which have the capacity to resist or change in order to reduce hazard vulnerability, and enable society to continue functioning, economically and socially, when subjected to a hazard event”

- Understand hazard threats
- Local and external capacity development

A resilient built environment

“design, develop and manage **context sensitive** buildings, spaces and places, which have the capacity to resist or change in order to reduce hazard vulnerability, and enable society to continue functioning, economically and socially, when subjected to a hazard event”

- Understand hazard threats
- Local and external capacity development
- Culturally appropriate methods and technologies

A resilient built environment

“design, develop and manage context sensitive buildings, spaces and places, which have the capacity to **resist** or change in order to reduce hazard vulnerability, and enable society to continue functioning, economically and socially, when subjected to a hazard event”

- Understand hazard threats
- Local and external capacity development
- Culturally appropriate methods and technologies
- Hazard resistant materials and technologies
- Protective infrastructure

A resilient built environment

“design, develop and manage context sensitive buildings, spaces and places, which have the capacity to resist or **change** in order to reduce hazard vulnerability, and enable society to continue functioning, economically and socially, when subjected to a hazard event”

- Understand hazard threats
- Local and external capacity development
- Culturally appropriate methods and technologies
- Hazard resistant materials and technologies
- Protective infrastructure
- Retrofitting
- Response plans, temporary shelter and services
- Sustainable development and planning
- Learn from previous hazard events

Disaster risk and the development of disaster resilience

Professor Richard Haigh



www.disaster-resilience.salford.ac.uk

Centre for Disaster Resilience
School of the Built Environment
University of Salford
Salford
Greater Manchester
M5 4WT, UK