

# Disasters and Climate Change



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Climate change

Disasters

Greenhouse  
gas emissions

Consequences

Natural and  
human systems

Mitigation

Response

Adaptation

Frequency and magnitude:  
more often, worse and spreading

- stronger storms
- larger floods
- longer droughts
- greater temperature extremes
- shifting reservoirs of disease
- changing crop production zones.

**Then (1950s)**

**Now (2014)**

**Under-reporting of disasters**

**More complete recording**

**Counting only direct effects**

**Quantifying indirect effects**

**Smaller population of hazardous places**

**Larger population, greater densities**

**Less inequality**

**Inequality, marginalisation**

**Less fixed capital at risk**

**Relentless accumulation of fixed capital**

**Simpler socio-economic networks**

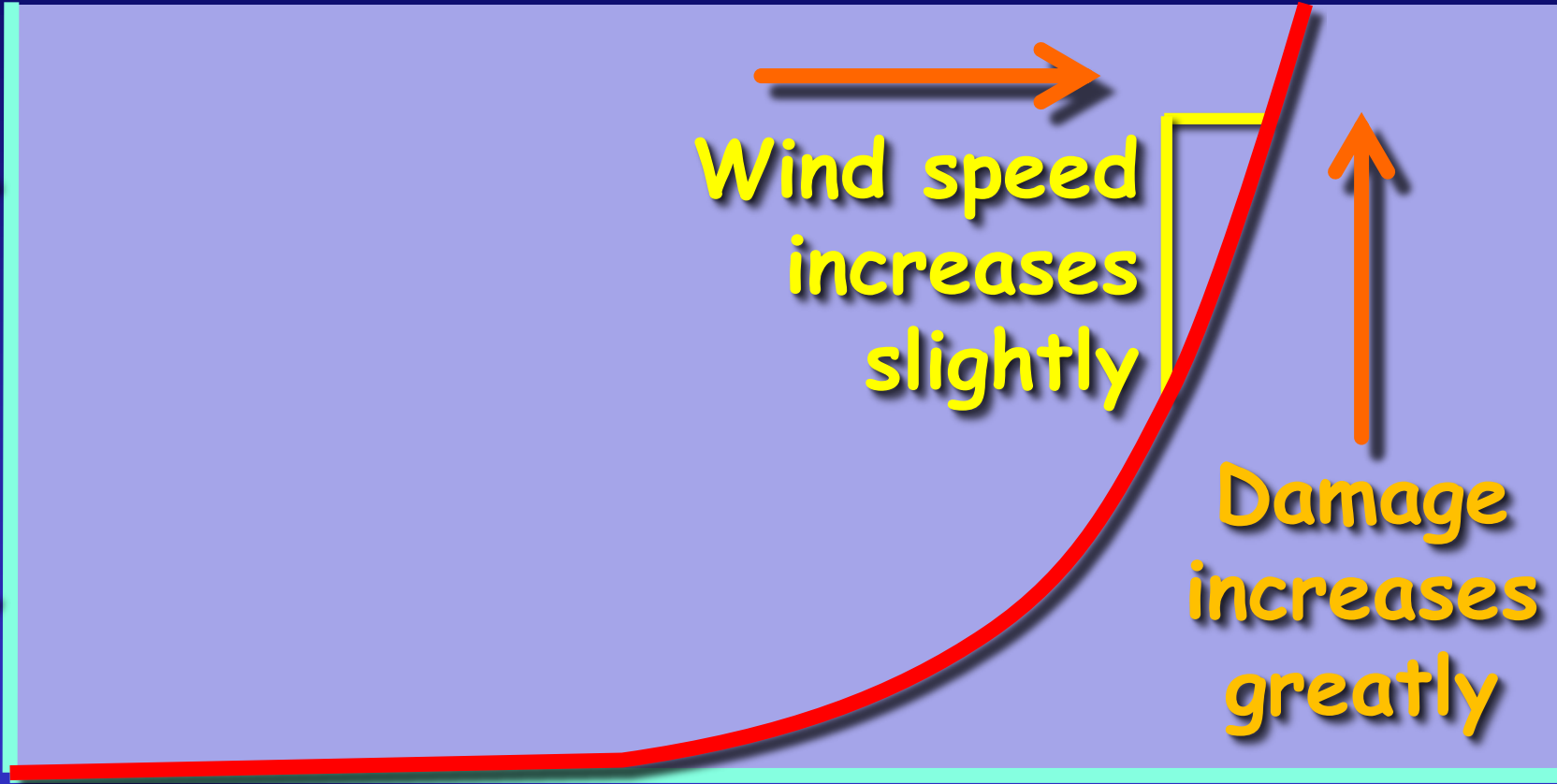
**More complex networks**

**Climate change ignored**

**CC taken into account.**



Damage ratio  
(max 100%)



Wind speed  
increases  
slightly

Damage  
increases  
greatly

Wind speed (metres/sec)



Haiyan/Yolanda, November 2013

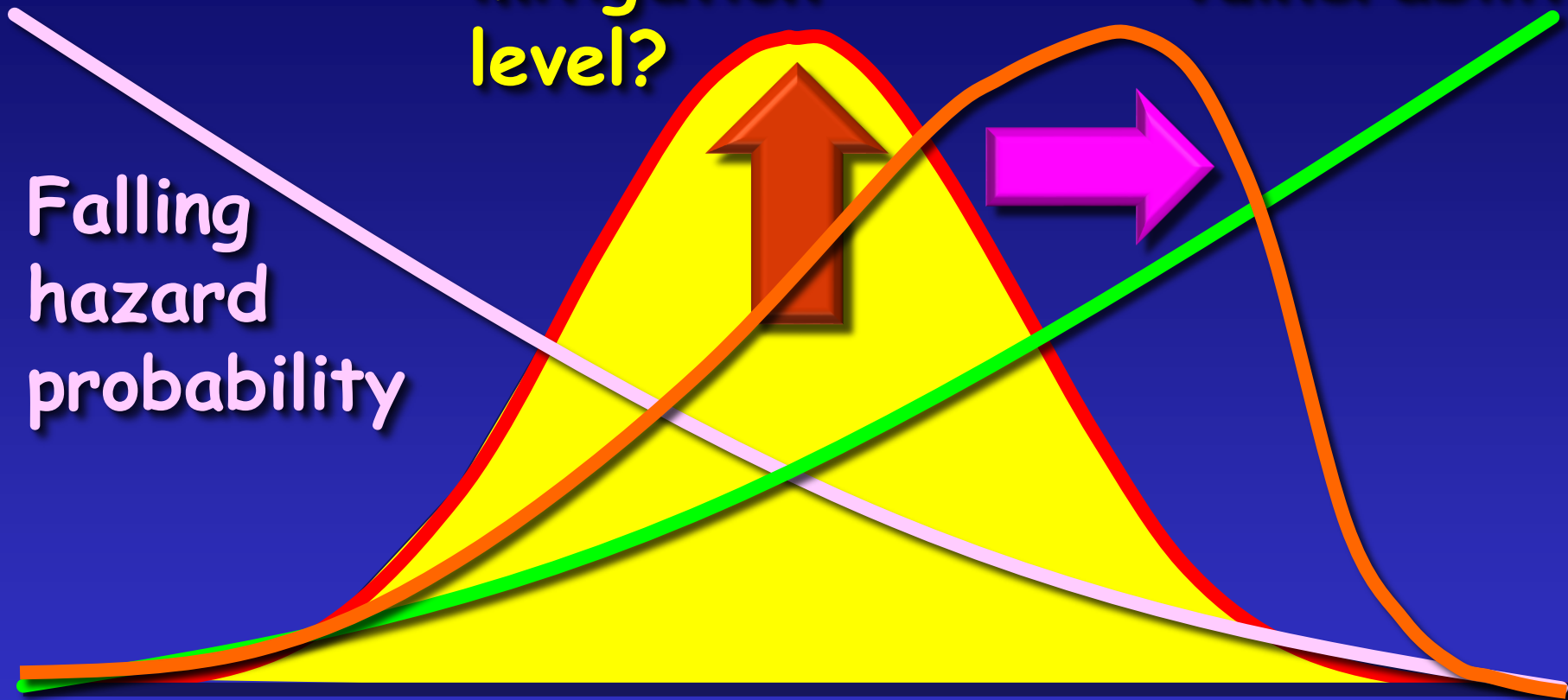
Optimum mitigation level?

Rising vulnerability

Falling hazard probability

Magnitude →

'Fat-tailed' (negatively skewed) distribution





Emerging risks...

Great geophysical events: volcanic eruptions, earthquakes, extra-terrestrial impacts, etc.

Radio-active emissions

CBRN terrorism

Climate change

Pandemics

Epidemics, epizootics, epiphytotics

Physical **Environment** Social

(including natural, built, technological)

(including cultural, political, economic)



Source: McEntire 2001



The background image shows a slum with people and makeshift structures. A man is visible in the center, looking towards the camera. The structures are made of corrugated metal, wood, and other materials. There are some clothes hanging on the walls. The overall scene is one of poverty and informal housing.

# The root causes of disaster

- imbalances of wealth and power
- denial or restriction of human rights
- poverty, marginalisation, exploitation
- corruption and lack of trust
- conflict and proxy wars.

# The "Military Cross"





# Science

Military  
assistance

Humanitarian  
assistance

Global  
exploitation

Informal and  
black economy

Creation  
of poverty,  
marginalisation,  
precariousness

"Capacity  
building":  
creation of  
resilience

The international community



What falls out  
of the sky?

Day 1: cluster  
bombs

Day 2:  
humanitarian  
rations





# Vulnerability

**Total:** life is

generally precarious

**Economic:** people lack  
adequate occupation

**Technological/technocratic:** due  
to the riskiness of technology

**Delinquent:** caused by  
corruption, negligence, etc.

**Residual:** caused by  
lack of modernisation

**Newly generated:** caused by  
changes in circumstances



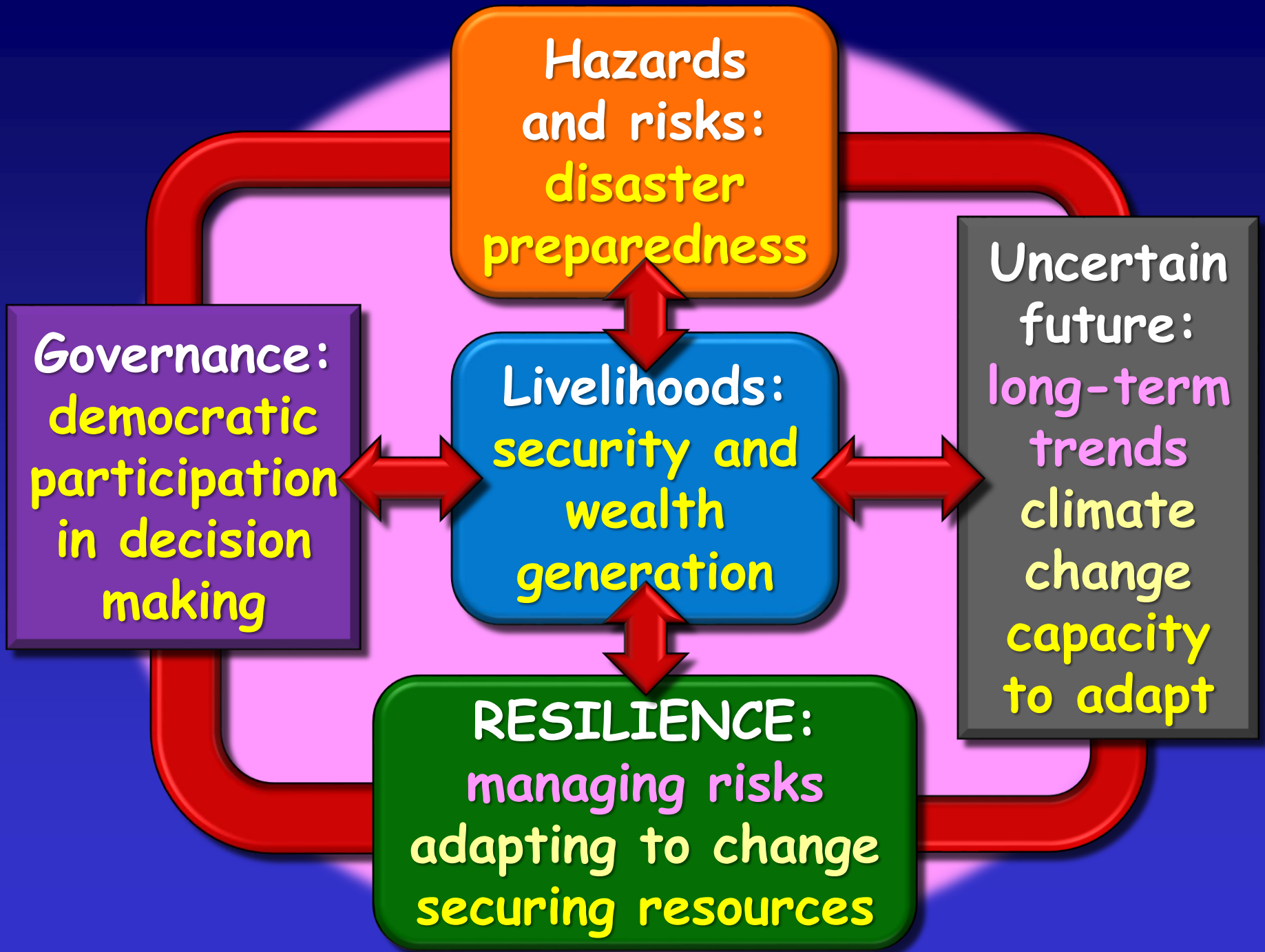
The ingredients of resilience



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Sorry!  
The lifestyle you  
ordered is currently  
out of stock

Sustainability





# MAJOR DISASTER RISKS

(e.g. floods, drought, landslides, heatwaves)

# EMERGING RISKS

(e.g. climate change, pandemics)

# SUSTAINABILITY OF DISASTER RISK REDUCTION

# DAILY RISKS

(e.g. unemployment, poverty)

# GENERAL SUSTAINABILITY

(e.g. lifestyles, economic activities, environment)

**SUSTAINABILITY**  
disaster risk reduction

**RISKS**

**daily:** unemployment, poverty, disease, etc.  
**major disaster:** floods, storms, quakes, etc.  
**emerging risks:** pandemics, climate change

resource consumption  
stewardship of the environment  
economic activities  
lifestyles and communities  
**SUSTAINABILITY**

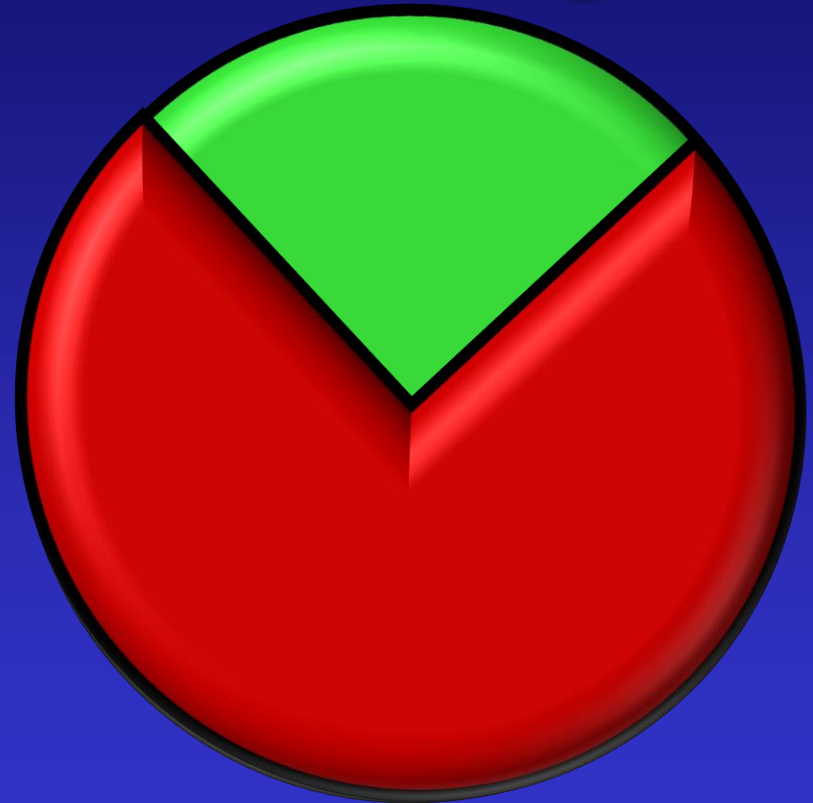


# The broader picture

Disaster resilience

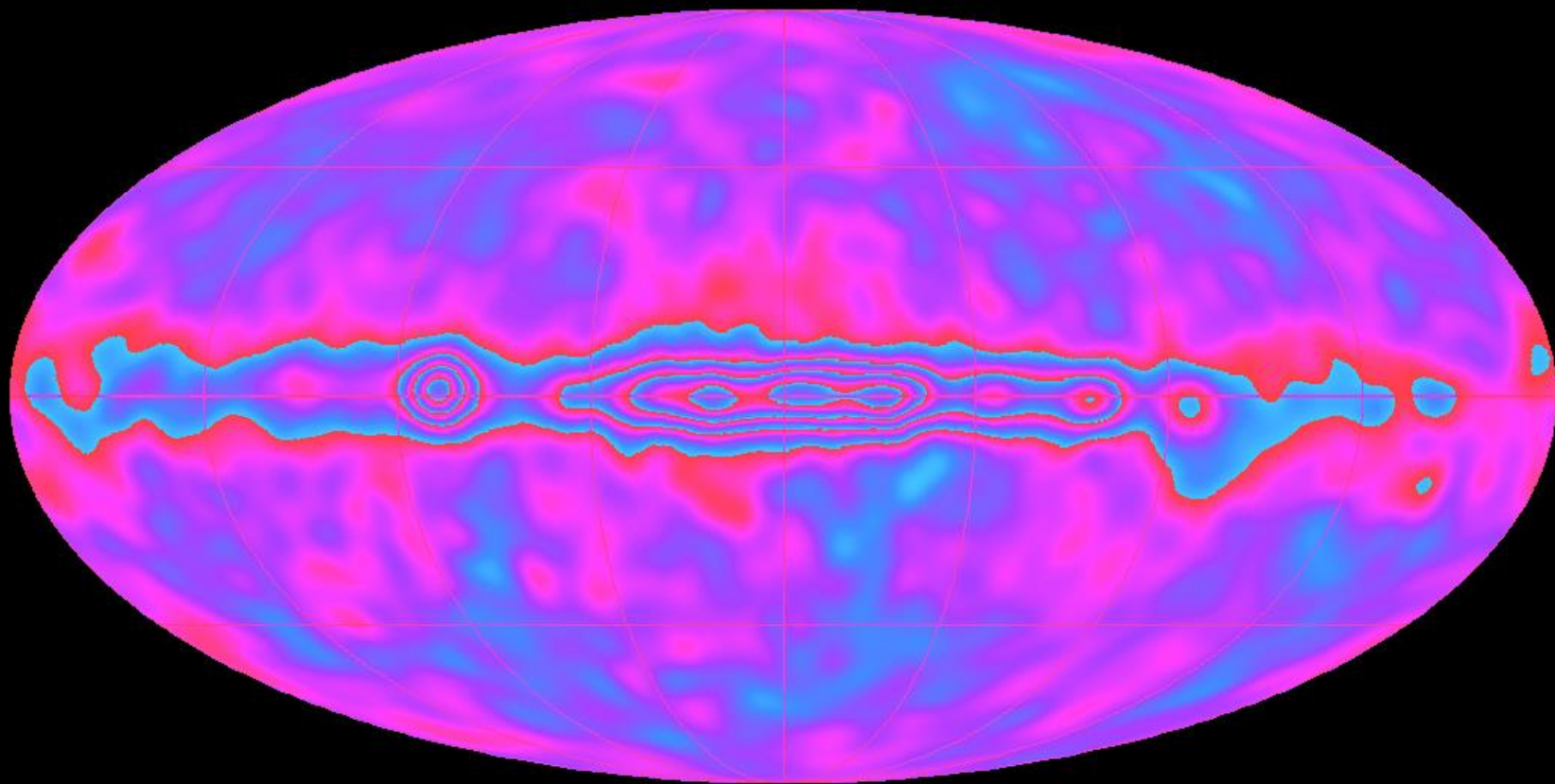


Disaster mitigation



General resilience

Disaster response



**Conclusions**



# Will CC and meteorological extremes force radical improvements in human safety?

- not because of high death tolls
- but threats to the food chain...?
- and losses that potentially threaten the global economy?
- sudden geophysical/climatic change: e.g. a massive volcanic eruption
- is there a threshold of global tolerance?



# Obstacles to progress in DRR:-

- corruption and the black economy
- the arms trade, proxy wars and fomenting conflict
- denial and curtailment of human and civil rights
- manufactured consent and the manipulation of politics
- governance must be achieved by participatory democracy.



**BENIGN (healthy)**  
at the service of the people

**IDEOLOGY**

interplay

dialectic

**CULTURE**

**MALIGN (corrupt)**  
at the service of vested interests

Justification

Development

[spiritual, cultural, political, economic]



# The potential catalysts for change

System is...	Example of catalytic disaster
Substituted	Economic catastrophe after mega natural or anthropogenic event
Threshold of economic sustainability	
Redirected	Indian Ocean tsunami, 2004 (?)
Threshold of political and public tolerance	
Static	Earthquakes: Kashmir 2005, Sichuan '08
Threshold of sustained political and public attention	
In decline	No significant major events

Organisational  
systems:  
management

Political  
systems:  
decisions

Natural  
systems:  
function

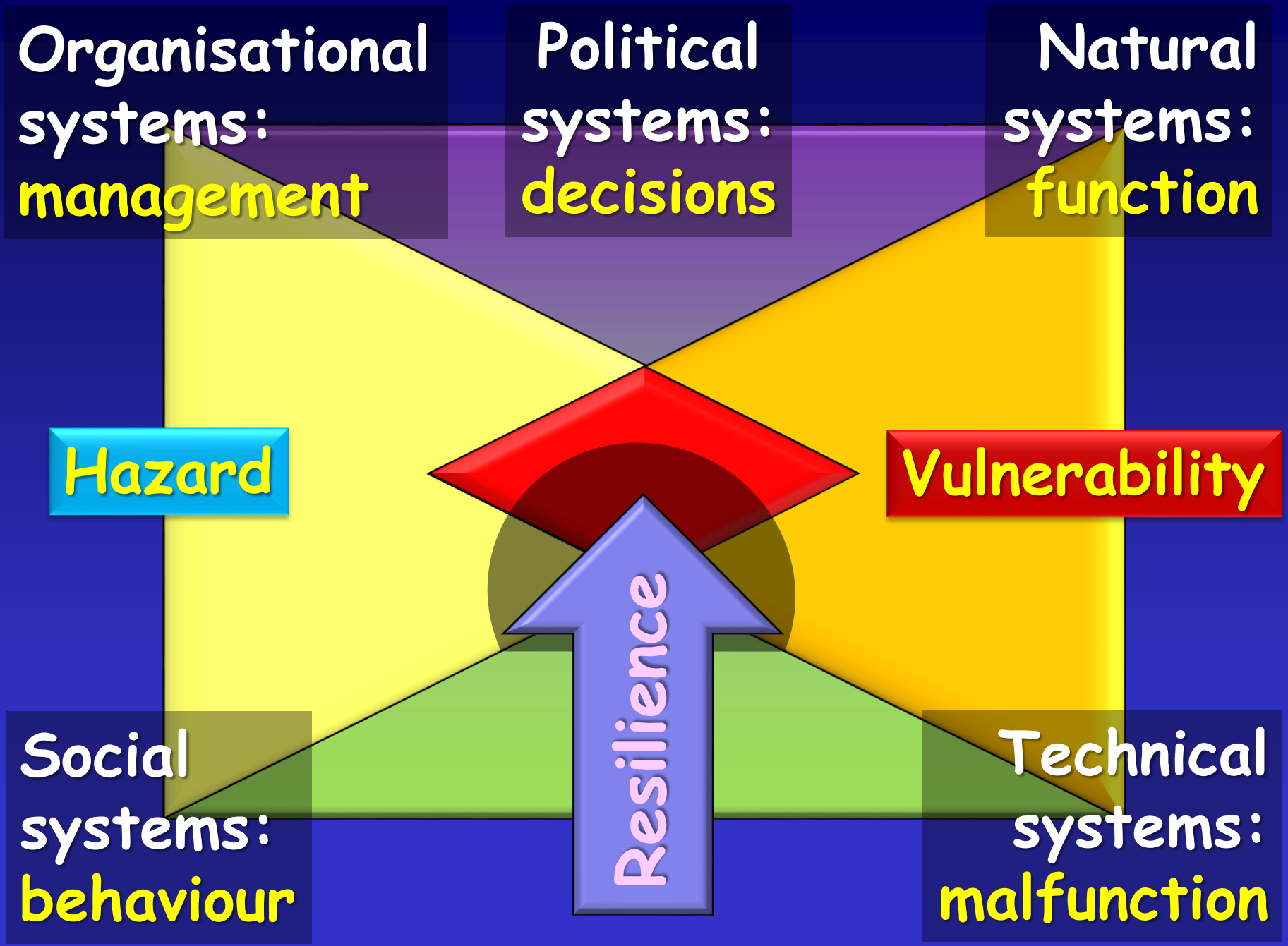
Hazard

Vulnerability

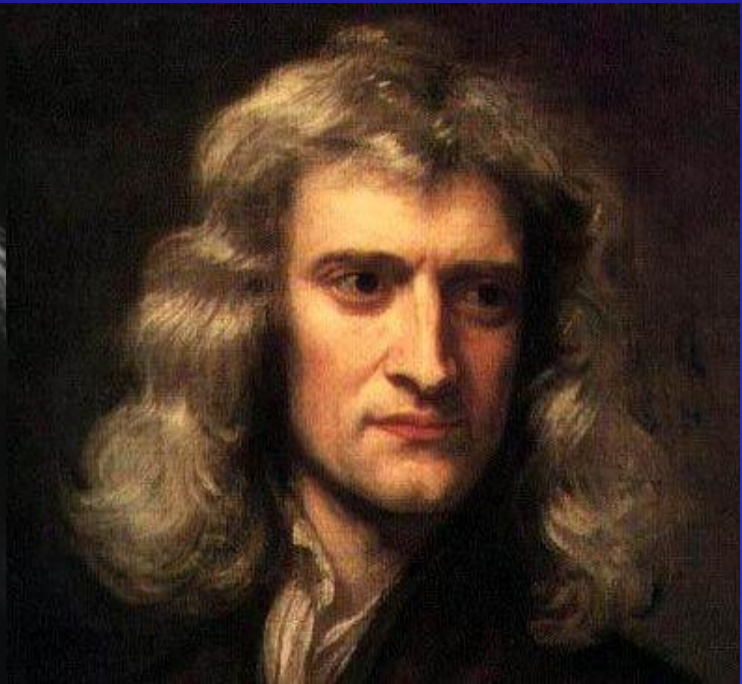
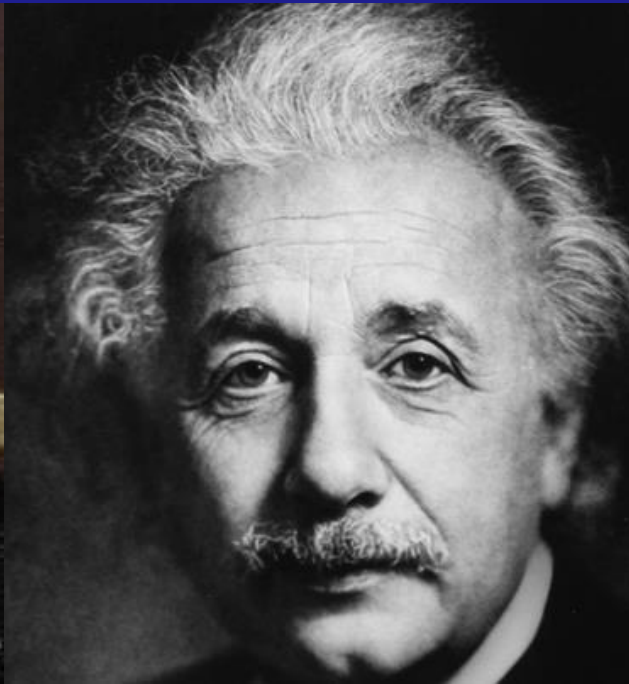
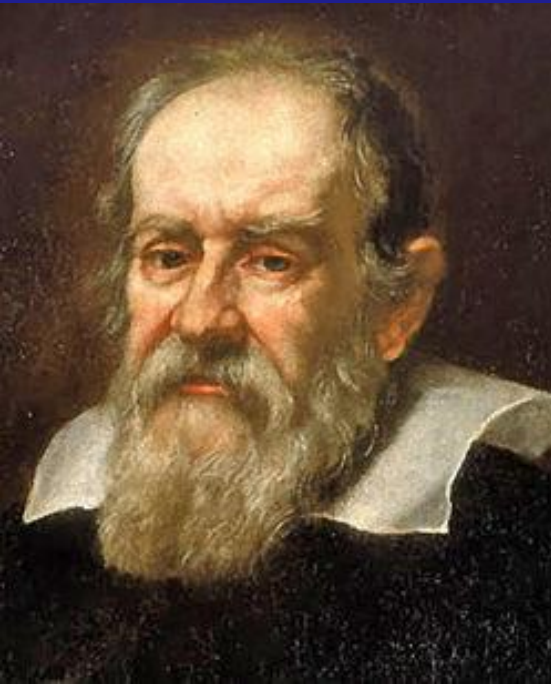
Social  
systems:  
behaviour

Resilience

Technical  
systems:  
malfunction



The great scientists were highly sensitive to the social implications of their work.





A man with a grey beard and mustache, wearing a purple long-sleeved shirt and dark trousers, is riding a camel. The camel is decorated with a red and white striped saddle and a decorative headpiece. The background shows a desert landscape with mud-brick walls. A red speech bubble points to the man.

Thank you for  
your attention!

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