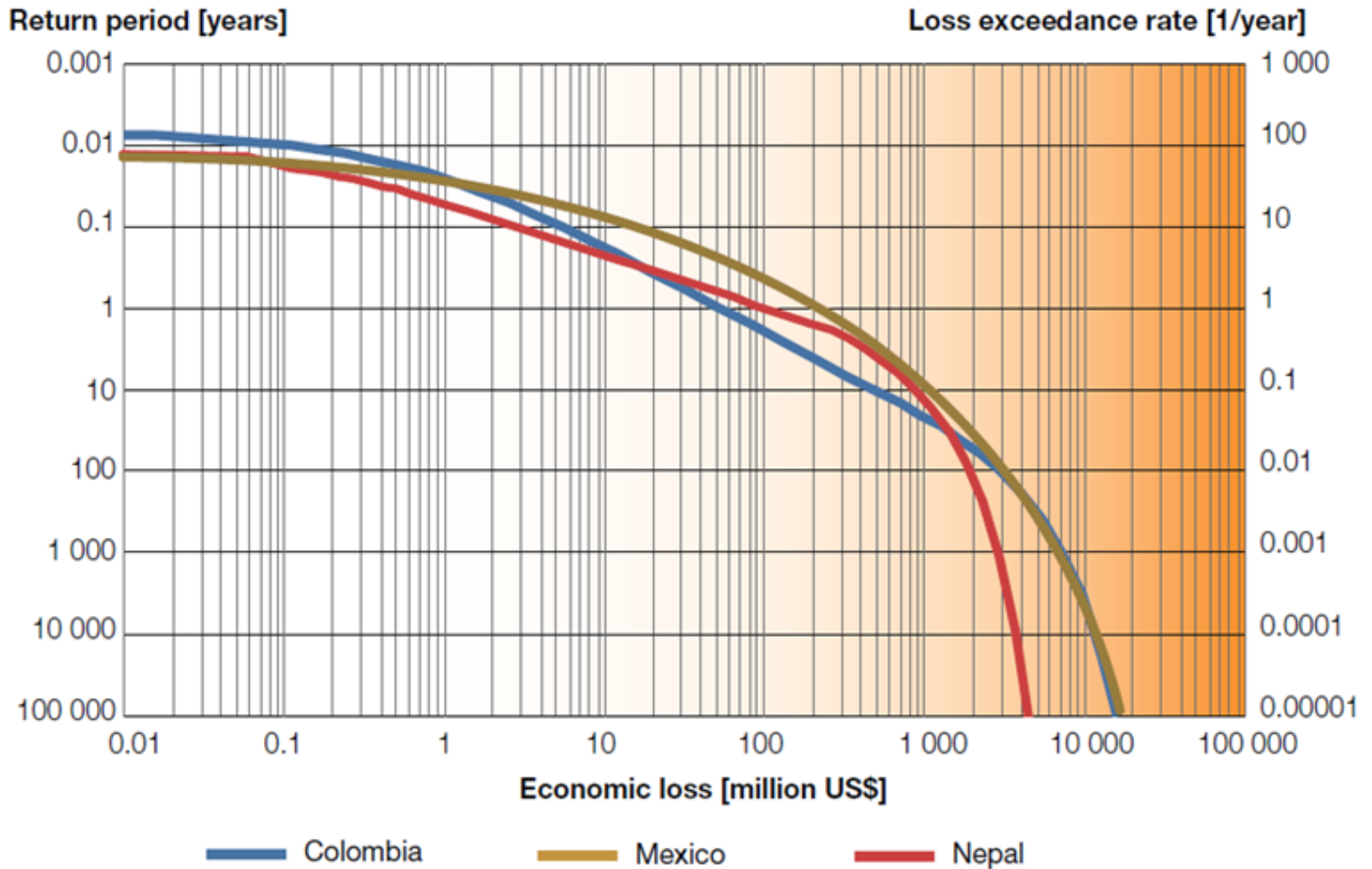




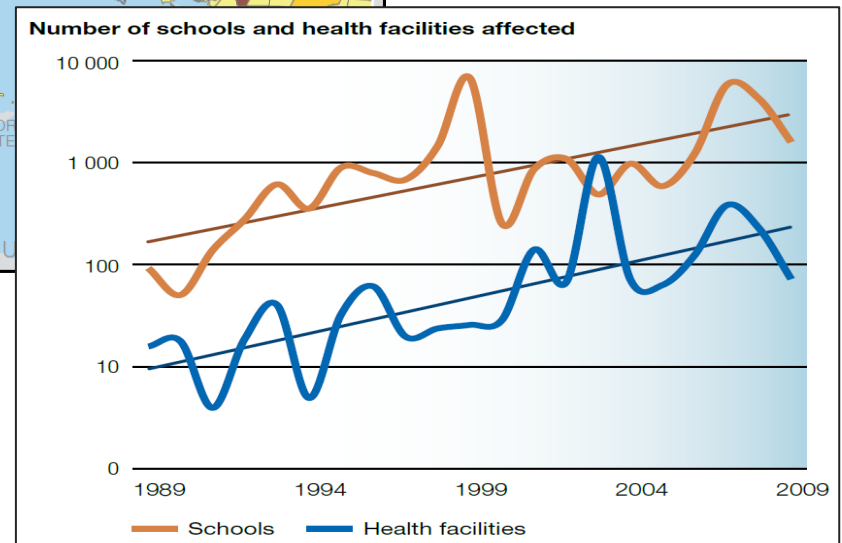
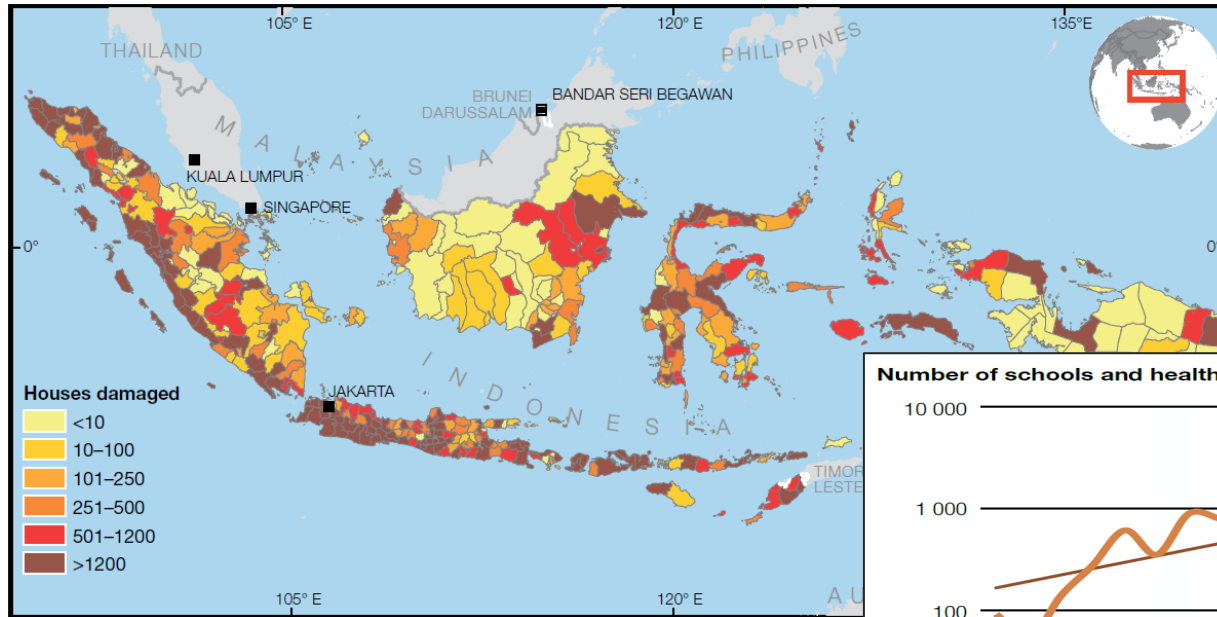
UNFCCC Expert Meeting on assessing the loss and damage associated with the adverse impacts of climate change



# The risk footprint



# Increasing losses



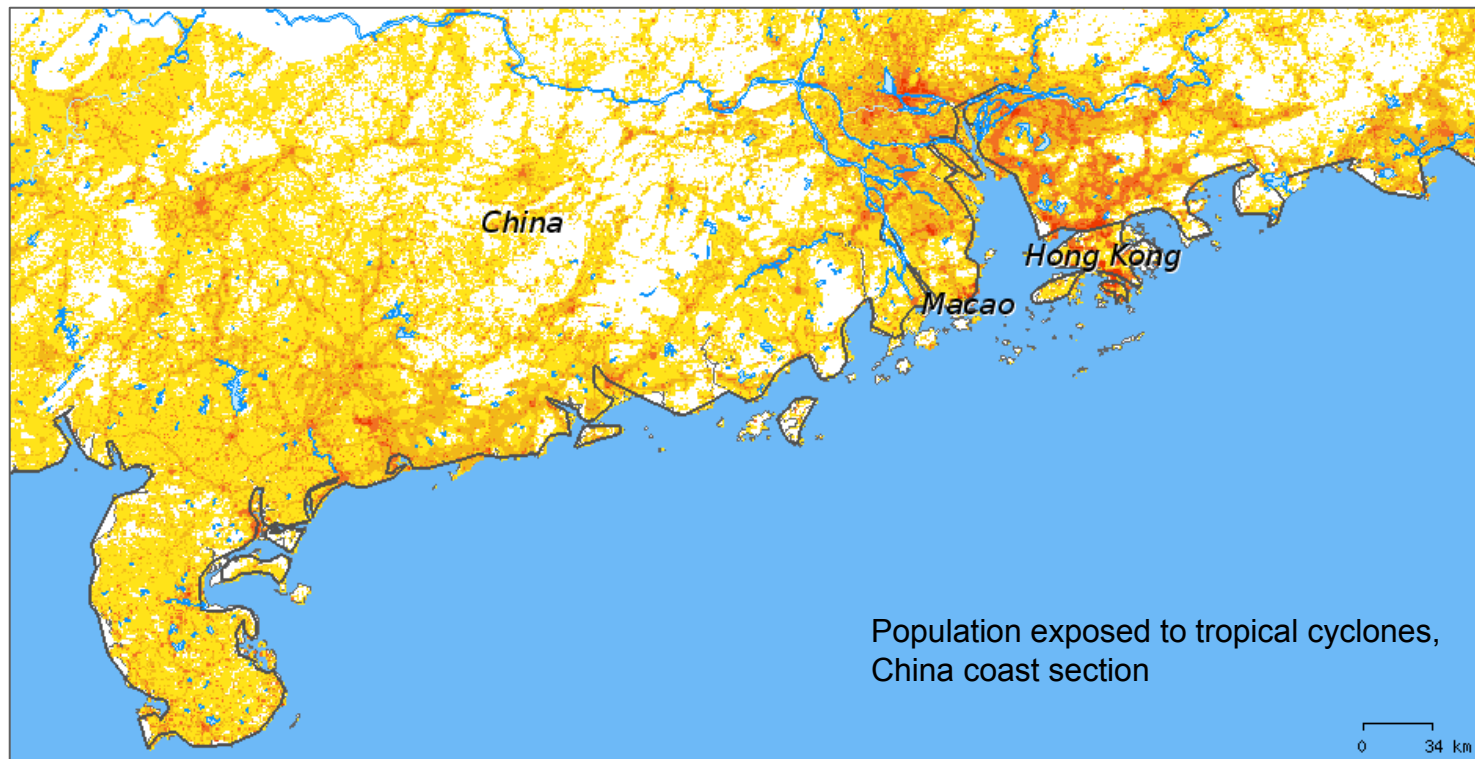
# Growing impacts

Economic loss (million US\$)



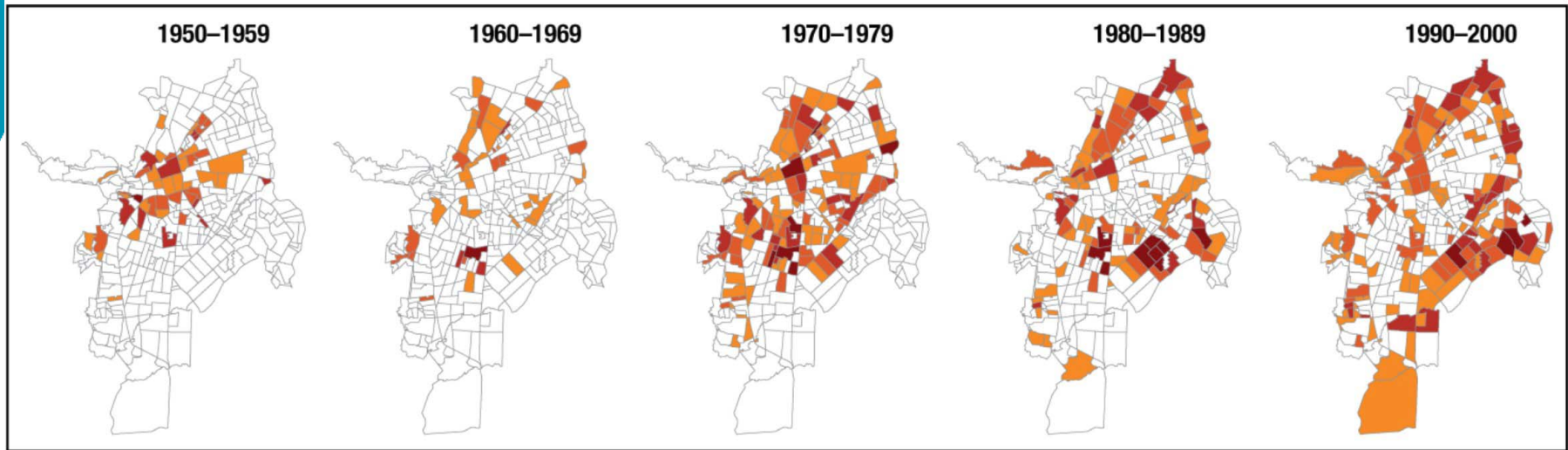
Disaster losses by Presidential period Mexico 1982 – 2009

# Increased exposure of people and economic activities to weather-related hazards



# Deficient urban and local governance

Floods in Cali, Colombia since the 1950's mirroring the expansion of informal settlements in the city



Number of flood events

0

1

2-3

4-6

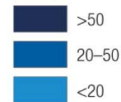
>7

# Vulnerable rural livelihoods

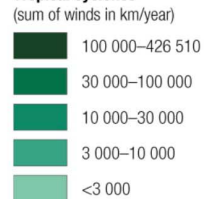
## Weather related hazards in Africa

### Weather-related hazards

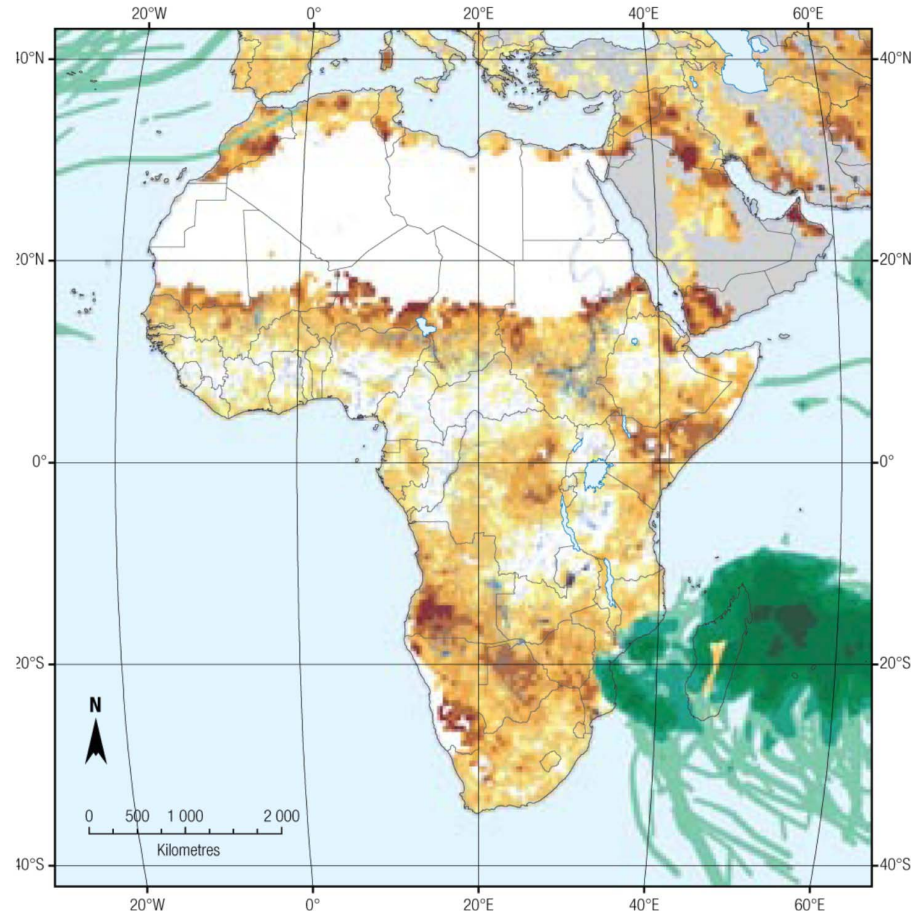
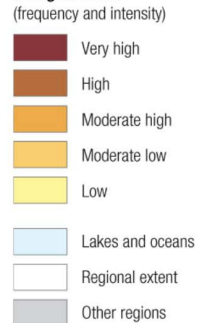
#### Floods (average annual frequency)



#### Tropical cyclones (sum of winds in km/year)

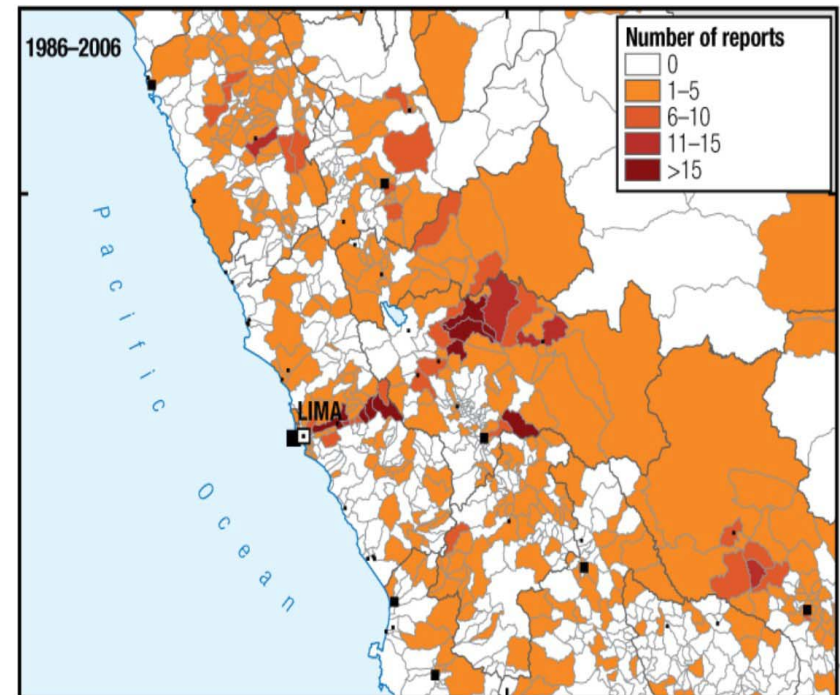
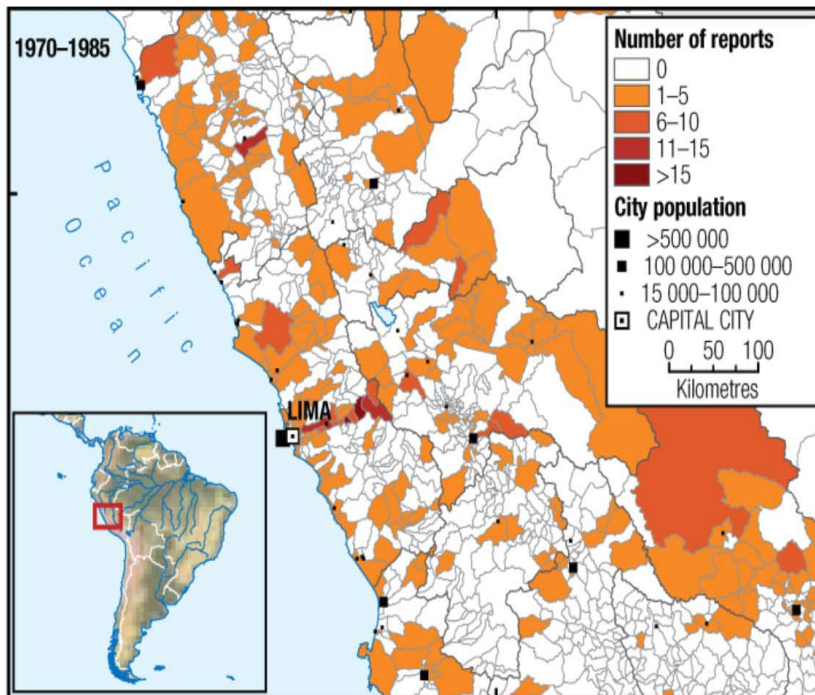


#### Droughts index (frequency and intensity)



# Declining ecosystem services

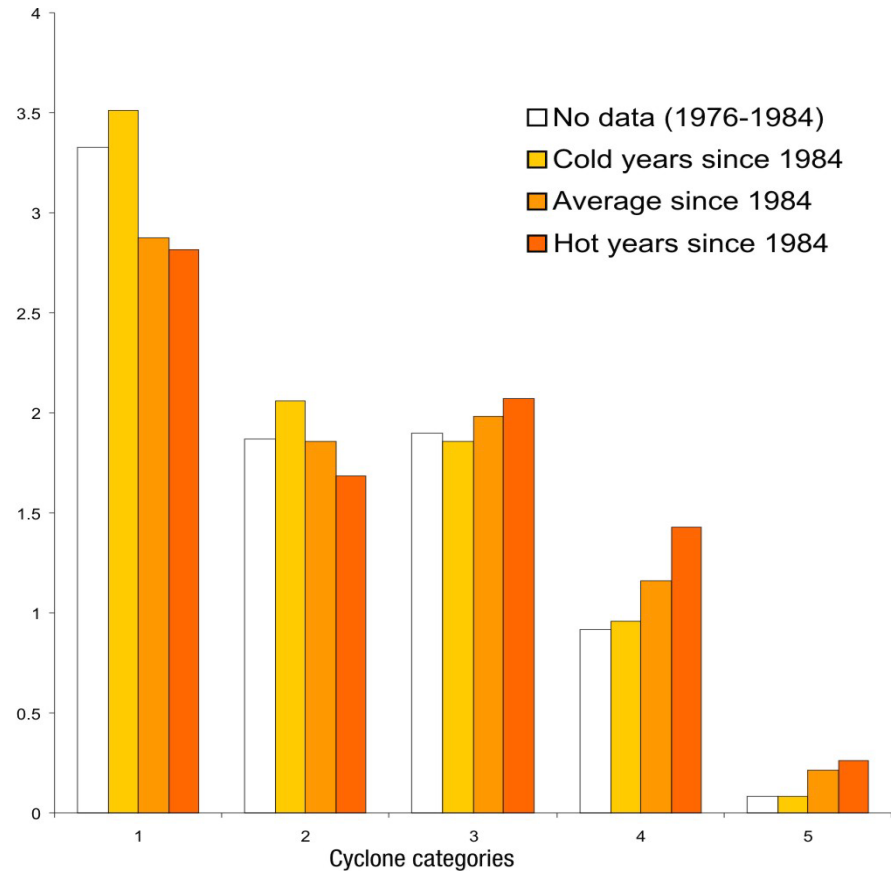
## Landslide risk in Peru before and since the mid 1980s





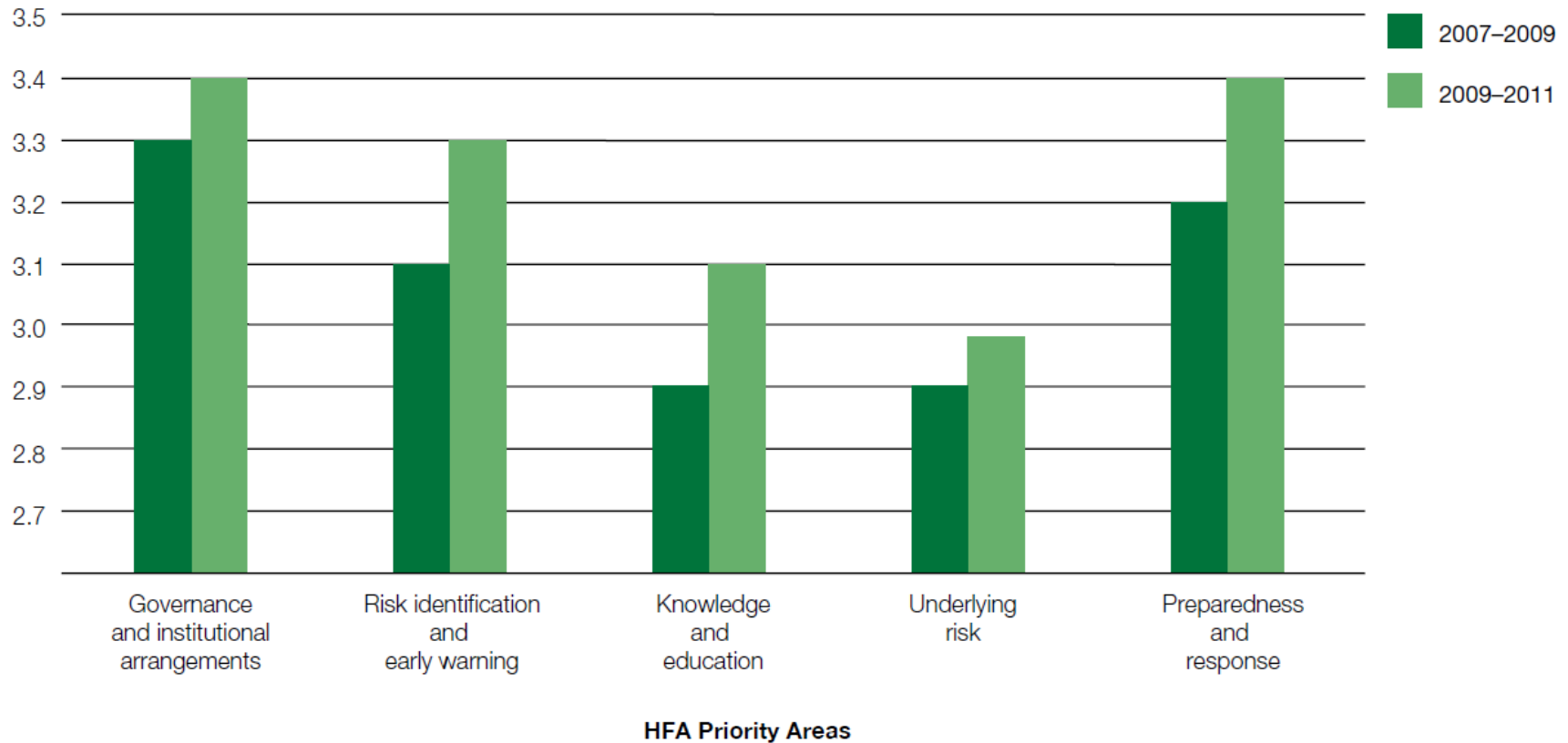
# Magnified by climate change

**Annual average tropical cyclone occurrence 1977-1984 and 1985-2006**



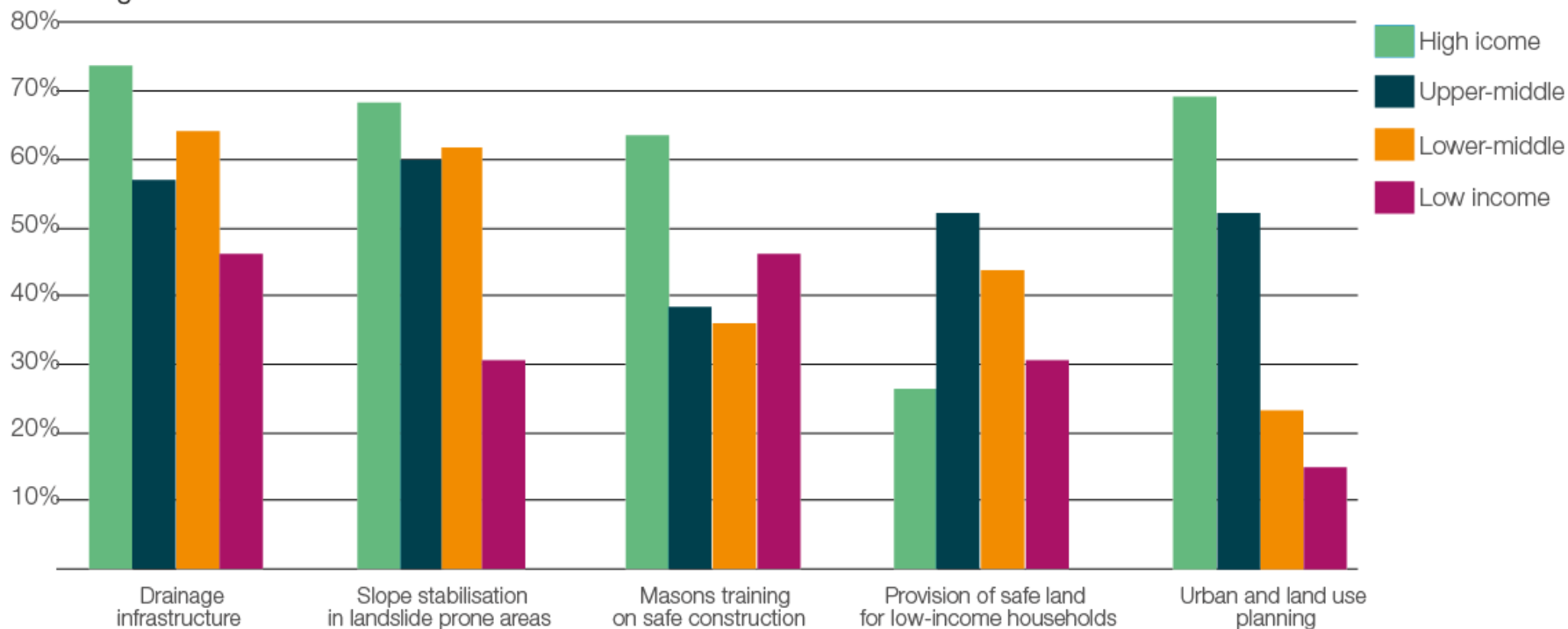
# Mixed progress towards achieving the HFA

Average score of progress



# Low investment in vulnerability reduction

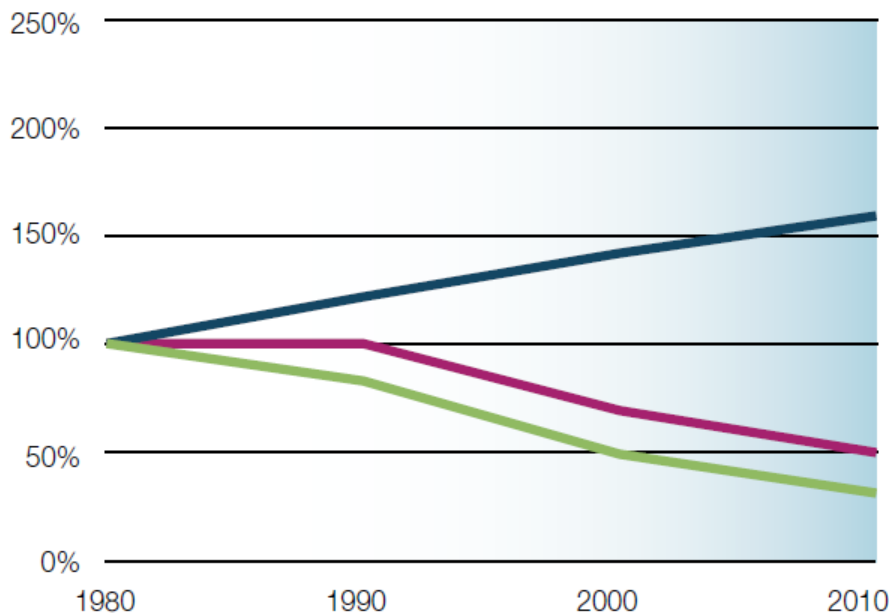
Percentage of countries



# Falling mortality – rising economic loss risk

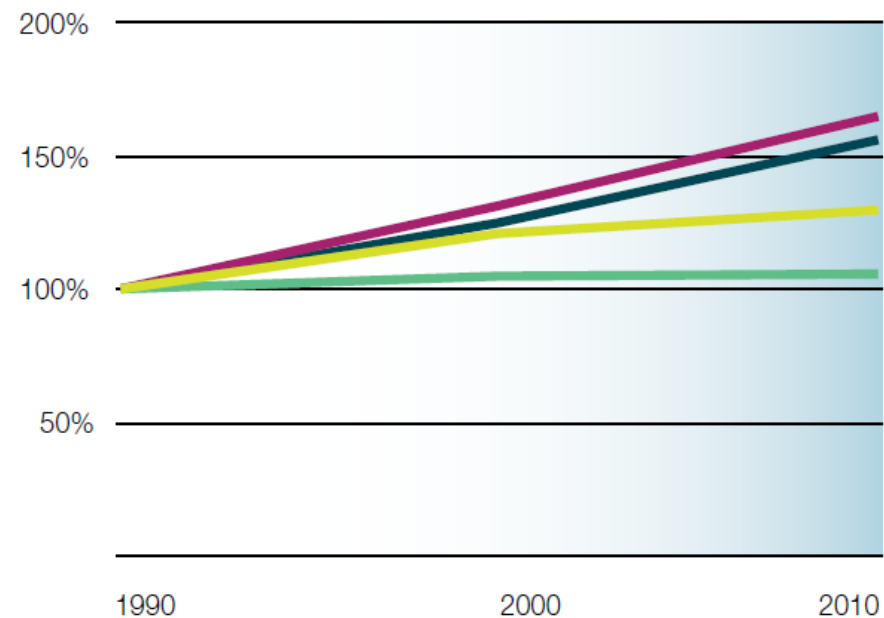
## Cyclone mortality risk

Percent change (East Asia and the Pacific (EAP))



## Flood economic loss risk

Percent change (OECD countries)



Exposure

Risk

Vulnerability

GDP per capita

# Systematically account for disaster losses

DesInventar on-line Query/Search - Windows Internet Explorer

http://desinventar/DesInventar/results.jsp

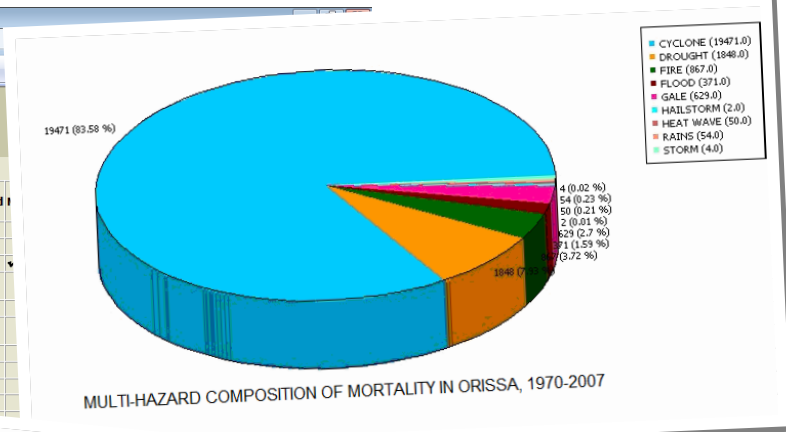
DesInventar | Home | Region | Login | Logout | Download | Help | About

English | Español | বাংলা | العربية | Français | Bahasa | Português

Query | View data | View map | Charts | Statistics | Reports | Thematic | Crosstab

Region **Orissa** - [OR]      Data: **Query Results**       Standard     Extension

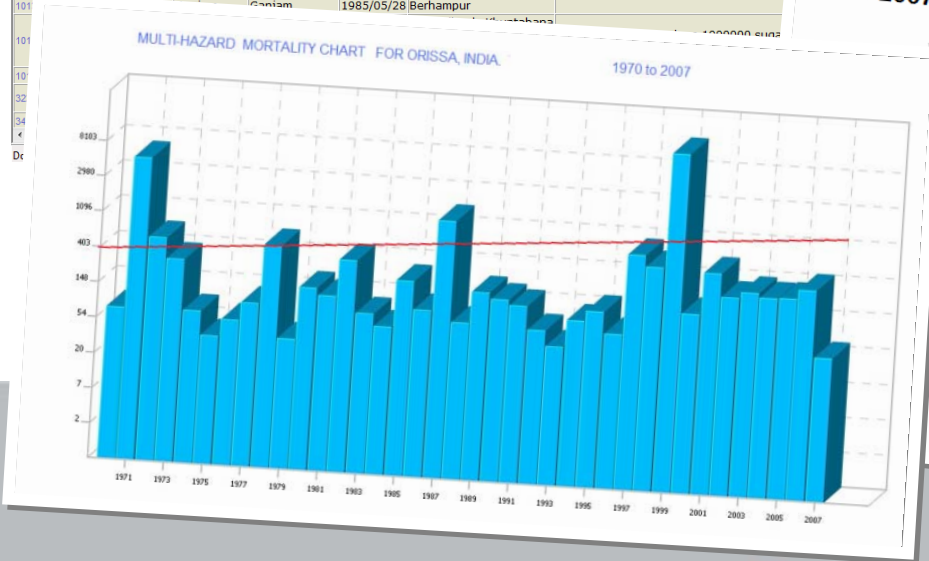
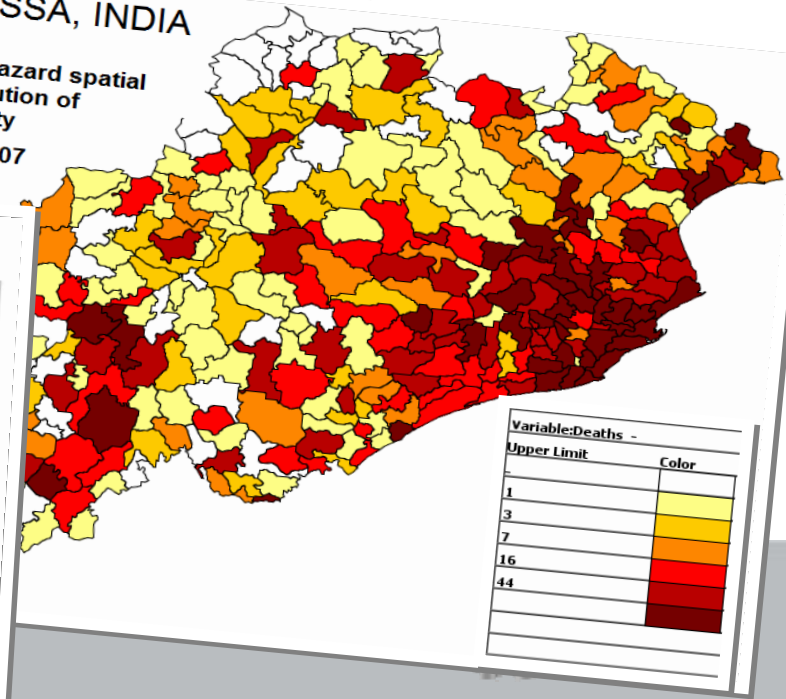
Serial (Click for details)	Event	State	District	Block	Date	Location	Comments	Deaths	Injured
82	CYCLONE	Orissa	Jajpur	Bari	1970/06/18	Bari panchayat		1	2
195	CYCLONE	Orissa	Balasore		1970/11/15			11	
10056	GALE	Orissa	Kendrapara	Kendrapara	1985/03/31	Chhoti Village	Many trees are fell on the road.		
10092	STRONG WIND	Orissa	Cuttack	Cuttack Sadar	1985/04/30	Cuttack Sadar			6
10099	STORM	Orissa	Jagatsingpur	Jagatsingpur	1985/04/29	Jagatsinghpur		2	
10100	GALE	Orissa	Jajpur	Jajpur	1985/04/29	Kaliapani, chirigunia, Patana, Dhabahali		2	250
10103	STORM	Orissa	Bhadrak	Tihidi	1985/05/04	Nuananda		4	
10108	GALE	Orissa	Keonjhar	Jhumpura	1985/05/07	Naopani		1	
10109	GALE	Orissa	Keonjhar	Jhumpura	1985/05/07	Hatidori		1	
10110	GALE	Orissa	Keonjhar	Jhumpura	1985/05/07	Brahmanajharilo		1	
10113	STORM	Orissa	Jajpur	Jajpur	1985/05/11	Jajpur.			
10116	CYCLONE	Orissa	Sambalpur	Dhankauda	1985/05/11	Gosala, Atabira, Chiplima	67 villages affected in the above cyclone and hailstorm. 8287 houses destroyed and 6568 hectre food grain destroyed. 11kv and 33kv power lines affected in this area. Many people has injured due to the cyclone, & hailstorm.		
242	STORM	Orissa	Balasore	Nilagiri	1971/04/30	Tenda village, Nilgiri	Many houses were affected and many bird was died.		
10121	STORM	Orissa	Jajpur	Rasulpur	1985/05/15	Ismailpur	The above 2 people died when one coconut tree has fell down on them.		
10126	CYCLONE	Orissa	Koraput	Koraput	1985/05/18	Many areas.			
10129	GALE	Orissa	Keonjhar	Champua	1985/05/26	Ranipur, Naopani, Hatidori, Brahmanajilla, Tipandi, Nahapada	Due to this Tornado many houses damaged and many cattle also died.		
10131	STORM	Orissa	Jajpur	Berhampur	1985/05/28	Berhampur			



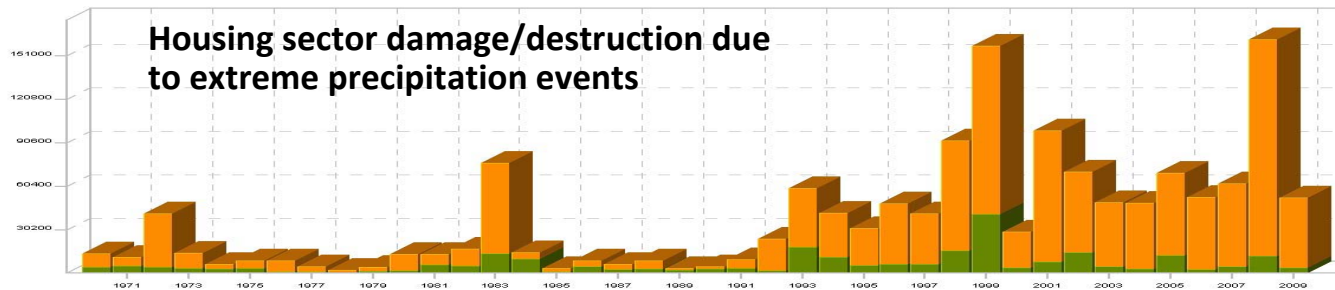
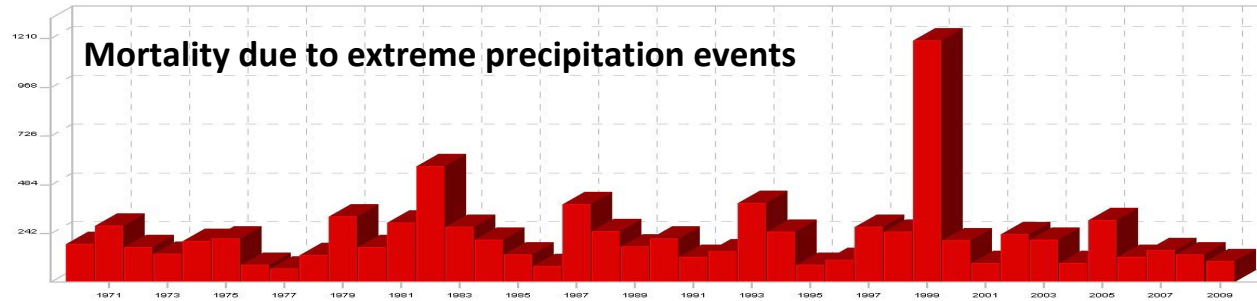
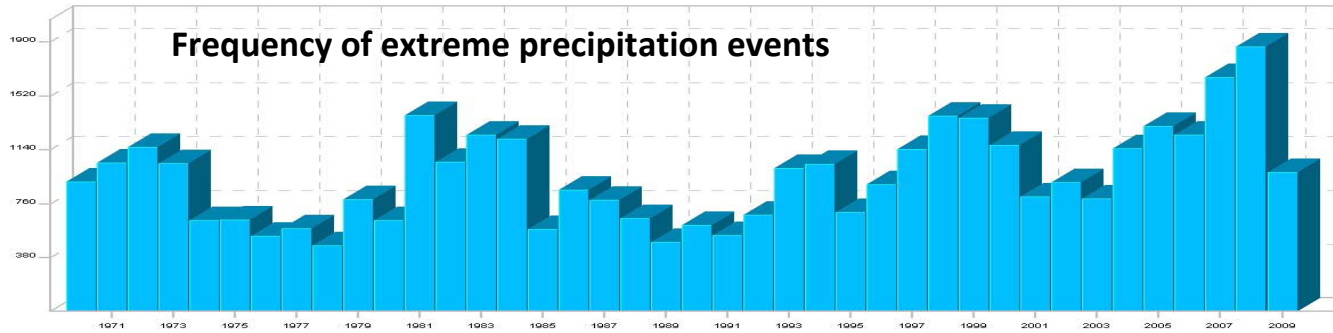
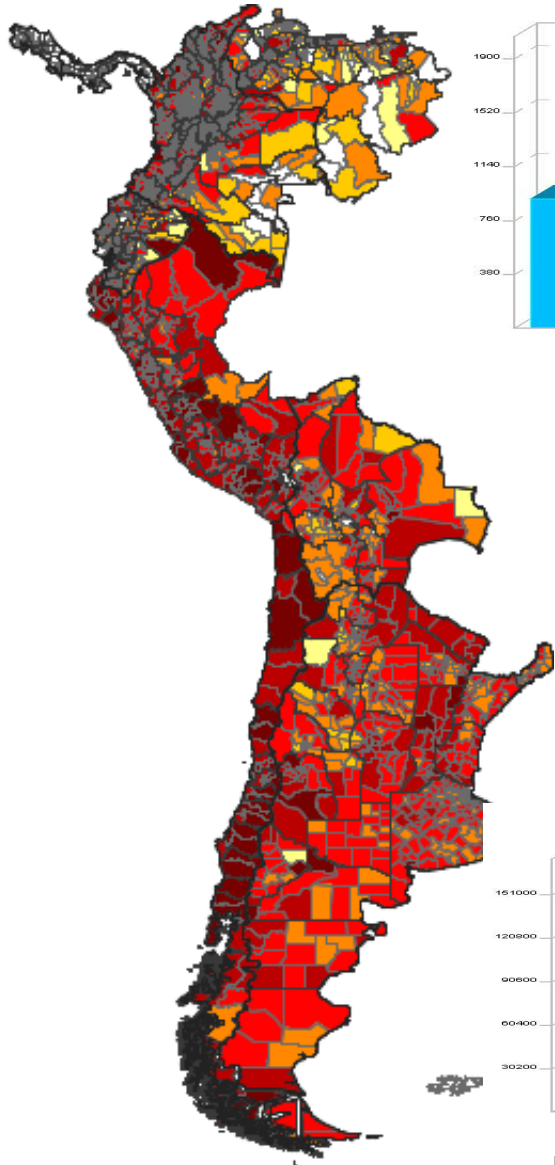
MULTI-HAZARD COMPOSITION OF MORTALITY IN ORISSA, 1970-2007

**ORISSA, INDIA**

**Multi-hazard spatial distribution of mortality 1970-2007**

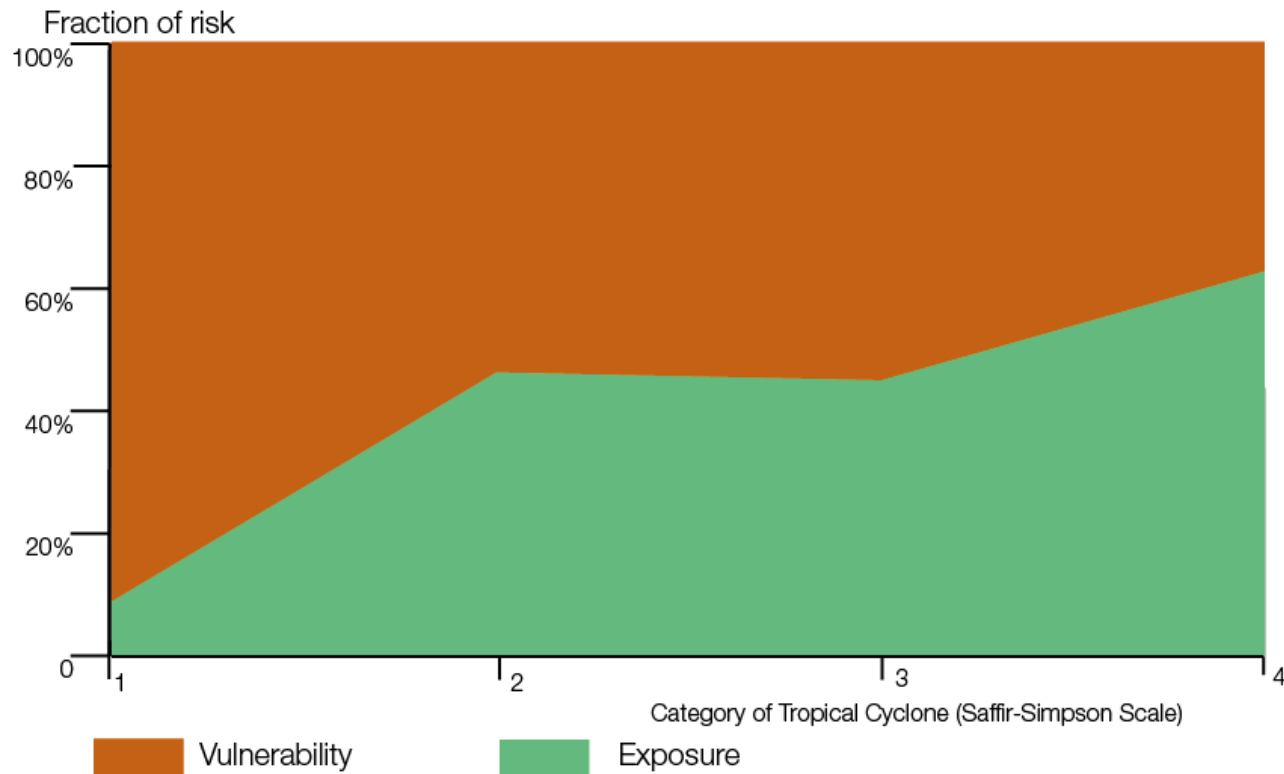


# Establish a base line



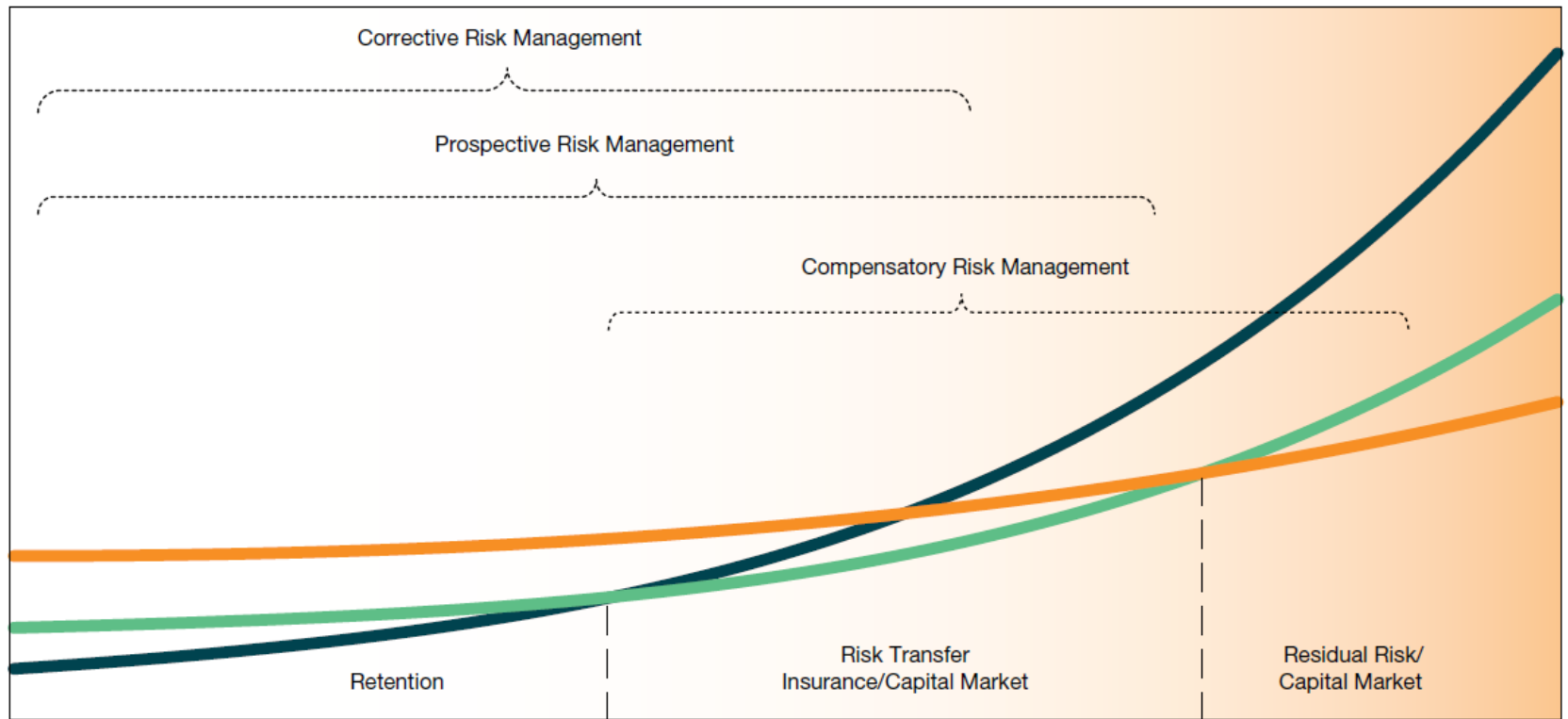
# Identify risk strata

Contribution of cyclone severity, exposure and vulnerability parameters to tropical cyclone risk



# Transfer catastrophic risk

Cost of the instrument



Probable loss

— National Reserve Funds

— Insurance/Reinsurance

— Capital Market/Cat Bonds



# Use public investment planning

## Cost-benefit ratio

