



Chulalongkorn University



# Disaster Risk Reduction and Management

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Bangkok, 8 of January 2014**

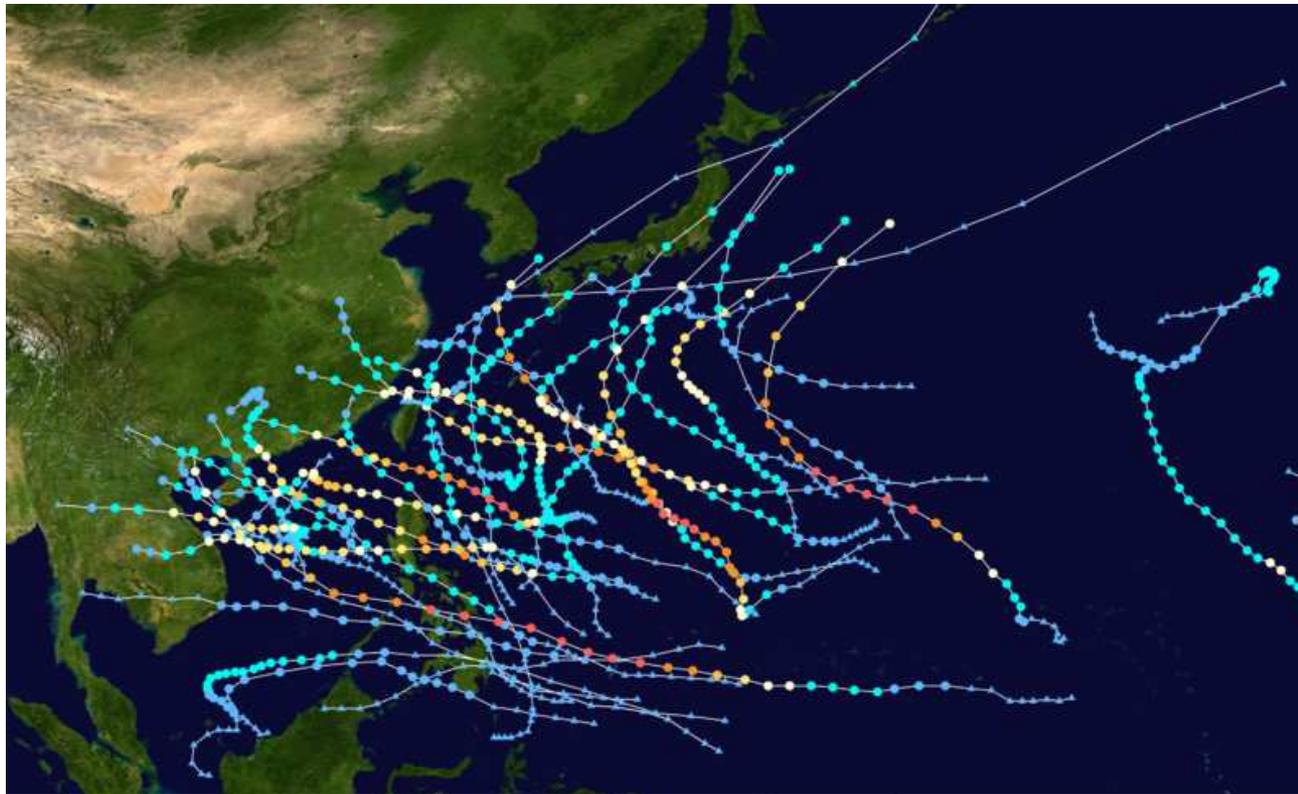
# **Content**

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- 2. Disaster risk reduction in Asia**
- 3. Climate change and disaster impacts**
- 4. Floods and droughts in Asia**
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- 6. Gender risks and insecurity in DRM**
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# 1. Global Risks (Beck, 2012)

1. **De-localization:** causes and consequences are not limited to one space: they are **omnipresent**. Do not respect borders and nation states and have long latency period (e.g. toxic waste, CC): nation-state is not the frame → cosmopolitan post-modern authorities
2. **Incalculableness:** unpredictable, complex, non-linear, global with local impacts and impersonal
3. **Uncertainty:** unknown, unpredictable future with cascading effects (Fukushima) or tipping points
4. **Non-compensatibility:** precautionary principle, preventive & proactive instead of reactive behaviour

# 2. Disaster risk reduction in Asia



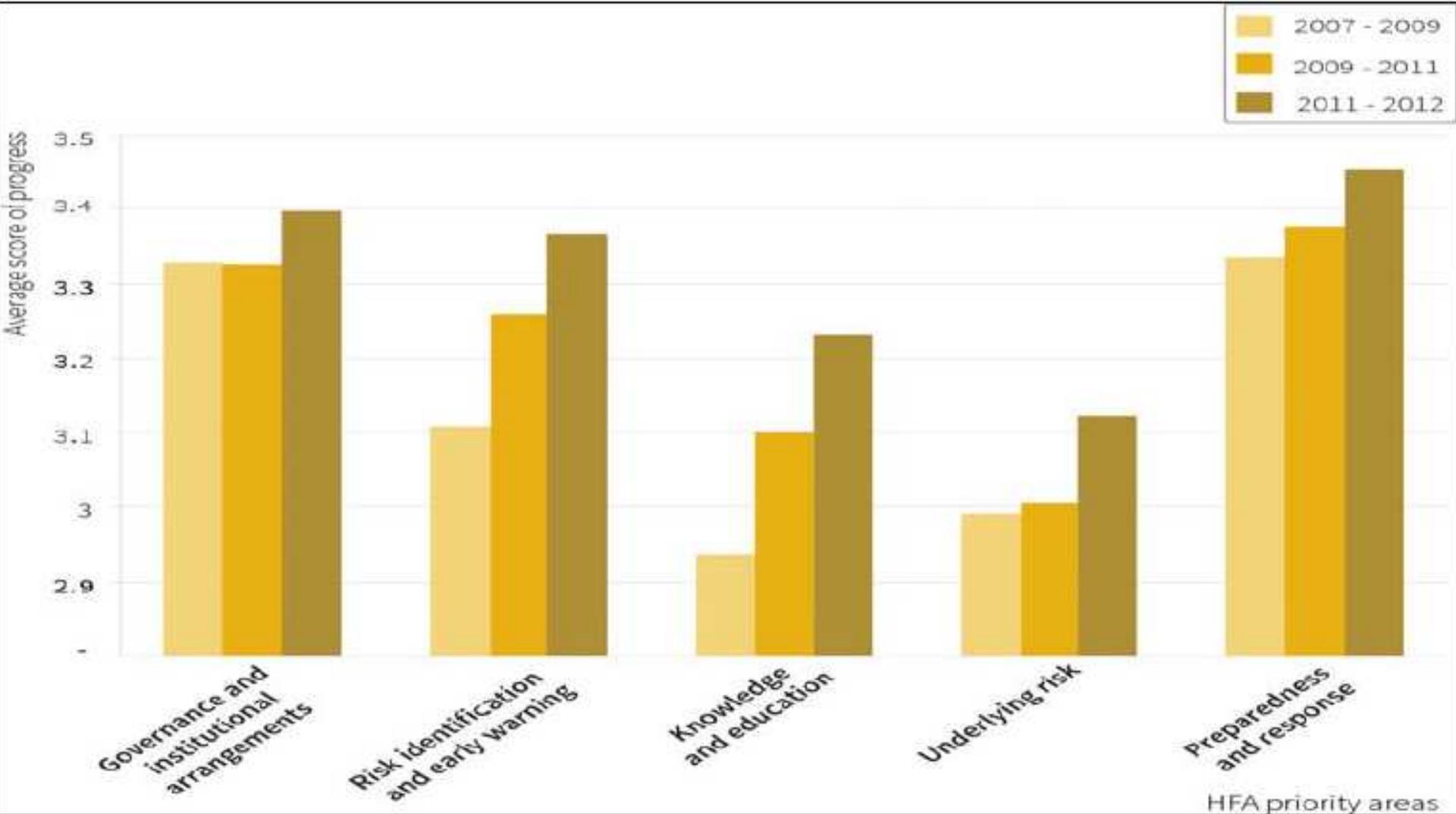
	Tropical depression	<39 mph	<63 km/h		Category 3	111–129 mph	178–208 km/h
	Tropical storm	39–73 mph	63–117 km/h		Category 4	130–156 mph	209–251 km/h
	Category 1	74–95 mph	119–153 km/h		Category 5	>156 mph	>251 km/h
	Category 2	96–110 mph	154–177 km/h		Unknown		

## Storm type

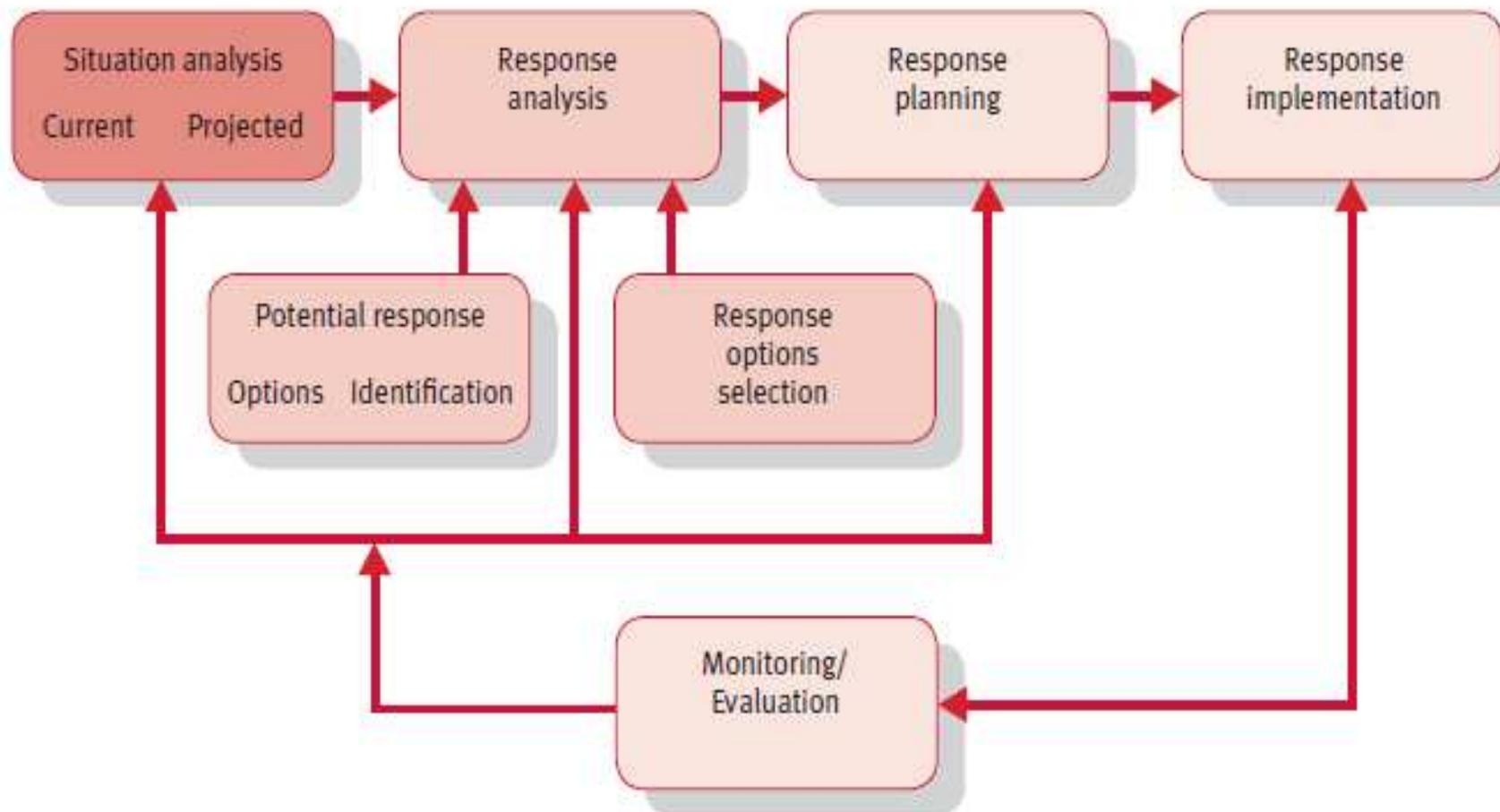
-  Tropical cyclone
-  Subtropical cyclone
-  Extratropical cyclone / Remnant low/ Tropical disturbance

# Hyogo Framework for Action (HFA)

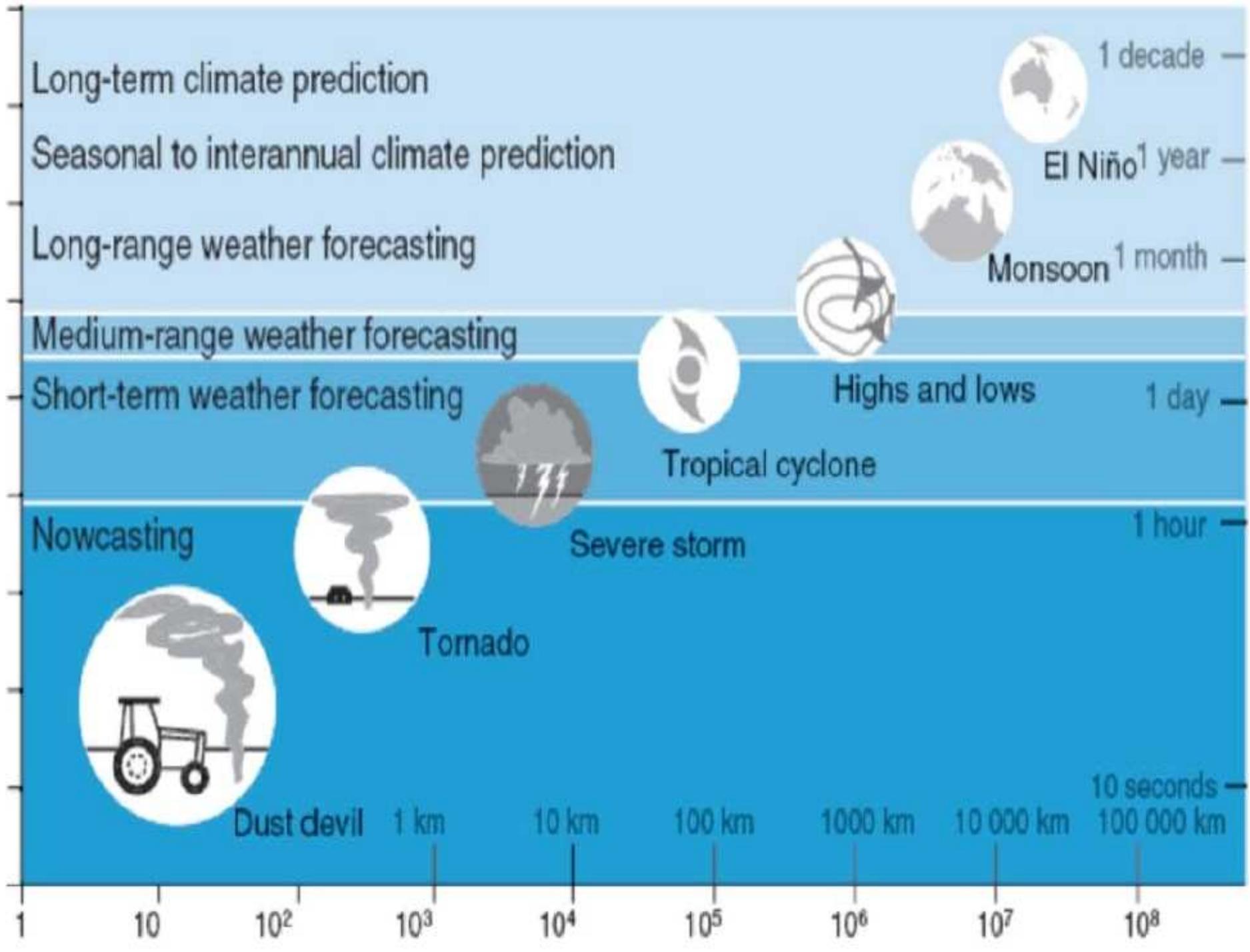
Source: UN, 2013:4



# 3. Climate change and disaster impacts

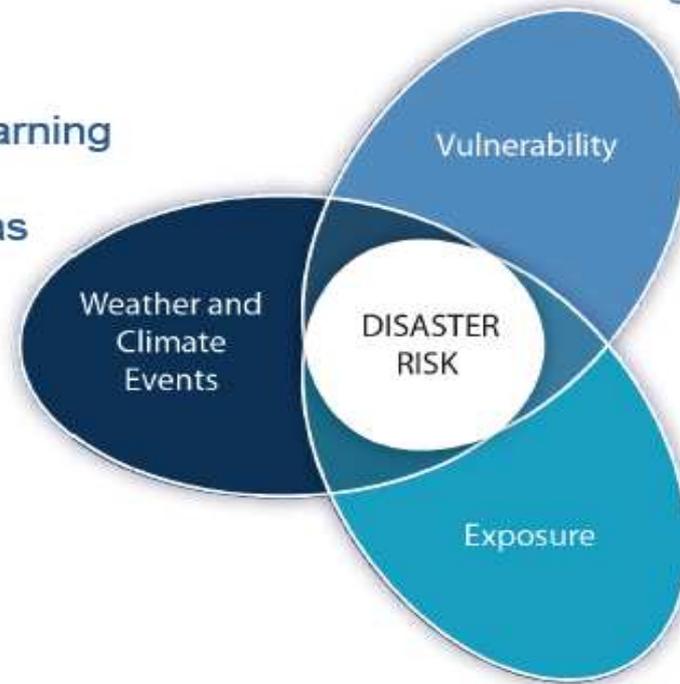


Source: A Framework for Food Security and Nutrition Response Analysis: Conceptual, Analytical and Process Issues, FAO, 2011.



# Environmental & social vulnerability, exposure and disaster risks reduction management (DRRM)

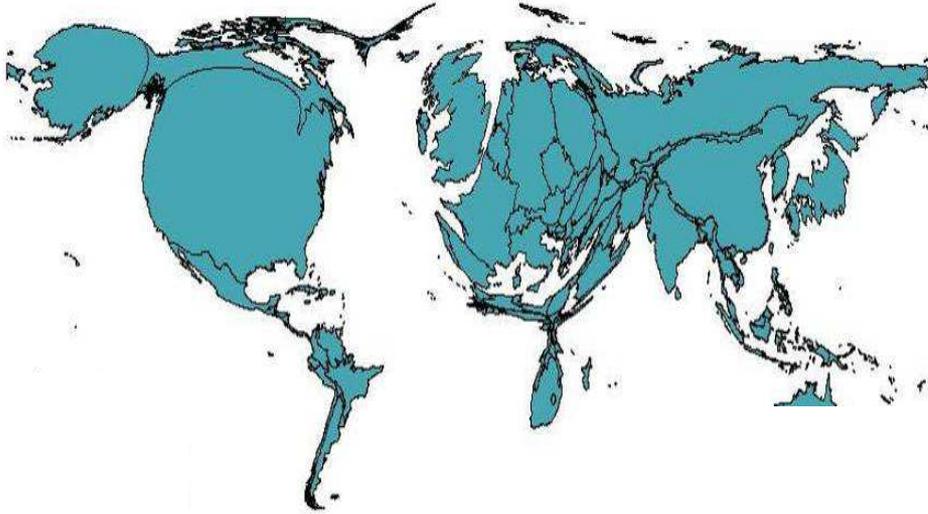
- improved forecasting for warning systems
- reduction of greenhouse gas emissions



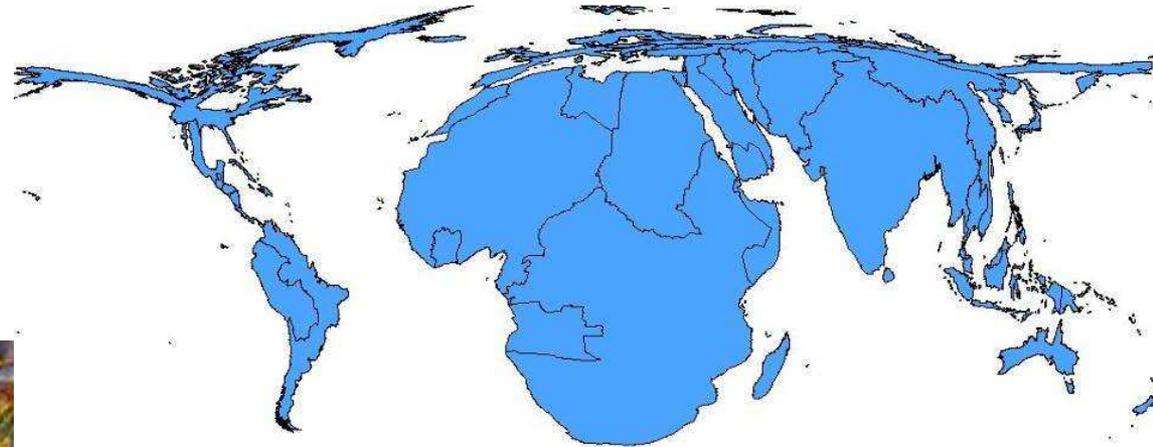
- poverty reduction
- better education and awareness
- sustainable development

- asset relocation
- weather-proofing assets
- early warning systems

# Health Inequality: Emissions of Green House Gases



## Health impacts related to climate change

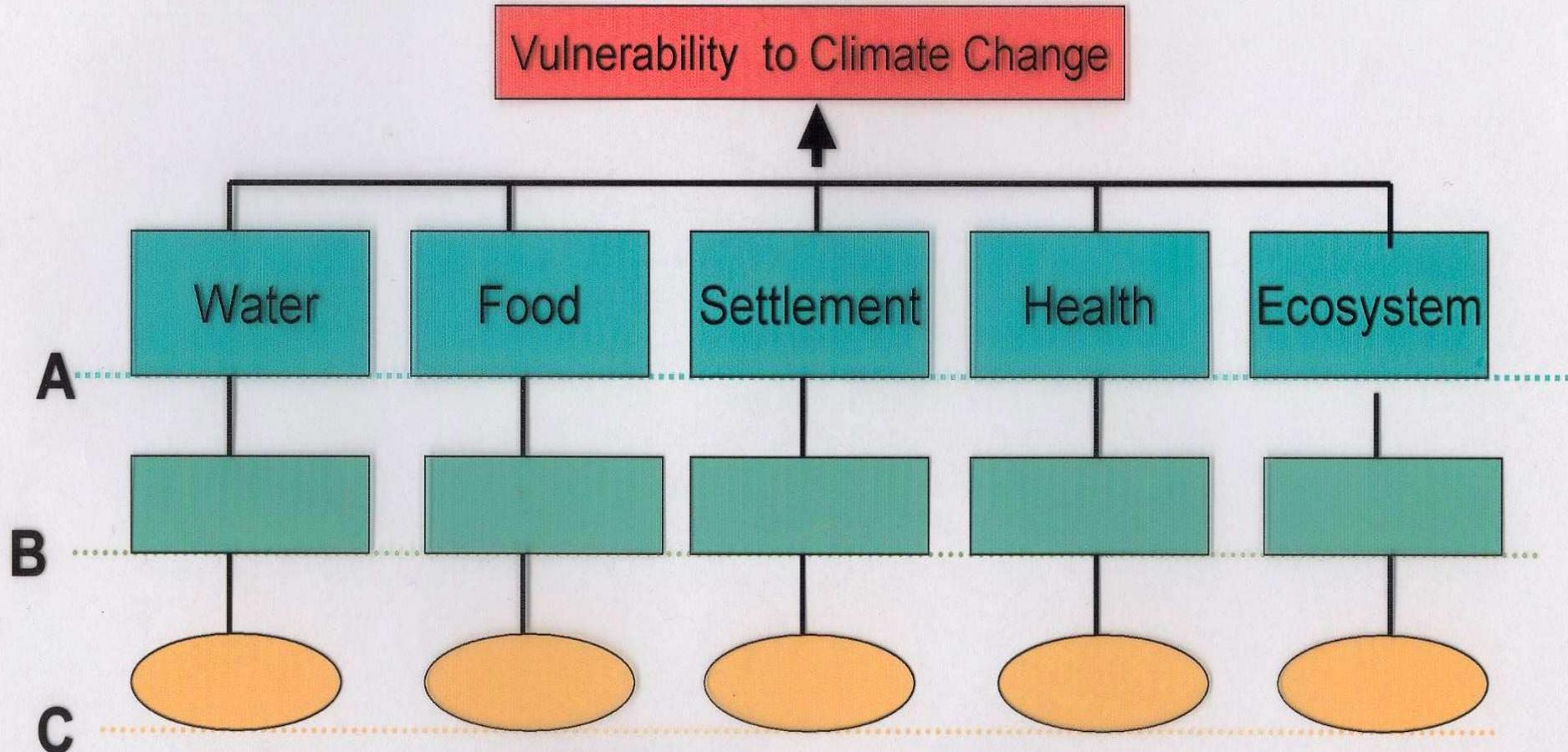


Patz et al., 2007; WHO, 2008.



This map shows estimated mortality (per million people) attributable to climate change by the year 2000. Map is a density-equalizing cartogram in which the sizes of the 14 WHO regions are proportional to the increased mortality.

Assessing Vulnerability (R.T. Watson, et al. 1998. IPCC)



A: Sectoral level; B: Coping level; and C: Sensitivity level

**Vulnerability =  $f$ ( sensitivity, adaptability, exposure)**

# **ADAPTATION STRATEGIES**

```
graph TD; A[ADAPTATION STRATEGIES] --- B[Risk Analysis]; A --- C[Improving Management and Decision-Making Capacity]; A --- D[IWRM]; A --- E[Engage local stakeholders]; A --- F[Investment]
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**Risk  
Analysis**

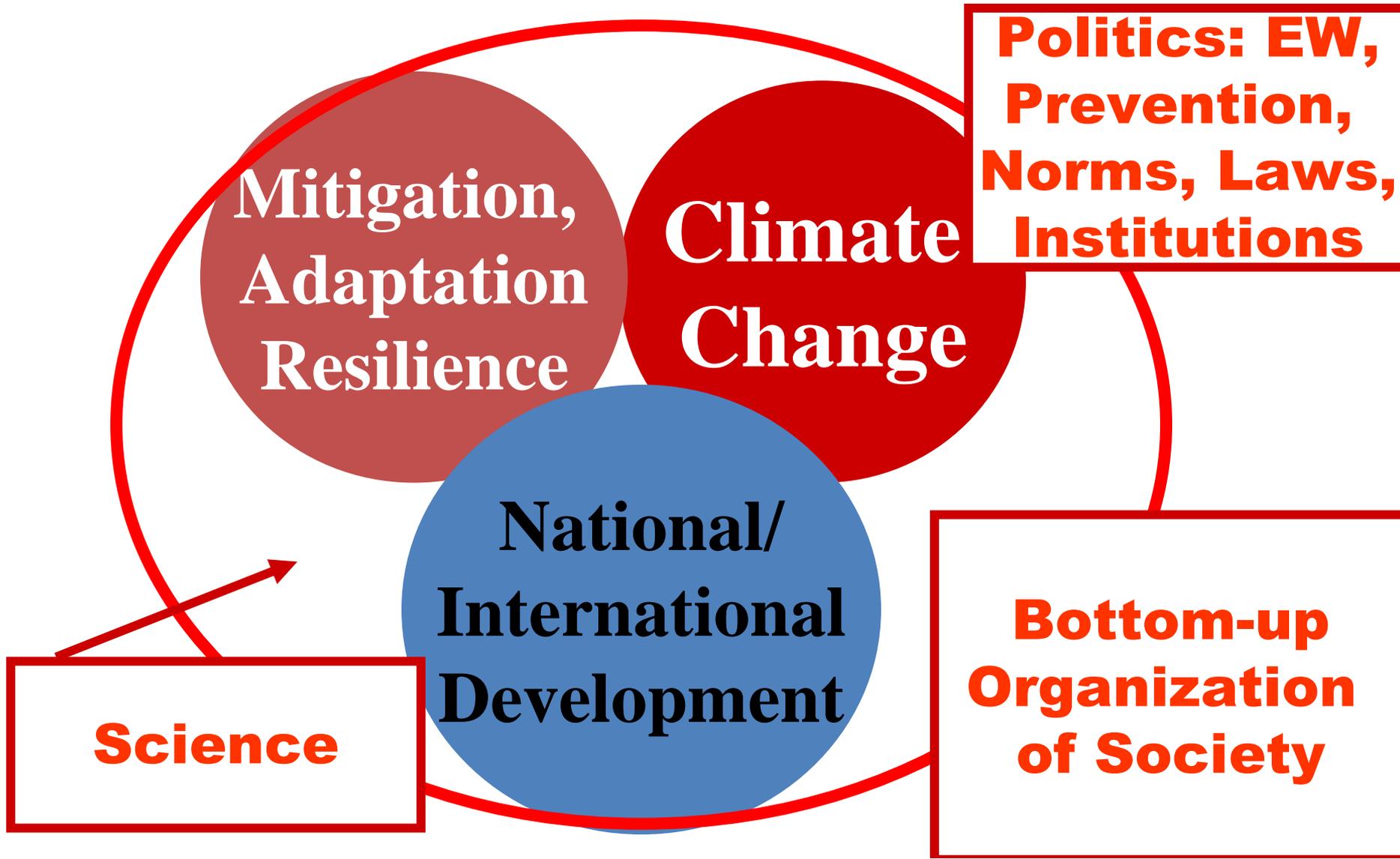
**Improving  
Management and  
Decision-Making  
Capacity**

**IWRM**

**Engage local stakeholders**

**Investment**

**Alternatives: Prevention, resilience-building, sustainable development, poverty alleviation, planning, ecosystem recovery**



**Mitigation,  
Adaptation  
Resilience**

**Climate  
Change**

**Politics: EW,  
Prevention,  
Norms, Laws,  
Institutions**

**National/  
International  
Development**

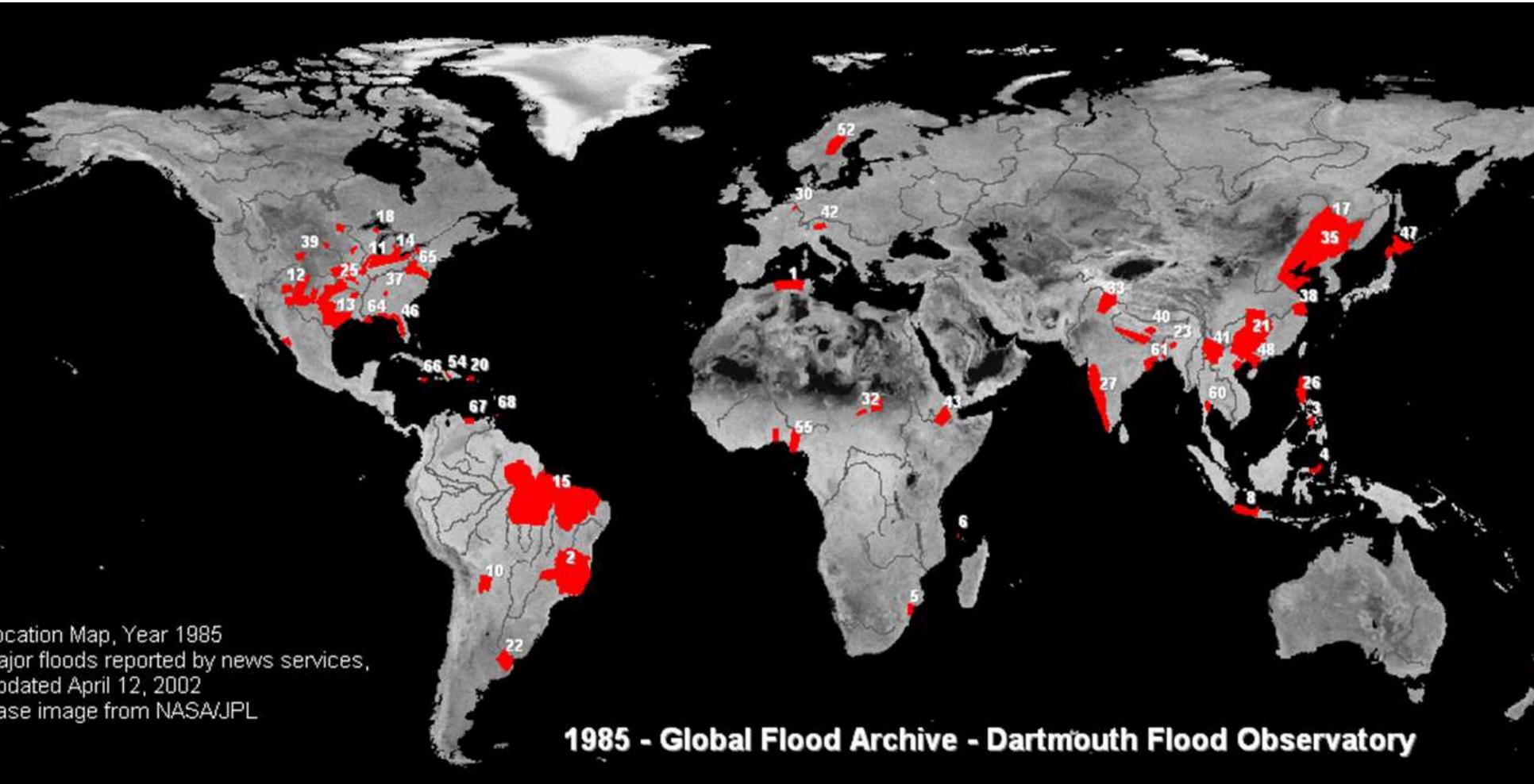
**Science**

**Bottom-up  
Organization  
of Society**

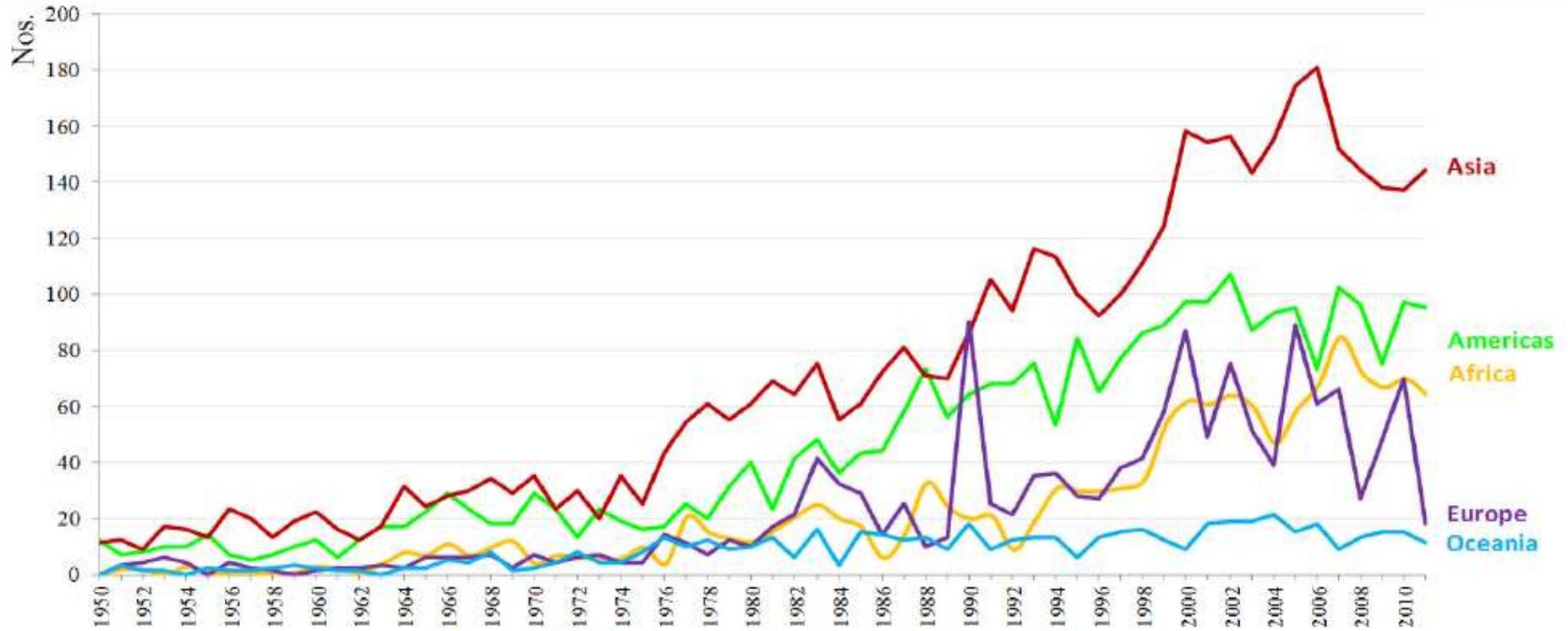
# Resilience

Resilience is the **social capacity** and **ability** to **anticipate, reduce, accommodate, and recover** from the effects of an extreme or a hazardous event in relatively **short term** and in an **efficient manner**. Often a resilient society is **better organized** and **prepared after** an natural event has occurred and can **anticipate future extreme** events with better **preparedness** and less **human, natural** and **financial losses**. Resilience manage better hazards and avoids disasters.

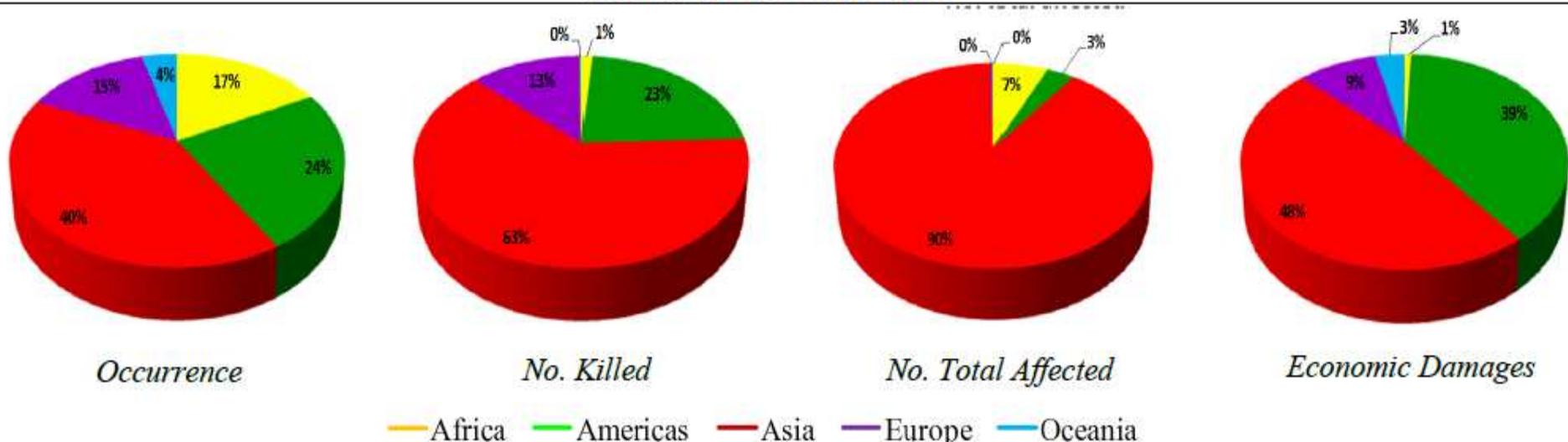
# 4. Floods and drought in Asia



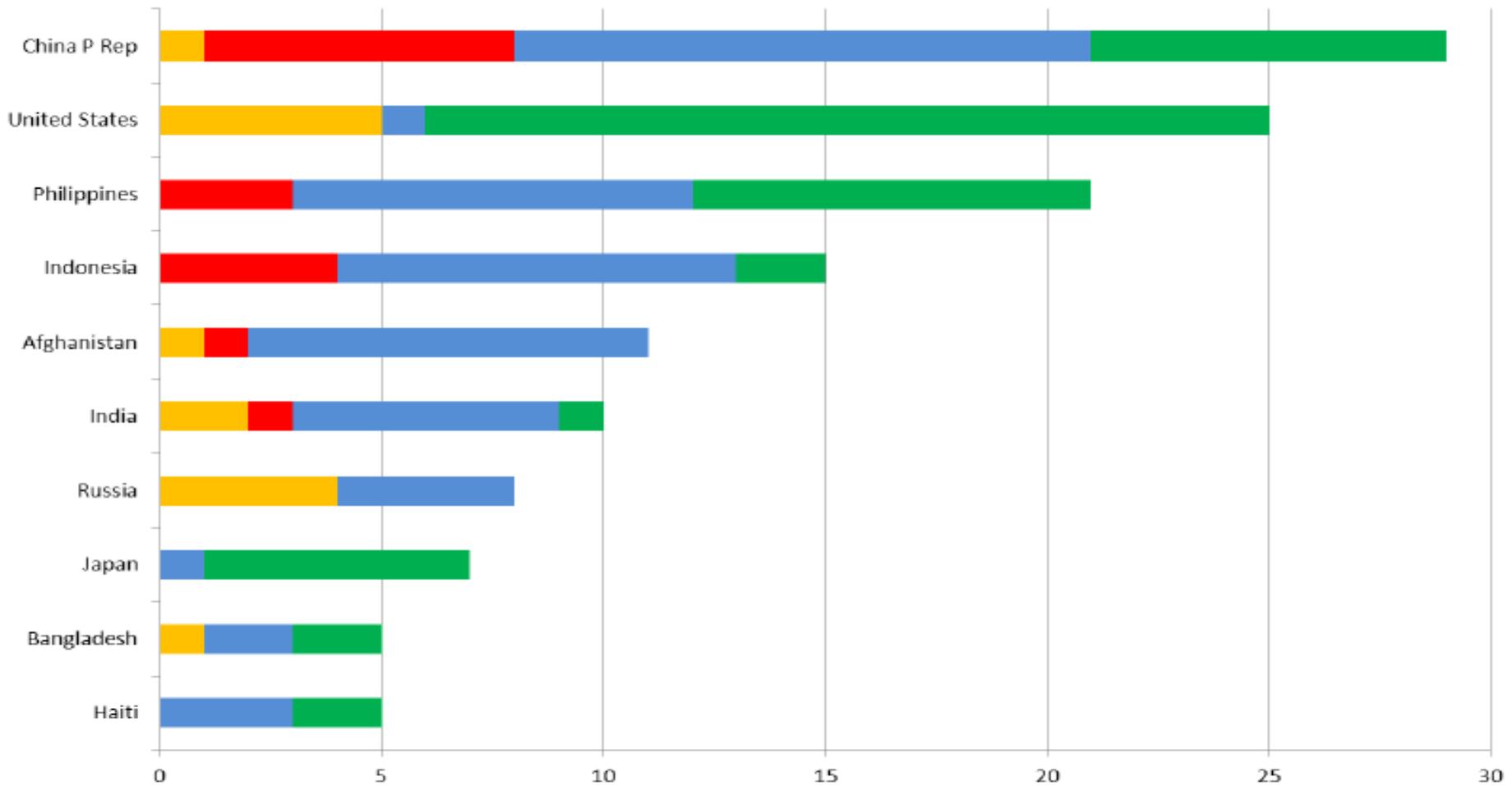
# Occurrence of reported natural disasters by continent: 1950 to 2011



## Asia's share: 2002-2011



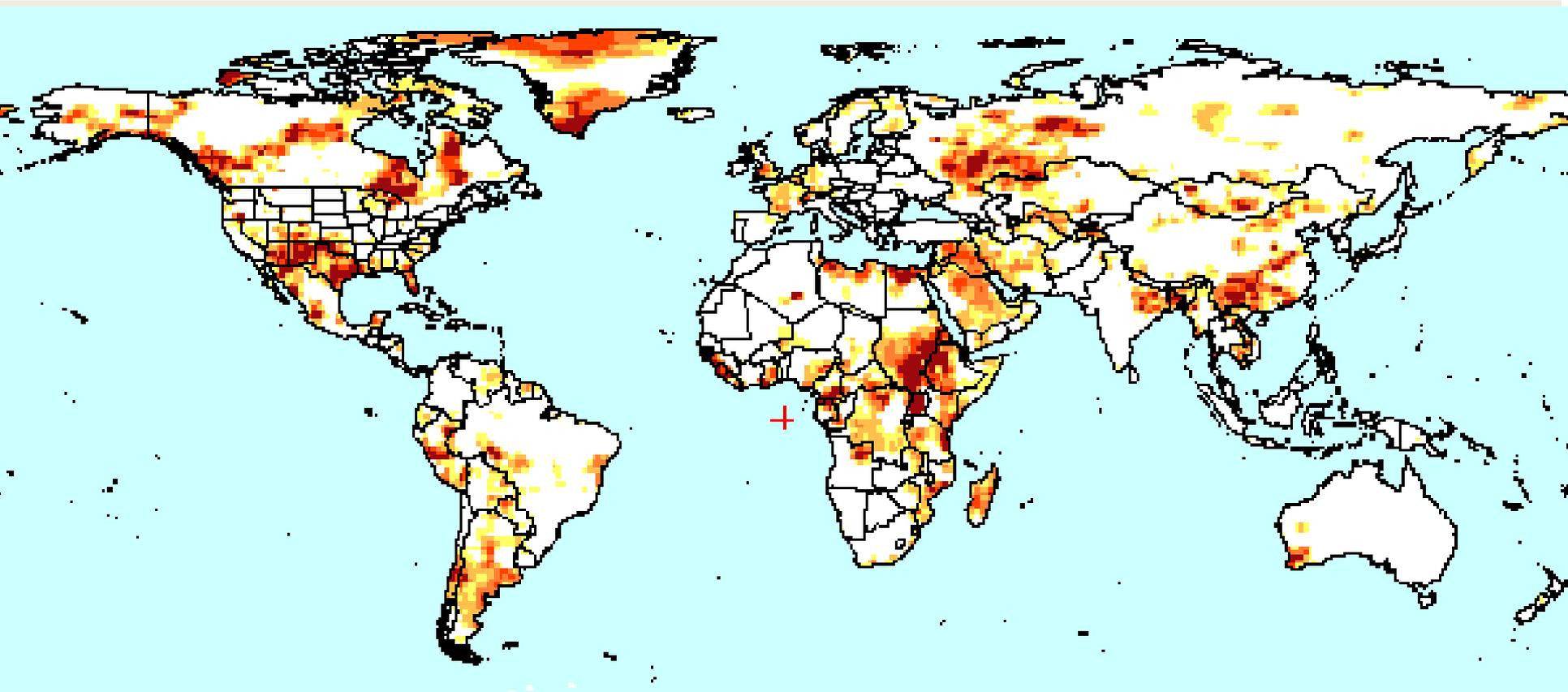
# Top ten countries by reported events in 2012



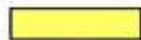
	Haiti	Bangladesh	Japan	Russia	India	Afghanistan	Indonesia	Philippines	United States	China P Rep
Climatological		1		4	2	1			5	1
Geophysical					1	1	4	3		7
Hydrological	3	2	1	4	6	9	9	9	1	13
Meteorological	2	2	6		1		2	9	19	8

# Droughts

## 36 months of drought conditions starting Sept 2011



Drought  
Severity



Minor  
Drought



Moderate  
Drought



Severe  
Drought



Extreme  
Drought



Exceptional  
Drought

302,800,000 People are under severe drought condition

Data from UCL global drought monitor. Based on 36 months standardized precipitation index

**Economic losses from climate-related disasters have increased, with large spatial and interannual variation, but are higher in industrialized countries, while fatalities are higher in developing countries.**

## **Managing the risks: typhoon and floods**

### **Risk Factors**

- population growth
- increasing property value
- higher storm surge with sea level rise



### **Risk Management/ Adaptation**

- better forecasting
- warning systems
- stricter building codes
- regional risk pooling

Projected globally: *likely* increase in average maximum wind speed and associated heavy rainfall (although not in all regions)

**ipcc**  
climate change



# Gender vulnerability and women's discrimination increase vulnerability of exposed communities: even non-extreme events can have extreme impacts in loss of lives and livelihood

## Managing the risks: drought in the context of food security in the drylands

### Risk factors

- more variable rain
- ecosystem degradation
- hotter days
- discrimination of women
- poor health and education conditions



### Risk Management/Adaptation

- improved water management
- sustainable farming practice
- drought-resistant crops
- drought forecasting

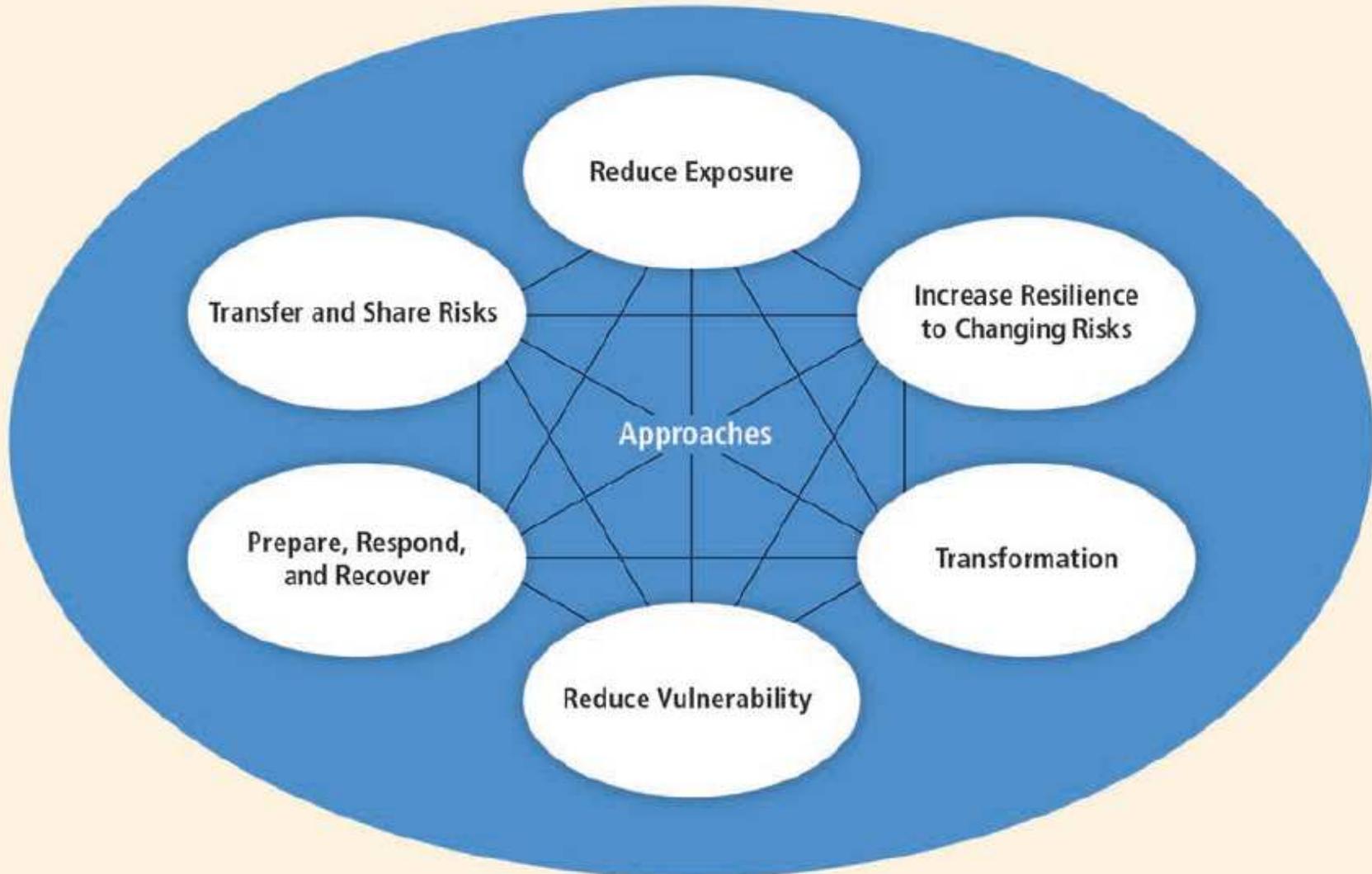
ipcc

INTERGOVERNMENTAL PANEL ON climate change



# 5. Disaster risk management (DRM)

Adaptation and Disaster Risk Management Approaches for a Changing Climate

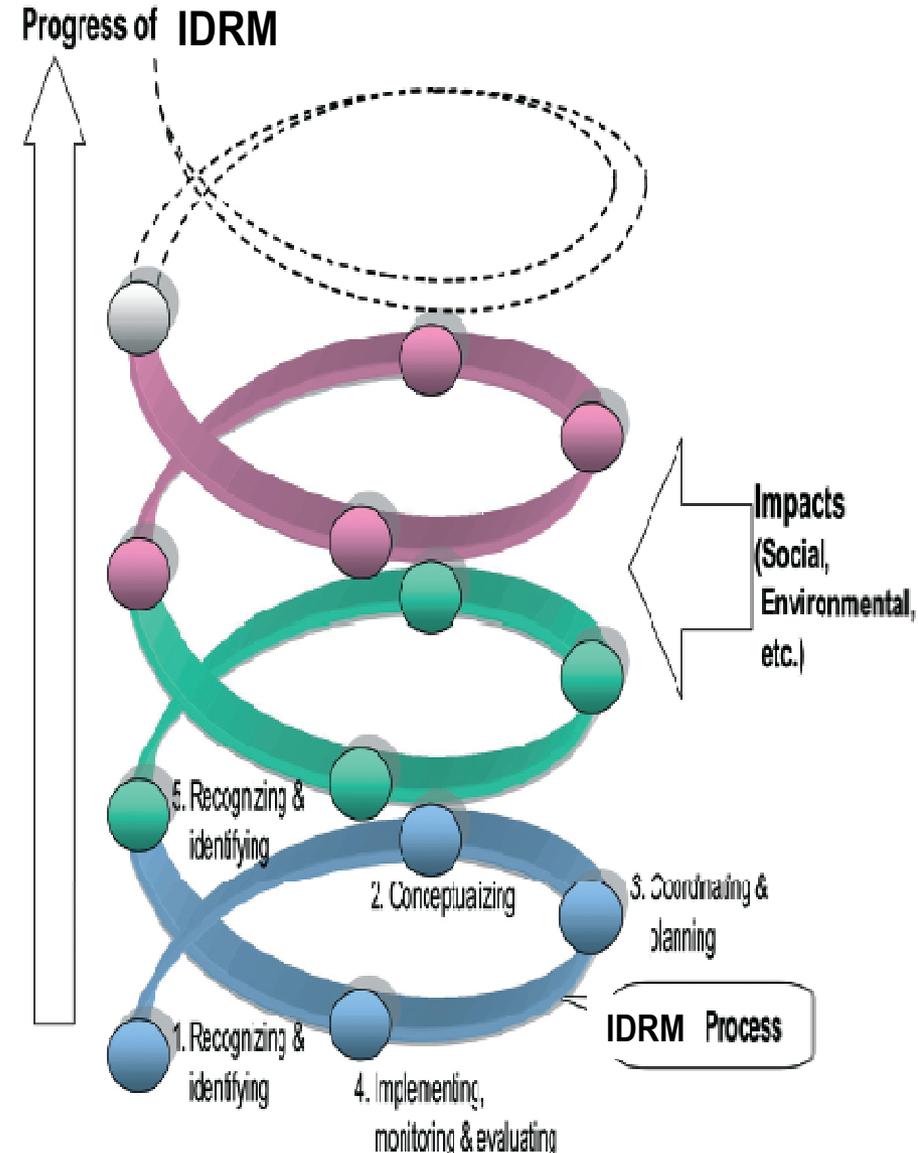


# Integrated IDRM

- IDRM - a process which promotes the coordinated development, health, communication and the management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems

## Processes

- Phase 1: Recognizing & Identifying (determine pressing issues or needs)
- Phase 2: Conceptualizing (delineate the problem and find possible solutions)
- Phase 3: Coordinating & detail planning (work with stakeholders to reach an agreement)
- Phase 4: Implementing, monitoring & evaluation (carry out the plan and study its outcome)



# A shelter kit



# What can we do in the present? Emergency help

- Safe water in plastic bottles
- Potabilization plants for safe water
- Safe food in candles
- Shelter boxes
- Flashlights and candles
- Burring dead people and animals
- Vaccinations and preventive health
- Census of dead and affected people
- Secure garbage management
- Evacuation plan for further extreme events or dangers
- Physical security for all affected and protection of their behaviours
- Temporary jobs for cleaning
- Reconstruction of local airports and roads for facilitating help
- Reestablishment of telecommunication
- Reestablishment of food supply, popular kitchens
- Special attention for vulnerable people (pregnant women, babies, old and sick people: therapies, drugs, attention)
- Evaluation of loss and damages with affected people
- Trauma healing for loss and damages



# 6. Gender risks and insecurity in DRM



# Social construction of gender

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MASCULINITY  
FEMINITY

Roles, state,  
norms, values,  
behaviour, social  
representations (SR)

Responsibilities, necessities,  
expectations

Sexuality and  
sexual behaviour

GENDER

DIVISION OF LABOUR,  
POWER AND  
RESPONSIBILITIES

DISTRIBUTION OF  
RESOURCES AND  
BENEFITS

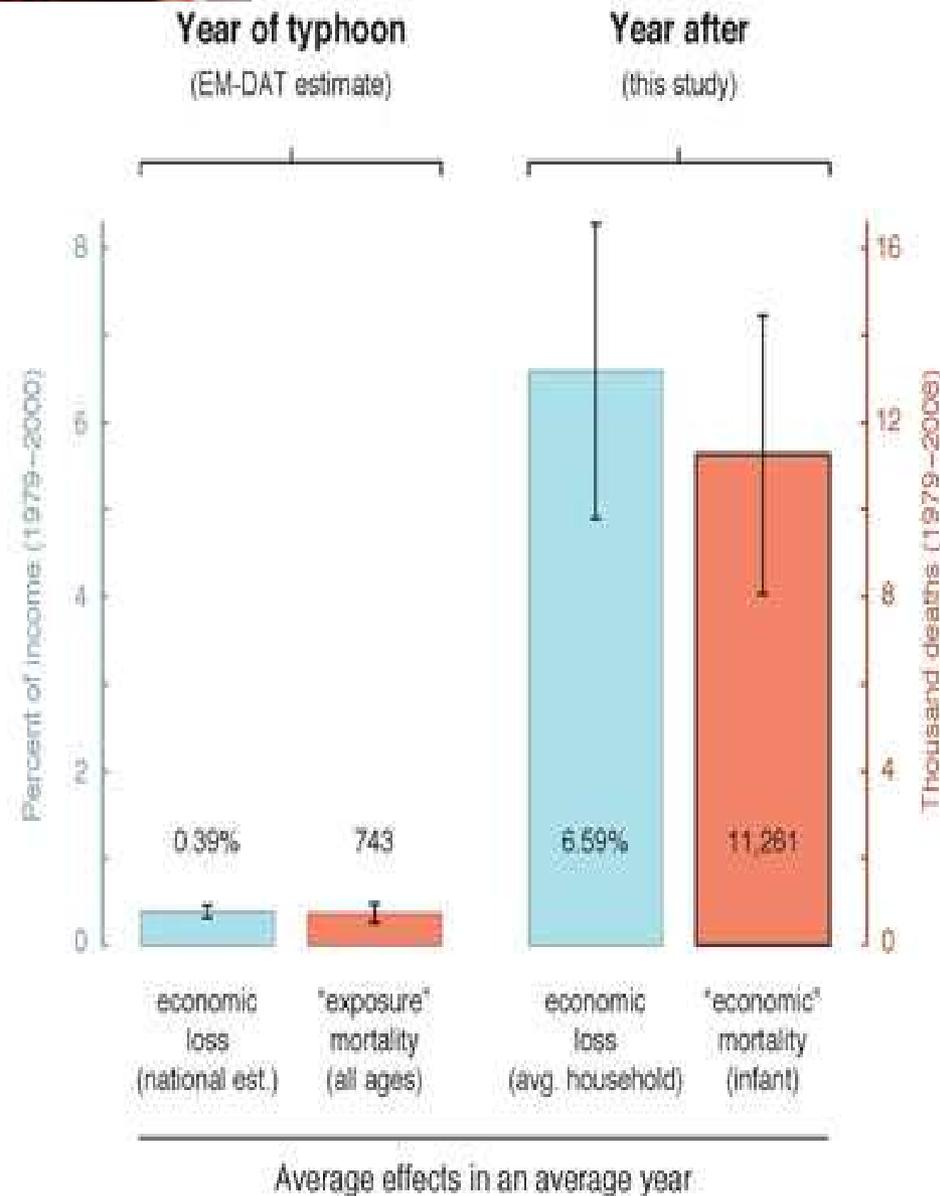
- Refers to the process of socialization to “become” a gendered human being; a man or a woman, depending on the position of the social structure.
- Gender security is socially constructed and systemic within the present patriarchal society, and it is normally taken for granted. The relations are linked to gender status–ethnicity/race, class, age and minority status- in relation to the model of reference. Equity and identity are the values at risk. The source of threat comes in first instance from the patriarchal hierarchical and violent order, characterized by exclusive, dominant and authoritarian institutions such as non-democratic governments, churches and élites.
- The symbolic distribution of space and time assigns the male the public sphere: production, *res publica*, *homo sapiens*; and the women the private: reproduction, home, *homo domesticus*. The distribution of power acquires also generic forms. Men exercise a hierarchical and vertical power of domination and superiority and women subordinated powers in their household.

# Gender empowerment reduces social vulnerability and climate risks

- Between **68-89%** of deaths occurs among **women and girls** due to long-term discrimination & self-identity of women to **care** for others
- **Information & training** on vulnerability, exposure, climate extremes, DRR, and resilience-building help people **reducing their risks** and getting prepared for **unknown and unpredictable threats**
- Integrated **water** management, sanitation and drainage improve health, wellbeing and reduce risks of **waterborne diseases**
- **Drought** forecasting, sustainable **farming** practices, drought resistant seeds and early warning reduce risks of hunger
- **Adaption** to changing climate conditions includes maintenance of draining systems, regional risk pooling, relocation from risky locations, early **evacuation** and **disaster risk reduction training**
- **Sustainable development** in the near term reduces longer term social vulnerability
- Managing risks now help **improve livelihood** and wellbeing
- Women maintain **social networks** during normal times and support communities and families during disasters



# 15x higher mortality rate by baby girls 2 years later (Anttila-Hughes & Hsiang, 2013)



- Typhoon area loose 6.6% of income, leading to a 7.1 % reduction in average household spending & durable assets
- Very strong storm reduces 15 % the following year (food, medicine)
- Indirect poverty-worsening effects of the storm
- Post-typhoons economic deaths account for 13 % of national infant mortality rate
- Infants are more fragile than other family members
- No increase of mortality rates for baby boys
- Risk double if she has an older sister
- Risk increase 4 times if she has an older brother
- Not intentionally: parents believe their newborn can cope with higher-than-average levels of neglect
- Parents provide more or different food or care to baby boys than girls unconsciously

**Policy  
Makers**

*Male and elite-dominated parties/political agendas limit opportunities for women's voice*

**Voice**

*Male and elite-dominated policy making can exclude women's concerns*

**Instructions**

**Gendered  
Mediation**

Women's capacity to use voice or exercise choice is mediated by men or local dominant interest groups, or is distorted by gender-biased access to politics or markets

**Delivery**

Gender-biased services misspecify women's needs for public provision

**Providers**

**Choice**



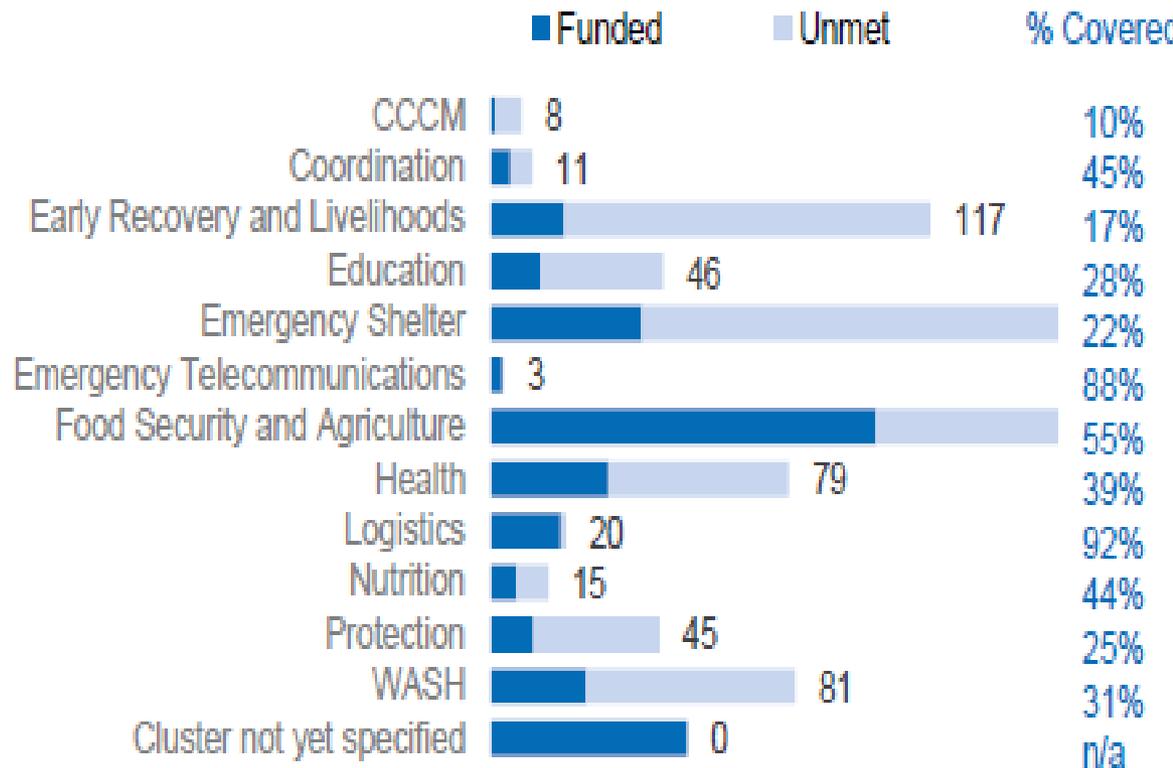
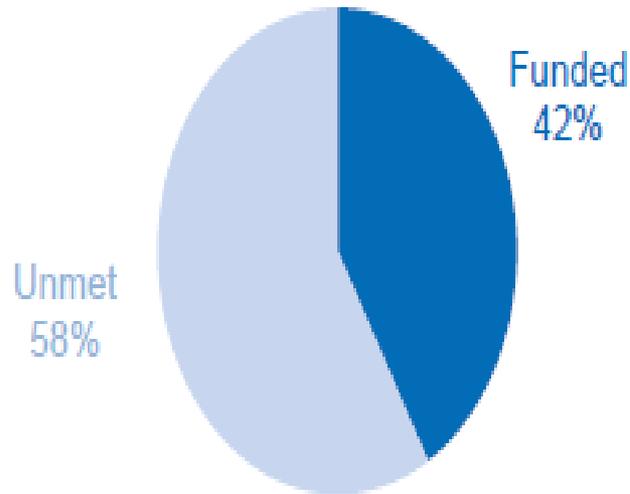
The dashed arrows symbolise weaker accountability due to gender bias

# 7. DRM: Typhoon Haiyan Action Plan

Typhoon Haiyan Action Plan

Funding by cluster (in million US\$)

**US\$788 million** requested



**14.1 million**  
Affected people

**4.1 million**  
People displaced

**1.1 million**  
Damaged houses

**6,166**  
Reported dead

**1,785**  
People missing

### Needs:

- The designation of No-Build Zones necessitates a rapid scale-up of recovery and transitional shelter provision across affected areas.
- Given the reopening of schools on 6 January despite some still being used as evacuation centres, there is an urgent need to identify solutions for IDPs that have been staying in schools (56 per cent of IDPs in Region VI and 61 per cent in Region VIII).
- Rain in Tacloban City has caused the situation in large evacuation centres to deteriorate; more than 500 people have come to the Astrodome since the rain started.

### Response:

- The CCCM Cluster has been working with Government counterparts and partners from other clusters to monitor the situation of IDPs in schools and identify possible solutions. Emergency shelter solutions are being sought for IDPs from “can-build” areas.
- Seventy-five new tents will be added to the Guiuan Tent City to accommodate additional IDPs.
- Three hundred eighty-three displaced families from the “can-build” areas in Estancia, Iloilo, received tools to complement the tents already distributed as part of their return packages. An additional 30 families received full IOM Emergency Shelter Kits (tents, tarpaulins, ropes, fixings, etc.) as return packages.
- The Displacement Management System has been established for bunkhouses in Eastern Samar and Marabut, Samar.

### Gaps & Constraints:

- IDPs from no-build areas need additional support until bunkhouses or alternative transitional sites are ready.



### Needs:

- According to Department of Agriculture estimates, 154,954 farming households and 48,915 fishing households (totalling around 400,000 people) were directly affected by the typhoon.

### Response:

- As of 29 December 2013, WFP had dispatched for distribution 16,024 tons of food to affected populations.
- In December, WFP distributed food assistance for 1.3 million beneficiaries (92 per cent of target). Towards the end of December, WFP had reached over 100,000 affected people with cash interventions.
- Other cluster partners have reached approximately 2.45 million people with a mix of food and cash assistance.
- More than 76 per cent of the almost 44,000 assisted rice farmers have received rice seeds to plant in December/January in Regions VI and VIII. In March/April, this will yield enough to feed 800,000 people for a year.

### Gaps & Constraints:

- Isolated populations living in highland areas, especially in Panay Island and northern Negros Occidental, have received limited assistance; there is a real risk of a deteriorating food security situation in these areas.
- As food assistance activities scale down, there are increasing gaps in areas where cash assistance and livelihoods support for fishermen and farmers have yet to scale-up to address the needs of affected people.



## Water, Sanitation and Hygiene

### Needs:

- Four barangays have been flooded in the Pontevedra Municipality (Capiz Province, Region VI), and 51 families have been relocated to a nearby evacuation centre (EC). Separate male and female bathrooms/toilets are needed in the EC. WASH interventions are needed in the affected barangays as toilets have been flooded.
- Acute watery diarrhoea has been reported in Kananga and Baruen barangays in Region VIII.
- Household level sanitation is still a serious challenge for IDPs waiting for shelter solutions.
- Vector control and solid waste management need to be ramped-up to curb public health risks.

138,554

families serviced by  
water kits distributed  
by the Cluster

### Response:

- To date, 121,198 families have received hygiene kits, 138,554 families have received water kits, and 1,022 toilets have been built in communities in Leyte and Samar Provinces.
- In Region VI, 102 latrines, 77 showers, and four laundry areas have been provided to augment facilities for 8,600 people.
- Fifty water purifiers have been distributed to affected island barangays in Region VI.

### Gaps & Constraints:

- Partners are experiencing challenges in scaling up interventions in western Leyte and Tacloban City.
- Municipal solid waste management and debris-clearing systems are still unable to cope with needs.



## Early Recovery and Livelihoods

### Needs:

- Some 5.9 million workers were affected by the typhoon, with livelihoods and sources of income destroyed, lost or disrupted. Current cluster activities are targeting 400,000 workers.
- Around 65 per cent of fishing communities lost their productive assets, and 28,000 mainly small-scale fishing boats were destroyed.
- There is a need to restart and diversify livelihood activities for people worst-affected by the typhoon.

### Response:

- The number of ER&L Cluster activities (308) is steadily increasing. Of these, 17 per cent are completed, 44 per cent are ongoing, and 39 per cent planned. Most activities are focused on emergency employment (22) and cash for work (230) for debris-clearing, although livelihoods activities are starting to increase. Ten initiatives on skills training for re-employment are currently under way in Cebu Province. Eight activities are being undertaken to restore livelihoods in Leyte, with a focus on Tacloban.
- In terms of support to the restoration of government services, six initiatives have been completed and four are ongoing to assist with small-scale physical repairs for Local Government Units in Eastern Samar.

### Gaps & Constraints:

- There is a continuing lack of heavy equipment; more needs to be done to salvage coconut lumber and recycle debris.

## Needs:

- According to the government, 1,127,041 houses were damaged. Of these, 548,793 were completely destroyed.
- While shelter self-recovery is generally occurring at a fast pace, there are concerns that some houses are being rebuilt to insufficient standards by the affected population, which would leave them unable to withstand future similar disasters.

34,498

households have received shelter self-recovery kits

## Response:

- To date, 333,071 households have received basic emergency shelter materials and 34,498 have received support for shelter self-recovery.
- In Estancia (Region VI), 384 households that had been living in an evacuation centre following the typhoon-engendered oil spill returned to their original place of residence and received shelter support. Some 150 families who were previously living 20 metres from the coast need to stay in the evacuation centre until an appropriate relocation place is determined.
- With facilitation from the CCCM Cluster, the Shelter, WASH and Protection Clusters have engaged in a constructive dialogue with the Government about standards for temporary settlements (bunkhouses). The Government has increased the living space per family.

## Gaps & Constraints:

- Funding of shelter activities under the Strategic Response Plan is currently at 22.5 per cent versus 41.6 per cent across all sectors. This is at odds with the huge shelter needs.

## Needs

- Cases of wounds, fever and diarrhoea are increasing in Region VIII.

## Response

- Suspected measles cases are being investigated in Ormoc and Tacloban.
- An emergency maternal care unit in Palo, Leyte Province, opened on 31 December 2013. Five deliveries have taken place since its opening.
- A boat is being used to bring reproductive health (RH) and other services to the island barangays of Carles and Concepcion, Iloilo.

## Gaps & Constraints

- Integration of adolescent RH in health service delivery remains a serious concern, especially in Roxas City.
- To address gaps in the WASH response, an inter-agency health and hygiene promotion baseline survey is being completed in Eastern Samar.

## Needs:

Priorities include protection and promotion of appropriate infant and young child feeding (IYCF) for 250,000 pregnant women and caregivers; supplementary feeding for 145,000 children; micronutrient supplementation for 100,000 children; and treatment of acute malnutrition in 27,000 children.

**53,680**  
children 6-59 months  
received blanket  
supplementary feeding

## Response:

- To date, 65,392 children under five were screened and 1,933 acute malnutrition cases detected (220 severe; 1,713 moderate). Slightly more than 50 per cent of children with severe acute malnutrition have been admitted for treatment.
- 53,680 children aged 6-59 months in Regions VI and VIII have received blanket supplementary feeding (ready-to-use supplementary food and high energy biscuits), according to WFP.
- IYCF services were provided to 6,004 pregnant and lactating women using the Barangay Nutrition Scholars network, 40 mobile counsellors and 23 mother- and baby-friendly spaces.

## Gaps & Constraints:

- Programmes to treat acute malnutrition are limited, though continuing to scale-up.
- There are gaps in the presence of Nutrition Cluster partners in areas that have been prioritized by the Nutrition Cluster for community-based management of acute malnutrition and IYCF interventions.
- Consistent information on Nutrition Cluster activities remains limited. Cluster partners are encouraged to report regularly.

## Needs:

- There is a need to scale-up the establishment of Temporary Learning Spaces (TLS), repair and rehabilitate schools, and provide teaching and learning materials now that schools have reopened.
- The identification of shelter solutions for IDP families still residing in schools is also required. Nine schools are still housing almost 10,000 individuals in Tacloban.

**1,050**  
Temporary Learning  
Spaces (TLS) have  
been created

## Response:

- The Department of Education (DoE) and Education Cluster partners have supported the official opening of schools on 6 January with a "Back to Learning" campaign.
- The distribution of school materials was scaled-up to coincide with the official re-opening of schools. Educational supplies including exercise books, pens, pencils and recreational kits have been distributed to over 83,000 children.
- Education Cluster members have established 1,050 TLS, with tents and tarps for roof repair, across the affected region, providing educational space to over 105,000 children.
- The Education Cluster is working with the Shelter Cluster and Department of Social Welfare and Development (DSWD) to find appropriate solutions for the relocation of IDPs still sheltering in schools.

## Gaps and Constraints:

- The Cluster will work with the DoE to monitor the potential gap in enrolment rates of children returning to school.

**Response:**

- Local Government Units throughout Eastern Samar are being advised to guarantee the integrity of the selection process for bunkhouses and to ensure that services are provided before families move in.
- Tacloban City officials have been urged to consult IDPs about their relocation options, rather than rapidly moving people. Selection criteria for bunkhouse beneficiaries are still being determined.
- After protection concerns were identified, authorities pledged to repair or ensure the presence of separate sanitation facilities for men and women.

**Gaps & Constraints:**

- Many of the incomplete bunkhouses in the municipalities of Giporlos, Guiuan, Hernani, and Borongan City have been occupied, although the list of occupants has not yet been validated.
- One of the bunkhouses in Lawaan, Eastern Samar, is on swampy land near where two cases of dengue have been reported.
- There are concerns about the lack of separate bathroom facilities in the civic centre evacuation site in

**Communication with Communities****Needs:**

- Affected people need more information on shelter, electricity, cash-for-work opportunities, livelihood programmes and weather prospects.

**Response:**

- The National Union of Journalists of the Philippines has organized trauma peer support activities for affected journalists in Tacloban, Guiuan and Roxas.
- First Response Radio International is continuing to provide humanitarian broadcasting in Leyte Province.
- The CwC Working Group is carrying out a rapid information, communication and accountability assessment in all evacuation centres.
- Efforts are being made to support a two-way communication platform in all evacuation centres on reproductive health.

**Gaps & Constraints:**

- The Philippine Information Agency's 24-hour mobile radio needs funding to continue operations.
- Hotlines need to be linked to appropriate agencies for accurate and reliable information.



## Emergency Telecommunications

### Response:

- ETC Internet services are now being provided in 25 locations across six towns to over 5,600 humanitarian workers.
- A VHF repeater has been installed in Roxas and will soon be providing VHF radio coverage for humanitarian organizations based in the area, improving security and operational communications.
- VSATs are being installed at WFP offices in Tacloban and Roxas to provide backup Internet connectivity.
- A VSAT is being installed at the new inter-agency office in Guiuan to provide primary connectivity to the WFP office and back-up connectivity to the new inter-agency office.
- The ETC Cluster continues to establish new microwave Internet links between its offices in Tacloban and organizations based in Palo, just outside the city. The IFRC offices and WFP warehouse have now been connected.

**5,600**  
humanitarian workers  
provided with Internet  
connectivity



## Logistics

### Response:

- Since 2 January, the Logistics Cluster has transported (by air, sea and road) 1,836m<sup>3</sup> (1,247 tons) of relief cargo and stored 309 m<sup>3</sup> (110 tons) of relief items on behalf of different organizations.
- Assessments of Tacloban airport and Isabel port have been carried out.
- Technical expertise is being provided to government and WFP staff on warehousing, handling equipment, and health and safety. So far, 20 DSWD staff have been trained.

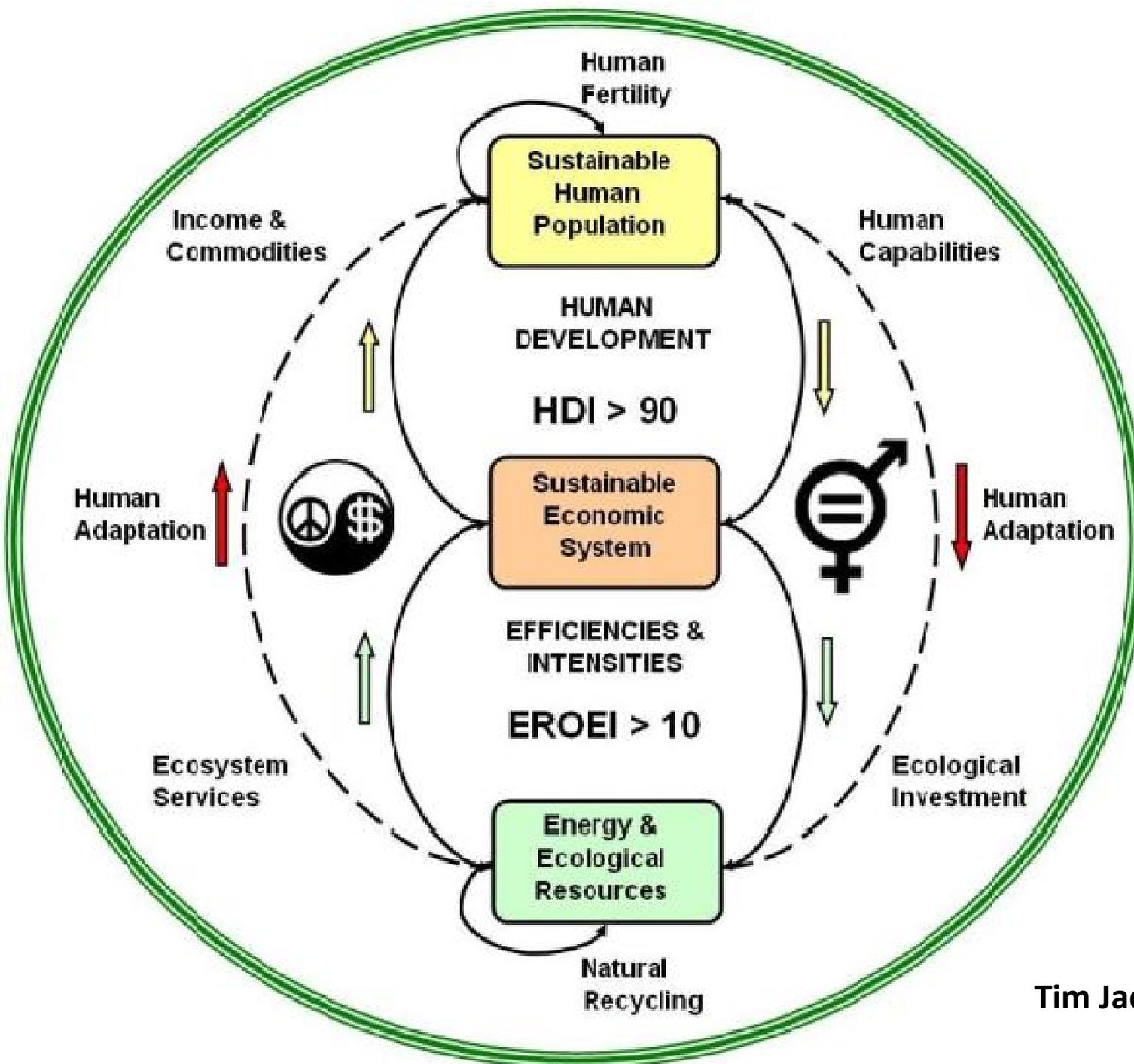
**1,247 tons**  
of relief items  
transported since 2  
January

### Gaps and Constraints:

- Limited commercial road transport capacity is presenting some difficulties for partners in Guiuan and Roxas.
- Commercial warehousing remains limited.

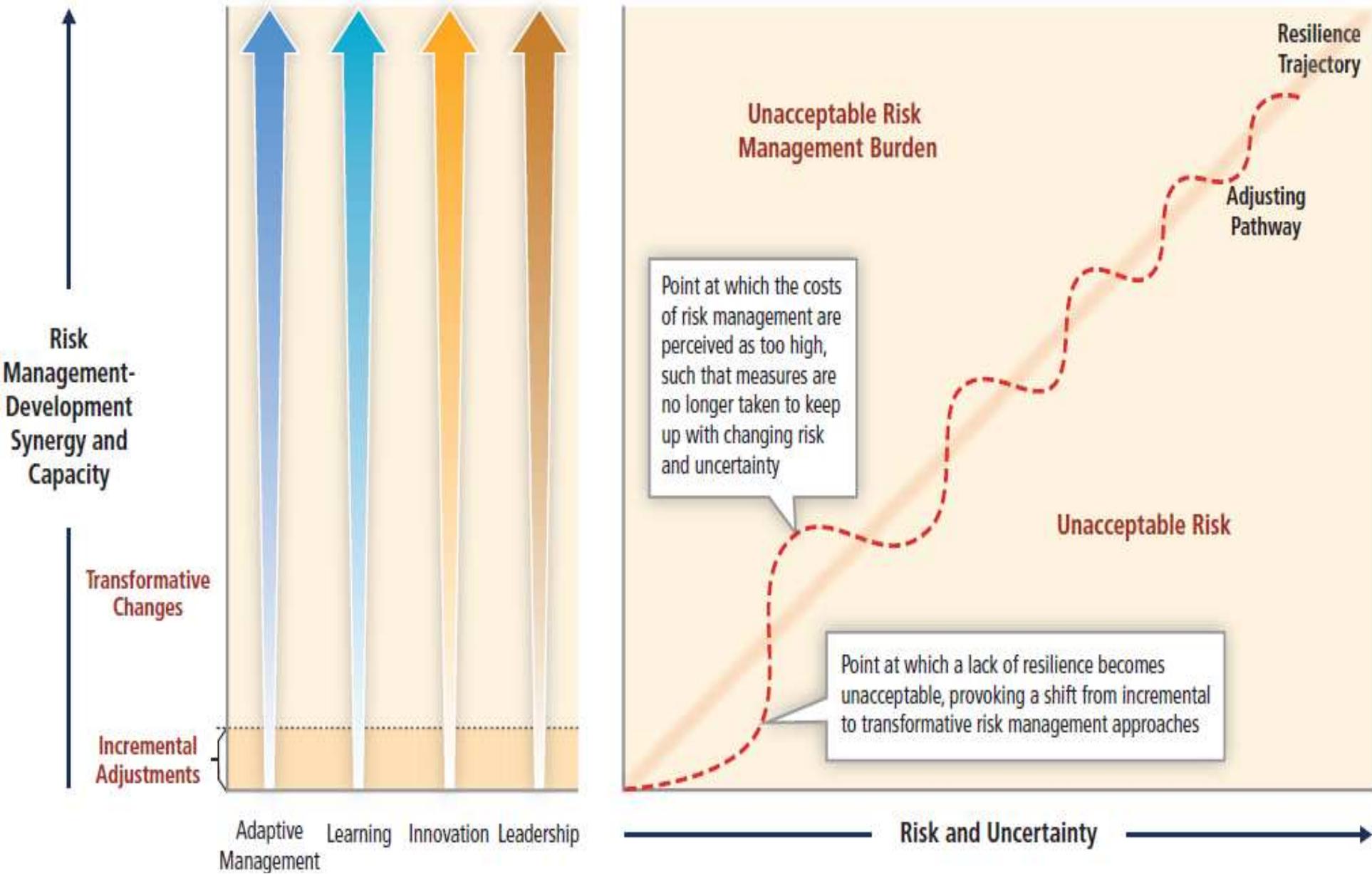
# 8. Conclusions





# Adaptation nature with gender perspective

# Transformative pathways to resilience



## Primary Actors

### INTERNATIONAL

- Bilateral and multilateral partners
- Intergovernmental organizations

### NATIONAL / SUB-NATIONAL

- National government and statutory agencies
- Civil society organizations
- Private sector
- Research and communication bodies
- Local government agencies

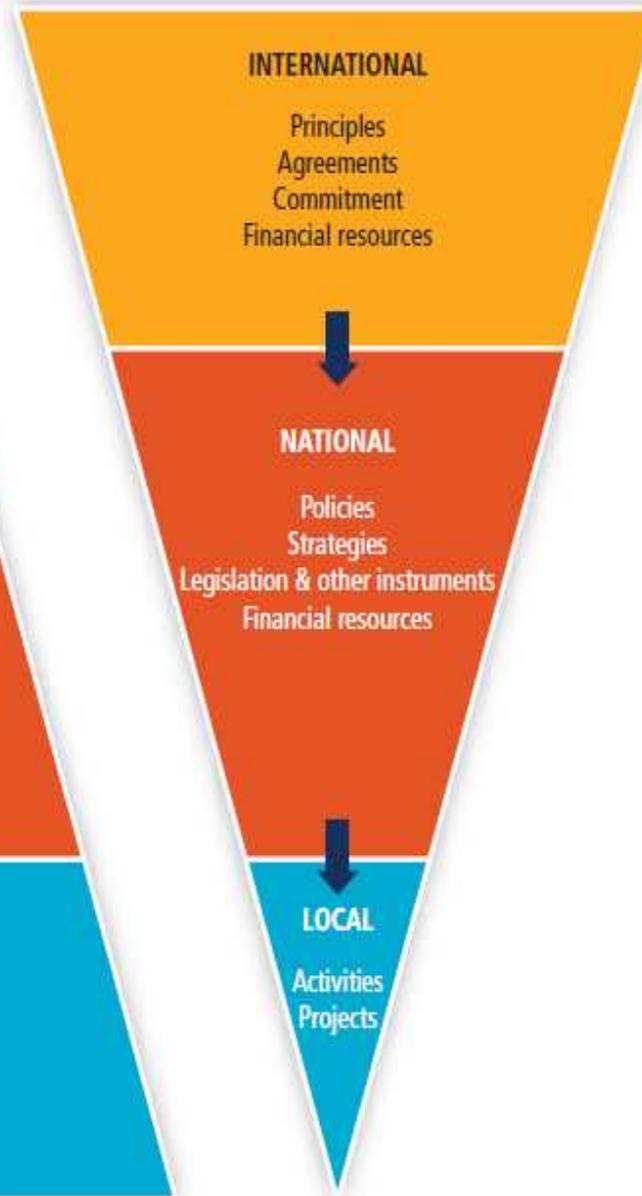
### LOCAL

- Individuals, households, and communities
- Private sector
- Community-based organizations
- Faith-based organizations

## "BOTTOM-UP" Functions



## "TOP-DOWN" Functions



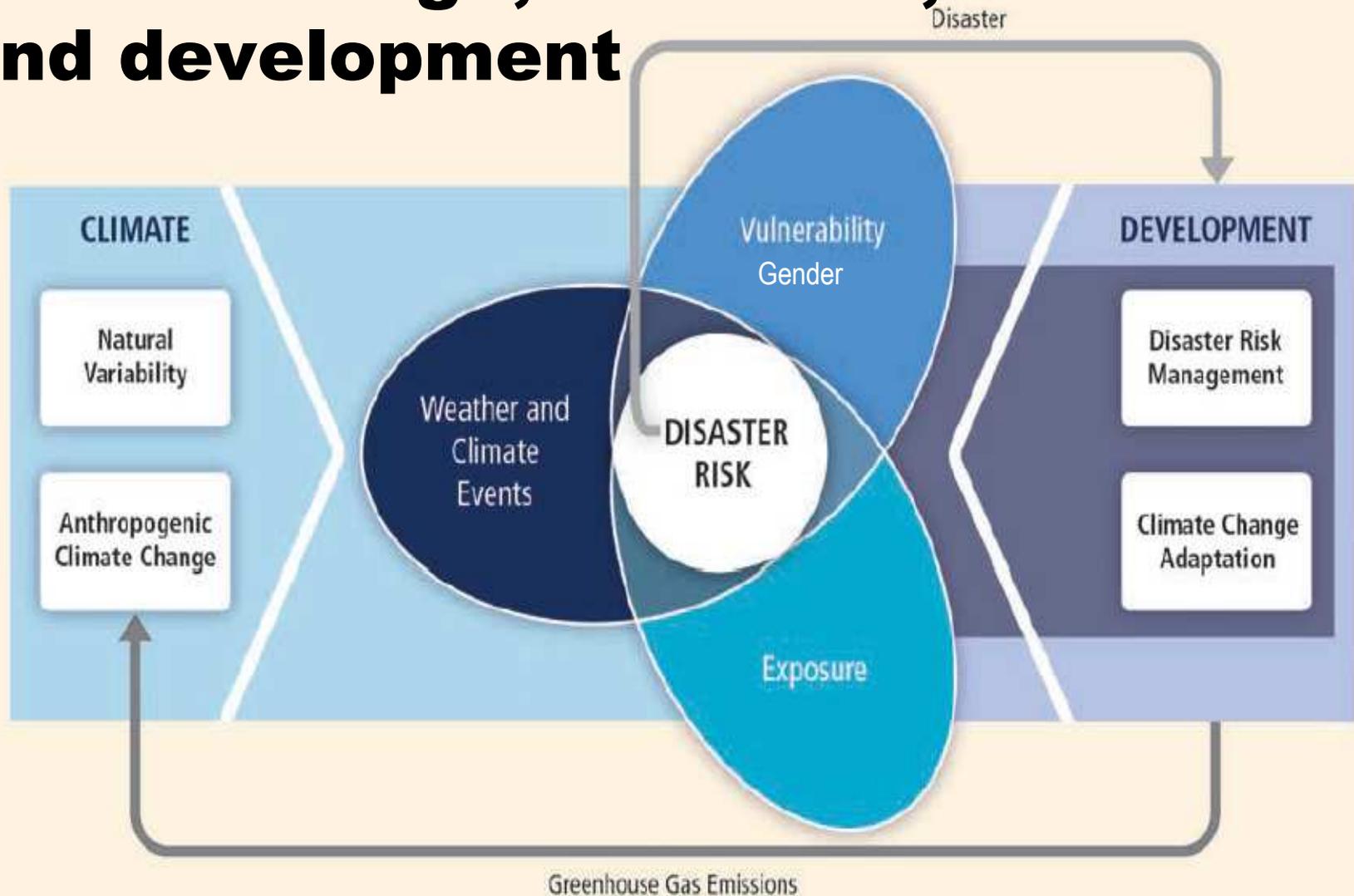
Global Climate  
Projections

Regional / National  
Climate Projections

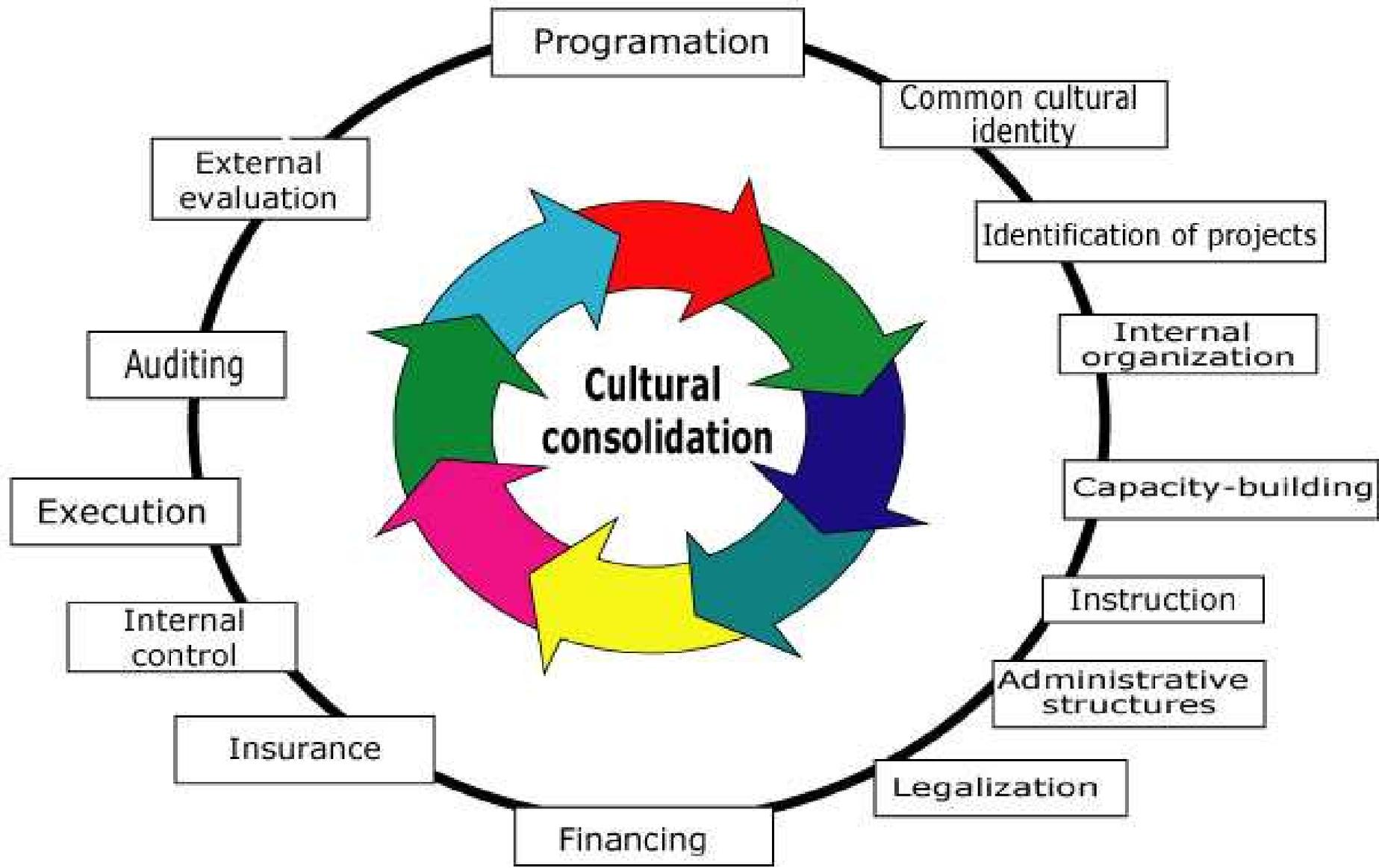
Scientific and Local  
Experiential  
Knowledge

Vulnerability,  
Risk, and Adaptation  
Assessments

# Climate Change, disasters, vulnerability and development



# Model of self-reliant entrepreneurship



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1. Complex social networks sustain humans in normal times. **Human vulnerabilities** during change, hazard, disaster or conflict are usually a matter of disruption or failure of these networks.
  2. Future research and policy on resilience building during extreme hydro-meteorological events helps to improve theories, data and concrete training about the impacts of climate, disaster, and other disruptions. Existing data overlooks social vulnerability and does not account for gender identity during normal, let alone in crisis situations.
  3. Gender analysis will lend a more nuanced understanding of women as social beings aligning in networks of family and community.
  4. More accurate understanding and training will facilitate to support networks that underlie a resilient society, where women educate, care and reproduce the historical memory and the cultural background, but increasingly generate also the material family sustain and the food.
  5. Active female participation opens the possibility to reduce gender related social vulnerability, improve hazard resilience, and increase the survival of the whole communities frequently affected by hydrological disasters, but reduce also gender violence and insecurity before, during and after disasters.