

# Outreach Event on the Role and Activities of the Intergovernmental Panel on Climate Change (IPCC)

*SUDAN, KHARTOUM, 12 – 13 August 2018*

## **Risk management and adaptation to Climate Change**

By

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# Outline

**Definitions**

**About SREX Report**

**Observes changes in climate extremes**

**Climate Extremes: Increasing frequency & intensity**

**Economic losses associated with extremes**

**SREX-Key Messages**

# Definitions (1)

## Adaptation

The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate harm or exploit beneficial opportunities. In natural systems, human intervention may facilitate the process of adjustment to actual or expected climate and its effects.

## Disaster Risk Management (DRM)

Social processes for designing, implementing, and evaluating strategies, policies, and measures to improve the understanding of disaster risk, foster disaster risk reduction and transfer, and promote continuous improvement in disaster preparedness, response, and recovery practices, with the explicit purpose of increasing human security, well-being, quality of life and sustainable development

# Definitions (2)

- **Climate Extreme**
- The SREX report defines 'climate extreme' as "the occurrence of a value of a weather or climate variable above (or below) a **threshold** value near the upper (or lower) ends of the range of observed values of the variable.
- Risk is the product of the probability that some event will occur & the adverse consequences of that event.
- **Risk = Probability x Consequence**

# Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)

## **SREX innovations**

- Integration of skills and perspectives across the disciplines covered by WGI, WGII, and the disaster risk management community.
- The emphasis on adaptation and disaster risk management & conceptualization of climate change as a challenge in managing risk

# Changes in Extremes

- A changing climate leads to changes in the frequency, intensity, spatial extent, duration, and timing of weather and climate extremes, and can result in unprecedented extremes.

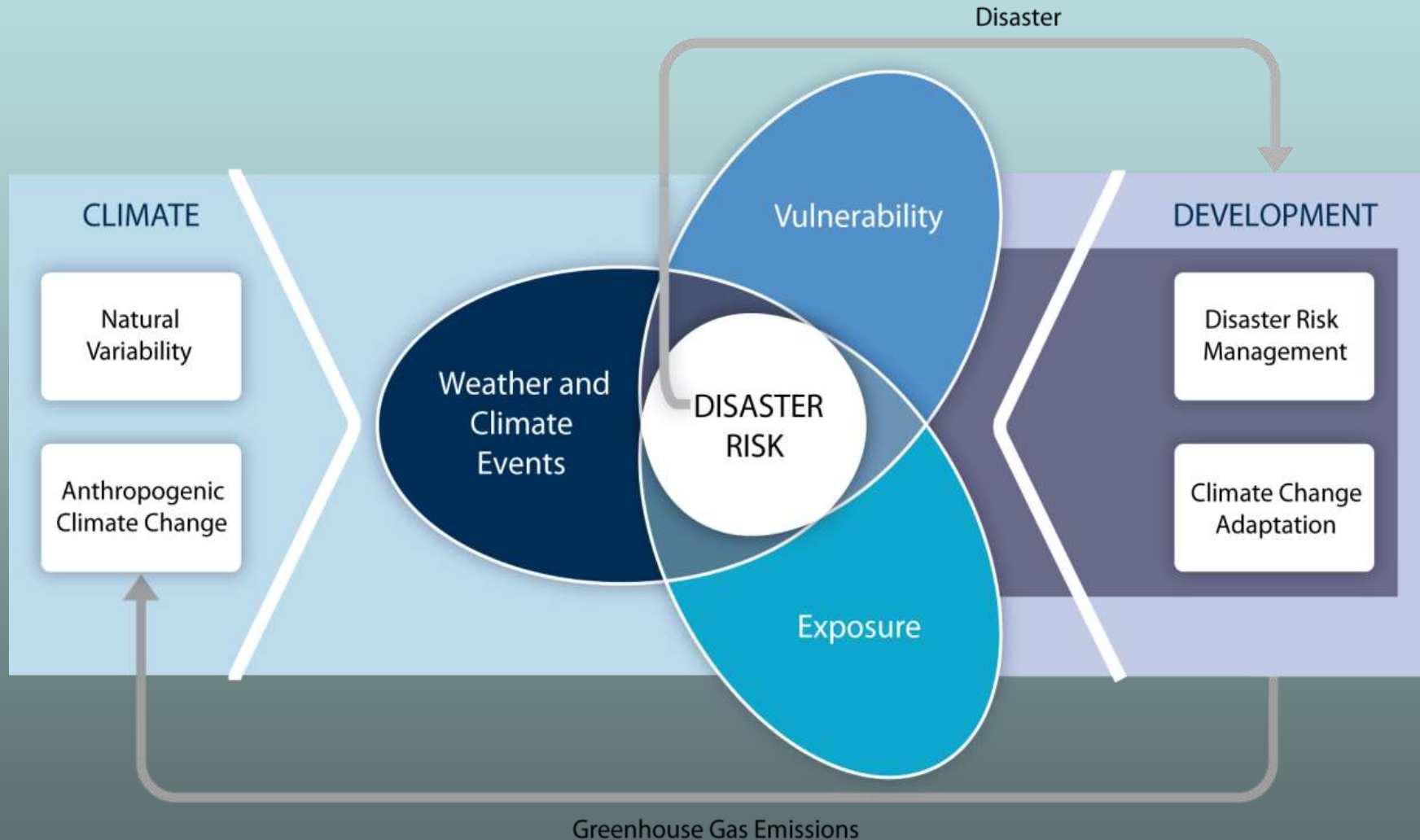




# Summary of extreme events 2017



# Increasing vulnerability, exposure, or severity & frequency of climate events increases **disaster risk**



*Disaster risk management and climate change adaptation can influence the degree to which **extreme events translate into impacts and disasters***



# South Sudan drought 2017



**For exposed and vulnerable communities, even non-extreme weather and climate events can have extreme impacts**



**At least 60 persons have been reported killed following the outbreak of cholera in South Sudan's Namurunynag State in Eastern Equatoria**

**South Sudan, 2017**



# Heavy Floods & Land slides

**In August 2017. At least 312 people were killed and more than 2,000 left homeless when heavy flooding and landslides hit Freetown, Sierra Leone's capital**



# Heavy rains & floods in Sudan



Flooding in El Fasher, capital of North Darfur, August 2014

Aug 2013 Heavy rains and floods-Khartoum



Heavy rains & floods Elgizira, 2016





# Recurrent drought events in the Greater Horn of Africa



**Pastoralists  
Somaliland, Northern  
Somalia,  
March 2017**



# Extreme temperature

The number of heatwaves affecting the African continent every year could be five times higher by 2050 as a result of climate change,



## Heat extremes 2001-2010 WMO

The global climate 2001 – 2010 A decade of climate extremes WMO 2013

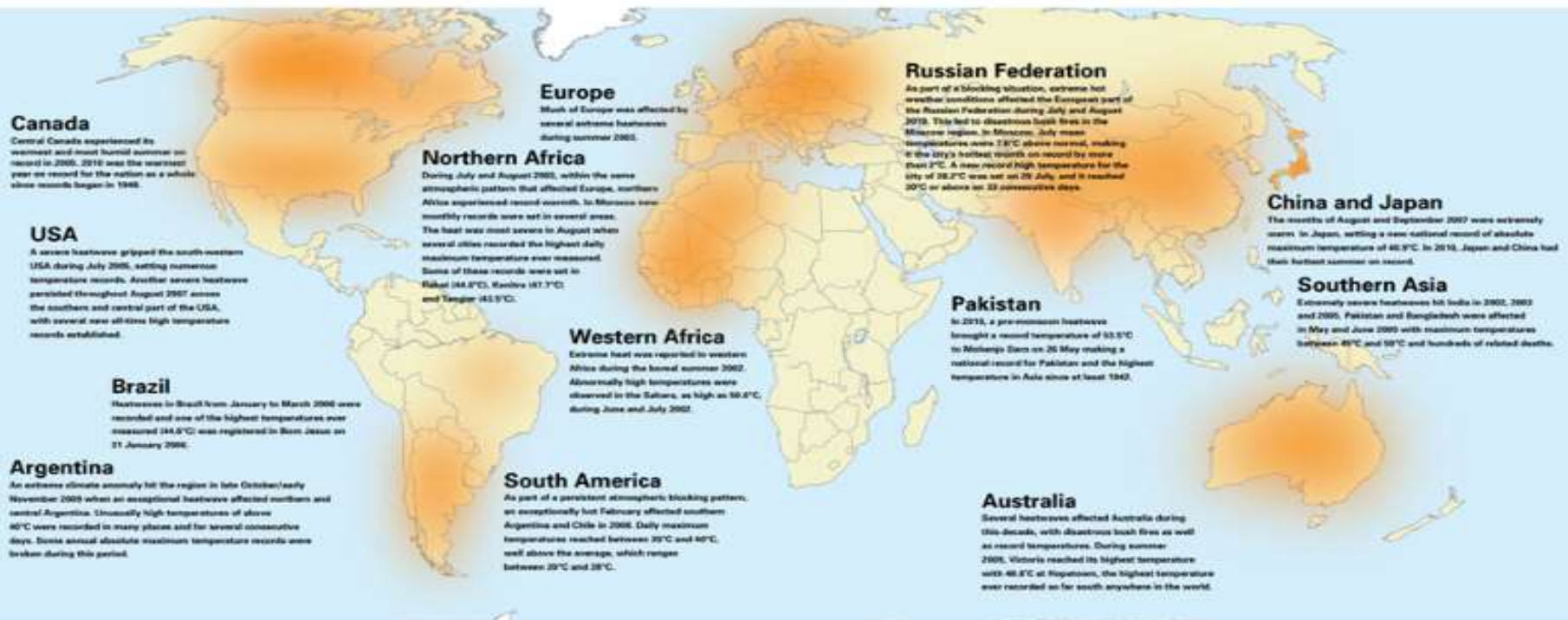


Figure 5. Most significant heat waves and abnormally high temperature conditions reported during 2001–2010



# Rising number of heat waves deaths

**Heat waves are replacing drought as the deadliest climate disaster** heat waves seem to be a rising killer, blamed for 72,000 deaths in Europe in 2003 and 55,000 in Russia in 2010 (WMO,2014)

## Heat-wave disasters worldwide

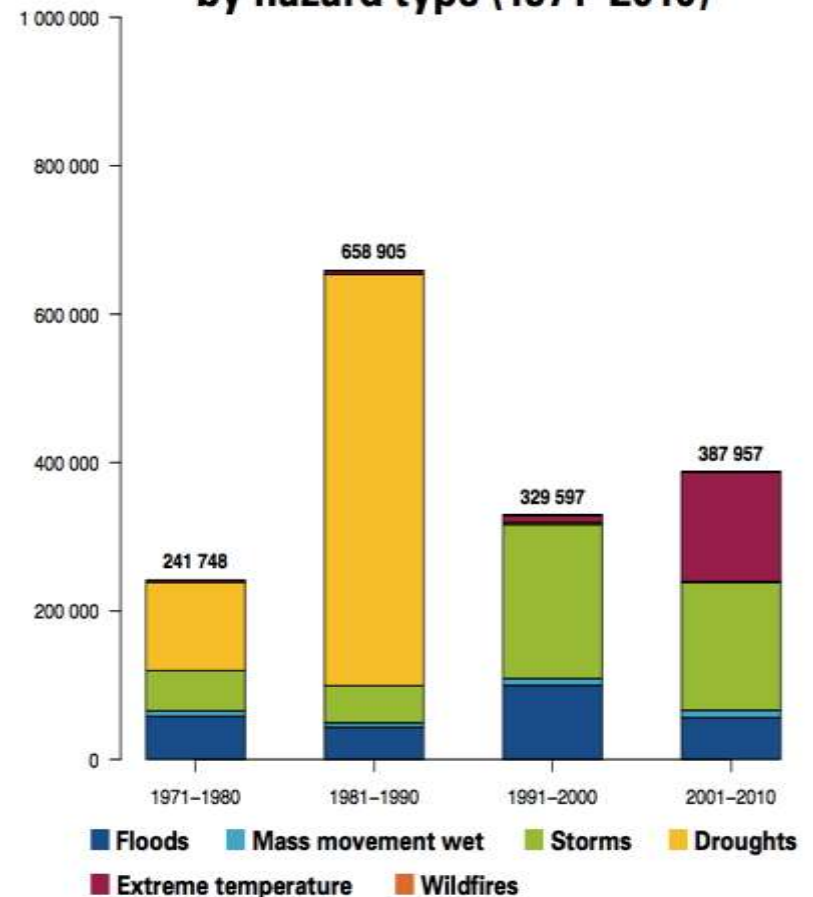
A total number of **172 heat-wave disasters** (about **2% of all natural disasters**) have been identified worldwide since 1950 with about **160,000 total deaths** (most of them in Europe)



Heat-waves rarely receive adequate attention: they often lack the spectacular and sudden violence of other hazards, such as tropical cyclones or flash floods.

WMO-No. 1142, 2015

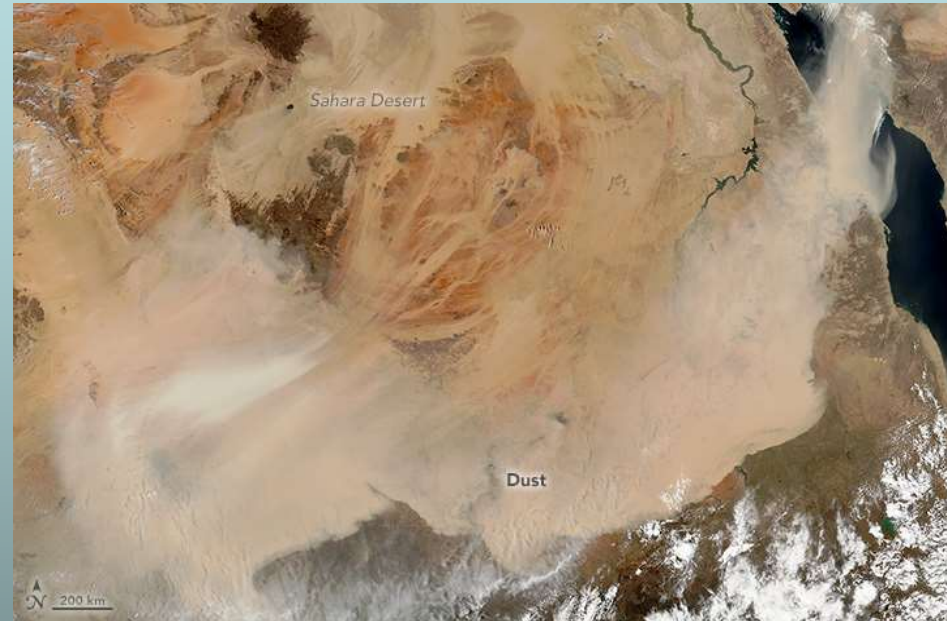
## Number of reported deaths by decade by hazard type (1971–2010)



# Extreme dust storms

the storms of late March, 2018 have been intense.

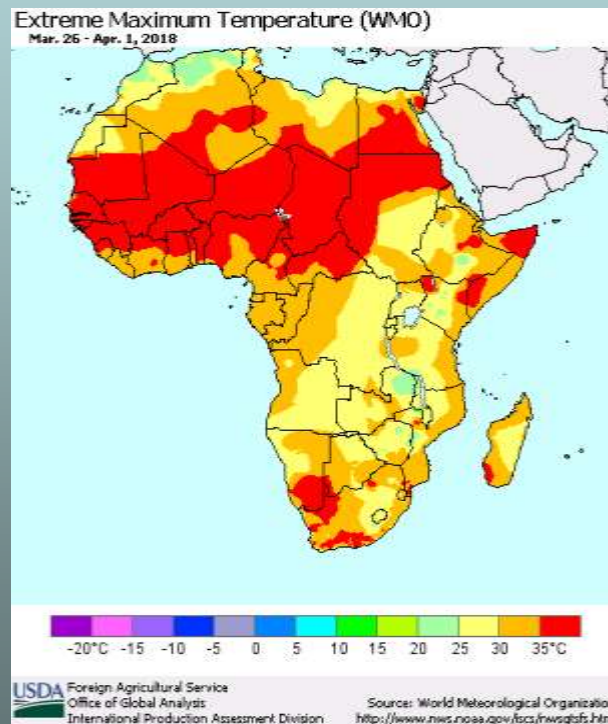
March 29, 2018 [JPEG](#)



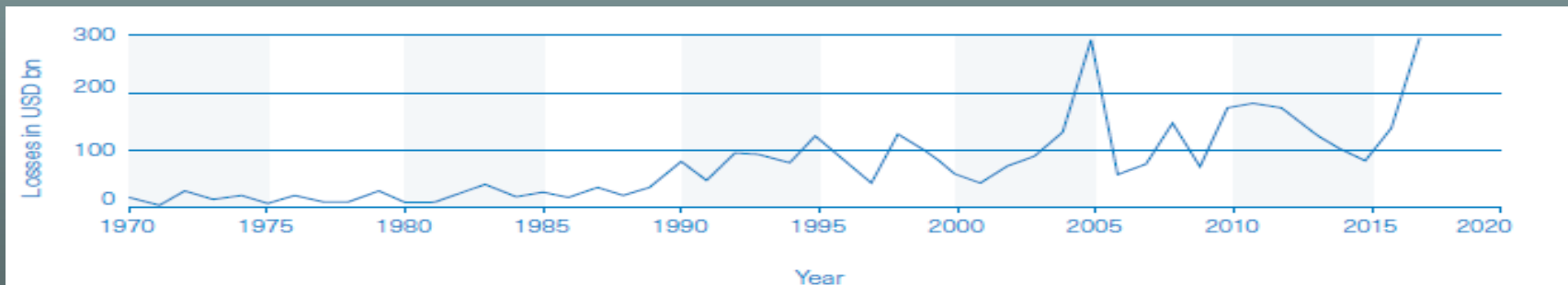
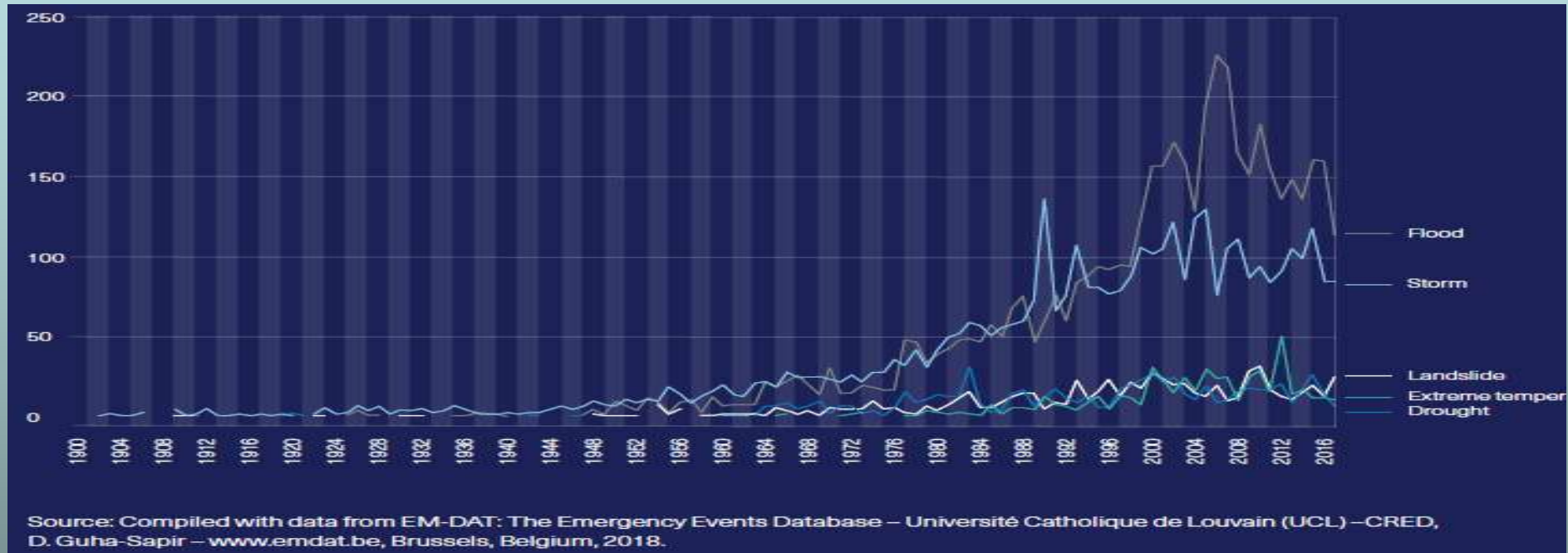
**Massive sandstorm sweeps through Khartoum, Sudan June, 2017**



# Economic losses associated with extreme events



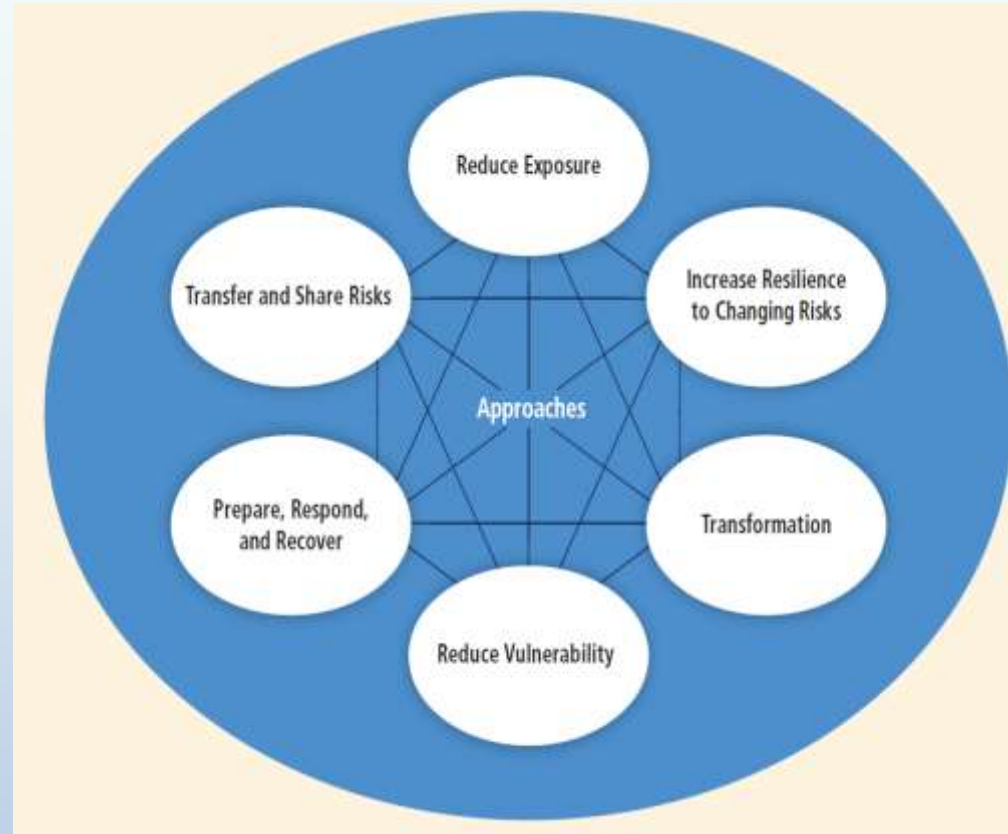
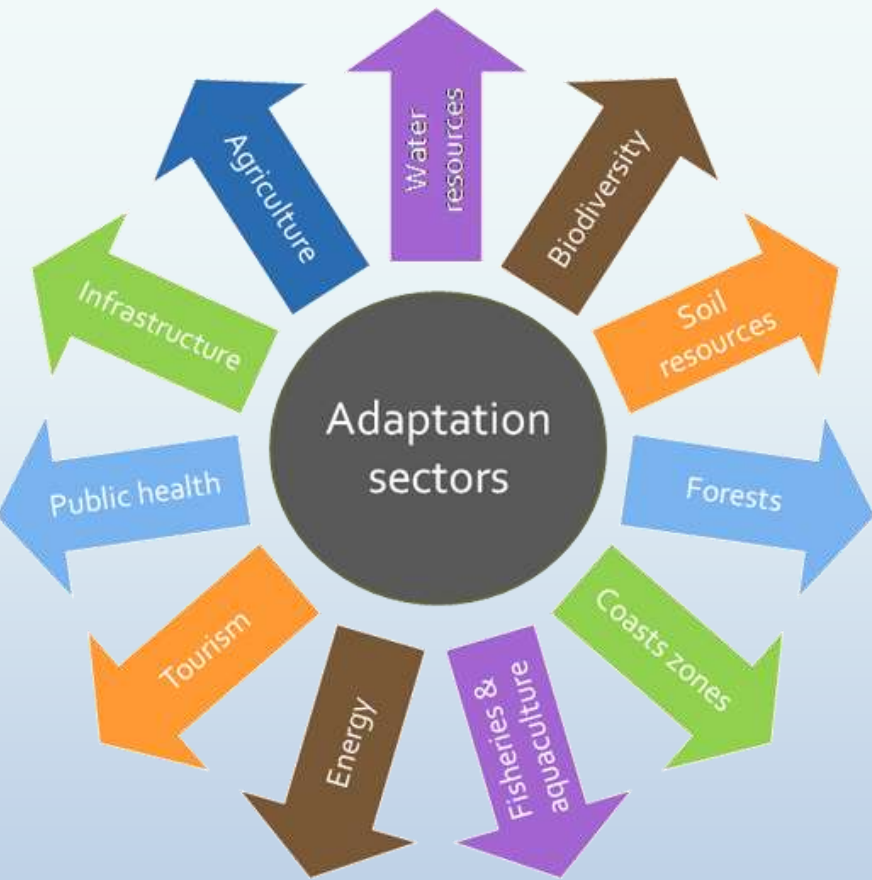
# Number of weather-related disasters, in developing countries, 1900–2017



**Total economic losses due to major weather-related events 1970–2017**

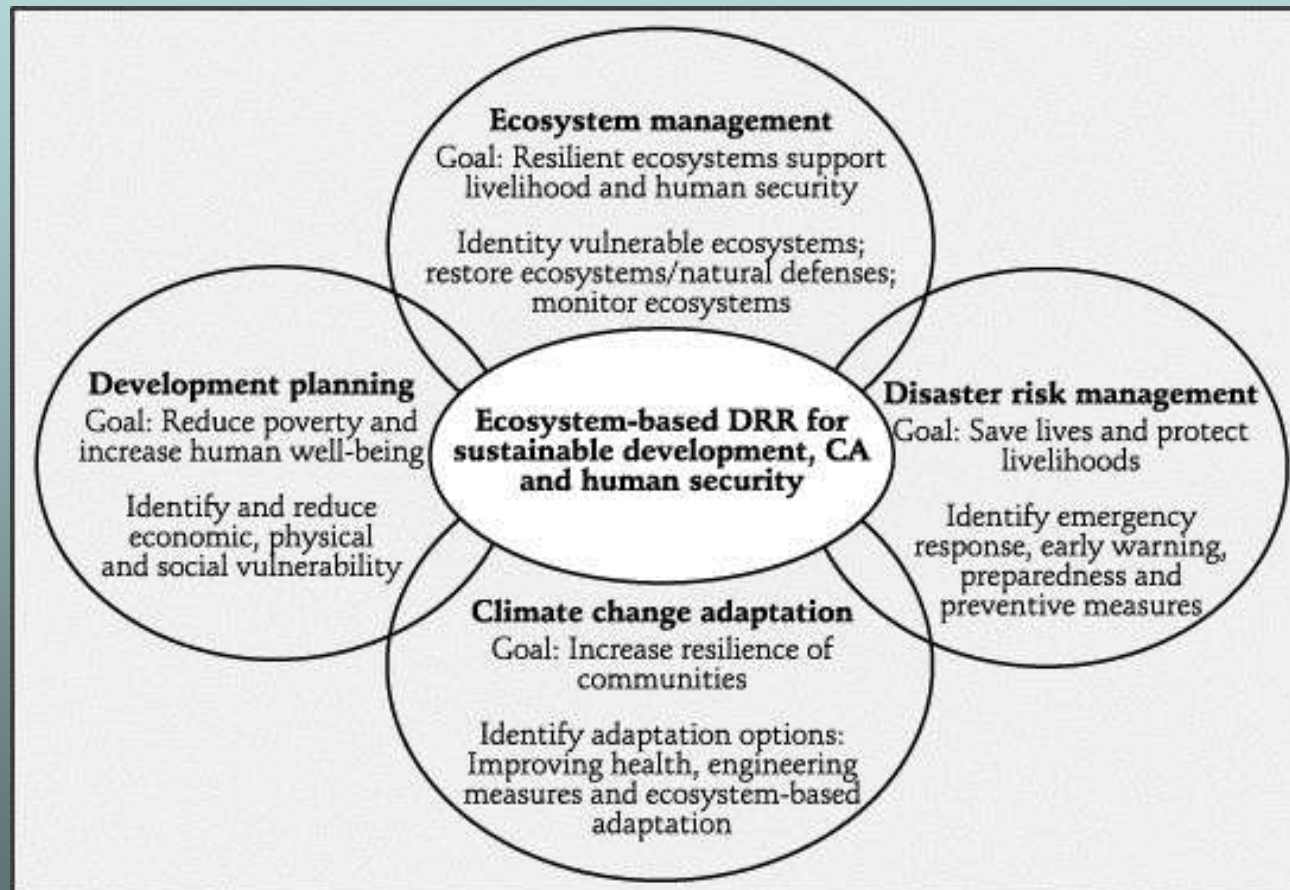


# The **Solution space** has many dimensions



# Creating a Solution Space

- Risk management and adaptation



*Ecosystem-based disaster risk reduction, a more sustainable approach to DRR and climate change adaptation (IDRC, 2011)*



# What factors determine capacity to adapt?

- ▣ The capacity to adapt to climate change is determined by:
  - The level of development
  - Access to resources
  - Scientific and technical skills & capacities
  - Technological advancement
  - Institutional model
  - Coordination capacity and mechanisms

# Linking adaptation to development (1)

- Many of the adaptation options intersect with vulnerability reduction and **development options that build adaptive capacity** and address the “**adaptation deficit**” which may be seen as part of a wider “**development deficit**”
- *Adaptation provide a chance to address “development deficit” as first (necessary but not sufficient) step.*

## Africa's infrastructure in numbers

**\$93bn**

Africa's annual infrastructure financing needs

**\$45bn**

Actual annual infrastructure investments  
(of which half from the public sector)

**34%**

Population with access to paved roads

**100%**

Higher transport costs than other developing regions

**7%**

Of cultivated land is irrigated  
(only 3.7% in Sub-Saharan Africa)

# Linking adaptation to development (1)

- SD & Adaptation are mutually reinforcing
- Addressing uncertainty through balancing economic efficiency/ productivity with resilience/flexibility,
- Through giving due consideration to CC issues, risk of maladaptation to national development plans will be avoided.



# Solution space: Risk Management & Adaptation

## flash floods

### Risk Factors

- rapid growth of informal settlements
- weak building construction
- settlements built near rivers and blocked drainage areas

### Risk Management/Adaptation

- reduce poverty
- strengthen buildings
- improve drainage and sewage
- early warning systems





# Solution space :Risk Management & Adaptation

## drought in the context of food security in E. Africa

- More variable rain
- population growth
- ecosystem degradation
- poor health and education systems



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



Kenya drought 2016



Uganda drought 2016

# Risk Management & Adaptation

## Lessons from the IPCC-SREX





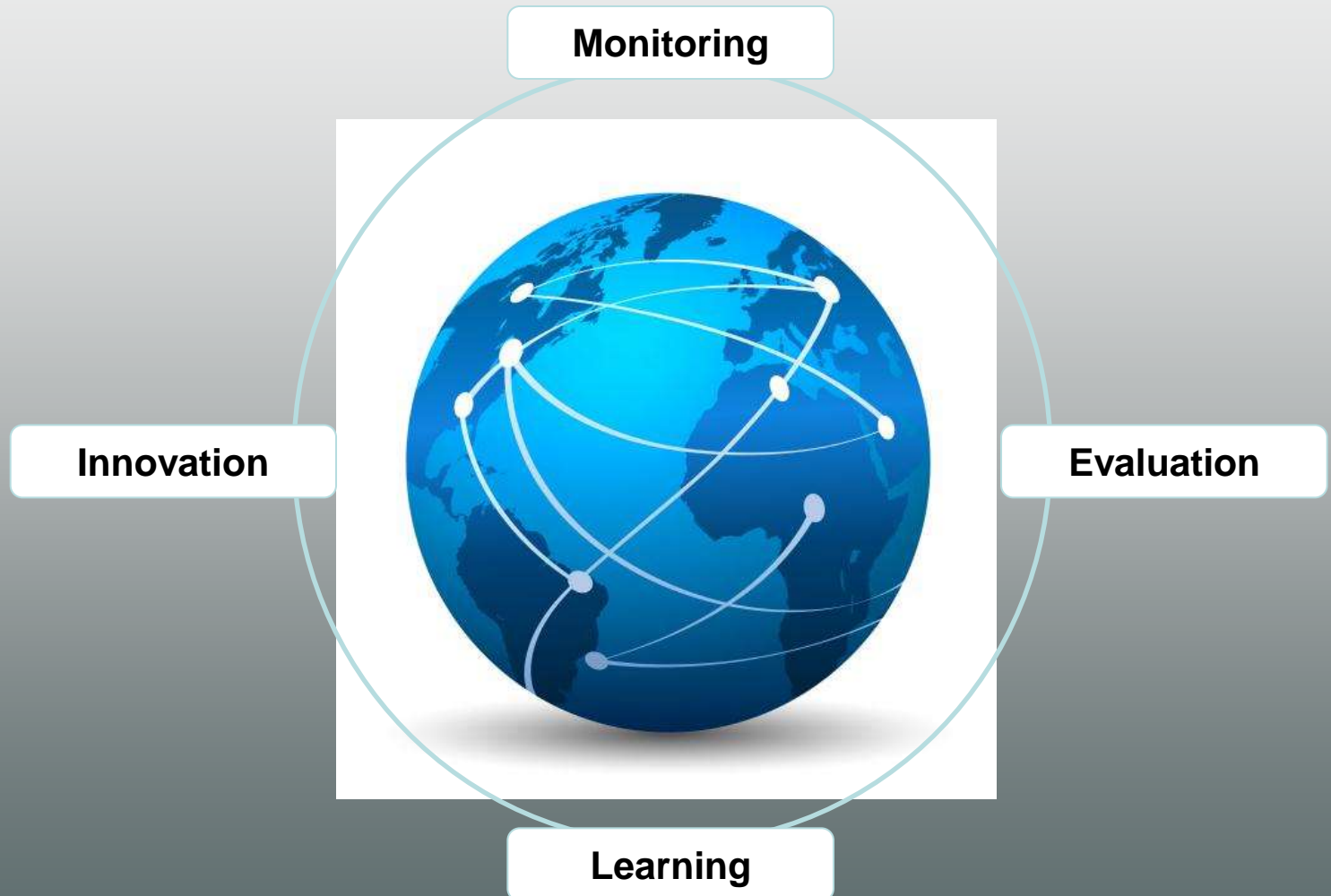
# Trends in vulnerability and exposure are major drivers of changes in disaster risk

• *(high confidence)*

- Understanding the multi-faceted nature of both **vulnerability** and **exposure** is a prerequisite for designing and implementing effective adaptation & DRM strategies.
- Vulnerability reduction is a core common element of adaptation and disaster risk management.



# Managing risks of disasters in a changing climate benefits from an iterative process



*Learning-by-doing and low-regrets actions can help  
reduce risks now and also promote future adaptation*

# Risk Management & Adaptation

Strategies exist that can help **manage disaster risk now** and also help improve people's livelihoods and well-being



The most effective strategies offer **development benefits** in the relatively near term and **reduce vulnerability** over the longer term



**Low-regrets measures for current DRM are entry points for addressing projected trends in **exposure, vulnerability**, as they have the potential to offer benefits now and lay the foundation for addressing projected changes**

*(high agreement, medium evidence).*

- Many of these low-regrets strategies produce co-benefits, help address other development goals, such as **improvements in livelihoods, human well-being, and biodiversity & help minimize the scope for maladaptation.**



**Attention to the temporal & spatial dynamics of vulnerability & exposure is important given that the design & implementation of adaptation & DRM strategies can reduce risk in the short term, but may increase vulnerability & exposure over the longer term. (*high agreement, medium evidence*)**

- For instance, dyke systems to control water flow can reduce hazard exposure by offering immediate protection, but also encourage settlement patterns that may increase risk in the long-term

# Integration of **local knowledge** with external **scientific and technical knowledge** can improve local participation in **DRR& CC adaptation** (*high agreement, robust evidence*)

- Community-Based adaptation can benefit management of DR and climate extremes, but is **constrained** by **the availability of human and financial capital** and of **DR and climate information** customized for local stakeholders



Local community from W.Sudan



# Appropriate and timely risk communication is critical for effective adaptation & DRM *(high confidence)*

- Explicit **characterization of uncertainty and complexity** strengthens risk communication.
- Effective risk communication requires **exchanging, sharing, and integrating knowledge** about climate-related risks **among all stakeholder groups**.
- Among individual stakeholders and groups, **perceptions of risk** are driven by **psychological and cultural factors, values, and belief**



# Inequalities influence local coping and adaptive capacity, and pose challenges to DRM & adaptation *(high agreement, robust evidence)*

- These inequalities reflect **socioeconomic, demographic, and health-related differences** and differences in access to **livelihoods and entitlements**.

A woman carrying Barely-Souss-Morocco



Nomads in Central Sudan



# Risk sharing and transfer mechanisms can increase resilience to climate extremes at local, national, and international scales

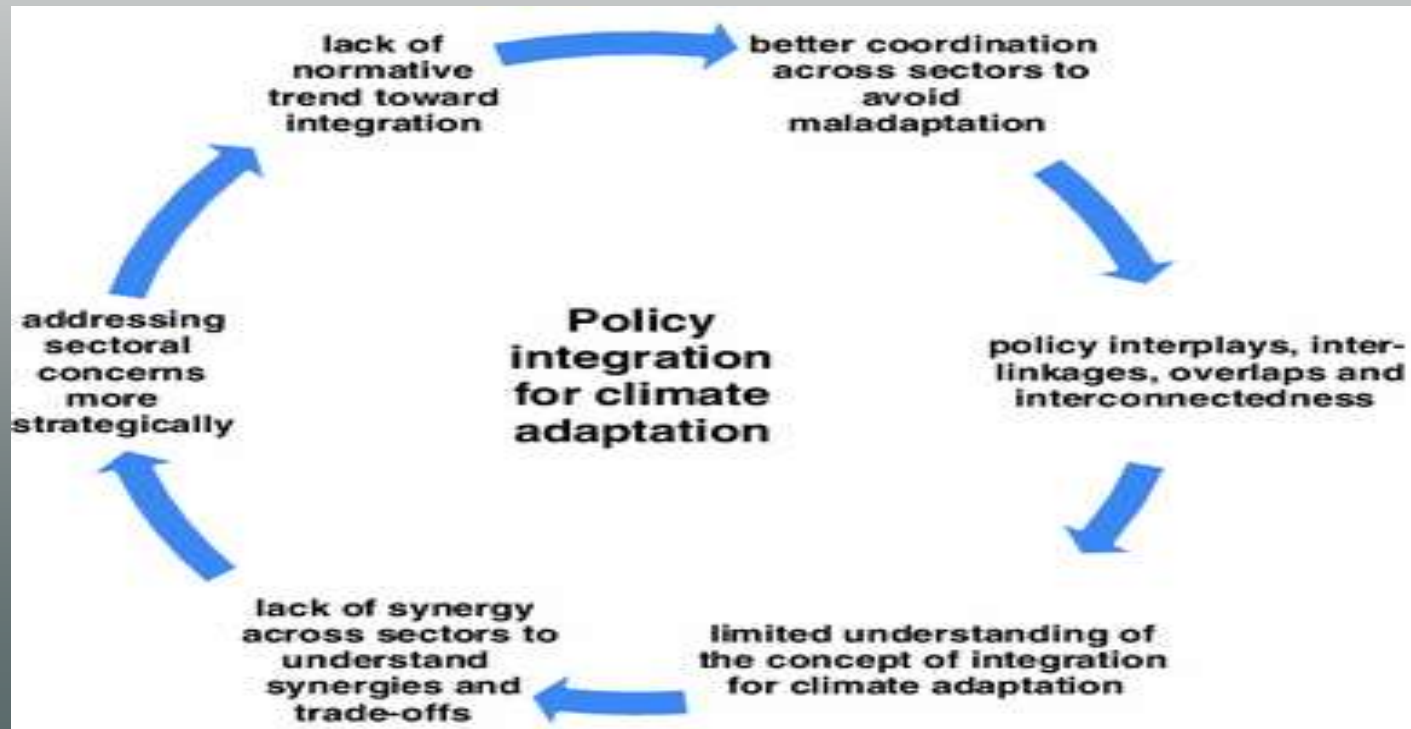
- Insurance and other forms of risk transfer are linked to DRR& CC adaptation by providing **means to finance relief, recovery of livelihoods, and reconstruction, reducing vulnerability & providing knowledge and incentives for reducing risk.**
- Uptake of formal risk sharing and transfer mechanisms is **unequally distributed across regions and hazards**





**Closer integration of DRM & Adaptation, along with the incorporation of both into local, national, & international development policies & practices, will provide benefits at all scales**

*(high agreement, medium evidence)*



Thanks for your attension

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Or visit

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