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Disaster Risk Reduction and Climate Change Adaptation

Basic Definitions and Concepts

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Module Content

1. Disasters – A threat to development
2. Terminology and Definitions
3. Measures of Climate and Disaster Risk Reduction
4. Disaster Risk Reduction and Climate Change Adaptation in International Frameworks
5. Key Messages

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1. Disasters – A threat to development

ACT Now, SAVE Later

https://www.youtube.com/watch?v=HhD85cQejTg

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1. Disasters – A threat to development

Recent Natural Disasters

Western Balkan Floods 2014

- Total Damage >€ 1 billion
- Fatalities: 86

Nepal Earthquake 2015

- Total Damage $10 billion
- Fatalities: 8’964
- Injured: 21’952
- Homeless: 3.5 Mio

Typhoon Haiyan Philippines 2013

- Total Damage $2.86 billion
- Fatalities: 6’340
- Missing: 1’061
- Affecting: 14 Mio. people

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1. Disasters – A threat to development

Recent Natural Disasters

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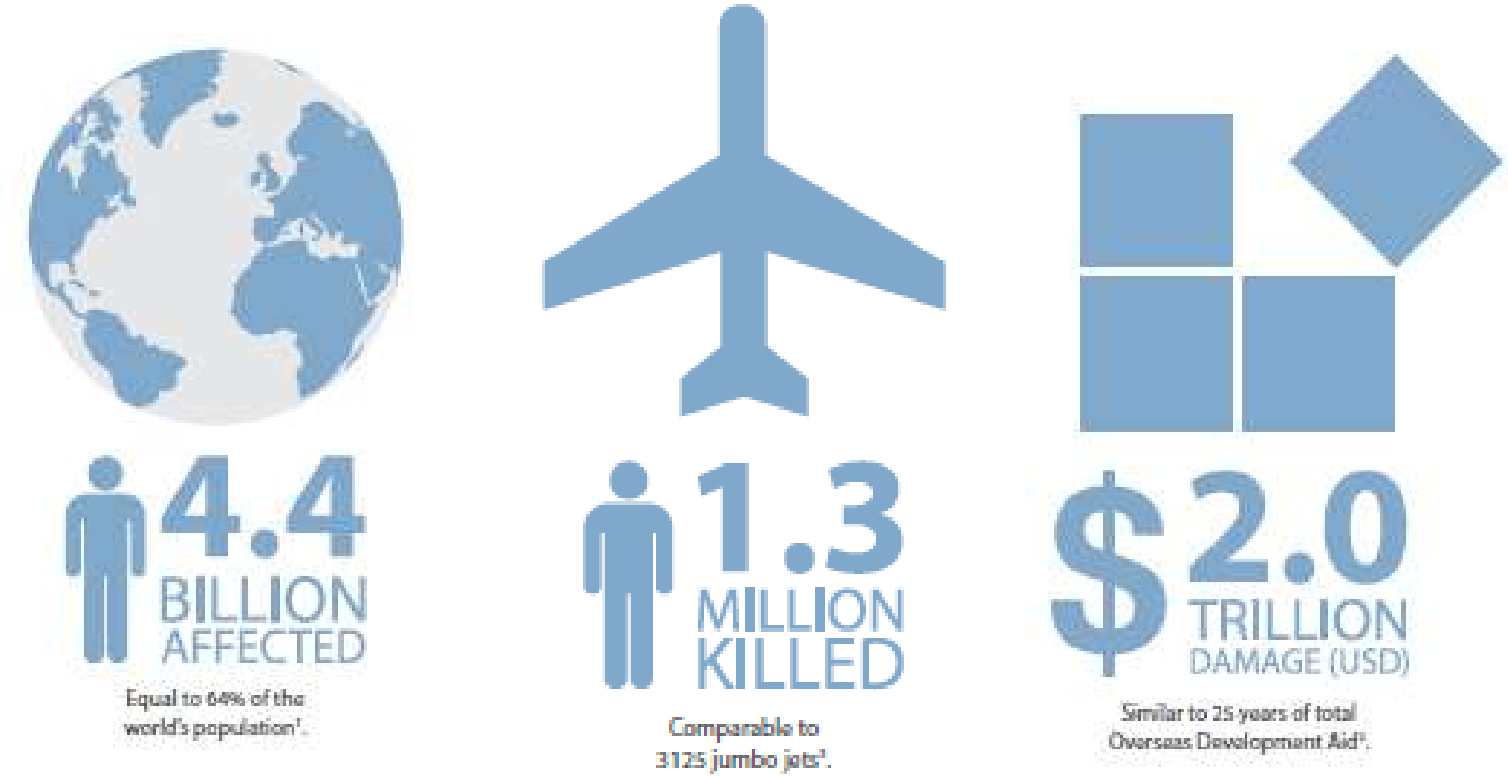
1. Disasters – A threat to development

Disaster Events: Facts and Figures



...between 1992 and 2012

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1. Disasters – A threat to development

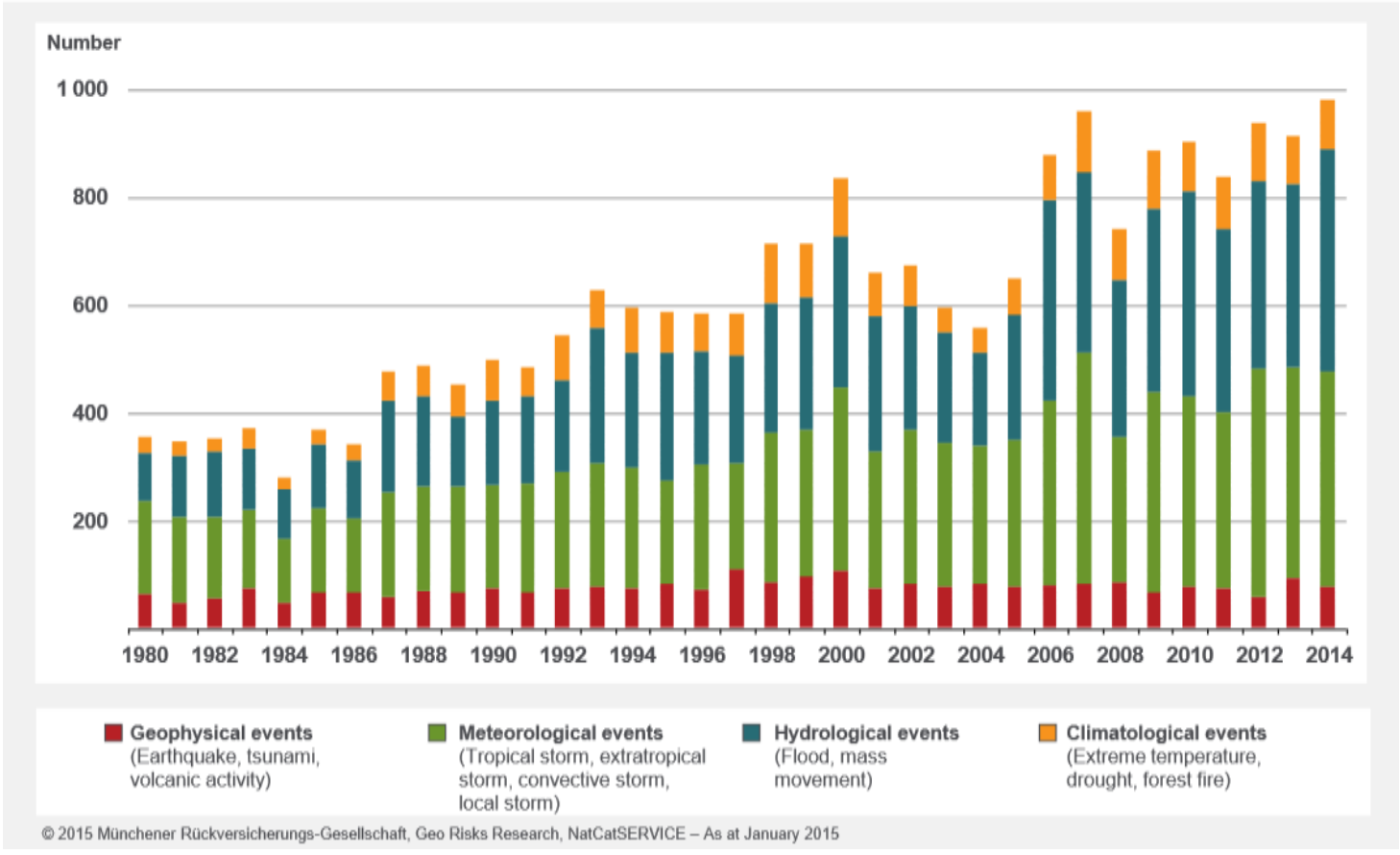
Disaster Events: Facts and Figures

NatCatSERVICE

Loss events worldwide 1980 – 2014

Number of events

Munich RE



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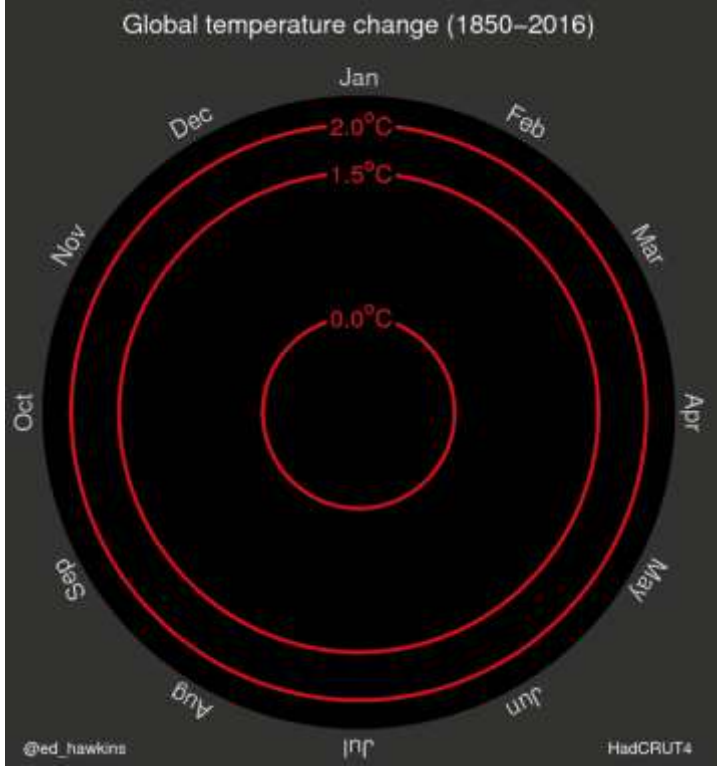
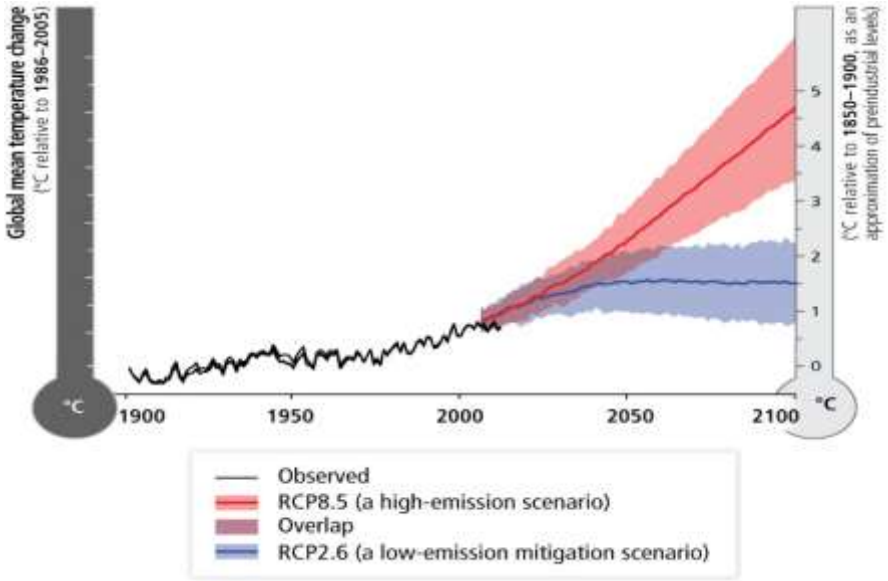
1. Disasters – A threat to development

Increase of extreme events

- Climate Change is increasing the frequency, intensity and magnitude of disasters (IPPC 2014)





- In the past 20 years, 90 % of major disasters have been caused by weather-related events such as heatwaves, storms, floods and droughts (UNISDR 2015)

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1. Disasters – A threat to development
Increase of Exposure and Vulnerability

- Rapid urbanisation leads to a concentration of population and assets
- Increase of settlements in disaster prone areas
- Inadequate land use planning, environmental degradation, poor infrastructure and poor risk governance are amongst others major drivers of vulnerability

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1. Disasters – A threat to development
Rationale for Disaster Risk Reduction and Climate Change Adaptation

- Disasters and Climate Change impact lives, livelihoods and economic development of the people we work with → people living in poor and developing countries bear the highest risks
- Impacts of Disasters and Climate Change set back development efforts.
- Disasters and climate change undermines efforts to achieve sustainable development.

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2. Terminology and Definitions

Disaster = A serious disruption of the functioning of a community or a society due to *hazardous events* interacting with conditions of *vulnerability* and *exposure*, leading to widespread human, material, economic and environmental losses and impacts.

Example: Flood Catastrophe in Bangladesh

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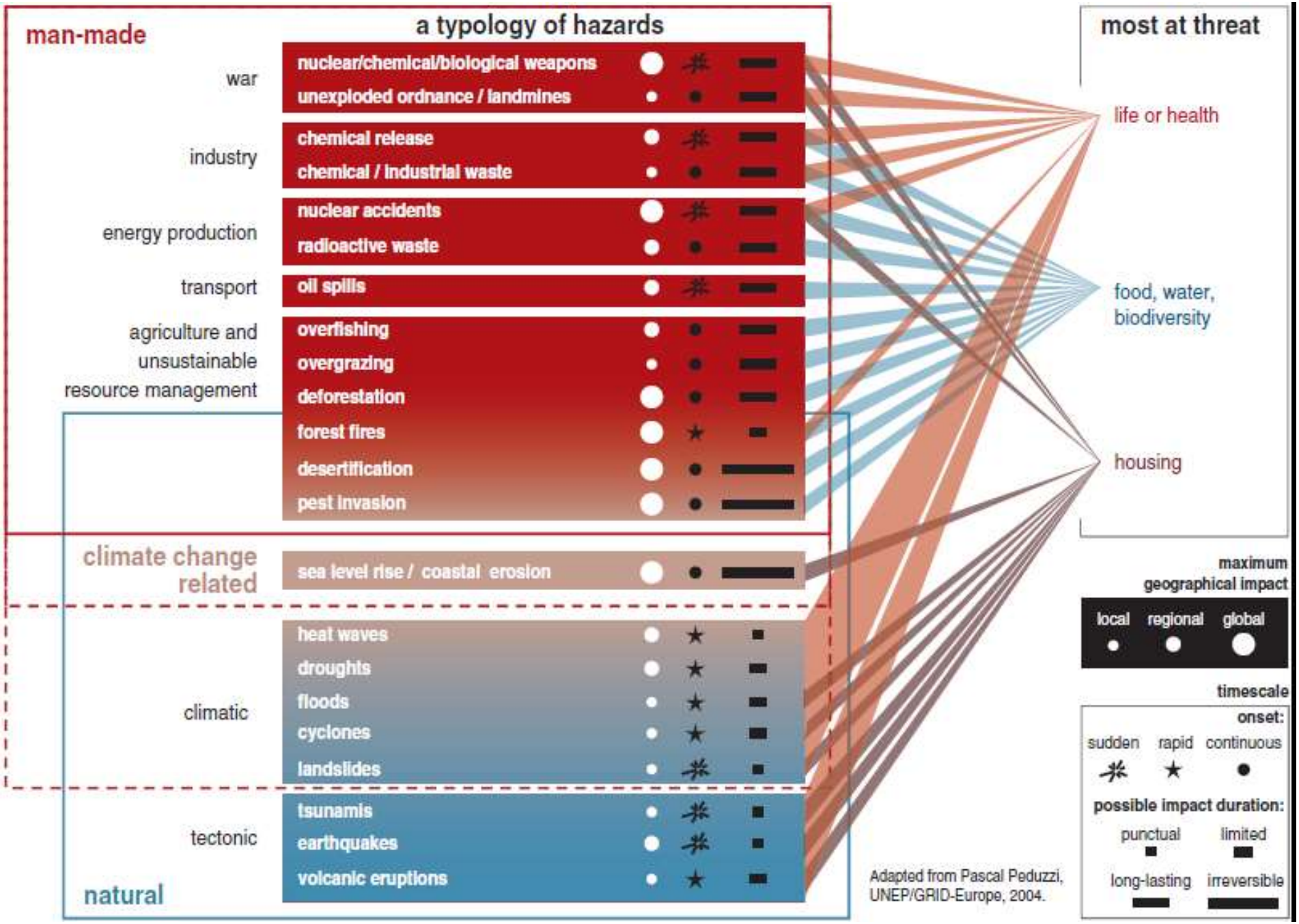
2. Terminology and Definitions

Hazard = A potentially damaging physical event, phenomenon or human activity that may cause the loss of life of injury, property damage, social and economic disruption or environmental degradation.

Example Bangladesh: Flood


man-made
a typology of hazards
most at threat
war
nuclear/chemical/biological weapons
unexploded ordnance / landmines
industry
chemical release
chemical / industrial waste
energy production
nuclear accidents
radioactive waste
transport
oil spills
agriculture and unsustainable resource management
overfishing
overgrazing
deforestation
forest fires
desertification
pest invasion
climate change related
sea level rise / coastal erosion
climatic
heat waves
droughts
floods
cyclones
landslides
tectonic
tsunamis
earthquakes
volcanic eruptions
natural
life or health
food, water, biodiversity
housing
maximum geographical impact
local
regional
global
timescale
onset:
sudden
rapid
continuous
possible impact duration:
punctual
limited
long-lasting
irreversible
Adapted from Pascal Peduzzi, UNEP/GRID-Europe, 2004.

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2. Terminology and Definitions

Exposure = People, property, other assets or systems exposed to hazards.

©Guardian

Example Bangladesh: Settlement in flooding zones due to population density

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2. Terminology and Definitions

Vulnerability = The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impacts of hazards

Example Bangladesh - Vulnerabilities:
Physical: Lack of protective infrastructure, lack of adequate housing
Social/human: Lack of awareness/knowledge, access to early warning information
Political: Lack of policies, regulations, e.g. adequate land use planning
Financial: Lack of savings, access to credit
Natural: Lack of functioning ecosystems

2. Terminology and Definitions

Capacity = The combination of all the strengths, attributes and resources available within a community, society or organization to manage and reduce to risk and strengthen resilience

Example Bangladesh: Traditional "Hati" structures – raised houses, protected with the local protective plants

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2. Terminology and Definitions

Risk = The combination of the <u>probability</u> of a hazardous event and its consequences, which result from interaction(s) between natural or man-made hazard(s), vulnerability, exposure and capacity.

Risk = Hazard x Vulnerability/Capacity

Risk = Probability x Impact

Example Bangladesh:
Probability high - recurrent flood events
Impact high – population density, exposure, and vulnerability
= Risk high

©Guardian

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2. Terminology and Definitions

Disaster Risk Reduction = The policy objective aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contributes to strengthening resilience.

E.g. Through the Sendai Framework, or National Policy Frameworks for DRR

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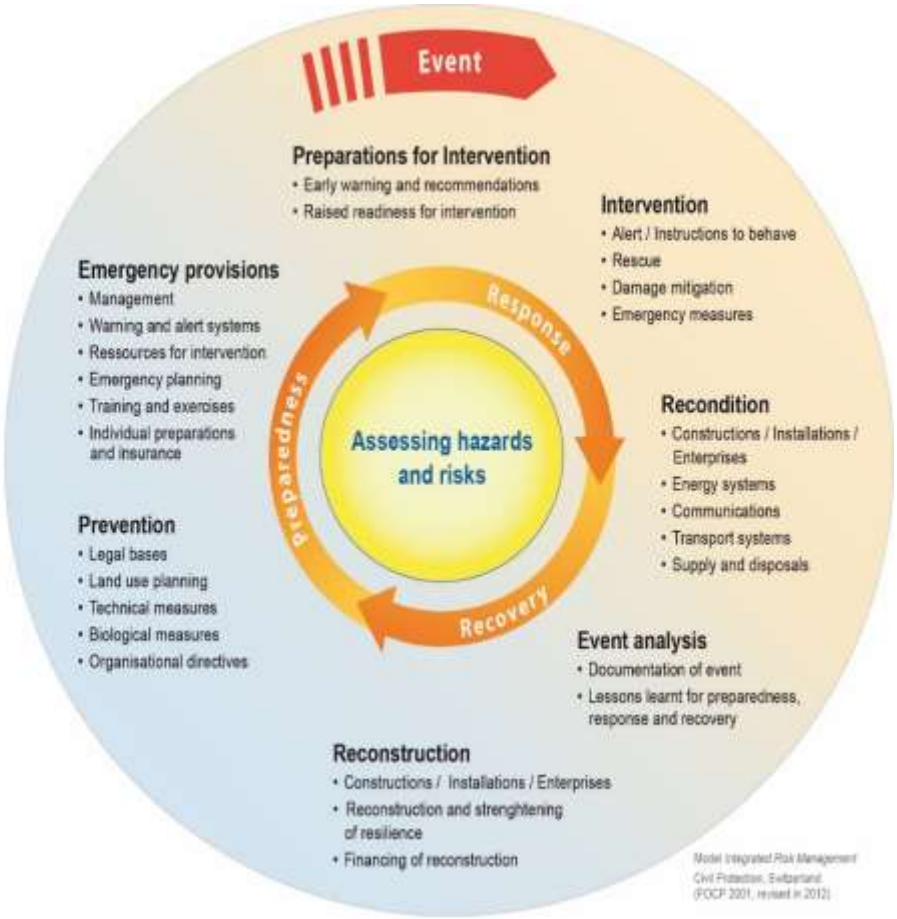
2. Terminology and Definitions



Disaster Risk Management =
The application of disaster risk reduction policies, processes and actions to prevent new risk, reduce existing disaster risk and manage residual risk contributing to the strengthening of resilience.

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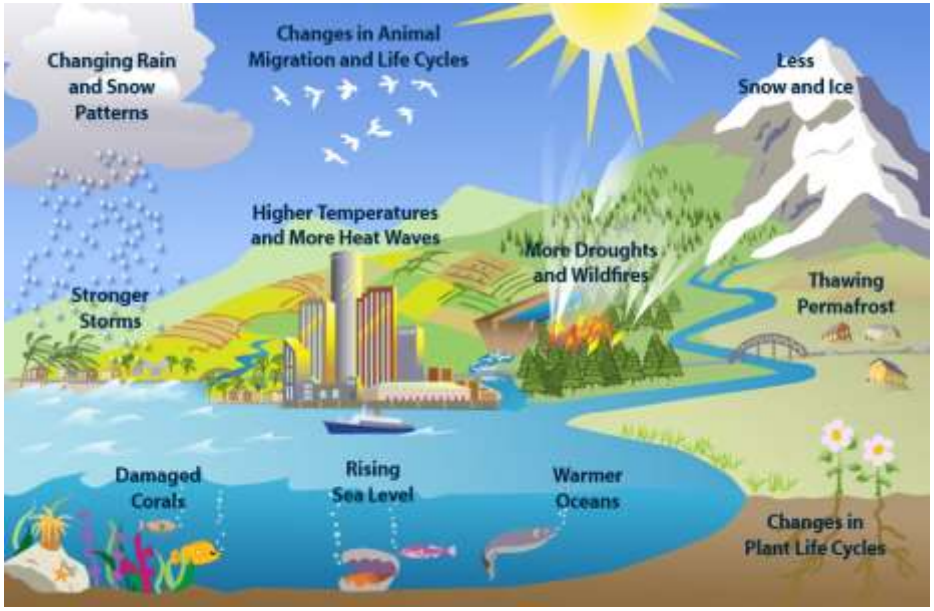
2. Terminology and Definitions

Climate Change = Climate Change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or variability of its properties, and that persists for an extended period, typically decades or longer. Climate Change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the compositions of the atmosphere or in land use.



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2. Terminology and Definitions

Climate Change Adaptation =
The process of adjustment to actual or expected climate change and its effects. In human systems, adaptation seeks to moderate or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.

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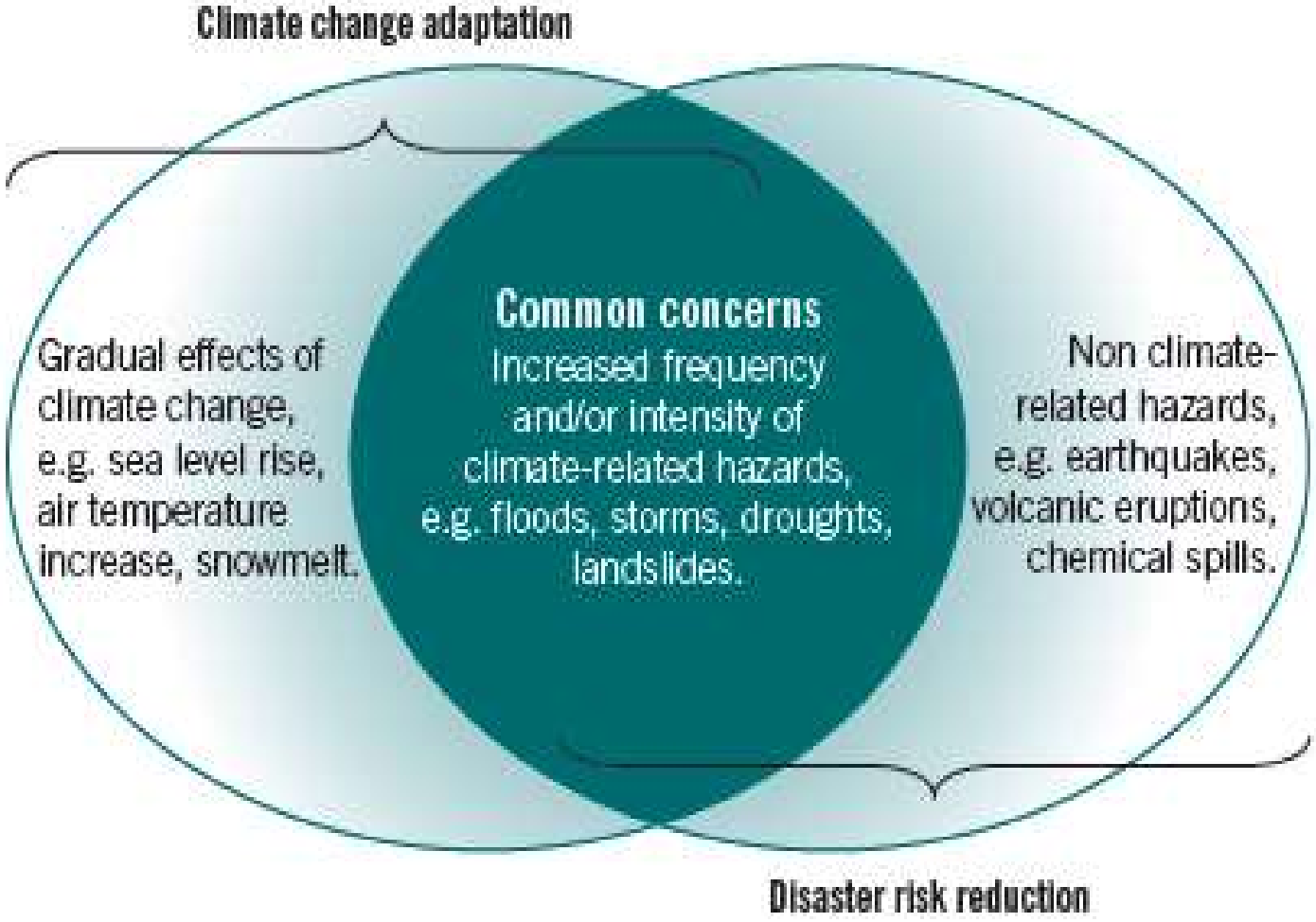
2. Terminology and Definitions

Disaster Risk Reduction and Climate Change Adaptation



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2. Terminology and Definitions

Resilience = The ability of a system, community or society exposed to hazards, to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

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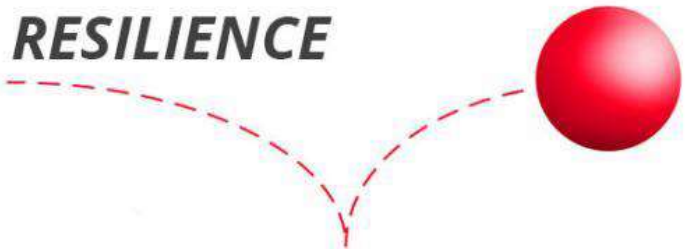
2. Terminology and Definitions

- Resilience is a dynamic/pro-active concept – it is the ability to:

  - Withstand a shock without losing its basic functions.
  - Adapt to changing circumstances.
  - Transform to a different way of life



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3. Measures of Climate and Disaster Risk Management

Integrated Risk Management

- To successfully reduce climate and disaster risk, risk reduction measures must be instigated well before disaster strikes and be integrated into long-term development
- Integrated Risk Management is an approach to assess and analyze risk and identify measures to reduce risk (reduce exposure and vulnerability, strengthen capacity)
- Three fundamental questions: What can happen?, What is acceptable to happen? What needs to be done?
- Integrated Risk Management involves different actors at different level of society
- Measures are informed by specific local conditions and targeted towards local needs

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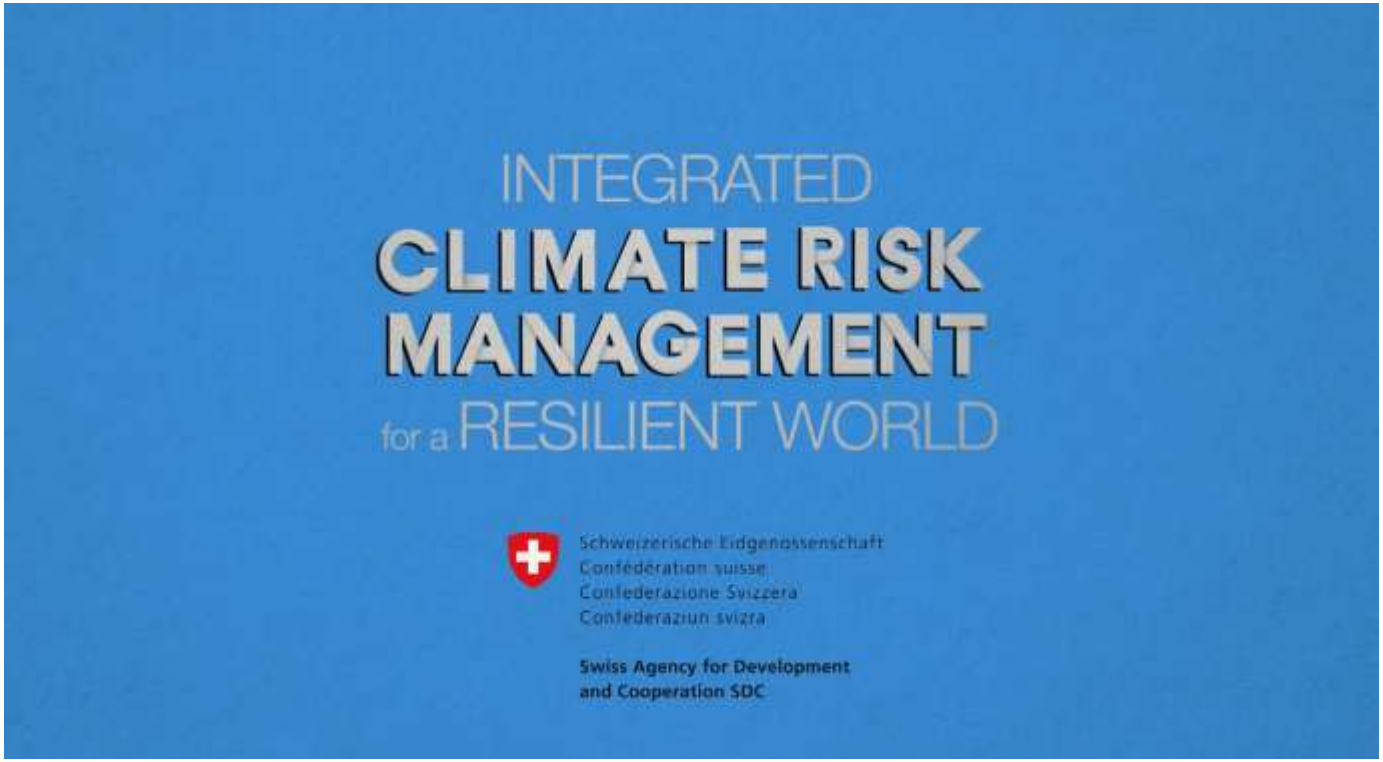

https://www.youtube.com/watch?v=qy4_Wgiwwt4

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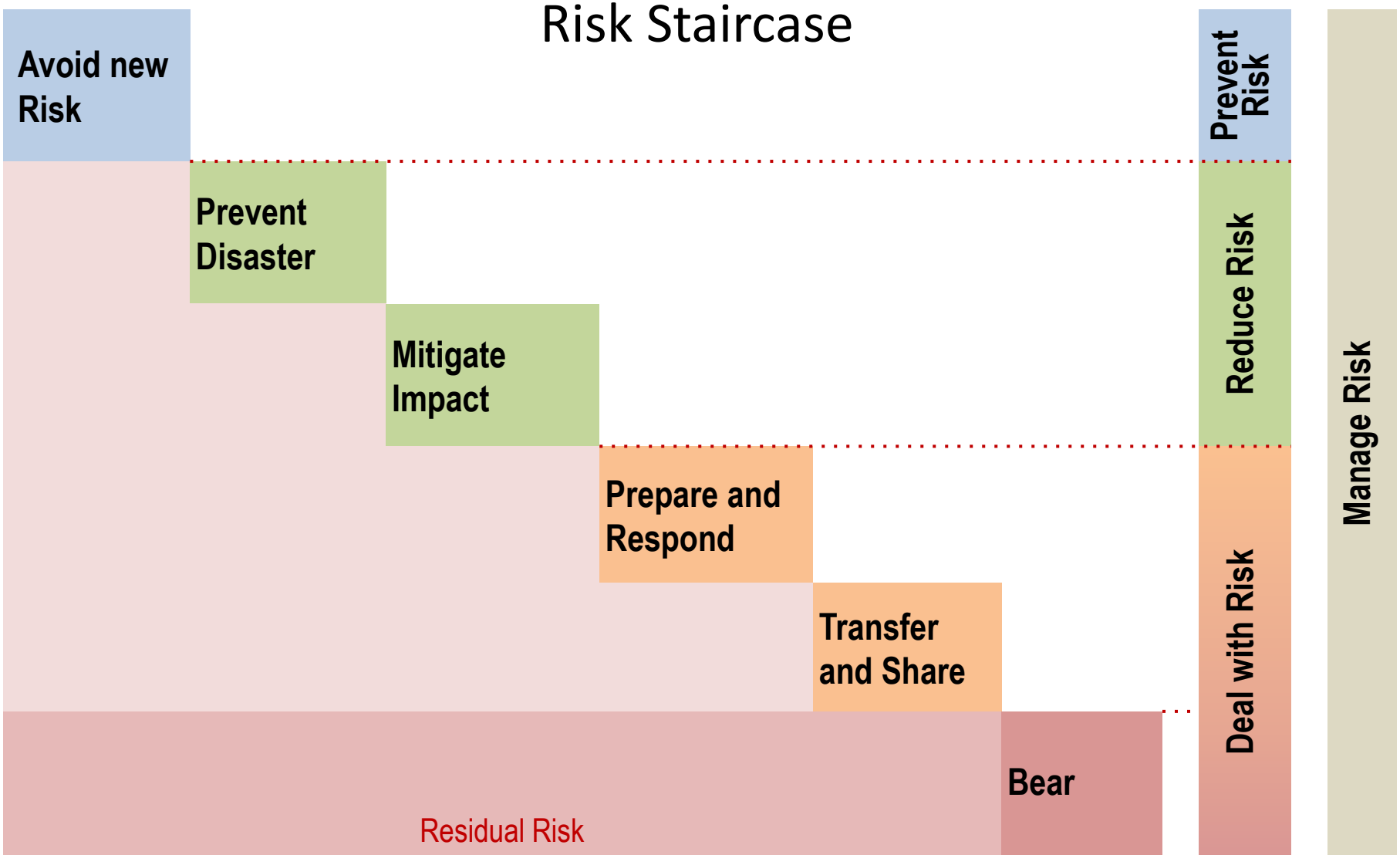
3. Measures of Climate and Disaster Risk Management

Risk Staircase



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3. Measures of Climate and Disaster Risk Management

Structural measures = Any physical construction to reduce or avoid possible impacts of hazards or application of engineering techniques to achieve hazard resistance and resilience in structures or systems

Non-structural measures = Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.

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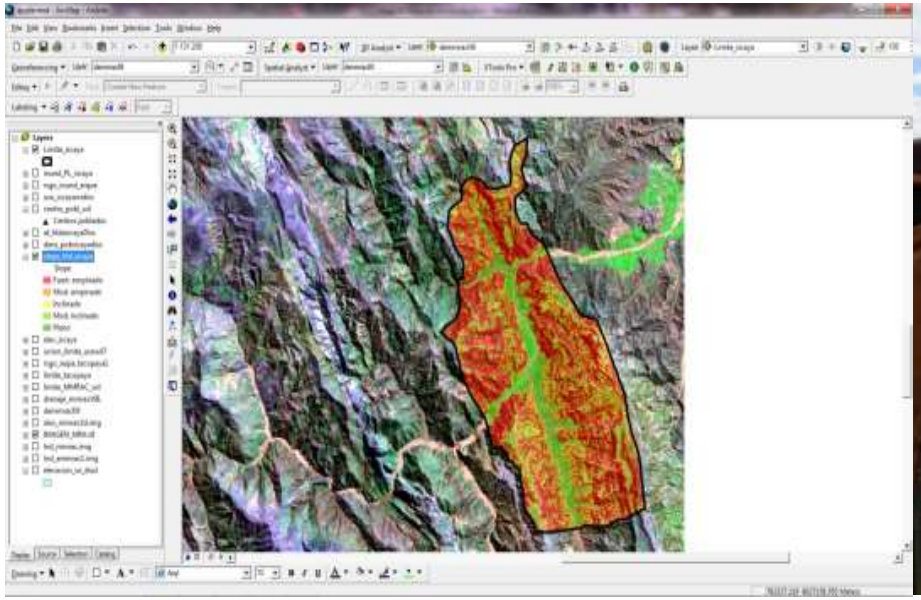
3. Measures of Climate and Disaster Risk Management
Avoid New Risk and Prevent Disaster

Prevention = Activities and measures to avoid existing and new disaster risk.



© HELVETAS: Flood Risk Mapping Bolivia

© HELVETAS: Awareness Raising Bolivia

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3. Measures of Climate and Disaster Risk Management
Avoid New Risk and Prevent Disaster

Examples:

- *Awareness raising*
- *Risk Identification/Mapping*
- *Promoting/advocate for land-use regulations, development plans including climate and disaster risk perspective*
- *Integrated Watershed Management*

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3. Measures of Climate and Disaster Risk Management Mitigate Impact

Mitigation = The lessening or limitation of the adverse impacts of a hazardous event

© Caritas: Retention Basin Tadjikistan

© HEKS, testing drought resistant varieties in Niger

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3. Measures of Climate and Disaster Risk Management Mitigate Impact

Examples:

- *Structural protective infrastructure (e.g. dams, embankments, riverbank protection, protection walls)*
- *Multi – hazard resistant constructions*
- *Ecosystem/Natural Resource Management (e.g. reforestation, erosion control, etc.)*
- *Livelihood diversification*
- *Introduction/revive (climate) resilient agricultural practices (e.g. drought resistant crops)*
- *Post-disaster recovery and reconstruction: build-back better*

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3. Measures of Climate and Disaster Risk Management Prepare

Preparedness = The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current disasters.

© HEKS – First aid training

© SRC - Training of local emergency response teams

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3. Measures of Climate and Disaster Risk Management Prepare for Response

Examples:

- *Early Warning Systems – guarantee access to information of all community members*
- *Building response capacity, e.g. community preparedness /emergency committees*
- *Training of live saving skills, e.g. swimming, climing*
- *Disaster drills*
- *Contingency Planning (community, family level)*
- *Ensuring access to emergency shelters*

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3. Measures of Climate and Disaster Risk Management
Risk Transfer

Risk Transfer = The process of formally or informally shifting the financial consequences of particular risks from the one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.

© HELVETAS, crop insurance for small-scale farmers

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3. Measures of Climate and Disaster Risk Management
Risk Transfer

Examples:

- *Micro-Insurance (Crop or Livestock)*
- *Community Seed/Grain banks*
- *Building of social networks, ties*

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4. International Frameworks
The Sendai Framework for Disaster Risk Reduction

https://www.youtube.com/watch?v=izpDdnaSxN0

4. International Frameworks
SFDRR

Outcome: The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries

Goal: Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience

4 Priorities of action:

1) Understanding Disaster Risk
2) Strengthening disaster risk governance to manage disaster risk
3) Investing in disaster risk reduction for resilience
4) Enhancing disaster preparedness for effective response, and to «Build Back Better», rehabilitation and reconstruction

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4. International Frameworks
DRR and CCA in Sustainable Development Goals

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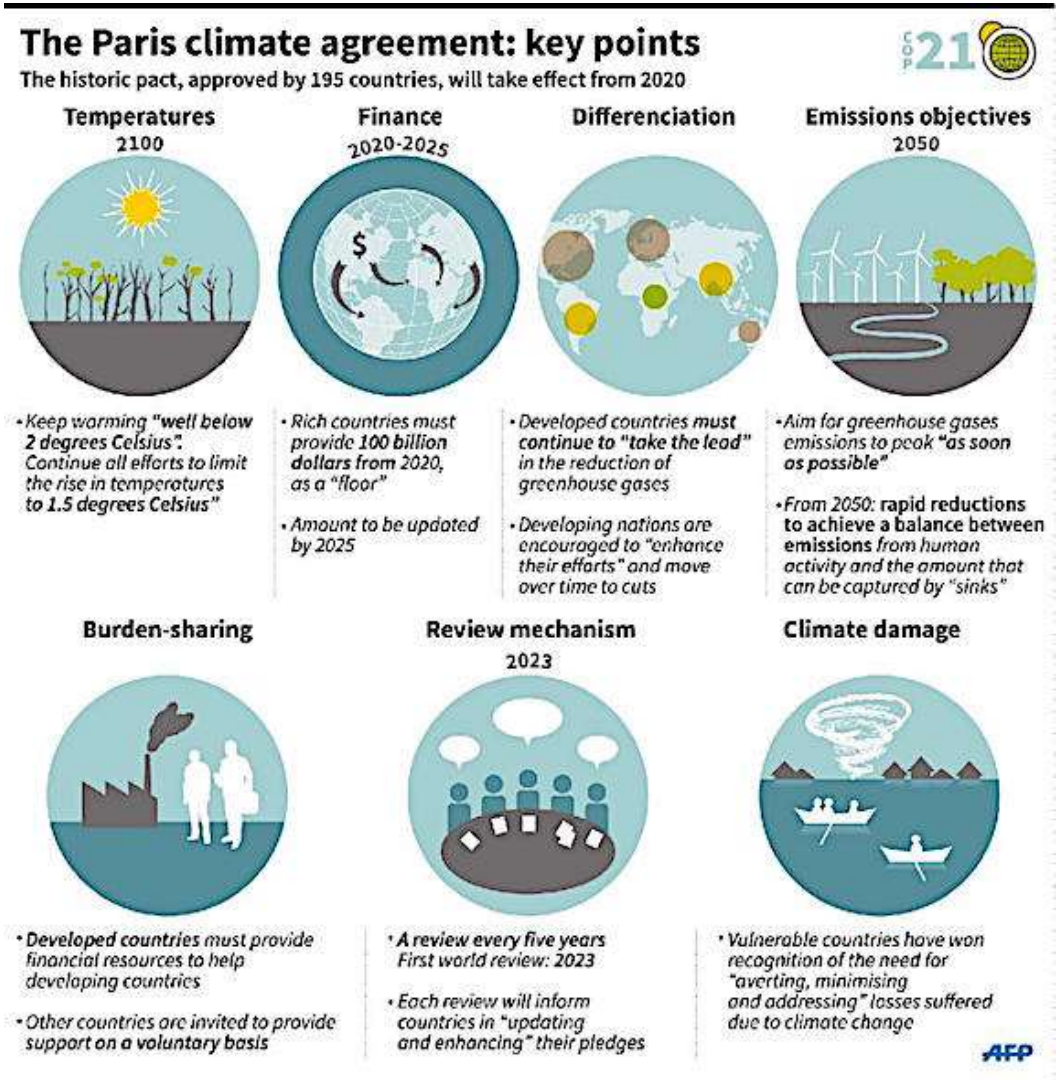
4. International Frameworks
The Paris Agreement for Climate Change



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5. Key Messages

- Disasters are not purely the results of hazardous events, but have a social, political and economic component. They have the heaviest impact on poor and developing countries, with poorest people being hit the hardest and everyday small-scale disasters causing the most harm.
- The effects of climate change increase the impact of disasters on the most vulnerable.
- Appropriate measures can prevent or reduce the impacts of hazardous events and have the potential to avoid disasters. DRR and CCA can save lives and livelihoods and aim to strengthen the resilience of communities.
- Disasters can be causes and consequences of development failures. Development can increase or decrease disaster risk. Development activities need to be risk-informed.
- DRR is cost effective: investment in prevention, preparedness and awareness raising can limit expensive reconstruction and rehabilitation costs.

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10 things you should know about DRR

https://www.youtube.com/watch?v=y16aMLeh91Q