FOOD SECURITY AND BIODIVERSITY THROUGH THE LENS OF DRR, CCA AND ECOSYSTEM BASED ADAPTATION

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Facts and figures

Source: © 2019 Munich Re, Geo Risks Research, NatCatSERVICE. As of March 2019.
Disaster Risk Reduction (DRR)

It is a policy objective that aims to prevent new disaster risk, to reduce existing disaster risk and to manage residual risk, all of which contributes to strengthening resilience (UNISDR 2015).

Climate Change Adaptation (CCA)

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 (UNISDR 2015).
How climate change is influencing disaster risks

The interlinkages between climate change and disaster risk
Source: IPCC 2012
Synergies between DRR and CCA

**DRR**
- Geo-physical hazards:
  - Earthquakes
  - Tsunamis
  - Landslides
  - Volcanic eruptions
- **Risk assessment**
  - Based on hard historical evidence as part of disaster risk assessment
- **High levels of certainty**
  - (in disaster planning)
- **Average to low political commitment**
- **Long history**
  - (over 1,000 years)

**Commonalities**
- **Climatic hazards:**
  - Storms / floods / landslides / temperature extremes / droughts / fires / rising sea levels / avalanches / climate change following volcanic eruptions
- **Impacts of climate hazards:**
  - Population shifts / international conflict / impacts on health services, agriculture and fisheries, economies on human settlements / institutional adaptation
  - **Joint DRM & CCA programmes to create resilience**

**CCA**
- **Non-disaster aspects of CCA:**
  - (including the positive benefits from climate change)
- **Risk assessment**
  - Based on climate risk assessment and climate models
- **Wider aspects of adaption:**
  - Political / social / economic / environmental
- **Low levels of certainty**
  - (in climate change)
- **High political commitment**
- **Short history**
  - (since about 1985)
Global impacts of climate change

Observed impacts attributed to climate change for

Physical systems
- Glaciers, snow, ice and/or permafrost
- Rivers, lakes, floods, and/or drought
- Coastal erosion and/or sea level effects

Biological systems
- Terrestrial ecosystems
- Wildfire
- Marine ecosystems

Human and managed systems
- Food production
- Livelihoods, health, and/or economics
- Regional-scale impacts

Confidence in attribution to climate change

- Very low
- Low
- Med
- High
- Very high

Source: IPCC 2014
Human Survival and Global Commons

**Biodiversity**
- 25% of animals and plants are threatened with extinction (nearly 1 million species), many in the coming decades.
- 75% of our crops are at risk due to loss of pollinators.

**Atmosphere**
- Air pollution kills approximately 8 million people annually.
- Net-zero emissions must be reached in 2050 to keep global warming limited to 1.5°C.

**Oceans**
- The livelihoods of 60 million fishers depend on ocean resources.
- 33.1% of fish stocks are fished at unsustainable levels.
- 60 million fishers depend on ocean resources.
- 50% of all coral reefs have been lost since 1870.

**Land**
- 33% of all land is used for agriculture.
- 20% of the Earth’s vegetated land surface showed declining productivity from 1998 to 2013.
- 30.7% of land area covered by forest.

Source: GSDR 2019
Ecosystem based Disaster Risk Reduction and Climate Change Adaptation

Ecosystem-based Adaptation
- Focus: reduction of long-term climate change induced effects
  - Food security
  - Drought resistant crops
  - Water management
  - Invasive species management

Ecosystem-based DRR
- Focus: reduction of immediate risk from hazard events
  - Early warning systems
  - Evacuation plans
  - Disaster management
  - Hazard / risk mapping

Common Measures

Source: Lange et al., 2014
Strategies of DRR / CCA in ecosystem-based approaches

Ecosystem function for DRR/CCA

- Biodiversity conservation
- Carbon sequestration
- Disaster prevention and recovery
- Hazard mitigation
- Climate change adaptation
- Sustainable livelihoods
- Heritage & culture
- Water and soil protection
- Stabilization of regional climate

Source: The Partnership for Environment and Disaster Risk Reduction (PEDRR)
Thank You!

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