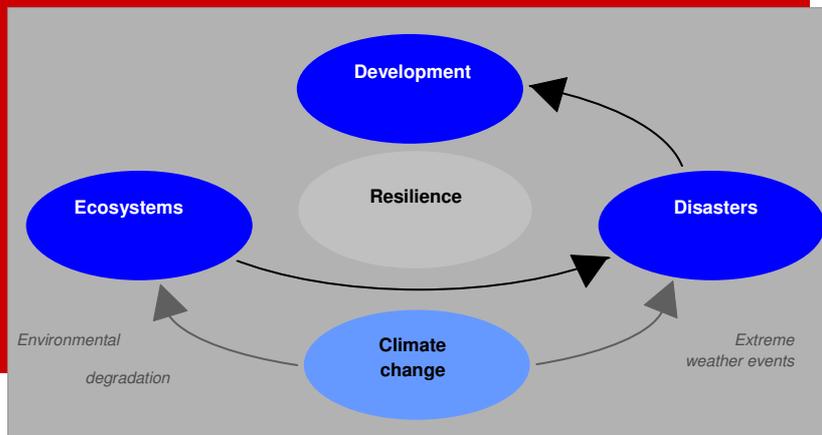


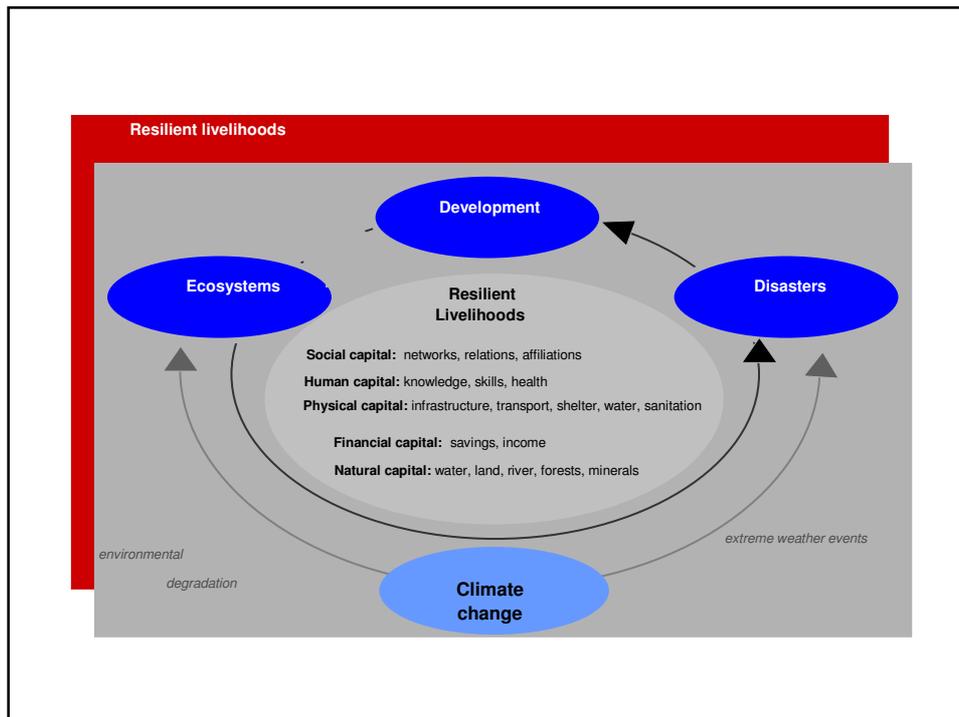
DRR, CCA and Ecosystem Management: how do they interrelate?

PARTNERS FOR RESILIENCE



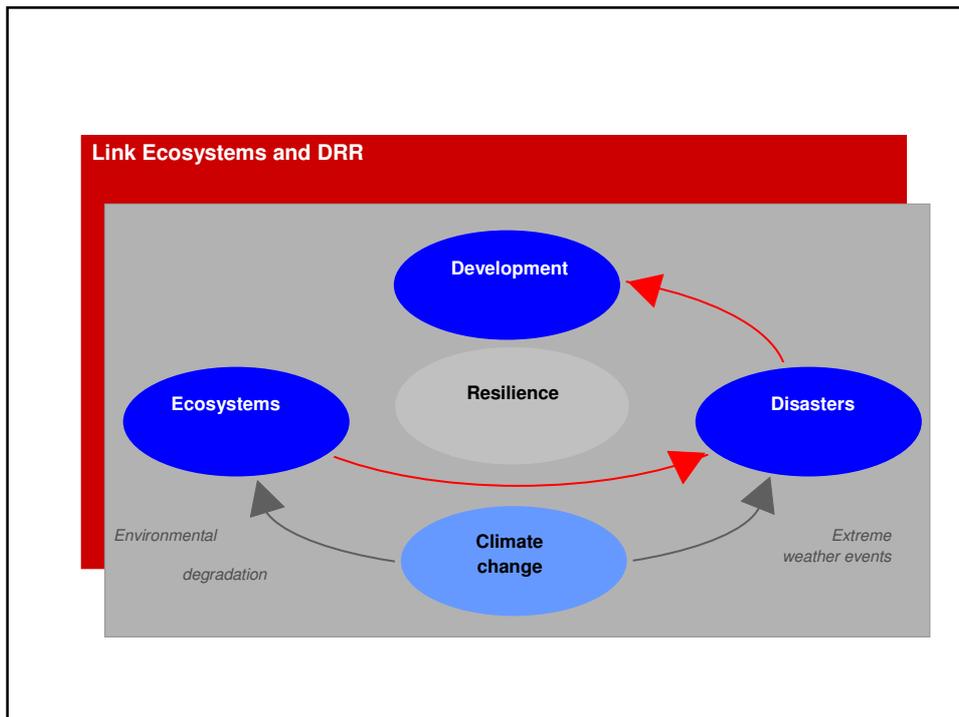
Alliance's focus





Livelihood support: strategies and focus

- There are three general strategies to support livelihoods:
 1. Livelihoods protection: safeguarding what is there (safety)
 2. Livelihoods strengthening: enhancing existing capitals (resilience)
 3. Livelihoods diversification: increasing options (resilience)
- “Traditional” DRR activities focus mainly on a few capitals, i.e. physical capital (infrastructure, buildings) and human capital (capacity building, trainings).
- The potential of Natural Capital, i.e. ecosystems, in DRR is often overlooked.



1. Ecosystem Management and DRR

Healthy ecosystems are important for DRR for two reasons:

- a. They act as buffers to reduce the impact of hazard events (“*natural infrastructure*”)
- b. They reduce vulnerability by supporting and sustaining livelihoods

a. Ecosystems as natural buffers

- **Flood protection:**
 - Vegetation cover upstream increases infiltration of rainfall and regulates the flow of rain water (connectivity).
 - Vegetation also protects against erosion and stabilizes riverbanks.
 - Wetlands and peatlands provide storage space for flood waters.
- **Landslides: slope stabilization:**
 - Dense and deep rooted vegetation helps to bind soil together and resists slippage

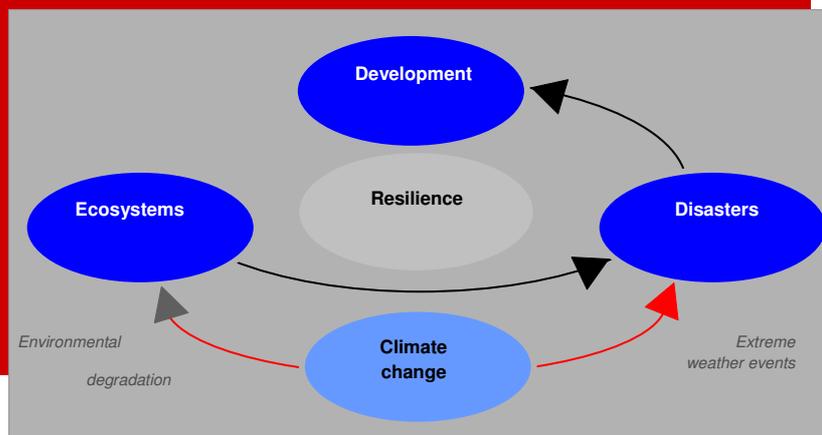
Ecosystems as natural buffers (2)

- **Coastal protection (tsunamis, storm surges):**
 - Intact coral reefs and sand as barriers against waves and currents.
 - Marshes and lagoons can divert and contain floodwaters.
 - Mangroves absorb waves and trap debris.
- **Avalanche protection:**
 - Forests form a physical barrier against avalanches and pin down snow pack.
- **Buffers against droughts and desertification:**
 - Greenbelts, hedges and other “living” fences break wind force, stabilize dunes, maintain soil and trap water.

b. Ecosystems reduce community vulnerability by supporting livelihoods

- Healthy ecosystems, such as intact forests, wetlands, mangroves and coral reefs provide many **livelihood products**:
e.g. firewood, clean water, food, fibres, medicine...
- Ecosystems also provide a range of **services**: regulating water flows and water quality, carbon sequestration, decontamination, soil conservation...
- Vulnerable populations, especially in rural areas, are heavily dependent on healthy ecosystems for their livelihoods and survival.

Climate change (adaptation) and DRR



Climate change leads to new, or more urgent questions

- How to deal with an increasing intensity and frequency of disasters?
- **How to handle new and unknown risks?**
- How to use knowledge about climate change to enhance risk reduction?



Early warning, early action Bridging time scales

Climate change
Rising risks, trends, more surprises

Seasonal forecasts
Level of risk in coming months

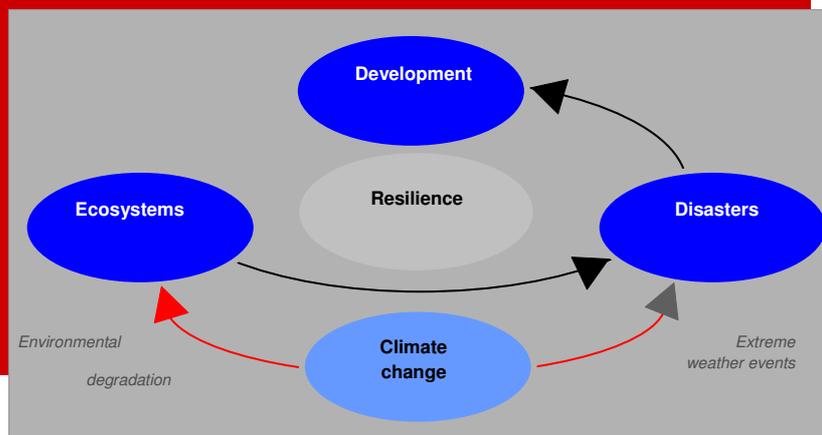
"Regular" forecasts
Impending hazard

More specific
information

More time to reduce risk

Example 1: flood	Example of early warning	Example of early action
Years	Increasing risk of extreme rainfall due to climate change Increasing risk of extreme rainfall due to climate change	Continually update risk maps and identify changing vulnerable groups, recruit additional volunteers, establish new areas of work, work with communities to reduce risk through concrete actions like reforestation, reinforcement of houses, etc.
Months	Forecast of strongly above-average rainfall for the coming season	Revisit contingency plans, replenish stocks, inform communities about enhanced risk and what to do if the risk materializes, e.g. clear drain.
Weeks	High ground saturation and forecast of continued rainfall leading to high probability of floods	Alert volunteers and communities, meet with other response agencies to enable better coordination, closely monitor rainfall forecasts
Days	Heavy rainfall and high water levels upstream, likely to result in floods	Prepare evacuation, mobilize volunteers, get warnings and instructions out to communities at risk
Hours	Flood water moving down the river to affected areas	Evacuate

Climate change and ecosystems



3. Climate change adaptation and Ecosystems

- Climate shocks and gradual changes contribute to environmental degradation, undermining the buffer and livelihood support function.
- The beneficial functions of healthy ecosystems are insufficiently unrecognized in current adaptation planning.
- Non-climate related anthropogenic pressures on ecosystems or “mal-adaptation” also contribute to increased vulnerability to climate change: (→ *Examples include misinformed infrastructure development, unsustainable water use, deforestation etc.*)
- Ecosystem –based approaches are often cost-effective, robust, low-technology and sustainable adaptation solutions.

Conclusion

1. Livelihood support: 3 dimensions
2. Natural capital/ecosystems underutilized in DRR/CCA context
3. Ecosystems crucial in DRR as: a) buffer; b) integral part of livelihoods
4. Ecosystem management also essential in climate adaptation
5. Climate change - DRR link through ‘Early Warning, Early Action’
6. Climate change may contribute to environmental degradation, indirectly affecting livelihood resilience and buffer function.
7. Need for Climate Proof and Ecosystem-based DRR:
---> more effective mainstreaming in development planning and poverty reduction.

THANKS !!