



# Adaptation to Climate Change

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# Climate Change

## Characteristics

- Temperature rise
- Changes in precipitation
- Melting and disappearance of glaciers and ice caps
- Sea level rise

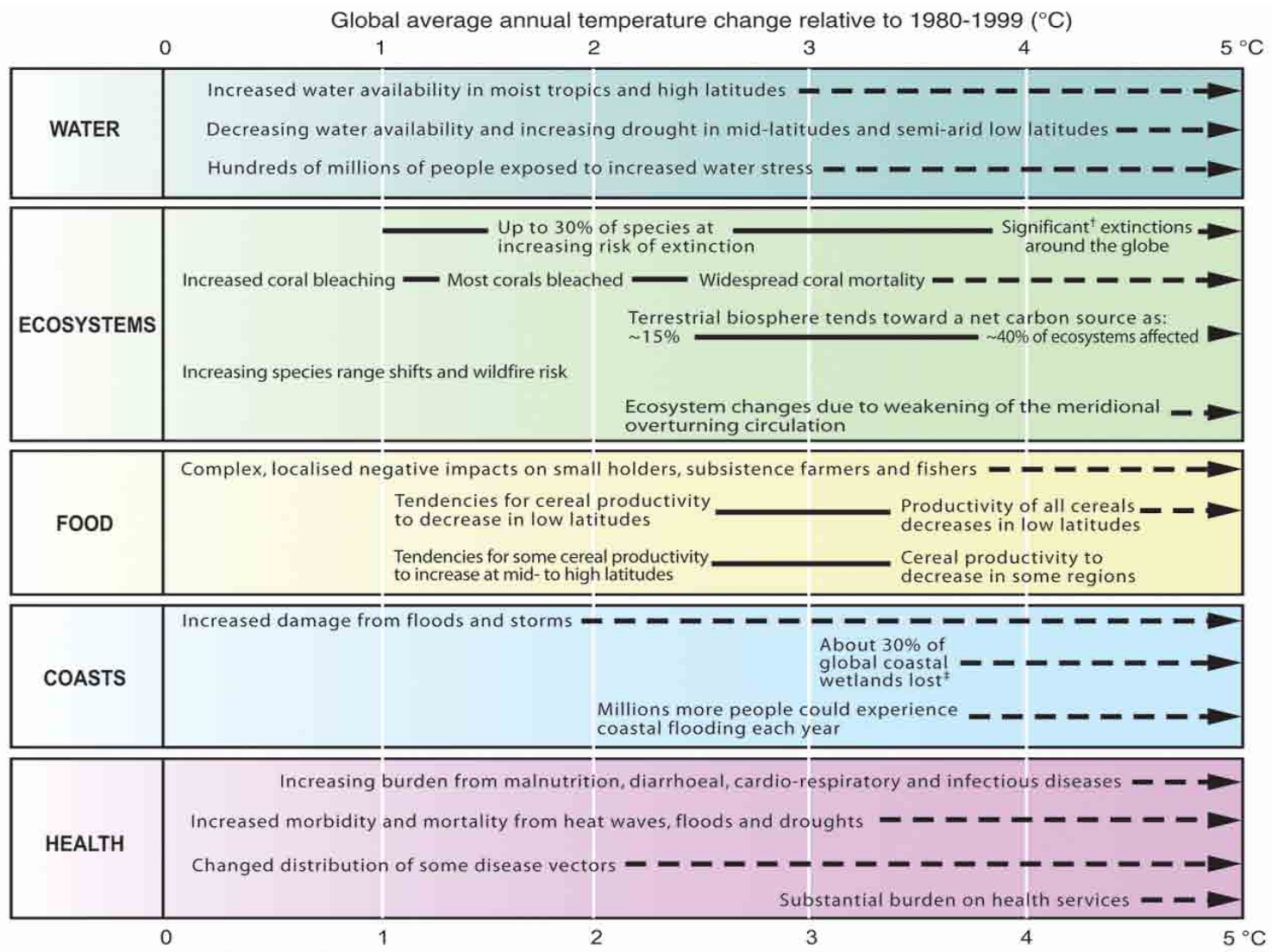
## Impacts

- Increased disasters: Cyclones, Floods, Heat waves, Droughts, Famines, Forest fires
- Coastal inundation
- Disease spread
- Reduced crop productivity
- Reduced access to water
- Biodiversity loss and species extinction
- Economic losses
- Loss of traditional lifestyles





# Sectoral climate change impacts



Source: IPCC AR4

<sup>†</sup> Significant is defined here as more than 40%. <sup>‡</sup> Based on average rate of sea level rise of 4.2mm/year from 2000 to 2080.



# Regional climate change impacts

- **Africa:**By 2020, between 75 and 250 million people are projected to be exposed to an increase of water stress due to climate change.
- **Asia:**Projected crop yields could increase up to 20% in E and SE Asia while they could decrease up to 30% in C and S Asia by the mid-21st century.
- **Australia and New Zealand:** Significant biodiversity loss is projected to occur by 2020 in some ecologically-rich sites including the Great Barrier Reef and Queensland Wet Tropics.
- **Europe:**Initially, climate change is projected to bring benefits to Northern Europe (reduced energy demand for heating, crop and forest growth increases) whilst Southern Europe is expected to experience increased heat waves, wildfires and reduced crop productivity.
- **Latin America:**By mid-century, climate change is projected to lead to the gradual replacement of tropical forest by savanna in eastern Amazonia.
- **North America:**Cities currently experiencing heat waves will experience many more in the future with adverse health impacts.
- **Polar Regions:**Climate change is projected to impact natural ecosystems with detrimental effects on many organisms including migratory birds, mammals and higher predators.
- **Small Islands:**Deterioration in coastal conditions e.g., through beach erosion and coral bleaching is expected to affect local resources e.g., fisheries and tourism.



# Adaptation – Areas of focus

- Systematic observation: atmosphere, ocean and terrestrial systems
- Climate modelling (including high resolution models)
- Assessment tools
- Socio-economic data
- Local coping strategies / Traditional knowledge
- Technological capacity
- Sustainable development goals
- Millennium development goals
- Risk management and risk reduction policies
- Poverty alleviation programmes



# Adaptation – Examples

- Raising ducks instead of chickens, Bangladesh – flood resistance
- Hurricane/Typhoon Resistant housing, Costa Rica/Philippines – storm resilience
- Gathering and domesticating snails and mushrooms, Benin – food security
- Zai technique, Burkina Faso – water conservation and soil conservation
- Contour stone bunds and half moons, Niger – water harvesting
- Disaster Management Strategy, Bhutan NAPA – planning for food security and emergency medicine to vulnerable communities in case of landslides, flood, drought and other forms of natural disaster
- Promoting drought/crop insurance program, Ethiopia NAPA
- Integrated Cropping/Livestock Farming, Liberia NAPA - enhancing resilience to increasing rainfall variability by diversification of crop cultivation and rearing small ruminants
- Community tree growing, Uganda NAPA – increasing tree products and services, and employment
- Increasing resilience of coastal areas and community settlement to climate change, Tuvalu – resilience to sea level rise, storm surge and tropical storms



# Adaptation – Resources

## Financing

- UNFCCC
  - GEF Trust Fund
  - GEF LDCF
  - GEF SCCF
  - Adaptation Fund
- Bilateral and Multilateral Funding
  - National governments
  - IGOs
  - NGOs



## Technology

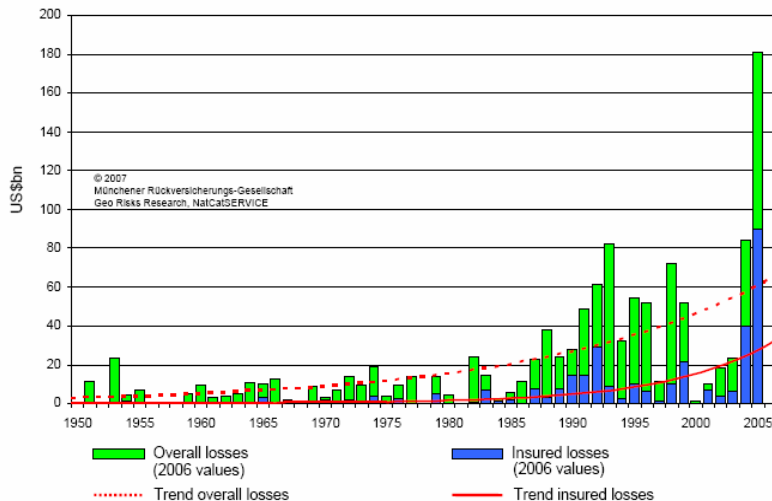
- Hard technology
  - e.g. irrigation, drought resistant seeds
- Soft technology
  - e.g. insurance schemes, crop rotation
- Combined hard and soft technology
  - e.g. early warning systems





# Adaptation – Risk and Insurance

Losses from Weather Disasters 1950-2006  
Overall and insured losses



## Insurance Options

- Micro-finance and micro-insurance
  - United Insurance Hurricane Mitigation Programme
- Public-private partnerships
  - UNEP-FI
- Weather derivatives
  - Caribbean Catastrophe Risk Insurance Facility (CCRIF)
- Innovative risk transfer
- Regional reinsurance
- Catastrophe funds
- Carbon credits
- International insurance pool





# Adaptation – Bridging the gap between planning and implementation



- Integrating adaptation into policy and planning
- Capacity building, education, training and public awareness
- Cooperation and Synergies (N-S, S-S)
- Streamlining funding
- Funding that is appropriate, additional, sufficient, sustainable and predictable
- Needs-based regional technology transfer
- Institutional frameworks to facilitate implementation





# International Policy

- UNFCCC Convention Articles 2, 4.1 (b, e, f), 4.4, 4.8, 4.9
  - Decision 1/CP.10
  - Nairobi work programme
  - Bali Action Plan
  - To Poznan and on to Copenhagen



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Thank you