Climate change Adaptation in South Asia

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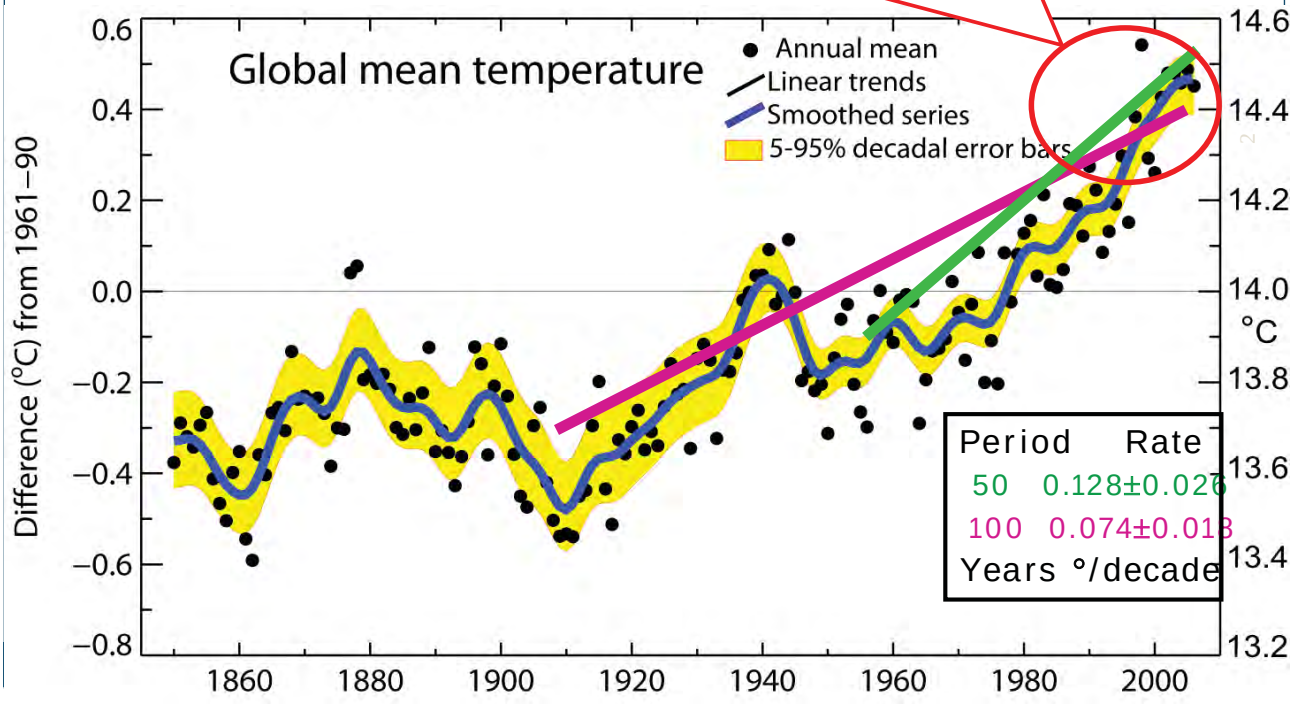
TERI

South Asia Climate Change Focal Points and Experts Consultation Meeting, Thimphu, 16-17 November 2011

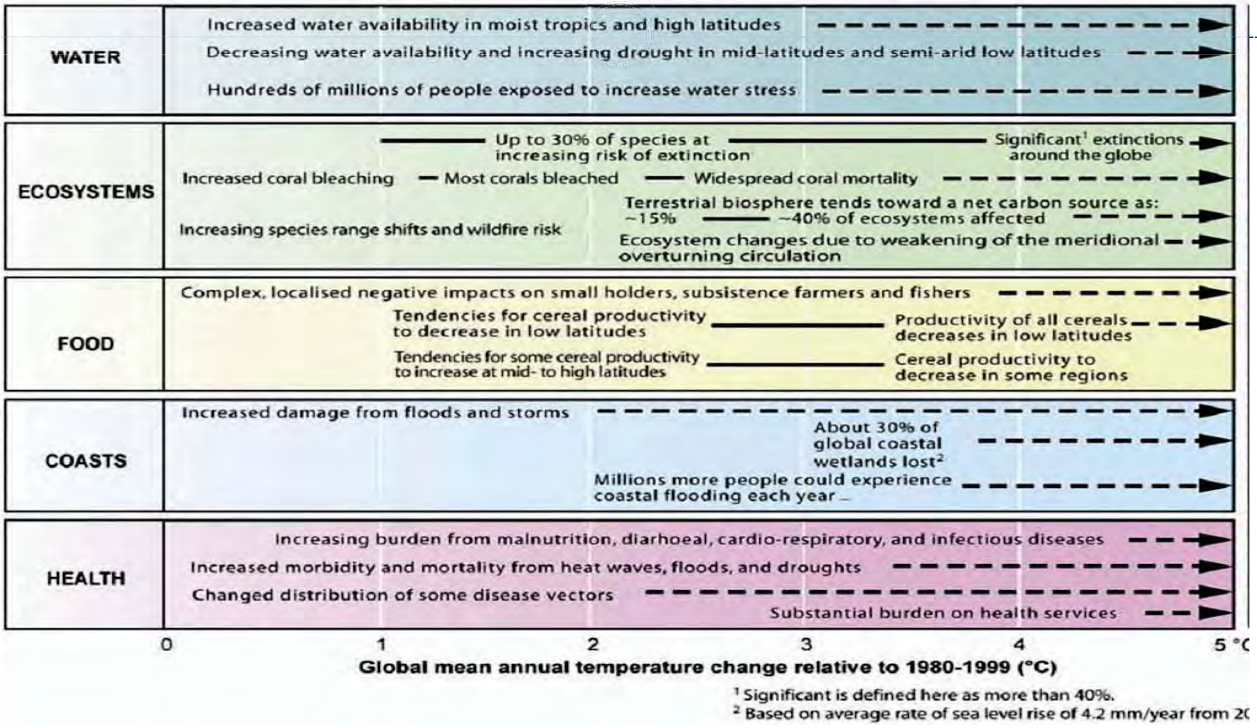
Global mean temperatures rising faster with time

Warmest 12 years:
1998,2005,2003,2002,2004,2006, 2001,1997,1995,1999,1990,2000

Source: IPCC AR4, 2007



Key impacts as a function of increasing global average temperature



IPCC, 2007

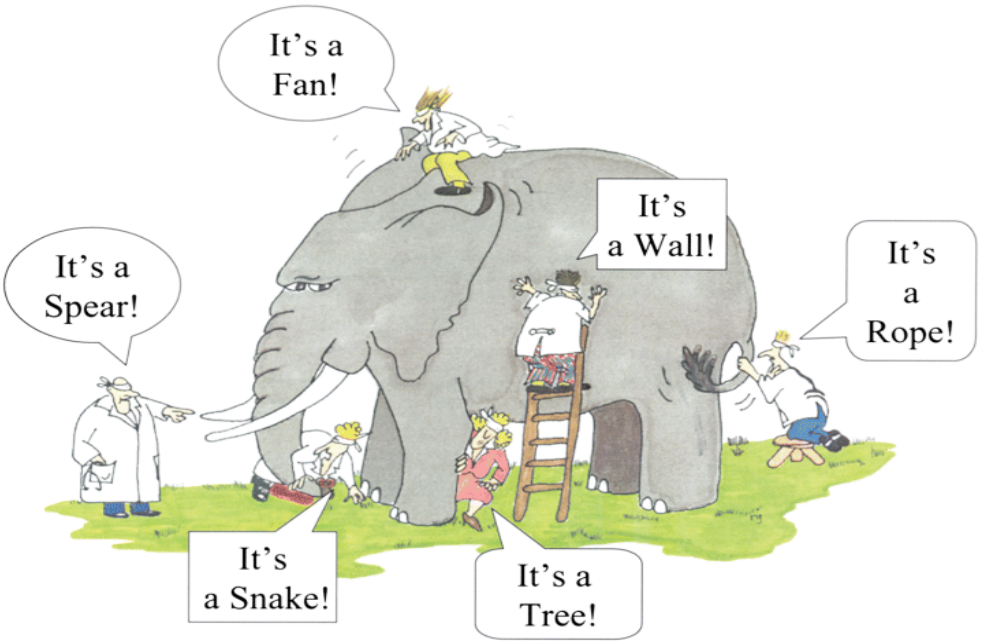
Projected climate change risks

By 2100:

- Global average surface temperature is projected to increase by 1.8 to 4° C
- The global mean sea level is projected to rise by 0.18 to 0.59 meters
- Increase in tropical cyclone peak wind intensity, mean and peak precipitation intensities

Source: IPCC Summary for Policy Makers- WG1, AR4, 2007

Multiple interpretations



http://www.nature.com/ki/journal/v62/n5/images/4493262f1b.gif

Debates and issues surrounding adaptation

- What defines good adaptation
  - Process/ outcome
  - Monitoring and evaluation issues
- Institutional mechanisms for disbursement of funds
- Where to target adaptation support?
  - Lack of trust between recipient (moving funds from ODA) and donor ('correct' use of funds)
- For what to target adaptation support (development adaptation continuum; need to prove additionality)
- Compensation versus aid
  - Role of national funding versus international support
- Matching national and local needs
- Focus on hard versus soft adaptation

A scoping study for South Asia: objectives

- To review ongoing work on addressing climate change impacts and adaptation in South Asia
- Identify adaptation needs and gaps
- Provide recommendations for strengthening current (and introducing new) policies, plans and programmes for supporting adaptation

There are many similarities and differences in climate exposure and socio-economic conditions (within and between countries), sensitivities, dependence on climate sensitive sectors, abilities to cope and adapt and impacts.

Afghanistan

Climate impacts and vulnerabilities

- Drought, desertification and land degradation
- Flooding due to untimely and heavy rainfall
- Impacts of water availability, quality and access (transboundary issues)
- Impacts on agriculture and livelihoods
- Frost and cold spells

Adaptation needs

- Invest in crop and water management and efficient irrigation practices, climate-tolerant cultivars, soil conservation
- Support livelihood diversification
- Strengthen health care & surveillance
- Flood evacuation support
- Strengthen R & D and build institutional capacities for vulnerability assessments
- Need to establish institutional networks for monitoring, collection and maintenance of datasets for climate research
- Need for regional networks and collaborative research

Bangladesh

Climate impacts and vulnerabilities

- High vulnerability owing to geography and geomorphology (confluence of GBM rivers)
- 2/3rds of the land area is less than 5 m above msl
- Floods affect 80% of the land area
- Salinization of land and water resources
- Frequented by cyclones and storm surges
- Densely populated (people: land ratio of 13 persons per hectare)
- Over 60% of the population dependent on agriculture for livelihood support

Adaptation needs

- R & D for climate-tolerant cultivars
- Natural protective coastal structures & coastal afforestation
- Need for studies on future storm surge patterns
- Enhanced computational and modeling capacities
- Strengthen early warning systems
- Vulnerability assessments in sectors such as health, forestry & biodiversity
- Strengthening and documentation of community-based adaptation

Bhutan

Climate impacts and vulnerabilities

- Undulating topography ranging from 150 -7500 m all within 150 kms
- Forests cover nearly 70% of the land area
- Lying between the tropical and Asian monsoon circulation, Bhutan experiences complex climatic variations
- High dependence on agriculture, forestry, hydropower
- Threat of flash floods, landslides, and GLOFs
- Limited adaptive capacities
- Health impacts

Adaptation needs

- R & D for regional climate modeling and impact assessments
- Strengthening of climate resilient infrastructure including establishment of early warning systems and expanding the network of climate monitoring stations
- Assess rate of glacial melt and GLOF formation
- Enhance adaptive capacities of farming communities
- Need to mainstream climate concerns into disaster management and planning

India

Climate impacts and vulnerabilities

- Multi-hazard prone
- Nearly 2/3rd of total sown area is drought prone and nealry 40 million ha is flood prone
- Long coastline vulnerable to SLR, cyclones and storm surges
- Over 600 million people dependent on the agriculture sector for livelihoods and sustenance
- Sectors at risk include agriculture and livestock, forests and biodiversity (including sensitive ecosystems such as mountainous regions, wetlands, mangroves and coral reefs), human health and infrastructure.

Adaptation needs

- Need for integrated impact assessments
- Need for further research in glaciology, human health, forestry and biodiversity and urban issues
- Need to build capacities of institutions and human resources at all levels , including public awareness
- Need to strengthen implementation and M & E of adaptation within State action plans on climate change

Maldives

Climate impacts and vulnerabilities

- Small geographical size with over 80% of the land area below 1m of msl
- SLR, shifts in rainfall patterns, cyclones, droughts and floods (ENSO influence)
- Extreme events pose a major threat to infrastructural investments and tourism (more than 90% of the tourism infrastructure is within 100 m from the coast)
- Loss of beaches owing to erosion
- Impacts on marine ecosystems (coral reefs and fish catch)
- Human health impacts (vector-borne , water-borne)

Adaptation needs

- Need to expand the network of stations and measuring points for sea level, SSTs & salinity, and enhance early warning facilities
- Need to explore resource-efficient technologies for desalination
- Need for better land-use planning (including citing of critical infrastructure) and consolidation considering the topographic variations
- Need to undertake research studies and monitoring of coral growth and respoinse to SLR and changes in SST
- Need to promote awareness among land use planners, civil society, sharing of best practices between islands etc.

Nepal

Climate impacts and vulnerabilities

- Covered by the Himalayan range with a vast altitudinal diversity
- Glacial melt, threat of flash floods due to GLOFs and excess river runoff
- High dependence on agriculture
- Key sectors of concern include water resources, infrastructure (hydropower), tourism and agriculture in the plains.

Adaptation needs

- Need to enhance climate modeling capacities.
- Need to focus R& D and technology applications for setting of early warning systems
- Need to build institutional, infrastructural and human resource capacities
- Need for skill development for livelihood diversification
- Need for detailed assessments of climate change on the hydropower producing units
- Role of private sector for risk sharing through insurance needs to be explored

Pakistan

Climate impacts and vulnerabilities

- Heavy precipitation
- Floods and droughts
- Cyclones
- Water stress
- High dependence on agriculture and livestock (nearly 43% of the labour force is engaged in the sector)
- High vulnerability to SLR within a long coastline
- Impacts on forests and biodiversity
- Impacts on human health

Adaptation needs

- Need for water resource conservation and management
- Maintaining and expanding reservoir capacity
- Strengthening of embankments for controlling sediment flows
- R& D on climate-tolerant cultivars
- Controlling coastal erosion
- Need for institutional coordination and building international networks (bilateral cooperation) for strengthening research capacities

Sri Lanka

Climate impacts and vulnerabilities

- Increased frequency of dry periods and droughts
- Increase in frequency of extreme hot days
- Extreme rainfall events which may increase floods
- SLR, Coastal erosion, landslides and floods
- Cyclones
- Key sectors at risk include agriculture (coastal & plantations), water resources, human health, forests and biodiversity
- Impacts on fisheries and tourism

Adaptation needs

- Need to develop climate-tolerant cultivars (coastal agriculture)
- Need to improve capacities for monitoring of changes in sea level
- Need to strengthen early warning and health surveillance systems
- Need to promote watershed management
- Need to strengthen delivery of climate services (including forecasts)
- Need for institutional capacity building and training at all levels

Ranking Importance and Uncertainty

'inevitables'

high

Critical Uncertainties

Importance

Key factors

TERI, IISD 2010

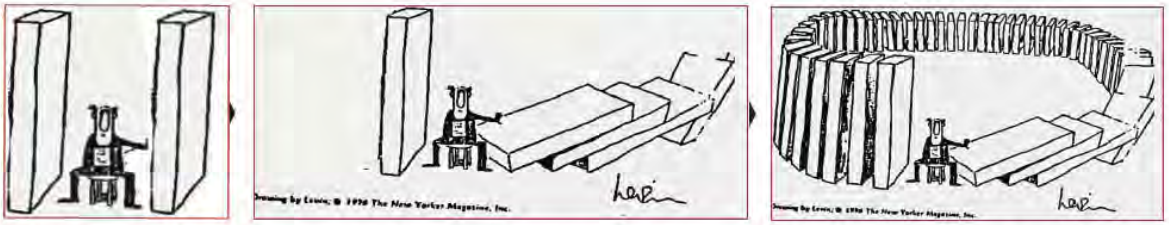
low

Uncertainty

high

Avoiding maladaptation

Understanding an issue as completely as possible is important because intervening in one point of a system…



…may have feedback & lagged effects

…and result in unintended consequences!

Deenapanray 2009

Messages at the Sub-regional level

- Need to support R & D
  - Largely sensitivity studies done, limited to specific scenarios and sectors, climate modeling needs to be supported, institutional and human resource capacities to be built
- Data, infrastructure and information needs
  - Need for granular data, networks for monitoring, collection and maintenance of data (especially in mountainous and coastal regions)
- Networks and partnerships for enhancing capacities
- Piloting Adaptation initiatives
- Awareness building
- Leveraging financial resources
  - Key role of private sector

Recommendations for regional bodies

- Strengthen South-South cooperation for R & D, training and capacity building, technological cooperation, sharing of best practices (CBA for e.g.) including policy initiatives, outreach and capacity building
- Governance: Management of transboundary issues, regional collaboration for adaptation in the Himalayas, regional R & D studies
- Capacity creation: Institutions, civil society (including youth, NGOs, CBOs), formation of research networks and exchange of researchers
- Finance: Development of joint proposals, co-financing opportunities, tapping on international sources
- Knowledge management: Need for web-portals and regional databases for climate data and sectoral assessments, need to document traditional knowledge and practices
- Enhance public participation and private sector role for adaptation: Seed banks, financial instruments, knowledge management, CBAs, climate-proofing infrastructure, awareness and capacity building

Role of APAN

- Support and provide a platform for sharing of learnings, best practices and policy initiatives
- Help identify innovative pilot projects in areas such as transboundary water management, coastal risk management, CBA etc.
- Help organize regional capacity building and training workshops for stakeholder dialogue and engagement
- Support publications that document CBA in local languages

Thank you for your attention

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