

# South Asia Water and Climate Change

## Policy and Planning Review

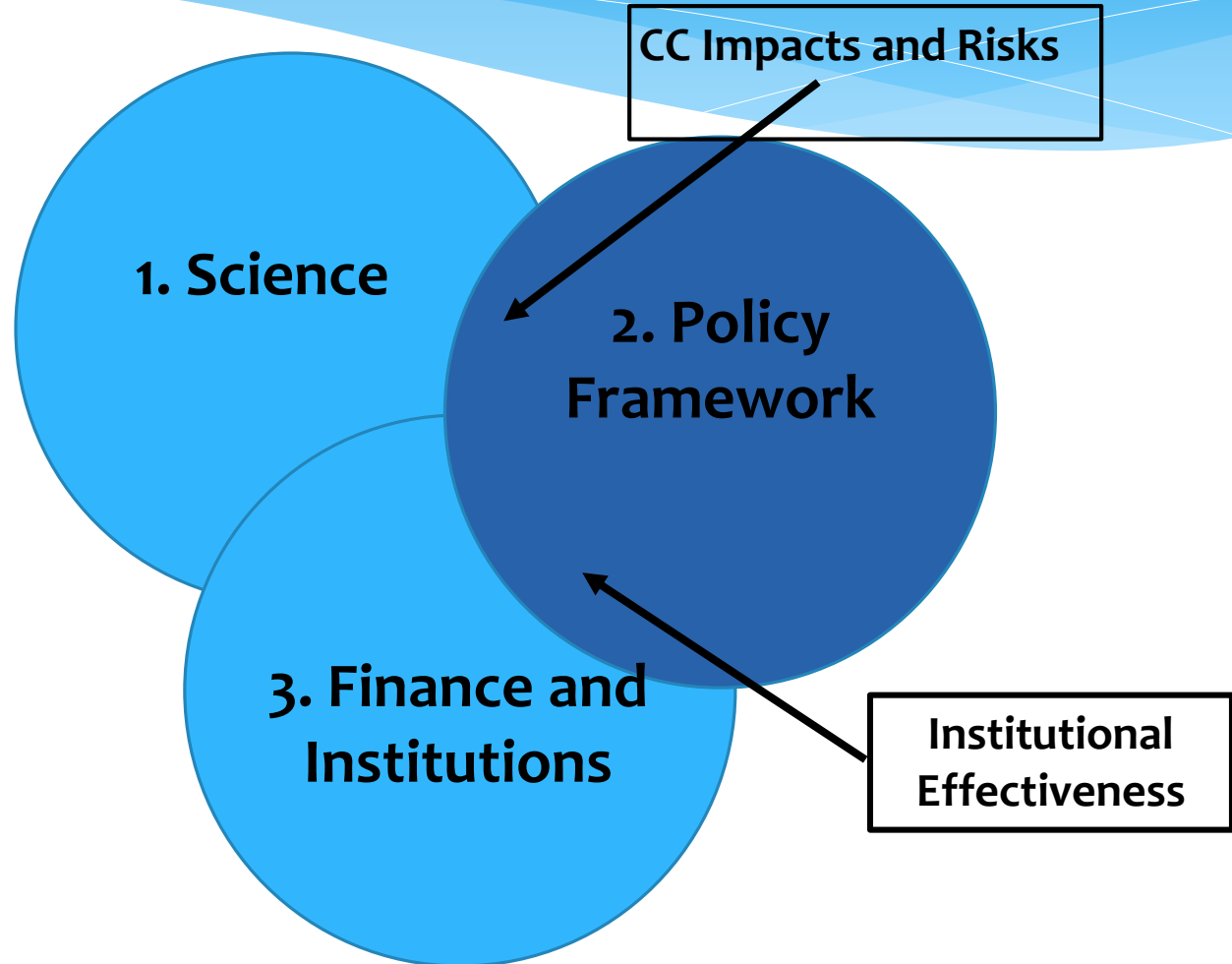
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# Background

Evaluate the adequacy of the water and climate policy framework to address climate change in the water sector in South Asia focusing on the degree to which principles of IWRM are identified and embedded in the water and climate policy landscape

- Surface and groundwater
- All major water using sectors
- Desk study, published documents
- No assessment of implementation

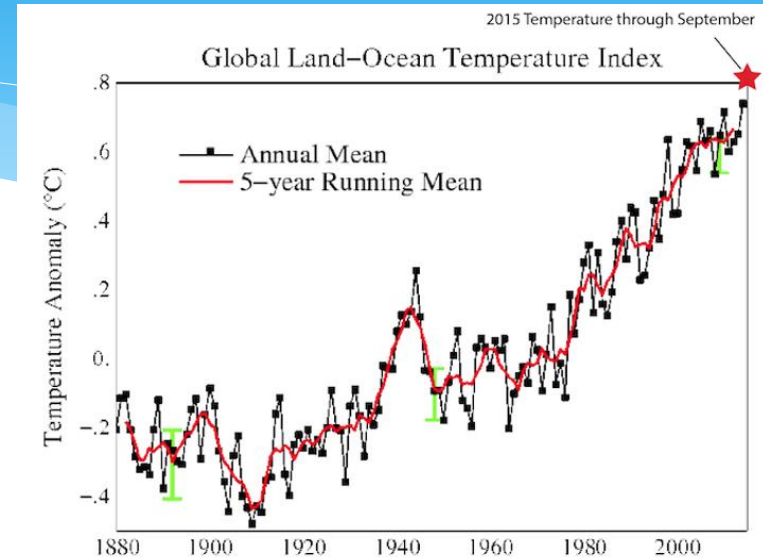
# Linked Papers



# Adaptation Fundamentals

## □ Risks

- Changes in average conditions
- Extreme extremes



- † Good water management current response; better management helps respond to greater changes
  - † Better water management is adaptation
  - † IWRM
- † Additional challenges
  - † Sea-level rise
  - † Integrating non-stationarity into predictions

# Analytical Framework

- SADC adaptation categorization (SADC and Zimbabwe)
  - Knowledge
  - Governance
  - Infrastructure
  - Planning/Management
  - Communication/Education/Participation


# Water Resources Analytical Framework

## 12 Criteria

1. *Surface and groundwater monitoring so that there is a factual basis on which to base adaptation*
  2. *Water is held in trust by the State rather than owned by individuals*
  3. *An integrative policy framework across all sectors and a means to coordinate these sectors*
  4. *Recognition of climate change impacts and inclusion of adaptation actions*
  5. *Sustainable water storage infrastructure to help smooth out peaks and troughs in water availability while aiming to preserve environmental flows*
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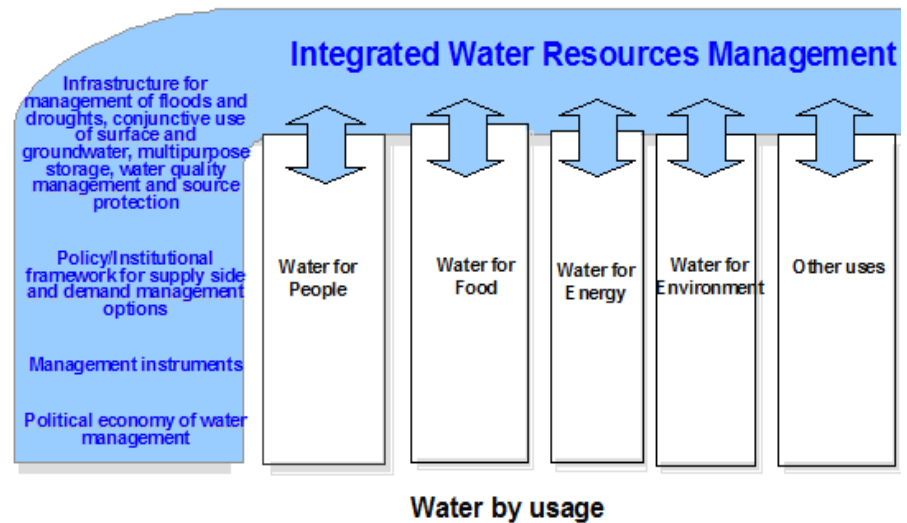
# Analytical Framework

## 12 Criteria

6. *Protective infrastructure against floods and water transfer to address areas of scarcity*
  7. *Water allocation plans at basin level developed collaboratively with all water users*
  8. *Demand management, reuse and recycling, and conjunctive use to make most efficient use of water resources*
  9. *Technical efficiency measures in the main water using sectors*
  10. *Protect water quality in rivers and aquifers*
  11. *Educate the public, officials and decision makers*
  12. *Full participation by water user groups*
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# Water Instruments

- 68 Policies, strategies, plans, legislation, etc
- Water resources and water dependent sectors
- English only and available on web
- Not always widely understood
- Draft and accepted





# Water Instruments

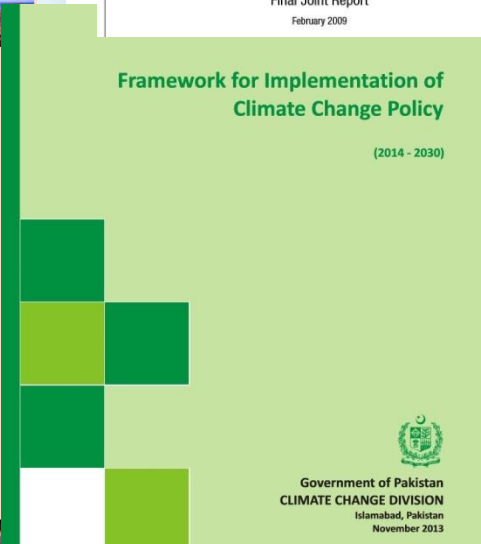
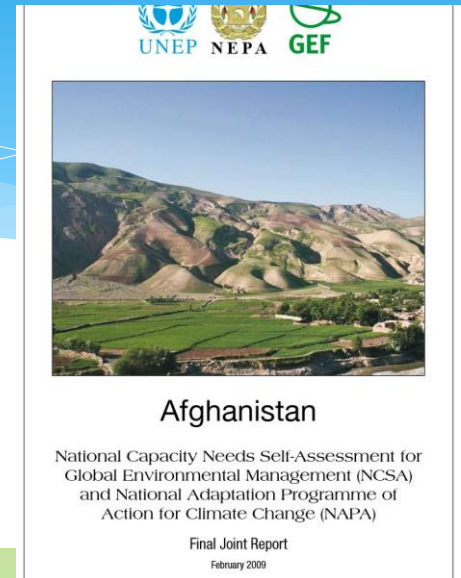
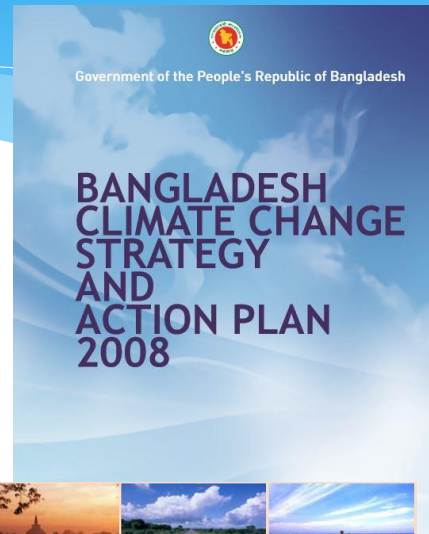
	Policy	Legislation	Strategy, Plan	Other
<b>Afghanistan</b>	<ul style="list-style-type: none"> <li>• <b>Strategic Policy Framework for Water Sector 2005</b></li> <li>• <b>Agriculture and Natural Resources Policy and Strategy 2005</b></li> <li>• Groundwater Development Policy</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water law 2009</b></li> <li>• <b>Environment law 2007</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water Sector Strategy 2008</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>National Development Framework 2002</b></li> </ul>
<b>Bangladesh</b>	<ul style="list-style-type: none"> <li>• <b>National Water Policy 1999</b></li> <li>• <b>National Agriculture Policy 1999</b></li> <li>• National Agriculture Policy 2010 (draft)</li> <li>• <b>Coastal Zone Policy 2005</b></li> <li>• <b>National Policy for Safe Water Supply and Sanitation 1998</b></li> <li>• National Agricultural Extension Policy (draft) 2012</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water Act 2013</b></li> <li>• <b>Environment Conservation Act 1995</b></li> <li>• <b>Environment Conservation Amendment Act 2010</b></li> <li>• <b>Water Development Board Act 2000</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>National Water Management Plan 2001</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Guidelines for Participatory Water Management 2001</b></li> <li>• Water Rules (draft) 2015</li> </ul>
<b>Bhutan</b>	<ul style="list-style-type: none"> <li>• <b>National Irrigation Policy 2011</b></li> <li>• <b>Bhutan Water Policy 2007</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water Act 2011</b></li> <li>• <b>National Environment Protection Act 2007</b></li> </ul>	<ul style="list-style-type: none"> <li>• National Integrated Water Resources Management Plan (draft) 2016</li> <li>• <b>National Environment Strategy (The Middle Path) 1998</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water regulations 2012</b></li> </ul>
<b>India</b>	<ul style="list-style-type: none"> <li>• <b>National Water Policy 2012</b></li> <li>• <b>National Urban Sanitation Policy 2008</b></li> <li>• <b>New Agriculture Policy 2000</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water Cess Amendment Act 2003</b></li> <li>• <b>Water Prevention and Control of Pollution Act 1974</b></li> <li>• National Water Framework Law (draft) 2013</li> <li>• Model Groundwater Bill (Draft) 2011</li> <li>• <b>Interstate Rivers Dispute Act 1956</b></li> <li>• <b>River Boards Act 1956</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Ministry of Water Resources Strategic Plan 2011</b></li> </ul>	

# Water Instruments

	Policy, Strategy Plan	Legislation	Strategy, Plan	Other
<b>Nepal</b>	<ul style="list-style-type: none"> <li>• <b>Irrigation Policy 2003</b></li> <li>• National Water Supply and Sanitation Sector Policy 2014 (draft)</li> <li>• <b>National Rural Water Supply and Sanitation Policy 2004</b></li> <li>• <b>National Urban Water Supply and Sanitation Sector Policy 2009</b></li> <li>• <b>Water Induced Disaster Management Policy 2006</b></li> <li>• <b>Hydropower Development Policy 2001</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water Resources Act 1992</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water Resources Strategy 2002</b></li> <li>• <b>National Water Plan 2005</b></li> <li>• <b>Renewable Energy Investment Program Plan 2011x</b></li> </ul>	
<b>Pakistan</b>	<ul style="list-style-type: none"> <li>• National Water Policy (draft) 2006</li> <li>• National Water Policy (draft) 2015</li> <li>• <b>National Sanitation Policy 2006</b></li> <li>• <b>National Drinking Water Policy 2009</b></li> <li>• <b>National Environment Policy 2005</b></li> <li>• National Wetlands Policy 2009</li> </ul>		<ul style="list-style-type: none"> <li>• <b>Water Sector Strategy 2002</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Pakistan 2025 One Nation-One Vision 2014</b></li> </ul>
<b>Sri Lanka</b>	<ul style="list-style-type: none"> <li>• National Drinking Water Policy</li> <li>• <b>National Rural Water Supply and Sanitation Policy 2001</b></li> <li>• <b>National Disaster Management Policy 2013</b></li> <li>• <b>National Environmental Policy and Strategies 2003</b></li> <li>• <b>National Wetland Policy and Strategy 2006</b></li> <li>• National Policy on Protection and Conservation of Water Sources, Catchments and Reservations in Sri Lanka 2014 (draft)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water Resources Board Act 1999</b></li> <li>• <b>Irrigation Amendment Act 1994</b></li> <li>• <b>Disaster Management Act 2005</b></li> <li>• <b>Agrarian Development Act 2000</b></li> <li>• <b>Mahaweli Authority Act 1979</b></li> <li>• <b>National Environmental Amendment Act 1988</b></li> <li>• <b>Irrigation Amendment Act 1994</b></li> </ul>		

# Climate Change Reports

- UNFCCC (adaptation)
  - NAPA
  - NAP
  - INDC
  - Communications
- Country climate change instruments
- Draft and accepted



# Climate Change Reports

	Policy	Legislation	Strategy/Plan	Other
<b>Afghanistan</b>			<ul style="list-style-type: none"> <li>• <b>National Adaptation Programme of Action 2009</b></li> <li>• National Climate Change Strategy &amp; Action Plan (draft)</li> <li>• National Adaptation Plan (draft)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>INDC 2015</b></li> <li>• <b>First National Communication UNFCCC 2013</b></li> </ul>
<b>Bangladesh</b>		<ul style="list-style-type: none"> <li>• <b>Climate Change Trust Fund Act 2010</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>National Adaptation Programme of Action 2009</b></li> <li>• <b>Climate Change Strategy &amp; Action Plan 2009</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Second National Communication UNFCCC 2012</b></li> <li>• <b>INDC 2015</b></li> </ul>
<b>Bhutan</b>			<ul style="list-style-type: none"> <li>• <b>National Adaptation programme of Action 2006</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Second National Communication UNFCCC 2011</b></li> <li>• <b>INDC 2015</b></li> </ul>
<b>India</b>			<ul style="list-style-type: none"> <li>• <b>National Action Plan on Climate Change 2008</b></li> <li>• <b>National Water Mission 2008</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>2nd National Communication 2012</b></li> <li>• <b>INDC 2015</b></li> <li>• <b>First Biennial Update Report 2016</b></li> </ul>
<b>Nepal</b>	<ul style="list-style-type: none"> <li>• <b>Climate Change Policy 2011</b></li> </ul>		<ul style="list-style-type: none"> <li>• <b>National Adaptation Programme of Action 2010</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Second National Communication UNFCCC 2014</b></li> <li>• <b>INDC 2016</b></li> </ul>
<b>Pakistan</b>	<ul style="list-style-type: none"> <li>• <b>Climate Change Policy 2012</b></li> </ul>		<ul style="list-style-type: none"> <li>• <b>National Framework for Implementing Climate Change Policy 2013</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>First National Communication UNFCCC 2003</b></li> <li>• <b>INDC 2015</b></li> </ul>
<b>Sri Lanka</b>	<ul style="list-style-type: none"> <li>• <b>National Climate Change Policy 2012</b></li> </ul>		<ul style="list-style-type: none"> <li>• <b>National Climate Change Adaptation Strategy 2011-2016 (2010)</b></li> <li>• <b>Information, Education and Communications Strategy for Climate Change Adaptation 2010</b></li> <li>• <b>National Adaptation Plan for Climate Change Impacts 2015</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Second National Communication UNFCCC 2011</b></li> <li>• <b>Water Sector Vulnerability Profile 2010</b></li> <li>• <b>Technology Needs Assessment and Action Plans 2011</b></li> <li>• <b>INDC 2015</b></li> </ul>

# Climate Change Analytical Framework

## 7 Criteria

1. CC Policy or Strategy
2. Recognition of adaptation in water sector
3. Strengthen IWRM elements
4. Address major-related risks
5. Support for bottom-up adaptation
6. Regional opportunities
7. Mainstreaming adaptation into water sector



# Findings General

- Strong understanding
  - CC impacts in water instruments except Nepal
  - water sector central to adaptation in CC reports
- IWRM explicitly adopted (except Sri Lanka)
  - Bhutan has IWRM in 11th 5-Year Plan
  - But difficult to implement

# Findings Knowledge

- ❑ Improved monitoring networks widely sought
- ❑ Sharing data and central repository less so
- ❑ Disaster monitoring also widely supported
- ❑ India recognises need for better information for CC adaptation
- ❑ Research needed, including special centres of excellence in Bangladesh, India and Nepal
- ❑ Widespread recognition of region-wide approach to data and R&D in CC documents

# Findings

## Governance

- Nepal, Pakistan and Sri Lanka lack Water Policies
- Afghanistan and Bhutan lack CC policies/strategies
- NAPAs and NAPs – Sri Lanka
- Most countries recognize mainstreaming and development
- All countries recognize coordination but variable mechanisms
- Water and CC coordination mechanisms overlap (paper 3)



# Findings Infrastructure

- ❑ Water storage only adaptive if designed and operated for CC
- ❑ Demand management and efficiency need to complement additional storage
- ❑ India NWP new storages be multi-purpose
- ❑ Groundwater provides CC adaptive storage
  - ❑ CC and groundwater needs study
  - ❑ Groundwater development (e.g. Nepal) needs control

# Findings

## Planning/Management

- Afghanistan, Bhutan, India, Nepal, (Bangladesh) adopted basin planning but difficult
- Improvements in WUE seen as adaptive response – non-technical methods can be effective
- Canal lining not always successful but conjunctive use of leaky canals opportunity in India, Pakistan, Bangladesh
- Artificial recharge and irrigation improvements common
  - But also needs control groundwater abstraction

# Findings

## Communication/Education/Participation

- All countries support community-level participation but often managed from top (Paper 3)
- Nepal LAPAs and Sri Lanka small grants program
- Community understanding of CC essential but few programs

# Possible Stage II Activities

## Knowledge

- **Data sharing for transboundary rivers and aquifers**
  - **Protocols, administrative support.**
  - **SAARC assistance**
- **Community data collection and strengthening for local adaptation**
- **Examine impediments to science influencing CC decisions**
- **Understand scientific and institutional links between groundwater and CC**

# Possible Stage II Activities

## Governance

- Institutional coordination – what constitutes successful models
- Assist water managers understand CC impacts and IWRM as an adaptation framework
- **Assistance in mainstreaming CC adaptation into water sectors**
- Coordination between central, State/Province and local government
- Impacts on groundwater and adaptation responses in different settings

# Possible Stage II Activities Infrastructure

- Integrating traditional water storages, groundwater and water-harvesting with large storages
- **Develop design and operating rules for storages that take account of CC**

# Possible Stage II Activities Planning/Management

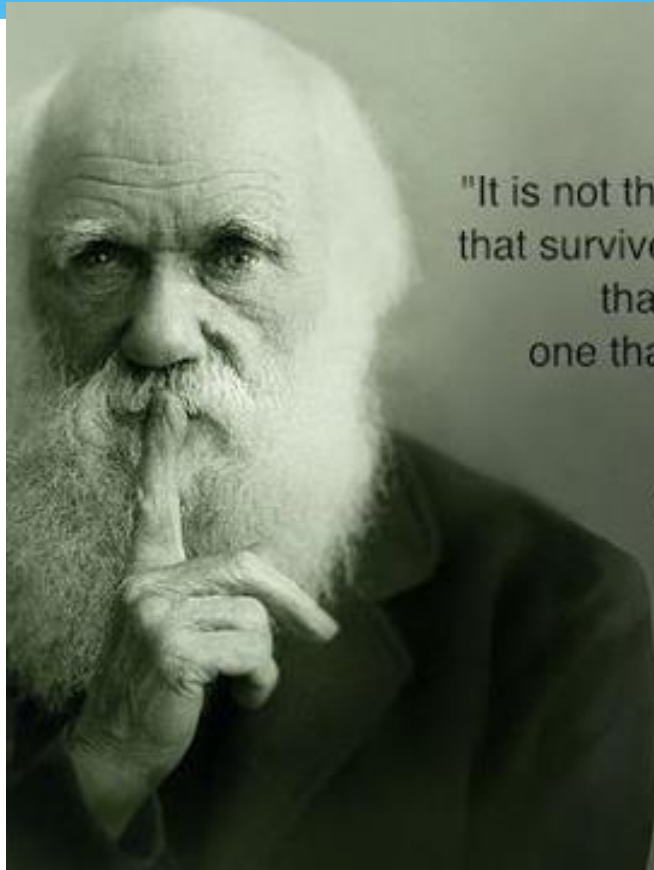
- **Pilot basin water allocation plans for CC**
- Designing adaptation measures to complement PRSPs and assist the poor
- Trial mechanisms to protect coastal aquifers from sea-level rise and storm surges

# Possible Stage II Activities

## Communication/Education/Participation

- Community led adaptation, using Nepal and Bangladesh as case studies
- **Undertake a targeted campaign to build understanding about CC adaptation in specific groups (e.g. irrigators)**
- Undertake pilot study to develop guidelines and technical support for local community adaptation





"It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change".

Charles Darwin