Towards climate change adaptation sensitive development planning: How can we get there?

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Shifts in narrative

• Climate mitigation -> low-carbon growth
• Climate adaptation -> climate-resilient development
• Recognize the priority of development
• Recognize that what is required is a shift in the development pathway
• Recognize that for this to happen, stand-alone actions have to be replaced by mainstreamed approaches
Evolving thinking on adaptation

• Adaptation viewed purely as a response (to climate change)
  – Adjustments made in practices, processes or structures of systems to projected or actual changes in climate (AR1)

• Adaptation as an element of scenario-impact assessments
  – Net impacts = Impacts (Vulnerability, Hazard) – Adaptation (SAR)

• Vulnerability and adaptive capacity as issues of importance in their own right
  – Recognition of an “adaptation deficit” (TAR)

• Evolution in thinking from a mechanistic and sequential view of impacts, vulnerability & adaptation to a more complex, process oriented view of climate-society interaction
  – Concept of mainstreaming (AR4)

• Emphasis on iterative risk management
  – Importance of learning and reflexivity (SREX and AR5)
Some key findings from the WG 2 AR5 SPM

• Adaptation is becoming embedded in some planning processes, with more limited implementation of responses (high confidence). Engineered and technological options are commonly implemented adaptive responses, often integrated within existing programs such as disaster risk management and water management. There is increasing recognition of the value of social, institutional, and ecosystem-based measures and of the extent of constraints to adaptation. Adaptation options adopted to date continue to emphasize incremental adjustments and co-benefits and are starting to emphasize flexibility and learning (medium evidence, medium agreement). Most assessments of adaptation have been restricted to impacts, vulnerability, and adaptation planning, with very few assessing the processes of implementation or the effects of adaptation actions (medium evidence, high agreement).

• Adaptation planning and implementation can be enhanced through complementary actions across levels, from individuals to governments (high confidence). National governments can coordinate adaptation efforts of local and subnational governments, for example by protecting vulnerable groups, by supporting economic diversification, and by providing information, policy and legal frameworks, and financial support (robust evidence, high agreement). Local government and the private sector are increasingly recognized as critical to progress in adaptation, given their roles in scaling up adaptation of communities, households, and civil society and in managing risk information and financing (medium evidence, high agreement).

• Transformations in economic, social, technological, and political decisions and actions can enable climate-resilient pathways (high confidence). Specific examples are presented in Table SPM.1. Strategies and actions can be pursued now that will move towards climate-resilient pathways for sustainable development, while at the same time helping to improve livelihoods, social and economic well-being, and responsible environmental management. At the national level, transformation is considered most effective when it reflects a country’s own visions and approaches to achieving sustainable development in accordance with their national circumstances and priorities. Transformations to sustainability are considered to benefit from iterative learning, deliberative processes, and innovation.
Adaptation is an on-going process

Scoping
- Identify risks, vulnerabilities, & objectives
- Establish decision-making criteria

Implementation
- Review & learn
- Implement decision
- Monitor

Analysis
- Identify options
- Evaluate tradeoffs
- Assess risks

Source: Figure SPM-3
What do we want to avoid (maladaptation)?

- Failure to anticipate future climates. Large engineering projects that are inadequate for future climates. Intensive use of non-renewable resources (e.g. groundwater) to solve immediate adaptation problem
- Engineered defenses that preclude alternative approaches such as ecosystem-based adaptation
- Adaptation action not taking wider impacts into account
- Awaiting more information, or not doing so, and eventually acting either too early or too late. Awaiting better “projections” rather than using scenario planning and adaptive management approaches
- Forgoing longer term benefits in favor of immediate adaptive actions; depletion of natural capital leading to greater vulnerability
- Locking into a path dependence, making path correction difficult and often too late
- Unavoidable ex post maladaptation – e.g. expanding irrigation that will eventually have to be replaced in the distant future.
- Moral hazard – i.e. encouraging inappropriate risk taking based, for example, on insurance, social security net or aid backup
- Adopting actions that ignore local relationships, traditions, traditional knowledge or property rights, leading to eventual failure
- Adopting actions that favor directly or indirectly one group over others leading to breakdown and possibly conflict.
- Retaining traditional responses that are no longer appropriate
- Migration may be adaptive or maladaptive or both depending on context and the individuals involved
What are we adapting to?

Assessment Box SPM.1 Figure 1.
## Africa: Regional Risks

### Climate-related drivers of impacts

<table>
<thead>
<tr>
<th>Key Risk</th>
<th>Adaptation issues &amp; prospects</th>
<th>Climatic drivers</th>
<th>Timeframe</th>
<th>Risk &amp; potential for adaptation</th>
</tr>
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</table>
| Compounded stress on water resources facing significant strain from overexploitation and degradation at present and increased demand in the future, with drought stress exacerbated in drought-prone regions of Africa (high confidence) | • Reducing non-climate stressors on water resources  
• Strengthening institutional capacities for demand management, groundwater assessment, integrated water-wastewater planning, and integrated land and water governance  
• Sustainable urban development | ![Temperature](image) ![Precipitation](image) | Present | Very low Medium Very high |
| Reduced crop productivity associated with heat and drought stress, with strong adverse effects on regional, national, and household livelihood and food security, also given increased pest and disease damage and flood impacts on food system infrastructure (high confidence) | • Technological adaptation responses (e.g., stress-tolerant crop varieties, irrigation, enhanced observation systems)  
• Enhancing smallholder access to credit and other critical production resources; Diversifying livelihoods  
• Strengthening institutions at local, national, and regional levels to support agriculture (including early warning systems) and gender-oriented policy  
• Agronomic adaptation responses (e.g., agroforestry, conservation agriculture) | ![Temperature](image) ![Precipitation](image) | Near-term (2030-2040)  
Long-term (2080-2100) 2°C 4°C | Very low Medium Very high |
| Changes in the incidence and geographic range of vector- and water-borne diseases due to changes in the mean and variability of temperature and precipitation, particularly along the edges of their distribution (medium confidence) | • Achieving development goals, particularly improved access to safe water and improved sanitation, and enhancement of public health functions such as surveillance  
• Vulnerability mapping and early warning systems  
• Coordination across sectors  
• Sustainable urban development | ![Temperature](image) ![Precipitation](image) | Present  
Near-term (2030-2040)  
Long-term (2080-2100) 2°C 4°C | Very low Medium Very high |
Will the NAP process and the institutional response that results be capable of transformational change?

In the SREX (chapter 8), we identified four main requirements:

• Adaptive management

• Learning – from single-loop (are we doing things right?) to double-loop (are we doing the right things?) to triple-loop (how do we decide what is right?)

• Innovation

• Leadership
Work on NAP’s

• Why?
  – Logical evolution of adaptation actions and mainstreaming
  – Countries want to “do NAP’s” and expect that process to be supported
  – There is guidance on what a NAP process ought to include
  – But what is likely to come out at the end of a NAP process? What *should* come out?

• Our work?
  – Comparative analysis of national responses
  – Identifying objectives and attributes of national response
  – Institutional models for long-term adaptation
  – Implications for support

• How?
  – In-depth case studies of a few countries
  – Literature review of other comparative analyses
  – Broad survey of national efforts – from the secondary literature and a primary survey
Case Studies

• Developed
  – United States, United Kingdom, Australia, Netherlands

• Developing
  – In progress: Bangladesh, Indonesia, Colombia
  – More to be added
Comparative Analysis

• **Process**
  – What approaches are countries following as they mainstream adaptation at the national level
  – Why did they make the choices that they did – contextual linkages
  – What are the issues to be addressed?

• **Outcomes**
  – What is the result of these efforts? What are the elements of the institutional response?
### Netherlands

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>2005</td>
<td>First national assessment of effects of climate change in the Netherlands (PBL, 2005)</td>
</tr>
<tr>
<td>2006</td>
<td>Four climate change scenarios for the Netherlands (KNMI, 2006)</td>
</tr>
<tr>
<td>2006</td>
<td>National Program for Spatial Adaptation to Climate Change (ARK)</td>
</tr>
<tr>
<td>2007</td>
<td>National Adaptation Strategy, “Make Space for Climate!” (ARK initiative focused on a long-term vision, the need for an adaptation agenda and a research track (originally 2 programs, only 1 still in place)</td>
</tr>
<tr>
<td>2008</td>
<td>A Delta Commission provided 12 recommendations for the short and medium term. As a result the Delta Program (started in 2009/2010) and a Delta Committee were established to advise on sustainable coastal development and freshwater management</td>
</tr>
<tr>
<td>2009</td>
<td>National Implementation Agenda (focuses on sectoral plans and spatial planning, however no clear goals were set or responsibilities allocated)</td>
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<tr>
<td>2009</td>
<td>Inter Provincial Accord: Dutch provinces signed an agreement with the national government to mainstream climate adaptation into spatial planning by 2015</td>
</tr>
<tr>
<td>2010</td>
<td>ARK program ended, initiatives were adopted by the Delta Program (Delta program is national, but only focuses on flood protection, urban development and freshwater supply, which is reduced from the original strategy)</td>
</tr>
<tr>
<td>2010</td>
<td>A Delta Commissioner was selected</td>
</tr>
<tr>
<td>2012</td>
<td>Delta Act is enacted; this provides the legal framework for the Delta Fund</td>
</tr>
<tr>
<td>2012</td>
<td>Audit of National Adaptation Strategies and Policies</td>
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<tr>
<td>2014</td>
<td>‘Roadmap climate’ is being developed which might establish a cross-sectoral approach</td>
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<tr>
<td>1994</td>
<td>The first UK Climate Change Programme was published - a document that guides UK policies and action on mitigation and adaptation efforts. This was revised and updated in 2000 and 2006.</td>
</tr>
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<td>1997</td>
<td>Large grant from the government to the University of Oxford established the United Kingdom Climate Impacts Programme (UKCIP).</td>
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<td>1998</td>
<td>Vulnerability assessments are reported.</td>
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<tr>
<td>2000</td>
<td>The second UK Climate Change Programme was published - a document that guides UK policies and action on mitigation and adaptation efforts.</td>
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<td>2001</td>
<td>Climate Change Levy was introduced (a tax on non-domestic energy use).</td>
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<tr>
<td>2006</td>
<td>The third UK Climate Change Programme was published - a document that guides UK policies and action on mitigation and adaptation efforts.</td>
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<td>2007</td>
<td>UK government establishes the ‘Adapting to Climate Change (ACC) program – a cross governmental initiative within the Department for Environment and Rural Affairs (Defra) to increase internal capacity on adaptation.</td>
</tr>
<tr>
<td>2008</td>
<td>Climate Change Act (the bill outlines mitigation and adaptation measures, requires a Climate Change Risk Assessment every 5 years, sets up the adaptation reporting structure and establishes the independent Climate Change Council).</td>
</tr>
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<td>2009</td>
<td>Adaptation and Resilience in the Context of Change (ARCC) Network - brings together research, policy and practice communities to work towards more sustainable buildings and resilient infrastructure system.</td>
</tr>
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<td>2011</td>
<td>Environmental Agency (within Defra) was tasked with building upon and further developing UKCIP’s work approaches to the changing adaptation landscape.</td>
</tr>
<tr>
<td>2012</td>
<td>The Government published the UK Climate Change Risk Assessment (CCRA), the first assessment of its kind for the UK and the first in a 5 year cycle.</td>
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<tr>
<td>2013</td>
<td>The first UK National Adaptation Programme (NAP) is released. It will be revisited every 5 years.</td>
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<td>2005</td>
<td>Sea level rise and agriculture assessments are reported</td>
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<td>2007</td>
<td>The first National Action Plan Addressing Climate Change is published</td>
</tr>
<tr>
<td>2008</td>
<td>National Council on Climate Change (DNPI) is established (via law)</td>
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<tr>
<td>2009</td>
<td>Development Plan (RPJM 2009-2014) includes climate change</td>
</tr>
<tr>
<td>2009</td>
<td>Indonesia Climate Change Trust Fund is established</td>
</tr>
<tr>
<td>2010</td>
<td>Capacity Development for Climate Change Strategies in Indonesia was started</td>
</tr>
<tr>
<td>2012</td>
<td>Climate Change Coordination Team is established (via law)</td>
</tr>
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</table>
Bangladesh

• Work to increase resilience to natural disasters since 1970s
• Integrated Coastal Zone Management Policy of 2005 (ICZM): policy transcending individual sectors and enhance coordination between different governing entities in the coastal zone
• Created the Bangladesh Climate Change Trust Fund, the Bangladesh Climate Change Resilience Fund, and the Climate Change Unit during the NAPA process
• Use of community-based approaches to reducing vulnerability
• Climate Change Strategy and Action Plan of 2008 (further updated in 2009)
  – Vision of eradicating poverty and achieving social and economic wellbeing
  – 6 pillars: fulfillment of basic needs; disaster management; infrastructure; research and knowledge management; mitigation; capacity building and institutional strengthening
  – Prioritizes activities according to: cost-effectiveness, urgency, needs of poorest and most vulnerable, creation of enabling environment, and ensuring of knowledge sharing throughout the region
Some observations

• Develop and revisit assessments and strategies in an on-going manner
• Reporting mechanisms to track progress and address challenges
• Developing a strategy is not an overnight process; each country will evolve a different pathway rooted in the underlying political economy, responsive to the geography and climate risks and the needs of communities, businesses and the government
Process issues

- Institutional home / guiding entity
- Role of science / knowledge
- Coordination
- Stakeholder engagement (private sector & public)
- Addressing barriers
- Some examples of pathways follow
Guiding Entity

- **Indonesia** - Lead: Ministry of National Development Planning (BAPPENAS) / National Development Planning Agency
  - Additional guiding entities: Ministry of Environment (KLH), National Council on Climate Change (DNPI); Agency for Meteorology, Climatology, and Geophysics (BMKG)
- **Netherlands** - The Minister of Infrastructure and the Environment
- **United States** - Interagency Council on Climate Preparedness and Resilience
- **United Kingdom** – Department for Environment and Rural Affairs
- **Colombia** – National Planning Department
## Role of science and knowledge

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<th>Country</th>
<th>Program Description</th>
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<td>United Kingdom</td>
<td><strong>UK Climate Impacts Program (UKCIP) (1997)</strong> is a public-private partnership between the government and University of Oxford, Environmental Change Institute</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Knowledge for Climate (KfC) is a joint research entity by Wageningen University, and Research Centre and the University of Utrecht that supports government agencies. The goal is to bring scientifically funded and practical knowledge concerning climate (spatial planning, infrastructure, sustainability) to policy-makers.</td>
</tr>
<tr>
<td>Australia</td>
<td>National Climate Change Adaptation Research Facility (2007), a consortium of eight universities led by Griffith University, brings together national expertise, for the benefit of government, industries and communities</td>
</tr>
</tbody>
</table>
| Bangladesh       | Three way partnership called the, International Centre for Climate Change and Development (ICCCAD) (1993), based at the Independent University, Bangladesh (IUB) in Dhaka  
1. The Independent University, Bangladesh (IUB)  
2. The International Institute for Environment and Development (IIED), an internationally renowned institute based in London  
3. The Bangladesh Centre for Advanced Studies (BCAS)                                                                                                                                                                                                                                                                                |
| Indonesia        | Climatology Laboratory, Bogor Agricultural Institute (IPB) and Oceanography Program, Bandung Institute of Technology (ITB)                                                                                                                                                                                                                                                                                                                                                                           |
Specific examples: United Kingdom

• **1997:** Large grant from the government to the University of Oxford established the United Kingdom Climate Impacts Programme (UKCIP)

• **2007:** UK government establishes the ‘Adapting to Climate Change (ACC) program – a cross governmental initiative within the Department for Environment and Rural Affairs (Defra) to increase internal capacity on adaptation

• **2009:** Adaptation and Resilience in the Context of Change (ARCC) Network - brings together research, policy and practice communities to work towards more sustainable buildings and resilient infrastructure system

• **2011:** Environmental Agency (within Defra) was tasked with building upon and further developing UKCIP’s work approaches to the changing adaptation landscape
Specific examples: Australia

• **2007: Creation:** Government grant for a ‘research facility’ created the National Climate Change Adaptation Research Facility (NCCARF), an inter-disciplinary institution to provide information to the government and reduce vulnerability.

• **2008-2010: Establishment Phase:** Establish support mechanisms for planning and coordinating research
  – Thematic adaptation research plans, adaptation research networks, website / newsletter, community and end-user engagement / participation

• **2010: Transition Evaluation:** Government commissioned an operational review to evaluate national impact, quality of outputs, operational timeliness and value for money. Government provided guidance for next phase.
  – Department of Climate Change and Energy Efficiency took a strategic role, established a board of directors, increased executive management capacity

• **2010-2013: Operational Phase:** Building government capacity for efficient adaptation decision-making, increased end-user capacity to use information for adaptation investments and decisions
  – Department of Climate Change and Energy Efficiency took a strategic role rather than operational or regulatory, established a board of directors, increased executive management capacity

• **2013-2020: Mainstreaming Phase:** Integration of adaptation research into all decision-making, with continued knowledge transfer between researchers and end-users (facilitated by NCCARF)

• **Evaluation progress:** Throughout this process stakeholders completed annual independent ‘customer survey’ (using the Nielson customer satisfaction survey)
Observations regarding role of science and knowledge

• Transparency and web-based platforms
  – Degree of independence from the government (e.g. partnership with an academic institution or NGO)

• Adaptation learning and collaboration
  – Global, national or cross-sectoral
  – Links policy and research (on issues beyond climate)

• Assessment activities and primary research
  – Feed scientific information into policy
  – Internal capacity & institutional memory
Attributes / elements of institutional response

- Policies / regulations / legislation
- Governance structure
- Organizations and coordination
- Financing
- Capacity development
- Monitoring and evaluation
Coordination

• **Indonesia** - Climate Change Coordination Team - consists of a steering committee and 6 working groups – coordinated across line ministries at the central level

• **Ethiopia** – ‘Environmental Units’ within line ministries

• **Bangladesh** - Climate Change Focal Points in all relevant ministries

• **Colombia** – National Climate Change System (NCCS) includes the Executive Commission on Climate Change – led by the National Planning Department

• **United States** - Interagency Council on Climate Preparedness and Resilience coordinates across federal agencies
  – State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience works with mayors, governors, commissioners and tribal leaders (temporary group)

• **United Kingdom** - A coordinating committee that requires representation on a regular basis from all agencies has not been developed. Knowledge sharing and coordinating is thematic– there are partnerships/working groups within each of the 5 adaptation themes
United Kingdom: Governance Structure

Committee on Climate Change (CCC)
- independent, statutory body established under the Climate Change Act 2008
- composed of economists, scientists and corporate entities, established to advise Defra and Parliament. The Adaptation Sub-Committee (ASC) within CCC provides oversight on government adaptation implementation and performance. The ASC is jointly sponsored by Defra.

Parliament

Department for Environment and Rural Affairs (Defra)

Environmental Agency (within Defra)

Local governments and businesses (through the Climate Ready Service)

Annual progress reports are sent to Parliament; the Secretary of State has ‘Adaptation Reporting Power’

Other government departments developing climate change projects

UKCIP (research)

Local governments and businesses (through the Climate Ready Service)
Colombia: Governance Structure

National Climate Change System

Institutional Commission on Climate Change Secretary:
National Planning Department
Includes delegates from other departments

Financial Management Committee
(Subcommittee/Secretaries)
Technical Secretary:
National Planning Department (DNP), Executive Secretary (MADS), MRE, MHCP, Adaptation Fund, secretaries of the permanent committees

Executive Secretary (MADS)
Counseling Group

Sectorial Subcommittee
Territorial Subcommittee
International Affairs Subcommittee
Information on Impact of Climate Change Research Subcommittee

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Bangladesh Governance and Coordination

- National Environment Committee
  - Chaired by PM
  - Strategic guidance and oversight
- National Steering Committee
  - Chaired by Minister of MEF
  - Secretariats of all affected ministries and divisions; reps from private sector and civil society
- Climate Change Unit
  - Support to steering committee
  - Coordination with focal points
- Focal points work to mainstream adaptation
- Planning Commission
Observations on governance / coordination

• Coordination issues – cross-sectoral and cross-scale (local – national)
• Need for leadership & political commitment (at the highest level)
• Need to create interest and incentives for sustained response and involvement
• Clear identification of authority and power
• Link with resource allocation and finance
ATTRIBUTES / ELEMENTS OF INSTITUTIONAL RESPONSE

- Institutional home / guiding entity
- Role of science / knowledge
- Coordination
- Stakeholder engagement (private & public)

- Capacity development
- Barriers
- Organizations
- Monitoring & Evaluation

- Governance structure
- Policies / regulations / legislation
- Finance

open-ended, evolving process
Key Messages

• Adaptation not a one-time activity – requires on-going action; and therefore a strong institutional mechanism
  – In all countries studied, still very much a work in progress
• The “NAP process” ought to lead to such an institutional response; and the country ought to use the NAP process to figure out the model that is appropriate given the national circumstances and the political economy
  – The NAP process is therefore ongoing and needs to be folded into domestic action eventually. External support may be needed for specific elements of the overall institutional response that do not exist and for catalyzing / initiation
• Challenges
  – Support an on-going, somewhat open-ended process, as opposed to specific, bounded interventions (projects)
  – Monitoring and evaluation – reflect learning into adaptive management practices, rather than only scrutinizing and reporting
Will the NAP process help us move on climate-resilient pathways?