ECONOMICS OF ADAPTATION TO CLIMATE CHANGE: What next?

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Economics of Adaptation to Climate Change (EACC) Study

Participants: Bangladesh, Plurinational State of Bolivia, Ethiopia, Ghana, Mozambique, Samoa, and Vietnam + World Bank

Funding: The Netherlands, United Kingdom, Switzerland, World Bank

Objectives

- Estimate costs of adaptation for developing countries

Approach

- EACC Global Track
- EACC Country Track

Support country processes for climate-resilient development
Study Methodology

Sectors
- Agriculture
- Forestry
- Fisheries
- Infrastructure
- Water Resources
- Health
- Ecosystem Services

Cross-Sectors
- Extreme Weather Events
- Coastal Zones

Projections
- Climate
- Water Run-off
- Baseline GDP/Population

Economic, Social, and Environmental Impacts

Identification of Adaptation Measures

Cost of Adaptation

Decision Rule
Assumption: How much to adapt? (I)

- Growth without CC = BASELINE
- Growth with CC
- Costs of adaptation

Costs of adaptation
Assumption: How much to adapt? (II)

It might be better, or not possible, to fully adapt...

...so a residual damage remains

Costs of adaptation
### Other Key Assumptions

<table>
<thead>
<tr>
<th>Assumption</th>
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<tbody>
<tr>
<td>Time Frame --- 2010 to 2050</td>
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<tr>
<td>Development Baseline --- A2 SRES</td>
</tr>
<tr>
<td>Climate Scenario --- Wet and Dry</td>
</tr>
<tr>
<td>Accounting for climate change benefits (not just damages)</td>
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<tr>
<td>Only Public Sector (Planned) Adaptation, “Hard” Physical Actions Included</td>
</tr>
<tr>
<td>No Catastrophic Climate Change Scenario</td>
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Summary of Key Lessons

• The cost to developing countries of adapting to 2°C warmer world between 2010-2050 is \( \approx \text{US$70-100 billion per year} \)

• *Economic development* is a central element of adaptation to climate change, but it should *not be business as usual*

• *Start with low-regret options; Tackle the weather risks that countries already face; Do not rush* into making long-lived investments in adaptation unless…

• Look beyond planned and hard adaptation to *soft* adaptation and enabling *private* adaptation
20-20 Hindsight

• Robust adaptation costs and measures that allow decision makers to hedge against a range of climate outcomes

• Extensive sensitivity analysis for different development paths and range of climate projections

• Cross sectoral implications of sector-wise adaptation strategies (partially addressed in country studies)

• Better prioritization across short-term and long-term measures
What next?

• Relax key study assumptions (particularly focus on efficient adaptation)
  – papers in the workshops fill this gap
  – very focused on agriculture and not long-lived investments

• Understand the implications of climate change on the demand for infrastructure?
  – Not just climate-proof roads but whether to build roads

• Multi-disciplinary work to understand impacts on and adaptation for ecosystems

• Global data set available upon request
## Annual Costs of Adaptation: by Sectors, 2010-2050, US$ Billion

<table>
<thead>
<tr>
<th>SECTOR</th>
<th>Climate Scenario</th>
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<tbody>
<tr>
<td></td>
<td>DRY</td>
</tr>
<tr>
<td>Agriculture, Forestry, Fisheries</td>
<td>2.5</td>
</tr>
<tr>
<td>Water Supply</td>
<td>19.7</td>
</tr>
<tr>
<td>Human Health</td>
<td>1.5</td>
</tr>
<tr>
<td>Coastal Zones</td>
<td>27.6</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>13.0</td>
</tr>
<tr>
<td>Extreme events</td>
<td>6.4</td>
</tr>
<tr>
<td>Total</td>
<td>71.2</td>
</tr>
<tr>
<td><strong>Adding costs differently</strong></td>
<td>70.0</td>
</tr>
</tbody>
</table>

2005 Constant Prices, 0% Discounting
Source: World Bank Analysis
THANK YOU!

www.worldbank.org/eacc