Mainstreaming Adaptation in Development Plans

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Climate Change as a Development challenge

- The impacts of climate change and the mitigation and adaptation efforts needed are essentially development challenges.
- The IPCC projects that by 2020, in some African countries, yields from rain-fed agriculture could be reduced by up to 50%, which would further threaten food security and exacerbate malnutrition.
- In many parts of Asia, freshwater availability is projected to decrease. Coastal areas, with high population density will be greatly affected by increased flooding from the sea and rivers.
- Latin America would experience decrease in productivity of some important crops as well as livestock, with adverse consequences for food security.
- In Europe and North America, climate change is projected to increase the health risks due to heat-waves, and the frequency of wildfires.
- Changes in precipitation patterns and the disappearance of glaciers are projected to significantly affect water availability for human consumption, agriculture and energy generation.

Adapting to Climate Change

- **Countries will need to adapt to a 2°C warmer world, *managing the unavoidable***
  - **Mitigation is needed to *avoid the unmanageable* consequences of higher temperatures**
- ***The Bali Action Plan* promises *new and additional resources* to help developing countries adapt**
- **Existing studies provide a wide range of cost estimates, *ranging from US$4 – 109 billion per year***

What is Mainstreaming?

- When crafting the fiscal stance, governments should take account of their countries potential vulnerability to economic shocks from climactic events.
  - Fiscal cushion (e.g. contingent funds)
  - Improved risk management (e.g. insurance)

What is Mainstreaming?

- Governments should create the right incentives, institutions, provide more information to the private sector and develop basic knowledge on adaptation technologies.
  - Assess the potential economic consequences of climate change and formulate multipronged action plans for informing the private sector and promoting adaptation (e.g. farming practices, water resources, encourage non-agri activities)
  - Ensure that price signals convey the correct incentives for adaptation.

What is Mainstreaming?

- Stimulate research and development to exploit existing technologies or develop new ones in energy, water resources, agriculture, forestry, livestock sectors.
- Investing in preventive infrastructure in susceptible areas.

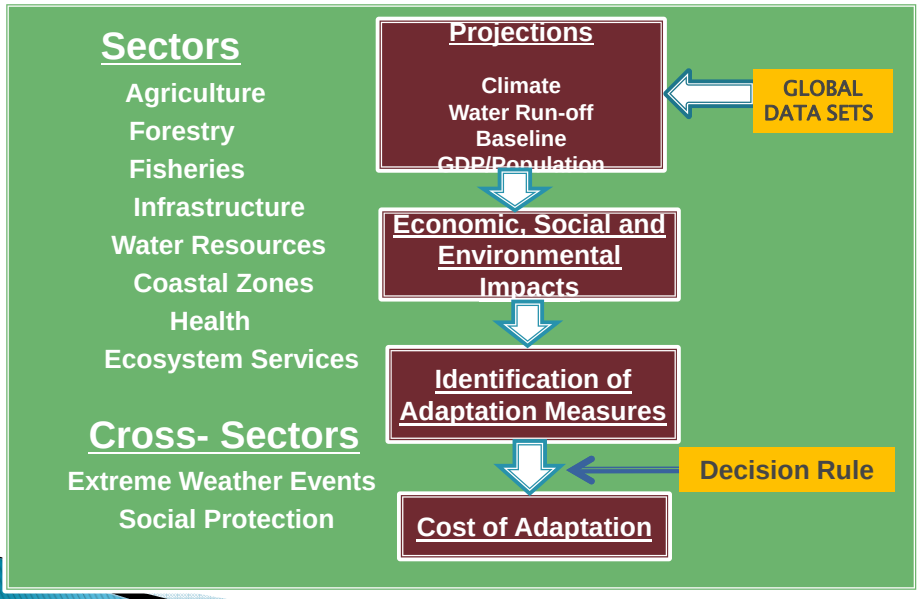
Economics of Adaptation to Climate Change Study (EACC)

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

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

Objectives	Approach
Estimate costs of adaptation for developing countries	EACC Global Track **Presented Today**
Support country processes for climate-resilient development	EACC Country Track **Spring 2010**

EACC Global Track



Other Key Assumptions

Time Frame --- 2010 to 2050
Discount Rate --- 0% and Constant 2005 prices
Development Baseline --- A2 SRES
Only Public Sector (Planned) Adaptation Included
Only "Hard" Physical Actions Included
Sectoral (as opposed to General Equilibrium) Approach
No Catastrophic Climate Change Scenario

What is not covered…

- Complete assessment of ecosystem services and climate uncertainties
- Distributional implications of impacts and adaptation
- Assessment of institutional capacity and financial mechanisms

Adaptation Measures Considered

Sector	Adaptation measure
Infrastructure	Design standards, climate-proofing maintenance
Coastal zones	River and sea dikes, beach nourishment, port upgrades
Water supply and flood protection	Reservoir storage, recycling, rainwater harvesting, desalination; flood protection dikes and polders
Agriculture	Agricultural research, rural roads, irrigation infrastructure expansion and efficiency improvements
Fisheries	Fisheries buybacks, individual transferable quotas, fish farming, livelihood diversification measures, marine protected areas
Human health	Prevention and treatment of disease
Extreme weather events	Investment in human resources

Infrastructure

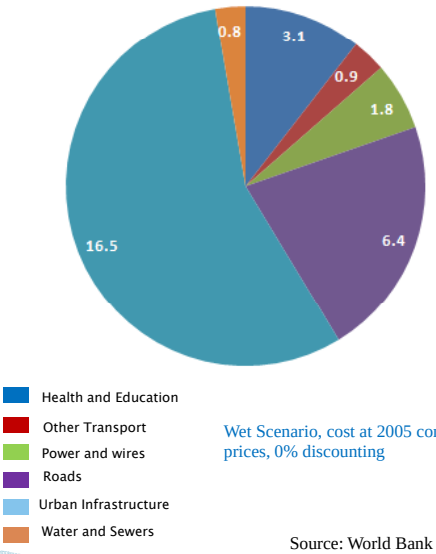
Value Added:

- Baseline demand projected
- Types of infrastructure
- Engineering dose-response functions for construction and O&M

Results:

- $30 billion /yr under NCAR and $14 billion /yr under CSIRO
- EAP and SAS have largest costs
- Changes in demand for services

Climate-proofing Cost Multiplier



Wet Scenario, cost at 2005 constant prices, 0% discounting

Source: World Bank Analysis

Annual Costs of Adaptation: by Sectors, 2010-2050, US$ Billion

SECTOR	Climate Scenario	
	DRY	WET
Agriculture, Forestry, Fisheries	7.3	7.6
Water Supply	18.8	13.7
Human Health	1.6	2.0
Coastal Zones	29.6	30.1
Infrastructure	13.7	29.5
Extreme events	6.5	6.7
Total	77.6	89.7

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

Annual Costs of Adaptation: by Regions, 2010-2050, US$ Billion

Climate Scenario	East Asia	Europe C. Asia	Latin America	Middle East N. Africa	South Asia	Africa Sub-Saharan	Total
DRY	19.6	5.7	16.9	3	15.6	16.9	77.6
WET	25	9.5	21.5	3	12.7	18.1	89.7

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

Implications of Study Assumptions

Assumption	Implication for Cost Estimate
2010 to 2050	↑ with longer horizon
0% Discount Rate	Net present value ↓ with positive rate
A2 Development Baseline	Higher growth implies ↑ absolute costs, but ↓ as % of GDP
Public Sector (Planned) Adaptation	↑ if private included
Only "Hard" Physical Actions Included	Unknown effect if "soft" (policy) actions included
Sectoral Approach	Unknown if analyzed under general equilibrium
Catastrophic Impacts	Considerably ↑

Main Messages

- Adaptation to 2°C warmer world will be costly ($75-100 billion /yr), even if low compared to GDPs;
- Adaptation addresses effect, not causes of climate change; Mitigation critical, especially to reduce catastrophic risks;
- Economic growth is the most powerful form of adaptation; but not development not as usual;
- Development strategies must maximize flexibility to incorporate climate knowledge as it is gained.

- www.worldbank.org/eacc