Preliminary estimates of additional investment and financial flows needed for adaptation in 2030

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Project Goal

- To estimate additional investment and financial flows needed for adaptation in 2030 in selected sectors and not to estimate the global total cost of adaptation
- Clearly a challenging task
  - Adaptation will be widespread and heterogeneous
  - The amount of adaptation needed will depend on the magnitude and the nature of climate change
  - There are few estimates of adaptation costs

Approaches

- Estimate based on modeling
  - Water supply (scenario A1B)
  - Health (scenario s750)
  - Coastal Resources (scenario A1B)
- Estimate based on current and projected level of investment and financial flows and assumption about adaptation needs
  - Agriculture, forestry, and fisheries (WEO reference scenario)
  - Infrastructure (WEO reference scenario)
- Difficult to estimate climate change adaptation costs for ecosystems
- The estimates are only for 2030

Limitations

- The estimation methods yield crude estimates of costs and **results should be treated as indicative**
- The estimates **may be low because** the amount actually required for adaptation because some sectors and sub sectors that are likely to need additional financial and investment flows to adapt to climate change impacts have not been included.
- The estimates **may also be high** because:
  - There could be some **double counting;**
  - No consideration of **adaptive learning** which could reduce adaptation costs.

Adaptation and development

- For all of the sectors examined herein, there is a substantial deficit in current investment and financial flows
- In many places property and activities are insufficiently adapted to current climate, including its variability and extremes

Findings

Additional investment and financial flows in 2030

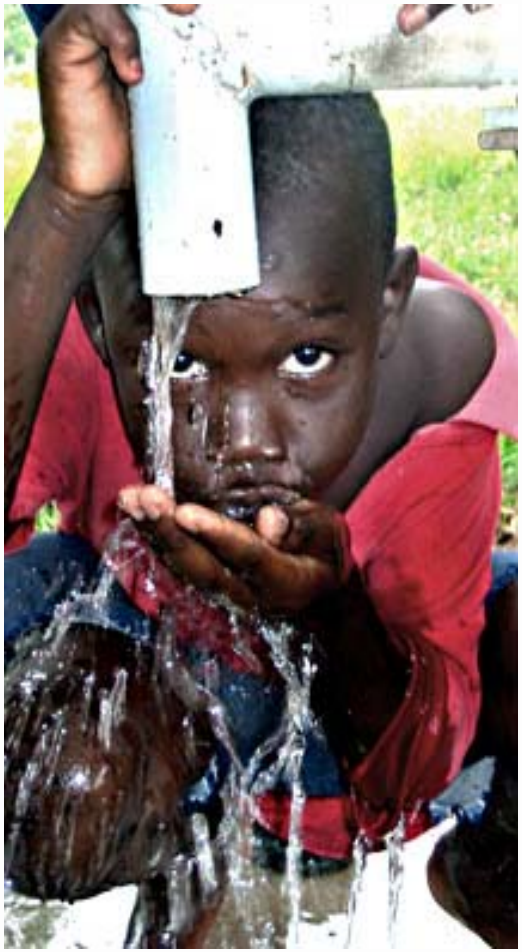
Sector	Global **(billion USD)**	Share of developing countries
Agriculture, forestry and fisheries	14	50 %
Water supply	11	80 %
Human Health	5	100 %
Coastal zone	11	40 %
Infrastructure	8–130	25 %

Global: Overall needs identified in this study correspond to 0.2 – 0.8 % of global investment flows or 0.06- 0.21 % of projected GDP in 2030.
Developing countries: USD 28 to 67 billion in 2030.
Amount large in absolute terms, but small relative to GDP and investment

Agriculture, Forestry and Fisheries

- Estimate is USD 14 billion
  - USD 3 billion for R&D and extension activities
  - USD 11 billion for production and processing
- A large share of additional investment needed will be in physical assets owned by private sector agents
- Public resources will likely be needed to provide the private sector with the necessary information and incentives. Small-scale farmers will need some direct financial support.
- Public resources will likely be needed for R&D and extension

Water Resources



- Estimate is USD 11 billion
  - 80% in developing countries
- Study only examined change in demand for water supply
  - Treatment, flood protection, etc. not estimated
- Assume anticipation of impacts to 2050
- Majority of financing currently come from domestic public sector.
- New domestic and external public resources will likely be needed.

Human Health

- Estimate is USD 5 billion
  - Entirely in developing countries
- Study only examined the additional cost of treatment related to additional cases of malaria, diarrhoeal disease, and malnutrition
- Likely to be paid for mainly by the families of those affected
- New and additional public financing will likely be necessary for families that cannot cope
- Countries that are already currently highly reliant on external sources for health care may need new and additional external support

Coastal Zones

- Estimate is USD 11 billion
  - About half in non-Annex I countries
- Study only considers the cost of construction of dykes and beach nourishment
- Assumed anticipation of sea level rise to 2080
- Sector highly dependent on public sources of funding.
- Deltaic regions, particularly the large coastal deltas in Asia and in Africa and small island states may have significant problems responding to sea level rise. In these countries, additional sources of external public financing will likely be needed.

Infrastructure

- Estimate range from USD 8 billion to USD 130 billion
  - Wide range indicates uncertainty
- Sources of financing depends on the nature of the new infrastructures that are vulnerable to climate change
- Public policies will also likely be needed to provide adequate support and incentives for new private infrastructures that are vulnerable to climate change to be adequately adapted.

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Interpreting the Results

- Investment and financial flows needed for adaptation are likely to be tens of billions of dollars per year several decades from now
  - Could more than USD 100 billion per year
  - Other studies (World Bank, Oxfam) also estimate adaptation costs at tens of billions of dollars per year
- Actual costs will be sensitive to many factors including how much climate change is realized
  - That will be affected by the level of emissions

Potential For Enhanced Investment and Financial Flows

Sources of investment and financial flows

- Private sources of funding can be expected to cover a portion of the adaptation costs in several sectors. In particular in the AFF and Infrastructure sector where investment in privately own physical assets would be needed.
- However, public resources are expected to play a predominant role in all sectors and in particular in the coastal zone and water sector.
- Measures will be needed to encourage/support private sector adaptation and additional sources of funding dedicated to adaptation will be needed.

Potential of Convention and Protocol Funds

- The funds that are currently available under the Convention and the Protocol are small compared to the magnitude of the needs identified in this study.
- The funds that are managed by the GEF (SPA, LDCF and SCCF) that are available for adaptation projects currently is about USD 275 million.
- The Adaptation Fund could receive USD 80-300 million per year for the period 2008–2012.
- Assuming a share of proceeds for adaptation of 2 per cent continues to apply post 2012, the level of funding could be:
  - USD 100–500 million per year for a low demand;
  - USD 1–5 billion per year for a high demand.
- **New sources of funding need to be identified!**

Role of national policies

- National policies may play an important role in ensuring that the use of resources, both public and private, is optimized. In particular there is a need for:
  - Domestic policies that provide incentive for private investors to adapt new physical assets to the potential impacts of climate change;
  - National and local policies that integrate climate change adaptation considerations in key sectors;

Notes

- Although the additional investment and financial flows needed for adaptation are significant, the value of the climate change impacts that those expenditures would avoid could be much larger.
- We need better understanding of what investment adaptation takes in each sector. More on the ground studies will be needed.
- As needs and potential sources of financing varies greatly by sector, analysis of needs and potential tools at the sectoral level is likely to be needed.
- The costs of adaptation are likely to rise substantially in the later part of the century.