

Challenges of Cost Effective Adaptation to Climate Change

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Ladies and Gentlemen, the Bonn agreement last month was a first major step to move the international community in establishing a complex framework to solve the challenge of climate change. Though much more work needs to be done to detail the implementation of the complex Kyoto mechanisms, the good news is that it is moving in the direction to incorporate climate mitigation as part of economic policy.

However, this success, though immense, remains incomplete in solving the problem of climate change. We realise that even the successful implementation of Kyoto mechanisms in meeting the emission reduction targets set by the Kyoto Protocol, the rate of climate change will merely slow marginally, given the long atmospheric lifetime of Greenhouse Gases (GHG) and the inertia of the climate system. Simply put, significant impacts of climate change would still likely to occur.

Some scientists state that a threshold of 60 per cent reduction in GHG emissions by 2010 is necessary to stabilise the global climate, the aim of the climate convention, while Kyoto Protocol targets about 5.2 per cent reduction over the 1990 levels.

Vulnerable Countries

This sharply brings out the plight of countries vulnerable to adverse impact of climate change, such as small island nations, least developed countries, but they have little say in deciding their future.

This requires efforts to adapt to climate change where it is cost-effective and feasible to do so. In the past there was a reason for this lack of interest in adaptation. Many experts feared that emphasising adaptation conveys the message that mitigation efforts are not having the desired effect and climate change is inevitable or, that climate change is manageable therefore mitigation efforts are unnecessary.

There is also a perception that future climate impacts must be known with some degree of specificity before it is possible to plan adaptation responses. Present global circulation and integrated assessment models do not have the capability to accurately predict climate impacts at regional or local scales. Few studies have attempted to analyse adaptation strategies and the associated costs, especially in comparison to the costs of mitigation.

This needs to change, for the sake of countries that are most vulnerable to potential impacts of climate change. Human-induced climate change represents an important additional stress to the many ecological and socio-economic systems already affected by pollution, increasing resources demands, and non-sustainable management practices.

Developing countries can be generally categorised as more vulnerable due to limited financial and institutional bases to adapt to the added stress of climate change. The vulnerability of human health and socio-economic systems - and to a lesser extent, ecological systems - depends upon economic circumstances and institutional infrastructure. People who live on arid or semi-arid lands, in low-lying coastal areas, in water-limited or flood-prone areas, or on small islands are particularly vulnerable to climate change.

Delaying action in these countries will increase damage costs since climate-induced environmental changes cannot be reversed quickly, if at all, due to the long time scales associated with the climate system. This is a serious concern for countries, which are

surviving on an environment already stretched to its capacity, and with no possibility of putting additional resources for escalating adaptation costs.

Therefore, precautionary investments, to assist human and natural systems to adapt to climate change become a necessity. While no-regrets principles can be employed to a certain extent in preparation for climate change and sea-level rise, considerable financial investment will eventually be necessary for preparedness measures and probably even more, together with extensive social costs, as forced adaptation becomes the inevitable consequence of not taking timely anticipatory actions.

We recognise that some adaptation is bound to take place at the local level. For instance, when we seek to evaluate the effect of climate change on food supply in the future, we should assume that new varieties of crops and improved methods of their management would be available. It is the additional innovations that we need to evaluate so that we can, ultimately, form a judgement as to the best combination of adaptation to impacts and mitigation of emissions that we should seek.

Countrywide policies could also influence adaptation, negatively or positively. For example, national policies that encouraged population movement into low-lying coastal areas might increase their vulnerability to future impacts of sea level rise. On the other hand, government actions to protect citizens from natural disasters could help to reduce vulnerability to extreme weather events associated with future climate change.

UNEP's role

UNEP's focus for the past several years has been to handle the second challenge by developing methodological tools for adaptation as the international agency responsible for World Climate Impacts and Response Strategies Programme (WCIRP) within the World Climate Programme. The handbook of climate impact and adaptation assessment methods which underpin the national studies in the UNEP programme is the latest in a series of advisories we have produced beginning in 1985. This is a useful tool for developing countries in setting up and conducting Climate Change Impact Assessment and Adaptation Studies.

UNEP has also initiated a study to develop more precise tools for assessing and comparing vulnerability between countries internationally, and between sectors within countries. A vulnerability index, once it is tested successfully, will be a major tool for making decisions on the cost-effectiveness of adaptation projects by countries and international community. The work will include a working paper and database describing a standardised index of comparative vulnerability for application in allocating funds for adapting to climate change.

Recognising that separation of normal climate from climate change is a question that cannot be fully resolved by scientists UNEP is also analysing the lessons learnt by a select group of developing countries on their response to the recent *El Nino* phenomenon. This project is likely to tell us a lot on the systemic weaknesses in dealing with extreme climate variability and will help us better prepare for such events in future.

AIACC

RATIONALE AND OBJECTIVES

1. The project supports enabling activities by developing science capacity and assessment techniques and information targeted at the most vulnerable regions and sectors where capacity is needed. This proposed global project would fund a number of studies assessing the impacts of climate change on a range of socio-economic sectors and ecological systems at the regional and national scale and the development of a range of adaptation response options. Science capacity building is a primary aspect of the project.

2. This project will enhance the comprehensiveness of impact and adaptation assessments using a consistent methodological approach (Carter et al., 1994) by supporting regionally focussed research to be undertaken by developing country experts, often in partnership with developed country experts. This will enhance regional scientific capacity and provide expertise available to governments, the private sector, and other entities that are developing national and subnational, sectoral and multisectoral policies and adaptation plans. The results will include expanded socioeconomic and other data, training and methodologies adapted to developing country regions. These results will then serve as reference impact scenarios and model adaptation strategies in the United Nations Framework Convention on Climate Change (UNFCCC) national communications. Countries can further expand or differentiate nationally focussed impact and adaptation effort using these reference cases and the methodologies developed in further regional/national Stage II adaptation studies.
3. This proposed effort will also contribute to global assessment activities in collaboration with IPCC by enabling selected developing countries, chosen on the basis of several criteria discussed in Section 7, Selection Criteria, to develop technical capacity and apply it to the assessment of climate change impacts and options for adaptation.

RESEARCH NEEDS TO BE TARGETED

4. The proposed multi-sectoral/multi-stress/multi-country research will cover a number of research priorities concerning vulnerability of key sectors affecting human development. It will also address key policy relevant questions, including:
 - Where and to what extent are water resources at risk?
 - How vulnerable is food security in developing countries?
 - How much of a risk to human health does climate change pose in developing countries?
 - How vulnerable are societies on small island states?
 - What coastal areas are at substantial risk from sea level rise?
 - How vulnerable are natural ecosystems?

AIACC Technical Committee Criteria for Evaluation of Full Proposals

1. Relevance to AIACC Project (pass/fail)

The project must address climate change impacts, adaptation, and vulnerability in developing country regions of Africa, Asia, Latin America and Small Island Developing States. There are a variety of methods to assess impacts, adaptation and vulnerability including "scenario-led" approaches (for example the IPCC guidelines, 1994) and other approaches that are not scenario-led (for example assessment of vulnerability to climate variability and extremes based upon empirical observations). Projects may employ any approach so long as it includes assessment of adaptation and has scientific credibility.

2. Scientific/Technical Merit (30 points)

Likelihood that the project would advance scientific understanding regarding climate change impacts, adaptation, and vulnerability in areas of key concern for the proposed region of study, as identified in the IPCC Third Assessment Report. Factors that will be taken into account to judge scientific/technical merit include, inter alia:

- Clear definition of the problem to be investigated.
- Identification of the information gaps that are expected to be filled by the project.
- Clarity of the written work plan that describes major tasks.
- Appropriateness of proposed methods, models, sectoral scope, and spatial scale for investigation of the identified problem.
- Climatic, socioeconomic and environmental futures are taken into account using approaches that are appropriate to investigation of the problem.

- Priority of the sectors/vulnerabilities/issues to be addressed for the region of study.
- Evidence of commitment to peer-reviewed publication of project results.

3. Integrated, Multi-country Analyses (10 points)

The extent to which the project would employ an integrated approach that would yield information relevant to vulnerability in multiple countries in a region. Integrated approaches would draw upon expertise from relevant disciplines, including both natural and social sciences, to account for critical linkages across sectors, systems, and space and to integrate information about impacts, adaptation, and vulnerability. Multi-country projects are encouraged, but projects that are not multi-country are appropriate provided that the results of the study are expected to be applicable to other cases that are similar in climatic, ecological, socio-economic or other relevant dimensions and the study is potentially replicable.

4. Adaptation (20 points)

The extent and depth of the project's investigation of adaptation. Investigation of adaptation might include:

- Identification of mechanisms for coping with climate variability and extremes and options for adapting to climate change.
- Evaluation of opportunities for and barriers to implementation of adaptation measures.
- Evaluation of the effectiveness, costs, benefits and other performance measures of coping mechanisms or adaptation options, and the factors influencing their performance (including conditions for failure).
- Evaluation and comparison of the capacity of different localities, communities, demographic groups, or sectors to cope with climate variability and extremes or adapt to climate change.
- Analysis/modeling of adaptation decisions of different actors or stakeholders.
- Evaluation of the effects on adaptive capacity of technological, demographic, economic, land-use, resource use, environmental and other trend and policies.
- Evaluation of the compatibility of adaptation policies with other policies and societal objectives.

5. Relevance to Stakeholders and Policy (20 points)

The likelihood that the project would generate and disseminate information of relevance to stakeholders and policymakers and be used in planning, decision making and, for example, preparing National Communications (GEF Stage II). Projects that have explicit strategies to seek stakeholder and/or government input (e.g. in problem definition and setting priorities for sectors/vulnerabilities/issues to be addressed) and to communicate information to potential users at key stages of the project will be scored higher on this element than those lacking such strategies. Endorsement by GEF focal points of key countries that are the focus of the project is required prior to awarding of funds and is an indicator of policy relevance.

6. Capacity Building (10 points)

The extent to which the project would build and enhance capacity for continued scientific investigation of climate change impacts, adaptation and vulnerability in developing countries. Capacity building may take a variety of forms, including but not limited to:

- Enhancement of the scientific and technical capabilities of project participants, particularly of junior researchers and graduate students, to continue assessment of climate change impacts, adaptation and vulnerability after the project.
- Development of databases, scenarios, models and/or methods of value for follow-on research that would be available for use by researchers and other potential users outside the project team.
- Enhancement of the capacity of stakeholders to incorporate climate change impacts and adaptation information into their planning activities.

7. Project Management (10 points)

The appropriateness of the project plan, personnel and budget for successful management and conduct of the project. Factors to be taken into account include:

- The project team includes appropriate scientific, technical and management expertise.
- The work plan identifies needs for and steps to achieve cooperation with government agencies and research institutions to, for example, acquire data, models, and training in the use of models.
- The work plan includes a strategy for reporting and disseminating results to potential users.
- Budget amount and allocation is consistent with proposed work.
- Potential co-financing identified.

Note: in addition to the above criteria for evaluation of individual proposals, final selection of proposals to be awarded funds will also take into account

- Complementarity of projects to provide broad geographic and sectoral coverage, and
- Complementarity of AIACC projects with other assessment activities such as the Millennium Ecosystem Assessment and regional and national assessment programs.

The threat of climate change has been decades in the making and it will take many years to solve. But each small step in integrating solutions into our economic and social agendas will gradually ensure that the society turns this adversity into an opportunity. This approach is what will guarantee that the wealth of nations not only sustains but continues to increase in the 21st century.