

## Financing the Adaptation to the Climate Change: Issues and Controversies

Shobhakar Dhakal, Ph.D<sup>3</sup>

### Abstract

*The financial mechanisms for medium and long-term adaptation measures are the outstanding issues that are expected to be further negotiated at the second session of the Sixth Conference of the Parties (COP6) of United Nations Framework Convention on Climate Change (UNFCCC) in July 2001. It seems more likely that some form of medium and long-term financial provisions would follow in the near future. However, the issues such as, expected huge adaptation demand, unclear definition of particularly vulnerable countries, limited resources availability, and reluctance of the donors to shoulder the uncertain financial burden are required to be resolved. Some priority adaptation areas are needed to identify and the criteria for the selection of adaptation projects are required to formulate for initial phase of the funding consideration. This paper discusses and analyses the ongoing issues and controversies in relation to the adaptation funding and outlines few criteria and program priorities that could be useful to the international effort of instituting the funding for the adaptation measures.*

**Keywords:** Climate change, Financial mechanism, Adaptation

### Introduction

Adaptation refers to any passive, reactive or anticipatory adjustment that can respond to the anticipated or actual consequences associated with climate change (IPCC, 1994). The strategies to adapt and mitigate the climate change are costly and long-term affairs. Mitigation and adaptation deal with the "cause" and "effect" aspects of the global climate change, respectively. Green house gas (GHG) mitigation strategies try to eliminate the "cause" of global climate changes e.g. concentration of carbon dioxide and other GHGs, whereas adaptation strategies try to minimize the adverse effects of the climate change e.g. fresh water shortage, spread of malaria, submersion of coastal area etc. There is a considerable time lag between the reduction in the GHG emissions, their implications on the global GHG concentrations, their physical implications on climate, and the anticipated damage due to the climate change. Since the most of the past GHG emissions have originated from the developed countries, the countries with high climate vulnerability see the point to argue that only mitigation measures are not enough and the assistance should be provided to the adaptation measures too. However, financial mechanism to the adaptation (other than short-term measures) does not exist at the moment although the United Nations Framework Convention on Climate Change (UNFCCC) has envisioned such provisions in Article 4.1(b), 4.1(e), 4.4 and 4.8. During the course of time from First Conference of the Parties (COP1) to COP6, financial assistance to the adaptation has been one of the major issues in the international debates and negotiations.

This paper provides a quick review of the existing financial mechanisms and controversies on adaptation. This paper also tries to address few delicate

---

<sup>3</sup> Institute for Global Environmental Strategies, 1560-39 Kamiyamaguchi, Hayama, Kanagawa 240-0198, Japan

questions in relation to the adaptation to the climate change such as: (i) does the financial investment considering adaptation make sense at present, and (ii) what kind of the criteria should follow the selection of adaptation measure in the face of scarce resources and unlimited adaptation demand?

### **Need for Adaptation**

Kyoto Protocol requires Annex-I countries to collectively cut their emission of greenhouse gases by 5.2 percent from 1990 level. However, these magic numbers, such as 1990 and 5.2 per cent are politically negotiated rather than on scientific basis, which do not ensure that such reductions, if implemented, would stop the climate from changing. Such GHG reduction commitments, which are yet to be ratified by major emitters, are just a very initial positive response towards the UNFCCC objective of reducing greenhouse gases by the developed countries to the level that would prevent anthropogenic intervention with the climate system. At the same time, developing countries do not have any commitments and will continue to emit increasing amount of GHG emissions. Therefore, it is more likely that GHG will be emitted significantly for the coming decades thus enhancing human interference to the climate system. Even if we are able to contain GHG emission to the level envisaged by UNFCCC in the future, the contribution of the past GHG emission might already alter climate significantly. The bottom line is that, the adaptation issue will eventually have to be addressed by the policymakers, the question is only on timing, and direction and magnitude of adaptation due to uncertainties involved in the understanding of the climate system (Smith, 1997). Postponing the adaptation decisions might have serious negative implications for the long-time frame decisions. Fankhauser (1999) argued that climate change needs to be considered in today's decisions that deal with the long-lived investments and investments that are sensitive to the changes in the climate, such as water management infrastructure, coastal protection, forests, roads and buildings. Other long-lived and weather sensitive areas are development plans, laws, and knowledge bases such as agriculture R&D. Postponing the adaptation decision are, particularly, serious for the irreversible impacts of climate change such as human mortality, extinction of the species and loss of ecosystem (Smith, 1997). Reactive adaptation is the adaptation that follows after the changes in climate have occurred. It is argued here that anticipatory adaptation should be incorporated in today's decisions so that reactive adaptation could be enabled more smoothly and efficiently in the future. The wait-and-see approach might entail too much of costs to the international community.

### **UNFCCC and Adaptation**

The principle objective of the UNFCCC is outlined in its Article 2 as,

“to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner”.

(Article 2/UNFCCC)

The UNFCCC itself does not define the word “adaptation” but relevancy and references are drawn from the words such as “adverse effects” (Article 4.8) in the convention and subsequent IPCC documents. Article 4.8 of the Convention clearly asks Parties to give full considerations to the adverse effect.

“In the implementation of the commitments in this Article, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on:

(a) Small Island countries; (b) Countries with low-lying coastal areas; (c) Countries with arid and semi-arid areas, forested areas and areas liable to forest decay; (d) Countries with areas prone to natural disasters; (e) Countries with areas liable to drought and desertification; (f) Countries with areas of high urban atmospheric pollution; (g) Countries with areas with fragile ecosystems, including mountainous ecosystems; (h) Countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products; and (i) Land-locked and transit countries. Further, the Conference of the Parties may take actions, as appropriate, with respect to this paragraph.

(Article 4.8/UNFCCC)

However, the interest of most of the Parties of the Convention lies in the economic compromises that Parties might have to face by implementing GHG mitigation policies. The Parties who need to pursue economic compromises and the Parties, who are extremely vulnerable to the climate change, at present, are different. Probably, that was the reason many Annex-I Parties liked to stress mitigation and hesitated to include adaptation in the Article 2 of the convention. The adaptation issues are of considerable interest to the vulnerable groups such as Alliances of Small Island States (AOSIS), African countries, and poor Asian countries. The uncertainties in the climate changes are the principle sources of the lack of confidence in Annex-I Parties to deal with the adaptation. These are scientific uncertainties in the nature of impacts of climate change, vague and boundless responsibilities, and uncertain adaptation costs. However, adaptation related funding decisions have taken some momentum recently in COP4, thirteenth sessions of SBI (Subsidiary Body for Implementation) and COP6, although decisions are yet in pending.

The decisions made in the COP-1 (Decision 11) is the basis for financial mechanism to the adaptation measures that provided the initial guidance on policies, programme priorities, and eligibility criteria to the operating entity of the financial mechanism. Short-term, medium-term and long-term strategies for adaptation to the climate change were proposed in COP-1. Such strategies were envisaged to be implemented in a stage-by-stage basis in the developing countries. Stage I deals with short-term measures while II and III deal with medium and long-term adaptation measures, respectively.

**Stage I: Planning.** This includes studies of possible impacts of climate change, to identify particularly vulnerable countries or regions and policy options for adaptation and capacity building.

**Stage II:** This includes the measures which may be taken to prepare for adaptation as stipulated by Article 4.1 (e) of the Convention including further capacity building. Article 4.1 (e) address the adaptation measures to develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods.

**Stage III:** This includes the measures to facilitate adequate adaptation, including insurance, and other adaptation measures as envisaged by Article 4.1 (b) and 4.4. Article 4.1(b) asks the Parties to formulate, implement, publish and regularly update national and regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change.

### **Particularly Vulnerable Developing Countries**

Article 4.4 and Kyoto Protocol Article 12.8 asks Annex I Parties to assist the 'particularly vulnerable developing countries' in adapting to the climate change. However, the definition of 'particularly vulnerable developing countries' is still obscure. There is a dilemma that more developing countries might like to enrol themselves into this category and so would compromise the original objective to assist the countries that are worst affected by the climatic changes. Therefore the basic question is how to prioritise the adaptation activities. This would require, firstly to agree upon the status of the few countries as 'particularly vulnerable' developing countries, and secondly to provide the guidelines to the operating entity on the priorities and criteria for funding the adaptation activities. Very few past studies have tried to address this question.

Yamin (1999) has touched upon four key considerations that influence the approach of the definition of 'particularly vulnerable developing countries'. The definition could be determined on the basis of pre-determined criteria or by political negotiation. Similarly, the definition could embrace the closed (static) or open (dynamic) list of vulnerable parties. Yamin (1999) pointed out that paragraph 19 of the Preamble of the convention gives some indication to the definition to the 'particularly vulnerable countries', but it explicitly does not talk about developing countries and does not include countries with the characteristics as described in Article 4.8. Those countries not covered in paragraph 19 of the Preamble but addressed by Article 4.8, include countries prone to natural disasters, high urban atmospheric pollution, fragile ecosystem, heavily dependent on income generated from fossil energy, landlocked and others. Yamin (1999) suggests that the Preamble could serve just as a starting point for discussions in the future negotiations. Closed list of the countries in the definition will be difficult to agree during negotiations because this does not recognize future uncertainties of the adverse effect, and countries not listed would have to be assumed to be not vulnerable to the climate change which is a difficult proposition.

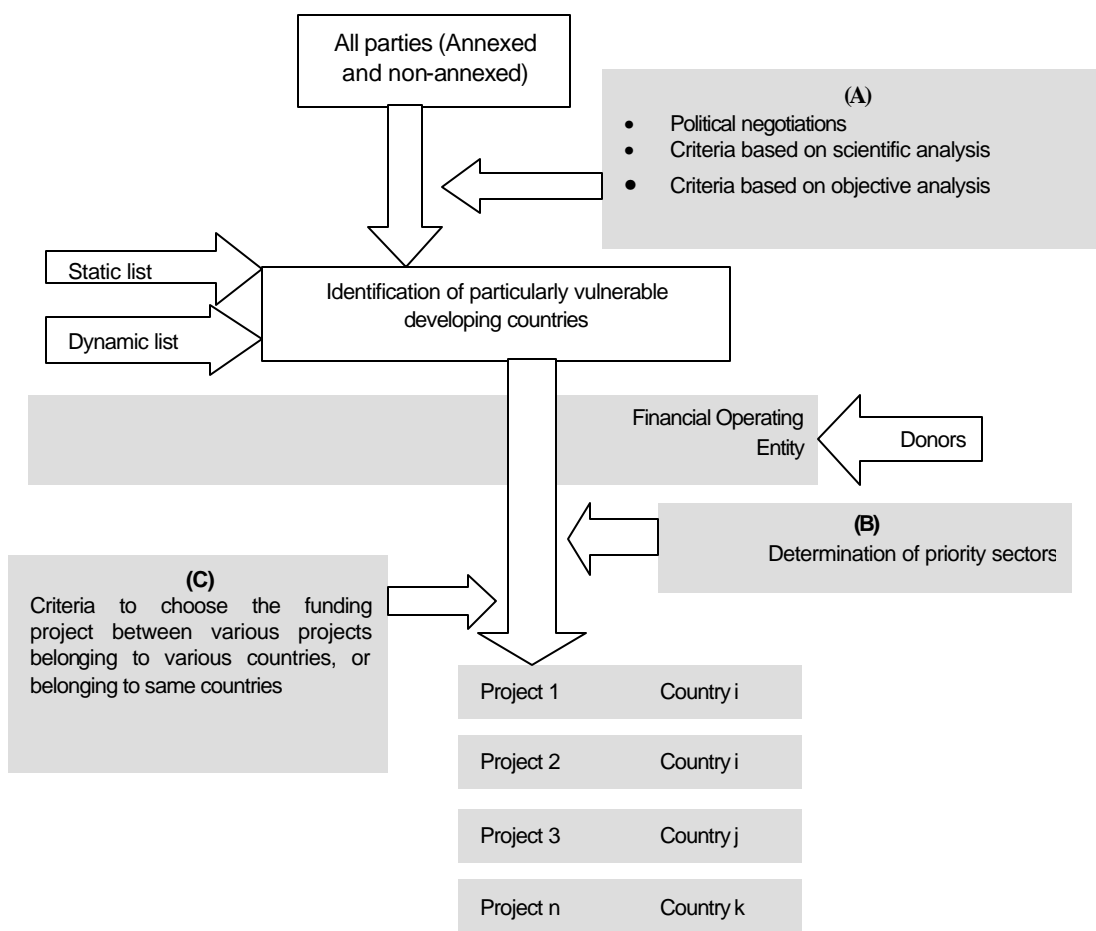


Figure 1. Bottlenecks in adaptation activities under the UNFCCC

Figure 1 describes the major three bottlenecks (A, B and C) in the adaptation issue to the decision-makers. Under the present scientific uncertainties regarding the change in the future climate and present controversies in relation to the economic valuation of the damage costs, it is inevitable that some political negotiation would be required to pave ways for future adaptation activities. There could be a possibility to reach an agreement to declare some of the countries, such as small island developing countries, drought prone sub-saharan Africa, countries with fragile mountain ecosystem and periodic flooding, as particularly vulnerable countries based on political negotiations.

### Financing the Adaptation Measures

The UNFCCC recognizes the need of the financial and technical assistance to the non-annexed developing countries to assist to comply with the provisions of the convention. According to the convention Article 4.3, the annex-II

developed country parties are obliged to provide the financial resources to the convention's financial mechanism to cover the agreed (by the financial entity and developing country) *full incremental costs*, incurred by the developing country parties, of Article 4.1 measures and of Article 12.1. Global Environment Facility (GEF) was designated, as an interim entity, to oversee the financial matters by COP-1 for stage I adaptation measures. GEF was established in 1991 as a pilot trust fund of US\$1.3 billion to support the developing countries with the projects to protect the global environment and sustainable development (Maruyama, 2000). GEF is entrusted the task of meeting the agreed *full costs* of the activities (basically stage I measures only) such as, formulation of national communication, studies on the possible impacts of climate change, vulnerability assessment, studies to identify the options for implementing the adaptation measures (especially the obligations contained in Article 4.1(b) and 4.1 (e)), and relevant capacity-building (Decision 11/CP.1).

*Barriers for adaptation funding:* The barriers for funding the adaptation measures are seen to emerge from GEF as well as from the donors. Donor's (developed country parties of annex-II) reluctance to take responsibility for the uncertain adaptation cost could be well understandable under present scientific uncertainty of climate change and its impacts. Stage II or III funding means the real long- term investment for developed country parties of annex-II. Further efforts are necessary to bridge the gap in the understanding of the climate system, its technicalities, and in the assessment of the adaptation costs. "Global environmental benefit" is the principle key word in the constitutional mandate of GEF, which do not met by financing the adaptation projects for the fact that adaptation projects would be local in effect (Werksman, 1993). Similarly, the process or methods to categorize the "particularly vulnerable" countries mentioned in Article 4.8 has not yet been established, and Annex-II developing Parties fear that more developing countries may like to add themselves into this category.

So far, only stage I adaptation measures have been supported at full cost basis. Based on the stage I assessments and the results of the scientific and technical studies, COP is empowered to decide to implement the stage II and III measures. If COP decide that it has become necessary to implement the stage II and III measures, Parties included in Annex-II would provide funding (Decision 11/CP.1). After COP1, no any significant decision was taken till COP4. COP4 provided the additional guidance that GEF should provide funding to developing country parties to implement stage II adaptation measures. COP4 focus was placed on the countries vulnerable to climate related natural disasters (Decision 2/CP.4). Apart from the Convention, two other bilateral sources, US Country Study Program (USCSP) and Netherlands Climate Change Studies Assistance Programme, have provided funding for the vulnerability assessment to the climate change (FCCC/SBI/1998/CRP.1). USCSP have provided financial support for the vulnerability assessment in 55 countries while Netherlands initiatives have focussed in the African countries.

#### **Progress in Adaptation Measures as of Article 4.8 and Kyoto Protocol 3.14**

Article 4.8 particularly mentioned about three items, provision of funding, insurance and technology transfer to the categories of the countries identified

in the article. According to the article, eligibility of the countries also includes those countries, which are affected by the implementation of the response measures. On this ground, Organization of Petroleum Exporting Countries (OPEC) demanded for the compensation during COP-3 but could not draw much attention. Kyoto Protocol 3.14 further bolstered three above-mentioned provisions but the protocol does not mandate Annex-I Parties to establish such provisions. However, Kyoto Protocol required the Subsidiary Body for Implementation (SBI) to identify and take necessary actions for implementing Article 4.8 of the convention. Eighth session of SBI (FCCC/SBI/1998/CRP.1) proposed the following framework for analysis to identify and determine actions necessary under the Article 4.8 and 4.9. Three-tier analysis was proposed including,

- identifying possible adverse effects of climate change and possible impacts of response measures;
- considering how these effects and impacts relate to developing country Parties, looking to their situation;
- identifying the need and the concerns of the developing country Parties; and
- finally, identifying the actions.

Noting insufficiency in the assessment, COP-5 further suggested organizing the workshops to carry out vulnerability assessments and to identify the adaptation option more concretely (Decision 12/CP.5). Thirteenth SBI meeting (FCCC/SBI/2000/10/Add.1) discussed about the Article 4.8 and Kyoto Protocol 3.14 and undecided proposals were submitted to COP-6. COP-6 so far has not made any decisions, and in face of the current events it is more likely that some action will be taken in this regard in the near future.

So far, market does not exist where one can ensure themselves against losses from the climate change. No any significant process has been carried out yet to address "insurance" as mentioned in Article 4.8. There could be two hindrances for insurance provision. First is that the developing countries have no established insurance markets even for the areas such as accidents, life, business and health. In such circumstances, insurance market establishment for the impacts of climate change would be very difficult. Secondly, the cost of bearing the risk may be different in different developing countries due to the nature of impacts. Working group III-Second Assessment Report (SAR) has mentioned various suggestions such as "mutual insurance contract", "risk securities" and international insurance funds.

### **Funding from Clean Development Mechanism Proceeds**

Apart from the provisions in the Article 4.3 and 4.4 of the Convention, Article 12.8 of the Kyoto Protocol has opened a new prospect for funding the adaptation measures. According to the Article, a share of Clean Development Mechanism (CDM) is to be used to cover the administrative cost as well to meet the costs of adaptation needed in "particularly vulnerable" developing countries. However many questions, including the size of the potential CDM market and determination of the share of CDM, are yet to be answered (Sharma, 1999). These unanswered questions impose uncertainty in the quantity of financial resources that CDM can deliver to meet the adaptation

costs (Yamin, 1999). It is important to note that the amount of the financial resources required to meet the needed adaptation itself is uncertain. G77 countries had earlier (also in COP-6) called for extending similar approach to other Kyoto mechanism, Emissions Trading (ET) and Joint Implementation (JI) for increasing the adaptation funding.

### **Proposals on Adaptation Matter at COP6**

Thirteenth sessions of SBI (November 2000) and COP-6 tried to narrow down the differences of parties on matters related to stage II and III funding however disagreements remained on several points such as,

- the sources of information on which to base funding for Stage II adaptation activities. Donors opposed the idea to permit funding for Stage II adaptation activities to be based either on national communications or other national studies;
- type of the adaptation activities (including stage II demonstration projects) that GEF should fund, and modalities for such funding;
- whether the GEF should fund capacity building for disaster preparedness and disaster management, and for early warning systems for extreme weather events; and
- whether the GEF should be the only channel for funding in certain areas, including technology transfer (ENB, 2000).

One of the proposals at COP-6 was the creation of an Adaptation Fund, a Convention Fund, and a Climate Resources Committee. According to the proposal, the Adaptation Fund would be a new fund under GEF (as a trust fund), which would finance concrete Stage III adaptation projects in Non-Annex I Parties. Special considerations are proposed to be given to the Least Developed Countries (LDCs) and Small Island Developing States (SIDS) and the fund would be generated by the proceeds on the CDM (2% of Certified Emissions Reductions). The proposed adaptation activities would include avoidance of deforestation, land degradation, and desertification. Similarly, the Convention Fund would be a separate "window" in GEF and special considerations would be given to LDCs and SIDS. The funding is proposed to come from a third replenishment of the GEF. The proposal also mentioned to increase the financial resources to an annual level of US\$1 billion by 2005, and in case this level is not reached, it is proposed to charge a levy on JI and/or ET. Agreement on above proposal or any other proposals are due at proposed second session of COP-6 in July 2001.

### **Criteria for Funding Stage II and III Adaptation Measures**

The priority setting of the adaptation activities are necessary in face of the scarce resources. There are possibilities that second session of COP-6, in July 2001, would take few important decisions regarding financial aspects of the adaptation. If COP-6 decides to implement II/III stage adaptation measures, as defined in Decision 11/CP.1, it has to provide general guidance on the modalities, e.g. what kind of adaptation activities to fund at this stage, how to evaluate the better adaptation measures amongst the various adaptation measures, and so on. Controversies in the cost concepts and other

uncertainties remain, however, efforts are made here in discussing and proposing the criteria that could be helpful in selecting the adaptation projects.

The major criteria adopted by GEF in selecting the mitigation/enabling activities were; country driven, and supporting the national development priorities. Such activities should involve environmentally sound and locally suitable technology transfer, as far as possible, should be cost effective, contribute to national response to climate change, and sustainable and promote internationally agreed actions for sustainable development. Initial emphasis was placed for enabling activities to facilitate the implementation of the response measures. The GEF operational guideline suggested the use of the established guidelines, efficient use of resources, use of local and regional expertise, and appropriate sequencing of the activities (GEF, 1996). Incremental cost criteria is endorsed as the basis for funding the mitigation measures by COP-1 (Decision 11/CP.1).

The natures of the adaptation measures are different from the mitigation measures in scope, uncertainty and amount of investment. Mitigation actions are evaluated by the incremental cost approach so far under UNFCCC but the extension of the similar approach to the adaptation actions is not suitable. Economic and other criteria are needed to choose amongst the projects. The criteria should be able to lessen the uncertainties and the associated risks of the investment. At the same time, the criteria should be able to select the measures that correctly address the adaptation to the climate change at the region most needed. Financial mechanism such as GEF should be able to answer following questions:

- What share of the full adaptation project cost the financial mechanism should bear (in case of large number of the adaptation projects funding request and limited funding availability)? How to justify this share based on economic (such as *incremental cost* in case of mitigation measures) or other criteria? Instead of the share, would it be better to focus on some specific component of the adaptation project?
- How to make sure that the mitigation measures presented by the vulnerable Parties are the best (or optimal)? Should the information and assessments carried out by the vulnerable Parties are to be agreed or the independent assessment is to be done? Who will provide the costs of such independent assessments?
- Which countries, regions, group of countries or sectors should be given priority for financial assistance?
- How to do vulnerability assessment at the macro level (individual country level)?

Some of the criteria that might be helpful are mentioned below. However, it is to be noted that these are just preliminary criteria that need to be further explored and enhanced.

*Criteria reflecting national realities*

- The vulnerable sector where the adaptation is desired should be the priority vulnerable sector in the country. This should be evaluated,

based on the present knowledge (not speculative) and credible analysis on already observed or anticipated changes. The analysis should be done according to the established international methodologies.

- The adaptation measures should be the best among other candidate measures in that vulnerable sector. While selecting the best adaptation measures, consideration should also be given to other human dimensions such as endangered culture and traditions, and social values, as far as possible. However, it is recognized here that framework to address such issues are difficult.
- The activities should be country driven, should make use of local and regional expertise.
- Country specific adaptation activities should contribute towards the significant local capacity building in the respective activities.
- Duplication of the activities should be avoided. Particular attentions should be paid to ongoing activities by other bilateral and multilateral agencies to avoid the duplication.
- The adaptation funding by this mechanism should be supplementary to other bilateral and/or multilateral commitments or the country's own investment initiatives.
- Wider participation of the local stakeholders that are vulnerable in the project formulation and implementation process should be given priority.

#### *Criteria reflecting cross-country realities*

- The adaptation activities that reduce the regional vulnerability should be promoted
- Particularly vulnerable countries, LDC and SIDS should be given priorities. However, the definition of the particularly vulnerable countries is required to narrow down.

#### *Program priorities*

Since the adaptation fund or other financial commitments is expected to serve as a small portion of the total funding demand from vulnerable parties, initial priorities are required to be set. COP6 is expected to set some priority areas in this respect. The proposal on priority area at unconcluded COP6 negotiations in November of 2000 included:

- initiating pilot/demonstration adaptation projects;
- undertaking adaptation projects where sufficient information is available in specified area; and
- establishing and strengthening national and regional centres, and information networks for rapid response to extreme weather events (ENB, 2000).

For the initial phase, the program priorities could be given to the following activities.

- Adaptation activities addressing the impacts that are irreversible (such as extinction of the species and loss of human life) in nature should be

promoted. Critical adaptation activities that might be difficult to implement over time should be given priority (e.g. more development of the coastal area over time create more difficulties to implement adaptation activities).

- Adaptation activities that address the long-term decisions such as building dam, coastal protection wall etc.

## **Conclusion**

Adaptation is the less discussed and shaded area in UNFCCC process but recently intense discussions on the adaptation funding were observed in COP6 and related negotiations. It seems more likely that some form of the medium and long-term adaptation funding will follow in the near future. Financing medium and long-term adaptation measures is an important issue for the particularly vulnerable countries and Annex I donors under UNFCCC and bilateral agenda. The adaptation funding demand from the developing countries might be huge than any adaptation fund can supply. At the same time, many developing countries might like to enrol themselves into the vulnerable categories. Therefore, the fundamental problem is how to ascertain the 'particularly vulnerable' countries, how to prioritise the adaptation activities and what kinds of the criteria should follow for eligible to the adaptation assistance. This study has outlined current issues and controversies surrounding the adaptation, and discussed some criteria and priorities as an initial approach towards the adaptation financial co-operation under UNFCCC. Further research on various aspects of the adaptation is required in order to bridge the uncertainties that hinder adaptation decisions.

## **References**

- ENB, 2000. *Earth negotiation bulletins* 12, no. 163. Vienna. International Institute for Sustainable Development (IISD).
- Fankhauser, S., J. B. Smith and R. S. J. Tol. 1999. Weathering climate change: some simple rules to guide adaptation decisions. *Ecological Economics* 30:67-78.
- GEF. 1996. *Operational strategy*. Washington D.C. Global Environmental Facility.
- IPCC. 1994. *IPCC technical guidelines for assessing climate change impacts and adaptations*, Inter Governmental Panel on Climate Change.
- Maruyama, A. 2000. Private public synergy in financing mitigation projects. *Proceedings of the IGES International Workshop on CDM*. 26-27 January, Hayama, Japan. Institute for Global Environmental Strategies.
- Sharma, R. 1999. Clean development mechanism: sharing of proceeds for adaptation. *Technical workshop on the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol*, Bonn Bad-Godesberg, Germany 9-15 April. United National Framework Convention on Climate Change (UNFCCC).
- Smith J. B. 1997. Setting Priorities for Adapting to Climate Change. *Global Environmental Change* 7, no. 3:251-264.
- UNFCCC documents at <http://www.unfccc.org>.
- Werksman, J. 1993. *FIELD Working Papers on the Relationship between the Convention and GEF*, London. FIELD.
- Yamin, F. 1999. The Clean Development Mechanism and Adaptation. *Proceeding of technical workshop on the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol*. Bonn Bad-Godesberg, Germany 9-15 April. United National Framework Convention on Climate Change (UNFCCC).