9. REGION-WIDE ASSESSMENT

This chapter summarises the concerns and interests of the Asia-Pacific region on the climate regime beyond 2012 under six broad themes: (1) development; (2) equity; (3) market-based mechanisms; (4) technology development and transfer; (5) adaptation; and, (6) negotiation and research capacity.

9.1 Development

Climate change per se is marginal and a lower national priority than economic and social development policies in much of Asia. The overriding priority for Asia is development. Climate change per se is marginal and a lower national priority than economic and social development policies, including energy security, food security, poverty alleviation, and rural development (see, for example, Berk, et al., 2001; Najam, et al., 2003). While many Asian countries have been experiencing rapid economic growth recently, there still remain considerable gaps in economic prosperity and social well-being between countries in the region and other developed countries. Table 9.1, for example, shows the degree to which basic economic development and infrastructure services in the region fall behind those of developed countries. Such economic disparities spur eagerness for further economic growth and improvement of the quality of life in Asia.

Table 9.1 Economic development and infrastructure stocks in Asia

	Gross national income per capita (PPP in US \$) 2004	Installed capacity per 1,000 persons (kW) 2001	Electricity consumption per capita (kWh) 2001	Average telephone mainlines per 1,000 persons 2001	Road density (km/sq, km of land) 2000	Access to improved water resources (% of population) 2000
veloping Intries	3,575	272	1,054	95	0.15	78
East Asia	4,589	223	921	59	0.15	71
South Asia	2,397	99	426	31	0.94	76
veloped intries	24,218	2,044	8,876	501	0.58	99

Source: World Bank 2004.

Table 9.2 Priorities in developmental issues in the Asia-Pacific region

	Mean	Median
Energy security	2.9±1.22	3
Poverty alleviation	2.2±1.13	2
Industrialisation	1.8±1.08	1
Food security	1.7±1.09	1
International trade	1.6±0.92	1
Rural development	1.5±0.92	1
Deforestation/desertification	1.5±1.02	1
Biodiversity	1.4±0.82	1

Note: Priority was rated on a scale of 1 to 4 (1: very low, and 4: very high). Number of respondents: 67 [China (15), India (15), Indonesia (15), Republic of Korea (10), and Viet Nam (12)]. The order of priority of specific developmental issues varies, however. A survey through a questionnaire on prioritisation of eight developmental issues (energy security, food security, rural development, poverty alleviation, industrialisation, international trade, biodiversity, and desertification/deforestation) on a scale of 1 to 4 (1: very low, and 4: very high) showed that energy security received more attention than others (Table 9.2).¹ The current hike in oil prices, among other factors, may have influenced the outcome. Furthermore, and perhaps more fundamentally,

¹ While looking at the above results, two caveats should be noted. First, the sample size was limited, and the survey did not follow the formal procedure of sampling. To overcome these shortcomings, we pursued a well-balanced representation of participants from not only the environment-related ministries but also the economy and development-related ministries in each country. See Annexure 1 for the list of institutational affiliations of participants. Second, we realise that participants shared a similar background in terms of their awareness on economic and environmental issues, which in turn may produce a particular bias.

burgeoning energy demand in emerging Asian markets due to rapid economic growth fuelled serious concerns on the energy shortage in the region, especially in China, India, Republic of Korea and Viet Nam (Fig. 9.1).



Figure 9.1 Diversity of preferences for developmental issues in selected Asian countries in relation to discussions on future climate regime

National circumstances seem to have influenced the outcome of consultations in each country considerably. Participants from the Republic of Korea, Viet Nam, Indonesia, and China placed high priority on international trade, food security, desertification and deforestation, and rural development respectively in relation to discussions on the climate regime beyond 2012. For example, Viet Nam's interest in food security seems to be accurately reflected in the current Five-year Socio-Economic Development Plan (2001-2005). Such diversity of interests confirms the need for considering different national circumstances in designing the future climate regime.

It may be concluded that the Asia-Pacific region is still facing enormous challenges in economic development as compared with developed countries and that climate change per se is not a priority. Therefore, future climate change discussions should consider legitimate developmental concerns of the region more seriously than before.

9.2 Equity

Several participants pointed out the importance of equity issues in designing a future climate regime, as was already pointed by several others worldwide (see also Ashton and Wang 2003; Ott et al 2004). They argued that it would be unfair that developed countries, which had considerable responsibility but failed to reduce their GHG emissions so far, would require developing countries to take on commitments to address climate change when there are huge gaps between developed and most of the Asian developing countries in GHG emissions and income per capita (GHG emissions per capita of the

The wide diversity in developmental priorities of various countries shows the need for considering different national circumstances in designing the future climate regime.

Asia's GHG emissions are under-represented as compared with its large share of population in the world.

Republic of Korea, however, exceed those of Japan and EU 15) (Fig. 9.2). Furthermore, compared with their large share of population, GHG emissions from Asia are under-represented (Figs. 9.3 and 9.4).

Figure 9.2 Comparison of GHG emissions and income per capita in 2000



Figure 9.3 Asia's share of population (2000) and cumulative CO₂ emissions (1850-2000)



There are several dimensions in equity with regard to climate change discussions, but we examined equity based on five principles. While there are several dimensions in equity with regard to climate change discussions, we examined equity based on the following five principles:

- Egalitarian—All human beings have equal rights to "use" the atmosphere and emit GHG;
- (2) Sovereignty—Current emissions constitute a "status quo right".
- (3) Historical responsibility—Mitigation efforts should be allocated according to a country's share of historical responsibility for causing climate change;
- (4) Capability/capacity—Mitigation efforts should be allocated according to a country's ability to pay, as well as its mitigation opportunities; and,
- (5) Basic needs—Securing basic human rights is a minimal requirement and all individuals have equal rights for development.

A questionnaire survey on prioritisation of equity principles for future regime discussions, on a scale of 1 to 4 (1: very low, and 4: very high) showed that historical responsibility was recognised as the most important principle, followed by basic needs, capacity/capability, egalitarian, and sovereignty (Table 9.3). Such prioritisation is different, however, from the moral hierarchy of equity, where basic needs come first, and capability/capacity, responsibility, and sovereignty follow (den Elzen, et al., 2003). The disparity in results may be related to deep frustration among Asian developing countries regarding the lack of progress in accounting for historical responsibility, although Brazilian proposal on the same point was discussed long ago.

Survey on prioritisation of equity principles for future regime discussions showed that historical responsibility was recognised as the most important principle, followed by basic needs, capacity/ capability, egalitarian, and sovereignty.

Table 9.3 Asian priorities for equity principles in relation to discussions on future climate regime

	Mean	Median
Historical responsibility	2.9±1.08	3
Basic needs	2.8±1.15	3
Capacity/capabilities	2.2±1.06	2
Egalitarian	1.9±1.43	1
Sovereignty	1.4±0.82	1

Note: Priority was rated on a scale of 1 to 4 (1: very low, and 4: very high). Number of respondents: 67 [China (15), India (15), Indonesia (15), Republic of Korea (10), and Viet Nam (12)].

Responses to equity principles were diverse among countries of the region (Fig. 9.4). Viet Nam and India, for example, placed relatively high priority on the egalitarian principle, perhaps because it is important for them to claim that as individual nations they have rights to emit GHG as much as other nations. By the same token, the general preferences to the historical responsibility principle and the capacity/capability principle must be understood.





Figure 9.5 Diversity of responses to the proposal of differentiation of

Interestingly, and contrary to our expectations, around 70% of the participants agreed to the idea that developing countries would need to accept GHG control commitments in the future with a condition that some sort of differentiation among them would be necessary (Fig. 9.5). While there was a strong argument, especially in India, that it was premature for developing countries to take on any emissions reduction or control commitments, most of the participants who responded to the questionnaire recognised the need for mitigation action by developing countries. Insofar as the differentiation of countries is concerned, the

questionnaire did not prescribe criteria or specific forms of commitments; hence it is likely that participants believed that their countries would benefit from such differentiation.

From the perspective of equity, the Asia-Pacific region is under-represented in the current climate regime. On one hand, such equity concerns legitimise their rights to develop and, arguably, more rights to emit GHG. On the other hand, our consultations showed that most countries would be willing to take action under an equitable framework for the differentiation of GHG control commitments.

9.3 Market-based Mechanisms

Asia has been playing a leading role in the CDM as it hosts 16 out of 33 registered projects (as of 5 November 2005) and nearly 43% of 316 project activities under or after validation (Fig. 9.6). Geographical bias of CDM project activities was observed as only 3 Asian LDCs (Bangladesh, Bhutan and Cambodia) and only one Pacific island country (Fiji) have one CDM project activity each, while as many as 13 other LDCs and most small island developing states (SIDS) do not have any project to date.



Figure 9.6 Geographical distribution of CDM projects under or after the validation process

Source: UNFCCC (2005b) Note: Total number of the projects is 316 as of 14 October 2005.

Geographical bias of CDM project activities was observed within Asia as many projects are based in India and China. Only 3 Asian LDCs (Bangladesh, Bhutan and Cambodia) and only one Pacific island country (Fiji) have one CDM project activity each. Frustration regarding slow the development of the CDM was expressed consistently in all countries (Fig. 9.7). In particular, 60% of participants from India regarded the CDM implementation at the international level highly unsatisfactory. It is perhaps related to the fact that only seven out of 107 projects approved by the Indian DNA were registered by the CDM-EB to date. Table 9.4 lists the major concerns on the current CDM and some suggestions for its restructuring, which were mentioned during our consultations. A diversity of the degree of concern on domestic institutional capacity for implementing the CDM was evident (Fig. 9.8). These results suggest that obstacles to the full-fledged implementation of the CDM do exist, not only at international level, but also at domestic level in the host countries. The need for capacity-building was recognised, especially in countries where domestic institutional capacity is inadequate.

Obstacles to the fullfledged implementation of the CDM do exist, not only at international level but also at domestic level, in Asia.



Figure 9.7 Diversity of concerns on implementation of the CDM in selected Asian countries

Figure 9.8 Diversity of concerns on domestic institutional capacity for the CDM in selected Asian countries



As the CDM in its current form is not promoting sustainable development adequately in the developing countries, it is crucial to remove various barriers and strengthen the CDM in the climate regime beyond 2012.

The questionnaire survey showed that while around 92% of the participants agreed on the continuity of the CDM beyond 2012, 94% of them saw the necessity to reform of the CDM, either within the first commitment period, or after 2012. In the light of the concern that the CDM in its current form is not promoting sustainable development adequately in the developing countries, it is crucial to remove various barriers and strengthen the CDM in the climate regime beyond 2012.

	the CDM in the future climate regime				
Category	Concerns	Ways of restrucuring			
Institutional concerns	 Complexity and rigidity of project approval process. Slow approval process in host countries due to weak institutional capacity. Marginal contributions to sustainable development (e.g., very few energy efficiency or forestry projects). Lack of contribution in technology transfer to developing countries. Weak institutional capacity in host countries. Geographical bias in terms of host parties. Uncertainty in continuity of the CDM beyond 2012. 	 Streamlining of project approval process through institutional reform of the CDM including the Executive Board. Strengthening of institutional and human capacity, where it is inadequate. Preferential measures to promote CDM projects with local sustainable development benefits, including energy- efficiency and forestry projects. Adoption of sector-based approach to CDM and of policy-based CDM. Promoting purchasing arrangements for CERs beyond 2012. 			
Technical concerns	 Technical difficulties in methodology development. Complexity of baselines and additionality. 	 Standardisation of methodology development. Relaxation of conditions of baselines and additionality. 			
Financial concerns	 High transaction costs for project development. Uncertainty in price and volume of CERs. Difficulties in getting project finance, including underlying finance. Difficulty in securing willingness of private sector (both in investing and host countries). 	 Reduction in transaction costs. Additional support to financing of CDM projects, especially during early developmental stages (e.g., the upfront payment schemes of Japan). 			
Legal concerns	 Complexity and lack of transparency of regulations in host countries (e.g., differential rates of taxation on CERs in China). Legal status of CERs. Distribution of CERs from projects using ODA for underlying finance. 	• Streamlining of legal institutions.			

Table 9.4 CDM-related concerns in the Asia-Pacific and some suggestions for strengthening the CDM in the future climate regime

9.4 Technology Development and Transfer

Technology development, deployment, and dissemination were seen by most participants as a key factor in tackling climate change. However, they expressed that the current regime largely failed to promote the deployment and transfer of relevant technologies to Asian countries. While there is a wide range of GHG mitigation technologies, their relative importance varies across countries, reflecting economic size, developmental stage, and geographical location (Table 9.5).

High use of traditional fossil fuels, such as coal in Asia, has significant implications for GHG emissions. Particularly, China and India have coal-based energy structures, and will continue to rely on coal in their energy mix over the next decades. Faster commercialisation, deployment and local dissemination of technologies, including clean coal technologies, switching from coal to natural gas, and increasing the use of renewable and nuclear energy can drive down demand for coal, thereby contributing to lower CO₂ emissions from power generation (IEA 2004).

Participants expressed that the current regime largely failed to promote the deployment and transfer of relevant technologies to Asian countries.

	China	India	Indonesia	ROK	Viet Nam	Japan
Clean coal technologies	J J J	<i>」 」 」</i>	√ √	11	11	<i>√ √</i>
Energy efficiency improvement in supply and end-use technologies	J J J	555	J J	J J J	J J	11
Shift to natural gas	<i>√ √</i>	11	1	1	1	<i>」 」</i>
Renewable energy						
Wind	11	11	1	<i>√ √</i>	1	<i>√ √</i>
Solar	—	11	—	1	1	<i>\ \ \</i>
Geothermal	1	1	J J J	—	—	J J
Biomass	<i>√ √</i>	<i>\ \ \</i>	1	11	1	1
Hydro	1	11	11	—	1	1
Nuclear energy	<i>√ √</i>	11	—	<i>」 」 」</i>	<i>✓ ✓</i>	<i>」 」</i>
Advanced transportation technologies	1	1	—	<i>\ \ \</i>	—	<i>\ \ \</i>
Carbon capture & storage						
Geological	11	1	1	—	1	—
Forest sinks	J J J	11	J J J	1	J J J	1

Note: Key for rating: / / / (extremely important), / / (very important), / (important), and — (not important or not relevant).

Participants noted that many technologies, especially renewable energy technologies, were not yet commercially competitive and that the transfer of climate-friendly technologies was very limited (ICCEPT, 2002). The need for accelerating the pace of technology transfer was repeatedly emphasised here and elsewhere (for example, Murphy et al., 2005). Table 9.6 lists various technology-related concerns and some ways to resolve them in future regime discussions.

The need for accelerating the pace of technology transfer to Asian countries was repeatedly emphasised in our consultations.

Table 9.6 Technology-related concerns and suggested ways of improvement

Concerns	Ways of improvement
 High cost/high capital intensity. Lack of financing and investment. 	 Creation of a new financial scheme focussing on technology transfer and dissemination. Promotion of awareness and confidence among financial institutions of long-term benefits of investment for energy-efficiency improvement.
 Rigidity of intellectual property regime. 	 Shorten the duration of IPR protection from current 20 years. Streamline the current IPR regime by considering global public goods nature of climate-friendly technologies while simultaneously protecting the interests of the patent holders of such technologies along the lines of approaches adopted for HIV/AIDS drugs.
 Mismatch between needs and supply. Limited domestic capacity. Difficulty in local dissemination. 	 Promote technology needs assessment. Facilitate international programmes for capacity-building, including information sharing. Institutionalise a domestic market in a way that adopting clean technologies is rewarded.

The lack of policyrelevant scientific information and shortage of funding are seen as major bottlenecks to facilitate adaptation to climate change in Asian countries.

9.5 Adaptation

The high degree of vulnerability to impacts of climate change in Asia is well-known (Table 9.7). In reality, however, such concerns have not been effectively taken into account in the policy-making process. In India, for example, it was pointed out that none of ongoing water resources planning for the next fifty years has seriously considered the impacts of climate change. The Chinese government, too, has not paid full attention to the impacts of climate change when designing its national development plans, including reservoir construction plans.

Table 9.7 Vulnerability of key sectors to impacts of climate change in Asia

Re	egions	Food and fiber	Biodiversity	Water resources	Coastal ecosystems	Human health	Settlements
Te	mperate Asia	-2 / H	-1 / M	-2 / H	-2 / H	-2 / M	-2 / H
Tro	opical Asia						
	South Asia	-2 / H	-2 / M	-2 / H	-2 / H	-1 / M	-2 / H
	Southeast Asia	-2 / H	-2 / M	-2 / H	-2 / H	-1 / M	-2 / H

Scale for rating of vulnerability: highly vulnerable (-2), moderately vulnerable (-1), slightly or not vulnerable (0), slightly resilient (+1), and most resilient (+2). Confidence levels abbreviated to VH (very high), H (high), M (medium), L (low), and VL (very low). Source: IPCC 2001b.

Table 9.8 summarises the major challenges noted by participants with regard to the formulation and implementation of adaptation measures in Asia. The lack of policy-relevant scientific information at the domestic level and shortage of funding at the international level were seen as major bottlenecks. Since adaptation actions would have to be conceived and implemented within the context of national planning (the so-called

Table 9.8 Challenges to adaptation in the Asia-Pacific region and suggested ways of improvement

	Challenges	Ways of Improvement
Domestic challenges	Science-related challenges • Scientific uncertainty on the impacts of climate	• Capacity development of scientists and experts in vulnerability assessment and adaptation planning.
	 change. Limited research on local vulnerability and assessments. 	• Provision of information and data, with international assistance, relevant to the above.
	Policy-related challenges Limited awareness among key political actors. 	 Information dissemination and public awareness promotion on needs of long-term planning and investment.
	Resource-related challenges Shortage of relevant technologies. 	• Strengthening of international funding mechanisms for adaptation, and enhancing their flexibility.
	Shortage of finance.	• Provision of additional "adaptation-focused" ODA.
International challenges	Shortage of funds for adaptation • Contributions to the Special Climate Change Fund	 Promotion of understanding and agreements on prioritisation in international financing.
	(SCCF) and the Least-Developed Countries Fund (LDC Fund) are far from adequate and below their commitments.	 Integration of available "adaptation" funds into conventional "development" funds.
	 Two percent of the CDM proceeds for the Adaptation Fund are seen as inadequate. 	• Further focus on development and transfer of adaptation technologies.
	Immaturity of the CDM market made the Adaptation Fund meaningless so far.	• Elaboration of CDM projects which might contribute to adaptation, and new CDM scheme that can incorporate combination of various funds, such as private investment, ODA, and other benevolent funds.
	 Poor operation of international mechanisms Complexity and rigidity of conditions for GEF funding especially with regard to "incremental costs" and "global benefits". 	Enhancing the flexibility for accessing GEF funds allocated for adaptation.

adaptation-development continuum), and ODA often covered adaptation-relevant areas, such as coastal defence, water resources, and health care, "additional" ODA was seen by many participants as a good starting point for addressing adaptation in the region.

9.6 Negotiation and Research Capacity

For Asian countries to engage confidently in international climate negotiations, the capability of negotiators to influence decisions by emphasising their country's interests is crucial. However, there are many significant concerns on the negotiation capability of countries in the Asia-Pacific region.

First, the number of delegates from most Asian countries to the UNFCCC process is small. Unlike developed countries, most countries cannot afford to send a large number of delegates. Although participation to the UNFCCC process was financially supported to some extent, it was considered inadequate. For example, the number of supported delegates from Pacific island countries was recently reduced from two to one due to financial constraints at the UNFCCC.

Second, policy-relevant research on climate change is limited in most countries. For example, an analysis of authorship of nearly 130 publications in English on the future climate regime showed that 80% of them were from the USA and Europe, and very few were from Asia (Kameyama, 2004b). Another example is the limited participation of Asia-Pacific experts in the IPCC process (Table 9.9). While there were as many as 1760 contributors from the USA and Europe, only 238 were from Asia. Furthermore, in all IPCC reports, very few examples and case studies were reported from Asia.

There were only 238 contributors from the entire Asia-Pacific region to the IPCC Third Assessment Report against 1760 contributors from the USA and Europe.

Table 9.9 Contributors* to the IPCC Third Assessment Report

	Scientific Basis	Mitigation	Impacts, Adaptation, & Vulnerability	Total
China	22	13	25	60
India	7	20	9	36
Indonesia	0	1	2	3
Japan	38	48	22	108
Republic of Korea	1	2	0	3
Viet Nam	1	1	0	2
Other Asian countries	4	6	16	26
Total of Asia	73	91	74	238
EU	543	196	166	905
USA	558	177	120	855
Total of USA & EU	1,101	373	286	1,760

*Contributors include authors and reviewers.

The involvement of Asian NGOs in international climate negotiations is very limited. Only 61 out of 514 NGOs with observer status at the Conference of the Parties were from Asia.

Third, the involvement of Asian NGOs in international climate negotiations is very limited. Among the 514 NGOs having observer status at the Conference of the Parties (as of August 2005), there were only 61 Asian NGOs (11.8%). Among those, 32 represented one country, Japan (52%), with 13 from India (21%), 6 from China (9.8%), 3 each from the Republic of Korea, the Philippines and Malaysia, and only one from Pakistan, Thailand, Bangladesh and Indonesia.² This shows that most Asian countries do not have the adequate capacity to effectively represent their views in international climate negotiations.

The questionnaire survey confirmed that even large countries, such as China and India, were highly concerned on the capability of their negotiators to influence decisions on the future climate regime through emphasising national interests (Table 9.10).

Table 9.10 Degree of concern on the capability of national negotiators					
	Mean	Median			
India	3.6±1.36	4			
China	3.5±1.13	4			
Viet Nam	3.5±1.09	4			
Republic of Korea	3.3±1.16	3			
Indonesia	3.2±1.34	3			

Note: Concern was rated on a scale of 1 to 5 (1: least concerned, and 5: extremely concerned). Number of respondents: 67 [China (15), India (11), Indonesia (16), Republic of Korea (10), Viet Nam (12)].

Such negotiation and research capacity-related concerns are likely to result in feelings of uncertainty about national interests and a general scepticism about new policy initiatives at the international level (Gupta 1998). The strengthening of capacity in terms of negotiation personnel, policy-relevant research, and funding is crucial, therefore, to reflect the concerns and real interests of the Asia-Pacific region in the design of the future climate regime.

It may be concluded that the current regime largely failed to effectively address concerns of Asia so far. On the other hand, most countries in the region have not established the political foundations to tackle climate change nationally, regionally and globally.

9.7 Epilogue

Our first round of consultations with diverse stakeholders across the region revealed specific concerns and interests of the Asian countries. On one hand, it may be concluded that the current regime largely failed to effectively address their concerns so far. On the other hand, most countries seem to have not established the political foundations to tackle climate change nationally, regionally and globally. Participants proposed the following ideas, inter alia, for strengthening the future climate regime from an Asian perspective:

² UNFCCC (2005a)

- Developmental concerns, energy security in particular, should be addressed as a priority issue in designing the future regime. Due consideration of equity issues would be crucial to engage Asian countries in the future regime.
- The future climate regime should be flexible enough to accommodate diverse national circumstances. One suggested approach to ensure such flexibility is the differentiation of developing countries in GHG mitigation and adaptation.
- Priority should be given to CDM projects with local sustainable development benefits.
- As technology plays a critical role, future regime discussions must focus on removing current barriers to technology transfer at both the international and the host-country levels in Asia.
- The future climate regime should focus on various options for mainstreaming adaptation in Asian development.
- As the issue of financing is one of the biggest barriers to address climate change in most Asian countries, future climate regime discussions should identify ways to devise more flexible inter-governmental financing mechanisms (especially for adaptation activities), and to direct more private financial flows towards climatefriendly development.
- Options for strengthening capacity of Asian negotiators and NGOs to contribute to the design of future climate regime must be pursued more consistently than before.

We are confident that building the future climate regime based on the above ideas could lead to the development of a more sustainable Asia without undue environmental burden.