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Implementation of Article 4, paragraphs 8 and 9, of the Convention

Progress on the implementation of decision 1/CP.10

Adverse effects of climate change

Report on the Asian regional workshop on adaptation

Note by the secretariat*

Summary

This document provides a summary of the Asian regional workshop on adaptation as mandated by decision 1/CP.10, which was held in Beijing, China, from 11 to 13 April 2007. Discussions focused on integrated impact and vulnerability assessments, adaptation planning and implementation in a variety of sectors of importance to the region, and regional and international collaboration. The document also includes possible follow-up actions relating to specific regional adaptation needs and concerns to address the main outcomes identified at the workshop, for consideration by the Subsidiary Body for Implementation.

* This document was submitted after the official deadline due to the timing of the workshop.

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I. Introduction

A. Mandate

1. The Conference of the Parties (COP), by its decision 1/CP.10, paragraph 8, requested the secretariat to organize three regional workshops reflecting regional priorities, and one expert meeting for small island developing States (SIDS), in order to facilitate information exchange and integrated assessments to assist in identifying specific adaptation needs and concerns. It further requested the secretariat to prepare reports on the outcome of these workshops in order for the Subsidiary Body for Implementation (SBI) to consider what further actions may be required by the COP at its thirteenth session.

B. Scope of the note

2. This note provides information on the Asian regional workshop on adaptation, organized by the secretariat under the guidance of the Chair of the SBI in response to the mandate referred to in paragraph 1 above. It includes an overview of the proceedings, and presents possible follow-up actions relating to specific regional adaptation needs and concerns to address the main outcomes identified at the workshop.

II. Workshop proceedings

3. The UNFCCC secretariat, in collaboration with the Ministry of Agriculture of China and the Institute for Environment and Sustainable Development in Agriculture, organized the Asian regional workshop on adaptation in Beijing, China, from 11 to 13 April 2007.¹ Financial support was generously provided by the Governments of Canada and Japan. The workshop was chaired by Mr. Bagher Asadi, Chair of the SBI.

4. Participants at the workshop included representatives from the countries of the region and from other interested Parties that provide support to adaptation-related activities in Asia, as well as representatives of relevant international organizations, intergovernmental organizations (IGOs) and non-governmental organizations (NGOs) that are active in the region. The workshop aimed to provide a forum to exchange experiences on adaptation in the Asian region, and to identify gaps, needs and concerns of countries in this regard.

5. An introductory session provided background information on the mandates, set the stage for the objectives of the workshop and included a presentation and discussion of a background paper produced by the secretariat for this event on impacts, vulnerability and adaptation to climate change in Asia. The rest of the workshop was structured around the following four sessions:

- (a) Integrated impact and vulnerability assessments: this session comprised two parts, one on systematic observation, data and monitoring, and the second on impact, vulnerability and adaptation assessments;
- (b) Adaptation planning and implementation: this session covered five areas of vulnerability of importance to the Asia region – agriculture and food security, water resources, coastal zones, health and mountainous regions. These were followed by a round table on multilateral support for adaptation in the context of sustainable development, which was held in two parts: the first included contributions from representatives of the

¹ The agenda, background paper and expert presentations can be found on the UNFCCC website at <http://unfccc.int/adaptation/adverse_effects_and_response_measures_art_48/items/3932.php>.

implementing agencies of the Global Environment Facility (GEF), and the second included contributions from representatives of other development agencies;

- (c) Regional collaboration: this session included two round tables, one on South–South collaboration and the second on North–South collaboration. Participants in the round tables included representatives of relevant international agencies as well as of Parties to the Convention;
- (d) Outcomes and ways forward: this session was held through breakout groups which discussed specific gaps, needs and concerns in Asia and possible ways to address them. The breakout groups reported their outcomes at the workshop’s final plenary session.

III. Workshop summary

A. Introduction

6. The background paper which was presented at the introductory session of the workshop covered areas such as the Asian context for adaptation including current variability and future climate change; projected future impacts and vulnerabilities in priority sectors and areas; national capacities for undertaking assessments; and issues relating to adaptation planning, implementation and existing and potential collaboration.

7. The presentation and ensuing discussions highlighted that social, environmental and economic capacity to address environmental and climatic problems vary considerably across Asia. However, there are common problems that many Asian countries are facing, including those relating to water, ecosystems and biodiversity, land degradation, and agriculture and food security. Future climate change is expected to lead to additional stresses on agriculture and food security; water resources; ecosystems and biodiversity; coastal zones; and human health.

8. The discussions also highlighted the need for enhancing technical capacity to assess, plan and integrate adaptation needs into sectoral development plans, to support mainstreaming of adaptation into sectoral policy, particularly water, agriculture, coastal zones and managing natural ecosystems, and to enhance the effectiveness of and access to funds for adaptation to climate change.

B. Integrated impact and vulnerability assessments

1. Systematic observation, data and monitoring

9. The representative of the World Meteorological Organization (WMO) gave details of the organization’s contributions in support of adaptation. WMO provides a number of services relating to data and observations, including training and capacity-building, data management, data rescue, climate monitoring and monitoring atmospheric composition. Associated regional climate centres, for example the Beijing Climate Centre under the China meteorological administration, provide support for climate monitoring and prediction services, understanding local and regional impacts, and early warning for mitigating impacts of extreme events.

10. The representative from the secretariat of the Global Climate Observing System (GCOS) explained the organization’s role in meeting the data requirements for climate information and for modelling efforts, in particular as they relate to the pursuit of sustainable development. The importance of improving networks and rescue of historical data was emphasized in this context, especially in developing countries and on global, regional and national scales. Asian GCOS regional workshops were held in Singapore in 2002 (for East and South-East Asia), Almaty in 2004 (for Central Asia) and New Delhi in 2004 (for South and South-West Asia). Each of them resulted in regional action plans

addressing observation improvements, information availability, capacity-building for climate applications, and regional coordination.

11. A representative from China presented a regional Asian perspective. He identified a number of problems specific to developing countries in Asia, including the insufficiency of observations (due to sparseness of stations, maintenance problems and lack of observations of some environmental variables), low representation of observations and capacity limitations. In response to these gaps, he identified the need for the construction of additional observational systems, improvement of observational/data sets, strengthening the capacity for training, data management and storage, and enhancing inter-agency coordination.

12. China is currently upgrading the network under the framework of the China–GCOS programme. It undertakes operational monitoring of atmospheric composition, energy balance, water and carbon cycles, ecosystems, land use, ice and snow. China regularly submits real-time observation data of China–GCOS stations and historical data records from national stations to the World Data Center for Meteorology. The country has an operational system of short-term climatic monitoring, prediction and assessment established in the Beijing Climate Centre, and has some regional cooperative climate programmes with other Asian developing countries such as the Islamic Republic of Iran, Nepal, Sri Lanka and Uzbekistan.

13. There is significant data scarcity in Asia, especially in mountainous and coastal ecosystems including islands of India, Indonesia and the Philippines. Participants noted that coordination between sectoral providers of data and information needs improvement at national, regional and global levels in order to maximize access and synergy of available data. Efforts are underway to enhance the harmonization and consistency of data. In this context, under the Global Earth Observation System of Systems project, coordination and interoperability of various data sets are being enhanced. Participants also noted the usefulness of establishing national projects that involve various ministries as a way to enhance coordination at national level. At the regional level, regional climate centres could enhance coordination and sharing of observational data across the region.

2. Impact, vulnerability and adaptation assessments

14. A representative of the United Nations Development Programme (UNDP) covered good practices, gaps and responses to these gaps in the context of assessments of climate change impacts, vulnerability and adaptation. She provided examples from several Asian countries on the use of simple methods of assessments that need not use complex modelling tools and extensive data, including examples from the process of preparation of national adaptation programmes of action (NAPAs) and studies under the project on Assessments of Impacts and Adaptations to Climate Change as well as methods in use for the preparation of national communications. She highlighted the importance of stakeholder engagement in the assessment process and of the policy relevance of the outcomes of the assessment process. In this context, existing gaps include the lack of means to make a best choice among available tools for a country's specific circumstances; constraints of data availability and technical expertise, which hinder rigorous validation; testing and application of imported models and tools; lack of integration across sectors, limiting the policy relevance of assessments; and lack of transparency in the treatment of risk and uncertainty within the methods, tools and results of the assessments. She advocated a compilation and dissemination of good practices and lessons learned, targeted training on selected methods on tools and providing tailored support to countries with special needs.

15. The participant from Uzbekistan presented her country's assessment process in the context of regional considerations among Central Asian countries. Uzbekistan assesses its vulnerability through an integrated approach that combines the assessments of the interrelated sectors of water resources and agriculture, given that 92 per cent of water use in the country is taken up by agriculture. The use of

regional climate models in Central Asian countries should be encouraged. There is a need for enhanced cooperation between Central Asian countries that have transboundary water courses; the WEAP (Water Evaluation and Planning System) tool could be used for analysing adaptation in the water and agriculture sectors at the regional level for the main transboundary river basins. This can also help in assessing regional adaptation measures. There are a number of gaps, including lack of socio-economic data and development scenarios, quantification of potential damages and integration of adaptation concerns into activities undertaken for other objectives. Training in the region is needed for the use of specific methods and tools, satellite information and geographic information systems (GIS). Financial support, through small grants, could enhance the implementation of field experiments, sectoral investigations and the use of different models to support the assessment process.

16. Participants reiterated the importance of engaging different sectoral stakeholders in the assessment process through appropriate national coordination.

C. Adaptation planning and implementation

1. Agriculture and food security

17. A number of country experiences were presented in relation to adaptation planning and implementation in the area of agriculture and food security. In Viet Nam, identified adaptation measures include an integrated package that comprises restructuring the agriculture production plan and cropping patterns, using irrigation water more efficiently, developing new crop varieties that can adjust to floods and drought, and developing new farming systems and techniques that are consistent with climate change. The policy framework includes identifying cost-effective adaptation measures for climate change and related extreme events; identifying interactive mechanisms between key socio-economic sectors and subsectors and between public and private sectors on climate change impacts and adaptation; developing special information material for policy makers; identifying priority measures for inclusion in the sustainable development strategy; and identifying barriers and the necessary action for integrating adaptation into medium- and long-term national development plans.

18. Several bilaterally funded projects are providing capacity-building for adaptation planning and implementation. A number of gaps was identified, including weak capacity for quantitative and qualitative vulnerability and adaptation assessment that incorporates the socio-economic context; lack of a comprehensive national adaptation implementation plan; limited staff capacity for planning, monitoring and evaluation; poor data on adaptation options and lack of mechanisms for information sharing and management across sectors; and limited awareness of adaptation among stakeholders and the population. In addition, for implementation of action to be effective, funding limitations for adaptation need to be addressed. There is a need for flexibility of access; mainstreaming climate change issues into development strategies in order to maximize national co-financing; developing and transferring adaptation technologies; and setting up a comprehensive national strategy for implementation of adaptation.

19. The case of China includes similar responses, for example, adjusting the cropping calendar and rotation, improving irrigation and water saving technologies, selecting planted crops based on changed climate and prices, and adopting heat resistant crops and water efficient cultivars. A stakeholder driven approach was advised, including developing the existing tool-kit; developing a checklist or scoring tool for stakeholders to assess their adaptive capacity and the quality of the adaptation strategy development process, following the twin track of building adaptive capacity and delivering adaptation action; and assisting local authorities in addressing adaptation as part of environmental assessments of local projects and plans. Cross-sectoral partnerships are paramount for successful implementation; mainstreaming is also an essential element for success. A standardized way for monitoring impacts and adaptation needs to be developed.

20. In the case of Mongolia, adaptation planning and implementation was covered in the context of the livestock sector, which engages half of the population. Proposed adaptation strategies in Mongolia include conserving natural resources, strengthening animal biocapacity, enhancing capacities and livelihood opportunities for rural communities and improving understanding of climate extremes and forecasting. Barriers include institutional barriers, financial difficulties, lack of necessary technology, and lack of adequate policies and strategies at national and local levels.

21. Ensuing discussions highlighted several issues relating to adaptation in agriculture, as well as to adaptation generally. Participants noted that it is important to plan future adaptation based on an analysis of the current situation, taking into consideration coping capacities and incorporating possible future risks. There is a need for building capacity, including through specific targeted training, and technical and financial support for adaptation including from the United Nations system and bilateral and multilateral assistance. The possible catalytic role of the Convention as a process that could support obtaining such support and could help countries to overcome technical and legislative barriers should be further explored. In addition, participants emphasized the need for institutional capacity-building, involving appropriate stakeholders in the planning and implementation of adaptation activities, as well as enhanced integration of climate change in the work of disaster risk assessment and management.

2. Water resources

22. Participants highlighted the importance of adaptation in the water sector. For many Asian countries ensuring adequacy of the water supply is one of the major challenges. Implementation of adaptation in this sector is a challenge and financial resources are insufficient.

23. The water sector is highly vulnerable, particularly because it affects and is affected by other sectors, such as agriculture, health and hydropower. In this context, the representative from the Institute for Global Environmental Strategies (IGES) stressed that inadequate coping strategies in water and sanitation results in increased hunger and child mortality, and reduced access to water will lead to increased migration.

24. The presentations from arid and semi-arid areas of Asia demonstrated that the water scarcity already being experienced in these countries is a major problem, which has the potential to be exacerbated with climate change. In the case of Azerbaijan, already scarce water resources will further decrease by 15–20 per cent owing to climate change in twenty years' time. The representative from Tajikistan observed links between melting glaciers in the mountain regions of Central Asia, caused by warming over recent decades, and increasing vulnerability of water resources in the subregion and associated disasters, including droughts, and impacts on agriculture and hydropower. Main adaptation options identified for the national water sector include introducing water saving measures such as the construction of reservoirs; increasing efficiency of existing water management systems and irrigation systems; developing new hydropower engineering technologies; and improving early warning systems and observations.

25. The representative of IGES explored progress and challenges regarding mainstreaming adaptation into the management of water resources in Asia. He highlighted that entry points for the integration of climate change adaptation into sectoral development can include planning for implementing the United Nations Millennium Development Goals (MDGs), the national communications process and the NAPA process. Approaches for such integration can incorporate top-down (e.g. expanded irrigation systems) and bottom-up (e.g. community-based water harvesting or allocation systems) policy and technical solutions. A mainstreamed adaptation strategy in the water sector includes measures that address the underlying factors of vulnerability to climate change, particularly at the local scale. He highlighted examples from the NAPA process in some least developed countries (LDCs) such as Bangladesh as a catalyst for mainstreaming adaptation concerns into planning stages.

26. In several of the more developed countries of the region, such as India, a national policy and a five-year plan exist that include many measures, such as decentralization of water supply, water audits and efficient water use. These may help in adaptation to climate change but no explicit reference to climate change impacts is made or to the possibility of incorporating additional climate related risks. The participant from the Philippines noted that climate change has just started to be taken into account in the country and its sectoral planning and management.

27. Other participants noted that development agencies have just recently begun to support mainstreaming efforts in the water sector. For example, the Organisation for Economic Co-operation and Development (OECD) declaration on integrating climate change adaptation into development cooperation was adopted by development and environment ministers of OECD member countries on 4 April 2006.

28. A number of important barriers to mainstreaming were identified by participants. These included lack of awareness among water policymakers about climate change impacts and their economic implications; the mismatch between the temporal and spatial scales of climate change projections and the information needs of water planners; the lack of capacity to integrate climate change information into water sector planning processes; limited leverage of environment ministries on water management agencies and policies; and high reliance on structural and technological options which are inflexible and insensitive to local contexts, and technologically and financially demanding.

29. Participants noted that risk management, insurance and financial institutions are mechanisms that can facilitate mainstreaming of adaptation and mobilize resources for adaptation. Enhancing regional cooperation in dealing with trans-boundary issues such as glaciers and rivers can also mobilize resources.

30. A number of actions were discussed that can help to facilitate adaptation and mainstreaming into the water sector. These include actions at the local level (e.g. strengthening coping strategies and feedback to national policies), the national level (inter-agency coordination in the water sector, legal provisions for mainstreaming) and the regional level (e.g. incorporating climate change risks into projects of regional development agencies). At the international level it was noted that the UNFCCC and international organizations can play a catalytic role in exchange of experiences, and in facilitating the development of region-wide and sector-wide approaches.

3. Coastal zones

31. Participants shared country experiences in the planning of adaptation in coastal zones. In the case of Sri Lanka, assessments carried out to formulate adaptation responses to climate change showed significant impacts of sea level rise on agriculture and water resources. These impacts include salt water intrusion into cultivated land; reduction of per capita land availability; encroachment of the coastal community into agricultural lands and salinization of fresh water in rivers. Adaptation options being explored in agriculture include identifying alternative land uses, switching to traditional systems and intensifying the breeding programme for salt-tolerant rice varieties. Options for the water sector include salt-water barriers and long-term planning for building upstream freshwater intakes.

32. The presentation from the Philippines described the country's national Community Based Flood Early Warning System (CBFEWS), which aims at helping local communities to prevent losses from increasing floods. Policy measures employed include coordination with the local government, organizing training, sharing information, monitoring rain and water levels, mapping and providing legislative support to local communities. The lessons learned from the CBFEWS that can be replicated for many community-based adaptation activities include the importance of involving grassroots organizations, transferring decision-making power to local communities; and combining advanced technologies with indigenous knowledge. Needs were identified in relation to scientific, technological and policy aspects,

including improved climate and water modelling of climate change impacts on the water cycle, environmental impact assessments and flood management; better communication between the scientific community and various stakeholders, and enhanced regional collaboration using a common flood management protocol.

33. Participants discussed the feasibility of community relocation as an adaptation measure for sea level rise and associated floods. The need for a socio-economic approach to relocation was highlighted by a participant from Indonesia; it should be ensured that people do not return to their original, unsafe locations. Participants also emphasized the importance of sustainability and continuity of adaptation work initiated by funded projects. Participants shared their experiences of implementing measures that can help to ensure sustainability. These measures can include signing a memorandum of understanding between national and local governments and other partners, and passing a local council resolution for the maintenance of a system after a project ends.

4. Health

34. The representative from the World Health Organization (WHO) presented the work of the organization in relation to adaptation to climate change. He recalled the findings of the Intergovernmental Panel on Climate Change, noting that climate change has led to changes in the frequency, distribution and severity of a number of health impacts which are expected to be diverse, long-lasting, uncertain, potentially severe and unevenly distributed. He outlined a WHO/UNDP/GEF pilot project on adaptation policies and programmes for developing countries to design and implement measures to protect health. In the Asia region this project covers Bhutan, China, Jordan and Uzbekistan using a 'health impact assessment' approach which involves screening, scoping, profiling, assessing and managing health impact risks. The process of identifying adaptation in the health sector would start with identifying the main issues of importance for the health and environment sectors, and continue with an analysis of the current state in dealing with these issues. Analysis of barriers and options in order to make progress on these issues would take place, accompanied by continual monitoring and evaluation.

35. Participants noted several examples of observed changes in the distribution of vector-borne diseases and uncertainties in attribution and predictions of further changes. It was stressed that although a high level of uncertainty remains, this should not be an excuse for inaction. Participants also noted a relative lack of examples of adaptation in the health sector and expressed hope that the health impact assessment initiative would serve as a model for replication in the region in the future.

5. Mountainous regions

36. Participants presented and discussed a number of examples of climate change impacts and experiences on adaptation in mountainous regions. Climate change is known to contribute to the shrinkage and retreat of glaciers and the increase in the size and number of glacial lakes. Climate change impacts include threats to water security, flooding in lower basins, and damage to settlements, livestock populations, infrastructure, agricultural land, forests and tourists sites, as well as degradation of mountain ecosystems and loss of biodiversity, all of which have been already observed and projected to be exacerbated with climate change.

37. The representative from the Asian Institute of Technology outlined a study by the United Nations Environment Programme (UNEP) and the International Centre for Integrated Mountain Development, which aims to establish an inventory of glacial lakes, a monitoring and early warning system and adaptation measures for the Himalayan region. Future actions will include completing the inventory for certain regions and assisting with the establishment of early warning systems; developing evacuation plans; siphoning; and establishing sluice gate structure canals.

38. In the case of Nepal, adaptation measures for different sectors include resource conservation in the agricultural sector; efficient management of the water supply infrastructure and the establishment of a hydrological forecasting system in the water resources sector; and extensive plantations in the biodiversity sector. Local communities respond to weather events without understanding their broader causes and future risks, but for enhancing adaptive capacities traditional coping practices should be fully explored and adjusted for additional climate change risks. The NAPA process is useful for identifying adaptation strategies and the immediate needs of countries, and valuable for its involvement of stakeholders and its role in raising awareness on climate change among policymakers. Follow-up initiatives that are important for promoting adaptation in the country include developing climate change policy and the formation of a climate change network with representation from government, IGOs, NGOs, academia and private sector.

39. Participants also discussed the issue of data availability for the development of adaptation in the mountainous regions. Much of the data is not systemized and recorded; participants suggested that all available data be provided through the Internet.

6. Multilateral support for adaptation in the context of sustainable development

40. Several GEF implementing agencies as well as other development agencies discussed their activities on support for adaptation in the region.

41. The representative from the UNDP country office in China noted that capacities to cope with natural disasters are generally low in the region. He outlined lessons that can be learned from China's climate change measures, and noted that in partnership with UNEP and other agencies, UNDP will continue to work on building adaptive capacity in Asia. The representative from the UNEP Risoe Centre explained that UNEP has carried out 'climate checks' to analyse how mainstreaming adaptation can link with climate change and development. She underlined the importance of region- and context-specific design and implementation of adaptation options, and of integrated analyses for understanding the relationship between poverty, development and climate change. It was also noted that adaptation initiatives are in their infancy and that the lack of available finance may result in financing those projects most firmly anchored in sustainable development. A fund has been initiated for United Nations projects to meet the MDGs at the national level; this fund will include climate change as a focal area. Participants were also informed that eight Asian countries have been chosen for the first round of projects under this fund.

42. The representative from the World Bank highlighted the gap between the funds required for adaptation, as published in the Stern Review,² and the funds available for adaptation initiatives, including through existing funds and the upcoming Adaptation Fund. The World Bank perceives adaptation as a development issue, as opposed to a climate change specific issue, and has introduced a climate risk approach. Approximately a quarter of the World Bank's total lending could be at risk from climate related developments.

43. Among other development agencies, the representative of the Asian Development Bank (ADB) reported the ADB's interest in adaptation, including through regional and subregional cooperation; in providing national adaptation support; and in mainstreaming adaptation into the ADB's own strategies and plans. He outlined relevant activities, such as taking account of projected climatic changes when developing infrastructure, and preparing a technical guide to help countries integrate adaptation into their planning processes. The representative from the International Fund for Agricultural Development emphasized the importance of cooperation among different agencies in addressing climate change risks.

² <www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm>.

He stressed the importance of adaptation for meeting the MDGs, noting that the 2015 poverty reduction goal remains a challenge for Asia, and emphasized the importance of bottom-up approaches and thinking globally and regionally while acting at a local level.

44. The representative from the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), reported their support for national communications and NAPAs. He noted the increased demand from members to strengthen activities on adaptation. UNESCAP, as an intergovernmental, multiministerial and multidisciplinary organization, seeks to promote more environmentally sound patterns of growth and development. UNESCAP undertakes a number of actions such as providing a policy dialogue forum to expand information exchange on adaptation policies. The representative from the secretariat of the United Nations International Strategy for Disaster Reduction underlined a strong relationship between disaster reduction and climate change and between disaster reduction, climate change and development. He mentioned that a number of 'win-win' measures, such as early warning systems, can be taken to both increase adaptation and prevent disasters.

45. In the ensuing discussion participants noted the importance of effective work within the framework of the UNEP–UNDP partnership for mainstreaming climate change that was established during the twelfth session of the COP. The issues of discussion also included economic diversification as an adaptation measure, and the need for increasing assistance and financial support. Participants also highlighted the importance of synergies with other multilateral environmental agreements (MEAs) in future adaptation activities and projects.

D. Regional collaboration

1. South–South collaboration

46. The representative of the Center for International Forestry Research summarized the institution's efforts in support of adaptation in the region, which focus on mainstreaming adaptation into development at multiple levels and sectors. He underscored the importance of holding workshops to promote mainstreaming and the exchange of experiences between sectors. Cooperation is also required to enhance the use of climate scenarios and to increase data availability. Existing tools do not fully integrate all the relevant variables, and fully dynamic regional models are necessary. Relevant outcomes from models are essential for convincing policymakers of the need for adaptation action. A regional group working with the PRECIS (Providing Regional Climates for Impacts Studies) regional climate modelling system, established in August 2006 to promote methodological work on vulnerability assessment, was mentioned as a good example of regional collaboration.

47. A representative from UNDP emphasized common concerns of Asian countries, which include poverty and vulnerability to changes in climate, hence the desirability for South–South collaboration among Asian developing countries. Most countries in the region are currently experiencing similar climate hazards, and regional cooperation could help address these threats. The lack of appropriate models to monitor and evaluate climate change impacts, and of methods to quantify costs and benefits for policymakers, was noted.

48. The participant from Georgia highlighted the vulnerability of the country's water resources to climate change and the associated impacts. She emphasized that the countries of the Caucasus region will face similar impacts, highlighting the importance of disseminating good practices among them. Recently there have been increases in the occurrence of reduced rainfall, flooding, deforestation and desertification. Discussions should focus on replicable solutions for adaptation.

49. The participant from Thailand advocated mainstreaming by subregion. There is a need to create adaptation frameworks by subregion in Asia, given the range of circumstances. Subregional models are necessary to prevent policy recommendations from being too general. Adaptation should begin with

preventive measures while increasing awareness among policymakers and the development sector. Further work is necessary on the quantification of costs and benefits, on education and on the improvement of institutional capacity. The UNFCCC secretariat could help in this regard by partnering with regional institutions.

50. The discussions endorsed the subregional approach, and participants called for identifying actual areas where capacity is needed at that level. There is a need for continuity of exchange of information. Participants noted the work of the SouthSouthNorth Network on issues relating to the Clean Development Mechanism as a useful model for exchanging best practices and experiences on adaptation.

51. Participants also highlighted the importance of disseminating lessons learned through regional workshops. There is a need to enhance the involvement of the development community, representatives of different sectors and all relevant ministers and agencies (other than environment ministries) in climate change activities. This will increase awareness of climate change and move the issue of adaptation forward.

52. The development of regional adaptation projects was identified as an effective means to identify common problems and joint solutions. There is the need for a strategy to retain regional capacity once it has been obtained through training and project implementation. Participants also confirmed the importance of enhancing cooperation within subregions of the Asia region given the differences in their level of development, national circumstances and geographical diversity. One of the relevant good practices includes the GCOS workshop programme under which Asia was divided into three regions. The potential usefulness of conducting 'sister' projects between neighbouring countries with similar conditions was explored in this regard.

2. North-South collaboration

53. The representative from Canada referred to projects supported in Vietnam, Bangladesh and India relevant to adaptation to climate change. Support comes from both within and outside the UNFCCC process. Two key questions are how to most effectively facilitate and enable adaptation in all countries and how to support adaptation in developing countries. The representative highlighted the importance of including climate change issues in development plans and strategies and stressed the usefulness of the NAPA process and the UNDP adaptation policy framework as models for national planning and mainstreaming. The Convention should serve as a catalyst to stimulate adaptation outside the process, including through the Nairobi work programme on impacts, vulnerability and adaptation to climate change.

54. The participant from Japan highlighted the security component of adaptation, including in the context of environmental refugees. He mentioned the Japan International Cooperation Agency programme of climate change training for young professionals from developing countries, and invited participants to provide nominations. He also noted that the World Bank is developing screening tools for adaptation and that Japan would like to support further development of this project and its implementation at a local level.

55. A representative of the United Kingdom of Great Britain and Northern Ireland outlined the country's support for impact assessments in the region. Use of the PRECIS model forms an important part of such collaboration, as does support for stakeholder involvement and building upon local practices. Training visits of researchers to the United Kingdom are also supported to provide exposure to the experience of the United Kingdom in modelling and to provide linkages between Asian and United Kingdom experts. Defining adaptation with respect to development and responding to natural variability is important, as is setting priorities and sequencing adaptation, including using NAPAs as a starting

point. There is a need to provide incentives to the private sector, including in Parties included in Annex I to the Convention (Annex I Parties), to invest in adaptation in developing countries.

56. Subsequent discussions emphasized the need for the UNFCCC secretariat to be more proactive in disseminating information on climate change impacts and catalysing support for adaptation. Participants stressed the need for enhanced and effective financing for adaptation and capacity-building, and for promoting the development of new methods. The need for innovative ways to enhance resources for adaptation, including through an expanded carbon market, was also outlined. The European Community underscored the need for research on the costs and benefits of adaptation and the costs of inaction. Participants also discussed possible incentives for the national prioritization of adaptation to climate change.

E. Main outcomes

57. A number of outcomes emerged from the discussions at the workshop relating to integrated vulnerability, adaptation and risk assessments; adaptation planning and implementation; and regional and international collaboration. The discussions focused on providing useful and practical ways to move forward, taking into account the fact that some of the needs and gaps had already been identified during the workshop.

1. Integrated impact and vulnerability assessments

58. There is a need to improve observations and data availability in Asia, including in islands and mountainous and coastal ecosystems, at the national, regional and global levels. Efforts regarding the harmonization and consistency of data should be enhanced through improved coordination between sectoral data providers.

59. There is limited capacity in a number of subregions in Asia to carry out regional and national integrated vulnerability and adaptation assessments. Problems include deficiencies in data collection; lack of technical expertise for the application of methods and tools for specific circumstances; lack of incorporation of socio-economic data and scenarios, and quantification of potential damages; and lack of integration of adaptation concerns into activities undertaken for other objectives.

60. Technical capacity-building, enhancement and retention, such as through the training of trainers on modelling tools, is important in addressing gaps in expertise in the application of methods and tools and in using appropriate kinds of available climate information and GIS.

61. Climate change impacts, vulnerability and adaptation assessments need to generate outputs that are policy relevant. This can be achieved by ensuring that climate change data are integrated with socio-economic data and analyses, and by tailoring the results of the assessment to policymakers and stakeholders. The effort of enhancing capacity for the assessment should be consistent with the Nairobi work programme.

2. Adaptation planning and implementation

62. Although a high level of uncertainty in the extent of climate change impacts remains, this should not be a reason for inaction on the implementation of adaptation measures.

63. The constraints in developing comprehensive national adaptation implementation plans in the Asia region include limited staff capacity for planning, monitoring and evaluation; poor data on adaptation options and lack of mechanisms for information sharing and management across sectors; and limited awareness of adaptation among stakeholders and the population.

64. There is a lack of cooperation among ministries within a country, which represents a major barrier to progress on adaptation. In order that real progress can be made, key governmental departments (such as ministries of finance) need to be involved in the development of adaptation strategies. In the same way, national and local development planning agencies need to be informed by the relevant outputs of impact and vulnerability assessments. There are a number of actions that can help facilitate adaptation and mainstreaming, including actions at the local level (e.g. strengthening coping strategies and feedback to national policies), the national level (e.g. inter-agency coordination in the water sector and legal provisions for mainstreaming) and the regional level (e.g. incorporating climate change risks in projects of regional development agencies).

65. The lack of funding in various forms represents a major barrier for adaptation. International financial support is required to support local community initiatives on adaptation, and to create initiatives for mobilizing national resources for adaptation. Participants noted that risk management, insurance and financial institutions are mechanisms that can facilitate mainstreaming of adaptation and mobilize resources for adaptation. Enhancing regional cooperation in dealing with trans-boundary issues, such as glaciers and rivers, can also mobilize resources.

66. There is a need to enhance technical capacity to assess, plan and integrate adaptation needs into sectoral development plans; support mainstreaming of adaptation into sectoral policy, particularly in the areas of water, agriculture, coastal zones and managing natural ecosystems; and enhance the effectiveness of and access to funds for adaptation to climate change.

67. Needs-based regional technology transfer is an important area in helping countries to adapt. Economic diversification within sectors to reduce dependence on climate-sensitive resources is key to successful adaptation in the future.

68. National governments were identified as having the responsibility to scale-up lessons learned and products from adaptation projects for use nationally, while the secretariat and donor agencies may need to take responsibility for disseminating successful adaptation activities and criteria for further replication at the regional and international levels.

69. At the international level, the secretariat and other international organizations should play a catalytic role in the exchange of experiences, and in facilitating the development of region-wide and sector-wide approaches.

3. Regional and international collaboration

70. The activities where South–South collaboration is most effective are regional adaptation projects, developing national climate change scenarios, solving trans-boundary adaptation issues such as with water resources, and developing ‘sister’ projects between countries facing similar challenges. There is still considerable scope for regional collaboration.

71. Annex I Parties and United Nations agencies have a facilitative role in fostering South–South collaboration, including through the UNEP–UNDP partnership for mainstreaming climate change that was established during the twelfth session of the COP, and in working on operational issues for adaptation, such as developing a working definition for climate change adaptation separate from development assistance work.

72. The secretariat needs to play a more active role in enhancing regional and North–South collaboration, as well as in disseminating information and enhancing the dialogue on climate change adaptation with other United Nations agencies and sectoral and disaster reduction communities, including through the Nairobi work programme. Synergy with other MEAs in future adaptation activities and projects is paramount for advancing collaboration.

F. Possible follow-up actions

1. Integrated impact and vulnerability assessments

73. Participants highlighted the following actions with regard to vulnerability and adaptation assessments:

- (a) Improve coordination among relevant national and international agencies responsible for data collection and provision to support climate change vulnerability and adaptation assessments;
- (b) Assess available climate information to clarify where the need for systematic observations is most pressing, and continue to build on existing networks to ensure continuous systematic observation of the climate system;
- (c) Increase capacity to carry out national and regional integrated vulnerability and adaptation assessments that better incorporate socio-economic aspects and ensure that such assessments are policy relevant and lead to practical adaptation. Such efforts should be consistent with the work under the Nairobi work programme;
- (d) Encourage the use of multidisciplinary teams with scientific and political skills when carrying out adaptation assessments. This will help bridge the gap between scientists and policymakers, and allow climate scientists to effectively communicate their results and the urgency for action;
- (e) Enhance targeted packaging and dissemination of climate data and the results of vulnerability and adaptation assessments, including assessment of costs and benefits of adaptation, so that the information available is used effectively and is tailored to suit the needs of stakeholders and policymakers;
- (f) Foster technology transfer and the transfer of skills, and promote interregional cooperation on modelling, adaptation assessments and economic valuation of the costs and benefits of adaptation.

2. Adaptation planning and implementation

74. Participants identified the following actions relating to adaptation planning and implementation:

- (a) Increase cooperation on adaptation between different sectors within countries with similar adaptation needs in order to use resources more efficiently;
- (b) Improve the access of developing countries to financial resources, including through streamlining guidelines for application, and by assisting countries in the preparation of project proposals;
- (c) Find innovative ways to obtain funding, beyond the climate change funds under the Convention, including through development assistance projects and promoting private sector involvement in adaptation through insurance and credit policies;
- (d) Facilitate funding for countries to develop national adaptation strategies or action plans. These plans should exist at all levels within a country (local, provincial and national);
- (e) Prepare operational guidelines to mainstream adaptation into various sectors from national to local level and from local to national level and encourage countries in the region to implement more pilot projects and facilitate funding for such projects;

- (f) Establish a NAPA-type process for all Asian Parties not included in Annex I to the Convention, not just those that are LDCs, and reinforce the call for precautionary rather than reactive action;
- (g) Promote synergies and advocacy in order to bring the issue of climate change vulnerability and adaptation to other MEAs and communities, and increase the dialogue with disaster risk reduction communities in the work on adaptation at the national and regional levels, so that experiences in disaster reduction can be applied to adaptation to climate change;
- (h) Raise awareness of policymakers and decision makers (including financiers) of climate change issues;
- (i) Promote local and needs-oriented capacity-building activities for adaptation at all levels, including through specific targeted training, and technical and financial support for adaptation assessment and the development of adaptation plans;
- (j) Enhance the catalytic role of the UNFCCC and international organizations in the exchange of experiences, and in facilitating the development of region-wide and sector-wide approaches for adaptation.

3. Regional collaboration

75. Participants identified the following actions relating to regional collaboration:

- (a) Promote regional cooperation on adaptation, especially on specific projects and between countries with different capacities in adaptation planning and implementation. In order for collaboration to be effective, it should be promoted in subregions where the adaptation needs will be similar, including through specific subregional projects for trans-boundary issues;
- (b) Ensure that development projects are screened for climate change, and that regional development agencies are mainstreaming climate change into their business cycle;
- (c) Establish a network to ensure continuity of exchange of information and learning;
- (d) Disseminate lessons learned through the UNFCCC regional workshops and consider the possibility for more regional and sectoral workshops. The secretariat should enhance its catalytic role in involving more development and sectoral communities, all relevant ministers and agencies in climate change activities to increase awareness of climate change issues and to move the issue of adaptation forward while ensuring consistency with work on the Nairobi work programme.
