



ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

Ministerial Conference on Environment and Development in Asia and the Pacific, 2005

Preparatory Meeting of Senior Officials
24-26 March 2005
Seoul

**REVIEW OF THE STATE OF THE ENVIRONMENT IN ASIA
AND THE PACIFIC, 2005**

(Item 4 of the provisional agenda)

SUMMARY

This document reviews the state of the environment of the region from the perspective of both environmental sustainability and environmental performance. It shows that economic growth and social progress have been accompanied by increasing pressure on the environmental carrying capacity of the region. The establishment of institutional and legislative frameworks by member countries has resulted in improvements in urban air quality in some cities, slowed rates of forest loss, increased forest planting rates and considerably reduced the use of ozone-depleting substances. However, environmental degradation, natural disasters and the impacts of climate change continue to threaten human health, livelihoods and the overall vulnerability of member countries. Therefore, the most urgent imperative for the region is the pursuit of environmentally sustainable growth. The review concludes that a shift to a “green growth” development paradigm will be necessary to ensure that sustainable development can be attained without limiting economic growth and the prospects for achieving the Millennium Development Goals.

The Meeting is invited to discuss the issues and challenges raised and provide guidance on ways and means of solving these problems through incorporating relevant actions into the Ministerial Declaration and the Regional Implementation Plan for Sustainable Development in Asia and the Pacific, 2006-2010.

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Introduction

1. This document reviews and highlights the impact of current economic growth patterns on the environmental sustainability of the region. The state of the environment of the region is reviewed from the perspective of both environmental sustainability and environmental performance. In this context, “environmental sustainability” refers to the capacity of a development process to ensure that natural resources are not depleted faster than they can be regenerated and that ecological systems remain viable. It reflects the pressure placed on ecological carrying capacity. The “environmental performance” of a Government may be assessed by the measurable results of environmental policy implementation, objectives and targets, regulations and legislation. In devising practical and effective response strategies for achieving sustainable development, these two dimensions must be considered in tandem.

2. The review shows that economic growth has enabled the reduction of poverty and social progress in many parts of the region. However, the pattern of growth has placed the environmental sustainability of the region in jeopardy. Action by Governments to improve environmental performance has resulted in improvements in urban air quality in some cities, slowed rates of forest loss, increased forest planting rates and considerably reduced the use of ozone-depleting substances. However, declines in fishery resources, marine and coastal degradation, biodiversity and forest loss, land degradation and natural disasters have continued to affect human health and livelihoods and increased the vulnerability of member countries. The review also notes the impacts of natural and human-induced disasters, including those of the recent tsunami in several Indian Ocean rim countries.

3. The review of the state of the environment in Asia and the Pacific reveals that the current pattern of economic growth is seriously threatening the environmental sustainability of the region. Therefore, the most urgent imperative for the region is the pursuit of environmentally sustainable growth. The review concludes that a shift to a “green growth” development paradigm will be necessary to ensure that sustainable development can be attained without limiting economic growth and the prospects for achieving the Millennium Development Goals.

4. The key questions before us, therefore, are “How can we reduce the pressure placed by rapid economic growth on the environmental sustainability of the region?”, “How can we improve the environmental performance of the region?” and “How can we shift away from a ‘grow first, clean up later’ paradigm towards a ‘green growth’ paradigm?”. The Meeting is invited to discuss the issues raised and provide guidance on ways and means of addressing these challenges, in particular through the Ministerial Declaration and the Regional Implementation Plan for Sustainable Development in Asia and the Pacific, 2006-2010.

I. ECONOMIC GROWTH AND SOCIAL DEVELOPMENT IN ASIA AND THE PACIFIC

5. The concept of sustainable development first received global attention as a result of the work of the World Commission on Environment and Development and its report published in 1987. The concept was enriched at the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992, and reaffirmed at the World Summit on Sustainable Development, held in Johannesburg in 2002. Sustainable development is now widely accepted as resting on the three pillars of the sustainability of economic growth, social development and environmental protection.

6. The Asian and Pacific region is now the fastest-growing part of the global economy. Despite uncertainties brought about by the war in Iraq, high oil prices and the impact of severe acute respiratory syndrome (SARS), average economic growth rates for the region in 2000-2003 ranged from 4.0 to 6.5 per cent. Asia and the Pacific is expected to remain the fastest-growing region at least in the medium term, with growth in China and India dominating. While many countries of the region are still predominantly agricultural, the share of GDP attributable to industrial activity is expanding.

7. ESCAP has 62 members and associate members, 58 of which are in the region. Of 39 countries reviewed, 32 showed increases in per capita income from 1990 to 2001 (ADB, 2004). It has been suggested that a threshold GDP per capita growth rate of at least 1.4 per cent per annum, starting in 1990, is required for countries to be able to achieve and sustain Millennium Development Goal 1 of halving the number of people in extreme poverty.¹ Most countries in the region have registered growth rates above this threshold in recent years.

8. Economic growth has provided resources for investment in social development. Several countries have registered positive gains in human development index² values in recent years. These countries include the Lao People's Democratic Republic, with higher school enrolment rates, and Bangladesh, Bhutan, Indonesia and Nepal, where significant reductions in under-five mortality rates have been achieved. The region's performance in reducing hunger is impressive, with the proportion of the undernourished in Asia and the Pacific falling from 20 to 16 per cent from 1990-1992 to 2000-2002 (FAO, 2004a).

9. However, the region has been far from successful eliminating its social ills. Poverty still persists in many corners of the region, with some economies in transition registering increasing poverty and declining life expectancy. Social equity continues to be a concern in many countries, and

¹ This figure is based on the estimate that if income distribution remains constant, the poverty rate declines by 2 per cent for each 1 per cent increase in average per capita income. If the increase in per capita growth needed to cut poverty in half must be accomplished starting in 2003, a much higher annual rate (2.9 per cent) is estimated to be needed. *Sources:* Bruno, Ravallion and Squire (1996) and Adams (2003).

² The human development index is compiled by the United Nations Development Programme. It is composite index measuring average achievements in three basic dimensions of human development, longevity, educational attainment and a decent standard of living.

a significant number of persons are still undernourished in the region. While population growth has slowed in the region as a whole, it continues unabated in South Asia, and by 2015 it is projected that the population of South Asia will overtake that of North-East Asia.

II. IMPACT OF ECONOMIC GROWTH ON ENVIRONMENTAL SUSTAINABILITY

10. Economic growth is based, in its most fundamental terms, on increased production and consumption and is a prerequisite for the achievement of the Millennium Development Goals. However, the rapid economic growth of the region has been based on industrialization, agricultural production systems that often overuse fertilizers and pesticides and the promotion of environmentally unsustainable consumption. The pressure on the environment resulting from the associated emissions and exploitation of energy, water and other natural resources has placed the region's environmental sustainability and the prospects for its future prosperity in jeopardy.

A. Threats to environmental sustainability

1. Industrialization

11. Industrialization based on export-oriented manufacturing is the most distinctive feature of the region's economic development strategy and is now a leading environmental challenge in the region. Although many countries are still considered agricultural economies, the contribution of industry to the GDP of the region has been increasing. Industrial production growth in the developing countries in the ESCAP region has outstripped that of the rest of the world in recent years; from 1995 to 2002 industrial production in Asia and the Pacific increased by almost 40 per cent as compared with 23 per cent globally (ESCAP, 2004a).

12. From 1995 to 2002, the fastest-growing areas of production were office, computing, radio, television and other electrical equipment; chemicals, petroleum, rubber and plastic products; and transport equipment (ESCAP, 2004a), many of these items produced by highly polluting industries. The rapidly expanding chemical industry has historically released more toxic substances than any other industry to air, water, land and underground, the impacts of which are manifested as carcinogens in the water supply and other threats to human health and the ecosystem. Food and beverage production is the single most important source of organic waste pollutants in the majority of countries of the region and is responsible for fish kills, nuisance odours and radical changes in ecosystems. The scale and quality of industrialization in the region make the shift to cleaner and more environmentally sustainable production an urgent priority.

13. The total value of exports from the region in 2002 was 75 per cent more than in 1992. The value of exports from developing countries alone more than doubled in this period. Similarly, imports to the region have more than doubled since 1990 (ESCAP, 2004a). The increasing trade activity brings several trade-environment issues to the fore, including trade in hazardous waste, the impact of

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trade liberalization on the environment, particularly in relation to agricultural activity, and trade in environmentally sensitive commodities such as minerals and timber. The complex interlinkages between trade and environment issues, and between global trade agreements under the World Trade Organization and multilateral environmental agreements are often not wholly recognized by policy and decision makers.

2. Expansion and intensification of agricultural production

14. Agricultural production in ESCAP member economies increased by some 62 per cent from 1990 to 2002 (ESCAP, 2004a); during this time global agricultural production increased by only 27 per cent. The dramatic increases in agricultural production have been largely achieved through the intensification of agrochemical and water use. The consumption of mineral fertilizers per hectare of agricultural land in the region increased by some 15 per cent, in contrast to a decline in the rest of the world, during 1991-2001. In 2002 twice as much mineral fertilizer was used per hectare in the region as in the rest of the world (FAO, 2004d). In at least 25 countries of the region, more than 60 per cent of water is used for agriculture (WRI and others, 2003).³

15. Overuse of agrochemicals has endangered the productive capacities of agricultural land and impacted on water quality, wildlife and human health. Agriculture is the most-often-cited cause of land degradation, a critical issue which affects the livelihoods of the rural communities, notably in the cotton-growing region of the Aral Sea Basin and South Asia. Where water scarcity is coupled with land degradation, the effects on rural communities that depend on the land are devastating. Fertilizer use is also a major source of reactive nitrogen in the natural environment, which contributes to processes such as climate change, smog production, contamination of groundwater, soil acidification and oxygen depletion in water bodies (UNEP, 2004).

16. The globally important aquaculture industry also poses a threat to environmental sustainability. The region accounts for an estimated 91 per cent of global aquaculture production, with the major contribution from China. In the Lao People's Democratic Republic, aquaculture is estimated to have contributed almost 6 per cent of GDP in 2001 (FAO, 2004c). Declining wild fish stocks and lower catches per unit of effort make aquaculture an attractive alternative to capture fisheries. However, unsustainable aquaculture practices have resulted in land degradation, water pollution, clearing of mangroves and degraded wetland areas. Destruction of coastal ecosystems is responsible for further declines in fish stocks and negative impacts on the livelihoods of coastal communities.

³ Data from various years, mainly from 1987 to 1994.

3. Deteriorating environmental sustainability of consumption patterns

17. As economic growth continues and disposable personal income rises, there has been a noticeable deterioration in the environmental sustainability of consumption patterns. While consumption has supported economic growth, both the level and nature of consumption have put increasing stress on ecological carrying capacity.

18. Economic recovery from the 1997 financial crisis has resulted in renewed growth in demand for personal modes of transport, housing and services, non-traditional and imported goods, information and communication technologies and energy-intensive products. As an example, the numbers of passenger cars in use in some fast-growing economies of South and South-East Asia have more than doubled from 1990 to 2002. In terms of absolute growth in numbers of cars in use, Japan, the Republic of Korea and Hong Kong, China, added some 32.6 million cars to their roads between 1992 and 2000 (ESCAP, 2004a). Urban smog caused by vehicle emissions is a feature of daily life in the larger urban centres in the region. With one car for every two persons, as in some parts of the United States of America today, the region would have 2 billion cars in 2025, a fleet that could prove environmentally disastrous, even with the best technologies.

19. Challenges in the area of waste management, especially solid waste management, loom large in the region. High-income countries typically generate more than twice the weight of waste per capita than low-income countries. It has been projected that the total expenditure on solid waste management activities in Asia may double from an estimated US\$ 25 billion in 1999 to US\$ 50 billion in 2025 (World Bank, 1999). Electronic waste or e-waste is growing exponentially. The estimated demand for personal computers in 2004 was twice that in 2000, and an estimated 45 million personal computers will be sold in the region in 2005. While some of the materials making up e-waste are recoverable, several, including heavy metals such as mercury and cadmium, are not. The recyclable components are an incentive for trade in e-waste for informal recycling. This activity exposes vulnerable communities to toxic metals whose health impacts include cancer and organ damage.

20. Policies to encourage environmentally sustainable lifestyles will ensure that consumer demand can be met in more environmentally friendly ways. Such policies can also support “green” economic growth. The economic costs of pollution and environmental degradation have been documented for some time. The development of efficient public transit infrastructure, use of clean technologies and fuels and policies for turning over the capital stock of older, highly polluting vehicles, recycling and proper disposal of vehicles all represent opportunities for cost savings and income generation. Similarly, promoting “cyclical” production and consumption systems⁴ results in economic benefits for Governments, firms and, by extension, wider populations.

⁴ Such systems reuse and recycle material in a zero-waste approach to consumption and production.

4. Urbanization

21. Urbanization poses significant environmental challenges related to waste management, air quality, climate change and environmental health issues. The region has been undergoing a significant demographic shift in the past few decades, with urban populations increasing from 20 per cent of the total population in the 1950s to 40 per cent by 2001 (United Nations, 2004a). The region is now home to 12 of the world's 20 mega-cities with populations of over 10 million each. Some 34 million persons are projected to swell the ranks of urban residents in the 16 cities that are already the largest in the region in the next 10 years. South Asia, in particular India, will form the epicentre of this growth. Rapid urbanization rates stretch the capacity of metropolitan authorities to provide adequate environmental services and facilities. In many urban centres, between 40 and 80 per cent of residents live in poverty, with very little or no access to shelter, basic urban services and social amenities as a result of rapid urbanization, structural adjustment problems, spatial and institutional mismanagement and the poor performance of formal housing and basic service delivery programmes (United Nations, 2004a).

22. Despite significant progress, inadequate infrastructure for solid waste management and for providing access to water and sanitation leave urban populations vulnerable to new health threats, such as SARS and avian flu, as well as natural disasters. It has been estimated that 600-800 million, or 35-50 per cent, of urban dwellers in Asia are without adequate provision for sanitation (UN-Habitat, 2003). In many developing countries less than 10 per cent of waste water is collected for treatment and disposal, and in some there is no treatment and disposal at all. Untreated domestic waste water is understandably one of the pollutants of growing concern. Lack of financial resources was identified as the major constraint to addressing this situation by 19 of the 21 countries responding to a survey in 2000 (ESCAP, 2000). Underdeveloped mass transport infrastructure also increases air pollution, with consequent impacts on environmental health and CO₂ emissions that add to the global warming threat.

5. Increasing energy demand

23. The high rates of growth in demand for energy as well as the environmental and health impacts of the consumption and production of energy, particularly from fossil fuels, are of major concern. In 2001, the ESCAP region accounted for 62 per cent of the world's population but only 40 per cent of the total primary energy supply (TPES). The region's TPES per capita was around 0.95 tons of oil equivalent (toe) per capita, as compared with the global figure of 1.64 toe per capita. Developed countries in the region possess approximately four times this value, while the TPES per capita of developing countries is only 0.7 toe per capita. The electric power sector has grown faster than others. In 2000 the per capita electricity consumption in the Republic of Korea was five times that of 1980.

24. Increasing energy demand in the region, particularly in large economies such as China and India, will continue to have a significant impact on the environment, as it is likely that most of this demand will be met through continuing use of fossil fuels, coal, oil and natural gas. Despite the availability of effective pollution control technologies, many nations continue to establish new fossil-fuel-based energy-generating facilities with inadequate controls for emissions of particulate matter, sulphur dioxide and nitrogen oxides. Further, the high reliance on fossil fuels, coupled with limited energy efficiency measures in many countries, has increased CO₂ emissions and amplified the region's contribution to global warming. The CO₂ emissions from the region are estimated to make up 41 per cent of the global total. Levels of energy use are positively correlated with GDP in some countries. Differences in types of economic activity and energy efficiency measures can translate into more productive energy use and a less polluting economy. For example, a country like Japan manages to obtain an average of almost US\$ 6 of GDP for every kg of oil equivalent of energy, while some countries only obtain US\$ 1 of GDP from the same amount of energy (World Bank, 2003).

25. The growing demand for energy, rising oil prices, increasing impacts on climate change and the pollution associated with the use of fossil fuels make sustainable energy use and technological innovation in the energy sector urgent priorities. Major investment coupled with policy reform at the national, subregional and regional levels needs to be pursued to support the diversification of the energy mix through the use of indigenous energy resources including renewable energy and cleaner fuels. Such action would enable countries to reduce their dependence on energy imports, increase energy security and reduce the CO₂ intensities⁵ of their economies. Strengthened trade in energy can also facilitate diversification of the energy mix and reduction in CO₂ intensity and assist in meeting the expected increases in energy demand in a more sustainable manner.

6. Pressure on water supplies

26. While the population of Asia is estimated to constitute 61 per cent of the global population, the region is estimated to have only 36 per cent of global water resources available to it (United Nations, 2003). Water withdrawals in Asia are projected to increase by almost 25 per cent from 1990 to 2010 (Shiklomanov, 2004), mainly attributable to the agricultural sector, which dominates water use in every subregion. While agricultural intensification is increasing water demand in this sector, urbanization coupled with population growth and industrial development is responsible for a growing proportion of total water used. A shortage of water to meet sometimes conflicting demands is being experienced throughout the region and is exacerbated by the generally minimal attention to water efficiency measures in the region. Declining water quality linked to urbanization, industrialization and agricultural intensification reduces the availability of water of adequate quality and threatens

⁵ CO₂ intensity refers to CO₂ emissions per unit of GDP.

human health and livelihoods. In general, the efficiency of water use in agriculture, industry and the domestic sector is low.

27. Per capita water use varies in the region, depending, among others, on levels of agricultural production, water efficiency and pricing measures. In a country like the Republic of Korea, the per capita withdrawal is estimated to be 400 m³ per capita⁶, while the highest per capita withdrawal of the region is experienced by one of the economies in transition and is estimated at 5,500 m³ per year, with almost all water being imported, mostly for use for irrigation and other agricultural needs. Measures to increase water efficiency in the agricultural, industrial and domestic sectors along with improvements in production and waste-water treatment processes are urgently needed. At the same time, intergovernmental commitment to and consensus on water resources issues are needed in the region. Significant support for developing countries will be required to meet the integrated water resources management targets set in the Johannesburg Plan of Implementation.

7. Social equity concerns - disadvantaged groups

28. Not all segments of the regional population have benefited equally from economic growth. Where the share of income or consumption of the richest 20 per cent in the region can reach as high as 54 per cent in some countries, the poorest 20 per cent of the population in some cases have access to only 4 per cent of national income. The income gap is reportedly widening. The majority of the poor in the region live in rural areas and rural poverty is reported to be on the increase (IFAD, 2002). Where the poor are forced to eke out a living on marginal lands, or to engage in informal recycling or waste disposal activity as a means of generating income, environmental quality and human health are at risk. Gender inequality continues to persist in some countries despite the growing recognition that without increased gender equality, the Millennium Development Goals cannot be achieved.

29. Where they exists, extreme social inequity, gender inequality, poverty and marginalization affecting the poor, women, children, indigenous people, persons with disabilities, the internally displaced and the socially excluded have serious consequences for environmental sustainability. Disadvantaged groups are also often disproportionately affected by environmental degradation. However, they are also the least empowered with respect to their ability to influence development processes which impact them more immediately, but which also threaten the environmental sustainability of the wider population. Institutional, legal and, at times, sociocultural barriers remain obstacles to the empowerment of disadvantaged groups in a number of countries in the region and hinder their potential to become full and active proponents of a shift towards more sustainable societies. Environment-related data are rarely disaggregated by sex or age, and the differences between men, women, boys and girls and various social groups in terms of their roles in managing natural resources and the extent to which any given group is impacted by environmental degradation

⁶ The per capita consumption of the United States is estimated at 2,000 m³ per annum.

are rarely highlighted.⁷ It is clear that non-recognition of the equity aspects of environment-development issues results in incomplete understanding by policy makers, as well as lost opportunities to develop creative approaches to improving environmental sustainability.

B. The need for a shift to a “green growth” paradigm

30. The previous section showed that economic growth and social progress are exerting significant pressure on environmental sustainability in the region. Despite this threat to environmental sustainability, economic growth must continue to be a priority for the region.

31. Meeting the needs of existing and future populations will require significant financial and natural resources. The total population of the region is now projected at approximately 3,964 million. This number is expected to increase by some 412 million persons by 2015 (United Nations, 2004b). Combating poverty remains an urgent priority. In 2002, the per capita GDP of the ESCAP developing countries was only one fifth of the global per capita GDP (ESCAP, 2004a), and some 712 million persons in the region, or about 65 per cent of the global total and 22 per cent of the region's population,⁸ are still estimated to be living on less than \$1 per day. South and Central Asia remain the most challenged in this respect. The special circumstances of the small island developing States of the region mean that the GDP growth rates of these countries are well below regional averages, with few exceptions. Meeting the housing, environmental and transport infrastructure needs of growing urban populations will also require significant investment. At the same time, debt management is still a serious issue for a number of developing countries in the region. The accumulated external debt within the region is valued at US\$ 1,060 billion (World Bank, 2003), triple the 1980 level. Despite the decline in total debt since 1996 and the steady increase in debt-servicing levels, it is unlikely that a substantial reduction in debt will ever be achieved. This has significant implications for the availability of resources for investment in sustainable development.

32. Agricultural production will need to keep up with growing populations. Despite the significant growth of agricultural output, an estimated 545 million people in the region are still undernourished, comprising 65 per cent of the world's ill-fed (FAO, 2004b). A focus on agriculture for export and growing industrialization mean that food security is still a concern.

33. Meeting future demand for water, energy and land resources will require huge amounts of new capital investment. Basing this investment on current economic growth patterns is an almost unthinkable option, given the scale of demand and the environmental pressures this would create. Maintaining the current course is more than likely to jeopardize both the Asian economic growth

⁷ As one example, given women's traditional role in the home, they, along with children, are more vulnerable to indoor air pollution and health impacts related to the use of solid biomass fuels. At the same time, this role in the home means that they are key actors in establishing domestic waste management and consumption patterns.

⁸ ESCAP estimate based on World Bank data at : <<http://www.developmentgoals.org/poverty.htm>>, 28 January 2005.

miracle and quality of life. The urgency of a shift away from the “grow now clean up later” paradigm to a “green growth” paradigm based on environmentally sustainable systems of consumption and production should not be underestimated.

34. While action to improve environmental sustainability will lead to improved environmental performance, the reverse is not necessarily true. For maximum effect, both environmental sustainability and environmental performance must be addressed in tandem. Action to address both environmental sustainability and environmental performance starts with the establishment of clear national goals and targets, as represented by Millennium Development Goal 7 on ensuring environmental sustainability. While the World Summit on Sustainable Development urged member countries to complete the formulation and elaboration of national strategies for sustainable development and begin their implementation by 2005, there has been slow progress to date, which is not inconsistent with the global picture. Of 45 countries surveyed in the region, only 5 reported that they had completed and were implementing those important strategic policy documents (United Nations, 2004d). However, the establishment of multistakeholder agencies such as national commissions or councils on sustainable development and other apex bodies with the objective of promoting sustainable development has been a good sign. Also, within the region, around 674 local communities/governments from 17 countries are reported to have prepared and be in various stages of implementation of their local Agenda 21 plans (United Nations, 2002). These self-motivated and self-financed initiatives are evidence of the view that reform of institutions to improve environmental performance necessarily involves decentralization.

35. The need for both national and local strategies to clearly focus on production and consumption patterns, integrate economic, social and environmental objectives and foster a shift to a “green growth” paradigm is paramount.

III. ENVIRONMENTAL PERFORMANCE, CONDITIONS AND TRENDS

A. Environmental performance

36. A Government’s environmental performance reflects its effectiveness vis-à-vis specific environmental targets and standards. Low environmental performance and high environmental sustainability (and vice versa) can characterize the same country and are not strictly linked at a given point in time.⁹ Governments, in particular in developing countries, have begun to successfully focus their attention on improving environmental performance, and many countries have established the legislative and institutional frameworks required for environmental protection and improvements in environmental quality. However, implementation is often subject to financial and capacity constraints

⁹ A country with a limited land area and high population density will be less environmentally sustainable than another with a large natural resource base and lower population density. At the same time, despite its low sustainability, the former may have very effective systems of environmental governance and, therefore, high levels of environmental performance.

and enforcement remains inadequate in some countries, giving rise to issues of protection of complainants and activists in some countries. This is largely due to conflict between environmental protection and economic growth objectives, as well as to financial resource and capacity constraints. In some countries, the judiciary is becoming increasingly responsive to the need to reconcile economic growth and environmental protection objectives; examples include the “green courts” of India and Bangladesh. At the same time, in the absence of extrajudicial mechanisms for conflict resolution, growing competition for access to increasingly scarce natural resources and social inequality may give rise to more frequent and severe environmental conflicts.

37. The effectiveness of environmental performance depends on the extent to which Governments are able to develop a shared commitment to sustainable development among stakeholders, as well as other “enabling conditions”. Mechanisms for dialogue with all stakeholders (in particular the private sector) in the context of a comprehensive, long-term environmental policy framework are a basic requirement. The emergence of markets, evolving and strengthening property rights, economies of scale and political economy effects (income-induced changes in political decision-making processes), changes in economic production structures and relative openness of economies support improvement in environmental quality. Similarly, it has been found that underlying governance and institutional development are critical factors for environmental improvement (Yandle and others, 2004). All of these factors can be said to be improving, to various degrees, in the region. At the same time, there is room for more leadership by Governments in the form of improving the environmental performance and sustainability of their administrations. Green procurement, recycling, energy and water efficiency, and waste reduction measures can raise awareness and create confidence among the general population that government expressions of commitment to improved environmental quality go beyond political rhetoric.

38. Subregional and regional environmental cooperation arrangements support policy formulation and implementation at the national level and are deepening. Subregional cooperation secretariats are developing broad-based environmental action plans in support of national efforts. These include the Pacific Regional Environment Programme’s¹⁰ Action Plan (2005-2009), the Regional Environmental Action Plan for Central Asia, the South Asia Cooperative Environment Programme’s Action Plan for the South Asian Regional Seas Programme and the Regional Haze Action Plan of the Association of Southeast Asian Nations (ASEAN). There are also a number of important intergovernmental initiatives, including the Acid Deposition Monitoring Network in East Asia and the Malé Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia. The ASEAN Agreement on Transboundary Haze Pollution, the first regional arrangement of its kind in the world, which binds a group of contiguous States to tackle transboundary haze pollution resulting from land and forest fires, entered into force on 25 November 2003. Regional consensus and priority-

¹⁰ Formerly the South Pacific Regional Environment Programme.

setting, as manifested by successive Ministerial Conferences on Environment and Development, have served to reinforce government commitment to the ideals of sustainable development and served as a framework for regional cooperation.

B. Environmental conditions and trends

39. Environmental conditions and trends provide evidence of the effectiveness of the environmental performance of member Governments and also reflect the pressures on environmental sustainability exerted by socio-economic activities. A summary of conditions and trends related to air quality, freshwater, forests, land, biodiversity and marine and coastal resources is given in the table below. There is evidence of an improvement in air quality in some urban centres, slowed rates of deforestation and increased forest planting rates. Asia-Pacific consumption of chlorofluorocarbons, major ozone-depleting substances, has declined dramatically, falling by more than 65 per cent from 1995 to 2002.¹¹ However, biodiversity, freshwater, land and marine and coastal resources continue to be impacted by industrialization, agricultural intensification and urbanization with consequent impacts on rural and coastal livelihoods, biodiversity and human health.

40. The top 10 most disaster-prone countries in the world (Australia, Bangladesh, China, India, Indonesia, the Islamic Republic of Iran, Japan, New Zealand, the Philippines and Viet Nam) are all located in the region. Increasingly frequent extreme weather events have affected the Pacific islands and other countries, including the Philippines and Japan, and may be linked to climate change. Bangladesh, India and the Philippines are among the countries seriously affected by floods in recent years. Drought-prone countries (e.g., Afghanistan, China, India, Pakistan and Central Asian countries) have been suffering from severe recurrent drought, some in consecutive years, while the western Pacific countries have suffered from El Niño-induced drought (e.g., Indonesia and Papua New Guinea). Large-scale dust and sandstorms mainly originating in the deserts of Mongolia and the desert and semi-desert areas of the Inner Mongolia Autonomous Region of China have resulted in enormous economic losses and loss of life and adversely affected human health in China, Japan and the Korean Peninsula. Although the causative factors are mainly natural, land degradation and desertification attributable to anthropogenic activity have strengthened and intensified these effects.

41. It has been estimated that, during the past several decades, the total loss of life caused by natural disasters in the region accounted for 85 per cent of the worldwide figure. Based on available data,¹² the total number of deaths caused by natural disasters in Asia and the Pacific (excluding famines and epidemics) from 1990 to 2004 exceeded 680,000, including the more than 295,000 persons estimated¹³ to have been killed in the December 2004 tsunami event. The economic loss

¹¹ Based on data from the United Nations Environment Programme Ozone Secretariat.

¹² See <<http://www.em-dat.net>>.

¹³ Including over 130,000 missing as at 10 February 2005.

arising from natural disasters in the region from 1990 to 2003 has been estimated at over US\$ 380 billion. The December 2004 tsunami has reportedly set development in Maldives back by 20 years, and an estimated 2 million persons could fall into poverty as a result of the event.¹⁴

42. Vulnerability to such hazards and hence the risk for damage and destruction can be reduced through appropriate disaster preparedness. Disaster risk management must be integrated or mainstreamed into the socio-economic planning and development process (ADPC, 2004) and comprehensive, integrated, multi-hazard early warning systems established.

43. Climate change is one of the most serious issues facing humanity in this century and the issue has been placed firmly on local, national and international agendas as a sustainable development, rather than an environmental, issue. Emissions from developing countries and particularly the large and rapidly developing economies like China and India are of increasing concern. CO₂ emissions from fuel combustion in developing Asia (excluding China) increased by some 78 per cent from 1990 to 2002, against a global increase of 16.4 per cent in the same period, with the major increases attributable to fuel public electricity and heat generation (IEA, 2004). Many countries, notably China and India, have received funding from the Global Environment Facility to undertake climate change mitigation projects.¹⁵

44. The impacts of global warming and climate change, such as the accelerated recession of glaciers, sea level rise, seasonal and latitudinal shifts in precipitation patterns, projected increase in the frequency, magnitude and intensity of extreme climatic events (e.g., temperature variations, cyclones, floods, droughts and soil moisture deficits), and linkages to El Niño are projected to profoundly affect water and land resources, ecosystems, biodiversity, agricultural productivity, forestry and human health (IPCC, 2001; McMichael and others, 2003).

45. Much of the land area in many small island developing States is less than 4 metres above the present mean sea level. In these countries, there are signs that sea level rise is under way, such as extended tide peaks, salt intrusion into agricultural lands and resultant impacts on freshwater availability. Large deltaic regions and low-lying countries in South and South-East Asia are also at risk from sea level rise. A 1-metre rise in sea level would inundate about 17.5 per cent of Bangladesh and about 80 per cent of Majuro Atoll in Marshall Islands. In the Himalayas, which play a critical role in the provision of water to continental monsoon Asia, there is increasing danger from glacial lake outburst floods, as experienced in Bhutan. Climate change considerations and adaptation strategies must be incorporated into the national development planning process.

¹⁴ Asian Development Bank news release No. 005/05, 13 January 2005.

¹⁵ See <<http://www.gefonline.org/home.cfm>>.

State of the environment in Asia and the Pacific						
	Air	Freshwater	Forests	Land	Biodiversity	Marine and coastal resources
Overall conditions and trends	<p><i>Poor air quality in urban centres, indoor air and transboundary air pollution continuing to impact on health and mortality rates</i></p> <ul style="list-style-type: none"> ▪ PM10⁶ is the main air pollutant of concern (Huizenga and others, 2004). In over 50 per cent of reporting cities, average annual concentrations of suspended particulates and NO₂ have exceeded WHO standard limits. ▪ Many cities have reported improvements in the last 10 years, including Kolkata and Shanghai,^c but suspended particulates are a 	<p><i>Growing water scarcity and contamination by nitrates and heavy metals</i></p> <ul style="list-style-type: none"> ▪ Per capita water availability is approaching “scarcity limits” in many areas which are subject to seasonal water shortages. In particular, South-Asia, North China and Mongolia are affected. ▪ Extraction of water for various uses projected to increase by 25 per cent from 1990 to 2010, slightly higher than the global figure (Shiklomanov, 2004). ▪ Surface and 	<p><i>Slowed rates of forest loss, increased planting rates</i></p> <ul style="list-style-type: none"> ▪ About 28 per cent of the total land area is forested (FAO, 2004b).^b ▪ Forest losses since 1990 are heaviest in South-East Asia and Pacific island countries, but significant areas have also been lost in South-Asia. ▪ Increase in the proportion of land covered by forest in the Commonwealth of Independent States (Asia) and East Asia (United Nations, 2004c). 	<p><i>Significant land degradation due to agriculture and deforestation</i></p> <ul style="list-style-type: none"> ▪ The region has the largest agriculturally used dryland affected by land degradation. ▪ Over 28 per cent of the region’s land area is degraded to some degree (FAO, 2004b).^b ▪ Significant degradation (71 per cent) in dryland areas used for agriculture (UNEP, 1997). 	<p><i>Significant regional contribution to the rapid global decline of biodiversity</i></p> <ul style="list-style-type: none"> ▪ Rapid global decline of species. Some 10-25 per cent of mammals, birds and amphibians currently threatened with extinction (Reid, 2004). Amphibians under greatest threat (IUCN, 2004). ▪ Several countries of the region have particularly large numbers of threatened species (IUCN, 2004). ▪ Indomalaya^d is identified as one of three subregions with the highest number of threatened species, 	<p><i>Dramatic declines in fishery resources and continued degradation of coastal ecosystems</i></p> <ul style="list-style-type: none"> ▪ Almost two thirds of the major fish species are either fully exploited or overexploited (FAO, 2004c). ▪ The most dramatic declines in fish stocks are in South-East Asia, which has doubled its marine production since 1970. In some areas a decline of 40 per cent in five years has been observed (FAO, 2004c). ▪ Stocks of more commercially valuable stock higher up the food chain show major

⁶ PM10 refers to particles of less than 10 µm in diameter, associated with reduced lung function, aggravation of respiratory ailments and mortality. PM10 particulates are generally created during burning processes related to power generation and automobiles, among other sources. A total of 15 cities provided data for suspended particulates and 19 and 17 cities for NO₂ and SO₂ respectively. Data for 2000-2003. Upper limit of guideline range for suspended particulate matter used. Based on data provided in Huizenga and others (2004).

^b Excluding Armenia, Azerbaijan, Brunei Darussalam, Georgia, the Russian Federation, Singapore and Turkey.

^c Data from the Clean Air Asia secretariat (2004).

^d Indomalaya refers to the biogeographic region encompassing the South Asian subcontinent and South-East Asia, including lowland areas of Taiwan Province of China, China and Japan’s Ryukyu Islands.

State of the environment in Asia and the Pacific						
	Air	Freshwater	Forests	Land	Biodiversity	Marine and coastal resources
	<p>concern to a growing number of countries.</p> <ul style="list-style-type: none"> ▪ A much lower percentage of cities exceed limits for concentrations for SO₂, in which significant improvements are reported. ▪ Significant mortality and health impacts of indoor air pollution from the use of solid fuels in the home (mainly women and children affected). 	<p>groundwater resources degraded owing to overextraction and pollution. Main pollutants are nitrates (untreated domestic waste) and heavy metals (naturally occurring and anthropogenic).</p>	<ul style="list-style-type: none"> ▪ New forest area planted from 1990 to 2000 was about 34 million hectares (excluding Japan and Australia), about 79 per cent of global forests planted (FAO, 2004b). Major increase in China. 		<p>birds in particular (IUCN, 2004).</p> <ul style="list-style-type: none"> ▪ Oceania^e has a significantly high proportion of threatened species (IUCN, 2004). ▪ Threatened marine species are concentrated in the northern Pacific Ocean, eastern Indian Ocean and south-west and west-central Pacific (IUCN, 2004). ▪ Ratios of protected area to total territorial area: Eastern Asia 11.8 per cent, South-Central Asia 5.5 per cent, South-Eastern Asia 7.8 per cent and Oceania 7.1 per cent (United Nations, 2004c).^h 	<p>decreases (FAO, 2004c).</p> <ul style="list-style-type: none"> ▪ The area of mangrove forest lost in the region from 1990 to 2000 represents approximately 60 per cent of the global loss. South-East Asia accounted for the majority of the total mangrove area lost in the region. The North-East Asia subregion lost almost half of its mangrove area during that time.^f ▪ Approximately 60 per cent of the region's coral reefs are estimated to be at risk.^g

^e The Oceania biogeographic region encompasses the Pacific Ocean islands of the Federated States of Micronesia, Fiji and most of Polynesia (with the exception of New Zealand).

^f ESCAP estimate based on data from FAO (2003).

^g ESCAP estimate based on data from Spalding and others (2001).

^h Regions according to Millennium Development Goals regional composition adopted for 2003 reporting. See <http://unstats.un.org/unsd/mi/mi_worldmillennium1.asp>.

State of the environment in Asia and the Pacific						
	Air	Freshwater	Forests	Land	Biodiversity	Marine and coastal resources
Major issues and challenges	<ul style="list-style-type: none"> ▪ Urbanization and inadequate commuter transport development. ▪ Access to technologies that use cleaner fuels or take smoke outdoors. ▪ Increasing fuel costs are driving the use of highly polluting and health-endangering low-cost fuel mixtures such as industrial solvents and kerosene in South-Asia. 	<ul style="list-style-type: none"> ▪ Urban environmental infrastructure is failing to keep up with expanding urban populations. Less than 10 per cent of wastewater treated in many developing countries (ESCAP, 2000). ▪ Agricultural intensification leading to heavy agrochemical use and overextraction. ▪ Inadequate water efficiency policy and measures. ▪ Inappropriate sanitation technology used in areas of hydrologically sensitive atolls in the Pacific islands leading to pollution of groundwater sources. 	<ul style="list-style-type: none"> ▪ Lack of enforcement of logging bans. ▪ Forest area management regimes that can lead to conflict between the needs of rural communities and forest protection objectives. 	<ul style="list-style-type: none"> ▪ Limited availability of arable land (0.16 ha per capita as compared with 0.37 ha per capita in the rest of the world) (FAO, 2004b). ▪ Continued land degradation attributed to agricultural intensification coupled with water scarcity and competing demands, particularly in South, South-East and Central Asia. ▪ Deforestation. 	<ul style="list-style-type: none"> ▪ Habitat destruction, degradation and fragmentation. ▪ Trade in endangered species (South-East Asia) and overexploitation (marine species). ▪ Introduction of alien and invasive species, particularly on islands. ▪ Protected area management regimes that can lead to conflict between the needs of rural communities and habitat protection objectives. ▪ Illegal logging activity. ▪ Protected areas in South Central Asia, South-East Asia and Oceania still fall short of the 10 per cent guideline value. 	<ul style="list-style-type: none"> ▪ Development and urbanization in coastal zones.

IV. CONCLUSIONS

46. The Asia-Pacific region has become a dynamic economic growth centre, with industrialization based on the production of manufactures for export as the primary driver of this growth. However, the unwelcome environmental costs incurred by the use of outdated production processes, overuse of agricultural chemicals, declining sustainability of consumption patterns, rapid urbanization and increasing demand for energy and water resources all threaten the long-term prospects for both the continued economic growth and environmental sustainability of the region.

47. Current efforts to meet the challenges of sustainable development have largely focused on improving environmental performance, particularly related to pollution control measures. Governments have made significant progress in establishing legislative and institutional frameworks for environmental protection. There has been a measurable improvement in urban air quality in some cities, slowed rates of forest loss, increased forest planting rates and considerable success in reducing the use of ozone-depleting substances. However, environmental degradation, natural disasters and the regional contribution to climate change processes continue to threaten human health, livelihoods and the overall vulnerability of member countries and have assumed global significance.

48. Conflict between environmental protection and economic growth objectives as well as financial and capacity inadequacies have stymied implementation and enforcement efforts. It is clear that a focus on environmental performance alone will not significantly reduce current and future pressures on environmental carrying capacity. Ensuring that sustainable development can be attained without limiting economic growth will require Governments of the region to address the underlying causes of environmental degradation and improve eco-efficiency.

49. A shift from a “grow now and clean up later” to a “green growth” development paradigm is necessary. As stated in chapter III of the Johannesburg Plan of Implementation, “fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development”. This is a particularly urgent challenge for Asia and the Pacific, one in which indigenous knowledge, traditional lifestyles and cultural values can serve as an important foundation.

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