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# CRITICAL ENVIRONMENT AND SUSTAINABLE DEVELOPMENT ISSUES OF THE REGION AND MEASURES FOR PROMOTING SUSTAINABLE DEVELOPMENT, INCLUDING PARTNERSHIP WITH PRIVATE SECTOR AND CIVIL SOCIETY GROUPS

(Item 6 of the provisional agenda)

*Note by the secretariat*

**SUMMARY**

Eight years after the United Nations Conference on Environment and Development, held at Rio de Janeiro, Brazil, in June 1992, countries of the region need to take stock of the results of the changes made to improve the management of the environment. The policy issues which are expected to significantly influence the pursuit of sustainable development are trends in the globalization of trade, the impact of the Asian financial crisis, urbanization and the calls for better governance. Critical elements most affected by the recent development trends include rapid urbanization and associated environmental health impacts due to air and water pollution, and solid waste; water resources management; coastal ecosystem and biodiversity; sustainable energy development; and partnership with civil society and the business sector. The emerging issues for the next five years are improving information flow; the implications of privatization; enhancing the role of local government in environmental management and sustaining the implementation of policy reforms.

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CONTENTS

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# INTRODUCTION

1. Faced with rising populations, unbridled economic growth, the over-exploitation of natural resources, and the tendency to focus on achieving short-term development objectives at the expense of longer-term sustainability considerations, many countries of the region are experiencing severe environmental stress, unprecedented in human history. Some of the key environmental concerns include deteriorating urban air quality, declining water resources in terms of quality and quantity, overloading of wastes due to unsustainable production and consumption patterns, a loss of biodiversity, diminishing coastal resources, and exposure to hazardous chemicals and waste. These persistent environmental problems must be tackled without delay, as the situation has already reached crisis proportions, affecting human health and well-being, national economies, and the carrying capacity of the natural ecosystem.

2. This document analyses the critical policy issues in Asia and the Pacific that will significantly influence the continued pursuit of sustainable development. Chapter I includes a discussion of the implications of the new global trends in development. An examination will be made of the macro policies and major institutional reforms that are currently being pursued and their consistency with the principles of Agenda 21, adopted at the United Nations Conference on Environment and Development in 1992, in the context of the region's social and environmental complexities will be determined. In chapter II an assessment will be made of the key sectors most affected by the changing trends: (a) the impact on health of urban air pollution, water pollution and solid waste, (b) water resources management for a clean and adequate supply, (c) biodiversity management, (d) coastal ecosystem management, (e) sustainable energy development, and (f) partnership between civil society and the business sector in dealing with critical environmental issues. Chapter III will focus on the key emerging issues and constraints that could impede compliance with sustainable development principles in the Asian and Pacific region in the next five years and which should be considered by the Ministerial Conference.

## I. IMPLICATIONS OF NEW GLOBAL TRENDS IN DEVELOPMENT

3. The following discussion identifies the global trends that are expected to shape the outcome of environmental management in the next five years.

### A. Globalization and liberalization of trade

4. The impressive economic growth of most countries in the region over the past two decades made them paragons of development for other regions of the world. With average gross domestic product (GDP) growth rates close to 8 per cent between 1980 and 1991 and with a rate of increase of nearly 10 per cent between 1991 and 1997, the economic bases in the region were also radically transformed through industrialization over the same period. The share of agriculture in GDP in the

Asian and Pacific region declined from 35 to 20 per cent during the 1970-1996 period; in Indonesia the share of agriculture in GDP declined from 45 per cent in 1970 to 16 per cent in 1996. Similarly, countries which have attained industrialized status, such as Hong Kong, China; Japan; the Republic of Korea and Singapore, are changing to post-industrial economies, with a shift from manufacturing to service industries. There has also been a dramatic expansion in trade because much of the industrialization process in the region has been export-oriented. The region's share of trade as a percentage of GDP jumped from 19 to 58 per cent over the 1970-1996 period. The liberalization of markets and foreign investment regimes has allowed for increased trade and investment linkages, which have in turn produced market-driven economic integration within the region. This pattern of structural changes is emerging across the Asian and Pacific region.

5. The pattern of economic growth in the Asian and Pacific region, however, is also creating or exacerbating a wide range of environmental problems. The expansion of exports made possible by the increased integration and globalization of the Asian and Pacific economies is linked to many of these problems. For instance, the expansion of textile exports by Indonesia and Thailand has caused an increase in the pollution of rivers by the textile industry accounting for as much as 70 per cent of their total pollution loadings. The increased pressure to meet the environmental standards of international importing markets has also raised concern, particularly among exporting nations, that the imposition of rigorous environmental standards by importing nations may really be motivated by protectionism. There is also growing concern that nations imposing strict environmental standards could prompt industries to look for countries that have lower environmental standards. As many countries in the region envisage participating in the global market, amongst the incentives they may use to attract new industrial activities or prevent domestic industries from leaving is a relaxation of their environmental standards. This could give rise to "pollution havens" and thus accelerate environmental damage.

6. Liberalized trading in the region also has some social impacts. Essentially, growth has meant increased per capita incomes and reduced poverty, as well as rising life expectancy and declining infant mortality, suggesting that the lives of individuals have improved. In some cases these changes have been dramatic, as in Indonesia, where the number of people living in poverty fell from 70 to 26 million, a reduction from 60 to 14 per cent over the 1978-1995 period. Generally, however, despite large absolute declines in poverty, its reduction has not been uniform within each nation and improvements in the equitable distribution of income have been slow. According to the World Bank, income distribution in the Asian and Pacific region has, on average, remained unchanged in the last 15 years, which has resulted in tremendous pressure on the environment. The challenge to governments in the ESCAP region is to have the fruits of liberalized trading trickle down to alleviate poverty and enhance the equitable distribution of income for the poorer sectors of society to benefit.

### B. The impact of the Asian financial crisis on the environment

7. The Asian financial crisis stalled the Asian economic boom and shattered the myth of countries' perceived stability against economic and financial fluctuations. The crisis had a deeper impact than first expected and created an uncertain outlook for developing nations and the world economy. The consequences for the Asian and Pacific region include continued economic contraction or very low growth. This situation may have serious implications for the protection of the environment in the region. The path towards environmental growth and responsibility follows a pattern in which, when a country begins to industrialize it tends to put aside environmental concerns until its economy has improved. As it becomes more economically prosperous, the environmental agenda is then pursued. In an economic downturn, however, as occurred in the countries of East Asia, which were the most affected, the tendency is to retreat on environmental responsibilities and focus on reviving economies. This is what appears to have occurred in the region, particularly in countries that were severely affected, and it is consistent with what was observed in Latin America and Africa during the debt crisis of the 1980s. In both cases, government budgets were slashed, leaving only salaries for maintaining employment. Similarly, financially strapped firms who cannot get access to working capital and loans to invest in environmental compliance, such as installing end-of-pipe pollution control equipment or expanding environmental activities by seeking ISO 14000 certification, are postponing such investments and channelling funds to either bailing out or re-strategizing their market focus. Concern has also been expressed that, as fewer investments are made in industrial manufacturing, the crisis may lead firms to return to exporting natural resource goods. The imperatives therefore for economic recovery are indisputable: in the long run, countries affected by these crises can only revive their economies and sustain their environmental responsibility by depending heavily on governmental policy choices and their outcomes.

### C. Rapid urbanization: myriad complex problems

8. The urbanization process under way in the Asian and Pacific region is the most dynamic in the world. In 1995, 9 of the world's 14 largest urban centres were in the Asian and Pacific region. It is projected that by 2025, 27 of the world's 33 largest cities will be situated in the region, with an urban population swelling to 2.5 billion. The accelerated urban and industrial growth is bringing an equally rapid transition from rural to urban societies. From levels of urban population as low as 20 per cent or less in the 1960s, within the next two decades more than half of the population of this region will be residing in cities. Urban population increases are also giving rise to "mega-urban regions", with between 15 and 80 million people residing in complex urban fields of interaction. The urban transition is not only manifested in new wealth and higher incomes for many, but also represents social transformation that is championing democratic political systems, transparent relations between government, business and citizens, and more liveable surroundings.

9. Much of the environmental stress, such as water, air and ground pollution, in expanding urban regions is directly related to industrial processes; chemicals that affect workers and their conditions at work sites; the depletion of energy and environmental resources (water, timber and minerals) directly used in industrial transformative and assembly processes; energy and environmental resource requirements for product use (for example, leaded gasoline for automobiles); and noise, odour and other neighbourhood nuisances, such as a high volume of trucking for industrial production and distribution from production sites. These forms of environmental degradation and pollution have point sources that are readily identifiable and can be responded to quickly. There are, however, more varied and far-reaching impacts that are indirectly related to industrialization and urbanization that do not have easily identifiable individual point sources; nor are they responsive to market incentives to improve the environment. These include the following: (a) the poor environmental conditions of worker-housing and communities, including slum formation and the intensive environmental degradation associated with it; (b) air pollution from increased commuter traffic and traffic caused by school and shopping trips; (c) the appropriation and depletion of environmental resources for urban use, such as rural reservoirs for urban water supplies; (d) water and land pollution from multiple sources, including household sewage and solid waste disposal; (e) noise from traffic and construction; and (f) loss of prime agricultural land, coastal ecologies, regional forests and upland vegetation around (larger) cities targeted for resource extraction, industrial locations and infrastructure (such as airports and multi-media super corridors) and housing developments. These examples show that the urban and industrial matrix of manifold interrelationships is so intertwined that the dividing line between urban and industrial sources of environmental pollution and degradation is ultimately an arbitrary one. And although environmental degradation is occurring in cities that are not rapidly industrializing, the reality is that urbanization in the open economies of Asia and the Pacific is being substantially driven by industrialization, and where industrialization has taken off, local and global environmental risks are exceptionally high from interdependent urban and industrial sources.

## II. ASSESSING ISSUES IN THE KEY SECTORS

10. Most governments in the region have formulated their respective environmental plans on the basis of Agenda 21 and the Regional Action Programme for Environmentally Sound and Sustainable Development, 1996-2000 adopted at the Ministerial Conference on Environment and Development in Asia and the Pacific, held at Bangkok from 22 to 28 November 1995. While the commitment of those governments to sustainable development objectives is not doubted, much work is still needed as the efforts made so far have had little impact on improving environmental conditions across the board. The obstacles to attaining sustainable development in the region in the twenty-first century remain daunting. Previously, three key forces were expected to shape sustainable development efforts in the region significantly. At the core of these were the conventional thematic issues of

poverty, population, food security and environmental degradation which governments in the region, particularly the developing and least developed countries, were hard pressed to address. Given the persistent problem of balancing the resource and institutional constraints against the growing demands for an immediate response to these thematic issues, the ability of governments to focus and prioritize will always be tested to the limit.

## A. Environmental quality and human health: the bottom line for improving environmental management

11. Where there are significant improvements in the health of families and the workforce, economic and social conditions often improve as well as economic output. Essentially, health indicators are a good measure of the progress that can be linked with sustainable development. The patterns of urbanization, especially in the least developed or poorer countries in the region, however, are far from healthy. Where governments are faced with resource constraints, capital investment in infrastructure is often preferred over social spending, since the presumption is that the former spurs urban and industrial development. Such trade-offs, however, have serious implications for the poor, particularly women and children, who are exposed to a degraded environment. Sustainable development, therefore, requires not only the improvement of the environment and the lifting of the social status of people, but more important, the alleviation of the avoidable health obstacles that slow economic and social development. The following section consists of discussion of the emerging environmental health issues in urbanizing and industrializing areas which governments in the region should consider.

### 1. Air quality

12. The air in Asian cities is three times dirtier than in cities worldwide. The levels of ambient particulates, smoke particles and dust, are generally twice the world average, and lead emissions from vehicles are well above safe levels. The ambient level of sulphur dioxide, which causes acid rain, is 50 per cent higher in Asia than in either Africa or Latin America. In most of the cities in the region the major sources of air pollution are vehicular traffic and industrial emissions. The construction boom which took place in many of the metropolitan areas also generated high levels of dust and particulate matter in the air, as well as noise.

13. There is a growing realization of the health impacts of indoor pollution caused by the combustion of coal, in particular for cooking and heating, in certain countries of the region. For example, the burning of coal with a high arsenic and fluoride content in both rural and urban households has exacerbated public health problems in countries such as China. Not surprisingly, the adverse health impacts of indoor air pollution are much more prominent among women and children and it is important to take action for the provision of alternative and affordable energy sources and to encourage the use of low-cost, non-polluting stoves for domestic use.

14. The health and productivity costs of air pollution amount to billions of dollars a year in the large Asian cities. For Bangkok, the annual cost of air pollution is estimated to be as much as $ 3 billion; for Kuala Lumpur and the Klang Valley as much as $ 1.6 billion; and almost $ 1 billion in Jakarta. The adverse health impacts of air pollution in urban areas are not often immediately noticed, as shown in table 1.

**Table 1. Health impacts of specific air pollutants**

| POLLUTANT | HEALTH IMPACTS |
|---|---|
| Sulphur dioxide ($SO_2$) | Respiratory illness from short-term exposure.<br>Increased prevalence of respiratory symptoms including cough, chronic bronchitis (shortness of breath, colds and fatigue) from long-term chronic exposure. |
| Nitrogen dioxide ($NO_2$) | Effects on lung function in asthmatics from short-term exposure.<br>Causes bronchopneumonia, chronic fibrosis, emphysema, chronic bronchitis on continuous long-term exposure. |
| Suspended particulate matter (SPM) & respirable suspended particulate matter | Incidences of cough, chronic bronchitis, shortness of breath, colds, fatigue.<br>Exacerbation of respiratory illness from combined exposure to $SO_2$ and SPM.<br>Impaired lung function.<br>Increase in mortality due to combined impact of respiratory and cardiac disease. |
| Carbon monoxide | Reduced oxygen-carrying capacity of blood.<br>Impaired time interval discrimination for non-smoker.<br>Physiological stress in patient with cardiac disease. |
| Benzene | Human carcinogen.<br>Respiratory disorders, narcosis, changes in blood pattern, leucopenia, anaemia, etc. on chronic exposure.<br>May induce neuro-toxic symptoms on long-term exposure. |
| Polyaromatic hydrocarbons (PAHs) | Carcinogenic. |
| Lead (Pb) | Entry into the body mainly through food and drinking and partially through inhalation of lead particles.<br>Excessive exposure may cause blood enzymes to change, anaemia.<br>Hyperactivity and neuro-behavioural effects.<br>Irreversible brain damage and death in extreme cases. |

*Source: Air Quality in Asia and the Pacific: An Analysis in Relation to National and International Standards* (ST/ESCAP/2040) (forthcoming).

15. An epidemiological study undertaken by the World Health Organization (WHO) in Metro Manila showed that the hazards of air pollution are particularly felt by those who make their living in the streets, such as street workers, pedlars, mass transport drivers and traffic policemen. Many governments in the region recognize the health impacts of poor urban air quality and several policy measures are being initiated to address this growing problem. The measures taken vary from new legislative frameworks on air quality management to specific localized anti-air pollution programmes. A clear lesson learned from the Organisation for Economic Cooperation and Development (OECD) and the developed countries in the region, which have somewhat successfully addressed air pollution issues, is the need for a programmatic approach to the problem. This approach involves the following: (a) enacting legislation which takes into account the multiple facets of air quality management and therefore provides a framework for multi-agency and multisectoral collaboration; (b) programming targets by establishing clear indicators of progress and setting achievable targets such as the phasing-out of lead, a percentage reduction of key pollutants like particulate matter and sulphur oxides, the introduction of cleaner fuels and promotion of cleaner engines, and a fuel-efficiency labelling programme; (c) reforming institutions that can respond to air pollution issues, with special emphasis on supporting research for improving capacities for standard-setting; (d) combining market-based approaches with "command and control" enforcement procedures; and (e) mobilizing civil society by encouraging public participation in programmes aimed at the reduction of air pollution. In the light of the growing problem of air pollution, especially in the urban centres of the region, government representatives attending this Ministerial Conference may wish to consider adopting a programmatic approach to air pollution management such as described in the regional action programme for environmentally sound and sustainable development, 2001-2005.

### 2. Water quality

16. Rivers in Asia are far more polluted than those in the rest of the world. They typically have four times the world average of suspended solids; 1.4 times the world average of biochemical oxygen demand; three times the world average of coliform count and 20 times the amount of lead found in the rivers in OECD countries, most of which comes from industrial effluents. These pollutants are exacerbating the situation of those, particularly the poor, who already suffer from declining water sources caused by the lowering of water tables, saltwater intrusion, deforestation of watersheds and wasteful water use. One in three Asians has no access to a safe water supply, while one in two has no access to sanitation services. Where sanitation services are available, only 10 per cent of the sewage generated is treated at the primary level. Table 2 shows the percentages of the populations of selected countries of the region who have access to safe water and sanitation. While there were marked improvements in access to these services from 1982 to 1995 in all countries, providing sanitation remains problematic, particularly in the least developed countries.

**Table 2. Access to water and sanitation services in selected Asian and Pacific countries in 1982 and 1995**

| Country income level | Percentage of population with access to safe water | | Percentage of population with access to sanitation | |
|---|---|---|---|---|
| | 1982 | 1995 | 1982 | 1995 |
| Low | | | | |
| Bangladesh | 40 | 84 | 4 | 35 |
| China | - | 83 | - | - |
| India | 54 | 85 | 8 | 16 |
| Lao People's Democratic Republic | - | 51 | - | 32 |
| Mongolia | 100 | 54 | 50 | - |
| Myanmar | 20 | 60 | 20 | 43 |
| Nepal | 11 | 59 | 0 | 23 |
| Sri Lanka | 37 | 70 | 66 | 75 |
| Viet Nam | - | 47 | 30 | 60 |
| Middle | | | | |
| Indonesia | 39 | 65 | 30 | 55 |
| Malaysia | 71 | 89 | 75 | 94 |
| Philippines | 65 | 83 | 57 | 77 |
| Thailand | 66 | 89 | 47 | 96 |
| High | | | | |
| Japan | 100 | 96 | 99 | 100 |
| Republic of Korea | 83 | 83 | 100 | 100 |
| Singapore | 100 | 100 | 85 | 100 |

*Source:* Adapted from World Bank, *World Development Report 1999/2000: Entering the 21st Century* (New York, Oxford University Press, 1999).

17. The health impacts of degraded water quality are just as serious as those of declining air quality. Approximately 35,000 children die daily of water-borne diseases caused by bacteria, viruses and other pathogens that spread as a result of inadequate sanitation and contaminated drinking water. The link between environmental quality and health is demonstrated more clearly with the deterioration of water quality. Water-borne infectious diseases such as diarrhoea, dysentery and cholera and vector-borne diseases whose carrier habitats are in water, such as dengue, fever malaria and lymphatic filariasis, are affecting thousands of poor people in the region. Particularly susceptible are infants and children in informal settlements and slum areas in urbanizing areas and most of the rural areas of the region's least developing countries, where basic water and sanitation services are practically non-existent. Some settlements are even located along eutrophic water bodies, perpetuating the vicious circle of population, poverty, pollution and disease.

18. An additional environmental health concern that has been documented in numerous countries of the region, including Bangladesh and India, is the high level of arsenic and fluoride contamination in groundwater sources. The population potentially at risk from consuming arsenic-contaminated groundwater in the region is estimated at over 30 million, and a much greater number of people are at risk from fluoride contamination. These harmful chemicals occur in groundwater as a result of a natural geochemical process, over-exploitation of groundwater for human consumption, and agricultural, industrial, and unsustainable mining activities. Further studies to

investigate the magnitude of such chemical contamination, its immediate and long-term health impacts, and methods of early detection and prevention are essential.

19. According to WHO, considerable reductions in the incidence of gastrointestinal diseases can be obtained: 16 per cent when water quality is improved, 25 per cent on improving water availability, 37 per cent when improvements in water quality and availability are combined and 22 per cent on improved excreta disposal. The challenge is to change the attitude of people towards water resources and responsibilities for sanitation. Given the size of the problem, governments in the region should programmatically address this issue of improving water quality, which is placed in context under the regional action programme for 2001-2005. Specific to the improvement of health are policy actions directed towards: (a) supporting public health information and education; (b) bringing health services near areas of population in urban and rural areas that are prone to water-borne diseases; (c) incorporating health indicators in the formulation of environmental programmes designed to address water quality; and (d) urging the international community to provide necessary support in improving water and sanitation in the region.

### 3. Solid waste management

20. The problem of the disposal of solid wastes is becoming critical in many cities in the region. Finding new landfill sites is increasingly difficult for most governments, especially with the rise of Nimby (not in my backyard), attitudes. The urban areas of the region are estimated to spend about US$ 25 billion on solid waste management per year and this is expected to rise to at least US$ 50 billion in 2025. Table 3 shows the expected trend in solid waste generation in the region, illustrating that as countries become more affluent, as measured by increasing GNP per capita, more wastes are generated. This trend is likely to be most marked in the urbanizing centres of the region. Despite large expenditures, no way of avoiding a crisis in solid waste disposal in most of the urbanizing centres in the region appears yet to have been found.

**Table 3. Comparative assessment of solid waste generation of selected cities in the Asian and Pacific region in 1995 and 2025**

| Country income level | Gross national product per capita (US$) | | Municipal solid waste generation (kg/capita/day) | |
|---|---|---|---|---|
| | 1995 | 2025 (estimated) | 1995 | 2025 (estimated) |
| Low[a] | 490 | 1 050 | 0.64 | 0.6-1.0 |
| Middle[b] | 1 410 | 3 390 | 0.73 | 0.8-1.5 |
| High[c] | 30 990 | 41 140 | 1.64 | 1.1-4.5 |

*Source:* Daniel Hoornweg and Laura Thomas, *What a Waste: Solid Waste Management in Asia* (Washington DC, World Bank, 1999), p. 10.

[a] Low income countries include Bangladesh, China, India, Lao People's Democratic Republic, Mongolia, Myanmar, Nepal, Sri Lanka and Viet Nam.

[b] Middle income countries include Indonesia, Malaysia, Philippines and Thailand.

[c] High income countries include Hong Kong, China; Japan; Republic of Korea and Singapore.

21. Governments in the region are aware of the health and safety implications of improper solid waste management. In fact, the Public Health Service of the United States of America has identified 22 human diseases that are linked to improper solid waste management. The combination of human faecal matter and insect and rodent vectors commonly found in municipal waste is responsible for spreading such deadly infectious diseases as cholera and dengue fever. Using water polluted by solid waste for bathing, flood irrigation or drinking can expose individuals to disease organisms and other contaminants. In developing countries, waste-workers and -pickers, most of them children, are seldom protected from direct contact and injury, and the collective disposal of human wastes, hazardous and medical wastes, and municipal wastes poses a serious health threat. Governments in the region may wish to consider the following policy measures for addressing solid waste management issues in the context of improving urban health: (a) promoting a hierarchy of waste management, that is, reduce, re-use, recycle and recover at all levels; (b) formulating a comprehensive waste management plan that is integrated but offers the least technical and most cost-effective solution to the problem; (c) honestly and respectfully gauging the public's willingness and ability to participate in any decision-making processes related to solid waste management; (d) defining key responsibilities at all levels of governance with respect to solid waste management and promulgating policies that would enable key actors to perform their assigned responsibilities effectively; and (e) devising mechanisms that reflect the actual cost of solid waste management.

### B. Water resources management for a clean and adequate supply

22. The concern over water resources is well justified, since the availability of renewable fresh water has been diminishing with the growth in population, while demand for water has been growing rapidly at a rate far exceeding the population growth. It is considered that water tends to become a limiting factor in socio-economic development when water withdrawals exceed 20 per cent of annual total renewable water resources. A higher level of water use relative to water supplies implies that the role of water in development is becoming more important in the country concerned. For example, in Pakistan, Turkmenistan and Uzbekistan, more than half of the total renewable water resources, including inflows from across the border, is withdrawn annually to meet the demands of the national economy. Both Hong Kong, China and Singapore have to import water to cover the water supply deficit created by the inadequacy of their internal water resources. More than a quarter of the renewable water resources are withdrawn in Afghanistan, the Islamic Republic of Iran and the Republic of Korea. However, water resources in a number of other countries, such as Bhutan, Cambodia, the Lao People's Democratic Republic, Myanmar and New Zealand, apparently remain largely untapped.

23. General water use trends in the region are also changing, with the share of water used for domestic and industrial purposes in urban areas steadily increasing. Although agriculture still accounts for more than 90 per cent of water withdrawals in the less-developed countries of the region, such as Bangladesh, Cambodia and Myanmar, in industrialized countries its share has shrunk to 65-70 per cent of total national water use. Experience shows that an appropriate combination of both supply and demand management is generally required. Highly selective development and exploitation of new water sources can be coupled with comprehensive water policy reform to make better use of existing supplies. However, the balance of efforts has been shifting from supply management to demand management as competition for water among various users, especially agricultural and urban ones, increases. A large share of water to meet new demand is expected to come from water saved from existing uses, provided that more vigorous demand management measures, which will vary with levels of development and water scarcity, are taken. Along with the framing of appropriate legislation for water management, including the recognition of water rights, the following water management options should be considered by many governments in the region in addressing water management problems: (a) reducing water losses by adopting measures that address the source of water loss, such as leakages in distribution networks or losses through illegal connections; (b) formulating incentives that encourage the reduction of industrial water use through the introduction of water-saving technologies, recycling techniques and water re-use, which have the additional benefit of reducing waste-water discharge; (c) increasing the use of economic instruments by properly pricing water use and removing subsidies that tend to encourage inefficient and wasteful domestic water use; and (d) supporting efforts that enhance public information and education on the proper utilization, protection and conservation of water, particularly the education of schoolchildren, who can influence their parents regarding efficient water use.

### C. Biodiversity conservation and management

24. Biodiversity is under serious threat in the ESCAP region as natural resources are rapidly depleted. The dramatic increase in human activity over the past 100 years, such as developments on natural landscapes, the clear-cutting of forests, polluting of rivers and streams, damage to the protective ozone layer of the atmosphere and rapid population growth in almost every habitable area, is bringing to an end the richness of nature's biodiversity. Biodiversity loss has become a global phenomenon, raising serious concern, particularly amongst the scientific community, who believe that mankind is now witnessing the sixth major mass extinction of organisms. This condition has been observed to be more serious in the ESCAP region, which has about 3.7 billion humans that are heavily dependent on natural resources, and where a rapid increase in economic activity is taking place, driven by the desire for industrialization.

25. The shift to global economic integration that basically allows market forces to establish the rules for economic development is now the main determinant of how natural resources will be used. Recent lessons, however, indicate that blindly embracing the philosophy of global market integration without putting in place the necessary policy structures and institutional reforms and accounting for the cultural diversity of the respective countries could do more harm to, rather than help, their efforts to achieve economic prosperity. As past experience has shown, the rapid depletion of natural resources that directly contributed to habitat loss was driven by the strong desire of many countries to join the ranks of the industrialized economies. The future of biodiversity conservation and management in the region therefore hinges on the kind of policy structure set by the respective governments with the following as the main issues that governments must consider: (a) the use of knowledge and information in setting priority policies in conservation; (b) focusing efforts on marine biodiversity; (c) recurring implementation issues that have not been adequately resolved; (d) emerging concerns on the introduction of genetically modified organisms; and (e) promoting the presentation of traditional cultural values which are generally supportive of biodiversity conservation.

### D. Coastal resources management

26. Coastal and marine habitats are among the ecosystems most seriously affected by the loss of biodiversity. While a number of countries in the region embarked on conservation efforts to protect these zones more than 20 years ago and appear to have succeeded, the challenges remain formidable. Efforts to conserve marine habitats still lag behind, along with the forestry sector, due to special problems of ownership, land use and control. Most urban agglomerations are situated in resource-rich coastal zones, which contribute significantly to national and regional economies. Unfortunately, the urbanization process is not without its environmental costs. The movement of people to coastal cities is causing an increase in domestic and industrial effluents, more areas of landfill, increased dredging, more mangrove clearance, more discharges of agricultural chemicals and increased coastal and estuarine sedimentation. For coastal management in the region, the considerations for the future are the following: (a) adopting a performance-based philosophy for measuring achievements in coastal zone management; (b) making economic valuation an integral process of programme planning; (c) investing in database and information management systems for coastal management; and (d) empowering local governments and expanding the role of communities in coastal zone management.

### E. Sustainable energy development

27. The links between energy, environment and sustainable development pose difficulties for policy planners in the Asian and Pacific region. While modern energy services are vital for economic development, the increase in the combustion of conventional fuel sources for the

provision of those services is significantly contributing to adverse environmental effects such as indoor and urban air pollution, transboundary air pollution and global climate change. One of the challenges is therefore how to deal with the environmental implications of the rapid growth in energy demand that has been a characteristic feature of this region.

28. In a recent ESCAP study, the following policy options and issues were identified as the keys to developing and implementing sustainable energy goals in the region: (a) improving energy efficiency by continuing efforts to evaluate existing energy efficiency and energy intensity and to identify energy-saving potential with its accompanying environmental benefits in key sectors; (b) institutional strengthening and capacity-building to encourage institutions and policy makers to make decisions or choose options while taking into account goals of sustainable energy production, use and management that are cost-effective; (c) supporting the development, use and active promotion of cost-effective renewable energy technologies, in particular hydro, solar and biomass, by seeking assistance from multilateral funding institutions such as the World Bank, through the Global Environment Facility, from the Asian Development Bank and the private sector; (d) expanding access to energy services to meet rural energy needs where the provision of energy services remains inadequate for reasons ranging from the dispersed nature of communities living in rural and remote areas, the lack of adequate infrastructure and the low income levels of the rural poor; (e) reforming the energy sector by enhancing the performance of electric power, hydrocarbon and renewable energy sectors through private-sector participation; and (f) transferring advanced power generation technologies, particularly those with the potential to contribute both to improving efficiency and providing environmental benefits. Technological options combining new and conventional power generation, such as natural gas-fired, combined-cycle combustion turbines, biomass gasification, solar photovoltaics and wind energy, provide a new array of technological choices which can now be actively promoted in the region.

### F. Partnership between civil society and the business sector

29. Innovative environmental policies now stress the complementary roles of communities, markets and governments in creating incentives for improving environmental management. Policy makers are acknowledging that popular sentiment has moved beyond the desire for higher material welfare to include aspirations for accountable government, democratic practices and the translation of economic gains into more liveable urban habitats and socially just societies. Citizens are also becoming more active in challenging the ways in which their environment is being planned and managed. Environmental movements have emerged in significant numbers over the past decade, and many have gone beyond demonstrations and protests to form their own organizations to demand longer-term planning around environmental issues. It is fair to say that environmental issues and conflict among special interest groups, classes and communities will drive much of the urban

politics of the future. The challenge for governments in the region is to transform this social energy into a positive source of collaboration for enhancing environmental management.

30. The private sector as a particular segment of civil society plays a critical role in pushing for more effective environmental management in the region. Apart from being a catalyst for development, the sector has also been sensitive to community needs and demands for a better environment. The recent literature on pollution control contains many accounts of how industrial plants have responded to community pressure. In some instances, plants reduce their emissions by installing new treatment facilities. In others, they compensate the community indirectly by providing drinking water or new facilities, such as temples and community halls. But the private sector is also bringing about change by its increasing insistence that governments move away from overt, red-tape regulation of cities or industrial growth centres and move towards partnerships between the state and the private sector and privatization as the new mechanisms for sustaining economic growth. The current economic crisis in Asia has further pointed towards the need for basic reform in relations between the state and the private sector, both in terms of eliminating collusion between state and privileged enterprises and in terms of lenient forms of regulation. There is a manifest need for greater transparency in regulatory processes related to economic enterprises. Governments are thus increasingly being drawn into creating more inclusive forms of governance in environmental management.

## III. CRITICAL ISSUES FOR PURSUING SUSTAINABLE DEVELOPMENT IN ASIA AND THE PACIFIC

### A. Narrowing the knowledge gap through the improvement of information flow

31. Good economic policies can support sustainable development strategies by protecting and even improving the environment while promoting economic growth. Such strategies call for good institutions, appropriate incentives, good information, and better knowledge of the environmental impacts of alternative policies. The World Bank has identified the following key aspects of the long and knowledge-intensive process of integrating environmental management with development: (a) understanding the environment and the processes that affect it by identifying the sources of environmental degradation, its consequences and the cost of reducing it as the foundation for effective policy; (b) developing indicators of environmental performance that policy makers at the local, regional and national level can use; (c) using environmental information to improve both public regulation and private decision-making; and (d) managing environmental knowledge by building the capacity to gather and disseminate knowledge, improving private-sector environmental management and broadening public policy models to include environmental variables.

32. Given this perspective, the efficient generation, dissemination and use of knowledge on the costs of inaction and on the benefits of environmental improvements are key elements in formulating and implementing policy reforms directed towards improving environmental management. Firms and households may respond directly to information about environmental issues. While most industries do not want to contribute to environmental degradation, few respond as good citizens to information about the environmental consequences of their activities. Community groups, industry associations and resource user associations can exert pressure on their members to act responsibly. These actions reinforce government regulations and penalties which can provide important incentives for adjusting environmentally degrading activities to socially sanctioned levels. In Indonesia, for example, environmental regulators have significantly reduced water pollution by developing and publishing ratings of polluters' environmental performance.

33. Another way of narrowing the knowledge gap through the improvement of information flow is by supporting the accumulation of scientific data so that knowledge about the environment and the complex economic and environmental interactions can be steadily improved. Similarly, a better understanding of these interactions is essential for identifying environmental risk and efficiently managing natural resources. Better information can open new opportunities and prevent costly mistakes by allowing the fine-tuning of responses to environmental risk. Yet another way is by using environmental information in designing new technologies. Stimulated by environmental regulations that provide appropriate incentives, the supply of environmentally friendly technologies can be expanded. For instance, computer mapping systems that can monitor developments in the natural resource stock, pollution abatement technologies like electrostatic precipitators or flue gas desulphurization which can reduce air pollution emissions from power generation, and the equally important substitution technologies, such as renewable energy sources or unleaded gasoline, are all important innovations that can become part of the solution for environmental management.

34. Managing environmental knowledge, disseminating it and building capacity for its efficient use are at least as important as accumulating such knowledge. For this reason, many environmental projects now include information systems and capacity-building as part of project packages. Better environmental management also requires creating appropriate incentives, for example by removing market distortions, resolving policy and information failures, and, where appropriate, establishing compensation mechanisms for those who lose from these changes. Given the right incentives and the ability to process relevant information, people will start exploiting opportunities that benefit both themselves and the environment.

### B. The implications of privatization and the pursuit of efficiency

35. Agenda 21 called for US$ 125 billion annually in new and additional financial resources to go to developing countries to put them on the path to sustainable development. The funds were to come on grant or concessional terms from developed countries, with private-sector investment only to be encouraged as a support to the effort. What has happened since the adoption of Agenda 21, however, is the transfer of funds from developed to developing countries coming increasingly, year by year, from private rather than public sources. While official development assistance has declined from 0.34 per cent of developed country GNP in 1992, to 0.27 per cent in 1995, private capital flows have grown to over 86 per cent of total capital flows to developing countries as of 1996. This trend underscores the critical importance of mobilizing the private sector as a partner in the pursuit of sustainable development objectives.

36. The economic advantages of privatization, particularly of state-owned corporations and industries, are generally recognized: it promotes economic efficiency, attracts investment and reduces the burden of state ownership and the budgetary strain of loss-making enterprises. Privatization can also bring about improved environmental performance. The more efficient use of resources in privatized firms is the result of more effective corporate governance and management, greater attention to waste reduction, increased productivity of assets and improved access to capital, especially foreign direct investment, which means increased investment in new, more efficient and cleaner technologies. Exposure to international management practices such as ISO 14000 and market requirements is often a consequence of privatization as companies' export competitiveness improves.

37. While privatization can offer the opportunity for economic and environmental improvements, it cannot guarantee them. Government regulation and oversight are still necessary if the environmental benefits of privatization are to be realized. There are still environmental issues that need to be resolved during the privatization of polluting operations. Pollution flow problems, such as emissions and waste management, are related to the environmental performance of ongoing operations that are often assumed by the new owners. In most cases, however, the privatized entities are persistent violators of environmental requirements, and it would be unreasonable to expect full compliance without process changes or new investments. Provisions for such changes should be included in an environmental compliance plan to be agreed on by the investor and the government at the time of sale and which would allow a reasonable time for implementation as part of the buyer's broader investment plan. Environmental management plans and the application of environmental management systems such as ISO 14000 can further assist enterprises to improve their environmental performance. Environmental assessments for new investments should take into account commitments for compliance and the mitigation of potential adverse environmental impacts.

### C. Enhancing the role of local government in environmental management

38. The call for the localization of capacity-building to deal with urban-industrial environmental issues can be justified on several counts. First, industries and industrial organizations vary considerably in type from locality to locality. Globally, some segments of transnational production are undergoing radical transformation, while others continue to be characterized by older forms of organization, technology and production. In geographical terms, the general tendency has been for more polluting industries to be located in lower-income economies, not only because of relatively low environmental management capacities in these countries, but also due to the older, more polluting technologies which are transferred with the investment. In terms of indigenous enterprises, manufacturing in many cities in the region is typically found in shophouses and older commercial areas associated with particular ethnic groups. Although each enterprise may be small in size, the levels of pollution from them collectively can be substantial, difficult to monitor and even more difficult to regulate. In environmental terms, the implications of these industrial location patterns in cities and regions are that policies need to be suitable for many different types of technological and organizational possibility.

39. Second, the environmental situations of cities, even within the same country, can vary greatly and central governments have not thus far demonstrated the capacity to adjust policies and standards to suit different situations or to distribute resources equitably among cities. Action is a political process, emanating from local pressures and interests; it does not result from the simple realization by governments that improvements to urban and industrial environments are necessary. Localizing decision-making is therefore a way of bringing civil society and other local stakeholders into the political process. The failure to do so in the past has prevented local communities from engaging businesses in their areas in public discussions on environmental concerns.

40. Any process of decentralization to build local capacities would have at least three aspects: (a) increased local decision-making and management authority; (b) greater financial resources and autonomy at the local level; and (c) vastly increased manpower and personnel skills to engage in partnerships, streamlined regulatory processes and monitoring of the environment. There are tremendous needs in cities throughout Asia and the Pacific for each of these items. Even when the authority to make and carry out environmental policies has been given, initiatives may quickly fail due to acute skilled manpower shortages or inadequate financial management capacities of local governments. While the speed of decentralization and local capacity-building will depend on national and local political processes, international and other supportive organizations could greatly assist environmental management efforts through the promotion of local workshops and manpower training.

### D. Continuing and sustaining policy reforms

41. Although the positive demonstrations of sustainable development in the region are laudable, many governments agree that these achievements still fall short of what is required to effect fundamental changes for achieving the visions of Agenda 21 and the 1992 Rio Conference. New developments and trends that are poised to impact on the present efforts need to be taken into account. The emerging trends that are expected to influence the sustainable development policy reforms in the region have been discussed above. The Rio process, along with other discussions on shifting the development paradigms for the twenty-first century, has given impetus for a so-called "quiet revolution". Governments in the region are thus compelled to continue and sustain the various policy, structural and institutional reforms initiated. The environmental problems in the region are alarming and the financial requirements for addressing them are staggering. A recent Asian Development Bank study estimated that environment-related funding needs for the region would rise from US$ 38 billion in 1995 to almost US$ 250 billion by 2025. This projected growth is twice the estimated GDP growth in the region for the same period. Given this situation, governments wishing to sustain their policy reform agenda should be guided by the following principles: (a) set priorities for achieving objectives for sustainable development with the incorporation of clean, shared growth as the motivating driver; (b) continue the initiatives on the basis of a judicious mix of command-and-control and market-based incentives for the transformation of behaviour; and (c) anchor these reforms by continuously engaging the public and civil society, and in particular the private sector. Many of these principles are embodied in the regional action programme for 2001-2005, which merits the full support of the Ministerial Conference.

## IV. ISSUES FOR CONSIDERATION

42. Subregional, regional and global organizations can play a catalytic role in addressing the key issues identified in this paper. The Ministerial Conference may review these issues taking into account country priorities and suggest ways to deal with them in the regional action programme for 2001-2005, which is proposed for adoption by the Ministerial Conference. In particular, attention is drawn to the issues that are summarized in the following paragraphs.

43. The issues related to the conservation and management of resources for development identified in Agenda 21 are subject to discussion at the Commission on Social Development and will continue to be a major concern. They should be assessed within the context of the emerging policy trends of the region, as discussed in chapter I of the present document. The current trends in the degradation of the environment will have a profound impact on the sustainable development pursuits of Asian and Pacific countries. In the current policy review and subsequent policy design processes they require immediate consideration.

44. Fostering regional and subregional cooperation on the issues discussed in chapters I, II and III of the present document is a major undertaking. The Ministerial Conference may wish to provide guidance on the action that can be taken to promote environmentally sound and sustainable development policies in the region.

45. Financing the implementation of Agenda 21 and the regional action programme for 2001-2005 will remain a key problem in the region. The discussions on involving and persuading the private sector to finance sustainable development should be carefully examined and guidance may be provided, as appropriate, so that the Ministerial Conference can articulate its recommendations for action.

46. Improving governance, increasing the role of the private sector and civil society and decentralizing management functions are crucial to the sustainable development efforts in the region. These aspects should be given due consideration by the Ministerial Conference in the light of the expanding influence of these sectors in the pursuit of efficient and effective environmental management in the region and globally.

47. Advances in information technology are taking place and the demand for information on and knowledge of environmental management is growing in the region. Chapter II of the present document highlighted developments in these areas and identified the opportunities that they offer for the effective implementation of Agenda 21 and the regional action programme, which require the attention of the Ministerial Conference.

48. Additionally, each representative may wish to consider reviewing the environmental situation in the light of that of their own country and elaborate on their own national-level priorities in environment and development.