REGIONAL ACTION PROGRAMME FOR ENVIRONMENTALLY SOUND AND SUSTAINABLE DEVELOPMENT, 2001-2005

ABBREVIATIONS

ADB	Asian Development Bank
APCTT	Asian and Pacific Centre for Transfer of Technology
ASEAN	Association of Southeast Asian Nations
ASOEN	ASEAN Senior Officials on the Environment
CDM	Clean Development Mechanism
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CITYNET	Regional Network of Local Authorities for the Management of Human Settlements
DESCONAP	Regional Network of Research and Training Centres on Desertification Control in Asia and the Pacific
FAO	Food and Agriculture Organization of the United Nations
FADINAP	Fertilizer Advisory, Development and Information Network for Asia and the Pacific
GEF	Global Environment Facility
GHG	greenhouse gas
GIS	geographic information systems
ILO	International Labour Organization
ISO	International Organization for Standardization
LOGOTRI	Network of Local Government Training and Research Institutes in Asia and the Pacific
ODA	official development assistance
OECD	Organization for Economic Cooperation and Development
RICAP	Regional Inter-agency Committee for Asia and the Pacific
SACEP	South Asian Cooperative Environment Programme
SPREP	South Pacific Regional Environment Programme
TPN	Thematic Programme Network
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization
WTO	World Trade Organization

INTRODUCTION

Following the United Nations Conference on Environment and Development, the governments of the Asian and Pacific region have, within certain limitations and constraints, drawn up and implemented national strategies, action plans and programmes to attain the objectives of sustainable development. The international, regional and subregional organizations have developed their respective action programmes to assist the governments in their efforts. There were also some common problems and transboundary issues that lent themselves to action at the regional and subregional levels. To assist the governments of the region, the third Ministerial Conference on Environment and Development in Asia and the Pacific, held in 1995, adopted the Ministerial Declaration on Environmentally Sound and Sustainable Development in Asia and the Pacific and the Regional Action Programme for Environmentally Sound and Sustainable Development, 1996-2000.

The General Assembly, at its nineteenth special session held in June 1997, reviewed the implementation of Agenda 21 and noted that despite some progress in terms of institutional development, international consensus-building, public participation and private sector action, the state of the global environment had continued to deteriorate. As a result, the General Assembly adopted the Programme for the Further Implementation of Agenda 21. The assessment and conclusion applies equally to the overall trends in the Asian and Pacific region. Similarly, the twenty-second special session of the General Assembly, held in September 1999, made a comprehensive review and appraisal of the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States with guidance for further action, and the General Assembly, at its fifty-fourth session, adopted resolution 54/224 on the implementation of the outcome of the Global Conference on the Sustainable Development of Small Island Developing States.

The Ministerial Conference on Environment and Development in Asia and the Pacific, 2000 to be held on 31 August-5 September 2000 at Kitakyushu, Japan, will review major environmental and developmental trends and findings as highlighted in the report on the state of environment in Asia and the Pacific, 2000 and the implementation of the regional action programme, 1996-2000. Based on the recommendations of the General Assembly, a major effort to attain sustainable development in the region has been made. Drawing on the lessons learnt from this exercise and the implementation of earlier regional action programmes, the Regional Action Programme for Environmentally Sound and Sustainable Development, 2001-2005 has been developed to stimulate enhanced action. As we enter the twenty-first century, this Regional Action Programme is the fourth in a series of regional strategies and action programmes adopted at ministerial conferences since 1985. It is intended to build upon the progress to date and experiences gained through the previous regional action programmes and strategies. The Regional Action Programme covering the period

1996-2000, for example, identified 24 programme areas stemming from the major areas of priority action: pollution reduction, prevention and control and enhancement of environmental quality; conservation and management of natural resources and ecosystems; sustainable development policy improvement; and sustainable development indicators and assessment. Notable progress has been made in the region over the last five years in its implementation, and the Regional Action Programme takes into consideration those achievements to address effectively the emerging sustainable development issues and trends in the twenty-first century.

The Regional Action Programme fully recognizes the overarching need for poverty reduction as a fundamental prerequisite for achieving sustainable development. It further recognizes that poverty reduction through pro-poor economic growth, social development and the empowerment of peoples and institutions would contribute to such a process. The causes and effects of environmental degradation, like those of poverty, are wide-ranging and diverse. Environmental protection can only be effectively realized if it is accompanied by a comprehensive programme for social development and economic growth. In this connection, the Regional Action Programme identifies the programme areas that will address the issues of poverty reduction while securing a better environment.

The current Regional Action Programme is designed to take an action-oriented and focused approach with clear goals and targets to address areas of priority concern. Strategic environmental planning and management and the integration of environmental policy with economic policy are important guiding principles of the new action programme.

The Regional Action Programme will seek to achieve its aim, inter alia, by facilitating, supporting and promoting the implementation of the existing international, regional and subregional agreements and treaties. It will also use a range of other mechanisms, such as fiscal and economic policies, to promote environmental management, with programmes aimed at preserving regional cultural diversity and beneficial traditional practices. Increased public awareness and participation will stimulate an enhanced environmental programme. More specifically, the programme areas have been clustered around a number of strategic themes: environmental quality and human health; biodiversity; coastal and marine environments; freshwater resources; desertification and land degradation; globalization and policy integration; climate change; and sustainable energy development. Tools and institutional arrangements for implementation, reporting and review mechanisms have been included to ensure effective implementation.

Prioritization of activities and targets in the Regional Action Programme is based on the following criteria: (a) the need to address urgent issues; (b) the possibility of taking advantage of unique opportunities and replicating successful actions and strategies; (c) the potential to ensure

concrete action and produce results within a set time frame; (d) the need to undertake activities in a structured and coordinated manner.

Consistent with the special focus on the Small Island Developing States by the General Assembly through its twenty-second special session and resolution 54/224 of its fifty-fourth session, the programme also recognizes the need to focus more attention on the Small Island Developing States in all programme areas.

While the primary responsibility for implementing the Regional Action Programme lies with national governments and the necessary resources are to be mobilized by the countries concerned, a significant part of the activities will need to be carried out or coordinated at regional and subregional levels. The Programme takes fully into account the priorities identified by the governments and attempts to provide synergy with the existing programmes of subregional and regional organizations. The United Nations bodies and agencies and other international organizations and multilateral financing institutions have to play a major role in the implementation of the Regional Action Programme, including coordination, human resources development, capacity-building and the provision of technical assistance. Efforts are also necessary to harmonize the Programme with the work programmes of subregional, regional and other relevant organizations with a view to minimizing the multiplicity of efforts and optimizing the incremental cost of implementation.

The time frame for the implementation of the Regional Action Programme is 2001-2005, except where indicated otherwise. This implementation period is considered short-term. While some tangible results and targets could be obtained during this period, major tangible and identifiable benefits will be achieved only after the activities have been continued over a longer time frame. Such activities are referred to as long-term activities. The next Ministerial Conference on Environment and Development in Asia and the Pacific, which is likely to be organized by the year 2005, will review the progress in the implementation of the Regional Action Programme and recommend further measures as necessary.

I. PROGRAMME AREAS

A. Environmental quality and human health

1. Status and trends

With rapid economic development and population increases over the past 30 years, the environmental quality of both rural and urban areas has continued to decrease. The major environmental problems facing the rural population are those associated with poverty and

underdevelopment, such as access to drinking water, sanitation, education and health care, poor rural infrastructure for agriculture and related developments, and poor nutritional intake. Increased use of fertilizers and pesticides is contaminating the land and water resources. Urban populations in Asia have increased faster and most of the urban population is concentrated in a few cities. Similar increases and urban population concentrations have occurred in some Small Island Developing States such as Papua New Guinea, Solomon Islands, and Vanuatu. The impacts of rapid urbanization include encroachment on agricultural and forest lands, including hazardous lands; urban air and water pollution and associated diseases; unavailability of safe drinking water and the over-exploitation of groundwater causing urban ground subsidence and saltwater intrusion; increasing traffic congestion; noise pollution; and significant increases in solid municipal and industrial wastes. The urban poor are the most affected by urban environmental degradation. They tend to live and work in the most polluted and environmentally sensitive places and they do not have the means to protect themselves against pollution. Many of their settlements lack safe water supplies and sewerage and drainage facilities. Environmental conditions affect their health, which impoverishes them further.

In 1995, nine of the world's 14 largest urban centres (megacities with more than 10 million residents) were in the Asian and Pacific region. By the year 2015, Asia will have 27 of the 33 largest cities. Ten of Asia's 11 megacities presently exceed World Health Organization (WHO) guidelines for particulate matter by a factor of at least three and in some cases it is 10 times higher. Levels of smoke and dust, a major cause of respiratory diseases, are generally twice the world average. Quality of air in terms of carbon monoxide, sulphur dioxide, and nitrogen oxides are in many cases above the WHO standards despite initiatives taken by many governments. Slums and squatter settlements are growing at a much higher rate than the urban growth rates in some of the cities, adding stress to the already stressed capacity of municipalities to provide public services. Traffic congestion is another serious problem, causing air pollution and extending travel times, thereby affecting human health and incurring economic losses through delays.

Industrialization, poor quality of fuel, and inefficient and insufficient public transport systems are the factors behind the increasing air pollution. According to some estimates, automobile emissions account for two thirds of the pollutants. In particulate air pollution, local reductions were achieved in some countries by switching to cleaner fuel. Phasing out of leaded gasoline in some countries (India, Nepal, Republic of Korea, Thailand) resulted in the reduction of lead pollution but the level of lead in many cities is at a dangerously high level. The health effects of air pollution are a serious threat to the large urban centres and also in the rural areas because of indoor air pollution.

The production, conversion and use of energy have various environmental consequences.

The burning of biomass and coal for cooking is a major cause of indoor and local air pollution. Power stations using fossil fuels, especially coal, are a major source of carbon dioxide as well as sulphur dioxide and nitrogen oxides and cause local and long-range transboundary air pollution. Inefficient and unsustainable energy consumption patterns in industry, households and transport have also contributed to air pollution. With increasing sulphur dioxide emissions, acidification of the environment is an emerging issue. In response, many countries of East and South-East Asia have begun to monitor acid deposition in their own countries, and 10 countries have agreed to participate in the Acid Deposition Monitoring Network in East Asia. Similarly in South Asia, the Malé Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia, was adopted by the Ministerial Conference of the South Asian Cooperative Environment Programme (SACEP) in 1998. Two centers namely North-East Asian Centre for Pollution Reduction in Coal-fired Power Plants and North-East Asian Centre for Environmental Data and Training have been established under the Framework for the North-East Asian Subregional Programme of Environmental Cooperation (NEASPEC).

Frequent and widespread forest fires in parts of Indonesia in recent years have caused problems of haze, posing a serious threat to the health of the people in neighbouring countries. The haze incident for several months in 1997 in South-East Asia was responsible for smoke pollution. In December 1998, the Association of Southeast Asian Nations (ASEAN) adopted the Hanoi Plan of Action reaffirming their commitment to implement the ASEAN Cooperation Plan on Transboundary Pollution with particular emphasis on the Regional Haze Action Plan, 1997.

Water quality has been steadily degraded by a combination of factors including human excreta, sewage and industrial effluent, urban and agricultural run-off and saline intrusion. Levels of suspended solids in Asia's rivers have almost quadrupled since the late 1970s and rivers typically contain four times the world average and 20 times the Organisation for Economic Cooperation and Development (OECD) levels. Water pollution caused by organic matter, pathogenic agents, fertilizers and pesticides, and hazardous and toxic wastes is another serious problem. Biochemical oxygen demand in Asian rivers is 1.4 times the world average. Asia's rivers contain three times as many bacteria from human waste (faecal coliform) as the world average and more than 10 times OECD guidelines.

With the growth in urban population, unsustainable consumption and consequent lifestyles, another problem faced in the Asian cities is waste disposal. Asia's rapidly rising incomes have brought about a dramatic increase in solid waste. The total amount of solid waste generated each year in the Asian and Pacific region is about 700 million tonnes and industrial activities generate 1,900 million tonnes of waste per year. On average, municipal authorities in Asian cities spend

between 50 and 70 per cent of their revenues on municipal waste management. Nonetheless, collection services remain low, with only 50 to 70 per cent of residents receiving any service. Landfill sites are rapidly running out and selection of new sites rarely takes geological suitability into account. Indeed many cities and towns do not have sanitary landfill sites. In places where wastes are incinerated, high levels of dioxin emissions are health hazards. In the cities where the capacities are meagre, wastes are piled up, breeding disease, or burned in which case toxic fumes pollute the atmosphere.

As urban areas, especially megacities, expand further, increases in traffic congestion, water and air pollution, and slums and squatter settlements can be expected. Most large Asian cities already face an acute shortage of safe drinking water and a fivefold increase in demand is anticipated within the next 40 years. Public expenditure on water and sanitation is around 1 per cent of gross domestic product for most countries of the region.

The limited scope for landfill sites in the Pacific Islands poses a significant problem for waste disposal and contributes to ground water pollution – a source of drinking water supply. In addition, economies of scale poses a major problem in the disposal of heavy machinery and vehicle parts within the Pacific Islands. Automobile emissions pose localized problems owing to inefficient combustion.

Successful urban projects, such as the Orangi pilot project in Pakistan to build a sewage system with community participation, offer examples to emulate. However, communities and non-governmental organizations can only solve the problems within the neighbourhood. The lack of external infrastructure and wastewater treatment remains a problem. The large cities in the developed world are examples of a revived urban environment achieved through regulations and clean-up efforts. These will be difficult to emulate mainly because of cost considerations. The successful experience of the city of Kitakyushu in mitigating urban environmental problems can be cited.

The last five years have seen an unprecedented development in international efforts to restrict and control the international movement of hazardous chemicals. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal is central to this effort and calls for national action as well. Insufficient progress has been identified in the control of transboundary movements of hazardous wastes. The economic cost of these problems has been very heavy on the countries of the region, affecting their economic and social development. In this connection, there is an urgent need for an international consensus on the definition of “toxic waste”

as opposed to a “recyclable waste”. The legal framework, trained manpower, technical knowledge, information database and network, people’s empowerment and participation also need more improvement at national, regional and subregional levels. The secretariat of the Basel Convention has already proposed to carry out a review of the health and environmental effects of hazardous wastes focusing on relevant industry sectors. The study will identify the advantages, disadvantages and obstacles to environmentally sound management measures, including cleaner production processes and environmental management standards and auditing.

A major environmental trend all over the region in the past decade has been the adoption of cleaner production. An increasing number of countries are now signing the United Nations Environment Programme (UNEP) International Cleaner Production Declaration adopted in 1998 in the Republic of Korea and are adopting national strategies to be implemented over the next few years.

The use of the International Organization for Standardization (ISO) 14000 certified environmental management systems is becoming more widespread. However, some concerns about the feasibility of small and medium-sized enterprises adopting these highly structured environmental management systems are being aired. There seems to be a need to promote less complicated and less formalized environmental management systems for many of the companies in the Asian and Pacific region.

In order to respond to environmental challenges, access to information about the issues and management tools such as corporate environmental reporting, environmental impact assessments, environmental rating of companies and products, eco-labelling and emergency preparedness plans is necessary. Such information includes the environmental performance of individual industrial operations, the potential impact from planned activities, information about environmental characteristics of products and services, and risks and remedial actions associated with industrial operations. Many countries in the region are already using several of the tools available. However, there is a clear and stated need to further adopt and promote the use of a wide range of environmental information and communication tools currently available.

2. Mission statement

To make time-bound efforts at every level to achieve improvements in environmental health by: (a) taking concrete actions to reduce the generation and release of substances that are detrimental to human health in ways that are feasible and consistent with sustainable development; (b) reducing wastage of natural resources, in particular fresh water, through natural resources management; (c) enhancing the institutional and human resources capacity of national and local

governments; and (d) identifying environmental performance indicators and targets and preparing and implementing policies and programmes to ensure their achievement.

3. Selected areas for action

The following areas have been selected:

(a) The management of urban and rural environmental problems;

(b) The control of air and water pollution;

(c) The minimization of all kinds of wastes and toxic chemicals;

(d) Transboundary issues such as haze, the yellow dust phenomenon and acid deposition to reduce the health hazards.

4. Activities and targets at national level

(a) Short-term

(i) Formulate or review the implementation of integrated urban environmental management plans, covering air and water quality, appropriate use of land resources, transport systems and traffic regulation, water supply and sanitation, energy supply and demand management, solid waste management, urban agriculture and forestry and green belts, for most of the highly urbanized agglomerations and rapidly growing urban areas of the region. This should include:

a. Review and modification, as necessary, of subregional, national and/or local standards for air and water quality depending on local needs;

b. Development of national and subnational action plans for efficient, safe disposal of human waste, particularly in rural areas and urban slums, including waste disposal site selection, collection, treatment, disposal and recycling of solid wastes, including biomedical waste;

c. Plans for the creation of adequate facilities for the safe disposal of all kinds of wastes, including possible conversion of wastes into bio-fertilizer and energy, mechanisms for waste exchange and the creation of treatment, storage and disposal facilities;

d. Guidelines for assessing highly polluting industries and the safe handling of harmful chemicals;

e. Country-specific assessments on the health effects of environmental pollution by collecting related data and information including environmental health impact assessments;

f. Policy development for partnership with all relevant stakeholders to address urban environmental issues;

(ii) Formulate and enforce the regulations by enhancing the institutional and human resources capacities of local government bodies and higher authorities;

(iii) Phase out the use of leaded gasoline in large urban centres as soon as possible;

(iv) Promote rational and efficient production and use of energy including renewable energy ?;

(v) Promote cleaner fuel and popularize the use of compressed natural gas and liquefied petroleum gas to reduce particulates and sulphur oxide emissions;

(vi) Conduct scientific assessments of chemical pollution, in particular arsenic and fluoride, of groundwater supply in the affected countries of the region to assist in the early detection, prevention and identification of mitigation measures;

(vii) Promote the wider adoption of cleaner technologies for selected industrial processes;

(viii) Continue to develop national capacities for emergency and disaster preparedness and response through existing regional programmes, such as the Asian Disaster Preparedness Centre and the UNEP programme on awareness and preparation for emergencies at local level;

(ix) Strengthen national capacities for adopting environmentally friendly alternatives to hazardous chemicals for use in pest management and vector control, and promote training of end users and capacity-building at concerned national institutions and authorities.

(xi) Consider vulnerable groups such as children and women for targeting interventions.

(b) <u>Long-term</u>

(i) Promote increased private sector involvement in urban and rural environmental improvement, particularly for the construction and maintenance of pollution control facilities, urban transport systems, water supply and sanitation, waste management and other public services on a cost recovery basis;

(ii) Depending on the need, upgrade the technology of vehicular engines to match internationally recognized norms or country-specific equivalent standards;

(iii) Strengthen and achieve maximum compliance with environmental regulations for

both air and water pollution;

(iv) Establish and maintain routine channels of communication between environmental science institutions and central/local authorities to ensure an informed and well-balanced decision-making process;

(v) Promote sustainable energy development and management strategies;

(vi) Introduce practices of reuse and recycling of water in industries and the urban domestic sector;

(vii) Prepare a regional database on the quantities and sources of toxic chemicals and hazardous wastes;

(viii) Phase out existing two-stroke engines in two- and three-wheeler vehicles and those not meeting national environmental standards;

(ix) Enhance national capacity in handling and management of all kinds of wastes, including human wastes and hazardous wastes and toxic chemicals;

(x) Reduce solid waste, hazardous wastes and toxic chemicals to a defined level by adopting waste minimization and recycling techniques;

(x) Promote wider acceptance of the Basel Convention and prior informed consent procedures under relevant international agreements and guidelines and establish regional and subregional agreements as required;

(x) Strengthen compilation of knowledge related to negative impacts of acid deposition on the environment and take measures necessary to prevent or reduce such impacts;

(xi) Strengthen measures to regulate the generation, handling and disposal of waste, recycling of materials, and improve resource utilization efficiency and recovery;

(xii) Promote proactive corporate environmental management in small and medium-sized companies by training, information and capacity-building;

(xiii) Develop clean air and clean water acts for comprehensive coverage as appropriate;

(xiv) Reduce fertilizer and pesticide run-offs, faecal coliform and pathogens and biochemical oxygen demand in water bodies so that they comply with standards for use involving human contact;

(xv) Organize programmes for dealing with the chemical and arsenic contamination of soil and groundwater resources, as necessary;

(xvi) Review and strengthen the comprehensive regional action plan to prevent and fight forest fires, the yellow dust phenomenon, El Niño and La Niña effects in the region;

(xvii) Promote universal access to safe drinking water and targeted access to sanitation;

(xix) Assist governments in establishing their respective drinking water quality standards and strengthen national capacity in water quality surveillance as a measure to detect any significant change of drinking water quality, in particular faecal coliform, pathogens, arsenic and excess fluoride.

(xx) Develop national/local transport demand management plan with a view to achieving sustainable transport.

5. Implementation mechanisms

(a) Economic instruments

(i) Implement the "polluter pays principle";

(ii) Introduce price-based instruments such as environmental taxes and charges, and deposit refund schemes as much as possible;

(iii) Reduce subsidies on highly polluting fuels, fertilizers and pesticides as much as possible, keeping in view their environmental impacts;

(iv) Ensure adequate investment in waste minimization, in particular with respect to hazardous wastes and toxic chemicals.

(b) Regulatory controls

(i) Introduce policies for clean technologies in industries and vehicles, environmental audits for existing industries, zoning criteria for new industries and stringent standards for new exhausts;

(ii) Encourage the adoption of cleaner production policies in new and existing industries;

(iii) Invest in emission control, waste treatment and safe disposal systems, including bio-medical wastes;

(iv) Consolidate pollution control laws, including full liability laws, and implement them effectively.

(c) Technological interventions

(i) Introduce cleaner production for industries, especially in small and medium-sized enterprises, and cleaner technologies for vehicles, and develop cheap and simple technologies for the small-scale sector;

(ii) Encourage the reduction, reuse and recycling of wastes in industries and the urban domestic sector;

(iii) Encourage integrated pest management and the development and implementation of organic farming techniques, including organic composting techniques for biodegradable wastes, waste minimization and waste exchange practices;

(iv) Identify a range of environmental friendly, socially acceptable and cost-effective technologies and support the transfer of appropriate technologies to the grass-root level through the involvement of local communities, the private sector and other stakeholders;

(v) Provide technical help in creating treatment, storage and disposal facilities for hazardous wastes and chemicals.

(d) Institutional development and capacity-building

(i) Strengthen national policy-making and regulatory bodies with trained manpower and monitoring equipment with assistance from national governments and regional, subregional and multilateral bodies in terms of technical and advisory inputs;

(ii) Empower municipalities and local bodies to control pollution from small-scale industries;

(iii) Enhance capacity-building in waste management including waste minimization and integrated urban environmental plans;

(iv) Build the capacity for social mobilization and communication skills at all levels to accelerate action to improve environmental quality;

(v) Build and strengthen existing data banks on clean technology and cleaner production and promote their efficient utilization by improving existing global, regional and national networks.

(vi) Coordinate closely the activities of relevant parts of governments to ensure integration of social, economic and environmental policy.

(e) Awareness and stakeholder participation

(i) Involve local people, non-governmental organizations, community-based organizations, user groups, women groups and youth in air and water quality and waste management and provide the public with information through conventional and modern channels;

(ii) Promote voluntary environment reporting to give decision makers and the public access to information about the environmental impact of different industries and operations;

(iii) Enhance public awareness and stimulate consumers' preference for environmentally friendly products and services by supporting environmental rating and eco-labelling of companies and their products and services;

(iv) Establish rights to access to information and empower the people;

(v) Initiate public awareness campaigns and involve private sector participation.

6. Activities at subregional and regional level

(a) Continue assessments of air and water quality and the acidic deposition and haze in the region and the management strategy used;

(b) Enhance technical and financial support to governments in adopting clean technologies, emergency responses, demonstration projects, waste minimization techniques and zoning exercises;

(c) Promote wider acceptance of the Basel Convention and prior informed consent procedures under relevant international agreements and guidelines, and build institutional capacity at national and regional level as required;

(d) Promote the exchange and transfer of environmentally sound technologies through existing organizations and mechanisms such as the Asian and Pacific Centre for Transfer of

Technology (APCTT);

(e) Strengthen exchanges of information and networks on urban environment issues such as CITYNET (Regional Network of Local Authorities for the Management of Human Settlements), the Forum on Urban Geology in Asia and the Pacific, the International Environmental Technology Centre of UNEP, and the Network of Local Government Training and Research Institutes in Asia and the Pacific (LOGOTRI);

(f) Advise on improved policy and strategic planning in environmental monitoring, modelling and bio-monitoring techniques;

(g) Strengthen the information networks for fertilizer and pesticide use including the Fertilizer Advisory, Development and Information Network for Asia and the Pacific (FADINAP);

(h) Systematically collect and exchange data on toxic chemicals and hazardous wastes generated in the region and provide technical assistance to countries on the formulation of an action plan to implement the Basel Convention and develop a regulatory framework for harmonizing the classification and labelling of chemicals in line with the Chemicals Convention, 1990, No.170 of the International Labour Organization (ILO) concerning the safe use of chemicals at work;

(i) Promote the participation of countries in the implementation of the prior informed consent procedure through the provisions of the 1998 Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the “interim prior informed consent procedure” pending entry into force of the Convention;

(j) Accelerate the ASEAN cooperation plan on transboundary pollution and the Regional Haze Action Plan of 1997 and support ASEAN efforts in specialized meteorological centres to monitor, inter alia, forest and other fires and provide an early warning system;

(k) Develop the Acid Deposition Monitoring Network in East Asia, enhance the momentum of its activities, explore the possibilities for its expansion to other geographical areas and use it to improve environmental quality;

(l) Follow up the recommendations of the Malé Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia;

(m) Encourage and support the efforts of the South Pacific Regional Environment Programme (SPREP) to upgrade subregional awareness of solid waste issues and the sound

management of solid waste as well as implementation of the Waigani Convention;[1]

(n) Make use of existing regional forums on cleaner production, such as the Asia-Pacific Round Table on Cleaner Production, to identify and promote issues of priority for the region, to be forwarded to the UNEP International High-level Round Table on Cleaner Production.

B. Biodiversity

1. Status and trends

The region includes parts of three of the world's most precious bio-geographic realms. It also includes the world's highest mountain system (Himalayas), the second largest rainforest complex, and more than half the world's coral reefs. The South-East Asian subregion is noted as the centre of diversity of wild and domestic cereals and fruit species. Despite the Convention on Biological Diversity and other conventions such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the SPREP Convention, the ASEAN Agreement, and efforts made by countries of the region under Agenda 21 and the Regional Action Plan, 1996-2000, the loss of biodiversity, degradation of forests and watershed areas, and damage to wildlife habitat continues. Like South East Asia, the Pacific subregion is also rich in marine biodiversity and resources. This degradation is due to direct harvesting and export of natural products, particularly timber and fish, the expansion of agriculture into primary forests, wetlands and grasslands and the replacement of traditional native crops with high-yielding exotic species. For the Pacific Island countries of Papua New Guinea, Solomon Islands and Vanuatu the problem of deforestation is exacerbated by logging practices that are unsustainable. In addition, urbanization, pollution, mining, tourism, introduced species, hunting, illegal trade in endangered species and lack of proper management practices have taken their toll. In the last decade, demands on biological resources increased sharply owing to rapid economic and population growth. The major ecosystems in the Indo-Malayan region are estimated to have lost almost 70 per cent of their original vegetation. Overall habitat losses have been acute in the Indian subcontinent and China. Dry and moist forest have suffered 73 and 60 per cent depletion respectively, while wetlands, marshes and mangroves have lost 55 per cent of their original coverage. Thailand, the island of Java in Indonesia, and the central island of the Philippines have experienced extensive conversion of their natural

[1] Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes Within the South Pacific Region, adopted at Waigani, Papua New Guinea, in 1995.

habitats. Biological destruction has been comparatively less severe in the South Pacific. Increasing habitat fragmentation in South-East Asia depleted the wide variety of forest products that used to be the main source of food, medicine and income for indigenous people. A major concern in South Asia, particularly in the Indian subcontinent, has been the loss of biodiversity brought about by compounding the long-term pressure on grasslands with rapid growth in human and livestock populations. Tundra and taiga forests in the far east of the Russian Federation are also declining. Modern agriculture has reduced genetic diversity.

The most important recent outcome of modern agricultural biotechnology is genetically modified plant seeds which are intended to increase crop yields with relatively low inputs and reduced vulnerabilities. But many countries have expressed concern in terms of the long-term environmental and human health impacts and their irreversibility.

Wetlands, including coral reefs, are among the more productive and endangered biological systems. They have many life-supporting functions and products that help humanity survive. Wetlands, including coral reefs, are being increasingly polluted by human activities which produce industrial effluents, and agricultural, urban and other run-offs, and are threatened by over-exploitation leading to reduced availability of water, floods, eutrophication and loss of revenue and life support for the poor.

Since January 1995, 13 regional states of Asia and the Pacific have ratified the Convention on Biological Diversity. The initiatives taken by countries as regards policies, regulations and enforcement, institutional capacities and inter-agency coordination need strengthening. The participatory approach in forest management has gained some success in the region.

Any action at protecting biodiversity should be aimed at conserving the ecosystems such as coastal and marine environments, riverine ecosystems and wetlands, grasslands, forests and mountains, critical habitats, and threatened and endangered species. Action programmes in all these areas are a prerequisite for conserving biodiversity.

2. Mission statement

To improve substantially the resilience of Asian and Pacific biodiversity by reducing the threats and ensuring full public involvement in conserving biodiversity.

3. Selected areas for action

(a) Conservation, enhancement and restoration of key ecosystems, habitats, species and features of the landscape;

(b) Sustainable management and the wise use of biological diversity;

(c) Integration of biodiversity conservation and sustainable use objectives into all sectors managing or affecting such diversity;

(d) Improved information on and awareness of biodiversity conservation issues, including biosafety, and increased public participation in actions to conserve and enhance biodiversity;

(e) Improved understanding of the state of Asian and Pacific biodiversity and processes that affect sustainability.

4. Activities and targets at national level

(a) Short-term

(i) Identify critical areas and species to be protected, including those threatened by the development process, and prepare an enhanced national management plan for the conservation of biodiversity;

(ii) Promote the implementation of the Convention on Biological Diversity and the early ratification of the Biosafety Protocol;

(iii) Encourage increased adherence to CITES, the World Heritage Convention concerning the Protection of World Culture and Natural Heritage, the Convention on the Conservation of Migratory Species of Wild Animals, the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, the proposed ASEAN framework protocol on access to genetic and biological resources, and participation in the International Coral Reef Initiative;

(iv) Establish gene banks, for example, in situ gene banks and village ex situ collections, where they have not yet been established;

(v) Prioritize critical habitats to be protected and formulate conservation and management plans;

(vi) Achieve the targeted increase in forest area, as far as possible, every year;

(vii) Assess the status of wetlands and lakes conservation and strengthen networks for information exchange in the region;

(viii) Complete a few demonstration projects and case studies on improved land management and desertification control;

(ix) Document traditional knowledge and practices in biodiversity conservation;

(x) Promote capacity-building in biosafety measures at the national level;

(xi) Develop action plans for species threatened or endangered by the development process.

(b) Long-term

(i) Develop a system of nature reserves and other protected areas to cover a certain percentage of each of its main ecological regions;

(ii) Assess the status of information on biodiversity conservation, including forests, and the establishment of information and database systems at the national, subregional and regional levels in a phased manner;

(iii) Promote capacity-building in human resources development in assessment, conservation and research in biodiversity and forestry management;

(iv) Support the networking of regional scientific and technical institutions specialized in training and research in biodiversity;

(v) Promote enhanced community forest management at the national level to cover specific degraded forests.

5. Implementation mechanisms

(a) Regulatory controls and economic instruments

(i) Prepare or update a biodiversity inventory to support strengthened planning and management of protected areas and biodiversity conservation;

(ii) Establish in situ and ex situ conservation of the medicinal, endangered and other useful species of plants and animals;

(iii) Promote regulation on biosafety and access for research and bioprospecting, as appropriate.

(b) Technological interventions

(i) Revive folk uses, which are sustainable, of biodiversity and promote the tangible benefits to local communities of conserving traditional knowledge and practices;

(ii) Prepare improved national plans for forestry, grasslands, coastal and marine areas and river and wetlands management, support improvement in institutional and legal systems, create comprehensive databases and encourage the use of economic instruments for growth and sustainable development;

(iii) Promote research programmes on biosafety.

(c) Institutional development and capacity-building

(i) Help prepare enhanced strategic management plans for the protection and conservation of biodiversity for relevant ecosystems, carry out assessments of the status and build-up of databases and integrate the concerns of biodiversity conservation with national economic and social development planning;

(ii) Develop national mechanisms for the protection of traditional knowledge and related rights, including intellectual property rights;

(iii) Improve capacities for the promotion of ecotourism including an assessment of carrying capacities, environment and socio-cultural aspects, networking of the regional scientific and technical institutions, and human resources development in assessment, conservation and research in biodiversity management and sustainable use**,** noting that the year 2002 has been designated the International Year of Eco-tourism;

(iv) Empower local Governments and authorities to ensure biodiversity is valued and protected at the local level by their activities.

(d) Awareness and stakeholder participation

(i) Integrate stakeholders' participation, including the full participation of women, community-based organizations, user groups and the private sector, in biodiversity conservation programmes;

(ii) Encourage people's awareness and involvement and stakeholder participation in joint forest management and planning, and the management and conservation of biodiversity.

6. Activities at subregional and regional level

(a) Promote subregional and regional cooperation in identifying and designating transboundary protected areas;

(b) Promote subregional or regional networks of protected areas;

(c) Promote capacity-building and subregional and regional programmes for the conservation of migratory birds and animals;

(d) Promote a regional inventory of critical ecosystems, habitats and species for biodiversity conservation;

(e) Organize workshops and training courses to enhance national capacities for the management of biodiversity;

(f) Ensure the effective implementation of the ASEAN Agreement on the Conservation of Nature and Natural resources, 1985 and other relevant subregional initiatives;

(g) Strengthen regional and subregional centres for biodiversity conservation;

(h) Catalyse the development and assist in the implementation of the proposed ASEAN framework agreement on access to genetic and biological resources;

(i) Prepare and implement the SACEP regional action plan on biodiversity;

(j) Encourage and support SPREP efforts in the establishment and management of conservation areas, capacity-building and the implementation of strategic action plans for Pacific small island developing states;

(k) Promote efforts to conserve mountain ecosystems, such as the Himalayas, taking into consideration the fact that the year 2002 has been designated International Year of Mountains.

C. Coastal and marine environments

1. Status and trends

The importance of coastal areas in terms of fishery resources, biodiversity conservation, improved economic growth, tourism and food security is recognized by all the countries of the Asian

and Pacific region. Despite action at national, regional and subregional levels under Agenda 21 and the Regional Action Programme, 1996-2000, coastal areas are continually exposed to environmental stress because of (a) land-based sources of pollution resulting from the breaking up of ships, transport, tourism and industrial activities including oil spills, discharge of sewage and industrial effluents and a heavy load of sediments, (b) prawn culture and aquaculture activities along the coastline, (c) unplanned important development activities without a proper coastal zone management plan, (d) ship and sea-based activities including oil spills, sludge disposal and mining in coastal areas, and (e) offshore petroleum and gas exploration. Two thirds of the world's total sediment transport to oceans occurs in South-East Asia. Algal blooms, red tides and fish kills are not uncommon in the region. Red tides have been reported in many countries, including Australia, China, Japan, New Zealand and the Philippines. Seventy per cent of the coral reefs of South Asia are in poor condition. This situation exists even after ratification by 23 states in the region of the United Nations Convention on the Law of the Sea.

Small islands are ecologically fragile and vulnerable. Since they have limited resources and are isolated from the market, they are in an economically disadvantaged situation. Their ecological biodiversity and genetic reserves are very significant. The Barbados Declaration on the Sustainable Development of Small Island Developing States and the action programme for sustainable development in 1994 were a step forward in protecting the ecology and environment as well as the economy of the small island countries.

Tourism in the coastal areas is the fastest growing sector of the economy in Asia and the Pacific. It accounts for almost 20 per cent of total spending by international tourists. The massive increase in tourist traffic has serious environmental implications in terms of land erosion, waste disposal, pollution, extraction of resources, deterioration of ecology and damage to cultural values. The tourism development projects in the region have had a serious impact on the physical and ecological environment affecting the resource base on which tourists survive. Thus, tourism has resulted in damage to coral reefs and other marine biodiversity. Encroachments and destruction of mangroves have also occurred in the development of commercial sites to provide shopping amenities for tourists.

Lack of irrefutable and clear information about the nature and extent of the problem, legal and institutional complexities, non-involvement of local communities and weak multisectoral cooperation are some of the reasons for the slow progress in managing the coastal and marine environment. In line with the overall multifaceted approach to environmental management that is promoted and increasingly applied in the region, not only legal instruments, but the whole range of environmental tools, including financial incentives, environmental management systems and

environmental reporting, should be utilized.

2. Mission statement

To reduce the threats to and improve, rehabilitate and protect the coastal and marine environment for the sustainable development of living and non-living resources and ecotourism.

3. Selected areas for action

(a) Conserve, enhance and restore key coastal and marine environmental resources, ecosystems and habitats;

(b) Promote sustainable management and use of coastal and marine environmental resources through an integrated coastal area or zone planning approach;

(c) Improve information and awareness of marine and coastal environmental issues and increase public participation in actions affecting coastal and marine environments;

(d) Improve the understanding of the marine and coastal environment and the processes affecting its life support system;

(e) Promote partnerships among the stakeholders for planning, development and management of the resources of the coastal areas.

4. Activities and targets at national level

(a) Short-term

(i) Depending on the need, assess and establish databases on the state of the coastal and marine environment, including small island states and tourist destinations;

(ii) Strengthen capacities (including legal instruments, financial incentives, and environmental management systems) on the prevention and control of land-based pollution;

(iii) Identify fragile and sensitive coastal and marine environments and develop and implement action plans for their conservation;

(iv) Complete national action programmes and plans for water resources management, for small island states as needed;

(v) Provide countries and small islands in the region with technical, advisory and hardware assistance for the establishment of a sound monitoring system with satellite applications to gauge tides, the health of coastal marine water, information for potential fishery resources and other water quality parameters;

(vi) Strengthen capacity-building in various aspects of coastal environment management and ecotourism management;

(vii) Develop national strategies to combat environmental impacts associated with global climate change;

(viii) Enhance emergency preparedness and relief measures for natural disaster management.

(b) Long-term

(i) Encourage and enhance environmentally and economically sustainable fisheries;

(ii) Formulate integrated coastal zone management plans that give importance to effective resource management and that contain environmental pollution from all sources;

(iii) Promote wider ratification and observance of international and regional conventions on the protection of coastal and marine environments including the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), the 1990 Oil Pollution Preparedness, Response and Cooperation Convention and the 1982 Convention on the Law of the Sea.

5. Implementation mechanisms

(a) Regulatory controls and economic instruments

(i) Publish information periodically, on the state of coastal and marine environments at the national and subnational level, as necessary;

(ii) Accelerate implementation of the UNEP regional seas action plans for different subregions;

(iii) Encourage regional cooperation on combating marine oil-spill and ship-borne pollution;

(iv) Implement the regional action plans for land-based sources of pollution under the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities;

(v) Improve data collection and environmental monitoring of all coastal and marine environments;

(vi) Improve, build and plan control mechanisms for tourism development within the coastal zone and apportion tourism taxation revenue for tourist development and management and environmental improvement activities;

(vii) Review and strengthen environmental legislation and regulatory systems, particularly empowering local communities to control the pollution of common resources and to make more effective use of economic instruments;

(viii) Provide the private sector with economic incentives to promote sustainable coastal

and tourism development activities, such as tax exemptions on pollution control equipment, incentives, and recycling plans.

(b) Technological interventions

(i) Link national institutes and promote coordination mechanisms at the national level for strengthening and integrating databases;

(ii) Prepare profiles on the state of the coastal and marine environment to support the preparation of plans and projects for integrated coastal management;

(iii) Provide the countries in the region with technical advisory and hardware assistance for the establishment of a sound monitoring system with satellite application to gauge tides, the health of coastal marine water, recommendations for potential fishing zones and other water quality parameters;

(iv) Support technical development in geographic information systems (GIS) information for critical habitats in the coastal/marine areas;

(v) Provide technical and hardware assistance that will enable countries of the region to monitor annual sediment and toxic chemical loading in rivers or directly in the ocean, supported by the application of mathematical modelling integrated with remote sensing/GIS;

(vi) Provide technical and hardware assistance that will enable countries of the region to assess and identify the potential locations where coral reefs are at increasing risk from pressures directly or indirectly associated with human activities.

(c) Institutional development and capacity-building

(i) Strengthen capacity-building for scientific and technical personnel to develop strategic coastal zones management plans and their implementation;

(ii) Integrate environmental and social issues with economic planning and the use of economic instruments in protecting coastal and marine environments;

(iii) Carry out case studies of aquaculture development in the region to determine its impact on the coastal ecosystems, particularly on mangrove forests;

(iv) Based on the results of these studies, develop guidelines for the sound development

of commercial fisheries while at the same time ensuring a sustainable livelihood for coastal communities, particularly fishermen;

(v) Strengthen the capacity to prepare a master plan for environmentally sound coastal tourism;

(vi) Ensure that local government has the appropriate powers and incentives so that local planning leads to protection of coastal environment and communities.

(d) Awareness and stakeholder participation

(i) Encourage, empower and educate the general public, non-governmental organizations, women's groups and youth in protecting and managing the coastal and marine environment;

(ii) Develop methodologies for benefit-sharing with coastal communities from commercial coastal activities;

(iii) Target the tourism industry with information and awareness campaigns.

6. Activities at subregional and regional level

(a) Promote subregional cooperation to combat natural disasters such as typhoon and ocean surges and man-made disasters, such as marine oil spills, and the prevention of land-based and ship-borne pollution;

(b) Promote the vigorous implementation of the UNEP regional seas action plans in different subregions including the Pacific Ocean pollution prevention programme of SPREP, the South Asian Seas action plan of SACEP, the ASEAN regional action plan for the protection of the marine environment and the North-West Pacific action plan for the coastal and marine environment;

(c) Continue the ongoing programmes of integrated coastal zone management promoted by United Nations bodies and agencies and regional and subregional organizations such as the International Centre for Living Aquatic Resources, the Coordinating Committee for Coastal and Offshore Geoscience Programmes in East and Southeast Asia, the South Pacific Applied Geoscience Commission, the South Pacific Regional Environment Programme and the Indian Ocean Marine Affairs Cooperation;

(d) Consolidate and accelerate action on 10 sectoral priority programmes detailed in the 1994 Barbados Programme of Action for the Sustainable Development of Small Island Developing

States taking into account the outcome of the twenty-second special session of the General Assembly; and assist and improve the technical and financial capacity of SPREP to provide the necessary technical and advisory support in creating capacity-building, legislative frameworks and national strategies to combat environmental impacts, particularly those resulting from global climate change;

(e) Promote efforts similar to (d) in other subregional organizations such as SACEP and ASEAN Senior Officials on the Environment (ASOEN);

(f) Facilitate the necessary transfer of technology through existing regional and global mechanisms to areas where it is most needed.

D. Freshwater resources

1. Status and trends

Fresh water, an essential element for all forms of life, is a critical resource for Asia and the Pacific. Per capita availability of renewable water resources is the lowest in the region for China, India and Pakistan. Annual water resources per capita in the Pacific are the highest in the world. The sources of fresh water, including river basins, groundwater reserves, lakes, and man-made reservoirs, are increasingly under pressure to meet the heightening demand for agriculture, industry and domestic consumption. There is a general trend of water scarcity, deteriorating quality and sectoral conflicts in water allocation in the region. The Indian continent of South Asia and countries of East Asia had the highest level of water withdrawals for agriculture accounting for 92 and 77 per cent of total consumption respectively. Several areas in the region, including northern China and the Aral Sea Basin in Central Asia, are water-scarce and already experiencing an acute shortage of fresh water. Some island countries in the Pacific and the Indian Ocean also experience critical water shortages. In many areas of the region, the misuse of water reserves has already resulted in depleted aquifers, falling water tables, and shrinking of inland lakes and stream flows to ecologically unsafe levels. The development of multipurpose dams for irrigation and hydroelectric power generation and flood control have also created environmental problems which include the involuntary resettlement of displaced people, inundation of valuable lands, spread of waterborne diseases and land subsidence. Salinization and waterlogging leading to the degradation of agricultural land and depletion of flora and fauna and fishery reserves have also been observed. The quality of the water is becoming degraded because of domestic sewage effluents in water bodies, industrial effluents and non-point sources of pollution through agricultural run-off. The eutrophication problem is more serious in Asia and the Pacific as compared to Europe and America. Organic matters, pathogens,

heavy metals, toxic chemicals, silt and salt, and radioactive contamination pollute many rivers, particularly in South Asia and South-East Asia. The pollution of fresh water has compounded the problems of the existing water stress in the region. In many towns and cities, there is considerable wastage of water, up to 40 to 60 per cent of all the water supplied by the water company.

Lack of adequate legislation including water rights or entitlements, fragmented and overlapping responsibilities among a host of agencies involved in water management projects, lack of coordination in implementing water-related projects, ineffective water resources planning and management, insufficient political and public awareness, lack of public and stakeholder participation in water resources planning and management, and a general shortage of institutional capacity to meet the increasing need in service delivery and resources management are some of the issues that countries are facing in water resources management. More decisive and concerned efforts for the sustainable use and management of water resources are needed.

These issues are not new, nor are attempts to address them. Discussions and actions started in Mar del Plata in 1977**,** continued in Dublin and were consolidated into chapter 18 of Agenda 21 in Rio de Janeiro, Brazil, in 1992. They were reaffirmed in Paris, 1998, at the sixth session of the Commission on Sustainable Development and lately in the Second World Water Forum and Ministerial Conference which were held in The Hague in March 2000. These actions underline the importance of integrated water resources management, including the planning and management of water resources, both conventional and non-conventional, and land. They also take account of the social, economic and environmental factors and integrate surface water, groundwater and the ecosystems through which they flow. Integrated water resources management depends on collaboration and partnerships at the levels, from individual citizens to international organizations, based on a political commitment to, and wider societal awareness of, the need for water security and the sustainable management of water resources. To achieve integrated water resources management, there is a need for coherent national and, where appropriate, regional and international policies through the development of respective water visions and the formulation of corresponding programmes of action. The projects to be implemented should take into account the findings of the Global Waters Assessment programme.

2. Mission statement

To promote the sustainable use of fresh water by developing strategic approaches that integrate all aspects of water use and security to reduce water stress and to maintain, conserve and protect freshwater ecosystems to meet development needs in a sustainable manner.

3. Selected areas for action

(a) Improve integrated water resources management through enhanced strategic planning and management, effective demand management, better public participation, and improved institutional, legal and policy frameworks, including appropriate pricing mechanisms;

(b) Promote knowledge of overall national (and subregional) surface and groundwater resources to allow the establishment of realistic water budgets;

(c) Enhance water resources development and conservation;

(d) Improve the status of surface and groundwater quality monitoring and information.

4. Activities and targets at national level

(a) Short-term

(i) Adopt the target of reducing by half between 2000 and 2015 the proportion of people who lack sustainable access to adequate sources of affordable and safe water;

(ii) Develop national water visions and formulate programmes of priority action, including the preparation of integrated water resources management plans and promotion of their implementation involving the active participation of stakeholders and local communities;

(iii) Enhance the national capacity in strategic planning and management for more effective and enhanced implementation of integrated water resources management;

(iv) Achieve savings in the usage of fresh water by the introduction of cleaner production and innovative technologies in agriculture and industrial production and other water-consuming sectors, and promote the use of treated waste water for industrial and other uses;

(v) Enhance the capacity of water and sewage treatment in an environmentally sound manner;

(vi) Introduce cost-recovery mechanisms for wastewater treatment plants with private sector involvement for their construction, operation and maintenance;

(vii) Develop integrated management plans/programmes for aquatic environmental hot spots;

(viii) Introduce water demand management in urban areas and programmes to detect and prevent losses.

(b) <u>Long-term</u>

(i) Manage water quality through preventive, curative and enforcement methods, wherever necessary, with the use of:

a. Environmental impact assessment;

b. Economic instruments for water pollution control;

c. Ecological measures such as watershed management and land-use planning;

d. Rain water harvesting techniques;

e. Lake and river cleaning programmes;

f. Better land and water management practices with adequate drainage and proper cropping in command areas of irrigation projects;

g. Better institutional and legal frameworks and effective enforcement of laws;

(ii) Increase efficiency in water use in water-stressed areas by the implementation of the specific action plans.

5. Implementation mechanisms

(a) Regulatory controls and economic instruments

(i) Introduce market-based pricing, including a mark-up for environmental damage for demand management and water conservation to encourage resource users to utilize natural resources and other inputs more efficiently;

(ii) Promote the reuse and recycling of waste water for industrial and other uses through policy and economic instruments;

(iii) Manage water quality through preventive, curative and enforcement methods;

(iv) Develop and adopt national policies that promote the use of sea water and waste water for toilet flushing;

(v) Establish "restricted groundwater zones" in sensitive areas/locations, especially where there are rapidly depleting aquifers, increasing chemical contaminants, and instances of rapid and serious land subsidence.

(b) Technological interventions

(i) Reduce the non-point sources of pollution by adopting integrated waste management practices and controlling pollution run-off;

(ii) Implement better technological options such as a drip irrigation system in conjunction with better land and water management practices for the conservation and optimal utilization of the water;

(iii) Launch integrated watershed development schemes to promote soil conservation and resource development;

(iv) Provide countries in the region with technical assistance to assess and estimate their annual internal renewable water resources.

(c) Institutional development and capacity-building

(i) Strengthen the institutional capacity for basin management and capacity-building of people involved in water resources development and conservation through technical and advisory services;

(ii) Formulate or update guidelines on integrated water resources planning, management and conservation, widely disseminate them and provide technical assistance support for the implementation and organization of workshops and training courses to sensitize policy planners, resource managers, non-governmental organizations and special interest groups.

(iii) Promote close integration of social, economic and environmental considerations in water resources planning and management.

(d) Awareness and stakeholder participation

(i) In the irrigation sector, encourage water users associations to empower water users in the management of infrastructure and distribution of water;

(ii) Strengthen local communities and women's role in water conservation and management activities.

6. Activities at subregional and regional level

(a) Provide technical and financial assistance to governments on capacity-building, including improved water resources management, particularly in the areas of water quality monitoring, sewage treatment, sewerage network, water reuse/recycling, leak detection, database creation, handling of non-point sources of pollution and cleaning techniques of rivers and lakes;

(b) Promote the necessary information exchange and transfer of technology in the above areas through existing mechanisms at regional and global level such as FADINAP, APCTT, the Cleaner Production Centre Network, the International Environmental Technology Centre, the UNEP Division of Technology, Industry and Economics and the United Nations Industrial Development Organization (UNIDO);

(c) Prepare guidelines on the sustainable management of water resources;

(d) Promote the implementation of the ASEAN regional water conservation programme and introduce similar efforts for the countries of SPREP and SACEP.

E. Desertification and land degradation

1. Status and trends

The combination of rapid urban and industrial growth, extensive deforestation and unsustainable agriculture, including inadequate soil conservation, cultivation of steep slopes and overgrazing, has had a devastating impact on land resources. Of the world's 1,900 million hectares of land affected by soil degradation during the past 45 years, the largest area (around 550 million hectares) is in the Asian and Pacific region, constituting about 20 per cent of total Asian vegetated land. Dry parts of the region are particularly vulnerable, and it is estimated that 1,320 million people (39 per cent of the region's population) live in areas prone to drought and desertification.

Soil erosion has reduced agricultural potential in many countries. In India, for instance, as much as 27 per cent of the soil has been affected by severe erosion. Irrigated agriculture has degraded existing arable lands and resulted in vast expanses of salinized and waterlogged soils. The Asian and Pacific region is responsible for around 75 per cent of all human-induced salinization in arid, semi-arid and dry sub-humid areas of the world.

Several Asian countries have completed, or are in the process of formulating, national action programmes. These include China, the Islamic Republic of Iran, Kazakhstan, Mongolia, Pakistan and Turkmenistan. In many cases, governments have responded to the approach of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa by having the existing desertification programme reviewed by consultative groups involving non-governmental organizations, local authorities and community leaders.

The Regional Implementation Annex for Asia of the Convention recognizes these particular

conditions. It calls for tackling them through national, regional and subregional action programmes. Action at the local level should combine the fight against desertification with efforts to alleviate rural poverty. Based on the principles contained in the Convention to Combat Desertification and the annex, a number of regional meetings later introduced the thematic programme network that has become central to regional cooperation in Asia.

Six thematic programme networks (TPNs) have now been planned for the Asian region. They are: (a) desertification monitoring and assessment; (b) agroforestry and soil conservation; (c) rangeland management and fixation of shifting sand dunes; (d) water resources management for agriculture; (e) strengthened capacities for mitigating the impacts of drought and combating desertification; and (f) assistance for the implementation of integrated local area development programmes. Of these, the first two thematic networks are already operational, with TPN-1 (launched in 1999) being hosted by the Government of China and TPN-2 (launched in 2000) being hosted by the Government of India. Preparations are being made for the launching of TPN-3, which includes the establishment in Yadz, Islamic Republic of Iran, of the international centre for resource conservation and sustainable development in drylands, including high mountains. TPN-3, which is hosted by the Government of the Islamic Republic of Iran, will be launched in late 2000. Additionally, the Regional Network of Research and Training Centres on Desertification Control in Asia and the Pacific (DESCONAP), for which ESCAP serves as the secretariat, has been operating since 1985.

A country task manager will coordinate each network. Each network's members are the national focal points in charge of executing and coordinating the thematic programme at the national level. They are responsible for ensuring that the network is further integrated into existing national institutions and activities.

Given the existing economic and demographic trends, and the rapid decline in arable land, the need to promote the efficient and balanced use of fertilizers and other inputs to sustain agricultural production, particularly in food crops to feed a growing population, will remain the central focus for some time to come. Drought has also had a serious impact on land resources and productivity. Even some island countries such as Tonga are seriously affected by drought. Addressing desertification is essential for poverty reduction and food security in developing countries. Substantial regional progress is being made to implement the Convention to Combat Desertification.

2. Mission statement

To effectively implement the Convention to Combat Desertification and enhance the capacity of countries to combat desertification and land degradation, reduce the extent and incidence of such occurrences and deal with the socio-economic consequences.

3. Selected areas for action

(a) Updated accurate assessments of the extent of land degradation and desertification at national and regional levels, the creation of databases and the exchange of information;

(b) Preventive mechanisms to stop further degradation and rehabilitation of already degraded areas;

(c) Plans and policies to deal with the socio-economic impacts of desertification and drought.

4. Activities and targets at national level

(a) Short-term

(i) Assess the status of desertification, drought and land degradation at the national (and regional) level, wherever necessary;

(ii) Introduce policy reforms for effective land and water management in areas where it is necessary;

(iii) Review and strengthen national action plans for combating desertification and land degradation;

(iv) Carry out case studies and demonstration projects on the improvement of land management and desertification control;

(v) Implement integrated water resources management projects.

(b) Long-term

(i) Provide capacity-building in integrated natural resources management, resource assessment and monitoring;

(ii) Improve the management of natural resources and the rehabilitation of degraded

areas, including techniques in networking and information exchange;

(iii) Integrate the socio-economic dimensions into national plans to deal with the consequences of drought and desertification;

(iv) Consider the development of further economic sectors (such as minerals) wherever agricultural practices are clearly unsustainable.

5. Implementation mechanisms

(a) Technological interventions

(i) Provide technical assistance and advisory services for national desertification control action plans and drought mitigation strategies;

(ii) Provide technical support for the early establishment and operationalization of the six thematic programme networks to be established under the aegis of the Convention to Combat Desertification;

(iii) Promote activities in land and agriculture development, such as improving food security and water and land productivity, agrochemical management and research;

(iv) Assess land degradation, including the preparation of soil erosion risk maps at the national level;

(v) Disseminate guidelines on integrated land and water management;

(vi) Provide technical assistance to governments for policy reform and technical improvement, including pricing policies for the effective and efficient management of land and water resources;

(vii) Promote international cooperation in the understanding and use of traditional knowledge and practices.

(b) Institutional development and capacity-building

(i) Organize workshops and training courses on desertification control to sensitize policy planners, resource managers, non-governmental organizations and special interest groups;

(ii) Encourage the review and assessment of the status of desertification and drought;

(iii) Draw up plans and strategies to address land degradation and promote food security;

(iv) Encourage, through seminars and training courses, the integration of environmental concerns into research on dryland management and crop yield maximization;

(v) Promote the exchange of information and research results on proper irrigation techniques and pest management.

6. Activities at subregional and regional level

(a) Assess the status of desertification at the subregional and regional levels;

(b) Strengthen relevant organizations and networks such as DESCONAP and link them with the proposed thematic programme network activities;

(c) Strengthen support for the implementation of the Convention to Combat Desertification and its related networks such as TPN-1: the regional desertification monitoring and assessment network in Asia, TPN-2: agroforestry and soil conservation, TPN-3: rangeland management including the fixation of sand dunes, and three other regional networks for promoting the exchange of information and expertise as part of an ongoing regional action plan;

(d) Develop institutional capacity at the regional level for the development and implementation of a regional action programme to combat desertification in Asia and the Pacific;

(e) Link the activities of the different networks with the national action programmes and seek institutional synergies with other relevant programming initiatives.

F. Globalization and policy integration

1. Status and trends

The region is going through the process of liberalization of trade and foreign direct investment as well as globalization with its increasing role for global markets and globally operating firms. This globalization offers great opportunities for rapid economic development. Many countries in the Asian and Pacific region have seized the opportunities that already exist and are actively promoting more access to world markets and increased financial flows. Others do take part in these endeavours but to a lesser degree.

As a result of globalization, external factors have become critical in determining the success or failure of developing countries in their economic and social development efforts. Harmonization of trade, taxation and financial markets through a variety of institutions, including the World Trade Organization (WTO), is continuing. In this connection, at least four issues are of relevance to the countries in the region: the international competitive effects of environmental regulations; the trade effects of environment-related trade product standards, and related eco-labelling and eco-packaging regulations; the use of trade measures to secure international environmental objectives; and the effects of trade on the environment and natural resources. There is also apprehension that globalization will have an adverse impact on impoverished communities and is increasing the disparities between rich and poor. Safety nets for poor communities affected by the process of globalization need to be developed.

There is a great need to explore the environmental dimensions of international financial flows. The interlinkages are still unclear. The challenge is to reform the international financial system and the world's capital markets to better integrate environmental considerations and use financial markets and instruments more creatively to control environmental damage and to increase the flow of investment and technology for sustainable development purposes. Secondary markets could be used for the control of pollution and for tapping the wealth represented by natural resources in developing countries. In this connection, a thorough analysis of the impacts of the Asian financial crisis on the environment is urgently needed. Governments should be enabled to develop new policy approaches that provide for positive linkages between financial flows and the environment.

Increased trade and foreign direct investment, increased financial flows and the role of global markets and firms operating worldwide create both important opportunities for, as well as threats to,

sustainable development. On the one hand, they may lead to positive developments such as technology transfer, decreased pressures on the local, regional and even global environment and enhanced social development. On the other hand, they may lead to undesirable developments such as increased pressures on the local environment, over-exploitation of natural resources, the loss of valuable skills and techniques (notably in agriculture), the deterioration of the social fabric and the impoverishment of certain groups in society. Thus globalization in itself is neither good nor bad. The policy challenge is to minimize the "bad" while maximizing the "good". This implies many trade-offs, notably with respect to inter-generational and intra-generational equity and national and international equity.

Globalization is taking place and offers significant opportunities for further development. On the other hand, this process alone is not sufficient to ensure sustainable development, since the latter is dependent on balanced policies. There are important trade-offs such as those between a rapid pace of trade and investment liberalization and the need for adjustment periods to avoid disruptive social, economic and environmental developments. In this respect, much attention is to be given to the effects of higher degrees of specialization and concentration of certain economic activities at local levels (including the depletion of natural resources and irreversible damage), and measures to reconcile these developments with well-balanced policy objectives. Instruments for reconciliation include WTO rules, the adoption of standards and regulations, eco-labeling, the avoidance of tax and policy competition among nations, and national policies aimed at achieving equity.

Sustainable development policies, strategies and action plans are important mechanisms for enhancing and linking national capacity to bring together priorities in economic and environmental policies and thus respond to the challenges of globalization. Comprehensive and strategic local or national Agenda 21 programmes are being formulated and implemented, followed up with accompanying sectoral action plans. Despite many initiatives, much more still needs to be done in integrating economic, social and environmental objectives in policy design and execution to avoid serious environmental and social problems (such as the overuse of natural resources, and threats to the health and living conditions of the poor) that rebound on present and future economic developments. A range of economic instruments have also been used in many countries of the region such as environmental taxes, user fees, eco-marks and eco-labels, deposit refund systems, and subsidies to cover the social cost of environmental degradation, resource pricing and internalization of environmental costs. The efforts of countries such as Australia, China, India, Indonesia, New Zealand, Singapore and Thailand are encouraging in this regard. It is increasingly recognized that the financial sector (banks, trust funds, investment corporations and pension funds) have a considerable influence on what kind of investments are made in a society. Awareness of the

potential costs and liabilities associated with investments in non-sustainable and environmentally adverse projects, as well as the potential benefits from supporting environmentally friendly projects, is seen as a key to boosting "environmental investments".

The interdependence of social, economic and environmental objectives calls for balanced policies, which require:

(a) Careful policy design to be laid out in mutually supportive action plans on several policy levels (regional, subregional, national, local, as well as sectoral);

(b) A careful integration of local, often informal, markets into national and global markets dominated by global competition, taking economic, social and environmental considerations into account;

(c) A careful choice of policy measures and instruments, in particular those that help to integrate local markets into global ones, such as the application of the "polluter pays principle", full cost pricing and the use of price-based instruments.

2. Mission statement

To enable countries of the region to fully participate in and benefit from the ongoing process of globalization, liberalization of financial markets, international trade and foreign investment, while ensuring that environmental quality and improvement in people's livelihoods are not neglected.

3. Selected areas for action

(a) International cooperation in devising and executing policies to combat transboundary environmental degradation and the management of common natural resources;

(b) Promotion of a level playing field on market access and competition among countries, notably by reducing preferential treatment of internationally competing industries vis-à-vis domestic producers for the home markets;

(c) Transparency and accountability of relevant institutions (including private firms, central and local authorities and government-owned enterprises, and quasi non-governmental organizations);

(d) Assessments of the costs and benefits of economic and technological developments, trade policies, and multilateral environmental agreements in terms of their economic and social as well as environmental consequences;

(e) Promotion of information systems (including statistics and indicators) on economic, social and environmental developments, for example, by constructing environment and natural resources accounting system, pollution release information systems, and labelling system;

(f) Internalization of external environmental and social costs into market prices by means of charges, fees, taxes, tradable permits or regulatory approaches while applying the "polluter pays principle".

4. Activities and targets at national level

(a) Short-term

(i) Assess international agreements, in particular the ASEAN Free Trade Area, the South Asian Preferential Trade Arrangements, the North American Free Trade Agreement and Asia-Pacific Economic Cooperation with respect to their impacts on trade and production, the livelihood of vulnerable groups in society, economic development in general and the environment;

(ii) Apply impact assessments entailing the economic, social and environmental implications of policy initiatives, including trade and investment policies;

(iii) Improve and start preparations on information systems entailing economic, social and environmental consequences of processes, products, public investments by sustainability plans, systems of environment and natural resources accounting, environmental impact assessments, labeling of consumer goods, capital equipment and processes, emission release inventories etc;

(iv) Enhance the transparency of procedures and the role of institutions (governments, private sector and civil society) and increase the accountability of institutions, with respect to defining property rights, target setting and financial transfers, while promoting public participation in policy design;

(v) Strengthen national environmental policies, strategies, action plans and the national and local Agenda 21, keeping in view the concerns and opportunities of globalization;

(vi) Establish, and where necessary strengthen, mechanisms for coordination at the national level, such as national councils or other similar institutions for sustainable development;

(vii) Identify and promote green trade and production opportunities, preferably by creating markets for nature preservation activities;

(viii) Review subsidies and regulations that are put in place to enhance the competitiveness of certain products, processes or regions, or to enhance access to essential goods and services and which, together with the prevailing taxation regime, discriminate against sound environmental practices. In particular, review subsidies to agriculture, water management, energy and transport;

(ix) Review subsidies to cleaner production with a view to transforming them into temporary subsidies that are contingent on environmental performance (instead of specific technologies);

(x) Consider price-based instruments in every policy design procedure and make deliberate choices with respect to the application of mixes of instruments (price-based and regulatory, including voluntary or negotiated agreements) on the basis of effectiveness and efficiency, taking transaction costs and information asymmetry into account;

(xi) Review pricing systems for water energy and transport with a view to determining the actual beneficiaries of the prevailing mechanisms and reform them for subsidization only to the deserving target groups;

(xii) Promote environmental awareness in the finance sector by encouraging financial institutions to adopt the Financial Institutions Initiative and to use environmental screening of investment projects.

(b) <u>Long-term</u>

(i) Devise and execute programmes to improve price signals, including subsidy and tax reform as well as approaching as closely as possible full cost pricing taking external (economic, social and environmental) effects into account by means of charges and taxes;

(ii) Ensure adequate and transparent financing of environmental, social and economic government expenditures by accountable institutions, if necessary by installing well-defined (environmental) funds;

(iii) Reduce policy and tax competition among countries (for example, resulting from

subsidization, including preferential low rates of taxation, or lenient environmental standards applied to sectors of the economy that compete on international markets) by exchanging information and striking international agreements, in particular when issues of transboundary pollution, the use of shared natural resources and the management of global commons are at stake;

(iv) Encourage the introduction of good environmental management systems within firms, for example, by promoting the adoption of responsible care systems, ISO 14000 standards, and environmental and social reporting;

(v) Find ways of increasing business and employment opportunities derived from the further integration of environmental concerns in the national economy;

(vi) Undertake studies to assess the impacts of globalization and the recent economic crisis on the environment at national and regional levels;

(vii) Undertake studies on the impact of globalization on environment and natural resource endowments, and develop guidelines and measures to reduce its impact;

(viii) Undertake studies on the impact of globalization on the poor and develop guidelines and measures to reduce its impact.

5. Implementation mechanisms

(a) Law enforcement and economic instruments

(i) Ensure adequate and applicable monitoring and enforcement requirements in existing, as well as new, laws and regulations concerning regulatory and price-based instruments;

(ii) Ensure adequate monitoring and enforcement capabilities of authorities with respect to the application of both regulatory and price-based instruments;

(iii) Set long-term objectives and allow economic agents adequate time to adjust. For example, when reforming subsidy systems, redirect income flows to smooth the transition towards lower or absent subsidies.

(b) Technological interventions

(i) Promote fact-finding regarding social, economic and environmental developments

through international cooperation;

(ii) Promote the gathering and assessing of scientific evidence concerning the interactions between environmental, social and economic phenomena through applied behavioural sciences (economics, sociology, political and management sciences);

(iii) Assess the potential contributions of technological developments to sustainable development;

(iv) Identify areas where more scientific data and assessments need to be incorporated and develop innovative measures that can be used in resolving problems in these areas;

(v) Promote sound environmental technologies, taking their economic and social implications into account, through facilitating information exchange, research projects, temporary financial support contingent on performance-based objectives and standards, the brokerage function between potential suppliers and users of environmentally benign technologies, and responsible government procurement policies.

(c) Institutional development and capacity-building

(i) Establish, or if necessary strengthen, institutions for integrating environmental and economic and trade policies, including national councils for sustainable development or similar institutions;

(ii) Improve the policy debate on sustainability issues, inter alia, by strengthening or setting up organizations that actively disseminate reliable information from various perspectives;

(iii) Clearly separate responsibilities and clearly define accountabilities of the private sector, local and central governmental authorities, government-owned enterprises, and civil society.

(d) Awareness and stakeholder participation

(i) Ensure the indispensable support of stakeholders and the general public in the design and execution of policies by education, information dissemination, and involvement

of women's and youth organizations;

(ii) Keep in touch with the urgent needs and interest of the people by ensuring appropriate third party access to dispute settling.

6. Activities at subregional and regional level

(a) Undertake regional assessment of shifting patterns of comparative advantage and specialization in international trade;

(b) Assess the prospects of green trade and related commercial opportunities in the region;

(c) Strengthen international cooperation in applying economic instruments by exchanging information with respect to the reduction or elimination of existing subsidies and tax measures and the introduction of economic instruments;

(d) Render technical assistance and advisory services by regional and subregional organizations on the integration of environmental and economic policies and render assistance to subregions in integrating regional and sub-regional programmes.

G. Climate change

1. Status and trends

Since 1991, a series of annual seminars on climate change in Asia and the Pacific have been conducted to review the applicability of current methodologies, the availability of required baseline information, and the identification of gaps requiring further research and collection of data. Furthermore, these seminars have reiterated the need for the identification and effective support of institutional mechanisms for information exchange. Tenth Asia-Pacific Seminar on Climate Change held in Penang, Malaysia, in July 2000 promoted the understanding on the main negotiation topics, such as Clean Development Mechanism (CDM) and Transfer of Technology through active exchange of opinions before the COP6; and adopted of the Chairperson's summary which mentioned the proposal of a Capacity Building programme for information technology to transmit Climate Change Information via Internet, needs of which were scheduled to be examined through a questionnaire survey before its implementation.

In 1999, ESCAP conducted a study on impact assessment and regional response strategies for climate change in Asia and the Pacific. Among the constraints identified by countries in the

region with regard to GHG inventories are a lack of data and technical expertise, inadequate coordination of related agencies, lack of awareness among policy makers on climate change issues and a limited infrastructure for the dissemination of technologies. At the national level, most countries in the region have already initiated or finalized the process for the preparation of the GHG inventory. However, further work is necessary on the country-specific emission factors considering the wide diversity of natural environment and socio-economic development levels in the region.

The Kyoto Protocol, the outcome of the third Conference of the Parties of the United Nations Framework Convention on Climate Change held in 1997, established cooperative flexibility mechanisms designed to facilitate GHG abatement. The countries of the Asia-Pacific region could take advantage of CDM, which is one of those mechanisms. CDM is designed to enable Annex I countries to make investments in and transfer technology to sustainable development projects in developing countries and obtain the transfer of the resulting GHG abatement credits as a means of meeting GHG reduction obligations and assist developing countries to achieve sustainable development. Further capacity-building is required as the participation of developing countries in CDM will depend on strengthening their respective domestic legal and institutional arrangements to facilitate CDM projects and to fully avail themselves of the benefits of such cooperation. The Conference of the Parties at its fourth and fifth sessions also called for assistance for developing countries in building the capacities of their institutional frameworks through the exchange of technologies.

The role of regional support and cooperation activities should focus on capacity-building, which is needed to establish adequate numbers of well-trained individuals who may support national efforts in research in the scientific aspects of climate change, as well as in the scientific, social and economic ramifications of climate change and associated sea-level rise. These capacity-building efforts need to be encouraged to ensure that Asian and Pacific countries actively participate in international climate change negotiations. All these processes should support the regional and national development goals as set out in Agenda 21. Climate change policies should be viewed as an integral part of sustainable development. Actions to address climate change can promote both socio-economic development and environmental protection. Climate change strategies should be integrated into national development plans for all economic sectors.

There is little doubt that human health and welfare are influenced by energy production in at least two ways: by direct exposure to emissions from the consumption of fossil fuel through any production systems, and by exposure to climate change that is prompted by excessive emissions of GHGs from energy production. Improving the energy efficiency in processes and minimizing the associated emissions is therefore a priority in accordance with the Kyoto Protocol.

2. Mission statement

To assess the socio-economic impacts of climate change in Asia and the Pacific, in particular the vulnerability of small island states and low-lying urban and rural coastal areas, and make serious efforts to promote the implementation of the United Nations Framework Convention on Climate Change and the early entry into force of the Kyoto Protocol.

3. Selected areas for action

(a) Strengthen the institutional, technical and human capacity to address the challenges of quantifying and mitigating the rising GHG emissions of the Asian and Pacific region;

(b) Update national inventories of GHG sources and sinks in accordance with the guidelines formulated by the Intergovernmental Panel on Climate Change;

(c) Identify least-cost abatement options and formulate national strategies for the abatement of future GHG emissions;

(d) Promote projects to help demonstrate GHG abatement options and to reduce the growth of future GHG emissions;

(e) Strengthen the capacity to participate effectively in ongoing international deliberations for strategies to reduce GHG emissions and combat the adverse effects of climate change.

4. Activities and targets at national level

(a) Short-term

(i) Continue follow-up activities in the implementation of the United Nations Framework Convention on Climate Change;

(ii) Undertake and/or update the GHG inventory and provide measures for least-cost mitigation options;

(iii) Develop and implement win-win projects for combating climate change;

(iv) Promote public awareness of climate change issues and encourage the participation of all stakeholders in activities addressing climate change;

(v) Develop training programmes on climate change to build a capacity to formulate and implement policies and measures as well as to meet obligations under the United Nations Framework Convention on Climate Change.

(b) Long-term

(i) Conduct local-level studies to assess the vulnerability and the impacts of climate change, such as sea-level rise and land subsidence;

(ii) Formulate and implement national programmes which may contain appropriate mitigation measures and adaptation options, vulnerability assessments and other research and studies;

(iii) Catalyse action to address climate change issues by facilitating technology transfer, by improved energy utilization in the industrial sector and by national policy development;

(iv) Ensure that sea-level rise issues are addressed in integrated coastal zone management;

(v) Ensure that fragile mountain ecosystem in the Hindukush and Himalayan region benefit from the convention and the Kyoto Mechanism.

5. Implementation mechanisms

(a) Regulatory controls and economic instruments

(i) Facilitate the implementation of energy conservation policies, eco-labelling of energy-saving devices, clean technologies and other similar measures;

(ii) Promote and enhance the use of public transportation and bicycles.

(b) Technology interventions

(i) Assess the cost and benefits of relevant GHG abatement options;

(ii) Develop least-cost and technologically appropriate options for GHG emissions reductions;

(iii) Promote the introduction of new and renewable sources of energy.

(c) Institutional development and capacity-building

(i) Promote the integration of climate change issues in the national development planning process and into relevant sectors, including energy, agriculture, industry, urban development and transport;

(ii) Analyse the implications of CDM so as to understand its applicability and relevance at the national level;

(iii) Develop analytical capacity and participate effectively and constructively in international forums relating to climate change, including the deliberations of the United Nations Framework Convention on Climate Change;

(iv) Encourage ratification of the Kyoto Protocol and develop national policies and institutional capacities to allow the region to benefit fully from CDM.

(d) Stakeholder participation

(i) Conduct workshops and training courses for high-level and middle-level officials, non-governmental organizations and community leaders to sensitize them to climate change issues;

(ii) Improve awareness and participation of local communities in climate change mitigation projects.

6. Activities at subregional and regional level

(a) Establish a regional network to facilitate information exchange and policy dialogue, to disseminate technologies, to enhance public awareness and to provide international clearing house functions;

(b) Given that ozone depletion also contributes to climate change, promote ratification of amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer, review and modify as appropriate existing legislation for monitoring and controlling the import and export of ozone-depleting substances, and cooperate and share information to combat illegal trade in such substances.

(c) Continue to develop subregional cooperation in improving the environmental status

of energy production through the ESCAP/UNEP/UNDP (United Nations Development Programme) North-East Asia framework for clean coal technologies for energy production;

(d) Continue to utilize regional fora on climate change such as Asia-Pacific Seminar on Climate Change, in order to enhance the exchange of views, mutually share experiences and disseminate information.

H. Sustainable energy development

1. Status and trends

Energy is a crucial input to the development process. However, energy is also one of the major contributors to the emissions of greenhouse gases known to cause climate change. The current energy systems are not sustainable as most global energy needs today are provided by fossil fuels. It is expected that these fuels will continue to play a major role in the foreseeable future. Use of these resources, together with other factors, produces the main greenhouse gases that are thought to cause climate change and have implications on socio-economic development. In order to attain sustainable development in the long run, even though globally there are no immediate concerns regarding their resource availability, over-dependency on these resources must be reduced in favour of renewable energy sources. In the meantime, the use of energy in industry, transport and households must become more efficient.

The links between energy, environment and sustainable development thus present a difficult paradox for policy makers in the Asian and Pacific region. Modern energy services are vital to economic development, but the region's developing countries still lag far behind industrialized countries in terms of energy consumption. Moreover, making modern energy services accessible to the urban and rural poor is critical in reducing poverty. However, the increase in the provision of energy services through the combustion of fossil fuels and biomass is also significantly contributing to adverse effects on the well-being of human beings and the ecosystem through indoor and urban air pollution, regional and transboundary air pollution, and global climate change.

One of the challenges of the linkage between energy and environment facing countries of the ESCAP region, in particular developing country members, is how to deal with the environmental implications of the rapid growth in energy demand that has been a characteristic feature of this region. Strengthening institutional capacities and training of personnel responsible for the goals of sustainable energy production, use and management are critical to the evolution and development of effective regional and national energy policies.

Much has been accomplished in the Asian and Pacific region in recent years in addressing issues regarding environmental impacts from energy systems. Transboundary air pollution has been recognized and is being monitored. Deposition of acid rain is being reduced through retrofitting of existing coal-fired plants with flue-gas desulphurization equipment. Air pollution in very large cities is being addressed by tightening air quality standards, by introducing unleaded motor vehicle fuels and mass transit systems, by shifting to compressed natural gas and liquefied petroleum gas, and by controlling emissions from industrial plants. The promotion of the use of new and renewable energy technologies has continued in many countries. The region has seen rapid expansion in the use of improved cooking stoves, solar water heaters, and solar photovoltaic systems for home as well as other uses. The use of advanced renewable energy technologies and other environmentally sound technologies will further enable the region to improve the environmental quality of life.

Nevertheless, the region continues to experience high demand for commercial energy. Despite the Asian crisis which affected the region from 1997, commercial energy demand is expected to pick up again, and in particular electricity demand. Recognizing the seriousness of the problem of high demand but lacking the financial means to meet future demands, many developing ESCAP member countries have undertaken varying degrees of energy and power sector reform in order to secure the necessary financial resources for energy sector development.

In order to achieve sustainable energy development, all measures need to be taken to increase the efficiency of energy production and consumption, and to switch to non-fossil fuels. The world needs to develop further advanced (and clean) fossil fuel technologies in the medium- and short-term horizon and develop new and renewable sources of energy technologies to facilitate switching to renewable energy in the long run. Particular attention is needed to introduce modern technologies in the use of biomass, a major and widely used renewable energy in the region. Further improvements in cooking stoves have the potential of raising combustion efficiency and in reducing air pollution. With regard to the industrial and transportation sectors, effective national policies need to be formulated and implemented to reduce material and energy intensity of production and consumption, in particular in those countries of the region that are able to afford higher standards of welfare.

In the context of sustainable energy development, there is a need to refine energy-environment policies with a clearer focus on the dimension of poverty alleviation. In particular, people-centred rural development policies, including rural energy policies, developed in a more transparent and participatory manner would address appropriate issues in improving the quality of life for the poor more effectively in the long run. In developing such policies, it is also essential to build in a process through social impact assessment and gender analysis to ensure no adverse effect

will be brought upon the people.

In April 2000 at the Japan-Pacific Island Leaders meeting, the Pacific islands targeted renewable energy and hydrogen power as a way to free their countries from the escalating costs of petroleum and at the same time provide a global testing area for the development of renewable energy economics based on hydrogen power. Since then, the Pacific Islands have clearly identified the need for a dedicated, global research and development project to create 100% renewable energy, hydrogen based economics focused on the small island developing states of the region.

2. Mission statement

To enhance the capacity of concerned stakeholders in developing sustainable energy development strategies under which energy services can be expanded and improved with a minimum compromise on environmental quality.

3. Selected areas for action

(a) Strengthen planning capacity on sustainable energy development by establishing clear linkages to other sectors;

(b) Promote implementation of a supply- and demand-side energy efficiency programme in the region;

(c) Promote the application of renewable energy technologies in the region;

(d) Mobilize financial resources from traditional sources and the private sector;

(e) Develop policies to promote energy utilization for poverty alleviation.

(f) Promote and assist a dedicated global project to create 100% renewable, including hydrogen-based, energy in the small island developing states of the region.

4. Activities and targets at national level

(a) Short-term

(i) Enhance understanding on sustainable energy development and its linkages to sustainable development by promoting a discussion with various stakeholders including the general public;

(ii) Identify critical areas to be addressed to ensure sustainable energy development and

an action programme agreed upon by various stakeholders;

(iii) Enhance the capacity for information-gathering and improve the quality of statistical information required for better planning;

(iv) Review energy pricing and subsidies and assess their feasibility and effectiveness with a view to ensuring that prices cover the long-term marginal cost of energy supply;

(v) Identify energy efficiency potential in various economic sectors and formulate a plan to capture the potential;

(vi) Increase the level of awareness among industrial and residential consumers on the benefits of energy efficiency and conservation;

(vii) Promote partnership among the concerned stakeholders, including the private sector, in adapting energy efficiency and renewable energy technologies;

(viii) Promote the increased use of renewable energy, such as biomass, solar, wind and mini-hydro through the application of modern technologies, including improved biomass cooking stoves;

(ix) Establish concrete plans for rural electrification through grid extensions or decentralized power generation in coordination with rural development plans;

(x) Develop programmes to implement the action programme to be financed through domestic resources, international official and private financing and possibly through CDM.

(xi) Small island developing states and industrial countries wishing to participate in a global partnership to attain demonstration communities of 100% renewable energy economies based on hydrogen power should promote this initiative locally and nationally and cooperate fully between stakeholders to achieve this goal no later than 2020.

(b) <u>Long-term</u>

(i) Improve legislation to promote energy efficiency and renewable energy;

(ii) Support research, development, demonstration and dissemination of various technologies on energy efficiency and renewable energy;

(iii) Shift towards cleaner production of electricity;

(iv) Systematically enhance the application of energy efficiency in all sectors of the society;

(v) Expand access to clean and affordable and energy, particularly in rural areas, for poverty alleviation.

5. Implementation mechanisms

(a) Regulatory controls and economic instruments

(i) Introduce market-based energy pricing;

(ii) Review subsidies which are no longer effective and devise more effective subsidies, if necessary, to benefit the target group needing the subsidy;

(iii) Set a minimum common target and strengthen environmental monitoring on emissions from the energy sector;

(iv) Devise financial incentives to encourage private sector investment in the energy sector, especially on energy efficiency and renewable energy projects.

(b) Institutional development and capacity-building

(i) Strengthen the capacity of concerned agencies on strategic energy planning;

(ii) Strengthen the technical capacity of concerned agencies to be able to conduct energy audits and feasibility studies for energy efficiency/conservation projects;

(iii) Strengthen the technical capacity of concerned agencies to be able to conduct feasibility studies on energy projects targeting the rural and urban poor;

(iv) Strengthen legislation regarding the further promotion of energy efficiency and renewable affordable energy technology.

(c) Awareness and stakeholder participation

(i) Strengthen public awareness including through media and internet among consumers

in the rational use of energy;

(ii) Introduce energy efficiency standards and labeling on appliances, motors and equipment;

(iii) Establish practical procedures including use of internet, media and international conferences to design, implement and evaluate energy-related projects involving various stakeholders, including the general public, private sector and non-governmental organizations.

(d) Policy and planning

(i) Develop renewable energy and alternate fuel policy statement;

(ii) Develop national action plans to achieve renewable energy economies with specific achievement targets;

(iii) Establish bilateral partnerships between developed and developing countries for the transfer of technology and capitalization of funds to advance the implementation of renewable energy fuel economies.

6. Activities at subregional and regional level

(a) Promote subregional and regional cooperation/networks on capacity-building;

(b) Continue providing technical assistance in institutional capacity-building and human resources development for developing countries, particularly the least developed and small island developing countries;

(c) Undertake policy research and package and disseminate information in the region;

(d) Promote subregional and subregional cooperation/networks to plan, fund and implement renewable energy economies based on non-fossil fuels.

II. TOOLS FOR IMPLEMENTATION

Policy development and policy integration of environmental, economic and social issues by the government are essential for progress towards sustainable development. Each government will need to use a strategic environmental management approach to set priorities and determine which parts of this RAP should be applied and in what manner.

A. Poverty reduction strategies

The interlinkages between poverty and environmental degradation require an approach that integrates poverty reduction and environmental protection strategies, if sustainable development is to be effectively realized. Success in this area will depend on the combined efforts of government and civil society and on strong and sustained support from the international community. For all stakeholders, the strategies chosen to reduce poverty and improve the environment must be comprehensive enough to address all of their many causes. Support should be given to human resources development since such investments are frequently the most effective way of breaking the cycle of intergenerational poverty and thus promoting sustainable development. Furthermore, in designing actions for the programme areas, consideration should be given to poverty reduction initiatives such as improving access by the poor to land, water and common resources and the provision of basic needs such as health care, education, family counselling and social infrastructure which will improve the quality of life of the poor and create opportunities for them to engage in economic activities. Motivation, training and skills development for improved agricultural practices, including soil and water conservation, water management, animal husbandry, fish culture, multiple cropping and inter-cropping, may be included in training modules to promote sustainable livelihoods. This should be coupled with training, skills development and access to credit on affordable terms for rural and urban poor populations, which increasingly rely on small-scale income-generating activities, such as the sale of local handicrafts and prepared foods.

Other strategies in addressing poverty reduction and environmental protection may include providing local governments with financial support, promoting social investment funds and supporting non-governmental organizations that have experience in working in poverty reduction. New approaches to strengthen participation may call for innovative mechanisms, as well as making greater use of existing instruments. Strategies should also involve stakeholders in the process of poverty analysis and encourage their participation in a variety of forums. Ultimately, the strategies chosen to reduce poverty, and thus strengthen efforts towards environmental protection, must be comprehensive enough to address the many diverse causes of poverty.

B. Strategic environmental management

Strategic environmental management is a policy approach to manage environmental quality in a country. This approach takes a long-term view of trends in natural resource use and environmental quality, identifies changes required to bring these trends within sustainable limits and establishes a management framework (including measurable targets, incentives and control mechanisms) to encourage key actors to achieve their part in the identified changes.

The process of turning the vision of sustainable development for a country into a set of tangible results and a plan of action involving wide representation from diverse segments of society, as well as making the wider public aware of the way in which people can contribute to the successful implementation of the actions, is challenging. It requires political will and broad governmental support because in most cases a Ministry of Environment in itself is not strong enough to turn environmental degradation around.

Strategic environmental management is an approach applicable on different levels of government, different sizes of projects and different levels of sophistication. In essence, the approach is a tool kit of policies to be used as required in a particular situation. Although its potential extends to full-scale national sustainable development strategies, it has been applied in a single-issue situation, for example a regional biodiversity protection plan or a waste management plan. It is applicable in every single programme area identified in section I of this document. The Regional Action Programme will pursue the strategic environmental management approach for its implementation.

The essential features of this approach are the following:

(a) It takes a long-term perspective on the problem at hand (what needs to be achieved over a 10-15 year period) and identifies intermediate steps for intermediate horizons;

(b) It establishes priority tasks against the analyses of the problems;

(c) It analyses the problem against the background of the sustainable development of the country/region, integrating ecological as well as economic and social considerations in the analysis;

(d) It identifies the stakeholders that are part of the problem and/or part of the solution, and starts talks, leading ultimately to negotiations with them;

(e) It agrees on everybody's mission, goals (preferably quantified targets) and actions;

(f) It makes the wider public aware of the goals and actions;

(g) It agrees on the monitoring of progress on the implementation.

The benefits of the strategic environmental management approach include: (a) avoiding long-term economic and social costs; (b) identifying policies for economic and environmental gain; (c) making long-term environmental improvement manageable; (d) reducing the long-term costs of

clean-up, reduced productivity etc.

The application of strategic environmental management in the Asian and Pacific region for the programme areas identified in the Regional Action Programme, 2001-2005, requires a general understanding of the methodology of application. After several workshops organized by ESCAP in the last four years, there is a growing understanding of the basics, but at the same time an increased interest in more applied techniques, making use of existing experience outside the region and different elements of the tool box. In particular, there is a need for guidance and support for its application on the national and subnational level, for example in the form of guidelines, regional workshops and finally, probably with the assistance of the donor community, direct advice at the project or process level.

C. Governance, institutions and capacity-building

In many countries of the region, the structure and process of governance in general, and of environmental governance in particular, is changing, tending towards decentralization and devolution of powers and resources to local governments. This has increased opportunities for public participation in all spheres of decision-making and implementation, empowered local communities, women, youth, non-governmental organizations and especially the poor and indigenous people, and increased the transparency and accountability of governments and the private sector business and industry. Environmental institutions and legislation will need to incorporate and benefit from these emerging trends.

Effective implementation of sustainable development policies hinges, to a great extent, on the existence of an appropriate institutional and legislative framework. Tremendous progress has been made in the region in establishing institutional machinery for environmental protection and in enacting appropriate legislation for pollution control and natural resources management. However, there is still need for improvement. Weaknesses in the institutional and legal framework, in particular, enforcement mechanisms, overlapping of functional responsibilities and lack of coordination and policy integration, are but some of the existing shortcomings.

Governments will be encouraged to establish mechanisms to make sure that environmental concerns are effectively integrated in development activities and that all the policies and institutional goals are pursued in harmony with the objective of sustainable development. Case studies will be conducted and governments will be provided with technical assistance and advisory services to improve their institutional machinery and legal instruments. An assessment of institutions and legislation will be conducted to promote the strengthening of these mechanisms at the national level

with particular emphasis on emerging issues such as the introduction of market-based economic instruments, decentralization of decision-making, information disclosure and public participation. Appropriate mechanisms and guidelines will be developed to involve the local communities and interest groups in the decision-making process and in sharing information with the affected people.

Local-level community organizations will be promoted and empowered and, wherever necessary, strengthened to ensure effective conservation and management of the environment and natural resource endowments. Efforts will also be made to involve all social and political actors including local governments, trade unions and cooperatives, business leaders, non-governmental organizations, research and policy institutes, educational groups and community organizations. Efforts will also be made to identify training requirements and facilities and encourage training in environmental management and laws. At the same time, more emphasis will be put on enforcement of and compliance with legal instruments.

The above steps are to be taken into consideration, together with strategic environmental management, to achieve the targets in the identified programme areas of the Regional Action Programme. The regional mechanisms for information exchange and cooperation using the sustainable development network and the UNDP Capacity 21 initiative will be utilized to the fullest extent possible.

D. Project-based approach

The Regional Action Programme identifies the fundamental actions needed to realize the objectives of strategic themes. Governments, subregional and regional organizations, relevant institutions and major groups should follow the strategic environmental management approach, as appropriate, and develop the identified actions or activities into projects as feasible, including them in their ongoing initiatives and programmes. By thus linking into existing initiatives and work programmes, a coherent spectrum of projects could be executed to implement the Regional Action Programme.

Projects developed within the framework of the Programme will be innovative, proactive, cross-sectoral, achievable within the stipulated time frame and acceptable to and involving the major stakeholders. Project outlines will incorporate concrete activities, time frames, funding mechanisms, costs and actors, instruments including incentives, and the extent of target achievement. The multi-country projects can be developed based on subregional grouping of countries or a cluster of countries with similar problems, as necessary.

E. Technology networking and transfer

A number of efforts are continuing in the region in technology networking. APCTT is operating a network through which it is diffusing environmentally sound technologies in the region. Other networks include FADINAP, Agricultural Information Systems, Techmart supported by UNIDO, the UNEP International Environmental Technology Centre, the Network for Industrial Environmental Management coordinated by the UNEP Division of Technology, Industry and Economics and the UNEP Regional Office for Asia and the Pacific, the UNDP urban environmental technology initiative etc. Countries are encouraged to utilize the networks effectively while implementing the Regional Action Programme.

Other initiatives such as the UNIDO/UNCTAD (United Nations Conference on Trade and Development) effort on policy advice on technology transfer, the Food and Agriculture Organization of the United Nations (FAO) focus on indigenous technologies, the Global Environment Facility (GEF) supported project for the transfer of environmentally sound technologies, capacity-building efforts for managing such technologies provided by UNIDO, ILO, the United Nations Educational, Scientific and Cultural Organization (UNESCO), WHO etc. and the existing regional network of research centres will also be utilized for technology networking and transfer in addition to national cleaner production centres and technology assessment efforts jointly by UNDP, UNEP, UNCTAD and FAO.

Developed countries are urged to widen the accessibility to public R&D programmes for developing country participation by removing administration and legal restrictions, and by promoting expert exchange and training programmes. The linkage between R&D community and development cooperation agency should be strengthened to facilitate developing country access to public R&D programmes.

In addition, emphasis will be given to:

(a) Promoting regional clearing house mechanisms and information networks on environmentally sound technologies to facilitate the transfer of technology;

(b) Promoting endogenous capacity-building through human resources development on environmental technology assessment, its absorption and development;

(c) Enabling scientists in member countries to participate fully in programmes dealing with environmentally sound technologies;

(d) Promoting the identification of research needs and priorities and arranging support;

(e) Promoting private sector participation in research and development and in facilitating

access to and the transfer of environmentally sound technologies;

(f) Enhancing awareness and dissemination through measures such as clean technology exhibitions and fairs.

It is also necessary that greater financial resources should be made available to developing countries so that they can acquire environmentally sound technologies to implement measures for the promotion of sustainable development. Additionally, the developed countries should take measures to enhance the access of developing countries to and transfer of environmentally sound technologies on favourable terms, including on concessional and preferential terms in line with Agenda 21.

F. Financial mechanism and resources

In implementing the Regional Action Programme, national governments will mobilize domestic resources from all possible sources, according to their capacities, taking into account chapter 33 of Agenda 21. United Nations bodies and agencies and multilateral financial institutions should, to the fullest extent possible, provide financial support for its implementation. Financial support is also requested from donor agencies, organizations and non-governmental organizations. The Asian Development Bank (ADB), being the most important multilateral financial institution in the region, is invited to assist the implementation of the Regional Action Programme through technical assistance. ADB may also be requested to consider organizing a meeting with donors soliciting their support as well as to discuss the implementation of the Regional Action Programme. UNDP is requested to take a leading role in capacity-building and provide funding support. United Nations bodies, multilateral institutions, and regional and subregional bodies may provide the necessary synergy through their existing or proposed action plans or work programmes. Funding through GEF, the International Fund for Agricultural Development etc. may be reoriented in accordance with the priorities of the Regional Action Programme. In particular, UNEP, UNDP and the World Bank as the implementing agencies of GEF, should strengthen their support to governments in the region, in partnership with ADB, ESCAP and other relevant United Nations agencies and bodies, to develop appropriate projects for GEF funding, through programmes such as the country dialogues and direct assistance. The financial support earmarked for implementing the recommendations of the Asian Environment Outlook 2000 of ADB and the Global Environment Outlook 2000 of UNEP would also assist in implementing the Regional Action Programme. Consultation with all the partners will be undertaken for establishing a regional funding mechanism in the form of a trust fund as mooted in the Regional Action Programme, 1996-2000. Increased use of economic instruments by member countries will generate additional resources for better management. Mobilization of high levels of foreign direct investment and technology transfer will be encouraged through relevant

policies. New ways of generating resources such as trust funds, debt relief, debt swaps and reallocation of resources will also be explored.

Official development assistance (ODA) is a main source of external funding and makes a significant contribution to the promotion of sustainable economic development in the region. Agenda 21 stressed that substantial new and additional funding for sustainable development and the implementation of Agenda 21 would be required. However, ODA flows, globally as well as in the region, have been declining over the years. This has hampered the process of sustainable development in the region. It is therefore imperative that the developed countries honour their commitment to reach the accepted United Nations targets of 0.7 per cent of gross national product for ODA and to the extent that they have not achieved that target, agree to augment their aid programmes in order to reach that target as soon as possible.

G. Environmental education, public awareness and training

Environmental education, public awareness and training activities will be intensified with a view to promoting the implementation of the Regional Action Programme and disseminating its benefits. A significant amount of work in environmental education is already ongoing. Numerous reference and resource materials, curriculum structures, learning sequences and corresponding training outlines are available. The materials are directed to different groups, for example, schoolchildren, teachers, university students and lecturers, organizers of non-formal environmental education activities, various government officials, government planners, engineers, industrial managers and the general public. The exchange of information and experience between environmentalists and experts has also been encouraged. What is still missing, however, is the commitment to concrete action, using culturally acceptable modalities for implementing the Regional Action Programme.

Removal of illiteracy constitutes a prerequisite for attaining sustainable development. Specific programmes should be launched to make the countries of the region free from illiteracy. While some progress to enhance education and awareness has been achieved, further efforts should be made to develop education, training and information activities which emphasize context-specific, problem-solving approaches and actions for the Regional Action Programme. The focus should be on sustainable development, taking into account the importance of human dignity, in improving the quality of life and of the environment while promoting a culture of peace, solidarity and international understanding; the diversity of life and the balance between reasonable human activities and the need to preserve natural ecosystems; and building human capacities, promoting participation and cooperation among people and institutions.

Efforts will be made to continue and consolidate the programmes and activities that have been initiated into an environmental education plan at national and subregional levels. Awareness creation programmes for all individuals and groups will have to be intensified using both traditional and modern communications technology. Regional cooperation and collaboration through networking, such as the UNEP network for environmental training at tertiary level in Asia and the Pacific, should be strengthened as environmental problems transcend national boundaries. The efforts of the SACEP South Asian Environment and Natural Resources Information Centre, the UNEP Information Referral System for Sources of Environmental Information and the ASEAN state of the environment report 2000 will continue to be accelerated and promoted. The exchange and sharing of information and experiences through publications and newsletters using various communication channels should be encouraged. National efforts on this important activity will be intensified. The involvement of non-governmental organizations, the private sector and voluntary citizen groups will be supported. The use of the Internet web site on this subject should be popularized. The capacity for participatory decision-making and management and public involvement will be encouraged through programmes at all levels.

Environmental education and training should therefore target the needs of decision makers and policy formulators, the formal and non-formal education sectors, public awareness, information networking and communication. These are the areas in which there is an urgent need to align values to those supportive of sustainable development and socio-economic equity. This will enhance skills, increase awareness and allocate resources, as already recognized in the subregional environmental education and training action plans, including those developed or being developed by SPREP (for 1999-2003), ASEAN (2001-2005) and SACEP (2001-2005).

H. Environmental information and communication

National governments of the region place great importance on public access to environmental information and environmental communication as a means of fostering action. Furthermore, these national governments recognize that a condition for being able to respond to environmental concerns is access to information. This is not only in regard to the state of the environment, which is provided by the national, subregional, regional and global reviews, but also to the current and potential future impact from various activities in the society.

Access to information is necessary for political and administrative decision makers to make informed decisions. But the public also needs this kind of information in order to be able to make informed choices on what products to purchase, what issues to be concerned about and what actions to take within the society to address environmental problems that may affect them as

individuals.

The role of the media and the press is very important for environmental information and communication. The press and the media in the region have been fairly active in disseminating environmental information and undertaking investigative reports, which have been instrumental in raising public concerns. The Asia-Pacific Forum of Environmental Journalists, a network of over 20 national forums, has been making a significant contribution to environmental reporting.

Environmental information also includes a range of communication means, including corporate environmental reporting, eco-labelling of products, planning for emergency preparedness, environmental impact assessments, environmental technology assessments and more. Programmes, which include mandatory public exposure of environmental information, such as pollutant release and transfer registers or public rating of industries can be useful policy tools**.** Many examples of how these tools are applied in the region already exist but need to be promoted, adopted and disseminated on a wider scale, as necessary. The participation in the development of global map, with the assistance of the International Steering Committee for Global Mapping and in close cooperation with the United Nations would also be useful.

Voluntary reporting systems, including those promoted by the UNEP Global Reporting Initiative, are important existing efforts under way to foster the use of environmental information and communication as a tool to implement the Regional Action Programme. Additional emphasis may be placed on developing national requirements for reporting, building capacities for performing environmental impact assessments, facilitating eco-labelling schemes etc.

Use of the Internet, virtual conferencing and other modern tools such as GIS could be very effective in information and communication dissemination and will be actively promoted.

III. INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTATION

A. Role of governments and subregional, regional and international organizations and relevant institutions

The primary responsibility for implementing the Regional Action Programme lies with the national governments. National and local governments will therefore play a leading role in successful implementation. Efforts will be made to mobilize the necessary resources within the countries, particularly through tapping the technical and financial potential of the private sector and the participation of all the major stakeholders including the civil society. The role of governments in strategic planning, policy formulation, integration of environmental issues with economic policies, creation of appropriate governance and legal frameworks, capacity-building, and the use of

economic instruments is crucial in the implementation of the Regional Action Programme.

To implement the Regional Action Programme, the governments will carry out the following actions:

(a) Formulate strategic environment management plans incorporating, as far as possible, its important components and develop relevant projects in line with the Programme, as necessary;

(b) Enhance capacity-building of its institutions in discharging new and innovative approaches as mentioned above;

(c) Develop adequate reporting and monitoring systems;

(d) Establish or enhance mechanisms and practices to ensure integration of economic environmental and social considerations in policy, planning and decision making.

(e) Promote the increased participation of non-governmental organizations, women groups, youth, the private sector and civil society groups in most of its activities;

(f) Establish mechanisms to ensure that environmental concerns are effectively integrated in development activities;

(g) Assess the capacity of institutions and legislation to address emerging issues such as the introduction of market-based economic instruments, decentralization of decision-making, information disclosure and public participation and revamp them, as necessary;

(h) Develop appropriate mechanisms and guidelines to involve the local communities and interest groups in the decision-making process and in sharing information with the affected people;

(i) Organize orientation courses for policy makers to sensitize them on the emerging environment and sustainable development issues;

(j) Take the initiative in devolving certain responsibilities and functions to local authorities and private institutions.

Regional and subregional cooperation will foster opportunities for assistance and a coordinated response to these initiatives. Cooperation will be intensified with SPREP, SACEP, ASOEN, and the North-East Asian Subregional Programme of Environmental Cooperation, and the Central Asian Interstate Sustainable Development Commission of the International Fund for the Aral Sea and the Central Asian Regional Environmental Centre to ensure that subregional

implementation of the Regional Action Programme is effectively and efficiently undertaken.

Some subregional cooperation programmes/organizations share common resources such as the UNEP Regional Seas Programme, the International Centre for Integrated Mountain Development, the Mekong River Commission, the Greater Mekong Subregion and the Forum Fisheries Agency. DESCONAP, the Inter-agency Committee for Asia and Pacific, the UNDP Capacity 21 initiative, the North-East Asian Conference on Environmental Cooperation and the Tripartite Environment Ministers Meeting among China, Japan and Republic of Korea and other relevant initiatives will also play a vital role in promoting the Regional Action Programme.

Immediately following the Ministerial Conference, ESCAP and UNEP, in close collaboration with relevant subregional organizations, are requested to hold official consultations at the subregional level or with a cluster of countries with similar problems to identify specific actions and delineate targets. The relevant organizations are requested to transform the identified activities into concrete project proposals containing specific budgets and time frames for implementation. The international donors, the United Nations funding agencies, multilateral financial institutions, non-governmental organizations and the private sector are requested to provide funding support to implement the Regional Action Programme. Regional and subregional organizations are invited to provide further opportunities for a more coordinated and enhanced response to global initiatives such as Agenda 21, the Barbados Programme of Action for the Sustainable Development of Small Island Developing States and international, regional and subregional environmental conventions in relation to the implementation of the Regional Action Programme.

The Subcommittee on Environment and Sustainable Development of the former Regional Inter-agency Committee for Asia and the Pacific (RICAP) is requested to carry out the following actions:

(i) To enhance the effectiveness of the United Nations system through increased cooperation and coordination;

(ii) To encourage interaction and cooperation between the United Nations system and other intergovernmental and non-governmental subregional, regional and global institutions and non-governmental organizations;

(iii) To assist in the strengthening and coordination of national, subregional and regional capacities and actions for further clarification and correlation between regional and sub-regional priorities.

(iv) To promote synergies among activities stemming from environment-related

conventions and those undertaken by relevant subregional, regional and international organizations;

(v) To facilitate increased participation in, and compliance with, multilateral environmental agreements;

(vi) To support revitalization, clear division of responsibilities and the avoidance of duplication;

(vii) To assist in the incorporation of appropriate components of the Regional Action Programme in the work plan of the relevant organizations and agencies.

B. Role of the private sector, civil society and local government

It is evident that concern for the environment is increasing in the region. This is reflected not only in the increased number of major groups on the environment but in the scope and diversity of such activities. The increase in the range of activities reflects not only the increasing seriousness with which major groups are fulfilling their obligations and responsibilities, but also the greater recognition and credibility accorded to them by national governments, regional and international organizations.

The contribution of business and industry to sustainable development in general, and to the achievement of the objectives and targets of this Regional Action Programme can best be attained through such measures as:

(a) The use of economic instruments, such as free market mechanisms, in which the prices of goods and services increasingly reflect the environmental costs of their inputs, production, use, recycling and disposal and the delegation and devolution of authority to those levels of governments;

(b) Improvement of production systems through the use of technologies and processes that utilize resources more efficiently while at the same time producing less waste;

(c) The facilitation and encouragement of innovation, competition and voluntary initiatives that lead to more varied, efficient and effective options;

(d) Allocation of resources or the means of securing resources to local government in line with its responsibilities;

(e) The fostering of entrepreneurship, especially those entrepreneurs active in small and medium-sized enterprises since they play an important role in the social and economic development of a country by enhancing rural development through increasing off-farm employment, by providing

transitional means for improving the livelihood of women, and by improving the efficiency of resource use, reducing hazards and risks and minimizing waste;

(f) The promotion of an enhanced flow of private capital into environmental sound and sustainable forms of development;

(g) Programmes to promote social welfare and area development and encourage benefit-sharing with the local and affected communities.

Civil society plays an important role in raising concerns, identifying environmental issues and in determining priorities that must be accorded to the various responses resulting from the overwhelming demand for action to improve environmental quality while fostering economic development. Non-governmental organizations and other major groups will therefore be invited to ensure successful implementation of the Programme within their areas of work. Their contributions can be facilitated in the following way:

(a) By establishing or enhancing dialogue with non-governmental organizations and other groups in order to efficiently channel non-governmental inputs to the governmental policy development processes and facilitate non-governmental coordination in implementing national and subnational policies at the programme level;

(b) By promoting and ensuring the participation of non-governmental organizations and other major groups in the conception, establishment, implementation and evaluation of national and local initiatives that are consistent with the strategies and mechanisms identified in the Programme;

(c) By encouraging and enabling partnership and dialogue between non-governmental organizations, large groups and local authorities in activities aimed at environmental protection and sustainable economic development;

(d) By taking into account the findings of non-governmental monitoring and review mechanisms in the design and implementation of policies and plans that support the implementation of this Programme;

(e) By developing or strengthening the legislative or other measures necessary to enable the participation of non-governmental organizations and other large groups in consultative bodies and processes, and ensuring the rights of such groups to protect the public interest through legal action or public campaigns.

Success in implementing the Regional Action Programme can be further enhanced through

the following:

(a) The increased involvement of subnational and local governments in the formulation and implementation of policies, plans and practices that lead to environmentally sound development;

(b) The adoption of cooperative and coordinating initiatives that result in greater sharing of information and experiences among local authorities, despite the impediments to these interactions owing to such factors as size, relative status and access to resources;

(c) The fostering of dialogues between citizens, local organizations, private enterprises and local government, with the aim of consensus-building that will lead to a mutual appreciation of the values and needs, and the formulation of the most appropriate environmental management policies and practices.

IV. REPORTING AND REVIEW MECHANISMS

A. Monitoring and reporting mechanism

National governments accept full responsibility to provide regular communications on the achievement of the individual targets and issues pertaining to the implementation of the Regional Action Programme. Such communications will be complemented by reports from relevant subregional and other relevant organizations on the implementation of their respective action plans and work programmes. ESCAP and UNEP will synthesize the national reports on the implementation of the Programme, which will be presented to the sessions of the Commission and the Committee on Environment and Sustainable Development periodically. In doing so, it will identify the elements of the Programme which have been implemented successfully and those that require considerably more attention and resources. Further, it will recommend additional measures to accelerate the implementation of the Regional Action Programme.

The Subcommittee on Environment and Sustainable Development of the former RICAP will be responsible for the regional coordination, joint programming where appropriate, and monitoring and review of the execution of the Regional Action Programme.

Individual members of the Committee may act as coordinators for specific programme areas in order to support efforts in information exchange, development of databases, capacity-building and reporting. However, in-depth assessment of the progress, together with implementation constraints at national and regional levels, will require institutional participation from the countries.

The Committee on Environment and Natural Resources Development, assisted by members and associate members of ESCAP and members of the Subcommittee on Environment and Sustainable Development of the former RICAP, will periodically monitor and review the implementation of the Regional Action Programme. The Executive Secretary of ESCAP and the Regional Director of UNEP will report on the progress made in implementation to the governing bodies of their respective organizations.

Ad hoc ministerial group and senior officials meetings might prove beneficial in ensuring follow-up of its effective implementation. They could report to the sessions of the Commission and provide additional insight regarding implementation of the Programme.

Enhanced inter-agency and inter-ministerial coordination and cooperation at the national level will be needed to take full benefit from the implementation of Regional Action Programme. The countries of the region are encouraged to establish appropriate mechanisms for this purpose. They may also designate a focal point to facilitate communication and coordinate the participation of local governments and other national institutions in the Regional Action Programme. In this respect, it may be most efficient and effective to make use of national focal points that are already coordinating with ESCAP and UNEP on environmental matters.

B. Involvement of non-governmental organizations, the private sector and other major groups

The implementation of, and follow up to, the Regional Action Programme envisages that non-governmental organizations, the private sector and other interest groups will be actively involved in the development and implementation of projects. They will be encouraged to identify areas of interest and develop projects for implementation. They may also be associated with the implementation and review of the Regional Action Programme. Suitable mechanisms for the involvement of major groups for the development and implementation of projects under the Regional Action Programme will be devised.

C. Review and evaluation

Periodic review of the Regional Action Programme and its update will be the primary responsibility of national governments through the coordinating mechanism existing at ESCAP. It is expected that mid-term and final evaluation workshops at national, subregional and regional level will be carried out in order to gain a constructive insight into the implementation and effectiveness of the Programme. Organization of these workshops will be coordinated at appropriate levels, to ensure that successful approaches are identified and replicated, while less adequate strategies are revised or

if necessary abandoned. Concurrent independent evaluations at national, subregional and regional levels will also be encouraged through the use of relevant subregional organizations, non-governmental organizations, research organizations and academic institutions.

A number of efforts are under way, including the development of sustainable development indicators along the lines of the chapters of Agenda 21, by the United Nations Department of Economic and Social Affairs in which ESCAP is participating. These indicators are being tested by the countries to define a core set suitable for their own situation. In addition, ESCAP is developing guidelines for environmental statistics to assist in developing capacities in the countries for a wider use of environmental information in policy formulation. ADB has proposed a set of aggregate indices to measure the cost of environmental remediation, environmental elasticity which measures the environmental performance relative to the economy, and an environmental diamond to describe the state of the environment. The methodologies when refined for application could be reviewed and tested for country situations. The countries of the region are strongly encouraged to apply the indicators and indices in conjunction with the above and other initiatives. These indicators and indices could also be aligned with the Programme areas and targets set for the Regional Action Programme, 2001-2005, to measure the progress of its implementation.

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