

RECENT TRENDS IN ENVIRONMENTAL MANAGEMENT IN THE ASIA-PACIFIC REGION

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For many years, the major environmental problems in the Asia-Pacific region stemmed from the relative lack of development and inadequate infrastructure facilities. In short, poverty itself seemed polluting. Therefore, countries of the region have generally considered economic growth and industrialisation as key development priorities and concern for the protection of the environment has been regarded as of secondary importance. This very process of accelerated development brought to the fore many environmental problems and considerable impact on their resource potential.

Desiring to cope with the gradually rising environmental costs of economic development as well as to maintain adequate balance, Governments of the region have responded in a decisive manner to evolve policies and programmes to prevent environmental degradation. However, the measures adopted were essentially of the problem-responsive type constituting a restorative action, which have been found to be expensive, inconvenient, time-consuming and sometimes insoluble in economic terms.

The countries of the Asia-Pacific region are now in the midst of an enhanced economic development involving natural resources. The challenges ahead to cope with the complex environmental problems are, therefore, formidable which require competent environmental management to achieve sustainable development.

This paper discusses the improved concepts, techniques, institutional arrangements and comprehensive approaches that are being adopted in the region for the management of the environment.

INTRODUCTION

The Asia-Pacific region, comprising over half of the world's population, displays vast diversity in the types and degree of interaction and direct dependency on the natural environment. Nevertheless, the people and countries in the region are experiencing similar desires and difficulties in their social and economic development. The similarity is that development relies on a natural resources base which can sustain development only if it is properly used and managed. The region has wide variations in climate, geology, soils, vegetation, culture and social structure. Apart from high

population density, the region includes some of the poorest countries, consisting of about 500 million people below the poverty line (US \$ 70 per capita per annum). About 72 percent of the population is rural, 54 percent depending on agriculture and 18 percent on livestock based activities.

The cultural heritage of the region is wide-ranging and includes in many countries significant architectural treasures and other historical monuments dating thousands of years back. The value and influence of this heritage is no longer limited to the region. As a major centre of attraction for visitors from all over the world, it makes a significant contribution to a flourishing tourist industry which is an important source of employment and foreign exchange for many countries. However, the intrinsic value of this heritage to people of the region is not primarily touristic or economic. It is deeply rooted in the spiritual and social values of the communities and reinforces their sense of cultural identity and spiritual harmony. Thus cultural heritage plays an important unifying role and provides a code of social conduct.

The natural heritage of the region ranges from the elephant and rhino, many species of primates, the panda, tigers, leopards and lions, birds of paradise and parrots, corals and associated wealth of colourful coral fishes, etc., and also includes various vegetative formations, such as almost pure dipterocarp forest and other rain forests.

The economic benefits that flow from this natural heritage range from daily agricultural activities for the production of food, fuelwood and trade commodities such as spices, vegetable oil, fibres, etc., to large-scale commercial exploitation of timber. It is estimated that the region provides about 70 percent of the world's tropical forest. The fauna of the region is, among other things, a major source of daily sustenance especially for the rural population. A closely related aspect is the use to which various species of plants have served the people of this region in traditional medicine and other related uses.

Freshwater and marine resources are also daily source of food and revenue for individuals and governments of the region. Indeed the island nature of many of the countries and their limited surface area compel them to be heavily dependent on marine resources for food. Small and large scale fisheries, including industries based on this resource, can be considered as important as agriculture-based activities in providing employment.

The region is also rich in a variety of minerals containing some of the largest deposits in the world. There are huge reserves of iron and manganese ores, rare metal-bearing pegmatites, deposits of chromite, copper, nickel, cobalt, lead and zinc, gold, platinum, uranium, asbestos, graphite, magnesite and some other non-fuel minerals. Significant supplies of fuel minerals, petroleum, natural gas and coal, are found in the region. About 60 percent of the world's resources of tin ores are found in East Asia. The main reserves of graphite are concentrated in Sri Lanka, India and Republic of Korea. More than 30 percent of the world reserves of zirconium and the largest reserves of muscovite are in India. Iron ores are abundant though irregularly distributed throughout the region, with total resources estimated at 163,000 million tons. Economic deposits of chromite are found in India, Iran, Pakistan and the Philippines, the latter country being the world's most important producer of refractory grade chromite.

The total estimated reserves of manganese in the region are about 500 million tons, mostly in Australia, India and China. Combined deposits of tungsten from East Asia and Australia account for over 75 percent of total world resources. The region's reserves of antimony constitute over 3 million tons or some 60 percent of the world's total. Though sizeable copper deposits are not common in the region, the Philippines ranks among the 10 leading copper-producing countries in the world. Total resources of bauxite in the region are estimated at 7000 million tons, the bulk of which is in Australia, China, India and Indonesia. About 8 percent of the world's production of phosphate rock are from the Asia-Pacific region mainly from China, Australia, Christmas Island, Nauru, Ocean Island and Vietnam. Finally the region contains natural gas reserves and about 20 percent of the world's coal reserves.

The Asia-Pacific region has the potential of becoming one of the fastest growing regions of the world with an estimated population of 3.4 billion by the year 2000. In many countries of the region, the population pressure or poorly managed or wasteful use of resources has led to degradation and depletion of key resources. With future population pressures and increased rates of national development, the demands on natural resources will increase and, unless exploitation is managed so that renewable resources are used on a sustained basis and non-renewal resources used wisely and conservatively, the natural resource base will be severely degraded.

Recent study done by ESCAP (1983) does in fact provide a clear indication of these possible future trends. If preventive measures are not taken swiftly or stepped up, the Asia-Pacific region could, over the next fifteen years, lose 70 percent of the tropical forests and 10 percent of its gene pool; the damage caused by the floods, the use of pesticides, and industrial pollution could be doubled; nearly 20 million square kilometers of land could be affected by desertification. Devastation of this scale would constitute a threat not only to the living conditions of hundreds of millions of people, but also to the very foundations of development, i.e. water, arable land, fuelwood, marine resources and the inhabitable environment.

ENVIRONMENTAL ISSUES

For many years, the major environmental problems in the Asia-Pacific region stemmed from the relative lack of development and inadequate infrastructure facilities, in short, poverty itself seemed polluting. Therefore countries of the region have generally considered economic growth and industrialisation as key development priorities and concern for protection of the environment has been regarded as of secondary importance. Hence, the situation in many of the countries of the region, until recently, was that concern over environmental quality became ignored in the process of marshalling resources to meet priority development goals. Higher agricultural productivity, maximising incomes and boosting living standards, balanced development among states and improved health care are but a few of these goals. Development thus proceeded apace, with industrialisation being the favoured path for accelerated socio-economic growth through increases in output, income and job opportunities. This very process of rapid development spanning mining, forestry, estate

development, agriculture, land settlement, urbanisation and industrialisation brought to the fore problems of a second order, namely, damage and disruption to the environment, which not only began to emerge but to gain in significance from year to year. Of particular concern are:

- Rural-urban drift contributing to urban concentration and congestion with enormous pressure on water supplies, waste disposal and other public services as well as giving rise to serious squatter problems;
- Polluting emissions, both gaseous and liquid, from a wide range of vehicular traffic and industries, including agro-based ones such as palm oil and rubber processing facilities;
- Particulate matter, such as smoke emissions from stacks and vehicle exhaust, and dust from quarrying;
- High ambient lead levels of concentrations 2 to 4 times higher than the allowable ambient level, at busy road junctions in urban areas;
- Occurrence of haze coupled with long dry spell leading to localised high temperatures especially in the urban setting and resulting in poor visibility and interruption of flight schedules;
- High noise levels measured at the boundary of many residential buildings and schools located at new main roads;
- Erosion and sedimentation of rivers and canals, arising from housing, land settlement, urbanisation and infrastructure construction and logging, causing perennial and recurring floods;
- Excessive deforestation and logging, shifting cultivation and dam construction for irrigation and hydropower projects which disrupt and dislocate traditional human settlements and wildlife;
- Desertification;
- Mining and industrial effluents polluting rivers and inland waterways, resulting in fishkill in river systems and limiting the availability of water of appropriate quality for future growth;
- Discharge of untreated sewage into watercourses;
- Oil spills and the discharge of wastes from ships near coastal areas causing fishkill, loss of other marine life and oil contaminated beaches;
- Indiscriminate dumping of solid wastes, poor refuse collection system and rampant littering;
- Misuse of fertilizers, pesticides and herbicides in agriculture;
- The build-up of dangerous pesticide residues in fish and other marine biota and adverse impacts through the food chain;

- Indiscriminate disposal and dumping of toxic and hazardous wastes generated by industries;
- Increased emissions of oxides of sulphur and nitrogen produced by the combustion of fossil fuel leading to acid rain and photochemical smog;
- Depletion of the ozone layer and accompanied threat of increased ultra-violet radiation at the surface of the earth;
- Increased concentration of carbon dioxide and the possibility of unpredictable changes in climate due to the 'greenhouse' effect; and
- Increase in fallout of trace metals, potentially toxic to humans and other organisms due to industrial activities, and the large number of organic micropollutants being transported long distances and deposited along with acid rain, toxic metals and other pollutants.

ENVIRONMENTAL MANAGEMENT IN THE ASIA-PACIFIC

Desiring to cope with the gradually rising environmental costs of economic development as well as to maintain adequate balance, governments in the Asia-Pacific region have taken cognizance of the environmental issues and responded in a decisive manner to evolve policies and programmes to alleviate environmental degradation.

Several approaches have been adopted in the region to deal with environmental protection depending on the gravity of the problems. The traditional approach, however, has been for environment-related issues to be routinely reviewed by several departments connected with resource development or conservation. In many cases, these departments did not have any statutory powers and the approach was found to be most unsatisfactory. The next development was the designation of a specific committee/department among the ministries to look after environmental issues. Subsequent requirements for specialised needs and skills have ultimately led to the creation of a fulltime environmental ministry, agency or board.

There has been a continuing upsurge of high level, full time environmental agencies in the region since 1977 (ESCAP, 1984). Almost all the countries in East Asia, South Asia and South East Asia have established separate Agencies or Ministries in charge of environmental matters. In the Pacific, however, institutionalisation of environmental concerns has been slow. Most of the countries in the region have no specific agency dealing with environmental protection. As of now, however, Cook Islands has a Directorate of Conservation; Papua New Guinea, a Ministry of Environmental Conservation; the Trust Territory of the Pacific Islands, an Environmental Protection Board. In Vanuatu, an Environment Unit is planned to be created in the Ministry of Lands, Mines and Energy (Asian Development Bank, 1987).

During the past decade, a priority task in the efforts of the countries of the region to achieve a balance between development and the environment was to deal with environmental problems that had accumulated over the years through restorative

measures backed by systematic enforcement of the various legislations while developing strategies to forestall future environmental problems.

Generally, legislation includes a statement of policy, goals, objectives and priority targets. In certain instances, it covers a variety of aspects of the environment, while in others it merely establishes the enabling acts and defines the scope and functions of the central environmental agency and provides a procedure whereby environmental considerations can be fed into decision-making procedures.

The countries of the region have undertaken a variety of legislative measures for environmental protection. A survey undertaken by ESCAP (Legislative Development. Vol 1: Summary) revealed that these are often sectoral in character. The survey indicated that environmental legislations in the region generally cover the areas of land-use, air and water quality, environmental impact assessment, noise, solid wastes, industrial waste disposal, coastal zone management, forests, parks and wildlife, hazardous substances, mineral development and cultural environment. Some countries have developed general environmental protection policies. Sometimes, these general environmental policies are predicated on the relevant provisions of the national constitution so that they truly reflect a permanent national commitment to improving the environment.

Legislation regarding Environmental Impact Assessment (EIA) occupies an important place in the environmental management undertaken by these countries. However, it has been found that except for countries such as Australia, Philippines with specific legislation on EIA, countries such as Hongkong, Malaysia, Papua New Guinea, Republic of Korea, Sri Lanka and Thailand have no specific legislation on EIA, but they rely heavily on the provisions of general environmental protection legislation (which often includes EIA) for the purpose of carrying out EIA of development projects. In other countries such as Bangladesh, Fiji, India, Indonesia, Nepal, Pakistan and Samoa, informal procedures are resorted to for the incorporation of environmental considerations into the planning of selected sites and projects, particularly in the case of major industries and other large-scale development undertakings. There are also many countries in the region without any requirement of EIA. Inadequacy of information on the environmental conditions and environmental protection needs of these countries could be a reason for the absence of EIA requirement.

Inadequate implementation and enforcement have so far appeared to be a critical shortcoming in many countries of the region. These shortcomings are often the result of the prevalence of factors such as poverty and inadequate and insufficient trained manpower, funds and equipment.

Logically it would be sensible to work out a proper environmental plan to be carried out within the 'general planning framework' before any pollution control work is carried out. However, in the context of most of the countries of the Asia-Pacific region, having due regard to the necessary lead time required to evolve a sound plan (data collection, resources, trained manpower, etc.) and urgency of enforcing anti-pollution measures, immediate action was called for. In this sense, pollution control has been the main activity in the programme of the Environmental Protection Agencies of the region for protection of the environment and enhancement of its quality.

The sustained environmental improvement efforts to date have made significant inroads into the problems identified at the start of the decade. Consciousness of environmental changes and appreciation of their bearing on social and economic well-being have grown significantly. Formal education, technical training, mass media, and non-government organisations and citizen groups have all played a role in this process of building environmental awareness. There has also been some progress in terms of greater access to information on environmental problems and prospects, administrative and legislative means of organising and implementing action, methodological guidance in assessment and analysis of environmental changes and measures, and training and technical co-operation to deal with environmental matters. Regional co-operation to deal with shared environmental problems has also increased. Environmental aspects have begun to be seen in clearer perspective in various sectors of development, such as, food and agriculture, health, industry and human settlements.

Public involvement in environmental debate and action has increased, support, both at scientific and grassroot levels for action to arrest environmental degradation has grown in the face of increasing negative ramifications of industrialisation, urbanisation, population growth and significant changes in forests, rangelands and farmlands.

The preservation of representative samples of the region's natural forest ecosystem with its constituent flora and fauna has continued to be accorded due importance. Such natural forest habitats are indispensable as they play a truly significant role in the preservation of watershed; in the maintenance of hydrological cycle while serving as a permanent source of scientific, cultural and recreational value.

THE CHALLENGES AND NEW STRATEGIES IN ENVIRONMENTAL MANAGEMENT

The achievements to date in terms of measures for overcoming environmental problems do not by any means represent the complete answer in tackling the whole gamut of environmental issues. The measures adopted have been essentially of the problem-responsive type amounting to 'pollute first and clean later' policy which have been found to be expensive, inconvenient, time-consuming and sometimes, insoluble in economic terms.

The countries of the Asia-Pacific region have no choice but to forge ahead with economic development for self-reliance and to raise the standard of living of the people to a satisfactory level. With greater experience, more thorough investigation of past projects and increased understanding of natural systems, it is now apparent that many development projects can and do have significant, and often unanticipated effects on the natural environment and the use made of it and that these effects can add to the real costs or affect the real benefits of the undertaking.

Increasingly it is now being recognised that, even if the direct and measurable economic costs and benefits of the projects remain of prime importance for the majority of the proposals, the effects on the natural environment which are not included in the economic sums cannot be ignored if allocative efficiency is to be maximised.

It is therefore crucial for developing countries such as those of the region to protect the source of their present wealth and those that are likely to be familiar in the future on the principle that renewable resources can best be extracted from a healthy environment. In addition, these countries must be constantly aware that their basic resources are finite and thus farsighted resource husbandry is of paramount importance.

This has, in recent years, led to some serious rethinking on the directions and pace of future development efforts. Whilst the concern with the human environment can only reinforce the commitment to development, it should serve, however to provide new dimensions to the development concept itself. The concept should have as its aim the satisfaction of human needs without destroying the environment from which these needs are generated. In this respect, therefore, in view of the interactions that exist between resource development and environmental quality, environmental management should be understood to mean prudent management of the quality and quantity of the natural resources.

As a result, the view which has been gaining ground in the developing countries considers environment decisions as organically linked to development decisions. While pollution and conservation are not unimportant from the point of view of environmental management, its major concern is with optimal resource use, resource maintenance and enhancement. Indeed, development with efficient environmental management can help to generate the resources and the means for sustainable development, given rational use and application of advances in science and technology.

In the context of the Asia-Pacific region, as the prospects of a long-run, abundant supply of natural resources are dim, and technological innovations are inadequate, discrete and unpredictable, the countries of the region have to take a serious look at the resource limitations, especially renewable resources, and tailor the development efforts suitably. This does not imply sacrificing development itself. What it does imply, though, is that patterns of resource development and resource use have to be restructured by adopting policies of resource management which are innovative and imaginative, and focus on employment and efficiently organised productive activities while treating environment as an important parameter.

Further, since the development of natural resources will be a continuing process which involves intentional changes to the environment through the various activities, it must be accompanied by conscious efforts in guiding these environmental changes so that the sustaining of economic growth will serve the purpose of providing a better standard of living not only in the material sense, but also in the value of life itself. The task of guiding these changes must be carried out through a proper long-term management of the resources by maintaining an equilibrium between the modes of resources and the rising needs.

The challenges ahead to cope with the complex environmental problems are, therefore, formidable which require competent environmental management to achieve sustainable development.

In the light of the above concept of environment and development, the countries of the Asia-Pacific region are beginning to adopt an environmental management strategy which essentially consists of the following components:

- Appropriate Environmental Policy;
- Integrated Economic and Environmental Planning; and
- Regional Co-operation.

Appropriate Environmental Policy

Environmentalism has grown out of the contradictions between modern economic activity and the regenerative capacities of natural systems. Such contradictions are characterised by the emergence of environmental problems and environmental values. The result is a confrontation between environmental advocates and affected parties and the vested interests of development. The policy system is principally a mechanism for conflict resolution, generating policy instruments that are the operational guidelines that define the actions of the implementation system.

Accelerated development in the developing countries could enhance their capacity to improve their environment. The environmental implications of poverty and under-development and the inter-relationships between development, environment, population and resource must be taken into account in the process of development. It is essential to avoid environmental degradation and give future generations the benefits of sound environment. There is a need to ensure an economic development which is environmentally sustainable over the long run and which protects the ecological balance.

In order to inculcate a greater understanding of the close relationship between development and the environment, governments of the region have formulated comprehensive environmental policies reflecting the recognition of their responsibility and strong commitment to manage all the resources of the nation in a manner which with due concern for the welfare of the future generations maximises the quality of life for all. Such a policy statement is broader in scope than the underlying policies of any laws and legislations with regard to environmental quality which in essence would chiefly be concerned with the control of various pollutants. It would also extend to other environmental tangibles and intangibles covering such diverse subjects as soil and water conservation, flood control, wildlife, national parks, cultural aspects, aesthetic values, health, recreation and tourism, and town and country planning.

The environmental policies of the countries of the region are generally consistent with the concept of sustainable development. Some of the significant features of the policies include the following elements:

- Maintain the quality of the environment relative to the needs and aspirations of the growing population;
- Preserve the country's unique and diverse cultural and natural heritage;
- Minimise the impact of growing population and human activities relating to mineral exploitation, deforestation, agriculture, urbanisation, tourism, and the development of other resources both renewable and non-renewable, on the environment through restorative and preventive measures;

- Balance the goals of socio-economic development and the need to bring the benefits of development to a wide spectrum of the population with the preservation and protection of the environment through proper environmental management; and
- Promote greater co-operation and increased co-ordination in environmental management at all levels of the governments.

The environmental policies have enunciated definite goals to achieve sustainable development, support and promote general welfare, and to create and maintain conditions under which man's activities and nature can co-exist in harmony. The responsibility of the environmental decision-maker and planner is to serve the major goals outlined in the environmental policy. This complex management task requires the environmental manager to be aware of and to recognise the key factors which constrain his activities. These factors can be identified as social, technical, political, legal, ecological and economic. An understanding of these inter-relationships requires multi-disciplinary knowledge and an inter-disciplinary, integrated planning approach to develop public policy programmes that enhance and achieve the politically desired quality of life.

Integrated Economic and Environmental Planning

In the past, there has been a tendency to equate development with the more narrowly conceived objective of economic growth as measured by the rise in gross national product or by physical indicators alone. When natural environment was considered, it was often viewed as an economic constraint on development. Flooding, slope stability, soil structure, and seismic activity were seen as environmental factors affecting the cost of development but usually subject to satisfactory engineering solutions. The lack of attention to environmental factors in development planning has led to significant environmental degradation, irreversible loss of precious ecological and other natural resources, and in many instances hazard to life and property, unanticipated social costs, loss of amenity and quality of life. In addition, when development planning has concentrated on overall economic growth, socio-economic disparities have led to the creation of urban slums and attendant neglect of basic environmental amenities such as water supply and sanitation. Disparities between urban and rural areas have intensified migration from rural areas to urban slums.

Underlying the importance of striking a balance between development and the environment is the need to place more emphasis on preventive approach to environmental management than on curative measures. Accordingly there has emerged a clear need to modify the traditional methodology and approach of project evaluation adopted by development planners and decision-makers that are based purely on economic considerations, in order that environmental dimension is incorporated into the development planning process from the outset.

In this respect, a more expedient approach used by the countries of the Asia-Pacific region has been to adopt the environmental impact assessment (EIA) process by which individual projects were carefully examined for environmental implications following the lead by the industrialised countries. The EIA requirement has indeed been the most powerful tool of the developing countries for influencing development decisions and it is expected that this would continue to be the case for the next decade or so.

The EIA process concentrates on individual projects, although occasional attempts have been made to conduct EIAs for overall development programmes. The EIA process could not be expected to give adequate attention to regional environmental needs. Past experience has shown that despite the use of environmental impact assessments and other techniques, major economic development projects have caused unacceptable environmental degradation.

Detailed environmental investigation is usually only possible at the appraisal stage, often in conjunction with a pre-feasibility study or feasibility study. Quite commonly, the environmental specialist is given inadequate time to prepare an environmental impact assessment for a multi-million dollar project. Thus, the environmental input is too little or too late, and by that time such a project would have been included in the national development plan and/or annual budget and it becomes difficult to prevent the project from proceeding.

Attention has since been directed to bringing about better planning which is environmentally as well as economically sound, i.e., Economic-cum-Environmental (E-c-E) planning. When development planning is done on this basis, the role of the EIA can be limited to local environmental effects, whereas without such planning, the EIA must deal also with macro environmental effects but can rarely do so effectively. The EIA process is no substitute for proper regional planning.

Figures 1 and 2 sum up the evolutionary processes of E-c-E planning in the countries of the Asia-Pacific region.

The objectives of integrated economic-cum-environmental planning is to prepare good plans which directwise investment decisions, thus contributing to sustainable development and benefiting the whole population. A 'good' plan is one which enables economic, social, natural resource, and environmental objectives to be satisfied; identifies development strategies which enable all the objectives to be satisfied; and identifies development and projects which are consistent with and facilitates the stated objectives and strategies.

Projects with varying degrees of integration were undertaken in Indonesia, Republic of Korea, Philippines and Thailand. The first project to comprehensively integrate environmental factors into regional economic development planning was the Songkhla Lake Basin Planning Study in Thailand. The process is shown in Figure 3. The steps involved in Regional Environmental Development Planning Process is shown in Figure 4.

CHEMISTRY AND THE ENVIRONMENT

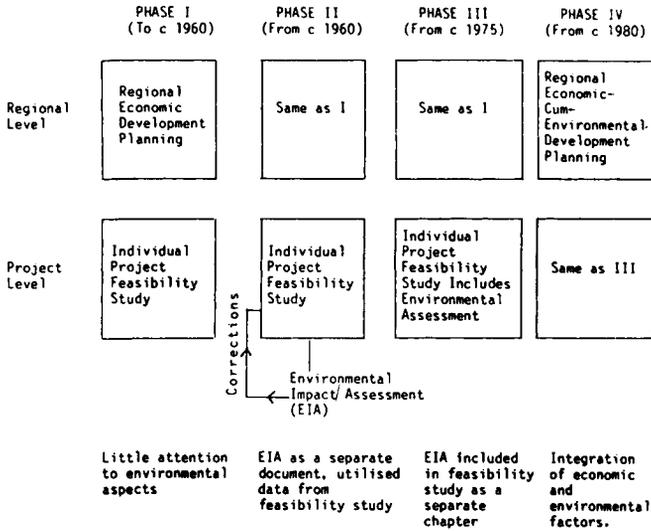


Fig. 1. Evolution of Economic-cum-environmental Planning
 [Source : Environment Unit, Asian Development Bank].

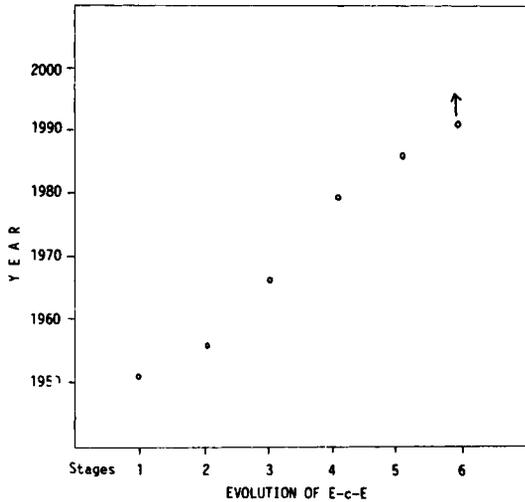


Fig. 2. Schematic illustration of economic-cum-environmental development planning in the Asia-Pacific region. [Stages : 1. Conventional Regional Development Planning; 2. Regional Economic Development Planning; 3. Environmental Impact Assessment (EIA) (Project oriented); 4. Environmental Profiles (beginning efforts at incorporating environmental inputs into development planning); 5. Regional Environmental Development Planning; and 6. Regional Economic-cum-Environmental Planning].
 [Source : Environment Unit, Asian Development Bank].

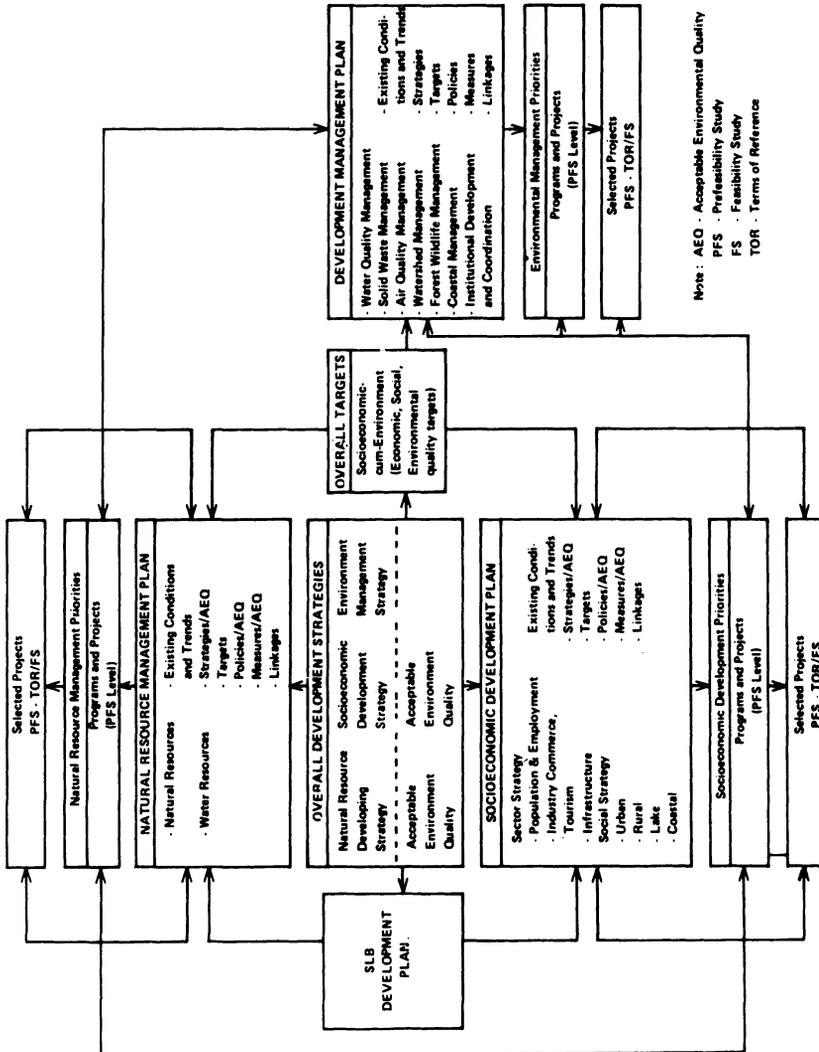


Fig. 3. Integrated Economic-cum-Environmental Development plan for Songkhla Project
 [Source : Environment Unit, Asian Development Bank].

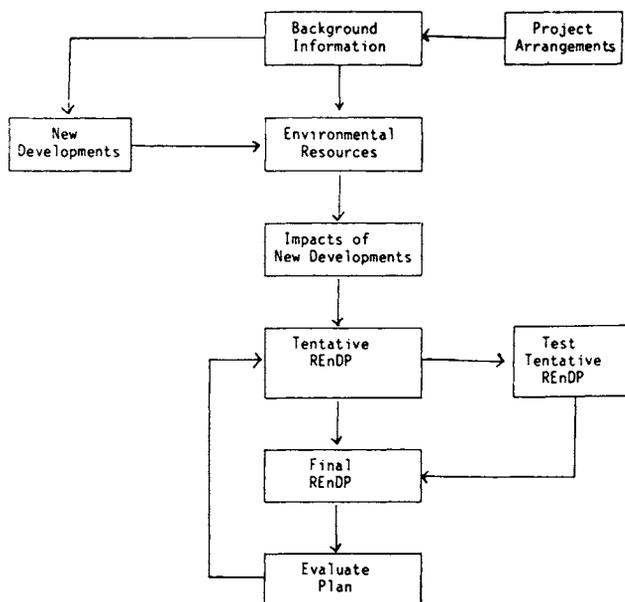


Fig. 4. Steps involved in regional environmental development planning process
[Source : Environment Unit, Asian Development Bank].

The evolution of regional environmental development planning in Asia has been gradual with several different approaches being tried. The chronological sequence of some of the most significant projects is as follows (Asian Development Bank, 1988):

- (1) Philippines — *Laguna Lake Basin* : Basin wide water quality management plan (1978).
- (2) Philippines — *Palawan Integrated Area Development* : Regional environmental development plan for the Island of Palawan (1983).
- (3) South Korea — *Han River Basin* : Regional environmental development plan (1984).
- (4) Thailand — *Songkhla Lake Basin Planning Study* : Economic-cum-environmental planning (1985).
- (5) Thailand — *Eastern Seaboard Planning Study* : Comprehensive regional environmental development plan (1986).
- (6) Indonesia — *Segara Anakan* : Regional environmental development plan (1986).
- (7) Malaysia — *Klang Valley* : Regional environmental development planning (1987).
- (8) Thailand — *Samutprakarn Project* : Regional environmental development planning (1987).

Regional Co-operation

The task of environmental management is so vast and complex that in order to accomplish it, it must be shared. The environmental problems are all-encompassing and transcend national boundaries. In this respect, regional co-operation in the Asia-Pacific region has been very pronounced in the broad field of environmental protection and management since the early seventies through regional seminars and meetings to foster inter-state collective measures for tackling environmental problems in the region. An Asian Plan of Action for the Human Environment was adopted in Bangkok in 1973.

Effective implementation of this broad regional Action Plan was hampered by the marked diversity of country and sub-regional situations in the region and this had led to the adoption in recent past of sub-regional environment action programmes. To date the following sub-regional programmes have been established:

- ASEAN Environment Programme (ASEP) established in 1978 and comprising Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand;
- South Pacific Regional Environmental Programme (SPREP) established in 1980 encompassing 22 countries and dependent territories, containing nearly five million people of three main ethnic groups—Melanesian, Polynesian and Micronesian—who are scattered over some 30 million square kilometers, of which less than two percent is land;
- South Asia Co-operative Environment Programme (SACEP) established in 1981 and involving Afghanistan, Bangladesh, Bhutan, Burma, India, Iran, Maldives, Nepal, Pakistan and Sri Lanka; and

The priority areas identified for action under the three sub-regional programmes share broad characteristics and objectives while being adapted to respective sub-regional situations. Technical co-operation stimulated by these sub-regional programmes has enabled the countries to learn from each other in their common endeavour to promote environmentally sound development in the region.

ASEAN Environment programme (ASEP)

ASEAN, in all modesty, can be numbered among the success stories in regional co-operation in the field of environmental management. The past eleven years have reconfirmed the exemplary spirit of co-operation among ASEAN Countries on environment. During this period ASEAN has completed two phases of intensive environmental programme and embarked on its third phase in 1988.

The ASEAN Ministers on the environment met in Bangkok for the second time in November 1984 and reiterated their commitment to the protection of the ASEAN environment and the safeguarding of its natural resources in order to make them available for sustained economic development. The Ministers declared (Bangkok

Declaration on the ASEAN Environment, 1984) the need to strengthen and enhance the regional co-operation in the field of environmental protection to meet the increasing and challenging environmental problems of the ASEAN Region in the decade ahead. In this respect, they redefined the Development Strategy of the ASEAN countries to include an integrated approach entailing advance or forward planning in the environmentally related activities with a view to incorporating the environmental dimension into development planning right at the base level in order to achieve sustainable development and long-term conservation of the assets and at the same time improving the quality of life for all.

In order to achieve the above objectives the Ministers have issued definite policy guidelines for application throughout the ASEAN region. The basic elements of the policy guidelines can be summarised as follows:

- (i) Foster the development of macro economic-cum-environmental development plans which can be accommodated by the environmental carrying capacity of the region;
- (ii) Continue and strengthen the use of EIA process for individual projects, both government and private sector, that are likely to produce significant environmental impacts;
- (iii) Establish environmental units in the planning divisions of major project implementing agencies to ensure that environmental consciousness permeates planners and decision-makers so that development policy and planning in all sectors reflect systematic consideration of the environment;
- (iv) Evolve criteria for augmentation of renewable resources and economical use of non-renewable resources;
- (v) Prepare an optimal land-use pattern and zoning plan;
- (vi) Develop new and practicable approaches for preserving forests, wild life and other ecological systems in the face of continuing population pressure;
- (vii) Adopt practicable methods for ensuring reasonable technology for waste management and wherever practicable adopt low-waste and non-waste technology and more effective re-use and recycling of wastes in production;
- (viii) Develop a Toxic and Hazardous Waste Control Programme and stimulate efforts by government agencies and industry to develop suitable systems for control;
- (ix) Increase efforts to provide water-borne sewerage systems with central sewage treatment facilities at least for the major towns;
- (x) Provide environmental training of personnel involved in decision-making on projects, programmes, policies and plans with emphasis on cause and

effect relationship that exist between an individual's environment and his health;

- (xi) Develop a comprehensive environmental information system to facilitate decision-making; and
- (xii) Promote government-industry co-operation.

The enunciation of policy guidelines in environmental management for the first time by the Ministers in charge of the environment at this meeting is a step in the right direction and this has certainly made the ASEAN Environmental Programme more meaningful and effective.

South Pacific Regional Environmental Programme (SPREP)

The Action Plan for the SPREP is intended to provide a framework for environmentally-sound planning and management suited to the needs and conditions of the countries and people from the region, and to enhance their own environmental capabilities. The principal objective of the Action Plan is to help the countries of the South Pacific to maintain and improve their shared environment and to enhance their capacity to provide a present and future resource base to support the needs and maintain the quality of life of the people.

The more specific objectives of the plan are:

- (i) Assessment of the state of the environment in the region including the impacts of man's activities on land, fresh water, lagoons, reefs and the ocean; the effects of these on the quality of man's environment, and the human conditions which have led to these impacts;
- (ii) The development of management methods suited to the environment of the region which will maintain or enhance environmental quality while utilising resources on a sustainable basis;
- (iii) The improvement of national legislation and the development of regional agreements to provide for responsible and effective management of the environment; and
- (iv) The strengthening of national and regional capabilities, institutional arrangements and financial support which will enable the Action Plan to be put into effect efficiently and economically.

The Action Plan has identified some sixty areas of environmental assessment, management and legislation for SPREP to initiate activities. All components for the Action Plan are interdependent and together provide a framework for comprehensive action which should contribute to both the protection and continued development of the region.

The implementation of the Action Plan and its co-ordination is in the hands of four organisations: The South Pacific Commission (SPC), the Economic and Social Commission for Asia and the Pacific (ESCAP), and the United Nations Environment Programme (UNEP), with SPC hosting the SPREP Secretariat.

South Asia Co-operative Environment Programme (SACEP)

The big change in South Asia's protection of the shared environment is the greater co-operation among the South Asian neighbours, culminating in the establishment of the South Asia Co-operative Environment Programme. Without losing sight of the benefits of technology and third party assistance, the SACEP countries have placed priority on co-operative schemes to tackle the myriad of environmental problems that have arisen in the region.

SACEP will aim to bring about better management of the environment in the region, particularly through eliminating the wasteful use of natural resources. Some of the main functions of the programme are to promote co-operative activities to solve major environmental problems of economic development, to facilitate the exchange of information and expertise among countries on environmental issues, to use local resources for implementing projects, and to encourage support from interested donor countries and other sources.

Three principal bodies share the responsibility for SACEP's programmes. They are the governing council—the policy-making and review body comprising ministerial-rank representatives from all SACEP countries; the Consultative Committee in charge of facilitating the programmes and policies formulated by the Council through close informal co-operation, and the dissemination of SACEP information; and the Secretariat which assists the Council, the Committee and individual countries in carrying out their respective environmental responsibilities.

While extreme poverty has made the environmental problems of South Asia diffused and often indefinable, environmental impact assessment and cost benefit analysis, the protection of the regional seas, resource management, environmental education and training, environmental legislation and energy have been identified as the priority areas in environmental management.

CONCLUSIONS

The assaults on the environment of the Asia-Pacific region are both many and varied in nature, arising from the countries' rapidly developing economy. In response, measures have been taken, within the constraints of competing policy priorities and claims on resources to protect and enhance the quality of the environment within manageable proportion on a scale of priorities.

Although much has been achieved, the task is far from being complete. It is regionally recognised that the environmental issues will become more complex, in the decade ahead, and require more competent environmental management. In this regard, the Asia-Pacific region is poised to adopt a preventive approach to

environmental protection. For this purpose, it is apparent that incorporation of environmental dimension into the development planning process is emerging as the effective environmental management strategy for the region together with enhanced regional co-operation to manage shared environmental issues.

In addition, the countries of the region have begun to realise that environmental management, far from being a handicap, can actually contribute to the success of resource development programmes. In fact, it has become evident that the environmental protection approach is a resource management concept while economic development is generally pursued as a resource use concept, and that the whole objective of integrating environmental planning with development is to absorb the resource management ideas into the process of planning for resource use.

REFERENCES

- ADB (1987). Environmental Legislation and Administration: Briefing Profiles on Selected Developing member countries of the Asian Development Bank. Annex 1, Environment Unit, Asian Development Bank. p 46.
- ADB (1988). Concept of Economic-cum-Environmental Planning and Review of Status in Asia, Paper 1, Environmental Unit, Asian Development Bank. p 6.
- ASEAN (1984). Bangkok Declaration on the ASEAN Environment. Department of Environment, Malaysia, Kuala Lumpur.
- ESCAP (1983). Development, Environmental Trends in Asia and the Pacific – A Regional Overview. Economic and Social Commission for Asia and the Pacific, Bangkok, Thailand.
- ESCAP (1984). Proceedings of the Expert Group Meeting on Integration of Environment into Development: Institutional and Legislative Aspects, Tokyo, Japan, Economic and Social Commission for Asia and the Pacific, Bangkok, Thailand. pp 37-88.
- ESCAP State of the Environment in Asia and the Pacific: Legislative Development, Vol. 1, Economic and Social Commission for Asia and the Pacific, Bangkok, Thailand. p 46.