



**SOUTH ASIA CO-OPERATIVE ENVIRONMENT PROGRAMME
INTER-GOVERNMENTAL EXPERT GROUP MEETING**

**Bangalore, India
10-15 March 1980**

REPORT

**UNITED NATIONS ENVIRONMENT PROGRAMME
REGIONAL OFFICE FOR ASIA AND THE PACIFIC**

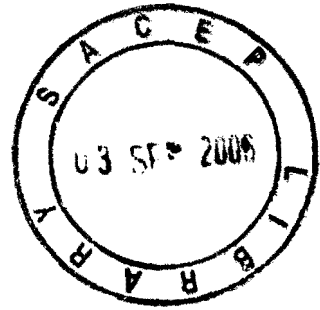
Bangkok, Thailand

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I. ORGANIZATION OF THE MEETING

Introduction

The South Asia Co-operative Environment Programme Inter-Governmental Expert Group Meeting was convened by the Regional Office for Asia and the Pacific of the United Nations Environment Programme, Bangkok; it was held at the Regional Centre for Technology Transfer (RCTT), Bangalore, India, from 10 to 15 March 1980. The Meeting reflected the many common ecological characteristics of the South Asia region (comprising Afghanistan, Bangladesh, Bhutan, Burma, India, Iran, Maldives, Nepal, Pakistan and Sri Lanka) which extends from the Himalayan chain at one end to the Indian Ocean at the other.

Organization of discussions

For convenience, discussions were held under the following headings:

- i) Environment management
- ii) Management of natural resources
- iii) Desertification
- iv) The Regional Seas Programme
- v) Energy and the environment
- vi) Education and training
- vii) Establishment of a South Asia Co-operative Environment Programme (SACEP).

Objective

The objective was primarily to consider the feasibility of a South Asia Co-operative Environment Programme.

Participation

Delegations from Bangladesh, India, Iran, Nepal, Pakistan and Sri Lanka attended the Meeting. Also present were representatives of UNESCO, ESCAP-RCTT, and five journalists from participating countries.

/Notification

Notification of intention to participate in and support the programme had been received from Afghanistan and Maldives in writing, and orally from Bhutan. A list of participants is given in annex I.

Inauguration

The Meeting was inaugurated by Shri N. Narasimha Rau, Chief Secretary of Karnataka. Mr. C. Suriyakumaran, Director Regional Office and Regional Representative for Asia and the Pacific, United Nations Environment Programme, in his opening statement gave background information on the meeting and on subregional co-operation in other parts of Asia and the Pacific (vide annex II). Dr. C.V.S. Ratnam detailed the current activities of RCTT and the leader of the Bangladesh delegation, Mr. M.A. Karim, proposed the vote of thanks.

Election of officers

The Meeting elected the following officers:

Mr. Sunil Roy (India)	: Chairman
Dr. Taghi Ebtekar (Iran)	: Vice-Chairman
Mr. M.A. Karim (Bangladesh)	: Rapporteur

It also established a Drafting Committee with Dr. Kamal K. Shreshtha (Nepal) as Chairman.

Adoption of the agenda

The agenda as adopted is attached as annex III.

Format of the report

The Meeting decided that the report should be brief, with emphasis on conclusions and decisions for action.

II. ENVIRONMENT MANAGEMENT

The vital importance of proper environmental management appeared to be universally recognized.

The following general conclusions were drawn:

- i) Impact assessment linked with monitoring should be a continuing process throughout the life of a project, from funding to maturity and thereafter.
- ii) A simpler, more flexible model, which would incorporate cost/benefit statements, and currently being developed in the Regional Office of UNEP in Bangkok, was welcomed.
- iii) In making impact assessments, the social component should be an important factor and there should be the maximum involvement of the affected people at all levels.
- iv) In developing countries the relationship between environment and development required special attention.
- v) It was necessary in all cases that the possibilities for the improvement of the environment inherent in many projects, should be fully exploited.
- vi) Public awareness has a critical factor and had to be created in regard to all aspects of conservation by all available means.
- vii) The establishment and enforcement of environmental quality standards required careful prior surveys and monitoring.
- viii) Cheaper, simpler instrumentation for use by ordinary citizens should be developed to overcome limitations of high cost of instruments.
- ix) Residue utilization has a particular significance because it combined prevention of pollution with creation of wealth.
- x) In all those matters there was need for constant exchange of information on experiences, problems and on-going activities among the countries of the region.
- xi) Efforts should be made to develop comparatively pollution free technologies.

/The

The Meeting agreed that the following countries/institutions act as focal points in those subject areas:

Environment impact assessment, cost/benefit
analysis and environment and development Sri Lanka
Environmental quality standards Iran
Residue utilization ESCAP-RCTT.

III. MANAGEMENT OF NATURAL RESOURCES

The Meeting expressed its deep concern over the inappropriate management of natural resources of the South Asia region, recognizing that they were being rapidly depleted. The exploitative factors were not due only to poverty and were not confined to the rural population. The increase in demand for fuelwood in one country, for instance, partly resulted from the practice of converting this commodity into charcoal for use in urban areas.

The Meeting noted with interest that a national coastal conservation law was being promulgated by one country. The participants also discussed the increasing menace of pollution from discharges of ocean-going vessels, which was affecting the coastline of the South Asia region.

In the various subject areas discussed under this heading, the following decisions were arrived at:

Regarding conservation of montane ecosystems and watersheds, the endeavour of the His Majesty's Government of Nepal and of UNESCO to establish a Regional Centre for Integrated Mountain Development in the Hindukush and Himalayas in Nepal, was welcomed. The UNESCO representative was asked (i) to provide particulars regarding the objectives and programmes of the proposed centre to the countries of SACEP, (ii) to keep them abreast of the progress made in its establishment, and (iii) to obtain their suggestions about its working. That would be useful to the country chosen to be the focal point in that subject area in the discharge of its functions.

/Countries

Countries of the South Asia region may make efforts to obtain meteorological, seismic and geomorphological data regarding the Himalayas and exchange that information periodically. Studies could also be initiated in those fields.

Efforts be made to assess the carrying capacity of montane ecosystems and watersheds with regard to human populations and domestic animals, and to regulate grazing so as to keep it within the limits of the carrying capacity. Establishment of fenced areas, cultivation of fodder, reseedling of pastures and rotational grazing may also be encouraged.

It was agreed that Pakistan would be the focal point for that subject area.

In the field of social forestry, the dangers of monoculture were emphasized. While fully endorsing the need to enhance social forestry and encourage plantations, it was suggested that that should not be done at the cost of existing forests. The creation of plantations along roadsides, canals and railways might also be given greater impetus, as suggested by some countries.

The papers produced by Sri Lanka on the subject may be provided to the UNEP secretariat for distribution to the countries of the South Asia region. Sri Lanka would also be in a position to supply, in the near future, the seed of *ipil ipil* (*Leucaena leucocephala*) which had so far been in very short supply.

As regards regional co-operation in wildlife conservation, the need to establish biosphere reserves in diverse ecological habitats and ecosystems, and to conserve them in accordance with the guidelines of the Man And Biosphere programme, was endorsed.

Exchange of information on and expertise in captive breeding and rehabilitation of endangered species of flora and fauna be encouraged, and co-operation developed between countries in that matter, including assistance in obtaining initial breeding stocks. It was noted with

/satisfaction

satisfaction that India would try to meet the request of Pakistan for breeding stocks of blackbuck, *gharial* and marsh crocodile. Furthermore, Pakistan expressed a desire to obtain breeding stock of *gharial* from Nepal.

It was agreed that the fullest co-operation would be extended to the focal point for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and other conventions relation to nature conservation, and that Iran would be the focal point in that subject area.

With regard to conservation of corals, islands, mangroves, deltas and coastal areas, it was agreed that the countries of the South Asia region should make all efforts to establish marine national parks, both as repositories and as breeding grounds for living marine resources, with special regard to unique and threatened ecosystems and endangered species.

It was agreed that, in view of the great importance of and potential for mangroves from the sociological, economic and ecologic standpoints, a far greater concentrated effort to propagage them be undertaken.

The countries of the South Asia region, particularly Bangladesh, would make available information and expertise with regard to management and propagation of mangroves.

It was agreed that Bangladesh would be the focal point in that subject area.

As to tourism and environment, the development of tourism and its adverse ecologic impact be controlled, especially in fragile ecosystems and protected areas such as national parks, wildlife sanctuaries, etc. The number of visitors and the movement of vehicles may be restricted, in keeping with the capacity of the area in question. The construction of tourism infrastructure for residential and other purposes may as far as possible be avoided within the confines of such parks, etc.

IV. DESERTIFICATION

There is already an on-going programme in this field under the aegis of UNEP; its inception followed upon the United Nations Conference on Desertification, Nairobi, 1977.

Desertification, salt-water intrusion and salinity encroachment were in evidence in almost all countries in the South Asia region; hence low-cost solutions and technologies to combat those problems needed to be evolved. In that regard, exchange of information and of the expertise acquired by some countries may be encouraged.

The Meeting noted that a trans-national project, involving four countries, and another collaborative project for combating desertification by integrating agriculture and industry, which involved several countries of the region, had been formulated. It was agreed that the outcome of those projects be awaited before further desertification programmes were considered. Bangladesh reported that it had formed a desertification control unit and had undertaken various schemes to counteract man-made desertification encroaching on cultivable and populated land areas. It was agreed that similar projects in other countries of the South Asia region be identified and that co-ordinated assistance may be provided.

V. REGIONAL SEAS PROGRAMME

The Meeting welcomed details of the on-going Programme on Regional Seas which had several components and which had been emulated by countries in other parts of the world. In Asia, the ASEAN countries and the countries of the South Pacific were proposing to benefit from the facilities made available under that programme. The Meeting heard with interest the outline given by the Director, Regional Office of UNEP, on the manner in which similar groupings could benefit by joining in the programme, and agreed that it might be useful to consider them in relation to their own needs and existing programmes on the regional seas. In that connexion, the work undertaken by a number of countries and agencies was also noted.

VI. ENERGY AND THE ENVIRONMENT

The Meeting discussed new and renewable energy sources such as solar, wind, mini-hydel, biogas, biomass, tidal and geothermal power, in relation to environment. These energy sources have also to be considered as instruments of social change and economic development.

Acute concern was expressed about rapid depletion of forest resources. Unless alternative energy sources were quickly made available to rural communities, the forests in the South Asia region would continue to be depleted at an alarming rate, adding to soil erosion, ecological disturbances, depletion of natural resources and above all to a grave crisis for the rural population.

It was decided to make the following recommendations:

(i) As the solar energy resource data base in the South Asia region was very poor, national meteorological networks for monitoring solar radiation may be considerably expanded, using cheap and periodically calibrated instruments manufactured in the region to cover that subject area as early as possible.

(ii) An atlas of those natural resources, such as solar, wind, tidal, and geothermal energy, be prepared as early as possible.

(iii) The principles of thermal passive systems for space heating and cooling be introduced while designing new structures.

(iv) Although a variety of solar cookers had been developed in the region and were technically feasible, they had not become popular or socially acceptable. Efforts be concentrated on their improvement and acceptability.

(v) The use of solar stills for providing drinking water to rural communities be encouraged.

(vi) Increasing use of solar energy for crop drying, fish drying and drying of other products be encouraged.

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(vii) A survey of requirements of hot water in relation to the quantity and temperature at which it is required in various industries, be carried out. The use of solar energy for meeting domestic and industrial hot water requirements be promoted.

(viii) The use of solar energy for power generation, employing the thermal route based on the Rankine cycle or any other suitable cycle; photovoltaic devices such as silicon, cadmium sulphide (CdS); solar cells and energy plantations, be encouraged. Research and development work for reducing the price of solar cells be undertaken.

(ix) Research, development and demonstration of the low cost use of solar energy and wind energy for water pumping be promoted.

(x) The possible effects of large scale utilization of solar energy on the environment be examined in detail.

(xi) The development and utilization of mini-hydel power generators using local materials and fabricated by village artisans be encouraged in order to meet rural energy requirements wherever possible.

(xii) A well co-ordinated research and development programme on the biogas systems, taking into consideration microbiological, engineering and socio-economic aspects be formulated and pursued.

In order to promote development and utilization of new and renewable sources of energy, it was further recommended:

(a) that an appropriate number of villages and small towns be identified in which integrated energy systems with a suitable mix of energy systems could be introduced, taking into consideration the sociological, ecological and economic aspects, thereby providing an opportunity for the study of the technical feasibility and social acceptability of these systems and their effects on the conservation of firewood, reduction of pollution and on economic development;

(b) that UNESCO be requested to expand its existing regional network on solar energy with a view to providing special support to research institutions in various countries of the South Asia region; and that UNEP would support UNESCO in this task;

(c) that the possibilities be explored of developing markets and manufacture of various components and devices used in the utilization of new and renewable sources of energy;

(d) that countries help each other in evolving integrated national plans for new and renewable energy development and their implementation strategy.

For regional co-operation in solar energy, it was suggested that the member countries utilize the following already existing programmes: (i) the Asian Working Group on Solar Energy promoted by UNESCO, (ii) the Commonwealth Regional Consultative Group on Energy and (iii) the United Nations University's Sub-programme on alternative sources of energy.

It was agreed that Iran be the focal point for this subject area and be the convenor for activities incorporating the expertise of India and Pakistan.

VII. EDUCATION AND TRAINING

The existence in Africa of two institutions for training in wildlife management was noted, and the Meeting expressed its concern over the absence of any such institution in Asia despite a long felt need. That one should be established was regarded as an essential basic requirement.

There was unanimous emphasis on the need to increase public awareness through the introduction of environmental education and training in schools and colleges, and on developing programmes for decision makers at both the official and political levels.

The representative of UNESCO briefly outlined the activities undertaken by his Agency in that field of training and education to promote mutual awareness and understanding; and he agreed to render assistance and co-operation within the Organization's budgetary limitations.

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It was decided:

(i) that India should be the focal point both for training in wildlife management and environmental education and training;

(ii) that India should also be the location of a regional training centre for that purpose, which would also disseminate institutional and other information;

(iii) that institutional and other expertise in those fields available within the South Asia region be identified and utilized to the maximum extent;

(iv) that the introduction of environmental training courses in the universities and other institutions be encouraged.

VIII. ESTABLISHMENT OF A SOUTH ASIA CO-OPERATIVE
ENVIRONMENT PROGRAMME (SACEP)

The deliberations during the Meeting and the harmonious accord that prevailed throughout confirmed that all delegations welcomed the significant contribution made by UNEP's initiative in organizing this Inter-Governmental Expert Group Meeting. It was agreed:

(i) to establish SACEP;

(ii) to accept the offer of the leader of the Sri Lanka delegation on behalf of his Government to provide facilities for the secretariat of the Co-ordinating Committee;

(iii) that all countries of the South Asia region would extend their help.

The Meeting expressed hope that UNEP and other UN agencies would also assist Sri Lanka to discharge the onerous responsibilities which it was undertaking on behalf of the group.

The Director Regional Office of UNEP, warmly welcomed the decision to establish SACEP and assured the Meeting that all efforts would be made to mobilize support for it from all quarters.

/It

It was also agreed that the focal points for the different subject areas would be as follows:

- | | | |
|--------|--|---|
| (i) | Environmental impact assessment and cost/benefit analysis; environment and development | Sri Lanka |
| (ii) | Environmental quality standards | Iran |
| (iii) | Residue utilization | ESCAP/RCTT |
| (iv) | Conservation of montane ecosystems and watersheds | Pakistan |
| (v) | Social forestry | |
| (vi) | Regional co-operation in wildlife conservation | Iran |
| (vii) | Conservation of corals, mangroves, deltas and coastal areas | Bangladesh |
| (viii) | Island ecosystem conservation | Bangladesh |
| (ix) | Tourism and the environment | |
| (x) | Desertification |) SACEP to feed
inputs into |
| (xi) | Regional seas programme |) global programmes |
| (xii) | Energy and environment | Iran - Convenor,
incorporating
expertise of Pakistan
and India |
| (xiii) | Environmental education and training | India |
| (xiv) | Training in wildlife management | India |
| (xv) | Environmental legislation | India |

It was agreed that specific contact addresses and names of the focal points would be communicated at the earliest opportunity to the head of the Sri Lanka delegation, acting on behalf of the Co-ordinating Committee of SACEP.

/Draft

Draft guidelines on the responsibilities of the Co-ordinating Committee and focal points were noted (annexes IV and V).

IX. OTHER MATTERS

1. Even though Afghanistan, Bhutan, Burma and Maldives were unable to attend, their interest in SACEP was noted. It was agreed that a high-level mission consisting of the Chairman and the Vice-Chairman of the present Meeting and a member of the secretariat of UNEP would visit those countries to inform them about the background and discuss areas of interest and co-operation.

2. While welcoming the constructive development of SACEP at the Inter-Governmental Expert Group Meeting of SACEP, it was agreed that there should be a high level meeting of government officials to work out articles of association, programme, modalities and functions of each focal point and of the Co-ordinating Committee, and that that might be followed by a high-level meeting that would adopt a declaration or convention.

3. Throughout the deliberations information was given on the wealth of capability and expertise available within the region. Mention was made of the negative impact of advice from experts unfamiliar with the socio-economic and geo-physical conditions in the South Asia region. It was agreed that SACEP might do well to adopt the motto:

"Before you look outside for what you need,
look inside for what you have".

4. Member countries were requested to send to the UNEP Regional Office the completed forms attached to the position paper (UNEP/SACEP/4 - January 1980) so that a datum base of status in each subject area in each country could be established.

5. Information on existing environmental legislation in different countries of the region, preferably a comparative study of various legislations in different fields, is to be obtained by the UNEP secretariat and circulated to the countries of the subregion. In case there is need for a further study or review, it may be commissioned by UNEP.

6. Noting that there would be a meeting of the Governing Council of UNEP from 16 to 29 April 1980, it was agreed that a member country acquaint the world body of SACEP's formation and objectives, and seek recognition for it and the allocation of adequate resources for its programmes.

7. The importance of UNDP assistance was strongly emphasized. A note detailing the assistance required is contained in annex VI.

X. ADOPTION OF THE REPORT

The report of the Meeting was adopted on 14 March 1980.

XI. CONCLUSION OF THE MEETING

The Meeting desired to record its sincere thanks to the Counterpart Administrator and staff of the ESCAP-RCTT for all the facilities provided, and for the unstinted efforts made to prepare and distribute the various documents under conditions of great stress.

The Meeting wished to express its appreciation and thanks to the Director Regional Office and Regional Representative for Asia and the Pacific, UNEP, Bangkok, for the imaginative initiative displayed in organizing the Meeting and to his colleagues, staff members and consultants, for the very valuable services they had rendered.

The Meeting had no doubt that the spirit of co-operation manifested by the delegations would endure and that, with the great fund of expertise and capabilities so evidently available among them, SACEP would be able to identify many practical and pragmatic steps for the preservation and betterment of the environment in the South Asia region.

UNITED NATIONS ENVIRONMENT PROGRAMME
REGIONAL OFFICE FOR ASIA AND THE PACIFIC

South Asia Co-operative Environment Programme
Inter-Governmental Expert Group Meeting

10-15 March 1980

Regional Centre for Technology Transfer
Bangalore, India

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Mr. Srinivasa Murthy, Information (Technical) Assistant.

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SOUTH ASIA CO-OPERATIVE ENVIRONMENT PROGRAMME
INTER-GOVERNMENTAL EXPERT GROUP MEETING

10-15 March 1980
Bangalore, India

Statement by Mr. C. Suriyakumaran
Director Regional Office and Regional Representative
for Asia and the Pacific
United Nations Environment Programme

Your Excellency, Distinguished Participants, Ladies and Gentlemen,

On behalf of the Executive Director of the United Nations Environment Programme and on my own behalf, I wish to express my deep thanks for your presence here today at this important meeting. I am particularly grateful to H.E. the Chief Secretary for so kindly delivering the inaugural address, on his own and his Government's behalf, and for welcoming you all to this beautiful venue.

We are meeting to discuss the formulation of a co-operative programme in this subregion in the field of environment. This is not something to which you have not already given considerable attention. Our presence here is in culmination of a process, of exchanges of ideas and consultations among us, that began a year or more ago through communications or visits or both. As a result of that process, ideas of prime interest in the environment field found selective expression and led to the identification of areas requiring collaboration and mutual support. The background documentation that you have before you is a preliminary presentation of these ideas and indications.

The areas which you have helped to identify in this manner are of fundamental importance in national development, but they also offer wide scope for mutually beneficial support and thinking among the countries as a group. Many ecological characteristics of the subregion - the Himalayan chain at one end and the Indian Ocean at the other, for example - give further substance to the concept of co-operation and mutuality. The

/subject

subject areas, too, reflect important commonalities - the shared struggle for development, the search for resources, for technology, for methods of planning and of management. All these, which carry challenges but also opportunities, have sufficient similarities to ensure benefits if joint efforts are made. Not least, as a common thread linking development and environment, there is the prime objective of both, namely the conservation of sustained and sustainable growth in each of our countries.

It is this thinking and these purposes that now establish the eminent rationale and need for a programme such as you are meeting here today to discuss. Perhaps it is proper that I mention at this stage, even briefly, some of our own experience with the emergence and setting up of similar programmes elsewhere in this region. In the area of the South Pacific - covered by two organizations, called the South Pacific Forum and the South Pacific Commission - a co-operative programme entitled the 'South Pacific Regional Environment Programme' (SPREP) has been initiated. That programme reflects needs arising from the typical ecosystem characteristics of that subregion, composed as it is of land systems distinguished by their smallness and isolated by great distances. It is a comprehensive programme covering terrestrial human settlements, and marine ecosystem areas; moreover, the programmers are particularly conscious of the brittleness of the small island territories. Meanwhile, in December 1978 at a meeting convened by the Minister for Development Supervision and Environment of Indonesia, the ASEAN countries approved the outlines of a co-operative programme called the 'ASEAN Subregional Environment Programme' (ASEP). They identified four top priority areas and five second priority areas, with sub-components within these areas. The programme as a whole was wide-ranging, in ecological terms as well as in its linkages with development. Several activities under this programme have already got off to a start, such as on regional seas, environment assessment, nature conservation, mine tailings, and education and training. A third subregional area, though with a slight difference in approach, was that of the Mekong riparian countries. It reflected the importance of the particular environmental dimensions of that area, namely its essentially

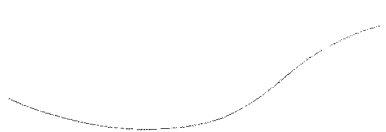
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dominant river basin system. Support for it was provided through the well-established United Nations Mekong Committee secretariat, in the form of institutional assistance to the secretariat and project support for deltaic area development, water management and the like.

It is a matter of satisfaction that the large and very real challenges of environment management for development in South Asia are on the point of being met through a proposed co-operative programme. As I have said, these challenges are well-known to you and it is not for me to detail them in any special way. Perhaps I could still say, I hope without any suggestion of professional bias, that the idea of co-operation in the realm of environment provides an eminently auspicious start. Environment is simply the sum total of our planetary inheritance, indeed everything from the sun downwards. It provides the resource base for our development; and for that rapid development which we seek so much for the coming years. The objective of environment management is to ensure that these resources continue to be available, where possible in increasing volume, for that greatly stepped up economic growth. Development cannot afford to destroy the very resource base on which it depends. Unfortunately, it seems it is doing precisely this in many ways today and threatening to do so even more in the coming years. At the same time, it has been rightly said that development is in fact the key to solving many, if not most, of the environmental problems themselves. Thus, here we have the very simple and practical nexus between environment management and development management.

The experience in environment management in the countries of this subregion is now a growing one. All countries, as we know, are committed to establishing sound policy positions, administrative systems, and methods of resource management for a solid environmental base. They are thus in a situation in which co-operation and exchange of skills and experience would constitute welcome mutual support to their national efforts in development and environment. The items of the provisional agenda before you, reflect many of the main areas in which such co-operation will

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undoubtedly prove fruitful. With your permission, I wish to make a few observations on the focus in some of these areas that has led to their being considered critical in the future. Before I do so, may I take a moment to make a sharp clarification relating to the customary association of environment with pollution. We are wont, all too often, not only to equate the two, but to exclude all else. It is strange that we should still think in these terms, without thinking first of the loss of resources themselves from production. In a 'Catechism on Environment', if I had one, the 'first pollution' would be the huge resources irrationally exhausted, depleted, destroyed, unused in the production process, in all countries. The 'second pollution' is the effluence - solid, liquid, gaseous - which we allow to affect our surroundings, and attempt to treat without making sufficient effort to re-convert them into productive resources. Having stated this, let me revert now to what I wished to identify as some critical areas.

Among the most sensitive areas in such a background are perhaps those of energy, soils, forests, coastal and island zones, regional seas, sustainable development, and education. All of these indeed pose serious, even dramatic constraints on future development; but, as I emphasized earlier, hold so much potential to resuscitate themselves and to support development, if we now take the right steps for their management.

For example, in terms of energy, there is no gainsaying that almost all the economies of the subregion are in a state of deep crisis. In this sense it is not an environmental crisis but an economic crisis. But in the possible resolution of this crisis, important environmental aspects emerge. The ecological effects of a massive resurgence in use of coal or other fossil sources - if they could be found - are only one aspect of the environmental relevance of those solutions. It is strongly held that large-scale fossil-based energy generation could, through combustion and emission effects, create large environmental changes of a local and global nature. However, it is in the concept of using sustainable resources that the realities of environment management acquire even more relevance.

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There seems little doubt that the wide range of renewable and re-usable sources of energy must figure as major constituents in any energy supply strategy of the future. If so, planning for that future and the necessary research and application of the findings have to begin now. The attainment of such renewable resource based energy must depend on a self-reliant approach to its technology and economics. Historically, developing countries have been at the receiving end of technology. That was indispensable, but costly and not necessarily appropriate. Here at least seems to be a case, in energy, which offers immediate scope for initiatives, if not leadership, by developing countries; and, from being participants in the 'products of technology', we may thus become partners in the 'process of technology'. A step such as this would also enable the countries, as potential consumers, to design future lines of production to suit the styles and scales of their own needs; to establish potential steady markets for the future on this basis; and to initiate indigenous, standardized fabrication of components, with scope for the smallest country as well as the large ones. This would clearly call for the establishment of national institutes where these do not exist and for providing support to them, among other methods, by means of a co-operative network of these research centres.

It is noteworthy that this compelling need for future energy planning is thoroughly understood by the major oil producing country of this subregion. That country has encouraged every initiative by non-oil producing countries - and proposes to take initiatives of its own - to probe the potentials in solar, wind, biogas, biomass, and other sources. There are also developed countries, in this region and outside, which have expressed their willingness to assist and to participate - in fact they are already doing so - in such planning and research. Not least, there is in this subregion, already established technological capability in certain solar and other renewable resources energy generation, particularly right here in this country. That there is need for further research in many of these areas is not in doubt. Past history left these sources of energy untouched since they were costly. Now that the costs of energy have changed

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rapidly, it should be no surprise that the technology for utilizing renewable energy sources has lagged behind. The present situation, therefore, is a natural one, with every promise of a future breakthrough in cost and in technology in the use of these resources.

In the area of small-scale alternative energy supplies, the situation today may even be described as economically established. Small-scale solar systems - including the so-called 'passive systems' to tap direct heat - wind, biogas, special woods and mini-hydro units are all in the area of present feasibility, with promise of extensive area-wide coverage within countries. These sources could reach out to most inaccessible or remote locations, as much as to the productive rural areas, for heating, lighting, processing, drying and many other uses in crops, forage, fish, fruits and other foods.

An equally impressive potential lies in the use by large agro-industries of their own residues. This 'coupled process' is certainly not unknown, being used, for example, partially in the sugar industry, totally in palm oil, and so on. A conversion of major agro-industries, in an ecosystem subregion such as South Asia, to make use of their own residues for energy, could account for an impressive contribution to total energy supply in an over-all strategy, harmonizing both economic needs and environment concerns.

It is in an area such as large-scale solar energy generation that both technology and costing have yet more distance to traverse. As to the power of the sun, there is no doubt of its vast capacity. For example, the energy produced from twelve hours of sunshine on the earth has been computed to be greater than that from all the oil reserves of the globe; or, the annual amount of solar radiation has been reckoned to equal 20,000 times the amount of annual energy from all present sources; or again, in about ten minutes the planet receives as much energy from the sun as all the secondary sources together in a year. As the governmental authority of a developed country concluded in its report, 'because of

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their climatic conditions, countries in the Third World will be the main areas of application of solar energy. For them the use of solar energy is one of the great hopes'. Thus, the problem is not one of potential supply. In fact, the energy problem today, or at any time, has never been one of inadequate energy. In some key sources and particularly in solar energy, the need had been for research, technology, provision of market conditions for product development, and developing relevant inter-country co-operation. This Meeting may therefore wish to set out a method of co-operation that will help national centres best in all these areas of solar, agro-wastes, and other biomass energy generation. In doing so, a distinction may be made between the type of fundamental research needed in large-scale solar energy generation and others. Perhaps the best recommendation for definitive action in this field is to say that no solution to the energy crisis - indeed to future economic and ecological stability - will emerge unless this process is initiated on a large scale, earnestly and immediately.

Soil erosion strikes at the first resource base of development. It is of enormous proportions in some cases and prevails in varying forms in all countries. It has been said, in the case of one country in this subregion, that its most important export has been the enormous tonnage of soil that washes down annually to other countries. The associated consequences create other disasters, including floods over vast areas. Apart from their ecological implications they touch large segments of populations. For example, it has been stated that, by the year 2000, there will be something like 1,000 million people living under the shadow and by the waters of the Himalayas along its sub-continental range. Every advancement in the knowledge on montane ecosystem management would be a positive gain to development, not only to the Himalayan zone, but to other countries in this subregion equally beset by problems of montane ecosystem management. In this situation, the countries may wish to identify or establish a research centre within the subregion to serve as a focal point in promoting this aspect of environmental management.

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A very special aspect of soils is the seemingly irrevocable desertification that has been taking place in many countries, owing both to man-made causes and to natural causes. Following on the global Desertification Conference of 1977 held under a General Assembly resolution, a set of subregional programme components have been identified by UNEP, one of which covers four countries within the South Asian subregion, under machinery that has been already instituted for the purpose. The Meeting may wish to take note of this as an inherent component of the total co-operative framework for dealing with environment.

The deprivations resulting from the ravaging of the forests are too well-known to need elaboration. From the increasing impossibility of rural access to firewood, to the effects on soil and water and on wildlife, forests are now of prime national concern. They serve not only multiple ecological purposes but also multiple economic and social purposes. It is this type of context which has given particular importance to recent initiatives, such as what are now called social forestry and village forestry, or the use of fast growing species. Along with residues - agricultural, industrial and municipal - the initiatives on renewable and re-usable resource management share a capacity much larger than we have been ready to concede, for yielding a wide range of end uses: as food, feed, fuel, fertilizer, materials for production and materials for construction. The Meeting may wish to identify centres dealing with renewable sources technology and with forestry, as forming networks; and in wildlife management, as a nodal institution or institutions, to provide for defined goals.

The whole area of coastal management as well as small island ecosystems management is equally sensitive and an important one ecologically, economically and socially. The coastal ecosystem in one country of this subregion is said to constitute the largest such living laboratory in the world; and island atolls in the smallest country of our subregion are unique, even by South Pacific standards. They relate also to issues of culture and heritage on the one hand and tourism and environment on the other. Systems for pilot studies, exchanges of information and mutual support seem to be essential developments that would be of undoubted help; this Meeting may wish to give them due attention.

Oceans, particularly regional seas, have been areas of successful programming by UNEP, with lead and support being provided to United Nations Agencies and other bodies in the formulation and implementation of activities, wherever countries have expressed the wish to institute such a programme. While it may not be possible at this Meeting to review information on regional seas in detail, it would perhaps be extremely useful and relevant to consider the issue as a priority area and, if agreed, request UNEP to initiate an initial fact-finding activity.

Education and training on environment in their many facets are a major endeavour in which countries have already displayed active interest, and in which co-operation and mutual support are bound to be eminently positive. The Meeting may therefore wish to provide for an appropriate mechanism in this vital area, for sharing in and promoting the exchange of ideas, materials and perhaps even staff and studentships. The focus would of course include specialized area training such as are already found, for example, in environmental engineering, resources ecology, social ecology, and so on. But there is a need to go beyond this, to assist in the gradual evolution and establishment of an integrated environmental education programme. Open to graduates from all sciences and all humanities, such an integrated environment course would yield a common environment perception by people from different disciplines, enabling meaningful and socially acceptable translation of biospheric knowledge into resource-use patterns and sound development action.

The need for formulation of meaningful resource management and economic planning is perhaps the most critical of all issues in developing countries today. One might go so far as to state that the success of environment management finally will depend on the success achieved in carrying it as part of an enlarged economic development planning and management system. The understanding and methodologies regarding these are still at a nascent stage. Even the objectives are not yet clearly defined. However, they must sooner or later involve arriving at methods of integrated environmental and economic development planning and incorporating environment impact assessment with cost/benefit analysis. It would mean that some neglected essential tools of such development can also emerge,

such as national 'resource balance sheets', land-use planning, and land-use practices planning. The co-operative arrangements that this Meeting decides to recommend may well embrace both professionals and practitioners, under modalities that may most suit this purpose.

The areas and the ideas that I have traversed so far are of course reflected in the proposed agenda for the Meeting. I have no doubt that, with your wisdom and experience, these matters will receive their due attention and that the constituents of an essential programme will duly take shape. The basic purpose in relation to each of the major topics mentioned is to strengthen national capability and achieve national benefits through co-operation. It is of course important that, in regard to each subject area, decisions should be of a practical nature and not confined to analyses alone. In saying this I am only reflecting what many have already conveyed to us in our earlier contacts.

I wish, in conclusion, to draw specific attention to two points in this connexion that are also reflected in the background documents already with you. One is that, once a pattern and the broad content for co-operation are identified in each subject area, it will be necessary for a particular country to offer to be the focal point for one or more of such subject areas as appropriate. I would recommend that the distinguished participants informally give their earnest attention to this matter from an early stage at this Meeting and possibly provide indications to the Chairman of their interest or readiness to be of help in this manner. For example, if a wildlife training institute or a montane ecosystem research institute is decided upon as the system for co-operation, the country in which that is to be located would serve as the focal point for that subject area. In cases where no particular institute is decided upon, but a network of research or other institutes is formulated, then one of the countries will have to be identified as a focal point. In the latter case, the concept may even provide for a rotational system of focal point responsibility.

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Similarly, on the proposed Co-ordinating Committee for SACEP, a decision would need to be made as to its location, either on a continuing or rotational basis. In addition, I would suggest that you give consideration to the idea of making an appropriate recommendation for United Nations or other institutional support, so as to give that committee an initial secretariat capability. In addition to the main rationale for establishing a co-ordinating committee, as brought out during the preparations for this Meeting, another point is that such a committee would also provide a means for inducing needed technical, financial and other external assistance that the countries in the subregion may decide upon in furtherance of their programmes.

Your Excellency, ladies and gentlemen, it is a happy augury that an opportunity has been provided to the environment cause for this step in subregional co-operation. This is a subregion with an ancient history and an old culture, perhaps as old as the environment. In the millennia of its ups and downs, the environment too has had its periods of bounty and of loss. Today, we have means of understanding, and of transmitting such understanding, that offer unmatched opportunities for providing support to the environment, to development and to welfare. In the small step that I hope we will be taking at this Meeting, a large step will indeed have been taken for the future. Actions such as we are considering here belong to the area not of barriers, but of bridges to understanding; and go beyond peace keeping to peace building. Our large populations and the poverty of our peoples call for no less; the expected benefits to them establish our effort as a worthy contribution to the tasks and endeavours that await our countries in the Eighties. I wish you every success in your deliberations and extend the assurances of our fullest support in all the decisions that you may make in fulfilment of these goals.

I thank you.

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UNITED NATIONS ENVIRONMENT PROGRAMME
REGIONAL OFFICE FOR ASIA AND THE PACIFIC

South Asia Co-operative Environment Programme
Inter-Governmental Expert Group Meeting

10-15 March 1980

Regional Centre for Technology Transfer
Bangalore, India

A G E N D A

1. Opening of the Meeting
2. Election of officers
3. Adoption of the agenda
4. Environment management -
environment impact assessment and cost/benefit analysis; environment
and development; environmental quality standards; residue utilization
5. Management of natural resources -
conservation of montane ecosystems and watersheds; social forestry;
regional co-operation in wildlife conservation; conservation of
corals, mangroves, deltas and coastal areas; island ecosystem
conservation; tourism and environment
6. Desertification
7. Regional Seas Programme
8. Energy and the environment -
solar electricity generation; other solar energy applications;
research and development of components for solar energy application
Wind energy; micro and mini hydro-electric plants; biogas; energy
from biomass, tidal power
9. Education and training -
training in wildlife management; environmental education and training
10. Establishment of a South Asia Co-operative Environment Programme (SACEP)
11. Other matters
12. Adoption of the report
13. Conclusion of the Meeting

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GUIDELINES ON THE RESPONSIBILITIES OF THE
CO-ORDINATING COMMITTEE - SACEP

1. To review the progress made in connexion with various activities as decided upon under SACEP, in particular the activities of the focal points identified for specific subject areas.
2. To help identify additional areas and activities as required and of concern to SACEP, from time to time, including activities that the countries may wish to undertake directly between two or more of them.
3. To assist the focal points, as necessary, with arrangements for technical and other assistance.
4. To arrange, periodically and as appropriate, for meetings of the co-operating countries under SACEP, including (a) countries that have not yet participated but are interested and (b) countries and agencies extending technical and other assistance, in order to follow-up all foregoing matters and for guidance and directives as needed.

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GUIDELINES ON THE RESPONSIBILITIES OF THE
FOCAL POINTS

1. To serve as the primary institutional points for carrying forward the agreed programme components in the subject areas identified.
2. To serve as the receiving and disseminating centres for organized exchange of materials and information for the field activities on-going in the participating countries.
3. To assist programme participants as needed during selected phases of the on-going activities, in order to optimize results, and review further needs.
4. To keep the Co-ordinating Committee of SACEP informed on progress and performance, in order to obtain maximum mutual support for the advancement of the objectives in each subject area, and as a whole.

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FUNDING SUPPORT: NOTE OF INTENT

Joint Request for UNDP Assistance

1. The South Asia Co-operative Environment Programme (SACEP) launched by the participating countries of the Inter-Governmental Expert Group Meeting in March, 1980, at Bangalore, India, has set out areas of high priority action in environment in the South Asia region, and established:
 - a Co-ordinating Committee of SACEP, and
 - Eleven subject-area focal pointswith responsibilities as described in annexes IV & V.
2. It is essential that immediate UNDP assistance be extended to the initial formative work of this Committee and of the focal points, so as to lay the foundations for the programme in a first phase of activities.
3. Such assistance will, at this stage, involve in particular
 - (a) the essential minimum substantive support to this Committee and the focal points;
 - (b) as a prior input, immediate assistance in the formulation of a project proposal in this regard.
4. This note requests UNDP to consider the above as a high and urgent priority need of the countries concerned and to field the assistance needed to meet the purposes stated at paragraph 3 above.

The note is also an advance indication of intended joint signature by the participating countries, of the approved project document that will be so prepared.

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17 April 1980

UNITED NATIONS ENVIRONMENT PROGRAMME
REGIONAL OFFICE FOR ASIA AND THE PACIFIC

South Asia Co-operative Environment Programme
Inter-Governmental Expert Group Meeting

10-15 March 1980

Regional Centre for Technology Transfer
Bangalore, India

R E P O R T

Corrigendum

Page 3, item vi)

For has read was

Page 4, last paragraph, second line

Delete 'the' before His Majesty's to read the endeavour of His Majesty's

Page 5, second paragraph, first line

For Efforts be made read Efforts may be made

Page 6, last paragraph, second line

For impact be controlled read impact may be controlled

Page 10, first line

For markets and manufacture read markets for and manufacture

Page ii, Annex II, twentieth line

For moreover, the programmers are read moreover, the programmes are

Page iv, Annex II, seventh line

For withouth read without

Page vi, Annex II, last paragraph, fifth line

For qrater read greater

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