

PREFACE

This volume of contributions to the UNEP-SCOPE International Symposium devoted to the problems of the environmental sciences in developing countries (Nairobi, February 11-23, 1974) is to some extent very unusual. Those who initiated and promoted the ideas, authored the papers, and served as general reporters for the working groups and at plenary meetings were scientists and administrators from Africa, Asia, and Latin America. The summary recommendations in this book comprise the collective ideas, thoughts, and recommendations of the participating experts. As such, they reflect the realities of life and the acute needs of the populations of the developing world.

The symposium was organized to present a spectrum of views. Since the economic, social, and scientific levels of developing countries vary widely, the organizers invited more than 100 authorities from three continents to recommend subjects for discussion. From these suggestions, an agenda consisting of eleven topics was compiled (Appendix A).

For each item on the agenda, three internationally known experts were invited to address themselves to the topic as it affected Africa, Asia, or Latin America. Over thirty original papers were submitted, and during the first week of the symposium, the participants discussed these papers and compared the situation and needs in one area with those in other parts of the developing world.

On behalf of the working groups, elected reporters wrote concise reports for each item on the agenda, based on the papers and the discussions. Each report was discussed several times, revised, and finally approved as a collective document for the plenary sessions of the symposium. In this way, the originality and freshness of the individual papers were reflected in the objectivity and universality of these summary reports. In spite of the extensive preliminary discussions, the plenary sessions of the symposium were very active, intense, and sometimes even "hot."

One of the authors of this Preface was an organizer of the famous UNESCO conference at Lagos in 1964 which discussed problems of national science policy in relation to exploration, survey, and the utilization of natural resources in African countries. Since that time, African, Asian, and Latin American countries have made great strides, but some areas remain inadequate: the lack of national research institutions and universities working in basic and applied sciences; the acute deficit of national skilled specialists; and the absence of governmental interstructural bodies to formulate national policy in science, the exploitation of natural resources, and the preservation of the environment.

Participants in this symposium affirmed once again that the effective and rational utilization of natural resources is possible only if each nation develops its own scientific knowledge, its own specialists, and its own appropriate strategy for dealing with demographic, agrarian, industrial, and environmental problems.

They also stressed that the environmental problems of Africa, Asia, and Latin America differ markedly from those in North America, Western Europe, or the USSR and other socialist countries. The main priority for the countries in the first group is to overcome such problems as low agricultural and local industrial productivity, malnutrition, poverty, poor housing, epidemic disease, illiteracy, ignorance of their own lands, and ignorance in general.

The continents of both hemispheres are closely related by networks for transport, trade, and exchange, and by the global circulation of air and water, the planetary flow of energy, and the geochemical cycles of elements. It was understood, therefore, that the advanced countries of the Northern Hemisphere would help developing countries to solve their problems with a minimum of damage to natural environments. The mottoes of the symposium were: "Do not expect charity from Nature. We must take her riches, but preserve Nature herself," and "Do not repeat the bitter experience of the Western World in spoiling and polluting the biosphere." Of course, the solution to all of these problems requires a sound scientific approach based on a comprehensive economic, social, political, and even philosophical background. This was facilitated by the participation and significant contribution of economists and sociologists in this symposium.

Advanced industrial countries must do everything to reduce and minimize pollution and the destruction of resources. Developing countries must accelerate their industrialization and triple the productivity of agriculture and animal husbandry. They must reach a considerably elevated standard of living with minimal destruction and deterioration of their own and the global environment. These ideas were accepted as the basic principles of the working and plenary sessions of the symposium.

The problems finally covered by the symposium and by these papers can be grouped into three main categories: (1) Problems of Man and Mankind; (2) Problems of the effective utilization of natural resources; and (3) Forms of action and organization.

The *Problems of Man and Mankind* were the main target of the symposium. Two-thirds of the world's population is still struggling with poverty and famine and must be assisted in solving these problems.

Population, the health of present and future generations, sound nutrition, suitable living conditions, the elimination of famine and analphabetism, the expansion of education and training, and the preservation of the riches of national history, art, traditions, and knowledge, all of these were the subjects of discussions, the targets of recommendations and, what is most important, components of every environmental program and project. This is evident in this collection of papers.

The *Problems of the effective utilization of natural resources* were also important subjects for multiform analyses and discussions during the symposium. Progress in agriculture and in animal husbandry; an increase in the bio-productivity of the forest or wildlife; river basin schemes and irrigation; problems of energy, mining, and industry could not be addressed without

knowledge, evaluation, economic appraisal, capital, and skilled labor. Participants in the symposium stressed that all these aspects of natural resource management must be combined with measures for the regular renewal of resources and the prevention of degradation and pollution. The desertification of previously flourishing territories; the salinization, waterlogging, and alkalinization of newly irrigated areas; deforestation; and land degradation in the humid tropics were particularly mentioned by reporters and discussants as requiring the most immediate investigation and attention. The domination of feudal landownership and "landocracy" in developing countries was considered one of the important obstacles to general progress and the redistribution of income and food.

Forms of action and organization comprised the third group of problems. Members of the symposium stressed the responsibilities of national governmental and scientific organizations for selecting priorities and for concentrating limited resources on the most important problems. It was noted that bilateral and regional cooperation would be effective in the initiation and execution of many vital projects, but the success of these enterprises in an economic and environmental sense will be possible only if a nation has its own skilled manpower, technicians, scientists, and appropriate government policies. It was underlined that centralized governmental planning is most suitable for the achievement of these aims. Networks of pilot projects, model enterprises, and field experimental stations will be most useful for the clarification of the costs and beneficent effects of future large projects.

The participants stated that for international and regional planning, the UN, UNEP, UNESCO, FAO, ICSU, and SCOPE provide an international network which aids both the accelerated progress of developing countries and the rational utilization and preservation of the natural resources of the biosphere. But the basis of this pyramid is extremely unstable. The capacity of many countries to research the environment, to select priorities, to finance and manage selected projects is sometimes very limited. Developing countries are commonly affected by devaluation of one or another currency and by fluctuations in world commodity prices. The regional commissions of the UN, UNEP, and SCOPE were mentioned as the organizations most capable of helping developing countries.

The number one need, however, is skilled national governmental planning, research, and policy-making institutions. National universities, academies of science, and national research centers closely connected with governments will be most effective in proposing alternatives for possible decisions.

The Bureau of SCOPE believes that the publication of these papers will disseminate valuable information to persons and organizations concerned with problems of the environment at the national and continental levels in Africa, Asia, and Latin America.

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EDITOR'S PREFACE

The proceedings of the SCOPE-UNEP Symposium, Environmental Sciences in Developing Countries, held in Nairobi, February 11-23, 1974 will be published in two volumes. This first volume contains the summary reports designed to outline the problem, set up guidelines for proposed programs, and recommend specific areas of research for the eleven regular topics of the Symposium and a twelfth special topic, Alternative Patterns of Development. The invited papers will be published in a second volume.

As part of its continuing commitment to the international aspects of environmental science, the Holcomb Research Institute of Butler University has provided SCOPE the support necessary for the publication of both volumes.

I wish to thank Professor M. Kassas, Vice-President of SCOPE and the moving force in the organization of the conference, for his invitation to edit the proceedings, a task which has been both pleasant and rewarding.

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