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# THE ROLE OF INTERNATIONAL AGENCIES

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In March 1977, the United Nations Water Conference will convene at Mar del Plata, Argentina. It will have been preceded by a series of regional meetings, organized under the aegis of the United Nations Economic Commissions, to identify common problems in the water resources sector and to propose remedies and solutions for consideration by the conference at Mar del Plata. The primary focus of the Conference will be the identification of policy options that governments will have available in order to cope with the rapidly rising levels of demand in future years. What issues will emerge from this Conference which will be of primary interest to the developing countries? How can the role of international agencies be strengthened so that they can provide more effective assistance packages in the critical decades ahead? In the context of this article, the term international agencies is understood to apply to organizations of the United Nations system, although some of the considerations made here would also be applicable to non-governmental international bodies, to regional financial organizations, and to bilateral assistance programs.

## *The Problem*

In historical perspective, the industrialized societies have developed their water resources over relatively long periods of time. Water has come to be accepted as a component of the infrastructural fabric of society, geared to the sustenance of a continuous and gradual development of the national economy. Presently, demand management to cope with existing and potential water shortages, and water quality management to correct and prevent the effects of pollution are the two main issues in the water resources field. These issues can at times require an in-depth review and modification of existing institutional arrangements. These problems are magnified in the case of water resources shared by two or more countries.

In less developed countries, on the other hand, water has an even

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more strategic role. Its relative scarcity, the reliability of supply, seasonal variations, and the degree to which it can be used efficiently, often conditioned by competing uses for scarce capital resources, are determining factors in the promotion of socio-economic progress. In such cases, the main problems are frequently in the broad areas of irrigation water for domestic use, power generation and navigation, and irrigation development, with emphasis on river regulation, storage and public health aspects of water quality management. Quality considerations and related public health issues have a direct bearing on improvements in the quality of life and can influence major population movements. Water resources development is, therefore, an integral component of the production matrix and will have a much greater influence on the promotion of productive activity, income, food security, the degree to which rural-urban migrations are accelerated or retarded and in improved social welfare in general than in the industrial countries.

In a majority of cases, water development institutions and technologies currently found in developing countries have been introduced from the industrialized parts of the world. The criteria followed in developing the related underlying principles have in many instances been governed by a single project analysis approach, geared primarily to public sector interventions.<sup>1</sup> Within the planning philosophy of developing countries, such an approach presents a number of weaknesses: (i) it is project rather than sector oriented; (ii) it does not embody a systematic procedure which will cover all project alternatives to ensure that the choice(s) made will be an optimum in terms of sectoral interests; (iii) the evaluation procedure, based largely on value of tangible benefits generated by a project and the cost of related facilities and services, has limitations.

The difficulty lies in the different types of objectives pursued respectively by industrialized and developing countries in the evolution of their planning policies and strategies. Industrialized societies are primarily concerned with security, physical survival, maintenance of high employment levels, the evolution of a commodity oriented society, and achievement of an acceptable level of social equity. Less developed countries are more concerned with all the issues affecting their transformation into a modern society, which also embody a deep concern for social equity. Thus, in less developed countries, development will necessarily be viewed in terms of national priorities

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1. See Wiener *Analysis of the Impact of Water Resources Development on the National or Regional Economy* presented at the U.N. Inter-Regional Seminar on River Basin and Inter-Basin Development, Budapest, Hungary (1975).

and of broad development policies. In order to accelerate the process of water resources planning and development, in keeping with rapidly growing population levels and the dictates of improved standards of living, less developed countries should introduce innovations with respect to new approaches for planning and evaluation methodologies, new implementation procedures, new institutional patterns, and to new approaches for the use of intermediate technology in the light of prevailing stages of development and natural resources endowment. In short, a series of strategies to correct present shortcomings and outmoded or inapplicable approaches will have to be developed.

Can the United Nations Water Conference help meet this challenge? Can it provide the international community with guidelines which would contribute to helping the developing world meet the challenge in a more effective manner? One may feel cautiously optimistic in this regard if the objectives of the Conference are born in mind.

The first objective of the Conference will probably be to impart the seal of approval to a limited number of important strategy recommendations, which should facilitate their acceptance within national decision processes. The emphasis here will be on identifying priority targets and the machinery required to try to meet the objectives. A second and equally important goal will be to provide a forum for productive discussions between countries on issues related to experience in water resources development, water use and technical cooperation. A final objective would be to provide a stage for the presentation of water related achievements and development approaches of every nation, large or small.

As a result of these varied forms of activity it is to be hoped that the Conference may have an opportunity, after appropriate discussion, to endorse some innovative policy, methodological and procedural approaches which could provide guidance and stimulation for future regional and international cooperative activities. For its part, the United Nations system has already taken steps to present a series of basic documents to the Conference, including a proposal for joint programming of the system's activities in a number of selected priority areas.

To some extent, the new doctrines and methodologies backed by the Conference would also inevitably affect subjects taught in higher institutions of learning and influence the format and content of seminars, symposia and workshops. Hopefully, regional institutions will, in due course, adapt their activities to conform with the new

approaches and help to develop more advanced policy instruments, related standards, technologies, cooperation programs, and criteria for access to information.

### *Some Probable Priority Themes*

The following are likely to be among the themes receiving attention at the Conference:

#### *A. Strengthening of Arrangements For The Definition of Water Policy and Planning Objectives*

Water policies and water management practices are designed to achieve or promote certain national and regional objectives which can broadly be classified as efficiency objectives (income maximization), equity objectives (income distribution), and other social, less tangible but equally important, objectives (quality of life). Conversely, the efficient use and rational conservation of water, particularly when it is in short supply, also requires the setting of specific water-related policy objectives and constraints which have implications on overall regional or national policies.

These objectives, however, often remain undefined and in the realm of preference of a group of planners, without a systematic relationship to the overall objectives of government, and in some cases may be in conflict with each other. This also applies to those water-related decisions, made by local, regional or national governments for sectors of the economy outside the jurisdiction of water resources managers, which should necessarily be drawn up in close consultation with water management organizations. Thus, the establishment and implementation of policies requires an explicit definition of objectives that lends itself to close scrutiny.

The ability to formulate and implement plans and policies on a continuous and consistent basis requires an appropriate institutional framework. While the actual type of organizational system may vary to suit the needs of countries, there are certain criteria that must be met in order to provide this infrastructure. These criteria could most usefully be defined at the Conference and would deal with such questions as a system's ability to identify objectives and environmental impacts, to generate good information, to take into account tangible and intangible costs and benefits, to implement quickly and faithfully policy decisions, and the like.

#### *B. Improvement in the Management of Water Demand*

A traditional approach to water management has been to equate

water demand with water requirements, the latter being considered as a fixed coefficient determining the amount of water required for various purposes, with no effective way of changing water use patterns. As pressures grow on the available fresh water supply it is becoming increasingly evident that water "demand" in the economic sense of the word prevails in its various uses and that significant changes in water use, and consequently in its relative allocation among various uses, can be achieved via economic incentives and other tools of demand management strategy. It has also been found that effluent charges can have a significant effect on effluent discharges and on the amount of water used in industrial processes through changes in recycling methods. Similar results can be obtained through the use of direct regulatory measures specifying water uses for various activities.

The need for a broader methodological approach is particularly relevant with regard to water demand projections, an area in which activities should be strengthened, as a basis for policy formulation and planning. A clarification of the principal issues underlying demand management approaches could assist in strengthening activities in this area at the national level.

### *C. Strengthening the Assessment of Water Supply*

Despite the numerous international programs in this area, first among them the UNESCO-WMO sponsored IHD,<sup>2</sup> considerable work still remains to be done to endow many developing countries with an adequate and reliable hydrological network. Moreover, investigation of groundwater sources is often spotty and data recording and retrieval systems are inadequate. Training facilities for the creation of a sufficient number of intermediate and junior level personnel should also be strengthened. There appears to be considerable latitude for activities at the regional level in this area.

### *D. Promotion of the Development of Appropriate Technologies*

A transfer of technology alone is meaningless unless the indigenous culture, social institutions, economic conditions and political environment of the receiving country are taken into account. The term "appropriate technology" is applied to that solution which brings together the appropriate levels of expertise, technology, capital and labor for the benefit of a region's or country's inhabitants. This concept permits local needs to be met more effectively,

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2. The IHD, International Hydrological Decade, has now become the IHP, International Hydrological Program.

and the development and use of tools that extend the utilization of human labor and skills are enhanced. However, solutions must be tailored to the individual situations, and will depend upon applied technological improvements, social innovation, the optimal combination of labor and capital as determined by the resources available, environmental constraints, an organizational infrastructure, and a policy environment that fosters the foregoing. A definition of broad guidelines in this area would certainly be of great assistance to the developing countries.

*E. Targets, Standards and Strategies for the Improvement of Community Water Supplies*

The Conference may well decide to establish certain targets and desirable quantitative and qualitative standards to aim at in this critical field. Almost eighty percent of the population of the developing countries lack adequate water supply and this tragic situation has shown very little improvement during the last decade. Many national and international efforts failed to achieve the expected results because the proposed technologies and/or institutional frameworks for water supply schemes were not sufficiently addressed to local socio-economic and environmental conditions. The range of alternatives seems to require greater flexibility with reference both to technological approaches and social innovations, with a general tendency towards better adaptation to locally available resources, skills and traditions. It is to be hoped that a careful analysis of the available choices and a critical review of positive and negative experiences will lead to the identification of the major cornerstones for a new water supply strategy with a view to stimulating and assisting national and international development programs and policies, as well as opening up new perspectives for adaptive and innovative research.

*F. Strategies for Efficient Use and Re-use of Water in Agriculture*

Agriculture is the largest user of water, accounting for about eighty percent of world consumption, primarily through irrigation. Data presented at the World Food Conference in Rome, 1974, indicated a global total of about 200 million hectares of irrigated land, almost half being in the developing countries from where much of the needed additional food must come. Because of wide differences in climate, soils, crops and methods of water application, to mention only a few of the variables, it is impossible to establish any "norm" for irrigation water supply.

Irrigation efficiencies are often so low as to be harmful, as well as

wasteful, and therefore current irrigation water use does not truly reflect water needs. Improved water application efficiencies, better overall water management and the rehabilitation of out-dated schemes may yield a savings of water sufficient to meet expected new demands for many years.

The issue of alternative development options is perhaps the most common factor influencing water demands, and is undoubtedly a major reason for discrepancies already encountered in the FAO's IWP projections. Limited funds, scarcity of personnel, constraints on energy must be weighed against the possible choices of expanding crop production through irrigation or extensive agriculture, or using the national land and water resources for other purposes and meeting food and fiber needs by import. The Conference may see fit to reinforce World Food Conference deliberations in this regard.

#### *G. Strategies for Extreme Conditions: Flood and Drought Management*

Thousands of people drown and more than ten million acres of crops are destroyed annually by floods in South-East Asia alone, while the recent drought in the Sahel region took a heavy toll in human lives and killed more than half the livestock. Not only are the losses caused by floods and droughts considerable, but they are also growing rapidly owing to continual movement of population and economic activities into flood plains and drought-prone areas.

The basic dilemma and challenge is to find a set of management strategies which would permit more intensive use of flood plains and drought-prone areas while minimizing the associated losses. Factual evidence suggests that frequently there is a large gap between what a country could attain by effective management strategies and what is actually achieved. Such a discrepancy is generally the result of institutional inertia tending to concentrate on measures that were perhaps appropriate at an earlier phase of development, but which are no longer satisfactory. Innovation in administrative and institutional structures coupled with long term planning based on a systematic assessment of the degree of risk, might be one of the most effective ways of improving the efficiency of strategies for coping with these natural hazards.

#### *H. Management of Shared Water Resources*

Some of the largest and otherwise most important river basins and aquifers in the world are shared by two or more countries. These shared water resources will increasingly play an active role in national



and regional economic development, particularly in Asia, Africa and Latin America. Moreover, problems of trans-frontier water pollution are becoming more serious in all regions of the world.

Uncoordinated planning of the development and conservation of shared water resources can be inefficient and may create difficulties among the countries concerned. However, it must be recognized that joint planning and management magnifies the problems which individual countries face in attempting to develop and manage their own water resources. Despite the large number of treaties and agreements on shared water resources, the majority deal only with the collection and exchange of hydrologic data and preliminary technical investigations. If full advantage from cooperation is to be realized, many cases will require construction of structures and the operation of coordinated water management, based on agreements between neighboring states.

Experience has taught that, in attempting to foster cooperation, sub-basin development and small scale alternatives should not be overlooked, for the large basin wide schemes may include too many economic and political obstacles. It is important that partial development should not entirely preclude future integrated development.

In addition to river basin development and management schemes, solutions to shared water resources problems are being sought through global conventions and regional agreements. The former aim at the codification of the law of non-maritime shared water resources and at the establishment of a code of conduct for States sharing water and other national resources in general. The latter seek to achieve coordinated management of regional water resources through the common acceptance of practical guidelines by countries having political and economic affinity. All these approaches deserve attention.

### *I. Assessment of the Environmental Impact of Water Development Programs and Protection of Human Health and Ecosystems*

Knowledge of environmental impacts of water-related technologies is presently rather limited and water frequently proves to be the most fragile element in the terrestrial and aquatic ecosystems. Increasing losses in human life and property caused by floods and droughts, a spread of water-related diseases, eroded or water logged soils, pollution of rivers and groundwater, and destruction of wildlife refuges, are all too frequent tragic consequences of a neglect of environmental and ecological limits in the selection of water related

technologies. In terms of human health, there are three very broad categories of problems to be considered, namely: (i) water in relation to communicable diseases; (ii) health and environmental consequences of water pollution related to industrial and agricultural development; (iii) health and environmental impacts of large scale water projects. The discussions at the Conference may focus on criteria for the evaluation of environmental impacts and for the development of improved guidelines in the broad areas referred to.

### *J. Pollution Management*

This is an issue which is of primary interest to the industrialized or semi-industrialized countries at present. It is, however, becoming increasingly important to the less developed countries. The problems in this case relate to measurement and monitoring of pollution, institutional implications of pollution control at source, international procedures for optimizing the system comprising use of pollutants and causes of pollution, re-use of waste waters, policies, standards, shortcomings in technology, and the trans-national and international implications of water pollution management. This is by no means an exhaustive listing of the questions which the United Nations Water Conference may see fit to take up. Within such a framework for discussion at the Conference, what role(s) can be envisaged for a more dynamic and effective contribution by the international agencies in the years to come?

### PRESENT ACTIVITIES IN THE INTERNATIONAL SYSTEM

In a report on coordination in the field of water resources submitted by the Secretary-General to the ECOSOC Committee on Natural Resources in the spring of 1975, the types of assistance currently provided by the system were clearly and cogently spelled out. The water-related activities of the United Nations system are intended to help meet these needs, particularly in those parts of the world where grossly deficient supplies of water constitute a serious handicap for developing countries struggling to achieve better economic and social conditions.

The general objectives of the United Nations system in the water resources field, as in other fields, are to harmonize action at the international level and to assist Member countries, in particular developing countries, in their achievement of national goals and plans. More specifically, the system is by and large guided by the basic objectives of water resources development suggested by the Com-

mittee on Natural Resources in the guidelines drawn up at its second session.<sup>3</sup>

It may be recalled that an overriding objective is that, within the constraints of national development plans and economic resources, water should be available where and when it is required, in quantities that are adequate, and of a desirable quality. While a long way remains to be traveled to reach that goal, the system works towards it by meeting objectives in that direction. These objectives include helping to increase and broaden knowledge of water resources, assisting in the preparation of plans for the allocation, development, utilization and conservation of water resources, institution-building and project formulation, and provision, as requested and available, of other inputs needed and requested by Governments in the implementation of their plans. These plans contemplate the improvement of water management and efficiency in use, expansion of facilities for irrigation, urban and rural water supply, water quality and health aspects of water supply and disposal as well as advancement of scientific knowledge in the water field.

The resources available within the United Nations system for carrying out water related activities are relatively modest. In financial terms, they amounted in 1974 to about \$70 million, which covered headquarters and field activities of all the organizations concerned. This sum must, of course, be viewed in the light of World Bank loans for irrigation, water supply and other water related projects, which totaled \$1,100 million in 1974, and of the similar loans of the regional development banks. Thus, while the system's contribution in the field of investment is fairly substantial, its contribution in other areas such as research, training, technical cooperation and pre-investment assistance remains of a marginal character when contrasted with the inputs in these areas being made by others at the national and local levels and, even more so, when compared with the overall need for these services. It follows that what can be achieved with the available resources must be assessed in realistic terms so that they may be applied where they will do the most good. It is also, of course, vital that the relatively large number of organizations among which these resources are allocated should cooperate with one another as closely as possible toward this end.

The water-related activities of the system fall roughly into two categories: (i) activities aimed directly at increasing the availability of water where it is scarce and utilizing water resources more efficiently everywhere; and (ii) activities aimed at strengthening the scientific,

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3. Official Records of the Economic and Social Council, 52d Sess., Supp. No. 5, ch. III.

social, institutional and technological infrastructure supporting these objectives.

Changes could be introduced to make the United Nations family more responsible to the needs of developing countries, once the Conference has formulated certain recommendations, addressed specifically to the international community.

The first step could be to introduce some measure of joint planning and programming for the activities undertaken by the organizations within the system. This could be a gradual process whereby, in the light of Conference decisions, a number of priority areas are identified for coordinated action involving a pooling of resources over a pre-determined period of time. This basic concept has, in fact, already been accepted by the United Nations and sister agencies, and a report will be presented to the United Nations Water Conference containing proposals along these lines. The proposal is to select not more than six major fields (which would probably be related to some of the priority areas defined earlier) for which a joint program could be developed. This program, in the areas selected, could have a variety of objectives: dissemination of technical information on a regional or global basis, promotion of research on selected water problems, and the development of new planning and evaluation procedures, among others.

A second parallel step could be to encourage states to request joint planning missions for the water resources sector, to be fielded by representatives of the United Nations and specialized agencies according to need, as a premise to the formulation of integrated water development programs. Once formulated these could then be financed by multilateral and bilateral donor agencies, within and outside the United Nations system. This could be an attempt to solve the problem, common to many countries, of having technical assistance in the water sector provided in a disjointed manner. The suggested system would attempt to propose a logical integration of all types of assistance, either already existing or planned.

Finally, a third step would be to intensify training activities sponsored by the system through seminars, workshops, symposia, and to strengthen existing or planned institutions in member states by organizing such activities in a much more closely coordinated manner, with an inter-change of United Nations family staff in the organization and implementation phases of these projects. This could help to insure an integration and logical coordination of all sectoral aspects within a particular area, and make available as full a range of expertise as possible for each training program selected.

There is no doubt that in order to contribute effectively to the gigantic tasks that await us in the water resources sector, the United Nations family will have to find new ways of pooling its limited resources so that its effort may be more concentrated and thus more productive. Ways by which these resources can be dovetailed with those of other nongovernmental international organizations, regional development banks and bilateral aid programs should also be more actively explored. As suggested, maximum attention will have to be devoted to the development of new conceptual instruments to assist less developed countries in the formulation of water policy, to coordinating planning activities both within and outside the water resources sector proper, and to providing support in training and applied research activities particularly with respect to the development of suitable intermediate technologies.