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Ten Years After Mar del Plata

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This paper describes the main conclusions of the Interregional Symposium on Improved Efficiency in Water Resources Management: Follow-up to Mar del Plata, which was held in New York in January 1987. The group of 70 water specialists came up with suggestions for governments and international organizations to speed up water resources development in the coming decade. Major issues covered were efficiency in the management of financial resources; human resources; technology; water quality; and natural hazards, consisting of floods and droughts.

1. INTRODUCTION

An Interregional Symposium on *Improved Efficiency in the Management of Water Resources: Follow-up to the Mar del Plata Action Plan* was held at United Nations Headquarters in New York from 5 to 9 January 1987. The meeting was convened to discuss the implementation of the Mar del Plata Action Plan, 10 years after the plan was drafted by the United Nations Water Conference at Mar del Plata, Argentina.

More than 70 water specialists from 30 developed and developing countries joined together to commemorate the Water Conference, to review the progress made in implementing the Mar del Plata Action Plan and to suggest measures for accelerated implementation of the Action Plan in the next several years.

Despite the fact that considerable progress has been made in implementing at least some of the recommendations and resolutions of the Mar del Plata Action Plan over the past decade, there is no doubt that the major task of supplying the world with adequate quantities of acceptable quality water continues to face serious constraints. It would, for example, require the mobilization of greatly increased financial resources during a time of serious financial recession and heavy external debts. Inadequate cost-recovery policies and the lack of financial plan-

ning at the national level have added to the problem.

Shortages of skilled labour and inappropriate technologies were additional constraints faced by many developing countries. Moreover, a serious deterioration in water quality in many countries severely reduced the available water supplies. Finally, natural disasters, particularly droughts and floods, continued to cause considerable losses, both in human and economic terms. Therefore, it was considered time to review the progress made in implementing the Mar del Plata Action Plan and to see what still needed to be done.

The six technical sessions covered improved efficiency in the management of financial resources; human resources; technology; water quality; and natural hazards, consisting of floods and droughts. The major conclusions of the Symposium and suggestions for action contained in the final report are summarized below.

2. IMPROVED EFFICIENCY IN THE MANAGEMENT OF FINANCIAL RESOURCES

The existing level of funding for water resources development is only a small fraction of the

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202.3 - 8324

estimated requirements. Developing countries would therefore have to make significantly increased allocations of financial resources for the sector, especially from national sources of revenue. The group felt that well-prepared water resources projects and programmes were likely to receive financial and technical assistance support.

Other requirements for stepping-up water resources development included improved assessments of immediate and longer-term needs, phased programmes based on carefully designed projects and a better integration of water resources management policies into overall government policies.

At the national level the need for possible cost recovery schemes, institutional efficiency, active participation by local communities, and an increased role for the private sector and autonomous entities were especially emphasized.

There was a general consensus that water must no longer be treated as being free, since the costs of development, treatment, delivery and management were expensive and should be an integral part of the calculations for project financing. The financial performance of urban water utilities in many countries would have to be improved.

Cost-recovery policies would entail the imposition of reasonable charges on the beneficiaries, according to the ability to pay. Flexibility in the formulation and implementation of cost-recovery policies was emphasized. The practice of cross-subsidization of non-revenue producing uses by revenue producing ones was mentioned. Moreover, revolving funds had been used successfully in some countries to cover recurrent costs of rural water supply projects.

The group felt that costs of intermediate services such as data generation and dissemination activities should also be paid for by the government agency requesting such services.

The importance of enlisting the support of beneficiaries, and in particular community participation, was recognized. A first step for doing so would be to identify water projects which could be implemented and maintained mainly through meaningful community participation, including the supply of labour and materials. Expansion of public-information campaigns and educational curricula could be used to explain the health, labour-saving and other justifications for the

country's water programme to the community. Participants also pointed out the relevance of involving women in planning and management of water projects and programmes.

In connection with the institutional aspects of the question, the participants stressed the need for greater collaboration among levels of government from the international down to the local agencies concerned, and among the agencies responsible for water, health, land use and development.

Respect for the existing traditional and institutional systems was important; working within traditional frameworks was often an effective way to mobilize community resources.

In some countries market mechanisms might be helpful in reducing institutional constraints. The private sector might, in many cases, be able to provide some economically efficient approaches.

The participants felt that the management of water resources projects needed to be improved to make more effective use of limited financial resources. Priority should be given to the proper functioning and rehabilitation of existing systems before undertaking new projects. New projects should not be undertaken unless provision is made for their efficient operation and maintenance. The use of low-cost, suitable technology could also facilitate operation and maintenance, and lower financial requirements. Project performances would have to be systematically monitored in order to determine the success of any new programmes.

The meeting noted recent efforts by the international community to step-up both technical assistance and financial support. The group expressed the hope that such co-operation would not only continue, but be expanded. The representatives also requested the international lending agencies to facilitate or simplify the procedures that they required before giving a loan or grant to a developing country.

The international community could play a catalytic role in assisting governments to devise suitable cost-recovery and operation and maintenance schemes, in the implementation of priority projects and the achievement of meaningful user and community participation. The group also thought it would be useful for the international community to collect and disseminate informa-

tion concerning cost-recovery practices, along with analyses of the reasons for success and failure in particular instances.

3. IMPROVED EFFICIENCY IN THE MANAGEMENT OF HUMAN RESOURCES

Human resources were considered to be the key to successful programmes. The efficiency of water resources activities depended largely on the availability and quality of human resources, which in turn were a function of appropriate education, training and human resource management policies. While the recommendations contained in the Mar del Plata Action Plan were still valid, the challenge was to focus on priorities and develop specific approaches to meet the most pressing requirements. Implementation mechanisms would have to be devised to ensure that those requirements could be met.

The participants suggested some prerequisites to setting up meaningful training programmes at the national level. The gap between the supply and demand of trained personnel should be remedied in those countries and disciplines where a gap existed. National surveys are needed to define needs in training and management. The need to create training plans was stressed.

The participants felt that it would be best to establish or strengthen permanent training structures at the national level, based on existing institutions where possible. Within those structures it would be most cost-effective to train trainers first and prepare them to train skilled workers. Water programmes which required skilled workers should establish contacts with institutions which provided training. They should ideally be able to design and adjust their programmes according to the actual needs.

Special delivery systems could be introduced for programmes which require basic but necessary skills, such as those related to maintenance and repair of simple mechanical equipment. Skilled workers and technicians were in great demand, and training of such workers was the top priority in many countries.

Special efforts were required to identify women's needs and to involve them in water project activities. Training women in technical and managerial skills, building awareness and

exchange of information on their crucial role were priorities.

New approaches to the management of human resources could include self-reliance, decentralization and greater delegation of authority. It was necessary to develop structures for human-resources management within existing agencies, which should aim at informing, training and organizing human resources.

Priority should be given to training in technical and managerial skills, with emphasis on practical and professional aspects. International construction contracts could require contractors to provide essential training in the operation of facilities to the client's personnel. Training materials should be appropriate to practical needs, and should be of a type which could be widely disseminated.

For training of high-level engineers or technicians using sophisticated technologies, regional and interregional training centres could be used to cater to the needs of several countries.

At the project level it was suggested that a systematic pre-evaluation should be made of the requirements for human-resources development, including training, education and personnel policies. Projects could be a realistic entry point for developing technical education and training methods to be introduced within existing national institutions of learning.

The international community was in a good position to promote awareness of the priority for human resources management and training and to support efforts for implementing corresponding measures. Interagency and bilateral efforts in training and human-resources development would have to be co-ordinated. To such an end the creation of regional training centres might be supported. Management of human resources would be improved if donors required an assessment of human-resources availability and skills, including aspects of personnel policy, as a prerequisite to project and programme financing.

4. IMPROVED EFFICIENCY IN THE MANAGEMENT OF TECHNOLOGY

The improvement of technological practices is not just a technical matter, but involves social issues such as community involvement, compatibility

with social and cultural conditions, and attitudinal and structural orientations within implementation agencies. All technologies adopted for implementation must therefore be appropriate for the situation in which they are to be used. What is needed is to reverse the idea that appropriate technology means 'second best' or 'low-status' technology. Solutions should best meet the development need at hand.

Appropriate technology also means adopting equipment and processes that are within the competence of national agencies to implement, maintain and, where necessary, modify and produce adapted equipment. Accordingly, curricula and training programmes should be orientated towards developing technical skills that are relevant to national problems.

The participants found that, over the years, severe problems had resulted from the requirements for 'tied aid' in many donor agencies, resulting in a proliferation of non-standardized equipment. Too often the problems were worsened because too many separate channels of negotiations between donors and national agencies existed. By channelling such communications through a single national body, countries should be able to encourage technological standardization, thereby containing technological choices within the capability of the country to support them.

At the national level the participants recommended that an assessment be made of the relevance of the professional and technical curricula to the requirements of the water-resources sector in a given country. Strong community development, communications and educational components were needed in projects. Social scientists should be given real responsibility and authority in working alongside the engineers in project planning and implementation.

Aid donors who had in the past offered 'tied aid' should provide appropriate products which respond to national needs, as determined by national agencies in the water-resources sector. Standardization should be considered to be a priority. Local water authorities could introduce their own successful technologies to foreign consultants or donors.

Technology assessment should be a prerequisite to project approval and implementation.

Every attempt should be made to improve the project specific database before the design of cost-effective water projects. Pre-project appraisal should include existing infrastructure, previous project experience, the availability of resources, and assessment of the likely sustainability after project completion. Post-project evaluation should include efficiency and effectiveness and, in some cases, impacts.

User beneficiary groups should be brought into stronger participatory and decision-making roles at all stages of the project: identification, feasibility study, approval, detailed design, implementation, operation, maintenance, cost recovery and evaluation. The group recognized the considerable potential which women offered as resources in support of projects in the water sector.

The group felt that international organizations, in co-operation with local authorities, could initiate a programme to disseminate information on successful technologies and approaches throughout the developing countries. International information centres could investigate with national governments more aggressive ways of disseminating such information more widely. In order to succeed, such a programme would have to be undertaken by an agency with strong and imaginative leadership as well as considerable independence from interagency politics.

International donor agencies should clearly outline their existing or planned policies on appropriate technologies, community involvement, hygiene education, subsidies and financial viability, operation, maintenance and tied aid. In turn, developing countries should attempt to prepare sector policy statements setting out general and specific goals, optimum strategies and basic development priorities.

Because international organizations have a strong influence over technology choices, their personnel would benefit from learning at first hand about successful technologies and approaches before encouraging their acceptance and use. The transfer of technology would be facilitated if international agencies assessed the constraints imposed by bureaucratic controls. The use of expatriates for project management should be tempered. At the same time international agencies could increase both the quality and the number of project evaluations. There was

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a need for a uniform set of guidelines for the monitoring and evaluation of water projects.

5. IMPROVED EFFICIENCY IN THE MANAGEMENT OF WATER QUALITY

Participants confirmed that appropriate priority should be given to water quality management worldwide. However, the resource constraints facing developing countries often prevented them from dealing with water quality as a priority issue.

At the national level the group considered a series of actions which could be initiated as a programme to tackle water quality problems. First, laws concerning the pollution of water would have to be amended to make them consistent with economic realities. Water quality legislation should be enforceable, which requires adequate staff and monitoring equipment. In addition, the political will to prosecute violators should be created and maintained. Mechanisms for co-ordination of water quality management programmes were required in order to reduce duplication of efforts. Appropriate standards should be adopted, and discharge of effluents by industries limited.

In the context of legislative actions, participants suggested that water quality control might include some of the following:

- designation of protected areas of hydrological regions and aquifers;
- requirements for special designs or construction;
- prohibitions against discharging specific contaminating substances;
- requirements for industry to treat effluents or to protect ground water through adequate design;
- control of production, processing, transportation and storage of water pollutants.

Environmental impact assessments should be required by the public and private sectors where they are not used, and improved where they are already used in environmental planning. It was agreed that governments had a responsibility to organize and operate efficient and well-equipped emergency services and warning systems in the event of accidents involving water pollutants. Planning groups needed to recognize trade-off

options, and communicate them to the affected people. Water quality monitoring needed to be developed in many countries, to include physical, chemical and biological parameters. It should be combined with hydrological assessments.

Participants suggested that programmes be developed to train specialists in water quality management, to teach environmental issues in schools and to place high priority on public education.

It was suggested that monetary incentives could be considered with care, and assessed with respect to their efficacy and redistribution impact. User and effluent charge systems could be used as regulating tools and sources of pollution control funds.

Management of water quality was necessary at the international level because of the nature of transboundary pollution. Therefore, it was important for international organizations to support and promote national efforts to control water pollution. Increased international funding was required for expanded water quality monitoring networks for assessment in developing countries, as well as for controlling water pollution across boundaries of all countries. Monitoring data could, moreover, be communicated through an international network.

International funding organizations could require environmental impact assessments based on both technical and economic criteria, before financing water resources projects. To do so, international organizations providing technical support to governments could assist in strengthening national capabilities to assess particularly sensitive and complex issues, such as groundwater quality.

International organizations should recognize the need for, and promote, differential standards for case specific needs. International organizations could and should promote the development of low-cost, site-oriented technologies for the control of water quality problems. For example, water supply systems serving low-income communities did not require sophisticated technologies. In fact, low-cost technologies might enable some communities to be served which otherwise could not afford water services.

Technical assistance should be accompanied by training programmes at regional and national

levels to train water resources personnel in the crucial aspects of water quality management. Moreover, international programmes for dissemination of information on water quality issues should be strengthened. A compendium-type document could be prepared to achieve more sharing of experiences, both successes and failures.

The transfer of pollution across national boundaries was a growing international concern which should be monitored and controlled. International organizations could co-ordinate and assist in achieving co-operation of affected nations. Principles for equitable and rapid redress, including appropriate compensation, and procedures for forecasting events, could be developed as joint national-international efforts. Protection against accidental industrial or agricultural pollution was desirable at both international and national levels.

6. IMPROVED EFFICIENCY IN THE MANAGEMENT OF NATURAL HAZARDS

6.1 DROUGHT AND DESERTIFICATION

The group pointed out that, over large parts of the world, recurrent periods of drier-than-average conditions had led to various forms of drought, often with disastrous consequences.

However, human disturbance of fragile ecosystems could be countered by a wide range of measures to restore ecologically sound agricultural and pastoral systems. Therefore, the interrelationship between drought and desertification called for integrated programmes, of which water resources development and conservation was one facet.

At the national level the group urged that contingency plans for implementing emergency measures for the supply of food, water and medical assistance should be prepared. Efficient communications systems for the rapid dissemination of data on emergency situations were essential. Water supply and sanitation programmes needed to be accelerated to provide those services during emergencies.

National institutions and co-ordinating bodies should be strengthened to improve their ability to implement effective drought and desertification programmes and to monitor land-use changes. Further investigation was needed on the conjunc-

tive use of ground and surface water to combat desertification. Therefore, the information based on climatic conditions and surface and groundwater resources needed to be improved. Firm policy decisions needed to be formulated by governments on problems such as deforestation, overgrazing, land tenure and demographic changes.

Comprehensive soil and water conservation programmes could then be implemented, with emphasis on technologies which could be carried out by community self-help organizations in traditional agrarian and pastoral societies.

At the international level the participants felt that better communication and co-ordination among external support agencies and with the national governments would lead to more effective progress. The question of setting aside funds to combat drought and desertification deserved attention. In this regard the international community could play a major part in financing, which would include support for hydrological, meteorological and agricultural research, including improved assessments of land-use systems, the carrying capacity of rangelands and the special problems of marginal lands.

Related activities could provide assistance in linking national drought management programmes to targeted water demands. This might entail assessments of current water needs, determination of priorities and minimum satisfaction levels, and assessment and implementation of cost-effective measures to meet the targeted needs.

The participants felt that the provision of food aid, although necessary in the emergency phase, was a short-term contingency measure, and one of the least effective types of external assistance in the long term. A whole range of technological systems was available, many of which could be applied in specific regions. Combating drought and desertification often required co-operation among a number of countries and the support of intergovernmental bodies. The Permanent Interstate Committee on Drought Control in the Sahel (CILSS) and the Intergovernmental Authority for Drought and Development (IGADD), in Africa could contribute to the implementation of comprehensive programmes for action.

6.2 FLOODS

The participants noted that, despite the recommendations of the Mar del Plata Action Plan on

flood loss management, adequate resources and appropriate institutional structures for mitigation of flood hazards were still lacking. Though the techniques for minimization of flood losses were well known, the frequency and intensity of floods since the Mar del Plata Conference has not changed significantly. The widespread effects of flood phenomena made the discussion of the subject one of the significant issues of the meeting.

At the national level the group considered that both structural and non-structural measures for flood mitigation should be executed within the framework of a comprehensive, long-term and integrated land and water development plan. Very often structural and non-structural measures were complementary. Wherever the choice was available, non-structural measures should be preferred to structural measures, because they happened to be less capital-intensive and more beneficial from the ecological point of view.

However, in the short term, structural measures were immediately necessary in many flood-prone areas. Adequate funds were needed for satisfactory maintenance of all flood protection works. Special care should be taken to ensure the safety of dams.

In order to minimize economic losses, flood mitigation measures could be given priority in cities, towns, villages and industrial areas. Within the broad framework of a comprehensive plan, local-level planning and execution could be encouraged.

The following specific measures related to effective institution-building against floods were suggested:

- (1) people's participation should be encouraged by giving proper weight to local views and by motivating the people;
- (2) there should be effective horizontal and vertical integration of all agencies dealing with flood prevention. Civil defence measures in case of emergency should be strengthened;
- (3) flood mitigation projects should be flexible, so that feedback from errors could always be taken into account;
- (4) in certain deeply flooded areas, immediate mitigation of floods might be neither feasible nor desirable: attempts should be made to minimize flood losses by undertaking re-

search for improving varieties or deep-water crops as well as for improving the housing and sanitary conditions in those areas.

To minimize flood losses, the machinery of flood warning, evacuation and relief must also be strengthened. It would be desirable to:

- (1) increase the forecast lead time by strengthening the flood forecasting and warning system;
- (2) set up an efficient system for the dissemination of flood warnings;
- (3) encourage the introduction of zoning laws;
- (4) educate the public about flood hazards, especially through development of flood-risk maps;
- (5) include disaster relief and preventive health measures in development programmes;
- (6) experiment with flood insurance, wherever possible.

At the international level the group felt that close interstate co-operation should be actively promoted in relation to the use, management and development of shared water resources. The following measures could be taken:

- (1) enunciation of principles for equitable and just sharing of flood risks by co-riparian states;
- (2) establishment of mechanisms and methods for compensation in cases where new flood risks are created;
- (3) establishment of effective linkages between flood forecasting agencies of a region;
- (4) undertaking joint programmes for structural and non-structural flood mitigation measures.

It was considered essential to undertake long-term research and provide technical co-operation for the minimization of flood losses. Adequate hydrometeorological data and continuous monitoring of dynamic changes in flood hazard occurrence should be collected. Legal and economic issues associated with environmental changes occurring as a result of floods should also be studied in depth and the information disseminated. Models for flood forecasting should be developed and national professionals trained in their application. Appropriate technologies for flood mitigation measures should also be disseminated.

7. CONCLUSION

The final report of the Symposium was discussed and approved by the participants at the closing plenary session. The group agreed that, while some progress had been made over the past 10

years, the tasks remaining were far greater. Governments and the international community, as well as the local community, had to co-operate in order to overcome the considerable constraints to water resources development.

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