



# International Rivers and Lakes

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Symposium on Improved Efficiency in the Management of Water Resources:  
Follow-up to the Mar del Plata Action Plan

The Interregional Symposium on Improved Efficiency in the Management of Water Resources: Follow-up to the Mar del Plata Action Plan, which was organized by the Department of Technical Co-operation for Development of the United Nations Secretariat, was held at United Nations Headquarters in New York from 5 to 9 January 1987. The meeting was convened pursuant to a request by the Committee on Natural Resources at its ninth session (which was later endorsed by the Economic and Social Council in its resolution 1985/49B), that the Secretary-General provide the necessary assistance in the preparations for and the organization of a meeting on the implementation of the Mar del Plata Action Plan, ten years after the United Nations Water Conference was held at Mar del Plata, Argentina.

Over 70 water specialists from developed and developing countries and representatives of the United Nations system participated in the Symposium. As well as commemorating the tenth anniversary of the 1977 United Nations Water Conference held at Mar del Plata, Argentina (which sought to sensitize the international community to the importance of water in social and economic development and to develop strategies for improved efficiency in the management of the precious resource), the participants in the Symposium also reviewed the progress made in implementing the Mar del Plata Action Plan and recommended measures for accelerated development over the next several years.

Confirming that water is essential in all fields of human endeavour, the Symposium noted achievements made in water management during the last 10 years but pointed out that the remaining tasks were far greater. Poor planning, limited financial and human resources, inadequate cost recovery policies, lack of proper operation and maintenance, use of inappropriate technology and natural hazards - droughts, cyclones and floods - were cited as constraints to water resources development.

To overcome those problems and improve efficient management of water resources, the Symposium recommended the following measures to Governments and the international community:

- (a) Improved assessment by Governments of immediate and long-term needs for the sector and formulation of realistic policies and plans commensurate with available financial, technical and human resources;
- (b) Greater collaboration among local, national and international agencies concerned, through joint planning, implementation and monitoring for minimum duplication of effort to attain maximum impact;
- (c) Innovative resource mobilization approaches to supplement funds from customary budgetary sources, including realistic cost recovery policies, mobilization of the community - especially women - for optimal self-help in all aspects of water and sanitation management;
- (d) Increased involvement of the private sector, where applicable, carefully monitored by national authorities, through tax regimes and guarantees such as for security of equity investment and the necessary returns on capital;

(e) Institutionalized human resources development in all national plans and obligation of international contractors to train "beneficiaries" in the operation and maintenance of systems;

(f) Increased emphasis on appropriate technology and standardization of equipment according to national needs;

(g) Integration of operation and maintenance within all water projects to ensure self-sustaining systems;

(h) Improved monitoring and evaluation of water resources projects and programmes, including economic, institutional, technological and human resources factors, both ex-ante and ex-post;

(i) Appropriate management of water quality including provision of physical infrastructure, technical support for monitoring standards and enforcement of regulations;

(j) Better flood and drought management through improved watershed management, rational patterns of land use, sound warning systems and international co-operation;

(k) Improved monitoring and controlling of pollution across international boundaries. At the same time, principles for equitable and rapid redress including appropriate compensation were considered necessary;

(l) Adequate flood control through international co-operation based on principles for equitable and just sharing of flood risks by co-riparian states; development of compensation systems, and integration of joint programmes.

The Symposium recommended also more aggressive and widespread public information campaigns to ensure renewed commitment to the sector and to disseminate breakthroughs in appropriate technology, community participation and revenue generation.

The subjects discussed at the meeting were in keeping with the activities of the Department of Technical Co-operation for Development (DTCD) of the United Nations Secretariat which, over the last 10 years has provided assistance to Governments in overcoming rigidities constraining the attainment of the goals of the Mar del Plata Action Plan, including:

(a) Financial resources mobilization. The Department has undertaken pre-investment studies which have resulted in considerable follow-up investment, primarily in engineering works;

(b) Human resources development. All the field projects of the Department encompass training as an integral component. Two new subregional projects are oriented exclusively to training technical personnel in the water sector;

(c) Technology. By making increased use of such modern technology as computers and satellites in its projects relating to the use of non-conventional water resources (desalination, re-use of water, transport by tanker, etc.), the Department has facilitated its work in the areas of planning and management. Two regional training centres on the use of computer technology for water resources have been set up in Latin America and Africa.

(d) Water quality enhancement and drought control. These areas have been at the centre of the Department's efforts to develop ground-water resources, particularly in Africa. The concern with ground water is important because of the relatively modest levels of investment required and the need to assist dispersed rural population groups.

The Symposium featured six specialized technical sessions for the discussion of mobilization of financial resources; development of human resources; and management of technology, water quality and natural hazards.

Participants from developing countries prepared country papers describing experiences in managing water resources over the last 10 years. The conclusions arrived at in technical sessions provided the basis for the recommendations of the Symposium.

### Operational Manual Statement for Projects on International Waterways <sup>1/</sup>

An Operational Manual Statement for Projects on International Waterways has been issued by the World Bank. It includes references to topics such as appreciable harm, notification, settlement of differences by amicable means and independent appraisal of project impacts.

Given the relevance of the World Bank not only in financing but also in conceiving and framing the content of projects on international waterways, the impacts of the statement will be far-reaching, influencing operational decisions, national behaviour and, eventually, the content of doctrine and binding decisions.

A summary of the main topics of the manual is given below.

#### Basic policy approach

The objective is to promote co-operation and goodwill among riparian countries, minimizing the causes for friction arising out of projects on international waterways.

It is considered that appropriate agreements and arrangements are essential to the most efficient use and exploitation of international waterways for developmental purposes.

In cases of unresolved differences, the Bank, prior to financing a project, will normally urge the interested party to conduct negotiations in good faith with the other riparians, with a view to reaching appropriate agreements or arrangements.

#### Applicability

The manual determines the types of waterways and projects to which it shall be applied.

"Waterways" comprises rivers and surface bodies of dormant waters, be they successive or contiguous, and their tributaries, and also expanses of sea waters, like bays, gulfs, straits or channels, bordered by two or more states, or, if within one state, recognized as necessary means of communication

between the open sea and other states, and any rivers flowing into such waters.

It may be noted that the statement refers only to surface waters, excluding ground water. Also, it can be argued that the use of the term "waterways" is somewhat restrictive, since this term is usually reserved for water bodies or watercourses that can be used for transportation or communication. However, navigation is not required in the definition of the expanses of fresh water covered by the statement. Therefore, a plausible explanation for the use of the word "waterways" would be that it covers better than the term "watercourses" the expanses of sea water which are also included in the statement.

The types of projects to which the statement is to be applied are those which involve the use or pollution of international waterways and detailed corresponding design and engineering studies.

#### General guidelines

Procedural aspects have been carefully regulated by the statement. Accordingly, it is provided that the international issues involved should be brought to the fore at the earliest possible opportunity. To such effect, the presence of any potential international water rights issue should be ascertained as early as possible.

#### Notification

In regard to the relationships between a state proposing a project and potentially affected riparian countries, the former should notify the latter about the project, furnishing enough information for a proper appraisal of potential damage.

If such notification is not given by the beneficiary state, it would be normally given by the Bank. If no notification is made by the beneficiary state and it objects to notification by the Bank, the project will be discontinued.

The notified state should communicate its response to the beneficiary state, or the Bank, within a reasonable period of time, which should normally not exceed six months from the dispatch of the project details.

It is also imperative for the Bank staff to ascertain the existence of any international institutional entity for the concerned watercourses. If so, its scope of activities, functions, and status of involvement vis-à-vis the project should be determined in order to establish whether any notification might be required to be given to it.

Notification will not be necessary for projects which are merely additions or alterations to already existing works or schemes, provided that they do not adversely affect the quality or quantity of water flows, or that the project itself will not be adversely affected by the uses of water made by other riparians. In any case, if there were arrangements or agreements among the

co-riparians, the Bank staff would make efforts to ensure that their terms are complied with.

Likewise, no notification is required for water resources surveys or feasibility studies. However, beneficiary states shall be required to include in the terms of reference for studies and surveys any potential riparian issues.

#### Responses and objections

If no objections are raised, the Bank can proceed with further action. However, even when no objections are raised by riparians, the Bank staff will have to assess whether the project will cause appreciable harm to the interests of other riparians or be so harmed by the uses that other riparians might make. This latter aspect would appear to be based on the Bank's concern as to the viability of the projects financed by it.

If objections are raised, the Bank must assess the nature of the problem, the objections, the potential for appreciable harm, either to co-riparians by the project, or to the project by the uses of water that other co-riparians might have; whether the circumstances of the case require the Bank to urge the parties to resolve the issues through amicable means (a step that will normally be followed, when objections are substantiated); or finally, whether the objections are of such nature that they merit assessment by one or more independent experts. (In this connection, annex A of the Operational Manual Statement provides for the maintenance by the Bank of a roster of ten independent and highly qualified experts). In this case, the opinion of the expert or experts must be reviewed before making a decision on whether or not to proceed with further processing of the project.

#### Presentation of loans

For every project, the staff appraisal report and the report and recommendations of the President of the Bank to the Bank's Board of Directors should cover the international issues involved and contain an assessment by the Bank staff that either they are covered by appropriate arrangements, or that the project has received a positive response from other riparians, or, finally, that in the assessment of the Bank staff, the project, as proposed, would not cause appreciable harm to other riparians; or would not be harmed by the uses of waters by other riparians. The salient features of the objections raised by co-riparians should be included in the report and recommendations of the President, as well as, where applicable, the reports and conclusions of the independent experts.

#### Reports of the International Law Commission <sup>2/</sup>

The thirty-eighth session of the International Law Commission discussed the law of the non-navigational uses of international watercourses. As is customary, the Commission had before it a report on the subject, prepared by the Special Rapporteur, a brief summary of which is given below.

Summary of the Views of the Special Rapporteur

Special consideration was given to several subjects. Accordingly, it was found that there was overwhelming support for the doctrine of equitable utilization as a general, guiding principle of law on the determination of the rights of co-riparian states.

Moreover, the applicability of the doctrine would be limited only by potential political obstacles, rather than by legal obstacles. The doctrine itself is based on the maxim sic utere tuo alie nun non laedas. In its most basic terms, equitable utilization involves a balance between the needs of the states concerned in such a way as to maximize the benefit and minimize the detriment to each. The process of striking a balance is to be approached by taking into account all relevant considerations. While various bodies have drawn up lists of factors to be considered in arriving at an equitable allocation, no fixed set of factors can be devised that would fit all situations. The Special Rapporteur also discussed the duty to refrain from causing appreciable harm and its relationship to the principle of equitable utilization. However, implementation of those principles rests upon the good faith and co-operation of the States concerned.

In turn, good faith and co-operation should be established through adequate institutional mechanisms. Unfortunately, such machinery is lacking, which leads at times to "acrid and protracted" disputes. Consequently, the Special Rapporteur has emphasized the need to implement suitable procedural rules for the prevention and resolution of conflict. Such rules as envisaged in the form of draft articles are summarized.

(a) Notification concerning proposed uses (article 10)

This requires timely notice of any proposed new use or alteration that may cause appreciable harm to other states. The notice shall be accompanied by adequate technical data, if available.

(b) Period for reply to notification (article 11)

This calls for a reasonable period of time in which to study and evaluate the potential for harm, and to request additional available data and information necessary for an accurate evaluation. During such a period, no new uses shall be initiated. Provision for the negotiation in good faith of a reasonable period of time for study and evaluation is also made. Negotiations shall not unduly delay the initiation of the proposed use or the attainment of an agreed resolution.

(c) Reply to notification, consultation and negotiation concerning proposed uses (article 12)

The notified State should inform the notifying State of any appreciable harm to its rights. A period of consultations with a view to adjusting differences follows. If States are unable to adjust their grievances satisfactorily through consultations, they shall promptly enter into negotiations in good faith with a view to arriving at an equitable resolution of the situation. Such a resolution may include modification of the proposed use to eliminate the causes of harm, adjustment of other uses being made by either of the States, and the provision by the proposing State of compensation, monetary or otherwise, that would be acceptable to the notified State.

(d) Effect of failure to comply with articles 10 to 12 (article 13)

Failure to provide notice to other watercourse States of a proposed new use entitles the latter to request information about new uses or alterations. Lack of agreement on the effects of such new uses or alterations should be consulted and negotiated in good faith. Failure to reply to a notification enables the notifying State to proceed with the proposed uses, provided that it has fully complied with its duties. Liability for any harm caused to other States by a new use follows failure to notify, consult or negotiate in good faith.

(e) Proposed uses of utmost urgency (article 14)

A State providing notice of a proposed use may, notwithstanding affirmative determination by the notified State, proceed with the initiation of the proposed use if the notifying State determines in good faith that the proposed use is of the utmost urgency, owing to public health, safety, or similar considerations, and provided that the notifying State makes a formal declaration to the notified State of the urgency of the proposed use and of its intention to proceed with the initiation of that use. Full compliance with notification, consultation and negotiation is required. Liability for violation to the duty to refrain from appreciable harm is set forth.

Discussion by the Commission

In presenting his report to the Commission, the Special Rapporteur drew attention to four topics on which he considered the Commission could profitably focus during the limited time it had at its disposal.

The four points were as follows:

- (a) Could the Commission, for the time being, defer the matter of attempting to define the term "international watercourse" and base its work on the provisional working hypothesis accepted by the Commission in 1980; 3/
- (b) Should the term "shared natural resources" be employed in the text of the draft articles;
- (c) Should an article concerning the determination of reasonable and equitable use contain a list of factors, or should the factors to be taken into account in making such a determination be referred to in the commentary;
- (d) Should the relationship between the obligation to refrain from causing appreciable harm to other States using the international watercourse, on the one hand, and the principle of equitable utilization, on the other, be made clear in the text of an article.

With regard to the question of defining the term "international watercourse" (see point (a) above), most members who addressed the issue favoured deferring such a definition until a later stage of the work on the topic. The Special Rapporteur concluded that the Commission should, for the time being, defer the matter of defining the term "international watercourse".

Concerning point (b) above, members of the Commission who addressed the issue were divided on whether the term "shared natural resources" should be utilized in the text of the draft articles. Many members on both sides of the issue recognized, however, that effect could be given to the legal principles underlying the concept without using the term itself in the text of the draft articles. The Special Rapporteur expressed the view that, in the light of the discussion of the issue, the latter might prove to be the wisest course for the Commission to follow.

There was also a division of views concerning point (c) on the question of whether there should be set forth, in the text of a draft article, a list of factors to be taken into consideration in determining what amounts to a reasonable and equitable use of an international watercourse. The Special Rapporteur concluded that this question would have to be given careful consideration, but supported the suggestions of some members that the Commission should strive for a flexible solution, which might take the form of confining the factors to a limited, indicative list of more general criteria.

Members of the Commission who addressed point (d) above recognized the relationship between the obligation to refrain from causing appreciable harm to other States using an international watercourse, on the one hand, and the principle of equitable utilization, on the other. However, they were divided on how to express it in the draft articles. Some members preferred a simple reference to the obligation not to cause appreciable harm while others supported a formulation which would provide that such harm may not be caused unless it is allowable pursuant to the equitable utilization of the watercourse in question. Still others preferred to use the term "harm" without qualification. The Special Rapporteur concluded that, as the Commission seemed to be in basic agreement on the manner in which the two principles were interrelated, the task of the drafting committee would be to find an appropriate and generally acceptable means of expressing that interrelationship.

In the course of their comments on the report of the Special Rapporteur, some members of the Commission expressed views concerning the form which the Commission's work on the topic was to take. With the exception of one member, who doubted the utility of the Commission's present approach to the topic, those members who addressed this subject supported the "framework agreement" approach that had previously been endorsed both by the Commission and by the Sixth Committee. The thrust of that approach is to elaborate draft articles setting forth the general principles and rules governing the non-navigational uses of international watercourses, in the absence of agreement among the States concerned, and to provide guidelines for the management of international watercourses and for the negotiation of future agreements. The Special Rapporteur indicated that, in his view, it would be appropriate to proceed first with the formulation of draft articles setting forth legal principles and rules; the Commission could turn next to the consideration of a possible set of guidelines concerning institutional mechanisms and other aspects of international watercourse management that are not strictly required by international law, but which are highly desirable components of an overall regime governing the non-navigational uses of international watercourses.

Finally, those members of the Commission who spoke on the topic commented generally on the procedural draft articles contained in the report of the Special Rapporteur. The Special Rapporteur indicated his intention to give the articles further consideration in the light of the constructive comments made by members of the Commission.

Recommendations for the first stage treatment and disposal facilities for the solution of the border sanitation problem at San Diego, California-Tijuana, Baja California 4/

The International Water and Boundary Commission (United States and Mexico) met in the offices of the Mexican Section in Ciudad Juarez, Chihuahua, Mexico on 30 April 1985 to (a) consider the border sanitation problem at San Diego, California-Tijuana, Baja California; (b) review the plans for the first stage treatment and disposal facilities prepared by the Secretariat of Urban Development and Ecology (SEDUE) of Mexico for the solution of the problem; and (c) formulate recommendations to the two Governments with respect thereto.

The Commissioners noted that the problem in the San Diego-Tijuana area resulted from discharges of untreated sanitary waste-waters from the city of Tijuana northward along the natural drainage courses and in the Tijuana River, crossing the international boundary into the territory of the United States.

The Commission agreed to submit for approval of the two Governments a resolution, which is summarized below:

1. Mexico shall proceed to construct, operate and maintain the sanitary waste-water treatment and disposal facilities which form a part of the first stage of the Integrated Project for Potable Water and Sewerage, prepared by Mexico for the city of Tijuana, Baja California.

2. Mexico shall design, construct, operate and maintain the treatment and disposal facilities for the city of Tijuana to prevent discharges of untreated sanitary and industrial waste-waters across the international boundary in the San Diego-Tijuana area.

3. The design and construction of the sanitary waste-water treatment and disposal facilities planned by Mexico shall include stand-by equipment to be utilized during periods of breakdowns or maintenance of the installations.

4. Mexico shall operate and maintain the first stage treatment and disposal facilities so that the quality of the coastal receiving waters at the international boundary complies with the water quality criteria established for primary contact recreation uses, that is, that the most probable number of coliform bacteria would be less than 1,000 organisms per 100 milliliter (ml), provided that not more than 20 per cent of the total monthly samples (at least 5) exceed 1,000 per 100 ml, and that no single sample taken during a verification period of 48 hours should exceed 10,000 per 100 ml.

5. Prior to the initiation of construction, Mexico shall provide to the Mexican Section for the joint review and approval of the Commission copies of the plans and designs for construction of the first stage treatment and disposal

facilities and its plans for operation and maintenance, including monitoring and supervision, and that each section shall inform the appropriate agencies of its Government of any deficiency.

6. Mexico shall progress in the construction of the treatment and disposal facilities in accordance with the approved plans and specifications and in such timely manner that the installed capacity of the facilities is not exceeded by the rate of discharge of collected sanitary waste-waters.

7. Mexico shall take the necessary measures to ensure the timely availability of sufficient funds for carrying out the construction of the treatment and disposal facilities of the first stage of the Integrated Project, as stated in paragraph 6 and according to the corresponding plans and specifications.

8. Mexico shall take the necessary measures annually to ensure that sufficient funds are available to operate and maintain the first stage treatment and disposal facilities, including preventative maintenance, and to enable performance of those functions in a manner that will ensure in so far as possible against breakdowns or interruptions.

9. In the event of a breakdown or interruption in the operation of the treatment and disposal facilities of the first stage, Mexico shall take special measures to make immediate repairs; and if Mexico shall make a request through the Commission, the United States section shall seek to make arrangements for provision of assistance to Mexico so that the repairs can be made immediately through the Commission and under its supervision. In the event of uncontrolled flows of Tijuana waste-waters across the boundary disposal system, such Tijuana waste-waters may be collected in the United States for conveyance to the Mexican system in a volume not to exceed that of the uncontrolled waste-waters.

10. In accordance with article 2 of the 1944 Water Treaty, the construction, operation and maintenance of the waste-water treatment and disposal facilities shall be jointly observed by representatives of the Commission, and each section of the Commission shall inform the appropriate agencies of its Government of the results of the observations.

11. The Commission shall attempt to arrange as soon as possible for an agreement for continued use of the emergency connection to the metropolitan system of the city of San Diego during the interim period until the first module of the treatment plant is completed, in terms acceptable to the appropriate authorities of each country.

12. Mexico shall initiate immediately the studies and designs of alternatives for the subsequent treatment and disposal facilities needed for the second stage of the Integrated Project, with the objective of presenting the plans in a timely manner for consideration of the Commission, and for its approval in accordance with the aforesaid criteria that the installed capacity of the treatment facilities shall not be exceeded by the rate of discharge of sewage collected; and that during those studies Mexico shall consult with the Commission through the Mexican Section, and that Mexico,

upon adoption of a definite plan, shall present a corresponding construction schedule to the Commission for its approval, and for its recommendation to the two Governments.

13. Minutes shall require the specific approval of the two Governments. The Minutes of the meeting were signed by: J. F. Friedkin, United States Commissioner; Joaquin R. Bustamente, Commissioner for Mexico; M. N. Ybarra, Secretary of the United States Section; and Lorenzo S. P. Padilla, Secretary of the Mexica Section.

Report of the fourteenth session of the Group of Experts on Aspects of Water Quality and Quantity of the Economic Commission for Europe (ECE) as adopted on 23 May 1986 5/

The Group of Experts on Aspects of Water Quality and Quantity held its fourteenth session at the Palais des Nations, Geneva, from 20 to 23 May 1986.

The session was attended by representatives from: Austria, Belgium, Bulgaria, Czechoslovakia, Finland, France, the German Democratic Republic, the Federal Republic of Germany, Greece, Hungary, Italy, Netherlands, Poland, Portugal, Spain, Switzerland, Turkey, the Union of Soviet Socialist Republics, and the United Kingdom of Great Britain and Northern Ireland.

Representatives of specialized agencies and other intergovernmental and non-governmental organizations were also in attendance.

The Group of Experts decided to submit the revised draft principles on co-operation in the field of transboundary waters, as contained in annex I of the report, to the eighteenth session of the Committee on Water Problems for its consideration. The recommendations address issues regarding control and prevention of transboundary water pollution, as well as flood management in transboundary waters.

Every state has the sovereign right to use its own water resources pursuant to its national policy and must, in a spirit of co-operation, take measures such that activities carried out within its territory do not cause damage to the environment of other states or of areas beyond the limits of its national jurisdiction. The Declaration of Policy on Prevention and Control of Water Pollution including Transboundary Pollution of the Economic Commission for Europe, provides that riparian states shall undertake, on the basis of their national policies, concerted action to improve the quality of surface and ground water, to control pollution and to guard against accidental pollution.

Transboundary waters do not lend themselves to purely national approaches because natural phenomena and human activities, including effects originating beyond the transboundary area itself, may make themselves felt across borders and require co-operation among riparian countries. Therefore, the following subjects, inter alia, were addressed.

### Co-operation

On the basis of the principle of reciprocity, good faith and good-neighbourliness and in the interest of rational water resources management and protection of those resources against pollution, riparian countries are called upon to enter into consultation if a riparian country so desires, aiming at co-operation regarding: (a) protection of ecosystems, especially the aquatic environment; (b) prevention and control of transboundary water pollution; (c) protection against such dangerous hazards as accidental pollution, floods and ice drifts in transboundary waters; and (d) harmonized use of transboundary waters.

### Treaties and other arrangements

Riparian countries should, by means of bilateral or multilateral treaties, or by other arrangements, define their mutual relations regarding control of water pollution, accidental pollution, floods and ice drifts in order to secure specific regulation of their conduct.

### Terms of agreements

Transboundary water agreements should stipulate the aims and objectives of joint co-operation, describe its conduct, define its geographical and substantive scope and provide for concrete measures as well as for their implementation and surveillance. Measures should, inter alia, include standards of quality, objectives to be achieved, monitoring and assessment activities, controlling of accidental and transboundary pollution and remedies for emergency cases.

### Water quality objectives and criteria

In transboundary water agreements or in subsequent arrangements, contracting parties should define jointly water quality objectives and adopt in common water quality criteria for the purpose of maintaining and, if necessary, improving water quality in transboundary waters. Such objectives may also serve as a guide for co-ordinating national policies on water quality.

Each contracting party should implement at the national level the necessary measures aimed at the preservation and, if possible, the significant improvement of water resources quality.

### Institutional arrangements

Where not yet in existence, riparian countries should consider the setting up of appropriate institutional arrangements such as joint commissions and working groups as a means of promoting the objectives of the agreement and facilitating implementation of its provisions. The structure, tasks, competence and financing of joint commissions or other co-operating bodies should be defined in the agreement.

### Functional of institutional bodies

Transboundary water commissions or other relevant bodies should be entrusted where appropriate with the following functions, inter alia:

- (a) Serve the contracting parties as an advisory and negotiating body in all matters concerning protection of water against pollution, including accidental pollution, floods and ice drifts;
- (b) Develop proposals for water protection objectives and standards, as well as joint arrangements and control programmes, including common methodologies for monitoring and data interpretation;
- (c) Monitor, collect, process, compare and evaluate the necessary data with a view to preparing inventories, time series, and forecasts as well as to surveying the state of transboundary waters and controlling the effectiveness of measures implemented, as a basis for drawing up new measures;
- (d) Arrange for and carry out relevant research work to determine the nature, importance and origin of transboundary water pollution, including accidental pollution, floods and ice drifts;
- (e) Propose, establish, develop, and operate early detection and warning systems;
- (f) Monitor the effectiveness and compatibility of control measures implemented at the national level and examine the extent to which objectives stipulated in the respective agreements are met;
- (g) Prepare regular reports on work accomplished and information supplied with respect to the results of monitoring activities or special studies and surveys;
- (h) Draft subsequent agreements on specific issues within their terms of reference;
- (i) Co-ordinate their activities with those of other commissions where there are points of contact.

### Prevention of water pollution

In order to protect transboundary waters against pollution, contracting parties should draw up control programmes, jointly if necessary, and implement those programmes. Contracting parties should commit themselves to taking all legal, administrative, financial and technical measures compatible with balanced development that might be necessary for achieving at least an agreed upon reduction in pollution of such waters. (The principle applied when transboundary waters are polluted is that the responsibility lies with the polluter).

### Reduction of flood risks

For transboundary waters subject to the risk of flooding, contracting parties should draw up programmes, jointly if necessary, in order to reduce the risk of floods and ice drifts. Such programmes should involve both harmonized construction measures along the waters and non-structural measures.

### Monitoring and data processing

Contracting parties should establish and implement co-ordinated programmes for the monitoring and observation of transboundary water quality, transboundary water pollution, accidental pollution, floods and ice drifts. Likewise, common methodologies should be agreed upon for data processing and evaluation procedures.

### Exchange of information

Contracting parties should, by means of transboundary agreements or other relevant arrangements, provide for the widest possible exchange as early as possible of data and information regarding transboundary water quality and quantity which are relevant to the control of water pollution, accidental pollution, floods and ice drifts in transboundary waters.

### Warning and alarm systems

Contracting parties concerned should set up and operate efficient warning and alarm systems to counteract special cases of pollution such as pollution from accidents, negligence and offences and to reduce risks of floods and ice drifts. Parties involved could consider the possibility of mutual assistance in such emergency cases.

### Services from competent international organizations

Riparian countries may consider the possibility of jointly seeking the services of any competent international organization in clarifying problems related to prevention and control of water pollution, accidental pollution, floods and ice drifts in transboundary waters.

### Book review

The Division of Natural Resources and Energy of the Department of Technical Co-operation for Development of the United Nations Secretariat will issue a new publication entitled Institutional issues in the management of international river basins: financial and contractual considerations, (Water Series No. 17). The study was prompted by Economic and Social Council resolution 1981/81 which requested the Secretary-General to prepare a manual on the technical and managerial aspects of the development, use and protection of international water resources, drawing on the competence of the organizations of the United Nations system as required.

The following topics are discussed in the manual:

(a) Issues and constraints affecting the development and protection of shared water resources;

(b) Employment and contractual relationships;

(c) Legal aspects of project and programme financing;

(d) Allocation of costs and benefits; and

(e) Ownership of works, facilities and equipment.

Chapter I addresses some of the constraints preventing adequate development of international rivers. It refers to problems such as international boundaries, appropriate programme areas, institutional organization, and data collection and fact sharing.

Chapter II addresses the issues of applicable law and competent jurisdiction as they relate to the contractual and employment relationships of international river basin organizations (IROs). The comparison of different legal regimes shows that international river organizations can be subject to the law of one particular state, to the law of nations, or to their own legal order, depending on each particular case. Moreover, it is not unusual for IROs to apply different rules to different situations since they deal with national and international firms, experts, consultants and employees. Consequently, there might be some flexibility in the selection of the principles to be applied to the contractual and jurisdictional regimes of IROs. However, this flexibility might be preempted by the specific law creating and controlling a particular IRO.

The subject is discussed in terms of applicable law and competent jurisdiction for state representatives, IRO officials and employees, seconded personnel, experts of international organizations, and workers of contractors or subcontractors.

The same perspective (applicable law and competent jurisdiction) is used to discuss contractual relationships of IROs. The analysis includes contracts based on the law of one Member State, on international law, or on other legal systems selected by the parties.

Chapter III reviews the financial factors affecting and influencing the development of international water resources programmes.

The primary objective is to review the availability of financing for projects and programmes involving international watercourses and to set forth clearly, albeit in summary form, the expectations, requirements and policy considerations of various lending or donor institutions in connection with projects or programmes of this kind. Obstacles to implementation and repayment are also examined.

Although funding can be provided by several sources, global water resources development suffers from insufficient financing, a situation partially due to inadequacies in planning, project identification and definition of national and regional priorities.

Even with financing and approval, a project can still face uncertain success because of implementation difficulties which might lead directly to repayment difficulties. Implementation might be impeded by disagreements that arise within the beneficiary States or between them and other entities. Such difficulties could be avoided if institutional arrangements were outlined from the onset and the legal obligations of all parties involved clarified.

In addition, the water resources sector is not alien to the financial problems of the many countries facing external debt crisis. Therefore, as global indebtedness increases, so too do concerns about the threat of defaults on loans. Consequently, borrowers need to be aware of the various types of disagreement that may occur, and the possible consequences of failure to avoid, or at least to resolve, such differences.

Chapter IV is a discussion of the different alternatives for the allocation of the costs attributed to, and the benefits resulting from, international water resources programmes.

The discussion of cost-related issues: research, construction and operational activities, includes their distribution among States, users and sectors. It also refers to the relationship between cost allocation, compensation for losses, and collection of royalties for the use of water-related resources.

The allocation of benefits is analysed in terms of the different criteria used for their distribution. These criteria are not always proportional to the allocation of costs, since the distribution of both costs and benefits is the result of a negotiation process which is only partially based on financial considerations.

Lastly, the chapter analyses possible environmental consequences of water resources projects and of the various ways by which they have been assessed, compensated and paid for in different programmes and projects.

Chapter V is an overview of the rules and norms applicable to the ownership of works, facilities and equipment related to international river programmes and projects. It is noted that there are no general principles of international law applicable to the subject, and that as a consequence each treaty addresses the matter according to the needs and situation of the individual case to which it applies. Within this context, questions such as public and private domain, sovereignty, jurisdiction, territorial supremacy, territorial sovereignty and exercise of police power might pose difficult obstacles to the inception, implementation and operation of international programmes.

Consequently, it is recommended that international treaties define, as precisely as possible, the regime of ownership of waterworks, facilities and equipment. Also, there is a long-term need to develop principles of international law, to be applied when provisions on the topic are either non-existent or defective.