in a context characterized by a combination of conviction and the potential to implement recommendations and guidelines on prevention.

In summary, therefore, the design of functioning integrated water resources management systems and the attainment of governability in order to secure this management requires, first of all, breaking away from paradigms, myths, and beliefs that, though valid in theory or in isolated cases, lose their validity in real world situations that are much more complex. And second, there needs to be acceptance that, in order to make ‘rational’ decisions, interdisciplinary working methods must be used that foster appreciation and respect for the contribution made by all sciences and disciplines, both hard and soft. Such methods exist and are available for organizing interdisciplinary activities and making participatory, transparent decisions. It is regrettable to note that for now many of the failed attempts at achieving integrated water management goals are due to the use of approaches that are piecemeal, applied out of context, and even naïve.

Integrated Water Resources and River Basin Management in Latin America

Sustainable Development and River Basins

The sustainability of development remains an academic concept unless it is linked to clear objectives that must be attained in given territories and to the management processes needed to achieve this. Management of the natural resources located within the area of a river basin is a valuable option for guiding and coordinating processes of management for development in the light of environmental variables. In order to turn environmental policies into concrete actions it is necessary to have suitable management bodies, which are normally very complex. The establishment of such bodies means generating a mixed public and private system which should not only be financially independent, socially oriented, and sensitive to environmental aspects, but must also act in a democratic and participative manner. In the past, the idea of establishing bodies to guide the management of the natural resources of a river basin (especially water, of course) has aroused the interest of the countries of Latin America and the Caribbean, with varying results. This interest has now become an urgent necessity, in view of the greater competition for multiple water use and the need to control water pollution and manage the environment correctly.

Sustainable development does not refer to a tangible and quantifiable goal to be achieved in a given period of time, but rather to the possibility of maintaining a balance between factors that explain a certain level of development among human beings, a level that is always transitory, evolving, and, at least in theory, should always lead to an improvement in the quality of human life. Sustainable development is thus the result of a set of decisions and processes which have to be carried out by generations of human beings, under ever-changing conditions and usually insufficient information, subject to uncertainties, and with goals which are not shared by a population that is showing a growing trend to individualism.

One of the biggest concerns at present, at least to judge from policy statements, is to find viable development options based on equitable and lasting economic growth. The latter consideration has gained in importance in recent years because of the realization that many alleged advances, especially in terms of changing production patterns, have been outweighed by the damage they cause to the environment. The greater awareness and understanding that now exists of mankind’s interaction with the environment, and the vulnerability of forms of development which do not take this into account, have been made more explicit by the addition to the word ‘development’ of the qualifying adjective ‘sustainable’. Since sustainability should be implicit in the very concept of development, this adjective should be only a transitory addition that will be needed only until the vital importance that development should be of a lasting nature is definitively incorprorated in the concept.
On the other hand, the sustainability of development remains only an academic idea or abstract aspiration unless the concept is linked both with clear objectives that must be attained within a given area that contains the natural elements and resources needed for the subsistence of the human race and with the management processes needed to achieve those objectives. Thus, political intentions must be transformed into concrete policies for implementation, and it is here that the greatest challenges arise.

In the Latin American and Caribbean region, there has been widespread reference to environmental problems, theories have been put forward on environmental issues, laws have been enacted, and even some ministries of the environment have been set up. What has not been done, however, is the laying of the necessary bases for the management of each of the natural resources—water, soil, forests, fauna, minerals, and energy—or of certain key natural areas such as coastal zones, river basins, and deserts.

This means that very broad goals have been set without deciding on the necessary steps for reaching them. Territorial organization for the management of each resource and later of the environment in general; organization and training of the population; research on ecosystems; the establishment of systems of management for given areas; the strengthening of public institutions (especially local governments) to provide support for environmental management; awareness and heightening of the economic value of natural resources; the keeping of natural heritage accounts; and the preparation of operating manuals and rules are essential aspects for making real progress in the management of natural resources and the environment in general.

The management of natural resources in the context of the dynamic evolution of a river basin, more generally known as river basin management, is one of the possible options for organizing the participation of users of natural resources within the process of environmental management. A river basin is uniquely fitted to serve as the basis for the co-ordination of the actions of all those involved in the use of a shared resource—water—and for the evaluation of the effects of environmental management measures on that resource. Water quality largely reflects the environmental management capacity within the basin in question.

A first step towards river basin management is to limit action to the management of the water resources existing within the area of the basin. Water management is a complex process designed to control the cycle of a natural resource whose availability is erratic and irregular over time and space. Furthermore, water is vulnerable to the treatment it receives, since it can easily be polluted, thus affecting all its actual or potential subsequent uses. The aim of this process is to solve conflicts among multiple users who, whether they like it or not, depend on a shared resource. Consequently, even though they may have water use permits or rights, they nevertheless affect and depend on each other. The supply usually comes from a common system, to which surpluses and wastewater are returned. Surface, ground, and atmospheric water resources, together with the areas where water is diverted and returned, thus form a single unit.

The actions taken have enormous repercussions on human health, the environment, and production, so that they must be approached in an outstandingly technical manner. The high cost of the works involved, together with the long lead times of water projects, make it all the more necessary that management should be in the hands of experts whose tenure does not depend on political changes.

Finally, the water management process requires that many different agents should act in a co-ordinated manner in spite of their differences of approach and the fact that some of them are not aware of the effects of their decisions on the hydrological cycle. This is why it is so important to have stable co-ordination mechanisms and, at the very least, a permanent river basin centre or authority.

**Between Ideas and Facts in Integrated Water Resources and River in Latin America**

A recurrent theme at recent international forums has been the so-called 'global water crisis' which stems apparently more from
a mismanagement, or lack of it, of water resources and the spectre of an increasing water shortage. Discussions focus then on the lack of appropriate mechanisms for resolving conflicts among water users with respect to quantity, quality, and time.

Since average annual rainfall in Latin America and the Caribbean is estimated at about 1,500 millimetres, which is over 50 per cent above the world average, reference to a water shortage in that region in the absolute physical sense is not very appropriate, although one must recognize the fact that the natural distribution is highly uneven. There is no denying, however, that water management systems are often poorly organized if not non-existent. This results in a lack of information on water balances, an almost total lack of control of water quality and, scant preparation for natural disasters such as droughts and floods. In addition, the region still lags behind in drinking water supply and above all, in the development of adequate sewerage and drainage systems. Furthermore, deficiencies persist in the water management systems for agriculture, both in irrigation and drainage, one of the outcomes of a long tradition of State paternalism.

A major obstacle to the improvement of water resource management is the institutional legacy of systems, which traditionally were centralized, and in many cases assigned to a user sector such as agriculture or energy. Even today, there are draft bills which suggest that national water, or water resource councils should be run either by the agricultural sector or the energy sector. In addition, very often, such councils claim that they should be composed only of public officials, without water users or civil society, in particular the municipalities, having any say in the decision-making process.

Another important obstacle is the legacy of a ‘subsidy’ culture for water projects (main hydraulic structures) and rates. This is especially true for the irrigation projects. In fact, almost none of the costs of the hydraulic structures to improve irrigation schemes are being recovered. In many countries, there still exists resistance to the establishment of real prices for water use. In part this is due to the fact that the money collected goes to the central budget. Stakeholders never know if the money collected is being wisely used for water management purposes. The lack of transparency in the financial management is a real obstacle.

For these reasons, much of the work in Latin America should be geared towards advising governments to formulate their water policies, in an attempt to achieve a balance between the advantages of markets and private participation, particularly in drinking water supply and sanitation, hydroelectricity, irrigation and drainage, and the need for government regulation to achieve social and environmental goals. Another part of the work consists in assessing the market’s real capacity to act as a mechanism for ensuring the efficient use and transfer of water rights.

Proper policy-planning requires information on existing water resources, the existence of a land register and public register of water users, effective control of water quality, and a system of participatory management at the river basin level. To achieve such results, it is necessary to improve the institution in charge of water resources management, especially at the river basin and at the agricultural levels since other users such as energy and water supply are better organized.

Today, in Latin America and the Caribbean, the water issue is immersed in a series of plans related to integrated environmental management goals, an aim which assumes that the capacity to manage multiple water use will be achieved as a by-product. For the sake of this idea, in more than one case the existing capacity for water management has been reduced in the process of adapting it to ‘integrated environmental management’.

There is currently a wide range of situations, many of them going backwards in the region with regard to proposals for legislation, standards, technical specifications, organizations, capacities, research, education, and effective application of processes for multiple water use management, even within a single country. Due to this, progress is slowly being made in the consolidation of some bodies for integrated water management, both at the national level and at the level of states, provinces, and river basins.
Brazil and Mexico are the only two countries with specific mandate in the water law to create river basin authorities. Unfortunately, it has to be recognized that, in more than one case, at the national level, and at the level of river basins, government capabilities have been reduced. The current reduced governing capacity for multiple water use management is obviously not exclusively due to its being diluted by incorporation into the broader environmental issue. There are deeper causes that have existed for decades: some originate with the public and private officials responsible for water management and use; and others are external, and stem from the socio-economic situation of the countries or the river basins where the water resources are managed.

In contrast, and paradoxically, it is interesting that although almost all countries of the region agree that some organizations are needed for the management of water at river basin levels, progress has been very slow. It is certainly not a simple task, nor does the relevant legislation often exist to create such organizations with due legislative and financial support. It is thus important to create or enhance the region’s capacity to support these initiatives.

The creation of a water management organization at the river basin level does not guarantee its continued existence as it requires continuous support for its consolidation in the form of technical assistance and financial resources for at least a decade. Many of the laws establishing these bodies do not provide for clearly defined roles, or the assignment of legal status, stable sources of income, personnel training, and in general the methods, criteria, standards, and operational procedures are not prepared beforehand in order to formulate plans and standards with due legality.

It is therefore suggested, as part of the necessary task of improving multiple water use management, that funding be provided for an appropriate number of researchers to systematize and standardize the experiences available. This would be possible if one or more research or logistics centres were established in Latin America for multiple water use management and integrated river basin management. These centres could be set up with the support of interested organizations and could be attached to a university or some existing regional or international organization, in order to serve as an information centre both for regional water resources networks and for educational centres to support manager training for river basin organizations and multiple water use management.

Although sizeable networks do exist now for issues relating to integrated water management, there are still very few regional studies available in this area and there is even less access to criteria, standards, procedures, and working methods at the river basin level. The above centre should help move on from the present situation of dispersed information, confused ideas, lack of follow-up on the progress made, and the generally unstable procedures for training, consolidation, and functioning of water management bodies at the river basin level, and organizations for multiple water use management in some countries of the region.

Water resources management has come to figure as a major item on the agenda at national and international meetings, after a long period during which the issue went relatively unnoticed among other environmental topics. Recent international meetings, however, have neither touched on new aspects nor, apparently, made any major strides in improving water management policies, particularly not in the Latin American and Caribbean countries. The concerns of national, regional, provincial, and local governments have proved to be a great deal more elementary than the lofty declarations of principles that usually arise from these events.

Case studies and experiences that already exist indicate the need for preparing a preliminary draft water legislation, evaluating

\[1\] One proposal is to establish one centre for the Andean region (in Cuenca, Ecuador), one for Central America, one for Mexico, one for a Caribbean island, and one for Mercosur based in Brazil.
the implementation of the existing legislation, assisting with the organization of water management systems at the river basin level, transferring hydraulic infrastructure systems to users, participating in river and lake restoration programmes, recovering natural water courses in urban areas, developing plans for international river basin management, and advising governments on the privatization of water-related utilities. Consultancy requests have increased exponentially in recent years. Central governments are no longer the only ones to request support. In the wake of decentralization and the privatization of water management and use, the demand for consultancy now comes from public and private organizations at national, state, provincial, departmental, and local levels, as well as universities, multilateral and bilateral aid agencies, non-governmental organizations, water-user commissions, public utilities, banks, and river basin organizations.

This growing demand reveals a need for principles, processes, and practices to enable the different actors to proceed correctly in multiple water-use management and public utility regulation. As a general rule, the countries of the region lack these basic instruments by which to co-ordinate the work on a large scale, covering many regions and situations simultaneously and making the most of the scarce resources available.

In spite of the lack of support, the need to improve the management of water resources is acquiring prominence on Latin American and Caribbean government agendas, not only nationally but also at the state and local levels. The various effects of greater private sector participation in water-related public utility companies and in the need for the management of the hydraulic structures as well as the irrigation systems, together with the decentralization of environmental management functions to the municipal level, including the management of river basins and streams, has generated increasing demand for information and technical assistance on this subject. This demand has been further boosted by the creation of numerous but weak river basin organizations, or plans to do so, by debates on water law reform, and by the disastrous effects of flooding and increased water pollution. Even though from the hydrological viewpoint, water resources should be managed in accordance with the concept of the river basin, it is not so easy to accomplish such goals when confronted with the political jurisdiction and administrative organization prevailing in each country. There are invariably problems in implementing such an approach because most of the countries of the region have a long-standing tradition of centralized public administration. Attempts to apply the concept of water management at the river basin level in these countries have generally been only partially successful.

This revival of interest in the river basin as the most appropriate unit for water management is due mainly to the fact that it is precisely at this level that it appears more feasible to achieve a better integration between all parties, whether public or private, and whether their concern with water management is for purposes of production or conservation. Furthermore, water resource management at the river basin level is increasingly considered to be the most appropriate way of absorbing the environmental costs of use of water resources. Nevertheless, there is still a strong emphasis on the physical components of the systems or on activities and investments in the sector, while the organizational component for the establishment of river basin entities, which undoubtedly constitutes the most important aspect of this approach to water resource management, has scarcely been developed.

Different Approaches and Definitions for Water Resources Management at River Basin Level

Management of water at river basin level is not new in the region, but despite this there is still no consensus on definitions that spell out the objectives of that management. The lack of conceptual clarity on the subject impairs the exchange of ideas and experiences, particularly between professionals of different countries, causes overlapping of functions, and hinders the formulation of policies and laws on the subject.
remembered, however, that if natural resources are not managed in a co-ordinated manner, not even water, then it will be impossible to undertake environmental management. The first step should then be to manage the water resources in an integrated manner and then the other natural resources associated with them.

A review of the history of river basin organizations shows that many never become more than, at best, 'action-coordination systems', and they somehow managed to get some studies on river basin carried out. Historically, some river basin organizations were even created for the specific purpose of sponsoring a study or plan, often carried out by groups of consultants hired temporarily for the purpose. In other words, many short-lived 'river basin organizations' were only intended to direct the execution of inventories, studies, assessments, or diagnoses, or draw up river basin development plans that were somewhat more complete than usual. Many of the studies on individual river basins that are currently available have been conducted by institutes of natural resources or by government ministries; these tend to produce the same results as the integrated river basin studies conducted by temporary river basin agencies.

In other cases, river basin organizations are, in practice, the management structures of investment projects corresponding to major water works in the river basin. The names given to these organizations also tend to be varied, the most common being corporations, commissions, or agencies, or simply 'programmes' or 'special projects' that have been responsible for executing water development investment projects in one or more river basins. Likewise, there have also been many national-level projects devoted to a single type of activity, which have been responsible for simultaneous studies in many river basins. These are what are known as 'national programmes' such as those targeting flood control, watercourse stabilization, soil conservation, drainage and land reclamation, river basin management, or rural electrification, to mention a few examples. Some of these projects have been co-ordinated at river basin level, but most of the national programmes have been run independently.

With the increasing drive for municipal participation in environmental management and the acknowledgement of the vital importance of broad public participation in river basin management programmes, a new focus has developed on the issue of managing river basins and bodies of water that are shared by urban areas and several municipalities. Local officials have become the most recent 'clients' in need of working methodologies on river basin management and recovery of watercourses, with the participation of the inhabitants of their administrative areas.

A variety of historical circumstances have brought about substantial progress in establishing and operating river basin organizations, such as the 25 river basin councils recently created in Mexico. There are also some river basin organizations that have been in operation for several decades. In general, in the course of their existence, they have undergone several changes of name, responsibility, or degree of autonomy. None of them, however, are guaranteed to survive unless they adapt to the changing situations in politics, the economy, and demands of the population. Although the efficient operation of a river basin organization does not ensure its continuity, it does give it a certain degree of security in the face of the institutional changes that may occur in any given country.

Prior to proposing the establishment of a new river basin organization in a country it is, therefore, useful to analyse the historical development of similar organizations. It is a worthwhile exercise to look for explanations of why some of these bodies continue to exist years after their creation, while others have disappeared.

**Processes Involved in River Basin Management**

Setting up any kind of river basin organization, with a view to river basin management under any of its modalities, entails a series of ongoing processes that can be implemented in parallel. The processes that are particularly worthy of further analysis are: (i) communication and awareness-raising; (ii) formation of alliances...
and agreements; (iii) legalization of operations; (iv) scenario development, evaluation, and diagnosis; (v) operational consolidation of each water user; (vi) administrative organization; (vii) economic valuation and preparation of strategies; (viii) operation of the shared hydraulic system; (ix) conservation of water bodies, natural habitats, and biodiversity; and (x) pollution control, stream corridor restoration, and recovery of rural and urban drainage capacity. These processes can be divided into three groups: a central coordination process, a group of socioeconomic processes, and a group of physical and technical processes.

**Communication and awareness-raising.** Awareness-raising campaigns through whatever media are available are to be recommended before proposing the establishment of any river basin organization. It is a good idea to explain to the actors involved in managing the water resources of a river basin why an agency to co-ordinate their efforts is useful and necessary. This stage also serves to gather information, identify conflicts, and compile literature. It is worthwhile to establish which bodies or organizations are operating in the basin, which of them distribute the water, how they measure distribution, if they keep water quality records, if they have emergency programmes, and, in general, how they operate the existing water systems and with what resources.

**Formation of alliances and agreements.** The actors involved should set up a preliminary alliance to take action that will gradually progress toward the establishment of an overall system of river basin management. The scope of the alliance can be widened as time goes on but, initially, it is usually easier if the actors set a specific objective for their action (clean-up of a lake or river, reforestation of a river bank, administering the water of a river, or canal used by several users, managing the banks and course of a river or any other subject that is of interest to more than one actor). The actors may include public or private groups, nongovernmental organizations, municipalities, universities, and professional organizations. Alliances must be formally established and set concrete goals for their work. Ultimately, this activity is expected to give rise to roundtables for co-ordination and dialogue. The list of actors who are invited to take part must be flexible, since it will vary from one situation to another.

**Legalization of operations.** The legal framework for a river basin organization can be consolidated gradually. If there is no specific legislation under which to create a river basin management system, the parties could start with a simple agreement to carry out a project. The final objective of the process, however, is to give the river basin management system legal personality and clearly identifiable competencies to manage the water in the basin (collection of charges, monitoring, etc.), either directly or by coordinating the actions of responsible organizations. There are several ways of affording legal status to actions relating to river basin management, including ministerial resolutions establishing special programmes and projects and responsibilities which are assigned by law to municipalities, ministries, or institutes, which then give their actions legal status through the modalities of ordinances, regulations, and other directives.

**Scenario development, evaluation, and diagnosis.** Once a minimum degree of commitment and agreement has been obtained among the actors in the alliance about what they want to achieve in the river basin through their co-ordinated action, the existing situation must be evaluated in order to arrive at a diagnosis. This will require the participation of an interdisciplinary team and can be defined as a management procedure for sustainable development. The actors must be encouraged to participate in a public debate about the issues to be addressed. It is also important to promote the use of geographical information systems and, in general, of all available techniques for describing what is happening in the basin, who the affected and responsible parties are, and what are the costs and benefits involved in the programme of action.

**Operational consolidation of each water user.** The aim of this process is to help each actor involved in managing the water and the river basin to ensure that they are complying fully with their
responsibilities. For example, support should be given to organizations of agricultural users, drinking water and sanitation services, mining, fisheries and recreational users, and, in general, all those actors who in some way alter the flow of water in the basin, to ensure that their practices conform to the highest standards possible. This consolidation process includes providing support to local governments to help them comply with their environmental responsibilities and to ministries—such as health ministries—to help them discharge their role of environmental quality control, and to other entities including non-governmental organizations.

Administrative organization. All the stages must be carried out within an adequate administrative framework, including the collection of charges, registering of actors, accounting, financial controls, monitoring and ensuring compliance, procurement of equipment, and hiring of staff and consultants. The administrative system will become more complex as the process advances. If the organization is to survive, it must make itself indispensable, and that will only happen if it generates confidence in its financial management and the quality of its work. The professionals who make up the administrative system must be suitably qualified.

Economic valuation and preparation of strategies. Plans are written strategies, and are presented in the form of programmes of work or projects which have due technical and financial backing. Once it has started, the process of planning is never concluded. Planning should be seen as equivalent to building a system of information and rules, standards, and criteria that facilitate decision-making among multiple actors. The factors which are used to calculate costs and benefits, design strategies, and draw up a plan come from the stages of identifying the actors, their criteria, problems, and objectives, building shared scenarios, evaluating the existing situation, making diagnoses, and identifying obstacles and restrictions. The plan should serve to communicate intentions and co-ordinate where necessary.

Operation of the shared hydraulic system. Qualified technicians are needed to operate and maintain the hydraulic system built in the river basin and to support water conservation and management, and the many users in the river basin must also participate in the process. The basin's rivers and hydraulic systems must also be equipped with a series of water monitoring stations and satellite information systems, or these must be reinforced if they already exist. In general, the organization needs to be sufficiently equipped to be able to keep track of situations and plan ahead. Modern communications systems are essential to enable the overall system to function correctly.

Conservation of water bodies, natural habitats, and biodiversity. It is not enough to merely operate the hydraulic systems built. An enormous amount of work is required to recover damaged areas along riverbanks and riversides and rehabilitate biological habitats. It is essential to mitigate the effects of conflicts related to water and river basin management by ensuring that plans for the use and occupation of the territory respect—as far as possible—the natural catchment and water-flow conditions in the basin. This is necessary to maintain all the river basin's original functions, in particular to conserve biodiversity and the landscape. This process requires town planners to take account of natural watercourses, with normal and seasonal flows, in their decision-making.

Pollution control, stream corridor restoration, and recovery of rural and urban drainage capacity. In most river basins, especially in urban areas, this process entails reversing situations that have already profoundly altered watercourses and flows. This is a long task and likely to be the most challenging of all. It is not possible to conserve basins or watercourses if they have already deteriorated totally. While industrialized countries are in the process of rehabilitating stream corridors, most developing countries are in the process of destroying them.

This analysis is clearly not intended to be complete. Neither does it address how to combine all these processes in a flow diagram of work, incorporating the activities, staff, and time for each action. The implementation of the stages described above will be greatly aided if theoretical and practical data is compiled.
to support the establishment of the river basin organization. This can be complemented with additional information such as an evaluation of the knowledge of water users, the actors who will be involved in managing the water in the river basin, their criteria on multiple water-use management, the problems and conflicts involved in shared management, and the objectives they are pursuing. It is also necessary to carry out a comparative analysis of the past and present experience of attempts to create such organizations within the country, and if possible in more than one country, whether these have been successful or not.

A particularly important point for making the processes of creating and consolidating a river basin organization as smooth as possible is to begin while the hydraulic works are still being built, whether they are State or privately operated. Commonly, the 'master plan' for integrated river basin management is not thought of until the works are finished. Still worse is that this often means that no resources are available for setting up the operative system—which amounts to much more than making a plan—including funding for complementary communication works and monitoring systems. At least 5–10 per cent of the cost of the major hydraulic works should be allocated to establishing the management system—including the necessary infrastructure. No less than ten years should be allowed for consolidation, especially in river basins featuring a combination of formal and informal actors and low-income groups.

The Long Process of Creating the Legal Framework for River Basin Organizations

In order to analyse the institutional structures for river basin management, it is essential to attempt to distinguish between the many variations they adopt. There are three basic types of structures in river basin management organizations:

- **Management structure.** Management structures vary depending on the extent to which the different actors participate in the management process. The name given to the river basin organization does not necessarily reflect their degree of participation in the decision-making process but it does, at least, indicate the original intention. The most common formulas are 'river basin commissions', 'river basin committees', 'river basin councils', and 'river basin agencies', which display a wide range of types of participation by the actors involved in the decision-making process. In other cases, the management structure consists of a board of directors, which may be composed of government officials only or may include users, non-governmental organizations, universities, etc. The board of directors must have the power to decide, resolve, and enforce agreements (it should not be merely an advisory or co-ordinating body).

- **Operational structure.** An operational structure is the body which puts the decisions of the management group into practice. It executes actions and processes, either directly or through consultants and contractors. The operational structure of a river basin organization must have highly qualified personnel. They are the 'agency' in the strict sense, although they may be known by other titles, such as executive office, technical group, technical office, corporation, or even institute, for example. The operational structure is the one responsible for providing the studies and information that the management group needs to take decisions.

- **Financial structure.** The body responsible for raising financial resources is one of the most difficult to design. In the countries of the region it is common to find that financial resources for river basin management are only available at the phase of executing hydraulic works, which is obviously not the solution for a river basin organization that is intended to be permanent. Few 'models' of financial structure are transferable from one country to another. The polluter pays principle, aids and incentives are a good option but are clearly insufficient and even inapplicable to many of the region's river basins which are characterized by informal settlements and producers. Any financing proposal must
take into account the situation of the country, region, and river basin.

The creation of formal institutional conditions for river basin organizations is at varying stages of progress in the region. Without a doubt, the best scenario involves national legislation serving as a regulatory framework for the process of creating river basin organizations while also providing for the possibility of adopting alternative approaches at the state, provincial, and regional levels, in line with the country's political and administrative structure.

In federal countries, and countries with regions which have greater or lesser degrees of autonomy, the legal framework for establishing river basin organizations is usually established at the respective administrative level (state, province, or region). In some cases, the framework is jointly created by mayors who share a river basin or by simple agreements between the main users of water in these areas.

The legal provisions establishing these organizations should usually be part of a wider framework of water legislation, as occurs in Mexico and Brazil. However, there are also situations in which the national level legal provisions come under legislation on decentralization, environmental laws which include provisions on territorial organization, investment promotion legislation, laws on national investment programmes or projects, or other variations arising from proposals by different ministries or regional governments.

Transboundary river basin development agreements can also provide a basis for formalizing the framework of river basin management. These agreements tend to be lasting, indeed much more so than agreements concluded at the national level. Some of the river basin organizations which have survived longest—albeit with some changes of name and responsibilities—are precisely those which come under international treaties involving bilateral or multilateral commitments.

Another major catalyst—and technical factor—in stabilizing and conferring legal status on river basin organizations are bilateral technical assistance agreements. These agreements have the virtue of providing a legal framework for the creation and operation of river basin organizations through agreements with banks or with partner countries. This arrangement puts the respective organization in a better position to withstand at least one direct attack, which can come in the form of a change in management, a change in attitude by some official, or the sudden structural and operational transformation of the public agency responsible for controlling it.

The process of providing a legal framework for any type of river basin organization is slow and many fall along the wayside. The fact that a law is passed to establish such an organization represents no guarantee whatsoever that it will be implemented. The approval of legislation is only a preparatory step, which must be made in parallel with many other actions, particularly in relation to organizing and implementing the formulas needed to create and operate these organizations. For river basin organizations to become consolidated, they must also be given the capacity to raise their own funding.

Difficulties in Establishing and Operating River Basin Organizations in Latin America

The establishment of river basin organizations very often faces opposition from some of the main users, sometimes from interinstitutional rivals and sometimes because they have to confront or compete openly with regional authorities. Many organizations which have been in operation for years continue to face the same set of conflicts and opposition. Many river basin organizations have succumbed to this problem, as the statistics of some countries show. The organizations which last the longest are those which can rely on their own fund-raising system.

Probably some of the greatest obstacles to the establishment and successful operation of river basin authorities are lack of awareness on the part of public and users of the economic advantages of having such organizations; lack of clarity about
their role, which generates potential competition with other authorities and with the public and private sectors; an unrepresentative management level (council, committee, or board); problems with the means and legal basis of raising funds; and the fact that water management at river basin level is often dominated by a sector which has no interest in forming part of a system of shared management.

To establish a river basin organization it is, therefore, necessary to run several processes in parallel. It is strategically advisable to start by acknowledging any type of water administration that already exists in the river basin—whether this is a single sector user, such as irrigation, hydroelectricity, or drinking water supply and sanitation, or various sectors—and involve them in the process right from the beginning. Many past failures or delays in creating river basin organizations are attributable to the neglect of something as fundamental as this.

It is obviously essential to have agreements in place among the public institutions which are involved in water management. Conflicts between State agencies are very injurious to the process and often occur between ministries and agencies, even from the same sector, to the extent that one party may even boycott the initiative. Conflicts sometimes arise between local authorities or provinces and the central government for political reasons, especially if the mayor or governor belongs to the ruling party's opposition.

In general, most of the financial agents of major hydraulic works are guilty of a glaring lack of provision for financing the establishment of river basin organizations to operate and maintain the hydraulic works once they are built. This is usually considered to be allocable to current expenditure of the fiscal budget and not to project expenditure.

Conflicts over the creation of river basin organizations also arise because of the effects of existing legislation, or the lack of it. Sometimes an existing law that provides for the creation of a river basin organization is not flexible enough to allow it to achieve its purpose: it may establish conditions for the participation of actors, composition of boards, or charges which are impracticable. In other cases, there is no legislation on which to base the creation of a river basin organization, afford a legal framework, or provide financial support.

From the hydrological viewpoint, river basins are ideal territorial entities for water resources planning and management. However, in situations where political-administrative jurisdictions do not coincide with the physical boundaries of river basins, many of the decisions that affect the hydrological cycle, water use, and the inhabitants of the basin fail to take into consideration this integrated system as a whole. Furthermore, water resources management is normally fragmented along the lines of user groups, sectors entrusted with overseeing the resource, types of use, the source of catchment, and other similarly arbitrary criteria. An integrated system and a shared resource are administered in a piecemeal fashion, and as a result more situations of conflict over water resources management occur when they should be avoided, minimized, or resolved. The challenge we face, therefore, is to create competencies for governability over areas delimited by natural factors, such as river basins, which do not correspond to traditional forms of government over political-administrative boundaries, such as states, provinces, regions, and municipalities.

How Can the Failure of Water Resources and River Basin Management Processes be Prevented?

Attempts to establish water resources and river basin management systems usually fail because proposals for the creation of the pertinent organizations, whether in the form of authorities, agencies, or any other body, are presented in a relatively superficial manner. Generally the aim is to give systems a holistic focus. Hence they should: (i) be economically efficient, self-sustaining, and competitive; (ii) have a social orientation, promote social equity, and be environmentally responsible; and (iii) involve both public and private sectors, promote civic participation, and