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THE ADMINISTRATION OF WATER RESOURCES IN LATIN AMERICA AND THE CARIBBEAN

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I. INTRODUCTION

This paper is divided into two parts. The first is a discussion of the changes in the way that water resources are administered in the countries of Latin America and the Caribbean which have taken place since the United Nations Water Conference of 1977. The second is an annex in which the current structure of the institutional system for the administration of water resources is shown on a country-by-country basis. Unfortunately, the information available at the time of the preparation of this document varied from one country to the next, so the coverage is uneven. Nevertheless, it is hoped that the information provided here will prove a useful guide to those interested in water resource administration in Latin America and the Caribbean.

In the years since the United Nations Water Conference, the administration of water resources has undergone considerable modifications in the countries of Latin America and the Caribbean. Until very recently, however, no general trends could be discerned in these changes for the region as a whole, and the resolutions adopted at the United Nations Water Conference in the Mar del Plata Action Plan could therefore not be shown to have had any clearly discernible influence on the direction taken by policies on the administration of water resources in the countries of the region. More recently, however, it has become possible to discern a general tendency towards the decentralization of water management responsibilities, as well as an apparent application of some of the basic precepts for water resource administration enunciated at the United Nations Water Conference.

Nevertheless, in Latin America and the Caribbean there are few genuine examples of institutions which take on integrated approach to water management, the most basic notion in the Action Plan (United Nations, 1977). There are clear signs, however, of an increasing recognition of the need to centre public-sector activities on the resource itself rather than on the uses to which it may be put. It is not surprising, perhaps, in societies where the prime social goal continues to be to raise productivity that government involvement in water management has for so long concentrated on attempting to raise the productivity of the resource by means of direct public action. It has taken a major economic and social crisis to change the perception of the public sector's role in water management to one in which the foreign idea of resource-oriented, multi-purpose management can be given serious

consideration. Previously, these ideas, which were brought into the region largely through the activities of international agencies attempting to apply the Action Plan, had no more than a very limited influence. The need to reduce public expenditures has prompted a reconsideration of the role of government in water management —as well as in most other public-sector activities— in Latin America and the Caribbean.

II. ADMINISTRATIVE SYSTEMS

Despite considerable variations from country to country, until the most recent reorganization of the public sector it was possible to group the administrative systems of the countries of the region into three very broad categories. These categories were as follows:

- Administrative systems characterized by the existence of many public and, in some cases, private institutions active in water management, with only weak central coordination;

- Administrative systems having a mechanism for the central coordination of policy, but in which institutional responsibilities for the administration of specific water uses were widely scattered;

- Administrative systems characterized by a complete centralization of authority and little or no dispersion of responsibilities either in terms of individual uses or by region or river basin.

The first category, in which the administration of water —in terms of both the resource itself and its uses— is divided up among a large number of institutions, was the most common. Not all these institutions were necessarily a part of the central government bureaucracy. Provincial, regional and municipal governments and even, on occasion, private agents played a significant role in water administration as well. However, it was a clear characteristic of such systems that no one institution dominated and that in those cases where a central coordinating mechanism did exist, it was relatively weak. Argentina, Bolivia, Chile, Colombia, El Salvador, Guatemala, Honduras, Paraguay and Uruguay all fell within this category. There were, however, considerable differences among them. Indeed, these countries possessed an extremely diverse collection of institutions covering the whole gamut of models proposed by international technical assistance and financial agencies.

The coordination of activities between institutions or across sectors is of obvious importance in such an open system of management and has been attempted in a great variety of ways although most of them have proved to be ineffective. Inter-ministerial councils, specific coordination agencies,

national planning offices and ad hoc arrangements for carrying out specific projects are only a few of the mechanisms that have been applied.

Within these administrative systems, which might rightfully be described as "fragmented" in terms of their distribution of functions, there were considerable differences in the degree of centralization or decentralization of decision-making authority and in the territorial units within which the different institutions operated.[1] In most of the countries falling into this group, the decentralization of specific functions and their delegation to autonomous public agencies (and in some instances even to the private sector) was common, particularly in the case of the management of hydroelectric power generation, the public water supply and irrigation. A form of territorial decentralization whereby authority was delegated to regional development or river basin agencies was quite rare in this group of countries, but such decentralization was characteristic of Colombia.

The second category, which had somewhat stronger central coordination but with separate systems at the federal and state levels of government, included Costa Rica, Panama, Peru and Brazil. In these countries policy coordination was carried out through formal mechanisms at the inter-ministerial level, most of which reported directly to the president. The existence of such coordination mechanisms in the countries of Latin America and the Caribbean predates, however, the specific recommendations made in the Action Plan. There is no record of any country adopting such an institutional structure in the 1980s, although Brazil did modify its coordination structure. The Water Council in Peru (Consejo Superior de Aguas) is one example of such a coordinating mechanism. The Bureau of Water, Soil and Irrigation of the Ministry of Agriculture acts as the secretariat for the Water Council, and this serves to enhance its responsibility for the management of water resources. A special variant of this type of management system is found in Costa Rica and in many of the smaller countries of the Caribbean, where coordination is achieved through the water supply agency which has responsibility for the predominant water use (United Nations, 1986).

In four countries —Cuba, Ecuador, Mexico and Venezuela— responsibility for the administration of water resources was centralized in a single institution. The specific form of the institutional system varied among these countries, but the important feature was the consolidation of authority over the resource and its use in one central institution. The classic example of this type of institutional arrangement is provided by Mexico. The Ministry of Water Resources was wholly responsible for the administration of water resources in Mexico from 1947 until its dissolution. This Ministry possessed the authority to define policies, to define and charge for uses, to execute works, and to conduct research into all areas of water resource use and

conservation. It was responsible for the formulation and execution of the plan or programme for water resources produced by each government in Mexico and, in contrast to the other countries of the region which had national water plans, in Mexico there were no competing sectoral plans (ECLAC, 1986, table 15). The Ministry was one of the most powerful political institutions in Mexico.

These marked differences in institutional structures among the countries of the region made it impossible to claim that there was one prevailing style of water management or water administration in Latin America and the Caribbean. The disparities in the structures of the countries' water management systems reflected differences in their styles of administration. In general, however, the degree of government involvement was considerable in all the countries, although it tended to be less marked in the countries in the first category, more so in those of the second, and still more so in those in the third category, especially Cuba. Conversely, the private sector was more active in water administration and economic incentives were given a greater role as an administrative tool in countries within the first category than in those countries falling into the other two categories.

III. RECENT INNOVATIONS IN WATER MANAGEMENT POLICY

Outside the confines of water management, the debate concerning policies to overcome the generally unfavourable economic situation has placed a great deal of emphasis on the need to manage existing investments, particularly in the public sector,[2] more effectively and to increase their rate of return. Public-sector investment and the role of government as a whole in the economy had been growing steadily until very recently in nearly all the countries of Latin America.[3] Investments in the control and regulation of river flows have increased as part of the general expansion of the public sector and of the role of the government in the economy. Investments in water-related projects have represented a large proportion of total public investment during the last 20 years.[4] The economic crisis of the 1980s has led to the perception that the whole concept of the role of government in the economy must be reconsidered. The decisions being taken as a result of this change in the way public-sector management is perceived is of considerable relevance to an understanding of the changes that are occurring in water resource administration.

Of all the countries of the region, the most interesting innovations in water management policies in recent years have been made in Brazil, Chile and Mexico. The innovations being introduced in these three countries are, in themselves, very different from one another, but they all point to the possible future creation of water management systems which will apply such concepts as integrated and coordinated water resource management while at the same time making a clear distinction between responsibility for the management of the resource and responsibility for the management of its use. In all three countries, the policy initiative has come from the top down as part of an effort to redefine the role of government in general. In Brazil, the reorganization of water management is still at the proposal stage, although a reduction and reorganization of the federal bureaucracy is already in place. In Chile, a system of water administration has been created which distinguishes between public responsibility for the resource and the users' responsibility to manage its use. In Mexico, the National Water Commmission (CNA), which has replaced the Ministry of Water Resources, is charged with the institutional responsibility for integrated water management within a more decentralized administrative system.

1. Brazil[5]

The responsibility for the administration of water resources in Brazil is divided between the federal government and the states. At each of these levels of government, responsibilities have traditionally been further divided among a number of agencies which are in charge of administering the different water uses. Over time, the complexities of this system of administration have led to many conflicts of interest between the different levels of government, among different water uses and among the agencies responsible for different aspects of water management.

Brazil's new Constitution, which it adopted in 1988, maintains the division of responsibilities between the federal and state governments, but transfers responsibility for the administration of groundwater to the states. The Constitution has not otherwise modified the water administration system which has evolved in Brazil since the adoption of the Water Code in 1934. Article 43 of the Water Code stipulates that, public water may not be diverted for agricultural, industrial or sanitation purposes without the prior award of a water concession, in cases of public use, or government authorization, in other cases; it also provides, however, that the requirement of government authorization will be waived in the case of the extraction of a negligible volume of water.

The Water Code has been administered by the National Department for Water Resources and Electric Energy (DNAEE) since 1965. The DNAEE is responsible for monitoring rivers under federal jurisdiction as well as for granting concessions, authorizations and permission for all water uses, with the exception of irrigation, which is governed by special legislation. Authority over irrigation is exercised by the Ministry of Agriculture.

Even before the adoption of the new Constitution in 1988, a series of reforms had been introduced into the water management system in Brazil. The most significant innovation was a joint experiment involving federal, state and municipal river-basin boards which focused on the control of water quality in the State of São Paulo. The success of this experiment prompted the federal government to create the Special Committee for Integrated Water Management in 1978. The terms of reference of the Committee include the preparation of coordinated studies and the promotion of integrated action by federal, state, local and private agencies. The Committee is composed of representatives of the Special Secretariat for the Environment (SEMA), the federal electricity utility (ELECTROBRAS), the National Sanitation Department (DNOS), the superintendencies for regional development and state secretariats. The Committee has not achieved all that was expected, but has had success in the settlement of inter-sectoral disputes. Recently, however, owing to changes in the bureaucracy the Committee has ceased to function effectively.

The present Brazilian administration has brought about significant changes in the federal government's water administration structure. Many agencies have been abolished, others have been amalgamated, and the DNAEE has been transferred to the newly created Ministry of Infrastructure, which is responsible for navigation and power generation. Responsibility for some uses still rests, however, with other ministries, although the number of agencies has been considerably reduced.

The 1988 Constitution provides for the creation of a new national water management system for the water resources falling under federal jurisdiction. There has been considerable discussion of the form which this system should take, but no decision has yet been made. The proposed new system will probably consist, however, of parallel systems of water management at the federal and state levels. At the federal level, the highest policy-making body in the field of water management is likely to be a water council formed by the relevant ministers and secretaries. When appropriate, special regional councils will probably be formed which would include representatives of the state governments. The water council will set the national water resources management policy and formulate a national water use plan. It will also act as an appeals board for administrative decisions taken in respect of the national policies and plan.

A management commission —made up of senior civil servants from the relevant federal ministries and, when appropriate, their state counterparts— will be subordinate to the council at the federal level. This commission will oversee the activities of the federal river basin committees, and a series of advisory river basin committees will be formed for each river within federal jurisdiction. The river basin committees will probably consist of representatives of all the water users of the basin in question, including federal and state water institutions, the municipalities, private companies, individual water users and the community at large. The task of these committees will be to oversee water management within their respective basins, and it will thus be their job to set objectives, ensure the compatibility of the plans and activities of the different bodies that are active in the basin and approve studies, among other duties. An executive secretariat will be established to coordinate all water management actions and to provide technical advice to the river basin committees.

The federal system would be paralleled by state systems, but as there are 27 states with very different traditions of water management and differing kinds of organizations, it seems unlikely that a single, uniform type of system will be established. One possible model for state administrative systems is that already proposed for São Paulo, which would include a state water resource council, state river basin committees and a technical and administrative support agency.

2. Chile

Policy innovations in the area of water management in Chile have been the result of a number of changes in the laws and in government policy concerning the development of water resources. These changes reflect a complete reversal of the historical tendency in Chile, which was, as in other countries of the region, to move towards the centralization of water development and management in the public sector. In the Chilean case, the dominant agency was the Ministry of Public Works and, within that Ministry, the Bureaus of Irrigation and of Sanitation Works, although other entities (such as ENDESA, the public electrical power utility) also played important roles. Traditionally, there had been no regional development agencies of any importance in Chile. Water management was entirely centralized. In the last 10 years, however, the Government of Chile has gradually reduced the role of the State in water management and has increased the responsibilities of water users.[6]

This policy shift has included the reform of the Water Code, the creation of the Department of Water Resources (DGA), the replacement of the Bureau of Sanitation Works by the Superintendency of Sanitation Services, the creation of the National Irrigation Commisssion and the promulgation of the Irrigation Development Act (Lee, 1990). The result of these changes has been to shift the focus of State action from one of almost complete responsibility for all aspects of water development and management to one of responsibility for the resource and of support and supervision of user actions. At the same time, many electricity utilities have been transferred to the private sector and the administration of water supply and sewerage services has been placed in the hands of regionalized autonomous public companies.

The amendments made to the Water Code, including the creation of a market in water rights, are the innovations which have drawn the most attention. Although the reformed Water Code maintains the classification of water as a public good, it provides for private ownership of water rights once they have been granted by the State, and water rights can therefore be freely transferred on the open market.[7] This is, however, only one of a number of interesting innovations. Among the most significant has been the establishment of a single "national body with comprehensive responsibilities in respect of data on water resources", within the DGA. From the standpoint of water management, equally significant are the reforms that have been made in relation to the authority and responsibilities of organizations of water users and the role of public authorities in the management and construction of irrigation works.

The Water Code defines three types of water user organizations:

- Water communities (which exist whenever there is more than one user of any water body). These communities may be formalized;

- Associations of users of irrigation canals, of drainage works or of water, in general. These associations must be formally constituted and are governed by elected boards of directors. The formation of an association must be approved by the DGA;

- Oversight committees are the highest level of user organization and are responsible for the administration of all users, including the different user associations, of major bodies of water or large reservoirs.[8]

Both the associations and the oversight committees are administered by elected directors. The voting for such directors is weighted by the number of water rights held. The law assigns to these user organizations the responsibility of regulating and administering the water resources and related infrastructure under their respective jurisdictions. Most irrigation and drainage works, including dams and reservoirs, are now owned by user organizations.

River basins are not treated as water management units in Chile, but are instead commonly divided among two or more oversight committees. Any disputes among the committees must be resolved by the DGA or by the courts.

3. Mexico

Mexico, although a federal State, has had a highly centralized system of water administration for a number of years. This system has recently undergone sweeping changes which have altered the basis on which water administration operates.

The National Water Commission (CNA) was created in January 1989 to replace the Ministry of Water Resources and to concentrate responsibility for water management in Mexico in one institution. The CNA has the responsibility of directing, coordinating and regulating all diversions from water bodies, all water use and all disposal of waste water in Mexico. Despite this overarching responsibility of the CNA, other government agencies have responsibilities in respect of various aspects of water management as well. For example, the Ministry of Agrarian Reform takes part in the regulation of the water rights of ejidos and other rural communities and the Ministry of the Navy has responsibility for uses affecting navigation.

Even allowing for these and other exceptions, however, the fact remains that the CNA is responsible for managing the water supply and for assigning the right to use water. The CNA must determine the natural supply, the water balance and the annual availability of water. Water rights are granted for a period of not more than 50 years and can be revoked if the use of the water is changed. The management of water use lies with a variety of institutions in both the public sector (at the federal as well as state levels) and the private sector.

The recent reforms undertaken in Chile and Mexico and those proposed in Brazil provide examples of the application of integrated water management approaches within national water management policies in Latin America and the Caribbean. In the case of Chile, so far the reforms may perhaps be said to have done no more than to create an environment within which a user-based integrated system of management might be developed. In Mexico, the country's long tradition of centralized administration has served as a basis for a new system which clearly distinguishes between supply and use management. In Brazil, in contrast, the explicit adoption of a system of integrated river basin management is the core of the proposed new policy. It is not yet clear, however, whether the policy will find favour either among the federal ministries or in the states. It could prove to be an initiative that will not prosper, although there are signs of considerable support for the proposals. These developments are positive signs for the future of water management in Latin America and the Caribbean as a whole.

IV. CONCLUDING REMARKS

In terms of the countries of Latin America and the Caribbean, the years since the Mar del Plata Conference can be divided into two very different periods. The first, which ended in 1982, was marked by unprecedented economic growth. It was followed, however, by the most serious economic recession since the 1930s. Many countries of the region have still to recover from the effects of this recession.

Both the boom and the recession deflected interest away from the status of the public sector and this, in turn, has been reflected in a lack of innovation in the field of water administration. Indirectly, however, both periods had repercussions on the administration of water resources.

The boom of the late 1970s marked the climax of the expansion of public-sector economic activities, which were typified by a number of grandiose water-related projects oriented mainly towards the generation of hydroelectricity, but also towards shipping and irrigation. This expansion of the public sector has been reversed in more recent years. In most countries of the region, the role of the State in the economy is under serious reconsideration. The objective of this reconsideration is both the reduction of State expenditures within the context of fiscal austerity measures, especially as regards capital investment, and an increase in the efficiency of services by transferring responsibilities to the private sector or, at the least, to financially autonomous State companies.

One of the results of this policy has been the privatizion or municipalization of many water-using activities; in such instances, the central government administration retains the responsibility for licensing, but not for operations. Such policies are not being pursued to the same extent by all the countries of the region, but they are quite widespread and mark what is perhaps the first major change in water administration trends in the past 50 years. The steady expansion of the State has been halted. The context in which water administration is being discussed has changed. The opportunity has possibly been created for the general adoption of institutional arrangements based on a concept of integrated water resources management whose application involves shifting much of the responsibility for the management of water use away from the central government administration and towards local government, autonomous State companies or the private sector.

Notes

[1] The regionalization of government functions in Chile imposed the same territorial units on all ministries, but this is unusual.

[2] The World Bank has shown considerable interest in this issue and has devoted much of the discussion in its recent annual development reports to the subject of the efficiency of investment and the effectiveness of management in the public sector (see World Development Report from 1983 on. The World Resources Institute, a private foundation, has also emphasized the importance of improving management capabilities so as to make production gains from existing investments (see Repetto, 1986).

[3] In Brazil, for example, public-sector companies increased their share of gross capital investment from 11.8% in 1970-1974, to 30.3% in 1975-1979 and to 35.8% in 1980-1981 (see Modiano, 1986, p. 23).

[4] Between 1971 and 1982, to cite only one relevant statistic, loans from international banks for projects related to water resources in Latin America and the Caribbean amounted to some US$8.7 billion (in 1975 dollars).

[5] This discussion is based on Morera Coimbra (1990).

[6] These associations of water users, known as juntas de vigilancia, represent all water users, both public and private.

[7] Other legislation permits some limits to be placed on the use made of the water right once it has been purchased, however.

[8] The Water Code identifies these organizations as: i) Comunidades de aguas; ii) Asociaciones de usuarios, and iii) Juntas de vigilancia.

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Annex 1

WATER RESOURCES ADMINISTRATION: BASIC DATA FOR THE COUNTRIES OF LATIN AMERICA AND THE CARIBBEAN

1. ANTIGUA AND BARBUDA

The Ministry of Works, Communications and Public Utilities has policy-making responsibilities in the fields of water resource management, development and conservation, including the provision of drinking water supply and sewerage services. The Ministry also sets the policy framework for the Public Utilities Authority (see below).

a) Drinking water supply and sanitation

The provision and regulation of drinking water supply and sewerage services are the responsibility of the Public Utilities Authority (Water Division) and, in Barbuda, of the Barbuda Local Council.

The Public Utilities Authority is a body corporate with financial autonomy. Its members are appointed by the Governor. The Authority is responsible for the management, development and conservation of surface-water resources and wells. Apart from drinking water supply and sewerage, it also manages the electricity and telephone utilities. The utilities have separate identities, but the Authority is structured to provide as many common services as possible to each of them and, as a result, there is considerable interaction between their respective managements at all levels.

The Central Planning and Housing Authority has primary responsibility for the implementation of government land development schemes, including the provision of drinking water supply.

b) Irrigation and drainage

There is no land under irrigation in Antigua and Barbuda.

Table 1

ANTIGUA AND BARBUDA: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Administration at the government level							
Ministry of Works, Communications and Public Utilities	■	■	■			■	■
Ministry of Health							■
Ministry of Agriculture, Fisheries and Lands		■	■ O	■ O ****	■	■ L	
Public Utilities Authority - Water Division						■	
Central Planning and Housing Authority							
Barbuda Local Council							
Special and autonomous agencies							
Antigua Agricultural Development Corporation		■ C I					■
Antigua Development Agency							

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Institutions of the energy sector.

The Antigua Agricultural Development Corporation and the Antigua Development Agency are both body corporates and enjoy financial and administrative autonomy. The Agency provides financial assistance to private companies for the development of agricultural activities. Within the policy guidelines set by the responsible Minister, the Corporation is empowered to implement and participate in soil and water conservation schemes as well as in the development of fisheries.

c) Hydroelectricity

There is no hydroelectricity generation in Antigua and Barbuda. The Public Utilities Authority is responsible for the provision of electricity.

d) Other water uses

The Public Utilities Authority and, in Barbuda, the Barbuda Council are empowered to issue ad hoc regulations for the prevention and control of water pollution, including the pollution of water supplied for domestic and business purposes. The Ministry of Health is responsible for the public health aspects of water-related activities.

The Ministry of Agriculture, Fisheries and Lands and the Ministry of Works, Communications and Public Utilities are the major agencies involved in the management of the coastal areas.

2. ARGENTINA

Argentina is governed by the 1853 Constitution, which established a representative, republican and federal system of government. Water resources (both surface flows and groundwater) form part, with certain minor exceptions, of the public domain. As a federal State, Argentina has a complex system of national, provincial and municipal institutions which are responsible for the administration, planning and management of various uses of water resources.

The peculiarities of the political system, the diversity of the water-related problems existing in various regions of the country and the changing conditions which influence water use account for the complexity of the water sector's institutional organization. The structure which evolved at the federal level was based upon specialization by sector of water use, and institutions were created to oversee energy generation, drinking water supply, irrigation and other water uses. More recently, however, there has been a redefinition of the institutional structure in the water sector.

Recently, the Government of Argentina has begun to implement an extensive programme designed to achieve the decentralization and privatization of many formerly centralized activities, including the management of hydroelectricity production and distribution and the provision of a water supply and sanitation services.

a) Drinking water supply and sanitation

In 1980 the national Government transferred responsibility for public drinking water supply and sanitation services to the provincial governments (Decree No. 258/80). The federal agency which had been in charge of such services until that time, National Sanitation Works (OSN), retained responsibility for the federal capital, the centre of the Buenos Aires metropolitan area, and surrounding areas in the Province of Buenos Aires. The Government currently plans to sell this company to private interests.

The Federal Drinking Water and Sanitation Council was established to promote, supervise, finance and administer drinking water supply programmes, as well as to coordinate sector planning, particularly in relation to external loans. The Bureau of Environmental Health, which is part of the Ministry of Health and Social Welfare, has policy-making powers in the area.

Table 2

ARGENTINA: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Federal Government							
Federal Drinking Water and Sanitation Council			■ I P				
Ministry of Health and Social Welfare - Bureau of Environmental Health (DNSA)			■ L C I O				
National Sanitation Works (OSN)							
State Water and Electricity Corporation (AYEE)				■ O			
Hidroeléctrica Norpatagónica, S.A.				■ O			
Joint Argentine/Uruguayan Technical Commission for Salto Grande				■ O			
Argentine/Paraguayan Commission for the Paraná River				■ O			
Meteorological Service, Water and Energy							■ B
Bureau of Port Construction and Waterways (DNCPVN)							■ B
National Institute for Water Sciences and Technologies (INCYTH)							■ B
National Council on Science and Technology							■ B
Provinces		■	■ O	■		■	
Municipalities			■ O			■	

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

b) Irrigation and drainage

In Argentina, responsibility for irrigation is held by the provincial governments. On the whole, the administration of the irrigation sector is marked by the heterogeneity of its administrative forms: highly centralized organizations, autocratic entities, corporations, State companies, etc. User participation ranges from heavy user involvement in decision-making and water management in such areas as the provinces of Mendoza and San Juan to less active user participation and even to organizations in which users do not participate at all.

c) Hydroelectricity

The State Water and Electricity Corporation (AYEE) used to be the major federal government company responsible for the production and distribution of electricity. Hidroeléctrica Norpatagónica, S.A., another federal government company, was responsible for the generation and supply of electricity in northern Patagonia. The operations of these two companies are now in the process of being turned over to the provinces or to private capital. Many provinces have traditionally managed smaller companies responsible for the distribution and marketing of energy.

Special institutions exist which are responsible for the development of hydroelectric power from international rivers, such as the Joint Argentine/Uruguayan Technical Commission for Salto Grande and the Argentine/Paraguayan Commission for the Paraná River, which is constructing the Yacyretá hydroelectric power plant on the Paraná.

d) Other water uses

Water quality control is under the jurisdiction of provincial and municipal governments. There are no federal agencies empowered to control water quality.

Meteorological and hydrological data collection is performed by several institutions in coordination with one another. Primary data processing is the responsibility of the Meteorological Service, Water and Energy and the Bureau of Port Construction (DNCPUN). Secondary data processing and storage banks are the responsibility of the National Institute for Water Sciences and Technologies (INCYTH) and the National Council on Science and Technology. Both of these bodies are now candidates for transfer or sale.

3. ARUBA

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

No information is available on the institutions involved in the administration of drinking water supply and sanitation.

b) Irrigation and drainage

No land is under irrigation in Aruba.

c) Hydroelectricity

There is no hydroelectricity generation in Aruba.

d) Other water uses

The major institutions involved in coastal conservation include the Land Use Department, which is responsible for land use planning and zoning; the Public Works Department, which is concerned with beach conservation, coastal defence works, dredging, ports and harbours; and the Environmental Protection Department of the Ministry of Health and Justice, which is responsible for environmental health.

Table 3

ARUBA: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Land Use Department		■			■		
Public Works Department						■	■
Ministry of Health and Justice - Environmental Protection Department							

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

4. BAHAMAS

The Water and Sewerage Corporation, which was set up in 1976, is a statutory government-run corporation responsible for the control, optimum development and protection of water resources and their use and for water resources management in the group of islands comprising the Bahamas.

a) Drinking water supply and sanitation

The Ministry of Works and Lands formulates national policies for this sector in coordination with the Ministry of Public Health.

The Water and Sewerage Corporation is responsible for the provision of an adequate water supply for domestic and industrial use, as well as for the provision of adequate facilities for the safe discharge of domestic wastewater and industrial effluents. Its duties include system construction and design, and it also provides consultancy services. The Corporation's operations are, however, largely confined to New Providence Island.

The Ministry of Public Health and the Building Control Division of the Ministry of Works and Lands oversee the provision of sewerage services for hotel and condominium development. The Environmental Health Inspectorate of the Ministry of Public Health has the responsibility of policing existing facilities and monitoring pollution.

b) Irrigation and drainage

The Water and Sewerage Corporation is responsible for land drainage.

c) Hydroelectricity

There is no hydroelectricity generation in the Bahamas.

d) Other water uses

The Environmental Health Inspectorate inspects sewerage facilities to ensure, inter alia, that there is no pollution of the environment, particularly with respect to groundwater.

Urban planning in the Bahamas is the responsibility of the Physical Planning Department of the Ministry of Works and Lands.

Table 4

BAHAMAS: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Works and Lands - Physical Planning Department - Building Control Division Ministry of Public Health - Environmental Health Inspectorate Water and Sewerage Corporation		■ C	■ P ■ P C O R		■	■ C	

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

5. BARBADOS

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Barbados Water Authority is a statutory government-run corporation responsible for the management of the island's water and sewerage systems. It replaced the Waterworks Department in 1980.

b) Irrigation and drainage

There is no land under irrigation in Barbados.

c) Hydroelectricity

There is no hydroelectricity generation in Barbados.

d) Other water uses

The Land and Water Use Research and Soil Conservation Unit of the Ministry of Agriculture is responsible for meteorological services. Hydrological activities are scattered among a number of other institutions, including the Environmental Department of the Ministry of Health and the Hydrometeorology Department of the Caribbean Institute for Meteorology and Hydrology. Rainfall data is also monitored and analysed by data users (sugar producers).

Table 5

BARBADOS: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Barbados Water Authority			■ O				■ B
Ministry of Agriculture		■					
- Land and Water Use Research and Soil Conservation Unit		■					■ B
Ministry of Health							■ B
- Environmental Department							■ B
Caribbean Institute for Meteorology and Hydrology							
- Hydrometeorology Department							■ B

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

6. BELIZE

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Water and Sewerage Authority of the Ministry of Energy and Communications is responsible for drinking water supply in urban areas. It also has a programme for drilling wells and installing handpumps. Other institutions involved in the sector include the Ministry of Health, which establishes sector goals; the Public Health Inspectorate, within this Ministry, which runs the rural water supply programme; and the Ministry of Natural Resources, which provides drinking water to small population centres. Some private firms also drill wells.

b) Irrigation and drainage

The Ministry of Natural Resources administers irrigation development.

c) Hydroelectricity

There is no hydroelectricity generation in Belize.

d) Other water uses

No information is available on other institutions involved in water resource administration.

Table 6

BELIZE: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Natural Resources Ministry of Energy and Communications - Water and Sewerage Authority Ministry of Health - Public Health Inspectorate		■	■				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

7. BOLIVIA

In Bolivia, water resources come under the public domain, but no single body is responsible for issuing licenses for water use. For each water use there is a corresponding public institution, and it is this institution (usually a ministry), which grants authorization in its sector for private or public water uses. In several sectors —including industry, fishing, mining and energy— water use is practically free, and no license is usually required. It is expected that at some point in the future responsibility for authorizing water uses will be handed over to a national irrigation institute. The legislative-administrative framework for water resource administration is shown in table 8.

A general law on water resources has been submitted for legislative approval; this bill provides for multiple priority water uses, water conservation, the establishment of a national irrigation institute and the creation of multisectoral commissions.

The Constitution of Bolivia provides for two levels of government: national and local or municipal. The Constitution also provides for decentralized bodies under the authority of the President of the Republic. At the intermediate level, there are regional development corporations. Their functions centre on the implementation of investments in various sectors, including energy, health and agriculture. In addition to public- and private-sector institutions, many water-related activities are also carried out directly by users who have organized themselves into cooperatives.

There is no agency in Bolivia which is responsible for integral planning, although at the national level the Ministry of Planning and Coordination does have formal responsibility. Its activities are largely limited, however, to financial and budgetary matters. Sectoral planning is carried out by the respective institutions of each sector. The Ministry of Planning and Coordination does, however, oversee sectoral investment programmes in order to avoid unnecessary duplication.

Programmes and projects for the development of river basins or irrigation schemes, such as the Plata Basin Development Fund and the Highland and Valley Irrigation Programme, may have a multisectoral focus, but in practice their activities are limited to the development of agriculture or irrigation. The regional development corporations are also characterized by a sectoral rather than comprehensive approach.

Table 7

BOLIVIA: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
National government level							
Ministry of Planning and Coordination	■ P						
Ministry of Social Security and Public Health			■ I				
- Office of Environmental Health							
Division of Housing							
- Potable Water and Sewerage Corporation			■ I				
Ministry of Mines and Metallurgy						■	
- Bureau of Metallurgy							
Ministry of Energy and Hydrocarbons				■ L P			
- National Bureau of Electricity							
Ministry of Agriculture and Peasant Affairs							
- Plate Basin Development Fund		■ I					
- Highland and Valley Irrigation Programme		■ I					
Ministry of Transport and Communications							■ B
- National Meteorological and Hydrological Service							■ B
National Electricity Company				■ O			
Regional development corporations		■ I		■ I			
Municipal government level							
Municipality			■ O				
Municipal companies			■ O				
Cooperatives		■ O	■ O				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

Table 8

BOLIVIA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

	Supply of water resources			Water service	Water resource use	Water resource conservation
	Integrated planning	Sectoral planning	Investment			
Central Government						
Ministry of Planning and Coordination						
Ministry of Agriculture and Peasant Affairs						
- Bureau of River Basin Hydrography			■	■		
- Plate Basin Development Fund			■			
- Highland and Valley Irrigation Programme			■			
- Bolivian Amazon Basin Water Project			■			
- Users' cooperatives				■	■	
Ministry of Energy and Hydrocarbons						
- Department of Energy					■	
- Energy companies					■	
- Planning Office					■	
Ministry of Mines and Metallurgy						
- Bureau of Metallurgy						■
- Planning Office		■				
Ministry of Urban Planning and Housing						
- National Bureau of Urban Infrastructure		■				
Potable Water and Sewerage Corporation			■			
Domestic Water Users Cooperative				■	■	
Ministry of Social Security and Public Health						
- Office of Environmental Health		■				
Departmental corporations		■				
Municipal governments						
- Water Division			■			
- Decentralized water companies			■	■		

Source: José Carlos Vera La Torre (consultant), Oferta y demanda por capacitación en gestión de recursos hídricos en Perú y Bolivia (LC/R.730), Santiago, Chile, 24 January 1989, p. 27.

a) Drinking water supply and sanitation

In the capital cities of the departments, the drinking water supply is managed by self-financed municipal companies. In some smaller cities, the water supply is managed by the municipality, but in most, this task is performed by cooperatives. In such cities, once the infrastructure has been put in place the Office of Environmental Health of the Ministry of Social Security and Public Health and the Potable Water and Sewerage Corporation of the Division of Housing organize the cooperatives and provide training in managerial skills to permit their autonomous administration. In these smaller cities, investments in the development of the sector are made either by the Potable Water and Sewerage Corporation (non-capital cities of more than 2 000 inhabitants), or by the Office of Environmental Health (non-capital cities of less than 2 000 inhabitants).

b) Irrigation and drainage

Irrigation schemes are managed by user cooperatives. Investments in agriculture are made through special programmes, projects or funds for the development of irrigation or the promotion of more efficient water use. Their sphere of activity is usually very broad and exceeds those of the regional corporations. Regional corporations also participate in irrigation development, but usually at the level of secondary river basins and only in small or medium-sized projects.

c) Hydroelectricity

The Ministry of Energy and Hydrocarbons is in charge of energy policy-making, plan coordination, authorization for the construction of power plants and the issuance of use permits to power companies, monitoring of project execution, approval of rates, etc. It is assisted by the National Bureau of Electricity. The power companies are responsible for the generation, transmission and distribution of electricity. The National Electricity Company is concerned with generation and transmission, while the regional power companies take care of distribution.

d) Other water uses

There are virtually no restrictions on the use of water for industrial, fishing, mining or energy purposes. Mining has priority as regards any exploitation or alteration of water resources. The only institution whose responsibilities include water quality protection is the Bureau of Metallurgy of the Ministry of Mines and Metallurgy.

The National Meteorological and Hydrological Service, under the Ministry of Transport and Communications, deals with operational hydrology at the national level. There are, however, several other agencies which operate hydro-climatological data networks.

8. BRAZIL

Brazil is a federal State. The authority to legislate on water-related matters is held concurrently by the federal and state governments, with the federal Government's decisions and legislation taking precedence over those of the states. In general, however, the states are more actively involved in the management of the resources.

The administration that was elected in March 1990 has brought about significant changes in the government structure. Jurisdiction over shipping and hydroelectricity generation has been given to the Ministry of Infrastructure; this Ministry is also responsible for enforcing the 1934 Water Code and for granting concessions, authorizations and permits in regard to all water uses except drinking water supply and sanitation, which are under the Ministry of Social Welfare, and irrigation —including the granting of concessions, authorizations and permits— which is under the Ministry of Agriculture.

a) Drinking water supply and sanitation

Drinking water supply and sewage disposal and treatment are the obligation of the municipalities. The municipalities either operate the systems directly or grant concession to a State company. At the federal level, the National Sanitation Plan established in 1968, plays an important role in financing capital investment. Under this plan, the Federal Economic Fund —a central financial and technical intermediary responsible for planning and coordination— provides loans directly to State water companies. This agency also channels funds indirectly through the Water and Sewerage Fund. These are revolving funds which have been set up to maintain sources of financing for sectoral investments within each state.

b) Irrigation and drainage

Irrigation, including the granting of concessions, authorizations and permits, is currently under the authority of the Ministry of Agriculture.

Table 9

BRAZIL: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Infrastructure - National Department for Water Resources and Electric Energy	■ L			■ ■ P L		■ B	■
Ministry of Social Welfare			■				
Ministry of Agriculture		■ L					
Centrais Elétricas Brasileiras, S.A. (ELETROBRAS)				■ I P			
National Sanitation Plan - Federal Economic Fund			■ I I P	I P			
National System for the Environment - National council for the Environment - Special Secretariat for the Environment		■ P				■ L P	
State water supply and sanitation companies Water and Sewerage Fund			■ O I				
Municipalities			■ O			■ O	

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

c) Hydroelectricity

The National Department for Water Resources and Electric Energy of the Ministry of Infrastructure grants licenses for generating plants, sets rates, performs regulatory functions, approves expansion plans and awards concessions. The State-run electric company Centrais Elétricas Brasileiras, S.A. (ELETROBRAS), is responsible for the coordination and analysis of power sector planning and for the formulation of expansion plans. It serves as a holding company and as a development bank for the power sector. Regional generation is the responsibility of its subsidiaries. Consideration is being given to returning responsibility for power generation and distribution to state companies and the private sector.

d) Other water uses

The National System for the Environment, which was established to implement the national policy on the environment (Act No. 6,938 of 31 August 1981), includes all federal, state and municipal agencies and organizations, as well as those of the Federal District and the Territories, which are active in the field of the environment. The System is headed by the National Council for the Environment, and its main agency is the Special Secretariat for the Environment, which reports to the President. The Special Secretariat for the Environment is also involved in the preparation of integrated plans for environmental protection and for the conservation of natural resources.

The National Council for the Environment is responsible for establishing water quality standards for rivers falling under federal jurisdiction. Numerous environmental agencies scattered among the states carry out water quality measurements of various kinds. The National Department for Water Resources and Electric Energy has established a network of about 300 water quality stations at the same sites where discharge measurements are taken.

9. BRITISH VIRGIN ISLANDS

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Building Authority of the Town and Country Planning Department is responsible for the provision of drinking water. The Medical and Health Department controls water quality.

b) Irrigation and drainage

There is no land under irrigation in the British Virgin Islands.

c) Hydroelectricity

No hydroelectricity is generated in the British Virgin Islands.

d) Other water uses

The main institutions involved in the administration of coastal areas are the Ministry of Natural Resources and Labour, which is responsible for agriculture, fisheries, land policy, conservation, coastal zone management, and national and marine parks; the Office of the Chief Minister, which is concerned with town and country planning and economic planning; the Ministry of Communications and Works, responsible for sea defence works, ports and harbours; and the Ministry of Health, Education and Welfare, which is concerned with environmental health.

Table 10

BRITISH VIRGIN ISLANDS: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Town and Country Planning Department							
- Building Authority			C O				
Medical and Health Department							
Ministry of Natural Resources and Labour							
Office of the Chief Minister							
Ministry of Communications and Works	P				P		
Ministry of Health, Education and Welfare							

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

10. CHILE

The ministries involved in water resource management are shown in figure 1. The Department of Water Resources of the Ministry of Public Works is the sole administrative authority in water matters. Its functions include granting water rights, establishing priorities for water rights, and maintaining and operating a national hydrometric service, as well as a registry of all water right concessions. The Department of Water Resources also has the authority to change the water source of any user and is responsible for the planning of water resource development, the formulation of water conservation criteria and the study and control of all water-related projects.

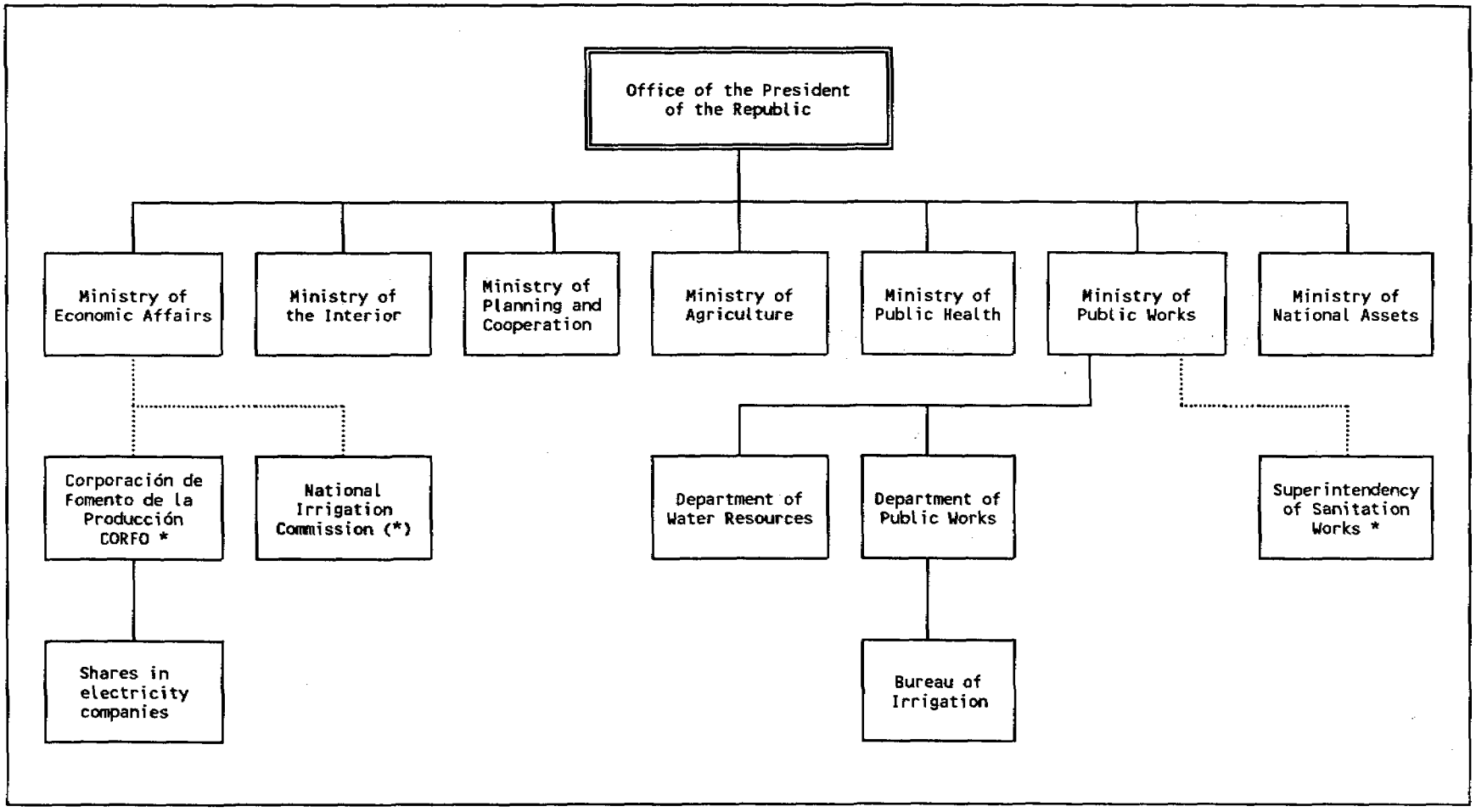
The Ministry of Planning and Cooperation plays an important role in the planning of water resources development. It is responsible for advising the President of the Republic on social and economic planning matters, coordinates the activities of various State agencies within the National Development Programme, conducts pre-investment studies, reviews investment projects and makes recommendations on public-sector investments. It carries out activities related to water resource planning in such areas as energy, the environment, public works and, particularly, forestry and agriculture.

a) Drinking water supply and sanitation

Responsibility for drinking water supply and sanitation is divided between the Superintendency of Sanitation Works of the Ministry of Public Works and a number of water supply and sanitation companies. The Superintendency is responsible for overall sectoral planning and for establishing general standards for systems operations, including the rate structure. The drinking water supply and sanitation systems are managed by autonomous regionally-organized companies. These companies' stock is at present wholly owned by the Corporación de Fomento de la Producción (CORFO), the Government's holding company. The law does provide, however, for private ownership of shares in these enterprises. There are also some small private and municipal companies.

Figure 1

CHILE: MINISTRIES INVOLVED IN WATER RESOURCE MANAGEMENT



Note: (*) - Autonomous agencies which report through the relevant ministry.

Table 11

CHILE: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Public Works	■	■	■ L P			■	■ B
- Superintendency of Sanitation Works							
- Department of Water Resources	■ B L P						■ B
- Department of Public Works		■ C O R P					
- Bureau of Irrigation							
Ministry of Planning and Cooperation	■ P		■ P	■ P	■ P	■ P	■ P
Ministry of Agriculture							
Ministry of National Defence			■				
Ministry of Public Health				■ L P			
National Energy Commission							
Ministry of Economic Affairs, Development and Reconstruction				■ L		■	
- National Irrigation Commission		■ P R					
Corporación de Fomento de la Producción (CORFO)			■	■			
Water user boards		■ C I O					
Irrigation canal users associations		■ C I O					
Oversight committees		■ C I O					
Confederation of Irrigation Canal Users Associations		■					
Compañía Chilena de Electricidad (CHILECTRA)				■ O O			
Empresa Nacional de Electricidad (ENDESA)							
Autonomous regional drinking water supply and sanitation companies			■ O				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

b) Irrigation and drainage

The National Irrigation Commission of the Ministry of Economic Affairs, Development and Reconstruction is responsible for the planning, study and formulation of integrated irrigation projects, the evaluation of irrigation projects, and the supervision and coordination of the activities of various public and private irrigation agencies. It places particular emphasis on the integrated development of irrigation on a river-basin or regional basis. The Commission is assisted in carrying out its work by a council composed of representatives of the Ministry of Economic Affairs, Development and Reconstruction, the Ministry of Finance, the Ministry of Public Works, the Ministry of Agriculture, and the Ministry of Planning and Cooperation.

The Irrigation Bureau of the Department of Public Works in the Ministry of Public Works is responsible for the study, design, construction, maintenance, repair and operation of irrigation works built with public funds.

The Water Code stipulates that whenever two or more people have the right to use the same body of water, they must establish an association or other type of organization to assume responsibility for water distribution and for the construction, operation, conservation and improvement of any hydraulic infrastructure. These institutions, which are known as "comunidades de aguas" (water user boards), irrigation canal users associations, or oversight committees, play a very active role in both water administration and in the financing and construction of water works. The associations are represented at the national level by the Confederation of Irrigation Canal Users Association.

c) Hydroelectricity

The National Energy Commission, an autonomous agency created in 1978, is responsible for the preparation and coordination of energy-sector plans, policies and regulations. It reports directly to the President of the Republic and advises the Government on energy-related matters. The Ministry of Economic Affairs, Development and Reconstruction approves electricity rates based upon the recommendations of the National Energy Commission and also has control functions.

Electricity generation and distribution are the responsibility of State-owned or private companies. The State companies are controlled by CORFO. The major companies are Compañía Chilena de Electricidad Ltda. (CHILECTRA), Empresa Nacional de Electricidad (ENDESA) and Empresa Eléctrica Pehuenche S.A., all of which are privately owned, and the State-owned Empresa Eléctrica Colbún Machicura S.A.

d) Other water uses

The Ministry of Public Health is the principal agency responsible for water pollution control. Other ministries concerned with this subject include the Ministry of Public Works, the Ministry of Agriculture, the Ministry of Economic Affairs, Development and Reconstruction and —through the Navy's Department of the Maritime Territory and the Merchant Marine— the Ministry of National Defense.

11. COLOMBIA

The Renewable Natural Resources and Environmental Protection Code provides for integrated natural resource management and planning. The traditional sector-by-sector form of water resource administration, however, does not provide for integrated water resource planning or management and hampers the development of multi-purpose projects.

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Ministry of Public Health is responsible for the drinking water supply and sewerage sector. The Ministry, in coordination with the National Planning Department, formulates national policy on these matters. The National Institute for Municipal Development and the National Health Institute, which perform central planning and supervisory functions and act as financial intermediaries for water supply and sanitation investments, are responsible for the implementation of these policies in urban and rural areas, respectively. The Urban Development Fund also finances water-related investments in urban areas. In the major cities, municipal companies are responsible for the construction, maintenance and operation of drinking water supply and sewerage facilities. In rural areas, the construction, maintenance and operation of such facilities is carried out by departmental offices of the National Health Institute in coordination with the target communities.

The Government sets rates for public drinking water and sewerage services through the National Rates Board, which is composed of the Director for Planning, the ministers of Finance and of the relevant sector and a representative of the President of the Republic. Administratively, the National Rates Board is part of the National Planning Department.

b) Irrigation and drainage

The Ministry of Agriculture has the primary responsibility for public-sector agricultural policy and for programme formulation and execution. The Agricultural Planning Department is responsible for planning and coordinating sectoral activities. The National Planning Department approves the sector's development plan and investment programme. The Colombian Institute of Agricultural Reform also has certain responsibilities in the field of irrigation and drainage.

Table 12

COLOMBIA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Public Health							
National Planning Department		P		I			
- National Rates Board							
National Institute for Municipal Development			C I P				
National Health Institute			C I O P				
- Departmental offices			C O				
Urban Development Fund			I				
Colombian Institute of Agricultural Reform							
Ministry of Mines and Energy				I P			
National Council on Economic and Social Planning							
Interconexión Eléctrica, S.A.				I			
Corporación Eléctrica de la Costa Atlántica				I			
Instituto Colombiano de Energía Eléctrica				O			
Ministry of Agriculture				O			
- Institute of Hydrology, Meteorology and Land Management		O					B
Agricultural Planning Department		P					
National Institute for Renewable Natural Resources and the Environment							
National Institute for Geological and Mining Research							
- Groundwater Division							
River basin authorities							
Corporación Autónoma del Valle del Cauca							B
Corporación Autónoma Regional de la Sabana de Bogotá y de los Valles de Ubaté y Chiquinquirá							B

Table 12 (continued).

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Municipalities							
Municipal drinking water and sanitation companies			■ C O				
Empresas Públicas de Medellín				■ O			
Empresa de Energía Eléctrica de Bogotá				■ O			■ B

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

The Colombian Institute of Hydrology, Meteorology and Land Management is an autonomous public body that was established in 1976 under the authority of the Ministry of Agriculture. It has direct responsibility for public-sector irrigation and drainage and associated land improvements and operates and manages public-sector irrigation and drainage districts. The Institute's General Director is appointed by the President of the Republic. There are also Regional Directors. The Board of Directors of the Institute is chaired by the Minister of Agriculture, and various public institutions are represented on it.

Users' associations are involved in the administration of irrigation systems.

c) Hydroelectricity

The formulation of national policies on electricity generation, transmission and distribution is the responsibility of the Ministry of Mines and Energy. The Ministry also coordinates and oversees power sector planning. Sector investment priorities are defined jointly by the Ministry of Mines and Energy, the National Council on Economic and Social Planning, Interconexión Eléctrica, S.A. and the National Planning Department. Interconnected system generation and transmission programmes are designed by Interconexión Eléctrica, S.A. and presented to the Ministry, National Planning Department and National Council on Economic and Social Planning for approval. They then become part of the National Power Expansion Programme, which is reviewed annually by Interconexión Eléctrica, S.A. The latter is an independent national generation and interconnection company owned by the generating companies. It provides an interconnected power system and constructs power generation stations.

Generation and distribution are carried out through regional public power companies, such as the Corporación Eléctrica de la Costa Atlántica (CORELCA) or the Instituto Colombiano de Energía Eléctrica (ICEL), and municipal power utilities which are independent from the national Government, such as Empresas Públicas de Medellín (EEPPM) or the Empresa de Energía Eléctrica de Bogotá (EEEB).

The Government sets public electricity rates through the National Rates Board, which acts on the basis of requests from operating companies.

d) Other water uses

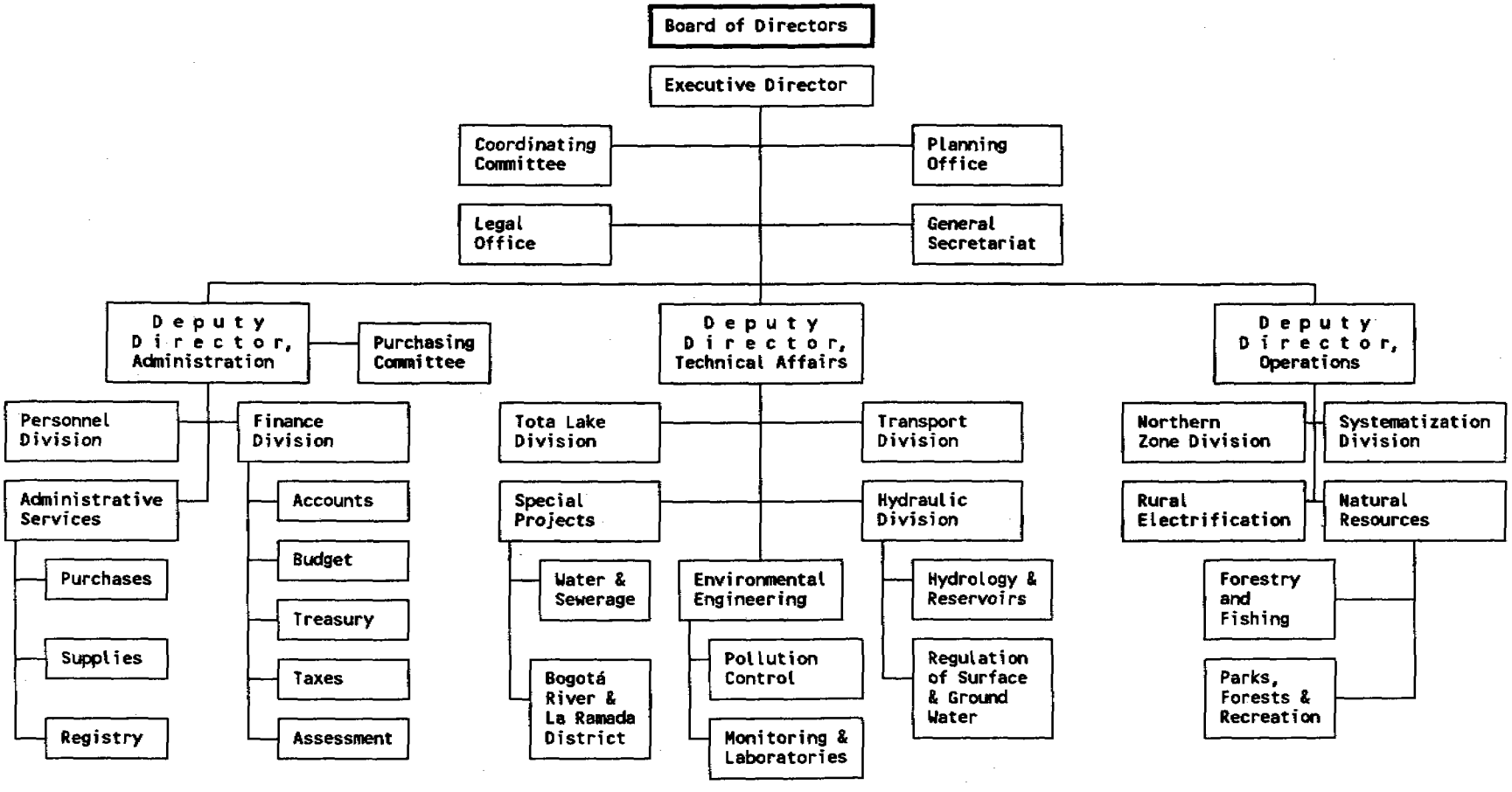
Colombia is one of the few countries in the region that has used river basin agencies to an appreciable extent as an administrative device. It has five agencies for the most intensively used rivers. The oldest are the Corporación Autónoma del Valle del Cauca, in Cali, and the Corporación Autónoma Regional de la Sabana de Bogotá y de los Valles de Ubaté y Chiquinquirá, in Bogotá (see figure 2). These are considered to be the most highly developed river basin institutions in Latin America and the Caribbean. The latter of the two, for example, possesses the authority to plan and develop the water resources of the Bogotá valley and to operate and maintain the works required to achieve that development. It is also the executing agency for the Colombian environmental code within its area of jurisdiction. The corporations of the Cauca, Sinú, and Medellín valleys have similar powers. Some of these corporations also have responsibilities in the fields of water pollution control, flow regulation, groundwater exploration and utilization, reservoir management, hydroelectricity generation, hydrology and meteorology, etc.

The Colombian Institute of Hydrology, Meteorology and Land Management is responsible for the operation of hydrological and meteorological services. The National Institute for Renewable Natural Resources and the Environment (INDERENA) is mainly concerned with environmental protection, but also has responsibilities in the area of river basin management and conservation. The Groundwater Division of the National Institute for Geological and Mining Research (INGEOMINAS) has certain responsibilities in regard to groundwater resources.

Hydrological stations are also operated by the Corporación Autónoma del Valle del Cauca, the Corporación Autónoma Regional de la Sabana de Bogotá y de los Valles de Ubaté y Chiquinquirá, Empresa de Acueducto y Alcantarillado de Bogotá, and Empresas Públicas de Medellín, among others.

Figure 2

COLOMBIA: ORGANIZATIONAL STRUCTURE OF CORPORACION AUTONOMA REGIONAL DE LA SABANA DE BOGOTA Y DE LOS VALLES DE UBATE Y CHIQUINQUIRA
(Decree No. 2021, September 1981)



Source: Jaime Saldarriaga (consultant), Case study: The Bogotá river basin summary (LC/R.572), Santiago, Chile, 9 October 1987, p. 14.

12. COSTA RICA

Costa Rica has a well-run system of water resource management institutions, but each institution covers only one particular use of water. Under the pressure of increasing competition for the use of water resources and mounting cross-sectoral conflicts, this situation has been slowly changing through the negotiation of a series of bilateral agreements between institutions. A separate problem for water resource administration in Costa Rica is the diminished financial autonomy of such institutions as a result of changes made in the law during the late 1970s and early 1980s.

The National Electricity Service (SNE), established in 1928, is the institution responsible for enforcing the provisions of the Water Code which deal with public water resources and waterways. It performs this task through its Water Department. It also controls electricity, drinking water and sewerage rates. Various conflicts have arisen between the National Electricity Service and other institutions, particularly in relation to rate setting. Many of these conflicts have been resolved through bilateral and multilateral agreements between the Service and the institutions concerned. The new draft water code would take jurisdiction over water-related matters away from the Service.

Planning activities are centralized within the Ministry of Planning and Economic Policy. The Ministry maintains particularly close relations with water-sector institutions concerned with agriculture through its Agricultural Planning Department.

a) Drinking water supply and sanitation

The Costa Rican Water Supply and Sanitation Institute (ICAA) was established in 1961 as an autonomous body responsible for supplying drinking water, waste collection and disposal services and for setting standards for rain water drainage systems in urban areas. Its other responsibilities include water quality control and natural resource conservation in the river basins it uses. Rates are regulated by the National Electricity Service. About half of the drinking water supply systems are operated by the ICAA and the rest by the municipalities. The Institute advises and gives technical support to the municipalities.

The Institute for Municipal Development and Advisory Assistance (FAM) collaborates with municipalities in developing drinking water supply and sewerage systems; its cooperation in this regard often includes the provision of financing. The Ministry of Health is authorized to control water pollution, including drinking water quality.

Table 13

COSTA RICA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
National Electricity Service	■		■ L	■ L			■ B
- Water Department		■		■ O			
Costa Rican Electricity Institute (ICE)		■	■ L O			■	
Costa Rican Water Supply and Sanitation Institute (ICAA)			■ I				
Institute for Municipal Development and Advisory Assistance (IFAM)		■ C O			■ C		
National Groundwater Service (SENAS)		■			■		■ B
Ministry of Natural Resources, Energy and Mines							■ B
- Forestry Department	■ P	■ P					
Ministry of Agriculture		■ P	■			■	■
- Institute of Hydrometeorology							
Ministry of Planning and Economic Policy							
- Agricultural Planning Department							
Ministry of Health							
Costa Rican Institute of Tourism (ICT)							
Municipalities			■ O				■

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

b) Irrigation and drainage

The National Groundwater Service (SENAS) was created in 1983 as an autonomous body responsible for the establishment of irrigation, drainage and flood protection systems and for water allocation for agricultural use. Its services are regulated by the National Electricity Service.

The Forestry Department of the Ministry of Natural Resources, Energy and Mines is specifically responsible for water conservation mechanisms and for the physical management of watersheds; it performs these functions through the establishment of protection zones on government land, the implementation of surveys to promote integrated watershed management and the establishment and coordination of the activities of an inter-agency regulatory committee.

c) Hydroelectricity

The Costa Rican Electricity Institute (ICE), was founded in 1949 and is an autonomous State body responsible for the generation of energy. The Institute and some private companies, including Compañía Nacional de Fuerza y Luz, Junta Administrativa de Servicios Eléctricos de Cartago and Empresa de Servicios Públicos de Heredia, operate hydroelectric power generation stations. The Institute's responsibilities also include the protection of river basins and other water sources, the promotion of the rational use of natural resources, etc. It is regulated by the National Electricity Service.

d) Other water uses

The compilation of information on water resources is the responsibility of the Institute of Hydrometeorology of the Ministry of Agriculture. It operates some 60% of the meteorological network; the other 40% is run by the ICE, which is also responsible for hydrological stations.

The Costa Rican Institute of Tourism (ICT) and the relevant municipalities share authority over the coastal zones.

Under a recently approved inter-agency agreement on the integral management of river basins, proposals are to be prepared for specific programmes of activities and for the preparation of pilot plans for various river basins.

13. CUBA

Cuba's water resource management system is the most highly centralized of all the countries of the region.

National responsibility for water resources is vested in the recently created National Water Resources Institute (Decree No. 114), which directs, executes and monitors compliance with government policies regarding the planning and control of water resources. Previously, the Institute of Hydroeconomics performed similar functions. The National Water Resources Institute is responsible for the integrated planning of water resource use and protection; water-related projects, including dams, canals, pumping stations, irrigation, drainage, drinking water supply, sewerage and storm drainage systems, hydroelectric power stations, domestic wastewater and industrial effluent treatment plants, etc.; data collection; water quality control; groundwater and drilling; and wastewater reuse. The Institute's organizational structure includes five national centres for training (in Villa Clara and Granma), technical-scientific information, hydrological services, water-related research and computer sciences.

The Central Planning Board directs planning and coordinates the plans of each sector.

a) Drinking water supply and sanitation

The National Water Resources Institute is responsible for drinking water supply and sanitation. Systems operations are supervised by bureaus under the authority of the provincial governments (see figure 3).

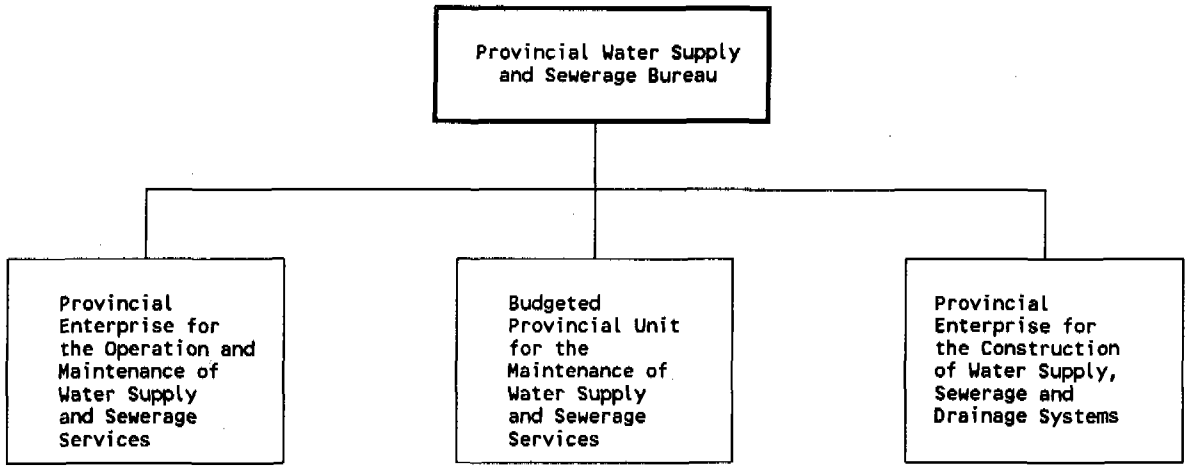
The local organs of the "People's Power Structure" (municipalities) also invest in water supply and sewerage systems.

The Ministry of Public Health is concerned with the health aspects of drinking water supply and sanitation.

The Housing Institute promotes and directs housing construction, reconstruction and maintenance planning, including drinking water supply and sewerage systems in areas where new housing is being constructed.

Figure 3

CUBA: PROVINCIAL WATER SUPPLY AND SEWERAGE BUREAU



Source: Mariano Armengol Alberti, Proyecto de mejoramiento de la operación y mantenimiento de los sistemas de acueducto y alcantarillado de la Ciudad de la Habana, Executive Committee, Provincial People's Power Assembly, Havana, December 1984, p. 6.

Table 14

CUBA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
National Water Resources Institute	P	P R	P R	P R	P R	P R	D O P R
Central Planning Board	P						
Cuban Academy of Sciences							
- Meteorological Institute							B
Cuban Institute of Hydrography							B
Ministry of Public Health							B
Housing Institute			C				
Irrigation and Drainage Research Institute		R					
Ministry of Sugar				****			
National Energy Commission				****			
State Committee for Economic Cooperation				****			
State Statistical Committee				****			
Ministry for Basic Industry							
Municipalities			I				
Provincial Water Supply and Sewerage Bureau							
- Provincial Enterprise for the Operation and Maintenance of Water Supply and Sewerage Services			O				
- Budgeted Provincial Unit for the Maintenance of Water Supply and Sewerage Services			O				
- Provincial Enterprise for the Construction of Water Supply, Sewerage and Drainage Systems			C				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Institutions in the energy sector.

b) Irrigation and drainage

The National Water Resources Institute is responsible for irrigation and drainage projects. The Irrigation and Drainage Research Institute undertakes the research and development required to improve irrigation and drainage. The Ministry of Sugar is also involved in the area of agricultural water uses.

c) Hydroelectricity

The National Water Resources Institute is responsible for hydroelectric power projects. Other institutions in the energy sector include the National Energy Commission, the State Committee for Economic Cooperation, the State Statistical Committee, and the Ministry for Basic Industry.

d) Other water uses

The National Water Resources Institute is responsible for the design and operation of the country's network of hydrological stations. The Meteorological Institute of the Cuban Academy of Sciences and the Cuban Institute of Hydrography are also concerned with meteorology and hydrology.

14. DOMINICA

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Ministry of Health is the policy-making body in this area. The operation of water supply systems is in the hands of the Dominican Water and Sewerage Company, which is run with Canadian assistance. This company is unique among the water institutions of the Caribbean in that it is now in the process of being privatized. A programme of privatization was started a little under two years ago and was to be completed during 1990. The privatization programme is being facilitated by the Canadian International Development Programme which is providing funding for management assistance during the transition period.

b) Irrigation and drainage

No land is under irrigation in Dominica.

c) Hydroelectricity

The Ministry of Communications and Public Works is responsible for the electricity sector, oversees the electric power utility (Dominica Electricity Services Limited) and is in charge of activities relating to new or less conventional energy generation technologies. The Electricity Supply Act empowers Dominica Electricity Services Limited to change its electricity rates subject to the Ministry of Communications and Works's approval. In those cases where rate changes are not approved, the request is referred to the Public Utilities Commission.

In so far as the formulation of energy policies is concerned, the Government has relied on the expert advice of the Economic Affairs Secretariat of the Organization of Eastern Caribbean States (OECS).

At the end of 1987 the Inter-Ministry Energy Committee was established to coordinate the pricing of energy products. The Committee is composed of representatives of several ministries.

Table 15

DOMINICA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Communications and Public Works Dominica Electricity Services Limited Public Utility Commission Inter-Ministry Energy Committee Ministry of Health Ministry of Agriculture, Trade, Industry and Tourism - Department of Forestry Town and Country Planning Office		■	■ P	■ O			■ ■
Other agencies Dominica Water & Sewerage Co., Ltd.			■ O				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

d) Other water uses

The Ministry of Communications and Public Works, the Ministry of Agriculture, Trade, Industry and Tourism, and the Town and Country Planning Office are the major agencies involved in the management of coastal areas. The Department of Forestry of the Ministry of Agriculture, Trade, Industry and Tourism has the major responsibility for conservation of the coastal zone.

15. DOMINICAN REPUBLIC

The National Water Resources Institute, an autonomous government agency set up in 1965, administers, controls and regulates the use of water resources in the Dominican Republic. In cooperation with the other agencies concerned and in conformity with national development plans, the Institute is also in charge of studies, projects and plans for all works related to river basin development.

a) Drinking water supply and sanitation

The National Institute for Drinking Water and Sewerage Services —an autonomous government agency to which the 1962 Constitution confers authority over all surface and groundwater resources— is in charge of the domestic and industrial water supply and wastewater and storm water disposal systems in both urban and rural areas.

b) Irrigation and drainage

The National Water Resources Institute, in cooperation with the Ministry of Agriculture and with users, manages the nation's irrigation systems. The Ministry of Agriculture manages water conservation and advises on the development of irrigable lands.

The Dominican Agrarian Institute is responsible for the construction of irrigation and drainage systems. It also provides water and power services to areas where it has established agricultural communities.

The Agricultural Bank of the Dominican Republic grants loans and provides technical assistance to farmers, including those who use irrigation.

Existing legislation also provides for the formation of associations of irrigation water users.

c) Hydroelectricity

The Dominican Electricity Corporation is responsible for electricity generation and distribution; its duties in this connection include the construction and operation of works on behalf of the Government. The National Water Resources Institute operates the country's hydroelectric generation plants.

Table 16

DOMINICAN REPUBLIC: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Administration at the government level							
Ministry of Agriculture		■ O					
Meteorological Department							
International water bureau	■						■ B R
Special and autonomous agencies							
National Institute for Drinking Water and Sewerage Services			■ C O			■ O	
National Water Resources Institute	■ L R P	■ O		■ O C O			
Dominican Electricity Corporation							
Agricultural Bank of the Dominican Republic							
Valdesia Corporation		■ I O C O	■	■			
Dominican Agrarian Institute							
Associations of irrigation water users							
Municipalities			■ C O			■ C O	

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

d) Other water uses

The Meteorological Department manages the Dominican Republic's meteorological services and sponsors hydrological research in the major river basins for flood forecasting purposes.

The municipalities, either directly or through licenses or authorizations, are responsible for the construction, administration and maintenance of water works, dams, reservoirs and other similar projects. They are also responsible for the construction and maintenance of sewerage, wastewater and storm drainage systems.

The Valdesia Corporation is an autonomous government institution which helps to ensure the rational use of the water resources of the Nizao River and its tributaries. Its activities encompass irrigation, hydroelectricity generation and drinking water supply.

An international water bureau examines questions related to the waters shared with Haiti.

16. ECUADOR

The Ecuadorian Institute for Water Resources was created in 1966 and is the principal water resource institution in Ecuador. It has responsibility for the technical and legislative aspects of water resource administration and for the definition of water policies. The Institute's duties also include planning out a better form of utilizing and developing water resources, preparing an evaluation and inventory of water resources, and promoting the protection and development of hydrographic basins.

a) Drinking water supply and sanitation

The Ecuadorian Institute for Sanitary Works, which is attached to the Ministry of Public Health and works in coordination with the National Development Council is responsible for drinking water supply and sewerage sector planning and determines investment priorities. The Institute also constructs and supervises works, sets standards, prepares projects, operates some small water supply and sewerage systems, and manages a rural sanitation fund. At the request of the municipalities it sets rates, and promotes and participates in the organization of autonomous water and sewerage companies.

Autonomous and separate municipal drinking water supply and sewerage companies operate in the largest cities.

The Banco de Desarrollo del Ecuador has played an important role in financing water supply and sanitation investments.

b) Irrigation and drainage

The Ecuadorian Institute for Water Resources implements the National Irrigation Plan; plans, studies, builds and manages irrigation and drainage systems; establishes standards and specifications for the management and operation of irrigation systems; and determines irrigation requirements and limits or extends water rights.

Users associations are involved in the administration of irrigation works.

Table 17

ECUADOR: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ecuadorian Institute for Water Resources Ministry of Public Health - Ecuadorian Institute for Sanitary Works National Development Council Banco de Desarrollo del Ecuador Ministry of Natural and Energy Resources - National Meteorology and Hydrology Institute National Energy Institute Ecuadorian Electrification Institute	■ L P B	■ C L O P R	■ I P ■ C I L O P I P I	■ ■ P R O L P			■ ■
Municipalities Users associations		■ O	■ O	■			

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

c) Hydroelectricity

The Ministry of Natural and Energy Resources is responsible for the overall coordination of the energy sector. The National Energy Institute has the organizational responsibility for energy-sector planning, as well as for coordinating certain research, development and technology transfer activities.

The Ecuadorian Electrification Institute has a dual role as a generation and distribution company, in addition to its duties as a planning and regulatory agency. Distribution companies acquire electric power from the Institute, which owns a majority of their stock. There are several municipal distribution companies which purchase electric power from the Ecuadorian Electrification Institute's subsidiaries.

Electricity in Guayaquil is provided by a private foreign company operating under a license (this license had been expected to expire in 1985).

d) Other water uses

The National Meteorology and Hydrology Institute, which is under the authority of the Ministry of Natural and Energy Resources, is concerned with meteorology and hydrology.

17. EL SALVADOR

The Ministry of Economic and Social Development Planning and Coordination ensures the coordination of the plans and investments of all institutions involved in water management and regulates the use of all water resources.

a) Drinking water supply and sanitation

The Ministry of Public Works, through its former Department of Water Works, and the National Water Works and Sewerage Administration have been responsible for the construction of drinking water supply and sewerage works in urban areas since 1962 and, more recently, in rural areas as well. The Ministry of Public Health and Welfare, through the former Department of Rural Water Works of the Environmental Health Division and PLANSABAR have constructed water supply systems and latrines in rural areas. Municipalities also participate in the construction of basic sanitation works and still provide water supply services in some areas. Water Boards administer and operate water supply systems in rural areas. The Community Development Division of the Ministry of the Interior assists in the construction of sanitation works in marginal urban areas and in small communities.

In 1981, the Revolutionary Government Board created the National Committee of Drinking Water and Sanitation Agencies (Decree No. 825) with the objective of achieving the targets of the International Drinking Water Supply and Sanitation Decade.

b) Irrigation and drainage

The Irrigation and Drainage Bureau is concerned with irrigation and drainage. Other important agencies in the agricultural sector include the Salvadorian Agrarian Institute and the Ministry of Agriculture.

c) Hydroelectricity

The main institutions in the energy sector include the Geothermal Resources Division, the Electricity Distribution Division, the Electricity Generation Division and INVERCEL of the Lempa River Executive Commission and the Ministry of Economic Affairs.

Table 18

EL SALVADOR: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Economic and Social Development Planning and Coordination	■ P		■ P				
Ministry of Economic Affairs				■ ****			
Lempa River Executive Commission							
- Geothermal Resources Division				■ ****			
- Electricity Distribution Division							
- Electricity Generation Division				■ ****			
- INVERCEL							
Ministry of Agriculture				■ ****			
- Meteorology and Hydrology Service							■ B
National Committee of Drinking Water and Sanitation Agencies			■ C				
Ministry of Public Works							
- Former Department of Water Works			■ C				
- National Water Works and Sewerage Administration			■ C				
Ministry of Public Health and Welfare			■ C				
- Environmental Health Division			■ C				
- Former Department of Rural Water Works			■ C				
Ministry of the Interior							
- Community Development Division		■					
Irrigation and Drainage Bureau							
Water Boards			■ O				
Municipalities			■ C O				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Institutions of the energy sector.

d) Other water uses

Water resources assessment activities are the responsibility of the Meteorology and Hydrology Service of the Ministry of Agriculture.

18. GRENADA

Institutional responsibility for Grenada's water resources is shared between the Central Water Commission and the Ministry of Health and Housing. Jurisdiction over these resources is currently undergoing a transition, however. Legislation concerning the establishment of a water and sewerage authority (which would incorporate the Central Water Commission) has been prepared and is currently being revised prior to its presentation to Parliament. It is anticipated that this legislation will stipulate that the authority is to be operated on the basis of sound engineering, economic and management principles and that it is to be empowered to set rate structures and collect the revenues required for the operation, maintenance and debt servicing of the water supply and sewerage systems.

a) Drinking water supply and sanitation

Since 1972, the institution responsible for the development of the sewerage sector has been the Environmental Health Division of the Ministry of Health and Housing. The Ministry, however, lacks the necessary engineering expertise and equipment to assume responsibility for project design, construction, operation and maintenance in the expanding sewerage sector. The Central Water Commission has a core team which possesses the bulk of this expertise and currently provides the major technical inputs for the operation and maintenance of the St. George sewerage system —including the hook-up of new consumers— in close liaison with the Environmental Health Division.

Grenada has no water treatment regulations concerning standards for the design or construction of treatment facilities, etc. The only existing regulations are plumbing codes.

b) Irrigation and drainage

No land is under irrigation in Grenada.

c) Hydroelectricity

There is no hydroelectricity generation in Grenada.

d) Other water uses

The Physical Planning Unit, the Ministry of Communications, Works and Public Utilities, the National Science and Technology Council, the Ministry of Agriculture and the Ministry of Health and Housing are the major institutions involved in the management of coastal areas.

Table 19

GRENADA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Health and Housing - Environmental Health Division	■		■ C O				■
Central Water Commission	■						
Ministry of Communications, Works and Public Utilities							
Physical Planning Unit							
National Science and Technology Council							
Ministry of Agriculture							■

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

19. GUATEMALA

Water resource administration in Guatemala has been marked by a proliferation of institutions, each of which has been established to deal with some specific problem. In many cases, institutions are assigned responsibilities which had previously been assigned to other agencies. In total, there are some 30 institutions responsible for the evaluation, utilization and conservation of water; none has the authority to define integral management policies, nor is there any legal instrument for regulating and coordinating the utilization of water resources.

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Empresa Municipal de Agua de la Ciudad de Guatemala supplies drinking water to the country's capital. The Executing Unit of the Xayá-Pixcayá National Water System, which is under the authority of the Ministry of Communications, Transport and Public Works, supplies Guatemala City with water from the Xayá-Pixcayá reservoir.

The Water Works and Sewerage Department of the Bureau of Public Works, which is also part of the Ministry of Communications, Transport and Public Works, is responsible for the study and design of drinking water supply and sewerage systems in urban areas other than Guatemala City and in some rural localities.

The Institute for Municipal Development was established to facilitate the financing of the works required by municipalities. It is also in charge of designing and building water supply and sewerage systems.

The Executing Unit of the Rural Water Works Programme, which is run by the Ministry of Public Health and Welfare, supplies water to the country's villages, while the Office of Environmental Health of the Division of Health Services, which is also part of the same Ministry, provides water and sanitation services to hamlets in rural areas. The Division of Health Services programmes, coordinates and supervises activities related to the improvement of environmental sanitation.

Table 20

GUATEMALA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Agriculture and Food Distribution		■					
- Bureau of Agricultural Services		■					
- Technical Office for Irrigation and Land Reclamation		■ L					
Ministry of Communications, Transport and Public Works			■				
- Executing Unit of the Xayá-Pixcayá National Water System			■ O				
- Bureau of Public Works			R				
- Waters Works and Sewerage Department			■ R				
- National Institute of Seismology, Volcanology, Meteorology and Hydrology	■ B R						■ B R
Institute for Municipal Development			■ C I R				
Ministry of Public Health and Welfare			■				
- Executing Unit of the Rural Water Works Programme			■ O				
- Division of Health Services			O				
- Office of Environmental Health			O				
National Electrification Institute				■			
- Empresa Eléctrica de Guatemala							
Municipal companies				■			
Empresa Municipal de Agua de la Ciudad de Guatemala			■ O				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

b) Irrigation and drainage

The Technical Office for Irrigation and Land Reclamation is a national agency which falls under the authority of the Bureau of Agricultural Services of the Ministry of Agriculture and Food Distribution. Its job is to develop the utilization of surface water for irrigation, and it has the authority to grant permits for this purpose. However, its objectives do not include the regulation of groundwater.

c) Hydroelectricity

The National Electrification Institute is the national body authorized to develop electricity generation systems. It also supplies electricity to many users in various parts of the country other than Guatemala City. The Empresa Eléctrica de Guatemala supplies electricity to Guatemala City. This company was recently incorporated into the National Electrification Institute, but it maintains administrative autonomy.

There are also several municipal companies that supply electricity at the local level.

d) Other water uses

The National Institute of Seismology, Volcanology, Meteorology and Hydrology under the Ministry of Communications, Transport and Public Works, established in 1976, is responsible for carrying out basic studies on water resources and meteorology. The Institute has recently prepared the initial draft of a law on water resources.

20. GUYANA

The main institutions involved in water resources administration include:

a) Drinking water supply and sanitation

The Ministry of Health and Public Welfare is responsible for the overall supervision of the drinking water supply and sanitation sector. The Guyana Water Authority administers drinking water supply systems, mostly in rural areas. The Sugar Industry Labour Welfare Fund Committee also operates several drinking water supply systems, but the administration of these systems is to be taken over by the Guyana Water Authority. The water supply and sewerage services in the Georgetown area are operated by the Georgetown Sewerage and Water Commissions. Water supply in the town of Linden is provided by the Guyana Mining Company.

b) Irrigation and drainage

The Ministry of Agriculture and its Hydraulic Division are concerned with irrigation development. A single, massive irrigation project is directed through an autonomous project authority. Irrigation water charges are levied by three types of land managers: private owners, local authorities which have the task of managing local infrastructure, and the Land Development Section of the Ministry of Agriculture.

c) Hydroelectricity

The main institutions in the energy sector are the Guyana Electricity Corporation, the Guyana Forestry Commission, the Guyana Natural Resources Agency and the Guyana Oil Company, Ltd.

d) Other water uses

The Hydrometeorological Service is concerned with meteorology and hydrology.

Table 21

GUYANA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Health and Public Welfare			P O				
Guyana Water Authority							
Sugar Industry Labour Welfare Fund Committee			O				
Georgetown Sewerage and Water Commissions			O				
Guyana Mining Company			O				
Ministry of Agriculture							
- Hydraulic Division							
- Land Development Section							
Guyana Electricity Corporation				****			
Guyana Forestry Commission				****			
Guyana Natural Resources Agency				****			
Guyana Oil Company, Ltd.				****			
Hydrometeorological Service							B
Local authorities							

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Institutions in the energy sector.

21. HAITI

The Ministry of Agriculture, Natural Resources and Rural Development is the principal water resource management agency. The Ministry is in charge of all operations designed to improve agriculture, the conservation and utilization of natural resources, and the organization of rural communities. It has responsibilities in the field of water resources as regards water conservation and use, river basin protection, river control, hydrography, hydrology, meteorology, soil conservation, the development of fisheries, etc.

The National Council for Development and Planning (CONADEP) is responsible for formulating the nation's overall economic and social development policy and for guiding the planning efforts of public and private institutions.

a) Drinking water supply and sanitation

The Ministry of Public Works, Transport Communications is responsible for the overall management of the sector. The main operational agencies are the Central Autonome Métropolitaine d'Eau Potable, which is responsible for drinking water supply in Port-au-Prince, and the National Drinking Water Service, which is responsible for other areas. Existing sewerage systems are maintained and operated by municipal authorities.

b) Irrigation and drainage

The Ministry of Agriculture, Natural Resources and Rural Development is responsible for managing existing irrigation and drainage systems, granting permission to private landowners to establish irrigation systems or build irrigation works, and carrying out studies on irrigation and drainage projects, river control, etc.

The Ministry also appoints the officers who inspect watercourses and irrigation systems, and together with the Ministry of Public Works, Transport and Communications, appoints representatives to the local committees that are set up for each irrigation system.

Table 22

HAITI: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Administration at the national level							
Ministry of Agriculture, Natural Resources and Rural Development	■	■ C L O R		■ ****		■ L	■ B
National Council for Development and Planning (CONADEP)	■ P						
Ministry of Public Works, Transport and Communications		■	■	■ ****			
Electricité d'Haïti				■ ****			
Ministry of Commerce and Industry				■ ****			
- Bureau of Petroleum Products							
National Drinking Water Service			■				
Central Autonome Métropolitaine d'Eau Potable			■				
Administration at the regional level							
Cadastral surveys and irrigation offices		■					
Administration at the local or user level							
Local committees		■	■				
Local rural councils							

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Institutions in the energy sector.

At the regional level, under the supervision of the Ministry of Agriculture, Natural Resources and Rural Development, the cadastral surveys and irrigation offices which are located in regions with government-run irrigation networks or services are concerned with the registration of irrigated lands, as well as with the management and operation of irrigation and drainage systems; in this connection, they set the schedules for the distribution of the water from an irrigation network or system among the various private landowners. These schedules must be approved by the relevant Minister.

At the local or user level, a local committee is set up for each irrigation system. This committee is composed of representatives of the corresponding ministries and users. The role of these committees is to make recommendations to the relevant government authority concerning ways to ensure the efficient operation of the system. Local rural councils encourage the establishment of agricultural cooperatives, which can also serve as water cooperatives.

c) Hydroelectricity

The main institutions in the energy sector are the Electricité d'Haïti, the Ministry of Agriculture, Natural Resources and Rural Development, the Ministry of Public Works, Transport and Communications, and the Bureau of Petroleum Products of the Ministry of Commerce and Industry.

c) Other water uses

The Ministry of Agriculture, Natural Resources and Rural Development or another competent government authority, as appropriate, is responsible for the authorization of discharges of effluents by industrial plants and dwellings into natural bodies of water and irrigation and drainage canals.

22. HONDURAS

The Council for Economic Planning is responsible for overall planning and coordinates policies, programmes and projects for, inter alia, the water sector.

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Autonomous National Water Works and Sewerage Service is responsible for the planning, design, construction, operation and maintenance of drinking water supply and sewerage systems in the capital city, as well as of 24 urban and 82 rural water supply systems.

The Ministry of Public Health's Division of Environmental Health is responsible for the planning, design and construction of drinking water supply and sanitation systems in rural areas.

Out of a total of 283 municipalities, 155 administer their own drinking water supply systems and 33 manage their own sewerage systems. Rural water works administrative boards manage 179 water supply systems. They are assisted by the Autonomous National Water Works and Sewerage Service.

The Banco Nacional Autónomo participates in sector financing.

b) Irrigation and drainage

The Office of Water Resources and the Natural Resources Management Project of the Ministry of Natural Resources is responsible for irrigation and drainage programmes, as well as for the management and conservation of the Choluteca river basin. The Corporación Hondureña de Desarrollo Forestal (CONDEFOR), together with the Ministry of Natural Resources, is responsible for river basin management and conservation. The Ministry of Communications, Public Works and Transport, through its Bureau of Civil Engineering Works, is responsible for flood, erosion and silting control.

Table 23

HONDURAS: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Council for Economic Planning	■ P		■ P	■ P			
Autonomous National Water Works and Sewerage Service			■ C O P R				■ B
Ministry of Public Health and Welfare			C P R				
- Division of Environmental Health			C P R				
Banco Nacional Autónomo			I				
Empresa Nacional de Energía Eléctrica				■ O P			■ B
Ministry of Natural Resources		■					■ B
- Department of Hydrological and Climatological Services							■ B
- Office of Water Resources and the Natural Resources Management Project		■					
Ministry of Communications, Public Works and Transport		■			■		
- Bureau of Civil Engineering Works		■					
Corporación Hondureña de Desarrollo Forestal (CONDEFOR)							
National Meteorological Service							■ B
Municipalities			■ O				
Rural water works administrative boards			■ O				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

c) Hydroelectricity

The Empresa Nacional de Energía Eléctrica serves all major communities through an interconnected nationwide system and is responsible for sector planning. Its Planning Division draws up sector investment programmes. Some institutional changes in the energy sector have recently been placed under review.

d) Other water uses

The Department of Hydrological and Climatological Services of the Ministry of Natural Resources is the primary agency in the field of hydrology. The National Meteorological Service is in charge of meteorological activities. The Hydrology Division of the Autonomous National Water Works and Sewerage Service is the main authority in respect of groundwater. The Empresa Nacional de Energía Eléctrica also has some responsibilities in the fields of hygrometry and climatology.

23. JAMAICA

The Planning Institute of Jamaica engages in economic, social and physical development planning, including the preparation of water resource development plans, and coordinates national, regional and sectoral development planning.

The Ministry of Finance and Planning is in charge of economic policy and planning, administers land use controls, and oversees the Planning Institute of Jamaica and the Town and Country Planning Authority.

a) Drinking water supply and sanitation

The National Water Commission has island-wide responsibility for the provision of drinking water supply and sewerage services. The Commission has corporate status. Subject to the approval of the Minister of Public Utilities and Transport, it has the authority to construct and operate works, to levy rates and charges for its services, and to issue and administer regulations concerning wells in general and the provision of public drinking water supply and sewerage services. It also has the authority to acquire the water supply works of parish councils (municipalities) and to operate them. The Commission was legally established in 1985 and is an amalgamation of the National Water Authority (formerly responsible for production) and the parish councils (formerly responsible for distribution).

The Ministry of Public Utilities and Transport oversees the National Water Commission. The Ministry of Construction is in charge of all public works, flood control and community amenities.

At the local level, the parish councils are responsible for the provision of public drinking water, subject to the approval of the Minister of Local Government, who oversees the parish councils and is in charge of the domestic water supply. The councils also have the authority to regulate the installation of sewers, the recreational uses of rivers, shipping, etc.

b) Irrigation and drainage

The Ministry of Agriculture is responsible for the management of the Río Cobre Irrigation Works.

Table 24

JAMAICA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Administration at the national level							
Ministry of Finance and Planning	P				L		
- Planning Institute of Jamaica	P						
- Town and Country Planning Authority							
Ministry of Science, Technology and Environment							
- Natural Resources Conservation Department							
- Watersheds Protection Commission							
Ministry of Construction							
Ministry of Public Utilities and Transport							
Ministry of Agriculture							
Ministry of Health							
Ministry of Local Government							
Ministry of Mining and Energy				****			
Ministry of Tourism							
National Water Commission			C O L				
Underground Water Authority							
Division of Geological Surveys				****			
Jamaica Public Service Company, Limited				****			
Scientific Research Council				****			
River Rafting Authority							
Black River Drainage and Irrigation Board		C O					
Irrigation authorities		C O					
Land authorities							
Parish councils (municipalities)			O				
Irrigation Board							

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Institutions in the energy sector.

The Black River Drainage and Irrigation Board is in charge of the execution and administration of projects and programmes for land reclamation, irrigation and drainage, as well as the maintenance of watercourses. The Irrigation Authorities are by law the grantees of water rights to groundwater and public waters and are responsible for the design and implementation of irrigation schemes and for water allocation. The Ministry of Local Government is in charge of irrigation and drainage, and oversees the Irrigation Authorities and the Black River Drainage and Irrigation Board.

The Watersheds Protection Commission is responsible for the administration of soil and water conservation activities. The Ministry of Science, Technology and Environment, through the Natural Resources Conservation Department, is responsible for watershed protection and oversees the Watersheds Protection Commission. The Commission has corporate status but its overseeing ministry appoints all its members and retains policy-making authority over it.

Land Authorities are responsible for the administration of land use regulations and land improvement schemes, including regulations and plans for soil and water conservation. The Ministry of Agriculture oversees the Land Authorities.

c) Hydroelectricity

The main institutions in the energy sector include the Division of Geological Surveys, the Jamaica Public Service Company, the Ministry of Mining and Energy, and the Scientific Research Council.

d) Other water uses

The Underground Water Authority has corporate status and is in charge of groundwater control. The Ministry of Public Utilities and Transport appoints all its members and retains policy-making authority over it.

The Ministry of Tourism oversees the management of mineral baths and the River Rafting Authority, which is responsible for controlling, regulating and developing river rafting. Another institution related to the water sector is the Ministry of Health.

Local governments and agencies operating at the basin or local level also play a role in water resource management (some of these agencies have been mentioned above). In addition, current legislation provides for the formation of water users' associations, particularly in the irrigation sector.

24. MEXICO

The National Water Commission was created in 1989 as the sole agency having the authority to guide, coordinate and regulate water resource utilization, including water diversion, use and disposal (see figure 4). It is a decentralized agency under the authority of the Department of Agriculture and Water Resources.

The responsibilities of the National Water Commission include:

- The formulation and updating of the National Water Programme, the implementation of the Water Programming System, the formulation of national water policies, and the establishment of criteria and guidelines for federal government programmes and action in the field of water resources;

- The administration and regulation of all national bodies of water, hydraulic structures and capital resources allocated for water-related investments;

- The establishment of a basis for coordinated action by the agencies operating in the water sector. The National Water Commission also ensures and monitors the consistency of water-related programmes with the sector's objectives and assigns public funds for their execution;

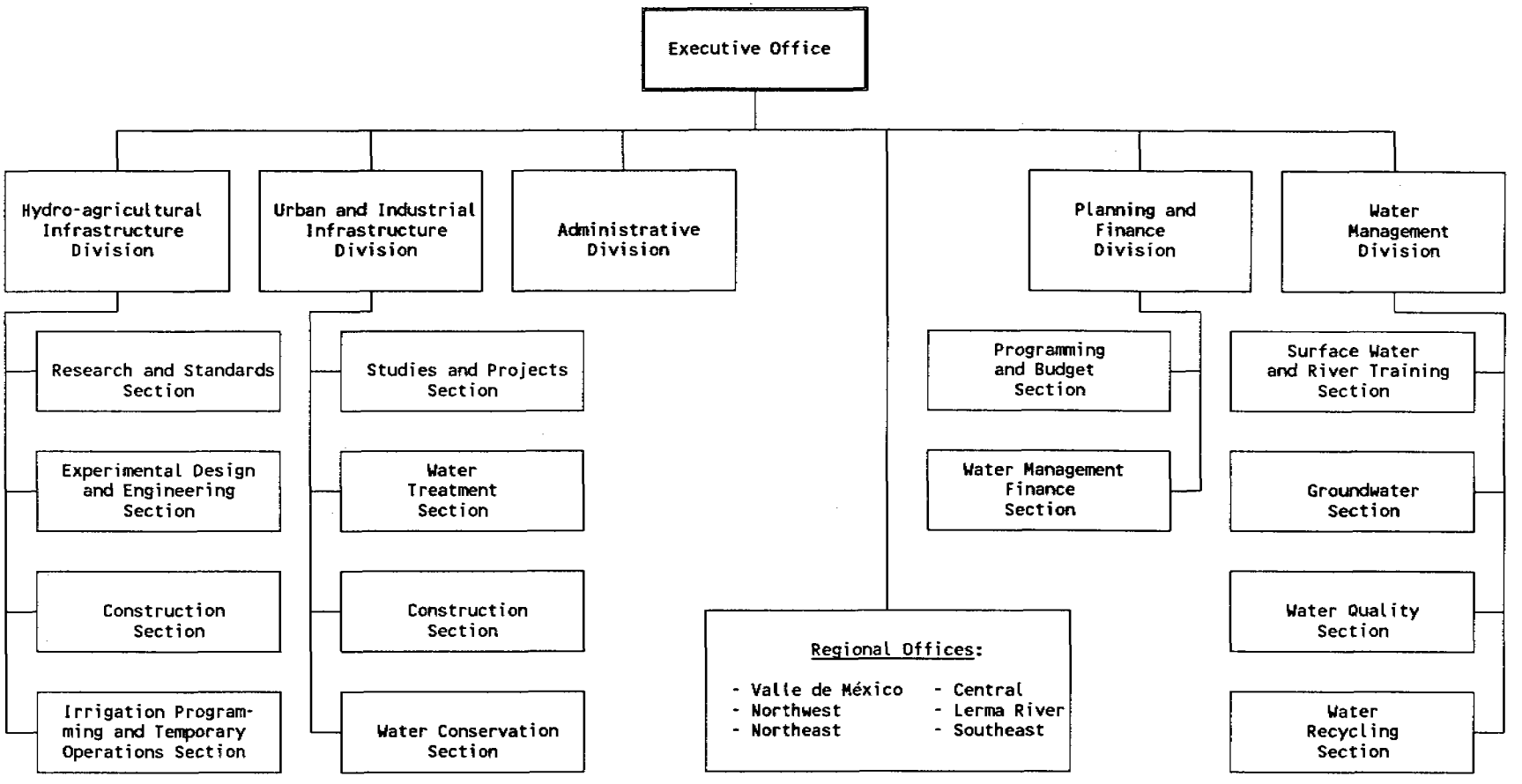
- The study, scheduling, construction and conservation of hydraulic works and the adoption of measures to ensure an integral utilization of water resources;

- The study, proposal and execution of the necessary financial arrangements for the development of the infrastructure needed for the provision of water services;

- The preparation of projects for river control and drainage works, for water resource use, and for other aspects of the management of the hydrographic system of the Valle de México basin.

Figure 4

MEXICO: ORGANIZATIONAL STRUCTURE OF THE NATIONAL WATER COMMISSION, OCTOBER 1989



Source: National Water Commission.

Table 25

MEXICO: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Department of Agriculture and Water Resources - National Water Commission - National Meteorological Service - Mexican Institute of Water Technology (INTA) Department of Agrarian Reform Department of Energy, Mines and Semi-Public Industry - Federal Electricity Commission - Compañía de Luz y Fuerza del Centro Department of Planning and the Budget Department of the Treasury and Public Credit Ministry of Health and Welfare Department of Urban Development and Ecology National Programme for the Efficient Use of Hydro-agricultural Infrastructure	■ I L O P R	■ C O P R ■ L ■	■ ■ L ■ L R	■ ■ L O L ■ L		■ L	■ B ■ R
State drinking water and sewerage commissions			■ C O				
Municipalities			■ C O				
Users associations		■					

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

The National Water Commission issues licenses, permits and concessions for water resource use.

a) Drinking water supply and sanitation

The responsibility for the provision of drinking water and sewerage services is borne by the municipalities. In addition, in the majority of the states there are state drinking water and sewerage commissions. Some of these only provide technical assistance, while others —with the prior agreement of the municipalities concerned— are directly in charge of building, operating and administering drinking water supply and sewerage systems.

The Ministry of Health and Welfare sets and enforces drinking water standards, while the Department of Urban Development and Ecology establishes provisions concerning water pollution control, oversees their application and gives technical assistance in the design, construction and operation of drinking water supply and sewerage systems.

b) Irrigation and drainage

Concessions for the use of water for irrigation in ejidos and other agricultural communities are granted by the Department of Agrarian Reform.

Users' associations are involved in the administration of irrigation works.

c) Hydroelectricity

The Federal Electricity Commission (FEC), under the jurisdiction of the Department of Energy, Mines and Semi-Public Industry, supervises the energy sector and is responsible for electricity service. The Commission generates, transmits and distributes electricity throughout the entire country. To this end, it has regional offices which enjoy a limited extent of autonomy with respect to distribution. In Mexico City and its environs, the FEC-owned Compañía de Luz y Fuerza del Centro is responsible for electricity distribution.

Other institutions with responsibilities in the energy sector include the Department of Planning and the Budget, which regulates procurement and contractual arrangements in the energy sector, and oversees the budget, and the Department of the Treasury and Public Credit, which is responsible for regulating the financial operations of State enterprises and electricity rates.

d) Other water uses

Other institutions involved in water resource administration include the Mexican Institute of Water Technology (INTA), which is part of the National Water Commission, the National Programme for the Efficient Use of Hydro-agricultural Infrastructure, which was founded in 1985 to deal with the problem posed by the under-utilization of existing infrastructure, and the National Water Commission's National Meteorological Service.

25. MONTSERRAT

Administrative responsibility for water resource management in Montserrat is held by the Minister in charge of water resources and the Montserrat Water Authority.

The Minister in charge of water resources is responsible for the administration of the licensing system for the use of groundwater resources and of the permit system for the use of surface water within designated water-controlled areas.

The Governor has the power to grant the required authorization for groundwater exploration activities, to designate water-controlled areas and to place the management of agricultural lands under direct government supervision for soil conservation purposes. The Governor also retains policy-making authority over the Montserrat Water Authority and the Montserrat Land Development Authority (see below).

a) Drinking water supply and sanitation

The Montserrat Water Authority is a body corporate. The Authority reports to the Minister in charge of water resources and operates within the policy guidelines which the Governor-in-Council has the express authority to establish. It enjoys an exclusive franchise for the sale of water for domestic use and is responsible for the provision of drinking water to the public. The Authority has rule-making powers as regards the regulation of the water supply, and its statutory responsibilities include the licensing of land uses liable to affect the banks and shores of surface water bodies within designated water-controlled areas. It is also empowered to construct, operate and maintain the required works, acquire the necessary land and water rights, and levy water rates and charges.

b) Irrigation and drainage

No land is under irrigation in Montserrat.

c) Hydroelectricity

There is no hydroelectricity generation in Montserrat.

Table 26

MONTSERRAT: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Administration at the national level							
Governor	■	■					
Governor-in-Council			■ L				
Ministry of Water Resources	■ L						
Ministry of Agriculture, Trade, Lands and Housing		■					■
Ministry of Education, Health and Community Services						■	
Ministry of Communications and Works and Labour							■
Montserrat Water Authority	■	■ C	■ C L O		■		
Land Development Authority			C				■
Development Control Authority		L	L		■ L		
Administration at the local level							
Rural district boards							

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

d) Other water uses

The Montserrat Land Development Authority undertakes soil and water conservation and water-supply works; the Development Control Authority administers the land use permit system and regulates water supply and sewerage works; the Ministry of Agriculture, Trade, Lands and Housing administers the country's soil erosion prevention and control regulations; and the Ministry of Education, Health and Community Services administers the relevant public health legislation. At the local level, rural district boards are empowered to regulate the prevention and control of pests.

The major institutions involved in coastal area management include the Ministry of Communications and Works and Labour; the Ministry of Agriculture, Trade, Lands and Housing; the Development Control Authority; and the Land Development Authority.

26. NETHERLANDS ANTILLES

The Central Government of the Netherlands Antilles is based in Curaçao, but each island has its own Executive Council and its own departments and budget. The central government determines policy, whereas the island Governments are concerned with implementation.

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Kompania di Awa i Elektrisidat di Korsou, N.V. operates the Mundo Nobo desalination plant, which provides drinking water for the island's population.

b) Irrigation and drainage

No land is under irrigation in the Netherlands Antilles.

c) Hydroelectricity

There is no hydroelectricity generation in the Netherlands Antilles.

d) Other water uses

The Department for Development Cooperation, which is a central government body, funds pre-feasibility and feasibility studies and selects the companies that will be contracted to conduct coastal conservation studies. The projects are put out to tender when they reach the execution stage. The Department also prepares development programmes for the smaller islands when they lack the resources to do so on their own.

Table 27

NETHERLANDS ANTILLES: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Central Government	■						
Department for Development Cooperation							■
Kompania di Awa i Elektrisidat di Korsou, N.V.			■ O				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

27. NICARAGUA

The Office of Natural Resources and the Environment (DRNA) was established in 1979 and has the responsibility of regulating, developing and monitoring the conservation of the country's natural resources, including water resources. It has focused its activities on establishing comprehensive mechanisms for regulating and safeguarding land, water and soil resources. The DRNA has played an important role in the settlement of disputes related to competing water uses which have arisen among different water resource management institutions. Its influence has diminished considerably, however, since it was placed under the Ministry of Agricultural Development and Agrarian Reform. Nonetheless, it performs the same functions as before and, in addition, is also responsible for the development of agriculture through irrigation.

a) Drinking water supply and sanitation

The Nicaraguan Institute for Water Works and Sewerage Services (INAA), established in 1979, is responsible for the supply of drinking water and sewerage services in Managua as well as in the rest of the country.

The Ministry of Public Health, in collaboration with the INAA, is responsible for monitoring the quality of water for domestic use.

b) Irrigation and drainage

The Ministry of Agricultural Development and Agrarian Reform is responsible for irrigation.

c) Hydroelectricity

The Nicaraguan Energy Institute was also set up in 1979 and has been the main agency in Nicaragua's energy sector ever since the State petroleum company was attached to it in 1982. It is the sole agency responsible for the generation, transmission and distribution of hydroelectricity throughout the entire country. The Institute conducts all its water-related activities through its Planning Office. The Empresa de Ingeniería, which also belongs to the Institute, is responsible for the design of hydroelectric works.

Table 28

NICARAGUA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Agricultural Development and Agrarian Reform - Office of Natural Resources and the Environment (DRNA) Department of Planning and the Budget - Nicaraguan Institute of Territorial Studies (INET) Nicaraguan Institute for Water Works and Sewerage Services (INAA) Nicaraguan Energy Institute - Planning Office - Empresa de Ingeniería Ministry of Public Health	■ ■ B L O ■ B R	■ ■	■ C O ■	■ O P R			■ B
Mayor of Managua			■ ****		■		

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Storm water drainage.

e) Other water uses

The Office of the Mayor of Managua deals with flood problems, landslides and storm water drainage within the city of Managua.

The Nicaraguan Institute of Territorial Studies (INET), was founded in 1979 and carries out basic surveys to assess water resources. Many of the components of the national meteorological network are already controlled by the INET and, pursuant to an agreement signed with the Nicaraguan Energy Institute, it will soon be running the country's meteorological and hydrological networks in their entirety. The INET is under the Department of Planning and the Budget.

28. PANAMA

The Bureau of Renewable Natural Resources of the Ministry of Agricultural Development is responsible for the formulation, coordination and execution of policies and strategies related to the utilization of renewable natural resources and their conservation.

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The National Water Works and Sewerage Services Institute (IAAN) and the Ministry of Health are the main agencies having responsibilities in the sphere of drinking water supply and sanitation. The Inter-agency Commission on Water Sanitation and the Environment has been formed to improve the coordination of activities in this field. The IAAN also conducts a drinking water quality control programme.

b) Irrigation and drainage

The Ministry of Agricultural Development is concerned with water use in agriculture.

c) Hydroelectricity

The National Energy Commission, an advisory body to the President of the Republic, is responsible for research and planning relating to energy supply and energy consumption.

The Institute for Water Resources and Electrification (IRHE) is an autonomous government agency entrusted with the responsibility for public service electricity supply; it does not supply the Panama Canal or adjacent areas, however, whose electricity is provided by the Panama Canal Commission.

Table 29

PANAMA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
National Energy Commission				■ P R			
Institute for Water Resources and Electrification (IRHE)				■ L O			
- Department of Hydrometeorology				■			■ B
Panama Canal Commission							■ B
- Division of Meteorology and Hydrography	■ P	■					
Ministry of Agricultural Development							
- Bureau of Renewable Natural Resources	■ P	■					■
National Water Works and Sewerage Services Institute (IAAN)			■ C O				
Ministry of Health							
Ministry of Public Works	■ B						■ B
- Tommy Guardia National Geographic Institute	■ B						■ B
Inter-agency Commission on Water, Sanitation and the Environment			■				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

c) Other water uses

The Department of Hydrometeorology of the IRHE is in charge of activities related to water resource assessment. The Division of Meteorology and Hydrography, of the Panama Canal Commission, is in charge of all activities concerned with the Canal Zone Catchment. The Bureau of Renewable Natural Resources is concerned with soil, groundwater and geology. The Tommy Guardia National Geographic Institute, under the Ministry of Public Works, is responsible for the execution and supervision of geographical, topological and hydrological studies which provide information for the preparation of plans for the development and utilization of natural resources.

29. PARAGUAY

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Technical Planning Department (STP) of the Office of the President of the Republic has the overall responsibility for drinking water supply and sewerage planning. All plans are approved by the National Council for Economic Coordination.

The Corporación de Obras Sanitarias (CORPOSANA), under the Ministry of the Interior is responsible for the provision of drinking water supply and sewerage services in larger communities (above 4 000 inhabitants). The National Environmental Health Service (SENASA), under the Ministry of Public Health and Social Welfare, is responsible for environmental sanitation projects in other communities. It also has responsibilities in the fields of environmental pollution, solid waste disposal, food quality, etc. Both agencies are responsible for the preparation of sectoral plans. The Department of Water Resources for the Chaco Region under the Ministry of National Defence, is responsible for the drinking water supply and sewerage sector in the Chaco region.

At the local level, Community Sanitation Boards participate in the construction and financing of drinking water supply and sanitation systems. After construction is completed, they administer, operate and maintain these systems with the help of technical assistance and supervision from SENASA.

b) Irrigation and drainage

The Ministry of Agriculture is concerned with water use in agriculture.

c) Hydroelectricity

The main institutions in the energy sector are the National Electricity Administration (ANDE), and two bilateral entities: the Argentine-Paraguayan Paraná River Commission, which is constructing the Yacyretá hydroelectric power plant on the Paraná River, and Itaipú Binacional. The Technical Planning Department has the overall responsibility for planning.

Table 30

PARAGUAY: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Office of the President of the Republic							
- Technical Planning Department (STP)			■ P	■ P ****			
Ministry of the Interior							
- Corporación de Obras Sanitarias (CORPOSANA)			■ C O P				
Ministry of Public Health and Social Welfare			■			■	
- National Environmental Health Service (SENASA)			■ C O P			■	■ B
Ministry of Agriculture		■					
National Council for Economic Coordination			■ P				
Ministry of National Defence							■ B
- National Meteorology and Hydrology Service							■ B
- Department of Water Resources for the Chaco Region							
Sanitation Boards			■ C I O				
National Shipping and Ports Administration (ANNP)							■ B
National Electricity Administration (ANDE)				■ ****			■ B
Argentine/Paraguayan Paraná River Commission							
Itaipú Binacional				■			

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Institutions in the energy sector.

d) Other water uses

The main institutions responsible for water resources assessment are the National Meteorology and Hydrology Service of the Ministry of National Defence, the National Shipping and Ports Administration, the National Electricity Administration and SENASA.

30. PERU

According to the General Water Act (Ley General de Aguas, Ley No. 17752) of 1969, the State has property rights over water resources, and all uses must be authorized by the Executive Branch. In addition, the Act stipulates that the State has the responsibility to preserve, protect, study and augment the use of water resources. The legislative-administrative framework for water resource administration is shown in tables 31 and 32.

The Constitution of 1979 provides for three levels of government: central, regional and local. All have responsibilities in the field of water resource administration. Since 1980, departmental development corporations have been created which are coordinated by the Ministry for the Presidency. Special development projects attached to the Ministry for the Presidency or the National Planning Institute manage multisectoral investments (e.g., multi-purpose hydroelectricity projects or projects in poor areas), such as special development projects being conducted in the central jungle region known as Selva Central.

Regional Governments have direct responsibility for water resources as regards both the water supply and the administration of the water service.

The Municipalities Act of 16 March 1981 gives the municipalities the responsibility of administering domestic and industrial water use and, in some localities, of managing the utilization of water resources for energy generation.

Water resource planning is carried out by the Regional Planning Department of the National Planning Institute. This Institute develops water resource plans on the basis of sectoral plans prepared by the planning offices of the respective ministries. The objective of its work is to evaluate projects, rank them according to existing priorities, avoid unnecessary duplication of effort and promote a multisectoral approach. On the basis of priorities assigned to each project, the Institute draws up short-, medium- and long-term investment programmes. These programmes are incorporated into the national budget, subject to the availability of funds, by the Ministry of Economic Affairs and Finance.

The establishment of a national council on river basin development has been proposed. A national water resource plan was prepared in 1977.

The main institutions involved in water resource administration include:

Table 31

PERU: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Central Government							
National Planning Institute	■ P						■ B
- Regional Planning Department	■ P						
- National Office for the Evaluation of Natural Resources (ONERN)							■ B
Ministry of Agriculture	■ L	■ L					
- Water and Soil Bureau (DGAS)	■ L	■ L					
Ministry for the Presidency							
Ministry of Energy and Mines				■ ****			
Ministry of Housing and Construction							
- National Drinking Water and Sewerage Service			■				
Ministry of Health							
- Department of Environmental Health							
- Department of Environmental Sanitation							■ B
Ministry of Defence							
- National Meteorology and Hydrology Service							■ B
Electricity Rates Commission				■ ****			
Centre for Energy Conservation				■ ****			
Centre for Energy Research, Consultancy and Development				■ ****			
Municipalities			■	■			

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Institutions in the energy sector.

Table 32

PERU: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

	Supply of water resources			Water service	Water resource use	Water resource conservation
	Integrated planning	Sectoral planning	Investment			
Central Government						
National Planning Institute	■		■			
- Regional Planning Department	■					
- INERUS Department						
Ministry of Agriculture						
- Office of the Deputy Minister for Natural Resources			■			
- Planning Office		■				
- Water and Soil Bureau (DGAS)						
- Irrigation Department		■				
- Regional Departments	■		■			
Ministry for the Presidency						
- National Development Institute (INADE)						
- Integral Project	■		■			
Ministry of Fisheries						
- Department of Inland Water Resources					■	
Ministry of Industry, Trade, Tourism and Integration	■					
Ministry of Energy and Mines						
- Department of Mines						
- Department of the Environment		■			■	
Ministry of Housing						
- Planning Office				■		
- Department of Urban Development		■			■	
Ministry of Health						
- Department of Environmental Sanitation			■			■
- Departmental corporations	■					
Regional Governments						
- Technical Planning Section	■					
- Production Section		■				
- Infrastructure Section			■			
- Social Affairs Section				■		
Local Governments						
- Department of Sanitation		■				
- Department of Energy					■	

Source: José Carlos Vera La Torre, Oferta y demanda por capacitación en gestión de recursos hídricos en Perú y Bolivia, Economic Commission for Latin America and the Caribbean (ECLAC), LC/R.730, 24 January 1989, pp. 10-11.

a) Drinking water supply and sanitation

Public companies provide urban drinking water supply and sewerage services in large cities; the operational units of the housing sector and the municipalities provide services in smaller cities.

Responsibility for water quality is assigned to the Ministry of Health, which performs its duties in this regard through the Department of Environmental Health in coordination with the Department of Environmental Sanitation and the National Drinking Water and Sewerage Service of the Ministry of Housing and Construction.

b) Irrigation and drainage

Under the General Water Act and the legal provisions relating to the agricultural sector, the permanent authorization of water uses can only be issued by the Ministry of Agriculture's Water and Soil Bureau (DGAS).

The supreme authority in respect of irrigation is the technical administrator of each irrigation district. The technical administrator has responsibility for planning agricultural production activities in consultation with users committees. Users associations are involved in the administration of irrigation districts.

c) Hydroelectricity

The energy sector is regulated by the Ministry of Energy and Mines. Electricity service is administered by ELECTROLIMA S.A., in Lima and by ELECTROPERU S.A., in the interior of the country. Other institutions in the energy sector include the Electricity Rates Commission, the Centre for Energy Conservation and the Centre for Energy Research, Consultancy and Development.

d) Other water uses

The National Meteorology and Hydrology Service of the Ministry of Defence and the National Office for the Evaluation of Natural Resources (ONERN) under the National Planning Institute are responsible for the country's meteorological and hydrological networks. Coordination in the field of hydrology is carried out by the National Meteorology and Hydrology Service.

31. SAINT KITTS AND NEVIS

The Ministry of Education, Youth and Community Affairs, Communications Works and Public Utilities, through its Water Department, is in charge of the management, development and control of surface and groundwater resources, the provision of public water supplies and related works and facilities, as well as the collection, analysis and storage of hydrological and water quality data.

a) Drinking water supply and sanitation

The Nevis Local Council has been entrusted with the primary responsibility for the management, development and conservation of water resources in the island and for the provision and regulation of the public water supply, including the setting of relevant charges and rates. It is also responsible for drainage and sewage disposal, for the implementation of land development schemes (including those for the provision of water supply, drainage and sewerage services), and for the maintenance of gutters, drains, sewers and sanitary facilities.

The Development and Finance Corporation provides financial and other assistance to development companies, including assistance in the provision of industrial water supplies. The Corporation is a body corporate; its start-up capital was subscribed entirely by the Government, but its shares may be held by the public. The Minister of Finance issues policy guidelines and appoints its Board of Directors.

The Ministry of Health and Social Affairs has responsibility for the health aspects of public water supplies and for other water-related activities.

The Central Planning and Housing Authority, under the Minister of Agriculture, Lands, Housing and Development, is in charge of land development and related zoning schemes, including those which concern the provision of drinking water, drainage and sewage disposal services.

Table 33

SAINT KITTS AND NEVIS: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Administration at the government level							
Ministry of Education, Youth and Community Affairs, Communications, Works and Public utilities	■		■ C O	■		■	■ B
- Water Department			■ C O	■			■ B
- Electricity and Cold Storage Department				■			
Ministry of Health and Social Affairs			■			■	
- Public Health Board							
Ministry of Agriculture, Lands, Housing and Development		■ I			■		■
Minister of Lands and Housing			■ C L O		■	■	
- Central Planning and Housing Authority							
Nevis Local Council		■					
Special and autonomous agencies							
Development and Finance Corporation			■ I				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

b) Irrigation and drainage

The Ministry of Agriculture, Lands, Housing and Development has primary responsibility for irrigation, fisheries, soil conservation and land use planning. The Ministry also provides financial assistance for the implementation of projects for the development and conservation of water for agricultural purposes, the improvement on drainage of agricultural lands, and the promotion of soil conservation.

c) Hydroelectricity

There is no hydroelectricity generation in Saint Kitts and Nevis. The Ministry of Education, Youth and Community Affairs, Communications Works and Public Utilities is responsible, through the Electricity and Cold Storage Department, for the generation of electric energy.

d) Other water uses

The Ministry of Education, Youth and Community Affairs, Communications Works and Public Utilities is responsible, through the Electricity and Cold Storage Department, for the production of ice. It is also responsible for the collection of meteorological data.

32. SAINT LUCIA

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Water and Sewerage Authority Act No. 18 of 1984 transferred the responsibility for sewerage to the Water and Sewerage Authority. The Authority is a statutory government corporation responsible for the operation and maintenance of all public water supply and sewerage systems in Saint Lucia. In addition, the Act empowers the Authority to regulate private sewerage disposal; however, no such regulations have been prepared.

The Authority is twinned with Essex, a British water institution. This twinning mechanism has provided substantial support.

The Ministry of Health, Labour, Information and Broadcasting, under the Public Health Act, is responsible for policing the discharge of effluents. In addition, regulations exist under this Act for controlling sewage disposal.

b) Irrigation and drainage

The Ministry of Agriculture, Lands, Fisheries and Cooperatives is concerned with water use in agriculture.

c) Hydroelectricity

There is no hydroelectricity generation in Saint Lucia.

d) Other water uses

The Ministry of Finance, Planning, Development and Home Affairs is responsible for planning; the Ministry of Trade, Industry and Tourism is concerned with tourism, parks and beaches; the Ministry of Communications, Works and Transport is responsible for sea walls and beach sand mining; and the Ministry of Agriculture, Lands, Fisheries and Cooperatives is concerned with fisheries.

Table 34

SAINT LUCIA: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Health, Labour, Information and Broadcasting							
Water and Sewerage Authority			■ L O			■ L	
Ministry of Finance, Planning, Development and Home Affairs	■ P						
Ministry of Trade, Industry and Tourism							■
Ministry of Communications, Works and Transport							■
Ministry of Agriculture, Lands, Fisheries and Cooperatives		■					■

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

33. SAINT VINCENT AND THE GRENADINES

Several government departments and agencies are involved in water resource administration at the national level and have jurisdiction over the entire country. Local governments also play a role in the control of water resources.

The Central Water and Sewerage Authority, a body corporate with financial autonomy, is the principal government agency having advisory, executive and rule-making functions regarding the development, conservation and use of water resources. It also controls all extraction and diversion of public waters and has the authority to levy and collect water and sewerage fees as well as charges for other services (water and sewerage rates and charges are approved by the Governor-General). The Authority is supervised by the Minister in charge of public health, who also has direct responsibility for the protection of water resources in controlled areas and for the designation of such areas.

a) Drinking water supply and sanitation

Both the Central Water and Sewerage Authority and local governments have responsibilities in this field. The responsibilities of local governments include the prevention of water pollution, sewage disposal, domestic water supply, the levying of the corresponding fees, waterworks maintenance, etc.

The Physical Planning and Development Board is in charge of land use planning and development control, including the provision of a drinking water supply within the framework of land development projects.

b) Irrigation and drainage

The Agriculture and Cooperative Bank provides financial assistance for agricultural projects, including land drainage and irrigation. The Saint Vincent Agricultural Development Corporation executes and operates agricultural development projects, including water conservation works.

c) Hydroelectricity

Saint Vincent Electricity Services Ltd., has an exclusive 60-year franchise for the generation, distribution and sale of electric energy in the islands of Saint Vincent and Bequia.

Table 35

SAINT VINCENT AND THE GRENADINES: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Administration at the government level							
Governor-General							
Central Water and Sewerage Authority	L	L C O	L L				
Physical Planning and Development Board							
Agriculture and Cooperative Bank		I					
Saint Vincent Agricultural Development Corporation							
Minister of Health and the Environment			****				
Ministry of Communications and Works							
Ministry of Agriculture, Industry and Labour							B
Ministry of Finance and Foreign Affairs	P				P		P
Local governments			O L			O L	
Special and autonomous agencies							
Saint Vincent Electricity Services Ltd.				O			
Mustique Company			C O				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Storm water drainage.

d) Other uses

The Ministry of Finance and Foreign Affairs is concerned with financial planning. The Ministry of Agriculture, Industry and Labour has responsibility for the management and protection of watersheds, as well as for beaches and sand mining. It also collects rainfall data. The responsibilities of the Ministry of Communications and Works include embankment works, sea walls and related structures, and storm water drainage.

The Mustique Company has an exclusive franchise to develop the island of Mustique, including the provision of drinking water supply.

34. SURINAME

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The main institutions involved in this sector include the Ministry of Health and Environment; the Ministry of Public Works, Telecommunications and Architecture; the Ministry of Agriculture, Livestock and Fisheries and Forestry; and the Ministry of Natural Resources and Energy. Water supply systems in urban areas are operated under the supervision of the Suriname Water Company. The Water Supply Service of the Ministry of Natural Resources and Energy is responsible for water supply systems in rural areas. In addition, a number of urban and rural water systems are operated by private bodies or other government institutions.

b) Irrigation and drainage

The Ministry of Agriculture, Livestock and Fisheries and Forestry is concerned with water use in agriculture.

c) Hydroelectricity

The main energy-sector institutions include the Ministry of Natural Resources and Energy, the Electric Utility Company and the State Oil Company Suriname N.V.

d) Other water uses

The Meteorological Service is concerned with meteorology.

Table 36

SURINAME: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Health and Environment			■				
Ministry of Public Works			■				
Telecommunications and Architecture							
Ministry of Agriculture, Livestock and Fisheries and Forestry		■					
Ministry of Natural Resources and Energy			■ O	■ ****			
- Water Supply Service							
Suriname Water Company				■ ****			
Electric Utility Company				****			
State Oil Company Suriname N.V.							
Meteorological Service							■ B

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - Institutions in the energy sector.

35. TRINIDAD AND TOBAGO

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The Water and Sewerage Authority, a statutory government corporation established in 1965, is the sole agency responsible for the development and control of the water and waste-water systems. This Authority, which replaced five agencies that had previously had responsibility for such functions, is required to supply water for agricultural, domestic, commercial, and industrial uses. In April 1989, it created a Waste-water Department in order to deal more effectively with problems related to waste water. The Department is headed by a Chief Engineer and has responsibility for all aspects of waste-water management, including research, design, the formulation of policies and procedures, and systems operation and maintenance.

On-site sewerage systems are under the jurisdiction of the Public Health Division of the Ministry of Health. The public health inspectors assigned to the different counties are responsible for offering guidance in the construction of pit latrines and septic tank systems.

b) Irrigation and drainage

No information is available on the institutions involved in the administration of irrigation and drainage.

c) Hydroelectricity

There is no hydroelectricity generation in Trinidad and Tobago.

Table 37

TRINIDAD AND TOBAGO: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Health - Public Health Division Water and Sewerage Authority Public Health Inspectors Institute of Marine Affairs - Coastal areas planning and management - Environmental policy - Socio-economic and legal division - Natural resources (fisheries, marine ecology, marine geology) - Information services Ministry of Works, Infrastructure and Decentralization - Drainage Division Ministry of Planning and Mobilization - Town and Country Planning Division Ministry of Energy Ministry of Food Production and Marine Exploitation			■ O R			■ ■ R	■ R ■ ■ ■

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

d) Other water uses

The Institute of Marine Affairs is a statutory body which was established pursuant to the Institute of Marine Affairs Act (No. 15, 1976). Its functions include conducting research on the marine environment, studying multiple uses of the sea and its resources, identifying policy options for the Government in the area of marine affairs, providing advisory services in respect of the development and optimum utilization of marine resources, etc. Its main divisions are: the Coastal Areas Planning and Management Division, Environmental Policy Division, Socioeconomic and Legal Division, Natural Resources Division (fisheries, marine ecology, marine geology), and Information Services.

Other agencies involved in the management of coastal areas include the Drainage Division of the Ministry of Works, Infrastructure and Decentralization, which is concerned with coastal erosion and protective structures; the Town and Country Planning Division of the Ministry of Planning and Mobilisation; the Ministry of Energy; and the Ministry of Food Production and Marine Exploitation.

36. URUGUAY

The main institutions involved in water resource administration include:

a) Drinking water supply and sanitation

The State Sanitation Works Administration plans, builds and operates all drinking water supply and sewerage systems outside Montevideo in both urban and rural areas. It is a decentralized service under the authority of the Ministry of Transport and Public Works. Montevideo's sewerage system is the responsibility of the Municipality, while the State Sanitation Works Administration provides the drinking water supply service. Two committees —one at the policy-making level and another at the technical level— coordinate the two services.

b) Irrigation and drainage

The Ministry of Agriculture and Fisheries is concerned with water use in agriculture.

c) Hydroelectricity

Policy in this sphere is determined through the Ministry of Industry and Energy. This Ministry is also responsible for long-term planning; its National Energy Bureau deals with sectoral policies.

The largest power company is the National Administration of Electric Power Plants and Transmission, which is organized as an autonomous public entity but is subject to certain administrative and legal constraints on its operations. The Salto Grande Joint Technical Commission is the only other public body in the power sector. This bilateral (Argentina and Uruguay) organization is responsible for operating the Salto Grande hydroelectric power plant on the Uruguay River.

Table 38

URUGUAY: LEGISLATIVE-ADMINISTRATIVE FRAMEWORK FOR WATER RESOURCE ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Ministry of Industry and Energy - National Energy Bureau National Administration of Electric Power Plants and Transmission Salto Grande Joint Technical Commission Ministry of Transport and Public Works - State Sanitation Works Administration - National Hydrography Bureau Ministry of National Defence - National Meteorology Bureau National Bureau of Mining and Geology Soil Bureau Ministry of Housing, Land Management and Environment			C O P	P O O		■	B B B B B B
Municipalities			■ O				

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.

d) Other water uses

The Ministry of National Defence's National Meteorology Bureau is the main institution in the area of meteorology. In the field of hydrology, the National Hydrology Bureau of the Ministry of Transport and Public Works is in charge of inventorying the country's water resources, but there are actually several other agencies engaged in water resource assessment activities as well. For example, groundwater falls within the purview of the National Bureau of Mining and Geology and soils and water-related information is the concern of the Soil Bureau. Some agencies in the hydroelectricity sector also process surface-water data. The possibility of placing all water quality-related activities under the authority of the recently created Ministry of the Environment is currently under consideration.

37. VENEZUELA

The National Water Use Plan of 1972 provided a framework for the cross-sectoral coordination of water resource administration. It was anticipated that the Plan would be implemented by means of new legislation and that a specialized management institution would regulate and oversee investments made in water resources. Just such an institution was established when the Ministry of the Environment and Renewable Natural Resources was created in 1977, but the legislation needed to implement the Plan is still being studied by Congress. The main public administration institutions with responsibilities in the field of water resources are shown in figure 5.

The management of water resources in Venezuela is highly centralized under the Ministry of the Environment and Renewable Natural Resources, which exercises authority at the national level over water resources and is responsible for their administration, utilization, regulation, control and planning. In addition, the Ministry is responsible for projects involving the construction, operation and maintenance of hydraulic structures, irrigation works, the urban water supply, hydroelectricity, flood and erosion control, inland water transport, etc. A bill concerning water resources has been awaiting approval by Congress for the last 10 years.

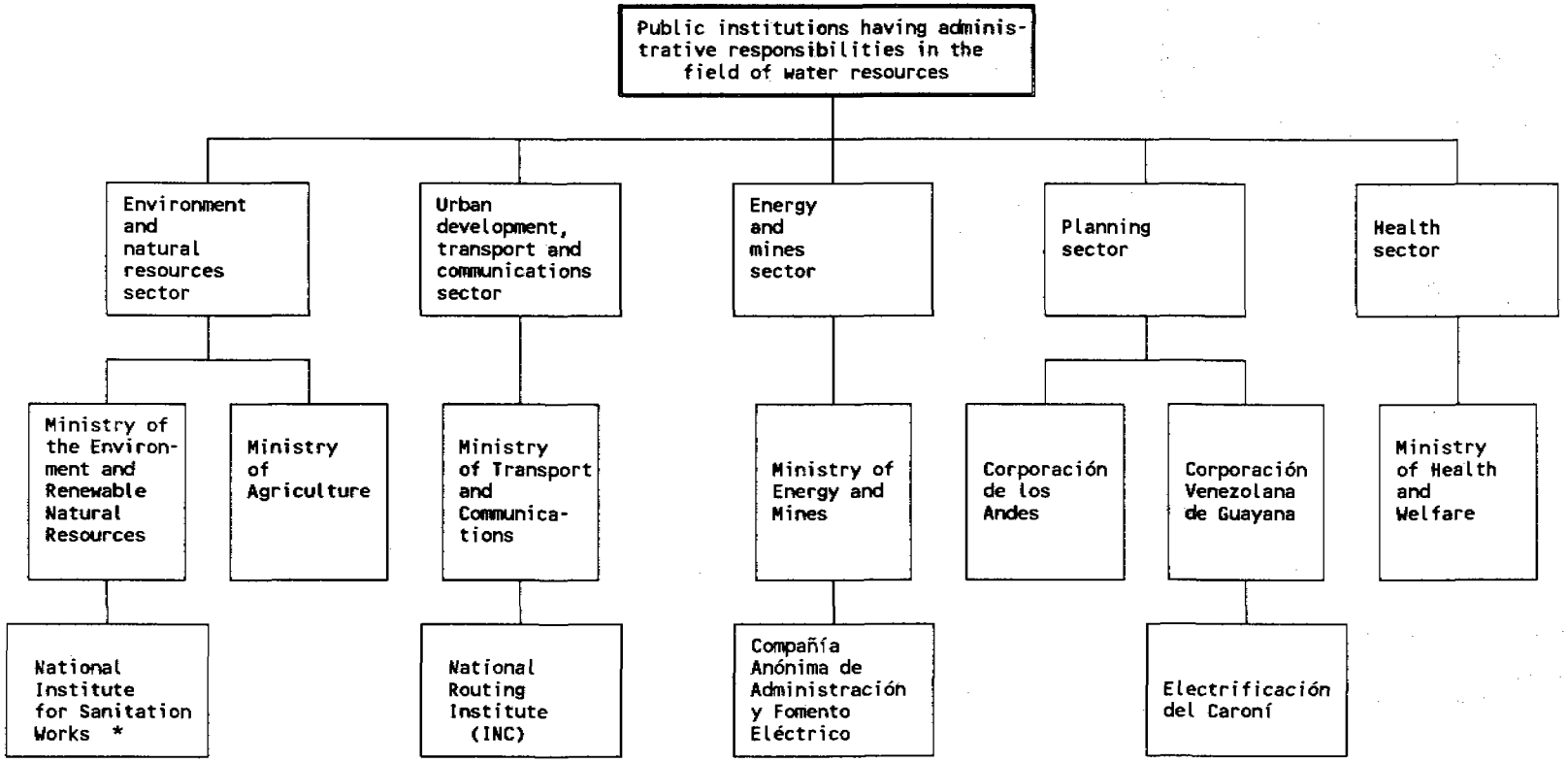
Water resources planning is carried out by the Bureau of Environmental Planning and Management (DGPOA) through the Water Resources Planning Division. It also takes part in the preparation of the water-sector investment programme. The Division's responsibilities also include the promotion of rational water utilization and integrated water resource management.

Regional development corporations also have responsibilities in relation to water resources. For example, the Corporación de los Andes, which was created in 1971 as an autonomous body under the Central Office for Planning and Coordination, has responsibilities in connection with the economic development of the Los Andes region, including the execution of irrigation and hydroelectricity projects, with emphasis on integrated development. The Corporación Venezolana de Guayana is another important regional development corporation.

The main institutions involved in water resource administration include:

Figure 5

VENEZUELA: PUBLIC INSTITUTIONS HAVING ADMINISTRATIVE RESPONSIBILITIES IN THE FIELD OF WATER RESOURCES



Source: Tomás A. Bándes R., "Estudio sobre oferta y demanda de capacitación en gestión de recursos hídricos en Venezuela", Economic Commission for Latin America and the Caribbean (ECLAC), LC/R.732, 6 January 1989, p. 23.

Note: * - The National Institute for Sanitation Works will be phased out of existence over the period 1990-1993.

Table 39

VENEZUELA: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES ADMINISTRATION

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Administration and the government level							
Ministry of the Environment and Renewable Natural Resources	C L O P	C O	C O	C O	C O		B O
- Bureau of Environmental Planning and Management (DGPOA)	P						
- Water Resources Planning Division	P						B
- Hydrology and Meteorology Division							B
Ministry of Agriculture							
- Sectoral Sanitation and Irrigation Bureau		O					C O P R
Ministry of Transport and Communications							
- National Routing Institute (INC)							
Ministry of Energy and Mines				P R			
- Research and Development Division				R			
National Energy Council							
Ministry of Health and Welfare							B
- Department of Rural Water Works							
- Rural Sewerage Department							
Autonomous agencies and other bodies							
National Institute for Sanitation Works ****			C O P				B
- Planning and Development Bureau			P			P	
Compañía Anónima de Administración y Fomento Eléctrico			O	O			B
Corporación Venezolana de Guayana							B

Table 39 (continued).

Organizations	Water resource policy and planning	Irrigation, land reclamation and drainage *	Drinking and industrial water supply and sanitation	Hydroenergy generation	Watershed management and flood control **	Water pollution control ***	Other (fisheries, shipping, recreation, etc.)
Regional development corporations - Corporación de los Andes - Corporación Venezolana de Guayana		■ C	■	■ C			
Users organizations Users associations		■					

Note: ■ - Has responsibilities in the sector: B - basic data collection and/or processing, C - construction, I - investments or financial assistance, L - licensing, regulation or rate regulation, O - operation and maintenance, P - planning, and R - research and investigation.
* - Including land and water conservation.
** - Including land use planning and control.
*** - Including health aspects of water-related activities.
**** - The National Institute for Sanitation Works will be phased out of existence over the period 1990-1993.

a) Drinking water supply and sanitation

The administration of the drinking water supply has been the responsibility of the National Institute for Sanitation Works, an autonomous body created in 1943 that has provided services throughout the country to towns of over 1 000 inhabitants (see table 40). It also has had responsibilities in the field of waste-water management. The Institute, through its Planning and Development Bureau, also has had responsibility for the preparation of the national plan for drinking water supply and distribution and for waste-water and storm-water disposal.

The Ministry of Health and Welfare, through its Department of Rural Water Works and its Rural Sewerage Department, has responsibility for water supply and sewerage systems in rural areas. The Corporación Venezolana de Guayana also provides drinking water supply and sanitation services in some urban and rural areas.

The sector is currently undergoing a reform process. The National Institute for Sanitation Works, which had previously been responsible for providing a drinking water supply and sanitation services to 73% of the population, will be phased out of existence over the period 1990-1993. Drinking water supply and sanitation services will be transferred to municipal or regional companies that will be servicing several municipalities. Private sector involvement in the sector is being encouraged. Private companies will be able to administer water supply and sewerage systems, as well as to lease them or to operate them under a franchise. Responsibility for the water supply in Caracas has been transferred to the Compañía Anónima de Administración y Fomento Eléctrico, which is itself being sold to private interests.*

The current reforms also provide for the creation of a national body to analyse and approve water supply and sewerage rates and charges. Another organization at the national level will be made responsible for comprehensive sector planning, the evaluation and monitoring of operating companies, policy-making, establishment of an information system for the sector, assistance to municipalities, etc.

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* Abel Mejia Batancourt, "La modernización del sector agua potable en Venezuela. Un reto para la década del 90" (paper presented at the United Nations Interregional Seminar on the Mobilization of Resources for the Development and Optimum Assignment of Water Resources and their Conservation, Mérida, Venezuela, 3-7 December 1990).

Table 40

VENEZUELA: DRINKING WATER SUPPLY AND SANITATION SECTOR, 1989

Population group	Responsible institution	Population		Coverage (%)	
		Thousands	(%)	Water supply	Sanitation
Urban	National Institute for Sanitation Works (*)	14 368	73	83	66
Urban and rural	Corporación Venezolana de Guayana	1 050	5	88	72
Minor and rural	Ministry of Health and Welfare	3 336	17	40	14
Misc.	n/a	980	5	n/a	n/a
Total	----------	19 734	100	72	54

Source: Abel Mejia Batancourt, "La modernización del sector agua potable en Venezuela. Un reto para la década del 90" (paper presented at the United Nations Interregional Seminar on the Mobilization of Resources for the Development and Optimum Assignment of Water Resources and their Conservation, Mérida, Venezuela, 3-7 December 1990).

Note: * - The National Institute for Sanitation Works will be phased out of existence over the period 1990-1993.
n/a - None or information not available.

b) Irrigation and drainage

Irrigation and drainage are the responsibility of the Ministry of Agriculture in coordination with the Ministry of the Environment and Renewable Natural Resources. Within the Ministry of Agriculture, the Sectoral Sanitation and Irrigation Bureau has been assigned responsibility for the supervision, control, coordination, operation and maintenance of irrigation works.

Users associations are also involved in the administration of irrigation projects.

c) Hydroelectricity

The Ministry of Energy and Mines, the National Energy Council, the Compañía Anónima de Administración y Fomento Eléctrico and the Corporación Venezolana de Guayana are among the institutions which have responsibilities related to hydroelectricity.

In the Ministry of Energy and Mines, the Research and Development Division is responsible for non-hydrocarbon energy production and distribution and for the formulation of national policy regarding studies, research and development, the control and the conservation of energy resources other than hydrocarbons.

The National Energy Council is chaired by the Minister of Energy and Mines and includes representatives from the Ministry of the Environment and Renewable Natural Resources, as well as the presidents of the Compañía Anónima de Administración y Fomento Eléctrico and the Corporación Venezolana de Guayana. Its main responsibilities are to undertake studies concerning energy resources, use, policy and projects.

The Compañía Anónima de Administración y Fomento Eléctrico was founded in 1958 and is responsible for the generation, transmission, distribution and sale of electric power. One of its specific objectives is to promote the development of hydroelectricity generation capabilities.

d) Other water uses

Water transport is the responsibility of the Ministry of Transport and Communications and its National Routing Institute (INC). This Ministry, which was created in 1952, is responsible for planning, conducting studies, executing projects, constructing, operating and maintaining waterways.

The Ministry of the Environment and Renewable Natural Resources is responsible for hydro-meteorological services throughout Venezuela. Through its Hydrology and Meteorology Division, it compiles information on water resources, including data on meteorology, hydrology, hydrogeology, etc. Other institutions involved in water resource assessment include the Compañía Anónima de Administración y Fomento Eléctrico and the Corporación Venezolana de Guayana, in the field of hydroelectricity, the Ministry of Agriculture in the field of irrigation and drainage, and the National Institute for Sanitation Works and the Ministry of Health and Welfare in respect of the drinking water supply.