

# Network for Cooperation in Integrated Water Resource Management for Sustainable Development in Latin America and the Caribbean



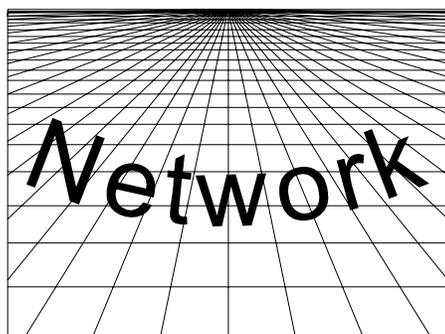
United Nations Economic Commission for Latin America and the Caribbean (ECLAC)

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In the Dublin Statement on Water and Sustainable Development, which was adopted at the International Conference on Water and the Environment: Development Issues for the Twenty-First Century (Dublin, Ireland, 26-31 January 1992), it is noted that “effective management of water resources demands a holistic approach, linking social and economic development with protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or groundwater aquifer” and



that the “most appropriate geographical entity for the planning and management of water resources is the river basin”. In Agenda 21, which was adopted at the United Nations Conference on Environment and Development (Rio de Janeiro, Brazil, 3-14 June 1992) it is emphasized that “integrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good” and it is added that this management, “including the integration of land- and water-related aspects, should be carried out at the level of the catchment basin or sub-basin”.

Although much is said about integrated water resources management, there is not as yet any universally accepted definition of what exactly this term means. One of the best-known is the definition of the Global Water Partnership (GWP). According to GWP, integrated water management is “a process that promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant

economic and social welfare in an equitable manner, without compromising the sustainability of vital ecosystems”. A study by the Inter-American Development Bank (IDB) focuses attention on a slightly different aspect and says that integrated water management involves decision-making and management of water resources for various uses in such a way that the needs and wishes of different users and stakeholders are taken into account. According to this study, integrated management is defined as the management of surface and groundwater in the qualitative, quantitative and ecological sense from a multidisciplinary perspective, and focused on the needs and requirements of society at large regarding water. On the basis of these and other definitions, it may be concluded that, in operational terms, integrated water resources management should be understood to include various different forms of integration, and at least the following:

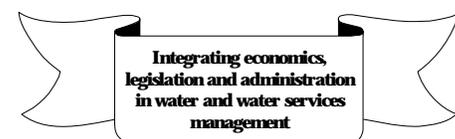
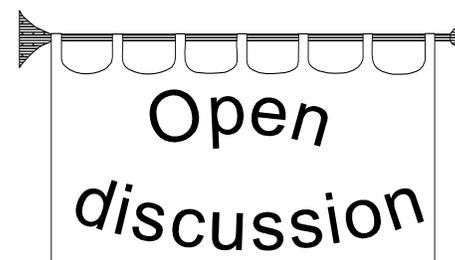
- Integrated management for all uses of water, with a view to maximizing the global benefits and reducing conflicts among those who depend on and compete for this finite and vulnerable resource.
- Integrated management of economic, social and environmental interests, both of the direct users of water and of society at large.
- Integrated management of all aspects of water (quantity, quality and time of occurrence) which have influence on its uses and users.
- Integrated management of the different phases of the hydrological cycle.
- Integrated management at the level of river basins, aquifers, or interconnected water systems.
- Integrated management of water demand and water supply.
- Integrated management of water, land and other related resources and ecosystems.

The appropriate level of integration depends on the specific situation. It is lower in the case of river basins with low levels of water resource exploitation and limited human impact, and in all cases it assumes progressive development.

*Integrated water resources management is, in fact, the capacity to mobilize water effectively in order to achieve development goals, social improvement and environmental sustainability. Rather than the concentration of activities in a single entity, it consists of the systematic application, in coherent form, of general criteria for the treatment of water-related programmes, independently of the institution that carries them out. Thus, integrated management is a way of doing things.*

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The Natural Resources and Infrastructure Division has published a document entitled “*Integrando economía, legislación y*

***administración en la gestión del agua y sus servicios en América Latina y el Caribe***” (*Integrating economics, legislation and administration in water and water services management in Latin America and the Caribbean*) (LC/L.2397-P, October 2005, *Serie Recursos Naturales e Infraestructura* N° 101) by Miguel Solanes and Andrei Jouravlev (available in Spanish only). This study attempts to identify developments in water legislation which promote the sustainable integration of water into socioeconomic development. The specific objectives of this paper are: (i) to contribute to focusing the regional debate on those aspects of water governance, water legislation and macroeconomics which are particularly critical in the specific situation of the Latin American and Caribbean countries; (ii) to promote the formulation of a regional position that genuinely reflects its reality, visions, aspirations and problems; and (iii) to promote a critical and balanced analysis and adjustment of legislation, public policies and the institutional framework for water and its services.

The document is introduced in this issue, with a focus on the criteria for decision-making. In the following issue we shall discuss in greater depth the other contributions that the document makes to the issue of public policies that contribute to the integration of water resources into the socioeconomic development of the countries.

Some countries have adopted decision-making criteria, either for general economic management or for water in particular, which have facilitated its incorporation in the process of sustainable development. Unfortunately, these countries are the exception, and the rule consists rather of institutional fragmentation and a lack of decision-making criteria based on objective long-term parameters.

The Plan of Implementation of the World Summit on Sustainable Development (Johannesburg, South Africa, 26 August-4 September 2002) included a call on all countries to develop national plans for integrated water resources management and water efficiency by 2005. The initiative includes a reference to the need for the developed countries and international financial institutions to support this process in the developing countries. Integrated water resources management should be translated into specific plans which are linked to national development, and the urgency of 2005 is a prerequisite for actions for 2015, to which countries have made a commitment, in connection with the Millennium Development Goals.

Integrated water resources management shifts the focus from the user's values to those

of the system, taking into account opportunity costs and internalizing the externalities. This concept is not new; it appeared over 40 years ago as the “concept of reasonable use”, which stated that the benefits for all users could not be maximized simultaneously. Maximizing the benefits for one user interfered with those of the others, and a reasonable balance had to be reached. The practical application of this concept from the institutional point of view requires, among other things, a separation of water management from productive, social and environmental water services.

In Chile, water resources have contributed to the country's development and macroeconomic policies have promoted the productive integration of water. However, it has been the systematic application of the concept of economic efficiency and assessment criteria for public investment that has made the productive integration of water possible. In practice, there has been a logical sequence of events from economic growth to social and environmental concerns, which has made it possible to pay for almost universal drinking water supply and sewerage services with national resources and to begin to pay the environmental debt. In various other countries, in contrast, the lack of institutional coordination and the lack of economic criteria for evaluating public decisions are preventing optimal management and productive integration of water.

Even the successful cases have not been the result of any single strategy, but rather combinations of macroeconomic, market and capacity-building measures. In any case, while failure can generally be attributed to one identifiable and main cause, success requires the consideration of many contributory factors, and it is very difficult to identify them all and attribute their relative contribution. Simplifications of complex problems and universal prescriptions are thus of very little use.

Some fundamental issues must be taken into account: the concept of efficiency, the impact of the macroeconomic environment, the systemic approach and the concept of planning.

### **The concept of efficiency**

There are a number of positions on this issue. Some advocate a strict definition (efficiency is economic), while others argue that efficiency is an input/output ratio, with a definition that may be more open. Others discriminate between physical, economic, social and environmental efficiency. In any case, approaches are not sustainable if they do not foster rigour in decision-making concerning the use of public resources, whether by direct or indirect investment. Such investment includes subsidies and guarantees

to public utility companies (for example, foreign-exchange, rate of return or other guarantees) which, while not appearing as direct costs at the time they are offered, may generate significant contingent liabilities in the future.

The internal efficiency of public utility companies may also be achieved at the expense of national economic development and social and environmental efficiency. It is therefore important to define this concept with a certain degree of economic rigour, as it should serve as the focus of the discussion and a source of proposals for decision-making that will improve the social efficiency of public investments and expenditure in developing the economic potential of water. For example, a change that appears to bring about an improvement in water management or services provision may in fact be a cost, if it has a negative impact on national development.

### **The macroeconomic environment**

The macroeconomic contexts and the policies on which they are based have a direct impact on the integration of water into the productive economy and the sustainability of services. Nevertheless, few water planners take these contexts into account. There are even examples of programmes that marginally increase physical efficiency at high investment costs, while in the broader context large productive areas are lost because of macroeconomic policies that discourage investment.

### **Systemic approach**

It is important to define clearly the links between water and the related sectors, such as agriculture, mining, energy, transport and others. It is useful to develop appropriate impact, performance and process indicators, and to use them effectively. In this connection, performance thresholds should also be established more rigorously, so that programmes, policies and projects below that level should not be approved.

Although laws and institutional frameworks exist in all the countries of the region, practically none of them include an assessment of the role of water in the national economy. A consistent effort to produce water legislation according to national policies should have more elaborate substrata on the general and sectoral economics of water.

### **The concept of planning**

One issue of great interest is the concept of what is meant by planning. A case in point is Chile, which has successfully incorporated water into economic development, but without formal planning. The model adopted

includes a series of criteria and parameters that are consistently applied over time and space in the economy. It also has formal instruments for water management.

It becomes apparent that improvements in the quality of water-related decisions are the result not only of formal plans, but also of strategies, in the sense of consistent application of criteria which can facilitate achieving certain goals. Planning should not be understood as merely a formal concept, but rather as procedures, as in the Chilean case; that is, criteria that produce the expected objective results.



The session on *water and free trade agreements* at the Fourth World Water Forum (Mexico City, Mexico, 16-22 March 2006) was a joint effort by the Bolivian project Social Vision of Water in the Andes, with financing from the International Development Research Centre (IDRC) of Canada, and technical advisory services from the Natural Resources and Infrastructure Division of ECLAC. The project "Water Law and Indigenous Rights" (WALIR) (see Circular N° 22) which is executed jointly by ECLAC and the University of Wageningen, Netherlands, financed inputs for the process of preparation of the session. The main points of the session are summarized below.

Investment and trade protection agreements have generated a legal system in which international institutions have advanced over national institutions. In terms of procedures, the goal of this system is to protect the interests of investors. Its procedures are secret, are not subject to appeal and have no unified case law. The arbitration market is created exclusively by the investors, and the arbiters are remunerated according to the cases in which they participate.

As they are not specialists in the issues relating to the disputes (for example regulation, environment and taxes), the arbiters produce narrow analyses based on the Vienna Convention on the Law of Treaties. The convention, however, is designed to cover agreements between nations, rather than to deal with the multiplicity and complexity of social, environmental and economic interests and needs associated with foreign investment in public services which affects all aspects citizens' lives, the community and the governance of countries.

Water, both as a resource and as a service, is particularly vulnerable to a simplistic vision. The normal conflicts that arise in

national water regulation are aggravated by the involvement of the interests of investors who have differential protection above and beyond that of the public. These investors can argue that measures for use management, environmental protection or payment for private benefits, affect their legitimate expectations and are thus by definition confiscatory; this is so even if comparative legislation considers such measures to be the legitimate exercise of the police power of the State.

The conclusions of the session emphasize that international investment and trade protection mechanisms have penetrated deeply into the domestic issues of States. The progress made on both substantive and procedural issues in the international institutional framework, however, has not included the updating of contents and approaches in line with its new role.

Water, both as a resource and as a service, is profoundly affected by investment and trade protection mechanisms:

- There are pressures to include water in its natural state in international trade. Although it is not at present legally included in trade obligations, this could happen under certain circumstances.
- A large number of sectoral investments include or have an impact on water. In countries with traditional legal systems and few regulations, this can result in hoarding, impacts on customary and indigenous rights and environmental deterioration. Accusations of expropriation may be made in relation to *ex post* regulatory improvements.
- In relation to water-related public services, a number of privatizations have failed. Many countries did not have the minimum level of regulatory institutions of countries with a long tradition of public-service provision by the private sector, and their inexperience resulted in a lack of adequate regulation and control in relation to used and useful investment, reasonable tariffs, level of leverage, control of transfer prices, and others. It had not been taken into account that the macroeconomic context is fundamental for the capacity to pay for public services and to create sources of sustainable financing.
- In these circumstances, the situation of the countries is more complex, as the arbitration tribunals, in their current form, have substantive, institutional and procedural limitations:

- They adopt extended substantive interpretations that assume, with few exceptions, that the purpose of the

system is basically to protect the interests of investors. These interpretations are based on the investor protection principles and on the Vienna Convention on the Law of Treaties. In the case of the investor protection principles, domestic governance is not an issue. In the case of the convention, the basic concern is the traditional system of international relations between States and not the impacts of investment protection on governance, and it was not designed to deal with a advance of international institutions over national ones. Here again, domestic governance is also not an issue, despite its importance for national legal systems.

- The system is neither transparent nor public, nor subject to appeals. There is no unified case law. Each case is dealt with on an individual basis.
- The system may be subject to capture. The arbitration market is created by the investors and the States cannot activate it. The cases in which the arbiters are involved determine their remuneration.
- The arbitration tribunals have not drawn attention to those principles of domestic law which would be applied in similar cases by countries with extensive experience in these issues. This is particularly clear in respect of the regulation of public services and economic crisis.
- This results in the creation of a new law for foreign investment protection, which moves away from the principles generated by the countries to deal with similar situations and legal relationships in a balanced form.
- In the arbitration processes no emphasis is given to the public interest, although this may be changing in view of decisions such as the Methanex case, where it was claimed that the exercise of the police power of the State, when consistent with universal, non-discriminatory, reasonable measures, in accordance with the public interest, was not expropriation.
- In substantive matters, some general principles are clearly shared by countries with a long tradition of reflecting public-interest considerations in their legislation on water and public services, and they should be applied by the arbitration tribunals:
  - In matters of public interest, the interpretation of the scope and limit of the police and regulatory power of the State, resulting from national practices

in similar cases, should be the determining criterion to decide whether or not the State acted improperly.

- For water as a resource, the fundamental principles of comparative legislation which the tribunals should take into account include: public dominion, allocation and management by the State, monopoly prevention, effective and beneficial use, prohibition of pollution and risk generation, sustainable management of water use, preservation of environmental flows, respect for established and customary rights, control of water markets, and under certain conditions, water charges.
- For water as a service, the tribunals need to take into account the principles accepted in comparative regulation, including: efficiency of the activity, reasonableness of design, supply for low-income groups, reasonable tariff levels, sustainability, service quality, information, control of transfer prices, levels of leverage and capital structure, used and usable investment, regulatory organization, levels of reinvestment, and tariffs in time of crisis.
- On the other hand, there have been problems with water and water services that were the result of contract flaws. It is particularly important to consider situations of conflicts of interest, coercion, abuse of the law, undue influence, and violation of moral norms and decent behaviour, in accordance with national practices, similar legislations and custom.
- In procedural matters, the arbitration system should be complemented by appeals, incompatibilities, opening and transparency, and expansion of the criteria to be considered. In this connection, it is important to take into account that at present the arbitration market is the monopoly of foreign investors. This monopoly should be broken, and the system should be regulated and replaced with something more similar to the national legal systems.
- In substantive matters, the arbitration should apply the common principles of the relevant national regulations and legislation, according to the issue and the facts to be considered. This is the only way to ensure a sustainable balance between investment and public interests. These are the principles that ensure continuity. They have been generated by the nature of the facts and problems, and not by a concern for unilateral protection of a particular sector. Also at the substantive level, international conventions on human rights, the environment and indigenous groups

should be applied. If they are ignored, they become a dead letter, despite the fact that the States signed them and supported them. There is case law available from the appeals panel of the World Trade Organization (WTO) which endorses this approach.

- It is essential to continue with training activities and legal analysis, which must be made available to the countries that need it in the form of consultancy services, and work with the authorities responsible for changing the foundation of the system, both in substantive and procedural matters. Otherwise the imbalance will be compounded by ignorance.

The documents presented at the session are available from the web site of the Bolivian project Social Vision of Water in the Andes at: <http://www.visionsocialagua.org>.

### Provision of transport infrastructure

**“Provisión de infraestructura de transporte en América Latina: experiencia reciente y problemas observados”** (*Provision of transport infrastructure in Latin America: recent experience and problems observed*), (LC/L.2360-P, August 2005, *Recursos Naturales e Infraestructura series N° 94*) by Ricardo Sánchez and Gordon Wilmsmeier (available in Spanish only), is a new study from the Natural Resources and Infrastructure Division. The purpose of the study is to analyze the situation of transport infrastructure in the region and its main characteristics, as a basis for developing a better understanding for the design and implementation of public and private policies on transport infrastructure, an essential condition for sustaining and extending economic development and eradicating poverty. If the growth rates of supply and demand for transport infrastructure diverge, prompt action is needed. National and regional political decisions must be taken in view of the emerging critical transport deficiencies, in order to avoid a situation where the lack of infrastructure becomes an obstacle to development in the region.

The internal distances between points of origin and destination within the region are large. Locations on the South American continent are on average over 500 kms, and in some cases 1000 kms, from the nearest shore, and an average of about 750 kms by highway or railway from a port that could serve them. In some areas in South America, this disadvantage of distance is ameliorated by the existence of navigable waterways, such as the river Orinoco, the Amazon system, the Paraguay-Paraná Waterway, the Tietê, Magdalena, and others. The rivers, even when

they do not interconnect directly, could be linked in intermodal fashion to form extensive transport infrastructure networks, taking advantage of the generous provision of rivers in the region. Significant areas of the region, however, do not have this natural advantage and in general this mode of transport is used at a low rate compared to the overall volumes and experience in other parts of the world.

The waterways have very significant potential, as various Central American countries and those of MERCOSUR, Venezuela and Colombia have an extensive supply of navigable waterways. On average, the availability of waterways in Latin America and the Caribbean in relation to its territory is higher than that of the United States, although not as high as in Western Europe, Thailand, Malaysia and Indonesia. Nevertheless, while in the United States over 14% of cargo was transported by this method in the year 2000, the figure for the Latin American and Caribbean region is less than 3%, suggesting that there is significant growth potential for the future.

In conclusion, urgent attention should be given to improving the navigation and service conditions of the main South American navigable waterways. In addition to having a potential similar to that of the main waterway regions of the world, Latin America has little waterway development and has not capitalized on this significant natural advantage.

This publication may be downloaded from the web site of our Division at: <http://www.eclac.cl/drni>.



We present the conclusions of the document **“Fundamentos jurídicos para el reconocimiento de derechos indígenas al agua: análisis normativo, jurisprudencial y de casos en el contexto chileno”**, prepared by the consultant Nancy Yañez in the context of the WALIR project.

The analysis presented in this document shows that the right of indigenous peoples to water is based on property rights, on the right to protect the environment, the right to

subsistence, the protection and preservation of their forms of life and culture and, in addition, on the right to self-determination. On the basis of this analysis, it is clear that all of the juridical argumentation is useful to protect indigenous peoples and guarantee them the full exercise of their rights.

Property rights confer maximum legal certainty in terms of rights and broad jurisprudential protection. Nevertheless, the regulatory contents of this right require some redefinition in the light of indigenous rights, which include collective ownership of rights and their exercise in accordance with use and custom.

Protection of the indigenous habitat and ecosystems guarantees the subsistence and preservation of their cultures and ways of life, which are indissolubly linked to the land, natural resources and environmental balance.

Both perspectives, which are clearly complementary, recognize that indigenous rights to natural resources are derived from the presence of their ancestors in the territories which contain these resources and ecosystems. This territorial reference point consists of the geographical areas which the indigenous peoples have used throughout history and which link them to the settlements occupied by their ancestors. This demonstrates the continuity of indigenous development in these territories.

The exercise of the right to self-determination, on the other hand, includes recognition that the indigenous peoples have their own forms of organization through which they administer their ancestral territories, and distribute and use natural resources. Recognition of the right to self-determination in the area of water resources management opens up institutional forums for the expression of management models that the indigenous peoples have traditionally used and which have proved to be efficient, in terms of both reallocation and the availability of the resource.

There is a certain degree of consensus concerning the need to adopt or extend a legal framework which recognizes the full collective rights of the indigenous peoples to their resources, including those related to the self-management of their territories of origin and the recognition of the legal right of their traditional authorities to take decisions concerning their natural resources, particularly in relation to water.

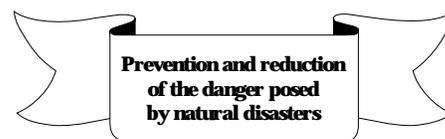
The facts show that in practice, the indigenous peoples have not fully exercised their rights and are in an extremely vulnerable situation in terms of the availability of juridical, social and economic resources to deal with issues that require the defence and

recognition of their rights. This social fragility has resulted in a situation in which the indigenous peoples have been absent from the process of establishing water rights and the structural adjustments to which water institutions have been subjected. On the contrary, the transfer of population and the deprivation of water resources has been a constant factor among the negative externalities generated by investment projects in indigenous territories.

The question that is subsequently raised is what are the regulatory bases needed for extending an adequate juridical framework in favour of the defence of indigenous rights and overcome the vulnerable conditions faced by indigenous peoples for the effective protection and defence of their rights. A regulatory proposal that serves the above purposes should consider the following issues:

- Demarcation of the ancestral territories of the indigenous peoples, with respect for their uses and customs and with full participation of the indigenous people and their communities, taking into account the fact that the territories are the geographical reference point for the exercise of indigenous rights to natural resources in general and to water resources in particular.
- Recognition of the preferential rights for indigenous peoples and peasant communities to the water resources existing in the demarcated territories. This priority is based on the fact that the water is the foundation that guarantees the preservation of indigenous cultures and ways of life in accordance with their own development project. Water resources are needed to make it viable. The right is thus intended to facilitate the sustainability of the development project of the indigenous and peasant communities that have used these resources since time immemorial. Accordingly, the recognition of these rights includes both uses that involve abstraction (extractive) and those without abstraction (*in situ*) associated with the natural water system and which include activities such as fishing, watering points for animals and the use of wetlands resulting from the existence of water.
- Constitutional protection of indigenous rights to existing water resources in their ancestral territories, both surface and groundwaters, and maximum legal certainty as to their ownership. In this context, there is the recognition of ancestral ownership of natural resources by the indigenous peoples, which should safeguard the collective dimension of their relationship with the resources and their use, and their customs for managing, using and reallocating the rights.

- Recognition of the validity of indigenous customary law and of the mechanisms available in these legal systems to strengthen integrated and local management of water resources, especially when a large number of users are interested in the same river basin.
- To ensure the participation and consultation with indigenous and farming communities for the implementation of infrastructure and investment projects which may directly or indirectly affect indigenous water rights in their ancestral territories or their habitat in general. In the case of investment projects authorized on these terms, there should be recognition of the right of indigenous communities to participate in the benefits and profits arising from the implementation of these projects and to be compensated for any potential damage or negative impacts. The right to consultation which is suggested should meet the standards which have been recognized in international and comparative law, and which require that the consultation be formulated in good faith, that is, intended to gain the free and spontaneous consent of the indigenous communities.
- To promote complementary mechanisms for positive and customary legal systems to provide an alternative for the resolution of conflicts that arise concerning authority over the use of water resources. Such mechanisms would take into account that water is a resource in flow, with scarce availability and is used for a variety of purposes and functions, which lead to constant conflicts of interests.
- Urge the national-level public organizations responsible for the management, regulation and control of water resources to guarantee the effective enjoyment of indigenous rights to water. This involves ensuring the preservation of indigenous ecosystems, the equitable and balanced use of water resources, the promotion of development programmes compatible with the economic strategies of the indigenous peoples and water management in accordance with the rules that emerge from indigenous uses and customs.



On 8 and 9 December 2005, the *International Panel on Risk Management in the Areas of Infrastructure and Development* was held in Santo Domingo, organized by ECLAC, the German Agency for Technical Cooperation (GTZ) and the Global Foundation for

Democracy and Development (FUNGLODE) of the Dominican Republic. This event is part of the stage of dissemination of the results of the research carried out in the context of the project “*Prevention and Reduction of the Danger Posed by Natural Disasters*” (see Circular N° 23) which was implemented by ECLAC in 2002-2004 through the Natural Resources and Infrastructure Division, with financing from GTZ. The main objectives of the panel were: (i) to disseminate the experiences of the project; (ii) to divulge, analyze and discuss proposals of public policies for the improvement of risk management, with the participation of the main decision makers for public investment in infrastructure; and (iii) to disseminate the document “*Elementos conceptuales para la prevención y reducción de daños originados por amenazas socionaturales*” (see “*Publications*”).

More information on this event and the texts of the presentations made are available from the web site of our Division at: <http://www.eclac.org/drni>.



A **Ministry of Water** has recently been created in Bolivia. Its mission is to meet the basic and productive water needs of the population and current and future biodiversity in both quality and quantity, while enhancing its availability, equitable, solidary and universal access and quality of the water resources and the related services in the context of social and integrated management while respecting the natural forms of organization of peoples and of the indigenous and farming communities. The Ministry has the following attributions:

- To design and develop the National Strategy for Water and Water Resources, in accordance with the strategy of defence of national sovereignty and security.
- To formulate and implement an integrated and sustainable policy for water resources, to guarantee the human right of access to water for the whole population, and to preserve the environment while respecting cultural diversity.
- To introduce and execute, evaluate and control policies and plans for drinking water supply and sanitation services, irrigation and watershed management, international and transboundary waters, as well as the development of all water uses, in coordination with the Ministry of Foreign and Religious Affairs and the Ministry of Development Planning.
- To be responsible for, participate in and take action for the regulation of different water uses and drinking water supply and sanitation services.
- To preside over and represent the executive power in the National Irrigation Service

(SENARI) and the Interinstitutional Water Council (CONIAG) (see Circular N° 20).

- To coordinate the national, departmental, regional and municipal plans for all water uses and services.
- To coordinate with the Ministry of Sustainable Development and Planning for the follow-up and assessment of the national development strategy.

This new ministry operates according to the following principles:

- Bolivia recognizes access to water as a human right and a right of all the living beings in its territory, based on the concepts of justice, solidarity, equity, diversity and sustainability.
- Water belongs to the public dominion.
- Water is a natural, vital, finite and vulnerable resource and water use has a social, environmental, cultural and economic function.
- The State gives priority to and encourages the social use of water resources rather than the commercial use.
- The river basin is the basic unit for water resources planning and management.
- The State recognizes the social and ancestral use of farming, indigenous and aboriginal communities of the country, while respecting and protecting their water rights, their customary authorities and their uses and customs (traditional knowledge and practices of water protection).
- The integrated management of water resources gives priority to human consumption, agricultural production and the needs of biodiversity.
- The management of water resources must be integrated through decentralized democratic and participatory decision-making forums.
- The knowledge and information on water resources and the related services are the basis for their management, with democratic and transparent access.

More information on the Ministry of Water is available from the web site of the Commission for Integrated Water Management in Bolivia (CGIAB) at: <http://aguabolivia.org>.



In Ecuador, the basin of the river Paute is strategically important at the national level because the Paute hydroelectric plant, the main electricity generating plant in the country, is located here. The river basin is subject to aggressive deforestation, accelerated erosions processes, geological instability, and irrational and inadequate water management. In addition, this zone is now socially and economically depressed, with low income levels and high levels of

unemployment, underemployment and illiteracy, which has caused a rural exodus to the cities and migration mainly abroad. As the area of influence of the Paute river basin is a priority for environmental conservation, land-use management and the socioeconomic development of the population, the Government of Ecuador decided to create the **Water Management Council of the Paute Basin** as an inter-agency coordination and consultation forum.

The Council is a decentralized public agency with legal personality, with its own assets and budget, administrative and financial autonomy, which includes sectional governments, public and private sector entities, users and other stakeholders involved in the management and administration of the river basin. It will be responsible for formulating and implementing a set of administrative, financial, technical and control policies and regulations with a view to ensuring the efficient use and conservation of water and natural resources and the sustainable development of the geographical area involved. The Water Management Council of the Paute Basin shall consist of the Council, the Executive Commission, the Executive Department and the Technical Department.

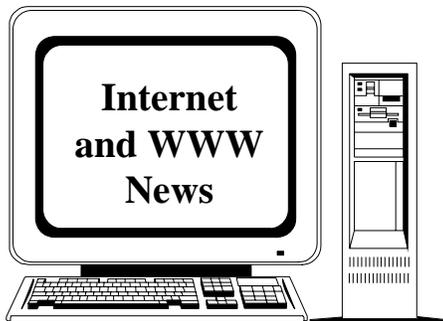
The text of the law creating the Water Management Council of the Paute Basin (9 November 2005) is available from: [http://www.congreso.gov.ec/documentos/pro\\_aprobados/23-925.pdf](http://www.congreso.gov.ec/documentos/pro_aprobados/23-925.pdf).



The project **From Potential Conflict to Cooperation Potential** (PCCP) is one of contributions of the International Hydrological Programme (IHP) of the United Nations Educational, Scientific and Cultural Organization (UNESCO) to the World Water Assessment Programme (WWAP) (see “*Internet and WWW News*”). PCCP has recently developed a software for the resolution of conflicts in water resources management, **Conflict Resolution Support Systems** (CRSS). This system uses a systemic approach to the resolution of conflicts over water. By helping stakeholders to explore and resolve the underlying structural causes of conflicts, the approach offers a significant opportunity for their resolution.

The five main functional activities for assisting the conflict resolution process are: (i) communication; (ii) problem formulation; (iii) data gathering and information generation; (iv) information sharing; and (v) evaluation of consequences. The CRSS is a computerized technical support which was developed to assist in implementing of this systemic approach to water conflicts. The

software includes the computational modules necessary to resolve conflicts resulting from water shortages in irrigation, drinking water supply, hydropower generation and floods. Its principal components include an artificial intelligence-based communication system, a database management system, and a model base management system. It is available at <http://www.unesco.org/water/wwap/pccp/phase2/crss.shtml>.



The web sites worth visiting for information on water resources management and use include the following:

- The **Second United Nations World Water Development Report "Water, a shared responsibility"** was launched on World Water Day, on 22 March 2006, at the Fourth World Water Forum. The report presents a comprehensive picture of freshwater resources in all regions and most countries of the world as it tracks progress towards the water-related targets of the UN Millennium Development Goals and examines a range of key issues including population growth and increasing urbanization, changing ecosystems, food production, health, industry and energy, as well as risk management, valuing and paying for water and increasing knowledge and capacity. Sixteen case studies look at typical water resources challenges and provide valuable insights into different facets of the water crisis and management responses. Finally, the report outlines a set of conclusions and recommendations to guide future action and encourage sustainable use, productivity and management of our increasingly scarce freshwater resources. The report, as well as a number of other interesting documents, are available from the web site of the **World Water Assessment Programme (WWAP)**, which serves as an "umbrella" for coordination of existing UN initiatives within the freshwater assessment sphere (<http://www.unesco.org/water/wwap>).
- The **Regional Portal on Integrated River Basin Management** is an initiative to streamline and enhance the exchange of information and experiences among the different organizations, projects and persons interested in this issue in Latin America (<http://www.portalcuenca.net>).

This portal enables its users to share their experiences, learn of others' experiences, have access to electronic copies of the latest publications on the issue, receive updates on various related events, and find out about training and many other activities.

- The document "**Mainstreaming gender in water management. A practical journey to sustainability: a resource guide**", published by the United Nations Development Programme (UNDP), can be downloaded from [http://www.undp.org/water/docs/resource\\_guide.pdf](http://www.undp.org/water/docs/resource_guide.pdf).
- From 2 to 4 October 2005, the **Fifth Ordinary Assembly of the Association of Regulatory Agencies for Water Supply and Sanitation Services in the Americas (ADERASA)** (see Circular N° 15) took place in Gramado, Rio Grande do Sul, Brazil. The presentations made at this event are available from the web site of the Brazilian Association of Regulatory Agencies (<http://www.abar.org.br>).
- The **National Water Resources Institute (INRH)** of Cuba is an agency of the central State administration, created by Decree-Law N° 114 of 6 June 1989. The INRH is responsible for directing, implementing and supervising the implementation of State and government policy relating to water resources activity in Cuba (<http://www.hidro.cu>).
- **International Shared Aquifer Resource Management (ISARM)** is a collaborative project with the goal of developing and championing best practice for the management of groundwater resources shared between neighbouring countries (<http://www.iah.org/isarm>).
- <http://www.agua.org.mx> is the **Virtual Water Information Centre**, an interactive portal which aims to give virtual space to all of the stakeholders concerned about water in Mexico. The public section of the portal contains: lists of events related to water, job opportunities, a summary of national and international water news, general information on the water situation, rivers, lakes and lagoons in Mexico, educational materials and links of interest. The subject library of the site contains many documents on various issues, such as watershed management, environmental services, the impact of dam construction, the relationship between water and health, arid areas, proposals for a new water culture, water resources management, privatization and others.
- The publication "**The Challenge in Disaster Reduction for the Water and Sanitation Sector: improving quality of life by reducing vulnerabilities**", a joint effort by the Pan-American Health Organization (PAHO), the United Nations Children's Fund (UNICEF), the International Strategy for Disaster Reduction (EIRD) and the International Federation of Red Cross and Red Crescent Societies (FIRC), was prepared for the Fourth World Water Forum to draw attention to the importance of ensuring that drinking water supply and sanitation systems remain fully operational in the aftermath of natural disasters. This document can be downloaded from: <http://www.paho.org/english/dd/ped/DesafiodelAgua.htm>.
- The web site of the **Latin American Association of Groundwater Hydrology for Development (ALHSUD)** contains information on its activities, publications (including the *Revista Latinoamericana de Hidrogeología*), statute, fellowships, and so on (<http://www.alhsud.com>). In addition, the ALHSUD forum entitled "Forum for the Future of Water" is functioning. It is currently covering the following issues: access to drinking water as a human right, who owns the water, how to put an end to water scarcity, and a vision of the future of groundwater.
- The **Canary Islands Water Centre (CCA)** of Spain is an independent and non-profit organization that was created to promote water science and technology (<http://www.fcca.es>). The CCA carries out applied research in different areas of the water cycle, in particular on water quality, desalination, wastewater treatment and reuse.
- **Strategic Alliance for Freshwater Information, Resources and Education (SAFFIRE)** is an "umbrella" initiative that brings together existing initiatives and websites that are working on water management issues (<http://www.water-saffire.net>). Its objective is to provide a common gateway interface to explore and understand the contents of the partner websites. It enables a consolidated search engine that searches all the partnering websites, provides packaged thematic pages that draws information from the partners, as well as delivers resources that enable decision-making on water management issues.
- The **SALINITY-L** discussion list is a forum for discussions related to salt management in relation to irrigation and drainage (<http://listserv.unl.edu/archives/salinity-l.html>).
- The **Stockholm International Water Institute (SIWI)** is a policy institute that contributes to international efforts to find

solutions to the world's escalating water crisis (<http://www.siwi.org>). SIWI advocates future-oriented, knowledge-integrated water views in decision making, nationally and internationally, that lead to sustainable use of the world's water resources and sustainable development of societies.

- The **Limarí Basin Integrated Territorial Programme** of the Production Development Corporation (CORFO) of Chile is designed to promote and support the integrated and rational management of natural resources, and also to implement quality management systems for the agricultural productive factors and processes according to the clean production concept, boosting and developing those sectors with export potential. More information on this programme, its contents and activities are available from <http://www.cuencalimari.cl>.
- The goals of the **Interdisciplinary Water Research and Management Programme** (PRIGA) of the National University (UNA) of Costa Rica are: (i) to promote and assist in creating and implementing programmes, projects and activities that contribute to an integrated and sustainable management of water resources; (ii) to generate knowledge that facilitates integrated management of water patrimony based on an interdisciplinary approach to the issues and the linking of academic experiences among the teams of UNA; and (iii) based on the above, to promote forums to strengthen all areas of institutional academic activity. On its web site (<http://www.una.ac.cr/priga>) there is information on PRIGA projects and publications, news and events, as well as the text of the legislation and regulations relating to water resources in Costa Rica.
- The Argentine National State, through the **Dam Safety Regulatory Agency** (ORSEP), regulates activities relating to the

maintenance of dams, and complementary and auxiliary structures that come under its jurisdiction (<http://www.orsep.gov.ar>). Its mission is to achieve a situation in which the dams in Argentina comply with international structural and operational safety standards in order to protect the population and safeguard public and private property.

- **SciELO (Scientific Electronic Library Online) Peru** is a cooperative effort of the National Council of Science and Technology (CONCYTEC) of Peru, the Universidad Nacional Mayor de San Marco and PAHO to implement an electronic library which provides full access to a collection of high-quality Peruvian scientific journals. Its web site (<http://www.scielo.org.pe>) offers access to the complete text of a number of interesting articles, such as "*Valoración de las aguas residuales en Israel como un recurso agrícola: consideraciones a tomar en cuenta para la gestión del agua en el Perú*", "*Importancia de los ríos en el entorno ambiental*" and "*Impacto socioeconómico de la contaminación de las playas de Lima*".

*socioeconomic threats*) (LC/G.2272-P, October 2005, *Cuadernos de la CEPAL* N° 91) by Eduardo Chaparro and Matías Renard (editors) (available in Spanish only). This publication is the final output of the Project "**Prevention and reduction of the danger posed by natural disasters**" (see "*Meetings*") which benefited from the collaboration of consultants from Argentina, Chile, Colombia and Peru. The document was conceived as a guide for the authorities of Latin American and Caribbean municipalities affected by socio-natural phenomena, so that they can develop effective local risk management and thus reduce the human losses and material damage. The text is intended to contribute to the training of all actors in society, with a view to taking a preventive rather than reactive approach to socio-natural threats, reducing vulnerability, which is the main determining factor in damage caused by disasters, and strengthening sustainable development strategies. The document is organized in four chapters. The first is devoted to basic concepts and to integrated risk management. The second chapter refers to the regulatory aspects and prevention tools, while the third outlines the institutional framework for management. The fourth chapter covers, on a topic basis, examples of preventive experiences in Latin America and the Caribbean, which take into account the historical information on disasters in the region.

## Publications



Recent publications of the Natural Resources and Infrastructure Division on water-related issues:

- "**Elementos conceptuales para la prevención y reducción de daños originados por amenazas siconaturales**" (*Conceptual elements for the prevention and reduction of the damages caused by*

The publications of the Natural Resources and Infrastructure Division are available in two formats: (i) as electronic files (PDF format only), which may be downloaded from <http://www.eclac.org/dmri> or requested from [Andrei.JOURAVLEV@cepal.org](mailto:Andrei.JOURAVLEV@cepal.org); and (ii) as printed (hard) copies which must be requested from the ECLAC Distribution Unit by e-mail to [publications@eclac.cl](mailto:publications@eclac.cl), by fax to (56-2) 2102069, or by mail to ECLAC Publications, Casilla 179-D, Santiago, Chile.

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