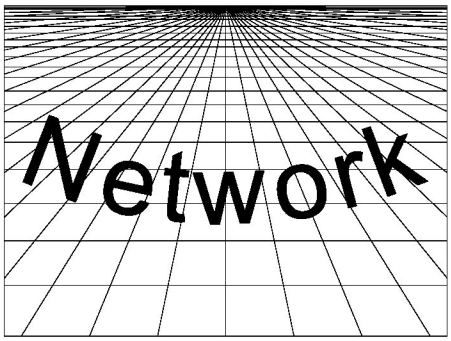
Network for Cooperation in Integrated Water Resource Management for Sustainable Development in Latin America and the Caribbean

United Nations Economic Commission for Latin America and the Caribbean (ECLAC) N° 16 November 2002

CIRCULAR N° 16

Today, we are seeing a renewal of interest, in virtually all areas of theoretical thinking associated with human development, in the attainment of ever more integrated goals. The quest for development has prompted human beings to specialize and to take a sectoral approach to the spheres of thinking and work. The upshot of this has been that "modern" societies have organized themselves to deal with issues and disciplines, from university education to the exercise of professions, using an increasingly sectoral or piecemeal approach.



This way of thinking and acting —which persists today in many spheres insofar as it has allowed, and continues to allow, huge strides to be made in economic, social and environmental development—, has become an obstacle to efforts to tackle the complex web of impacts of human activity on the environment and our quality of life. Piecemeal or sector-based actions —and the decision-making instruments used to prioritize them, such as economic instruments—, face limits imposed by nature and its ecosystems, not all of which are quantifiable or divisible, as well as the interactions associated with each action. In short, approaches based on purely sectoral or, worse still, sub-sectoral lines, which proved their usefulness in the past, today do not ensure optimum outcomes, whether in the economic, social or environmental spheres, if they are not linked up in integrated systems.

Due to the obstacles engendered by the sectoral approach, there has been an explosion of demands for better coordination, participation and integration in decision-making. It is only possible to follow through on these good intentions, whether couched in terms of systemic, holistic, integrated approaches or similar expressions, by employing appropriate working methods, as will alone is not sufficient. Interdisciplinarity is a discipline in itself. If there exists the desire to put decisions on integration into practice, it is necessary to train and to reorganize operations and institutions. Therefore, society will need to gradually adapt to new forms of organization and consistent methods of making decisions if it wishes to attain holistic goals.

Unquestionably, this need for change gives rise to a series of dilemmas still to be resolved in many areas, such as water resources management. It is necessary, for example, to review the ways in which strategies and plans are formulated, the ways in which greater numbers of people can be involved in the process, the acceptance of terms that can be understood across different fields of study, and recognition of issues that cut across disciplines, such as gender, environment and risk. The concept of integrated water resources management is not outside this process, and indeed forms an essential part of the drive for integration and participation in decision-making processes. In this regard, any progress achieved in creating integrated water resources management systems will serve as an example for attaining more sophisticated goals, such as those sought by integrated environmental management.

The Global Water Partnership (GWP) defines integrated water resources management as 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. This notion is linked to that of governance, which is defined by Mr. Peter Rogers as the capability of a social system to mobilize energies, in a coherent manner, for the sustainable development of water resources, with, it could be added, a commitment assumed and accepted by the majority of citizens.

While acknowledging the will to take decisions that are increasingly integrated in nature, it is nevertheless appropriate to adopt a practical approach. Activities geared towards integrated water management must set themselves limits in terms of what they should or should not intervene. Each day man carries out thousands of actions in every river basin. The fact that such actions are carried out does not imply that they automatically form part of a water management process at the river basin level, and even less that they are integrated. ***In order that actions conducted by human beings form part of a process of water management at the river basin level and of watershed management, they must have been coordinated beforehand, with due consideration to their overall impact on the dynamic of the river basin, the water resource and their populations.***

In order for the water management process at the river basin level to be "integrated", it is necessary to undertake actions that ensure that the benefits obtained are equitable, in terms of

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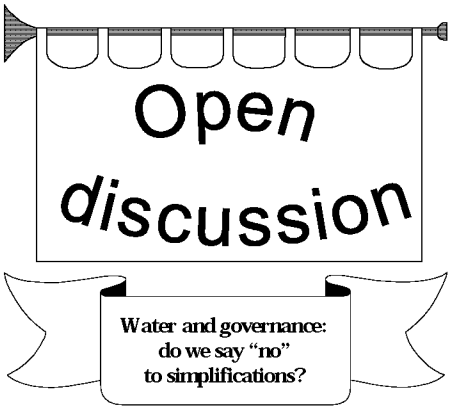
production and social and environmental considerations, considering the impact of human intervention on the river basin. Furthermore, it is vital that the water management system provides scope for user involvement in decisions with a view to promoting equity, thereby legitimizing the decision-making process and the actions undertaken. Above all, there is a need to explicitly state the link between the cause and effect of each action and their tie-up with the stakeholders (causal relations), so that government initiatives are implemented with the agreement of the majority of citizens, and approved procedures, criteria and standards are enforced.

It is not a particularly easy task to shift from a piecemeal, sector-based management approach to a multisectoral one, which to boot is integrated and geared towards sustainable development. The problem becomes thornier still if this transition must take place in each water system, involving the local participation, and covering the entire country. Complications arise when there is wide scope for interference in these local spheres on the part of authorities or by decisions from outside the water resource or river basin management system. In such situations, it is virtually impossible to identify "who's managing who" in water resources management, and this results in substantial conflict.

That explains why there is today something of a "water governance crisis" in the countries of the region. This crisis has arisen due to the evident conflicts caused by competition between user sectors and participating players from outside, and because of the problems they face in organizing themselves and dealing with these conflicts using rules acceptable to the majority. The players traditionally responsible for sectoral water management, such as the managers of irrigation districts, and firms involved in water supply and sanitation, hydroenergy, aquaculture and recreation, must start to go about their business taking into account not only multisectoral water uses, but social and environmental concerns as well. The players must begin to coordinate actions at the river basin level with other users, and at the same time pay to fund an organization for that purpose. They will not prove equal to this task if they lack the legal authority and coordination mechanisms to prevent unsolicited involvement by myriad actors in the river basin where they are located.

Many people in charge of water management are today convinced of the need to take increasingly interdisciplinary decisions, but they simply cannot do so or do not know how to do so. Governments therefore need to be capable of advising them on interdisciplinary management processes. Governments must be able to give them the guidelines required to shift their focus from issues about sectoral water use to multisectoral management, and then to integrated management. Water management agencies operating at the river basin level must assume responsibility for coordinating in a consistent fashion the laws and regulations in force at the national level with those at the river basin level. The principles of land-use planning should to a substantial degree be taken up; such principles generate the need to formulate water management plans at the river basin level and, above all, clarify the roles and duties of each player who becomes involved and has an influence, either directly or indirectly, on integrated water management objectives, in such a way that they act in a coordinated fashion consistent with the goals of integration.



We draw your attention to a paper entitled "***Agua y gobernabilidad: ¿un no a las simplificaciones?***" ("Water and governance: do we say "no" to simplifications?"), which has been prepared for the Global Water Partnership (GWP) by Mr. Miguel Solanes, Regional Advisor on Water Resources Legislation and Regulation of Public Utilities at ECLAC and member of the GWP Technical Advisory Committee. This article seeks to analyse the limitations of water governance in the countries of the region.

The concept of governance refers to the series of capabilities of the systems that are in place to develop and manage water resources and the provision of water-related services at various levels of society. In order to be effective, governance must be transparent, open, accountable, participatory, communicative, incentive-based, equitable, coherent, efficient, integrative and ethical.

Governance comes under the spotlight when its limitations manifest themselves. There is growing awareness about issues such as unsustainable water use, pollution and monopolization of the resource, and lack of accessibility to water-related services on the part of substantial sectors of the population, which together comprise the notion of governance; this rise in awareness serves to underline concern for the issue.

Globalization and the situation in each country, the lack of suitable legal frameworks and organizations, the presence of special legal arrangements, and the pressures that can be brought to bear by interest groups are all matters that relate to governance.

- ***Globalization and the situation in each country***: water problems, both in the utilities sector and as regards the resource itself, do not have to do solely with water resources; the same holds when it comes to solutions. Ignorance of this reality sometimes leads participants to propose universal, common solutions that are gross simplifications, i.e. ideological, and eventually counter-productive.

- ***The lack of suitable institutions and legal and regulatory frameworks***: regulation of a public good such as water, both as a resource and a service, is problematic and unreliable, in the sense that the institutions charged with regulation find it difficult to come to grips with the nature of the resource. Moreover, water management agencies do not generally have inventory or management competencies, and decentralization initiatives undertaken without analysis of resources at the local level aggravate the situation.

- ***Special legal arrangements***: as a consequence of globalization, the region is noteworthy for the large number of services provided and rights held by firms that operate under arrangements protecting foreign investment. This gives rise to foreign jurisdiction over local matters, and the implications and effects of this have come in for little scrutiny in the region (see Circular N° 14). Examples of such arrangements include treaties that protect foreign investment and regulations that may come into effect with the Free Trade Area of the Americas (FTAA), many of which would be taken from the North American Free Trade Agreement (NAFTA). Studies of this agreement, which have been conducted outside the region, are critical of it.

- ***Interest groups, corporations and pressure groups***: governance is affected by the different types of pressure brought to bear on governments. The wide range of needs and circumstances underscores the unsuitability of propositions that offer a universal solution. Thus, in developed countries, characterized by robust corporate structures (industrial, social, union, environmental, etc.) representative of different sectors, a high degree of participatory pluralism, powers that are more or less balanced, and effective support structures (such as adequate systems for the delivery of justice and education), agreement between corporate

structures or major sectors and self-regulation are instruments that are gaining ground, with consequent reduction in transaction costs. When advocated in societies where there is no balance of power or equality of access, these same arrangements lead to a situation where the sector with the greatest de facto power and ability to lobby can in practice secure policies that do not necessarily enhance the general welfare. This situation arises through a variety of mechanisms, such as the allocation of water rights without any conditions, and procedures governing services and guarantees that offer no incentive for efficient delivery of water-related public services.

These brief references lead us to a number of conclusions:

- ***Globalization and the situation in each country***: the issue of water governance cannot be separated from the context in which it operates. That implies the need for specific programmes that generate qualitative improvements in the sector. In addition, it calls for acknowledgement of the strategic importance of the resource, as reflected in the setting-up of the National Water Agency (ANA) in Brazil.

- ***The lack of suitable institutions and legal and regulatory frameworks***: differences between the situation in the region and other parts of the world mean that, in terms of chronological priority, water governance in the region may require stronger regulatory and management organizations. Where these are lacking, a vacuum of public power is created, as a consequence of imbalances between corporate structures and interest groups, and this benefits the sectors which hold effective control and enjoy greater access to political power.

- ***Special legal arrangements***: the region has yet to assess the consequences of the legal and institutional mechanisms ushered in by globalization on the equity and efficiency of water resources management and development in the region. Such an assessment is necessary to consider them when taking measures, granting rights, and entering into contracts for services in which water is an input or end product.

- ***Interest groups, corporations and pressure groups***: there is a need to optimize mechanisms for decision-making and conflict resolution. This entails improving the scope for access to the political, administrative and legal processes of traditionally marginalized groups such as indigenous peoples, the users of services and subsistence farmers; it also involves adopting decision-making criteria that improve efficiency and equity in the granting of rights, approval of projects, and provision of water-related public services.

Should we promote competition in the water supply industry?

The water supply and sewerage industry is a classic example of a local natural monopoly. It is considered the most monopolistic of all public utility industries and, as such, is uniquely resistant to direct market competition. Most forms of direct market competition between public utilities in the provision of water supply and sewerage services within a given region would entail inefficient, wasteful and prohibitively costly duplication of the network of water mains and sewers and would produce chaos on the streets. Moreover, at least in the foreseeable future, the barriers to direct market competition in this industry are unlikely to be reduced to any significant extent by the kind of technological progress which opened the telecommunications and electric industries to competition.

It is for these reasons that regulators always place strict controls on the entry into the water supply and sewerage industry, and each water utility has responsibility for its own exclusive geographical area, which does not overlap with any other. Generally speaking, the purposes of these controls are: (i) to avoid unnecessary duplication of facilities and the associated economic waste in a highly capital-intensive industry such as this; (ii) to encourage the achievement of economies of scale, which are substantial in this industry; (iii) to attract investment to the industry and protect it from ruinous and destructive competition; and (iv) to avoid the public inconvenience that results from the installation and maintenance of duplicative facilities.

Traditionally, regulatory practice has been to avoid direct market competition in the water supply and sanitation industry; that notwithstanding, some analysts believe that such competition should be permitted and even encouraged. Is this a good idea? The answer depends in essence on the goals pursued and the ability of regulators to minimize problems caused by the advent of competition.

On the one hand, under certain conditions, promoting competition may be a legitimate, albeit limited, means of attaining a number of objectives such as: enhancing security of supply in the event of localized shortages; encouraging more rational use of existing infrastructure, particularly where there are imbalances in installed capacity; ensuring that tariffs more truly reflect costs; promoting the introduction of new services, contracts and tariffs; and generating additional incentives for firms to reduce costs. On the other hand, it is likely that direct market competition and its benefits will be minimal and restricted to large consumers and areas that exhibit very favourable conditions. Furthermore, it is important to remember that, whatever the extent of restructuring and the enthusiasm for competition, it is impossible to eliminate the natural monopoly and the need for permanent and detailed public regulation.

The form of direct market competition in the water supply and sanitation industry that has received the greatest attention is what is known as common carriage. This form of competition occurs when one utility supplies water or sewerage services to its customers by using another utility's network. This form of competition is possible in the electric and telecommunications industries, but has not been successfully implemented to any significant extent in the water supply and sanitation sector. The principal impediment to this form of competition is that, unlike in the case of electricity and telecommunications, there are no national or even extensive regional networks of water mains and sewers.

Water supply and sewerage services are essentially local, or at most, regional monopolies, and in most of the countries the industry tends to have a fragmented rather then integrated horizontal structure. The principal reasons for this are threefold: (i) investment costs in the networks of water mains and sewers are extremely high; (ii) water and sewage are heavy and non-compressible, so the costs of transportation tend to be very high in relation to the costs of water abstraction, storage, treatment and retailing, as well as the costs of sewage collection and treatment; and (iii) water is relatively abundant and easy to store, so the benefits from interconnection at the national or regional levels tend not to be very substantial. It is reasonable to expect that the benefits from interconnection will be less substantial and costs particularly high especially in areas that are sparsely populated but have abundant water supply, a common feature in most of the countries of the region, where the distance between many cities is greater than in the developed countries. The situation is the complete opposite when it comes to electricity, in that the product cannot as a rule be stored and the bulk of the costs tends to be concentrated in the generation and retail sale segments.

In the absence of a national network, competition through common carriage can only take place at a local (for example, in cities served by two or more water utilities), and in some cases, regional (for example, where water utilities have established regional networks as security against localised water

shortages) level. It is extremely unlikely that even this limited competition will be effective because as a rule the number of potential competitors is very small. This means that where the competition emerges, it is probable that it will be oligopolistic when not duopolistic in nature. For example, the opportunities for supplying water from potential new sources (or treating wastewater in other locations) are very limited in most areas by the availability of sources of good quality water which can be accessed at a reasonable cost and in an environmentally acceptable way. When it comes to wastewater treatment, factors that come into play include the difficulty in finding adequate sites for facilities, the need to safely dispose of wastes, the heterogeneous nature of sewage —its composition differs depending on local conditions, and this has implications for treatment—, and the fixed nature of the transport system; given these factors, it is hard to imagine a situation in which many wastewater treatment plants compete with one another.

Another problem relates to the conditions that the incumbent utility would impose in order to allow access to the essential facilities that its competitors would need, such as networks. On the one hand, it is obvious that a utility that runs the risk of losing profitable customers has strong incentives to deny its competitors access to essential facilities on reasonable terms. On the other hand, there is the risk of inefficient entry and cream-skimming if the incumbent is required to allow access at a very low cost. The determination of the terms and conditions of access to network facilities is perhaps the most controversial aspect of all the problems relating to the pricing of regulated activities, and as a result the regulatory burden will probably be very large.

In order to be viable, common carriage for water supply would also require advanced metering systems, sophisticated information technology that enables customers to switch from one supplier to another, a high degree of coordination —in a distribution system, flow and pressure must be continuously balanced throughout the system to cope with varying levels of demand from customers—, and strict and continuous monitoring and control of the quality of water that each utility supplies to the common network. Sewerage services present a number of other additional problems that can be even more difficult to resolve than those regarding water supply; for example, it is difficult to control and monitor exactly what customers discharge into a sewerage system, and to ensure that each company extracts the appropriate volume and strength of waste products for treatment from a sewerage system that is being used for common carriage. None of these problems is simple or uncontroversial.

In addition, there exist more limited forms of direct market competition in water supply and sanitation: (i) cross-border competition, which denotes direct competition to supply services to large industrial, commercial and agricultural customers; and (ii) fringe area competition, which refers to direct competition between contiguous utilities for the right to supply customers at the boundaries of their service areas. Although cross-border competition entails the duplication of the network of water mains and sewers, which is almost always inefficient and prohibitively expensive, it could conceivably be desirable if there is sufficient demand on the part of large customers or if there is product differentiation. However, even in instances where regulatory agencies have actively promoted this form of competition, it has proved remarkably difficult to achieve. History also supports this conclusion. For instance, in the 19th Century in the United States, direct competition between water utilities seldom occurred, even when there were no legal impediments to entry. As for fringe area competition, this can only really feature when new residential, commercial and industrial development is taking place in previously undeveloped and unserved areas on the fringes of existing service areas.

There is very real, though limited, scope for direct market competition, but there are advantages and disadvantages in encouraging it. There are other problems apart from those mentioned above. Firstly, as regards activities characterized by economies of scale, it is possible to suppose that competition will lead to considerable cost inefficiency (for example, duplication of fixed assets). It is widely acknowledged that water supply and sewerage services are subject to significant economies of scale.

Second, it is very difficult to get direct market competition to work in the water supply and sewerage industry. It requires sophisticated regulatory capacity, in part because setting the terms and conditions of access to essential facilities is a complex and controversial issue. Furthermore, competition may at times lead to socially inefficient changes in suppliers if water abstraction and water pollution are not properly regulated or if tariffs do not adequately reflect marginal costs.

For these reasons, it is possible to expect that the cost of introducing direct market competition in the water supply and sewerage industry will be even higher than in other industries, with any benefit obtained probably considerably lower. Other major problems associated with competition in this sector include responsibility for continuity of supply, emergency measures, maintenance and expansion of infrastructure, etc.

Thirdly, direct market competition is an additional source of uncertainty and commercial risk. It tends to raise the cost of capital, make financing problematic, and discourage private sector interest in highly capital-intensive projects with long amortization periods.

Lastly, direct market competition will highlight and undermine existing cross subsidies. Cross subsidies are a very common feature of water supply and sanitation services. In all the countries, customers are not charged individually according to every characteristic that affects the costs they impose on the system, rather charges are averaged out across all similar customers within a company's service area or each supply zone. For example, in most cities a common tariff schedule is applicable throughout the city, resulting in a flow of cross-subsidies from low-cost areas to high-cost ones.

Though it may be desirable, from the standpoint of economic efficiency, to eliminate cross subsidies and move towards a pricing structure that more adequately reflects costs, this may run counter to objectives related to income distribution and universal access to water supply and sanitation services. For instance, in England and Wales, efforts to foster competition prompted many companies to lower their charges for large users, to stop them switching to a competitor; and in Australia, the experience has been similar. As a result, large customers obtained tangible benefits, while other consumers were left marginally worse off.

There is also a risk of cherry-picking and cream-skimming, which occurs when a competitor concentrates on customers and market segments which, for geographical or other reasons, are especially profitable —for example, large industrial and commercial users who can be supplied in bulk and who show a pattern of stable demand—, and leaves the incumbent with high-cost customers located in areas that are difficult to supply and with the burden of costly excess capacity. As a general rule, competition which is limited to creating opportunities for exploiting cross subsidies, giving benefits to some customers at the expense of others, without stimulating real efforts to improve efficiency and implement innovations, does not appear overly attractive, especially in view of the magnitude of the costs and the risks entailed.

If you would like to know more about regulation of natural monopolies in the water supply and sanitation industry, please be aware that we have available for you the following reports: "***Water utility regulation: issues and options for Latin America and the Caribbean***" by Andrei Jouravlev and "***Servicios públicos y regulación. Consecuencias legales de las fallas de mercado***" by Miguel Solanes (see Circulars N° 11 and 13).

Prevention and reduction of the danger posed by natural disasters

ECLAC, acting through the Natural Resources and Infrastructure Division, has launched a project entitled "***Prevention and reduction of the danger posed by natural disasters***", which is supported by the German Agency for Technical Cooperation (GTZ) and will take two years to complete. The over-arching aim of the project is to identify, evaluate, propose and disseminate experiences in the countries of the region with a view to raising awareness of the various levels of government and decision-makers in the public and private sectors about the need to improve delivery of policies and programmes in the disaster prevention and natural hazard mitigation areas, with the emphasis on river basin management. This is to be achieved through broad involvement of the population.

The project calls for the commissioning of case studies by national experts who are to: (i) evaluate the capacity for governance of national and local authorities and civil society in general, for the purposes of designing and implementing disaster prevention and mitigation strategies; and (ii) make recommendations on policies at the national and local levels that enhance disaster management. As one of its main contributions, this project will serve as a clearing house for information on the wide range of disaster-related experiences and initiatives in the countries of the region, since there is currently no pooling of such knowledge. For the purposes of publicizing these recommendations, it is envisaged that workshops will be conducted at the local level, together with seminars at the national and regional levels, with stakeholders invited to participate.

In-house coordination of the project is the responsibility of Mr. Matías Renard, (*mjrenard@eclac.cl*), a consultant geographer, in conjunction with professionals from the Division. Further information can be obtained from the Division's website (*http://www.eclac.org/drni*). Members of this Network are invited to send in to the Division any information about relevant experiences in their respective countries. Any comments concerning the project are also welcome.

Inter-American Water Day (IAWD)

The creation of the ***Inter-American Water Day*** (IAWD) was promoted by the Pan American Health Organization (PAHO), the Inter-American Association of Sanitary and Environmental Engineering (AIDIS) and the Caribbean Water and Wastewater Association (CWWA) (see Circular N° 15). These agencies signed a Declaration during the XXIII AIDIS Inter-American Congress held in Havana, Cuba, in November 1992. Since the inception of the initiative, it was decided to commemorate the IAWD the first Saturday of October of every year, so the first IAWD was held in 1993. Each year attention is focused on specific themes and materials are produced for distribution throughout the Americas for use by the different countries. The theme chosen for the IAWD in 2002 is "*Water, waste not, want not*". ECLAC joined this initiative in 2002. ECLAC's view of the IAWD theme for 2002 is set out below.

Water resources management bears similarities to conflict management between human beings and the environment, and among people themselves. Society must learn to live with these conflicts and deal with them effectively, all the more so as the relative scarcity of water will become ever more pressing as time goes on, as a result of economic growth, social demands, concern for the environment and climate changes. Since competition among users will become ever more intense, systems of government need to be participatory, have decision-making power and have the ability to enforce standards for the common good, so as to ensure integrated water systems are effectively managed. To that end, it is necessary to formulate and disseminate standards, practices, processes and techniques, with a view to making them accessible to each stakeholder in water resources management and development processes. Generally speaking, the countries of the region lack these guiding elements and the capacity-building mechanisms in the integrated water resources management sphere that would provide effective guidance on activities undertaken with a view to reconciling economic, social and environmental goals in each river basin or territory.

In ECLAC's view, we face a crisis of governance today in integrated water resources management due, on the one hand, to the clear increase in conflicts over water use, and on the other, the dearth or fragility of institutions capable of avoiding, preventing, or resolving such conflicts. ECLAC points to positive achievements and the implementation of good practices in the countries of the region as regards different aspects of water resources management and regulation of public utilities; ECLAC's work programme places the emphasis on activities aimed at classifying, analysing and comparing these experiences (political, legal, economic, environmental, social, financial and management dimensions). In this way, ECLAC has become one of the few, and in some fields, the only clearing house involved in collecting, processing, classifying and redistributing information and advising governments on water resources management and public utility regulation.

Water rights and empowerment

We draw your attention to a book entitled "***Water rights and empowerment***", edited by Mr. Rutgerd Boelens and Mr. Paul Hoogendam and published in 2002 by the Koninklijke Van Gorcum. The book looks at topics such as water rights and collective action, irrigation and institution-building, power and empowerment, negotiation and consensus-building. The book seeks to advance understanding of the relationship between water rights, collective action and the strengthening of institutions; special attention is paid to the local meanings of water rights, the ways in which they are acquired, the dynamic of their production and reproduction, and the strategic uses of water rights in social action.

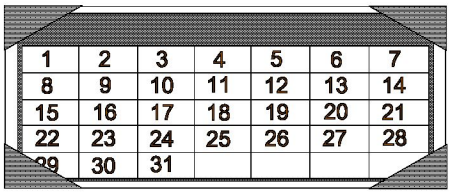
The reason the book places such emphasis on water rights is that they constitute the logic and basic foundation governing water use in systems managed by users themselves, while at the same time constitute, produce and reproduce the core of power relationships in water management. The book also studies forms of outside intervention that have an impact on the regulatory framework concerning irrigation systems: firstly, as they generate changes in the quantity of water available for distribution among users; and secondly, because they require users' contributions in infrastructure. That touches on one of the main mechanisms for changing ownership relationships: new rights are created or existing ones are modified.

The first chapter sets forth a conceptual introduction. The next eleven chapters examine the various concepts and issues in greater depth, illustrating them with empirical examples drawn from Bolivia, Chile, Ecuador and Peru. The Natural Resources and Infrastructure Division, through its Director, Mr. Axel Dourojeanni, took part in the writing of the chapter entitled "*Water rights and watersheds. Managing multiple water*

uses and strengthening stakeholder platforms".

One of the main conclusions of this chapter is that in order to prevent unfair competition for water use and pollution from generating serious injustices and imbalances, policies on water use planning and regulation must be developed throughout the Andean region; the focus should be on tangible implementation of water management strategies at the river basin level, through to the micro-basin level, while taking into account the traditional forms of water use by indigenous communities. Water laws should support such efforts. With that purpose in mind, there is a need for a suitable legal framework that gives consideration to the social, environmental, productive and economic functions of water.

Future activities



Third World Water Forum

The ***Third World Water Forum*** will be held from 16 to 23 March 2003 in Kyoto, Shiga, and Osaka, Japan. The Forum invites participants to share their experience with proven actions and best practices —supported by sound research, science, and theory— that have facilitated sustainable solutions to water problems. A priority will be to promote dialogue and interaction among the numerous stakeholders in integrating the knowledge and experience gained thus far, appealing to the world through potential solutions and providing information crucial to making a commitment to sustain those actions and solutions.

Additional information is available from:

Secretariat of the 3rd World Water Forum

Tel.: 81 3 5212 1645
Fax: 81 3 5212 1649
E-mail: office@water-forum3.com
WWW: http://www.worldwaterforum.org

Third International Scientific Workshop on Watershed Management

The Hydroclimatology and Watershed Management Group of the Faculty of Geography at the University of Havana, Cuba, invites participants to the ***Third International Scientific Workshop on Watershed Management*** (GeoCuenca III). The workshop, which will take place from 20 to 24 May 2003 at the University of Havana, has chosen as its central topic "watershed-city interactions", though other major issues relating to watershed management will also feature.

Additional information is available from:

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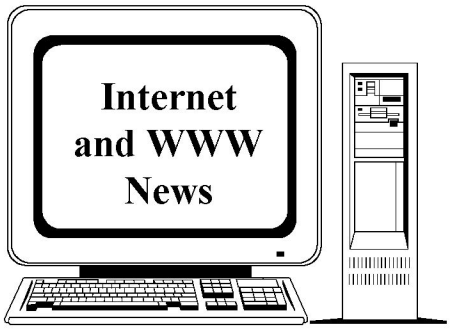


Among websites on water resources management and use that are worth visiting, we highlight the following:

- In Argentina, a project was launched in 1998, under the control of the Office of the Under-Secretary for Water Resources, to formulate ***guidance levels for ambient water quality***, the aim of the project was to establish a reference framework on which to consistently base decisions on the definition of uses of surface and groundwater resources, and to define effective strategies for protecting and recovering the quality of these resources. The conceptual and methodological framework used to formulate national guidance levels for ambient water quality is set out at *http://www.mecon.gov.ar/hidricos/calidad/index.html*; the site also presents priority quality parameters which have been submitted for consideration to the Secretariat of Sustainable Development and Environmental Policy, as the national environmental authority.

- An excellent ***International Glossary of Hydrology***, featuring eleven languages, is available at *http://www.cig.ensmp.fr/~hubert/glu/aglo.htm*.

- The website *http://aguabolivia.org* (see Circular N° 13) has launched the "***National Inventory of Irrigation Systems in Bolivia***". The inventory is an interactive system that lets users work with a database of irrigation systems in Bolivia, allowing multiple searches using a variety of different criteria. Users can also consult departmental, provincial and municipal maps, and from there gain access to both municipal irrigation systems and high-resolution municipal maps. In addition, users have access to a range of thematic maps (protected areas, indigenous territories, forestry concessions, poverty levels by municipality, hydrographic maps, etc.)

- The ***Coordination Center for the Prevention of Natural Disasters in Central America*** (CEPREDENAC) is a regional institution that comes under the Central American Integration System (SICA). CEPREDENAC seeks to bring about a reduction in natural disasters in the Central American region through the exchange of experiences, technology and information, analysis of common strategic problems, and the channelling of external cooperation. The organization's website (*http://www.cepredenac.org*) provides information on its creation, history and activities, the regional situation (risks and vulnerability, survey of disasters, statistics, etc.) and many topics related to natural disasters (the Regional Disaster Reduction Plan, Hurricane Mitch, drought in Central America, the rainy and hurricane seasons, threat of volcanic eruptions, etc.).

- ***SANEX*** is an easy-to-use decision support software for assessing the suitability of sanitation technologies for developing communities. Its purpose is to support beneficiaries, planners and other stakeholder groups during the early stages of sanitation planning by helping them identify suitable sanitation alternatives and by facilitating the assessment of these alternatives with regard to their preferences. The second version of SANEX is now available as a free download at *http://www.decisionscape.com.au/downloads.htm*.

- ***Salud Ambiental*** is a discussion list set up by the Society of Medical and Social Ecology (SEMS) to increase communication and information about environmental health. The Society seeks to advance environmental medicine associated with social and economic activity. To join the list, go to *http://lwww.elistas.net/lista/salud_ambiental*.

- All materials (papers, releases, conclusions, etc.) produced in connection with the ***First Iberian Congress on Water Resources Management and Planning*** ("Water discussed from the university perspective: for a new water culture") (Zaragoza, Spain, 14-18 September 1998) and the ***Second Iberian Congress on Water Resources Management and Planning*** ("A European rendezvous with the new water culture: the framework directive. Prospects in Portugal and Spain") (Oporto, Spain, 9-12 November

2000) are available at *http://www.us.es/ciberico/publanter.html*. The ***Third Iberian Congress on Water Resources Management and Planning*** ("The Water Framework Directive: reality and the future") was held from 13 to 17 November 2002 in Seville, Spain.

- The European Water Association (EWA) journal European Water Management has switched over to an online version, the ***European Water Management Online*** (EWMO) available at *http://www.ewaonline.de/journal/online.htm*. Recently published articles include the following: "*Pollution sources and abatement measures for dredged sediments in the city of Delft (The Netherlands)*" and "*How the Netherlands finance public water management*".

- ***Medambien*** is a discussion list that facilitates sharing of all kinds of information on the subject of urban environmental management, covering environmental planning, environmental law and environmental engineering as well as other environmental sciences. To join the list, go to *http://listas.rcp.net.pe/mailman/listinfo/medambien*.

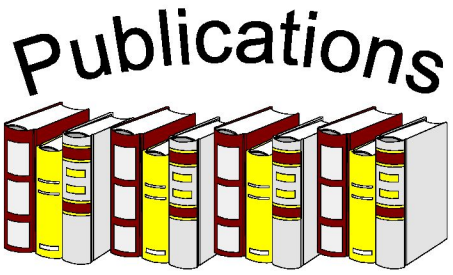
- The ***European Centre for River Restoration*** (ECRR) supports the development of river restoration as an integral part of sustainable water management throughout Europe. Its website (*http://lwww.minvenw.nl/rws/riza/home/ecrr*) has a wealth of interesting documents available, including "*River restoration. Danish experience and examples*", "*River Restoration '96. Plenary lectures. International conference arranged by the European Centre for River Restoration*", "*River Restoration '96. Session lectures proceedings. International Conference Arranged by the European Centre for River Restoration*" and "*River restoration in Europe. Practical approaches. Proceedings from the conference on river restoration*".

- ***Water and Power Pipeline*** is a new International Rivers Network information service (*http://www.irn.org/index.asp?id=/pubs/pipeline/index.html*). Every month it compiles a list of the new water and energy projects which are being considered for approval by multilateral development banks. It also lists projects which have recently been approved or dropped from the multilateral development banks project pipeline.

- The United States Environmental Protection Agency's Office of Ground Water and Drinking Water has recently published a book entitled ***Consider the source: a pocket guide to protecting your drinking water***. The book is available at *http://www.epa.gov/ogwdw000/protect/swpocket.html*. The guide is designed to heighten public awareness of the importance of protecting source waters used for drinking water supply.

- ***AquaForo*** is a discussion list devoted to modelling of drinking water distribution systems. Topics include techniques of hydraulic and water quality modelling; models vs. reality; software and data management; and research and theory. To join the list go to *http://www.haestad.com/spanish/lists.asp*.

- An excellent ***dictionary of technical and legal terms related to drinking water*** is available at *http://www.epa.gov/OGWDW/Pubs/gloss2.html*.



Recent publications of the Natural Resources and Infrastructure Division related to water resources management and use in Latin America and the Caribbean:

- "***Crisis de gobernabilidad en la gestión del agua (Desafíos que enfrenta la implementación de las recomendaciones contenidas en el capítulo 18 del Programa 21)***" by Axel Dourojeanni and Andrei Jouravlev (*Serie Recursos Naturales e Infraestructura* N° 35, LC/L.1660–P, December 2001) (available in Spanish only). Initiatives that are intended to create governance capacities for water resources management form an unavoidable part on government agendas. All of the countries of the region are facing constant challenges, and as a result need to come up with legislative and organizational answers that can prevent and resolve growing conflicts over water use, as well as mitigate extreme natural phenomena. Paradoxically, while conflicts stemming from water are on the increase, it appears that in some countries of the region, there has been a reduction in the relative ability that used to exist to resolve them. This state of affairs is described by this study as a "crisis of governance" in water management. Discussions held during the many meetings convened recently to address the water issue have not generated any clear way forward, either theoretical or conceptual, for achieving a consensus on options for improving water resources management. All too often, the upshot has been that each change in administration has in turn led to a shift in systems of water resources management. The last ten years have seen more proposed amendments to water legislation than in all of the previous century. Goals are constantly being revised, staff replaced and water management agencies restructured. Unfortunately, in spite of all these efforts, the degradation of water resources continues to worsen. The study points out the dilemmas that must be resolved if integrated water resources management goals are to be achieved, and outlines how the countries of the region are tackling them. The study highlights the importance of seeking solutions that link the organization and individual and collective thinking of a society (the "soft" sciences) with technical and scientific knowledge (the "hard" sciences) in order to find solutions to existing dilemmas. Among the factors that explain the difficulty in improving water management systems is the absence of methods for designing strategies for moving step by step from the situation as it exists now to the desired one. The formulation of strategies, which take the form of water resources management plans, has become a less common practice since the 1980s, when compared with the 1970s. Though planning is not being conducted, the countries of the region are engaged in an almost frantic search to attain increasingly integrated or holistic goals, in respect not only of water resources but also of the environment as a whole. However, the only way to achieve integrated, participatory, interdisciplinary and democratic goals is to design and implement consistent long-term strategies. The situation is exacerbated by the emphasis which is being placed on certain pre-established water management paradigms, particularly economic ones, which is disproportionate to the preparation of conditions required in order to put them in place. The study illustrates its observations with references to situations that are currently occurring or have occurred in the countries of the region during processes designed to improve water resources management. The study provides up-to-date information on aspects of institutional organization and legislation for integrated water management, water resources planning, and the setting-up and operation of water agencies at the river basin level, together with an exhaustive analysis of the challenges that remain to be overcome if we are to convert the recommendations contained in Chapter 18 of Agenda 21 into action.

- "***Regulación de la industria de agua potable. Volumen I: Necesidades de información y regulación estructural***" by Andrei Jouravlev (*Serie Recursos*

Naturales e Infraestructura N° 36, LC/L.1671–P, December 2001). Translation into Spanish of the document entitled "*Water utility regulation: issues and options for Latin America and the Caribbean*" by Andrei Jouravlev (LC/R.2032, 11 October 2000) (see Circular N° 13). This volume explores the prospects for solving the problem of asymmetry of information between the regulator and regulated companies, as well as the scope for promoting competition and facilitating regulation through changes in the structure of industry, including horizontal and vertical restructuring.

- "***Regulación de la industria de agua potable. Volumen II: Regulación de las conductas***" by Andrei Jouravlev (*Serie Recursos Naturales e Infraestructura* N° 36, LC/L.1671/Add.1–P, December 2001). Translation into Spanish of the document entitled "*Water utility regulation: issues and options for Latin America and the Caribbean*" by Andrei Jouravlev (LC/R.2032, 11 October 2000) (see Circular N° 13). This volume focuses on the regulation of prices, service quality, investments and diversification. The study also examines the possible underinvestment problem arising from the limited commitment powers of governments and regulators, and the implications of the existence of separate regulators with different duties and powers.

- "***Derecho al agua de los pueblos indígenas en América Latina***" by Ingo Gentes (*Serie Recursos Naturales e Infraestructura* N° 38, LC/L.1673–P, December 2001) (available in Spanish only). In Latin America and the Caribbean, demands for the legal recognition of special ownership status for indigenous lands and water resources have generally led to the introduction of rules governing ownership of land or water, but not a joint set of rules bringing together both "resources" as "combined resources". There is a fundamental divergence between the indigenous concept of land, which covers all resources —soil, water, shores, subsoil, forests and plains— and the legal concept which divides these elements into distinct land tenure systems and concessions to individuals. Nevertheless, it should be noted that this is a characteristic of law in general in the region, and does not represent specific discrimination towards any community or group of people. Today many of the indigenous communities of the region are aware of the existence of specific water rights, in respect of which it is possible to make applications and registrations and take other actions. That explains why the need has arisen for a national authority dealing with indigenous peoples' water rights, with the capacity to regulate and rule on the issue through to the local level in an effective and equitable manner. In the absence of such authorities, many traditional customs of indigenous communities have been destroyed by mining or urban growth, for example. The countries of the region have yet to carry out a study of water use rights of their indigenous peoples. Recent law proposals would appear to indicate that indigenous peoples have not been treated in the same way as the indigenous peoples of the United States or Canada. In the United States, legal decisions have accorded senior priority to indigenous water rights, and the law in force respects this and ensures it is applied. As a result, arrangements in the United States bear out the traditional elements of the linkage between law, politics and economics: state property rights clearly and precisely, and appoint authorities prepared to ensure that they are enforced. In Latin America and the Caribbean, there is still no comprehensive response along these lines, and legal systems often prove dysfunctional and, when disputes arise, are ineffective in dealing with indigenous water rights. Where national law is non-existent or deficient, international norms on indigenous rights assume great importance. The main norm in this regard is the "Convention on Tribal and Indigenous Peoples" N° 169 drawn up by the International Labour Organization (ILO). Almost all recent national political constitutions refer to the Convention when addressing the issue of indigenous peoples. The Convention outlines a series of indigenous rights as regards equity in integrated natural resources management. Unfortunately governments in the region often draw up guidelines concerning administration and planning, without a clear definition of customary indigenous rights at an operating level, collective decisions and individual obligations, among other matters; they also fail to provide the substantive means and procedures for the defence of these rights. The resulting ambiguity and lack of precision not only creates uncertainty and a sense of social unease, but it also fails to ensure that protected interests are indeed respected.

The publications of the Natural Resources and Infrastructure Division are available in two formats: (i) as printed documents, single copies of which are distributed free of charge by airmail (while supplies last); and (ii) as electronic files (Microsoft Word or PDF formats) which are sent as attachments to e-mail. Requests should be sent to ***ajouravlev@eclacl.cl*** or the ***Natural Resources and Infrastructure Division, CEPAL, Casilla 179-D, Santiago, Chile***. Most of the recent publications are also available at our website at ***http://www.eclac.org/drni***.

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