

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



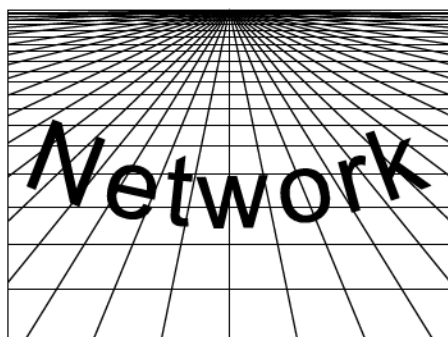
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Deficiencies in the provision of drinking water supply and sanitation services not only adversely affect the health and dignity of individuals but also hinder the fight against poverty and indigence, limit opportunities for socioeconomic development and harm the environment. The concern of governments around the world to improve the provision of these services is expressed most visibly in their commitment to achieve the Millennium Development Goals (MDG), including halving, by 2015, the proportion of the population without sustainable access to drinking water and basic sanitation.



The most recent data from the Joint Monitoring Programme for Water Supply and Sanitation (JMP) of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) show that, although the situation varies greatly among countries, Latin America and the Caribbean has already exceeded the MDG of access to improved sources of drinking water and could well achieve the target on access to improved sanitation facilities. At the national level, the overwhelming majority of the countries of the region (77%) has already reached or is likely to achieve the goal for drinking water. But while more than one third (36%) of them had already achieved the target for access to sanitation, the majority (54%) is unlikely to do so.

Despite the seeming success in the expansion of access to improved services between 1990 and 2011 (going from 85% to 94% for drinking water supply and from 68%

to 82% for sanitation), there are reasons to believe that the methodology used for calculating the levels of coverage, coupled with the lack of attention to the qualitative dimensions of access to services, means that what has really been accomplished is much more modest. Some of these dimensions are identified below:

- **Technological solutions.** In accordance with the definitions of coverage used, improved access to water is taken to include public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs and rainwater collection and, in the case of sanitation, ventilated improved pit latrine, pit latrine with slab and composting toilets. But a more restrictive definition of coverage (in line with the preferences of the population) significantly changes the picture. For example, only 88% of the population has access to piped water in the dwelling, yard or plot; and probably less than 60% is connected to conventional sewerage systems. At least in the cities, a connection to the dwelling is the solution that is most in demand by the population, and it tends to be in line with ability to pay.
- **Service quality.** Unfortunately, the quality of the services is often not good, even in large areas of major cities in the region. For example, many drinking water supply systems operate only intermittently and service is actually available a few hours per day or a few days a week. And the population covered by adequate water quality control and monitoring is very limited, even in urban areas. In some cases, water is not disinfected effectively, leading to a high risk of exposure to a number of diseases for people who use water directly from the pipe. If "safe and adequate" access is taken as the definition, drinking water coverage could be 15% to 20% lower than the JMP estimates and 20% to 40% lower in the case of sanitation.
- **Affordability.** Many countries of the region have adjusted tariffs to move towards self-

financing, but few have established effective subsidy systems for low-income groups. As a result, in a number of big cities the basic monthly bill takes up an average of 5% of the income of the poorest quintiles and as much as 10% in some cases.

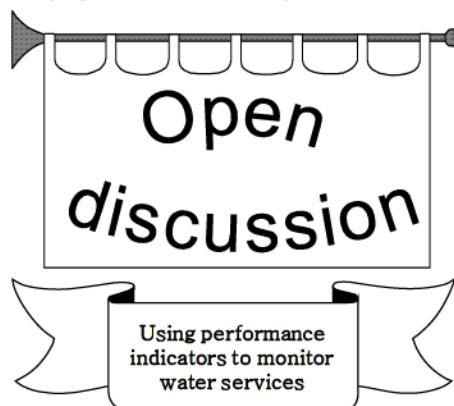
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- **Social and geographical differences.** Deficiencies in services mainly affect low-income groups. About 70% of the people who do not have access to water supply and more than 80% of those without sanitation services are in the two lowest income quintiles. In rural areas, coverage is consistently lower than in the cities: 15% in the case of drinking water supply and 24% in the case of sanitation services.
- **Sustainability.** It is still unusual for services to be self-financing through tariffs. Budget allocations depend on policy priorities that change over time and tend to be cut in times of crisis. And there are indications that the investments needed to replace existing assets are often not made. Moreover, much of the infrastructure is deteriorating. Many water

sources are at risk and under increasing pressure from growing competition for water, while more than two thirds of wastewater is discharged untreated into the nearest water bodies, causing serious pollution problems. This threatens the medium- and long-term economic and environmental sustainability of service provision. On top of all this come the enormous challenges that climate change poses for the sector.

- **Human rights.** Unlike the MDGs, recognizing the human right to water and sanitation requires —through the notion of progressiveness— taking deliberate, specific steps to gradually reach the goal of universal access to quality services that are affordable and are provided in an acceptable and appropriate manner.

It is a cause for concern that a number of governments of the region have been leaving drinking water supply and sanitation services off the public agenda. This can be seen in a systematic slowdown in the expansion of coverage of these services since 2000, precisely when the MDGs were adopted, and in a decade that was economically more favourable than the 1990s. It can also be seen in the weakening of regulatory bodies, and even, in some cases, an outright questioning of their existence. This is particularly troubling because in public services, economic efficiency, whether by public (state-owned and municipal) or private providers, depends on the regulatory framework in place. Efficiency is important because it reduces the cost of both provision and expansion and contributes to sustainability. Lower costs mean greater affordability, together with more and better opportunities for use. On the contrary, by artificially increasing the cost of provision inefficiency works against equity and jeopardizes sustainability.



Alejo Molinari, Benchmarking Manager of the Water and Sanitation Regulatory Agency (ERAS) and Coordinator of the Working Group on Benchmarking of the Association of Regulatory Agencies for Water Supply and Sanitation Services in the Americas (ADERASA), contributed the following article on *using performance indicators to*

monitor drinking water supply and sewerage services in the Metropolitan Area of Buenos Aires, Argentina.

In March 2006 the company providing drinking water supply and sewerage services in the Metropolitan Area of Buenos Aires was renationalized. The new company, Agua y Saneamientos Argentinos S.A. (AySA) was set up as a joint stock company with 90% of the shares held by the national government represented by the Ministry of Federal Planning, Public Investment and Services (MINPLAN) and the remaining 10% by its employees, through the trade union.

Subsequently, Law 26221/07 approved the Tripartite Agreement between the three jurisdictions involved (the National Government, the Autonomous City of Buenos Aires and the Province of Buenos Aires), as well as a new regulatory framework. It separated the existing regulatory authority (ETOSS) into two new bodies: Planning Agency (APLA) and ERAS. The Planning Agency is responsible for monitoring investment in infrastructure development and the expansion of services; ERAS monitors the provision of services as an adviser to the Implementation Authority (function which corresponds to the Office of the Under Secretary of Water Resources (SSRH), which is part of MINPLAN).

Under the Tripartite Agreement, “agencies ... shall constitute a means to achieve efficient service provision based on best regulatory, technical and managerial practices, which must be guaranteed through mechanisms that ensure appropriate transparency and control”. The regulatory framework provides that “instruments for verification and control shall be based on procedures that enable ... the authorities to conduct efficiency studies and in turn facilitate comparative analyses with other companies both in the country and abroad ... For conducting comparative studies and analyzing projected and achieved levels of efficiency the Implementation Authority shall establish ... reporting and follow-up mechanisms for management indicators that facilitate comparison of the same service across different areas or with other services in the country and abroad ... The data required for determining these indicators shall be presented periodically by the concession holder to ERAS along with the agreed annual reports ... in order to make possible better understanding and control of the provision”.

Based on these principles, the Office of the Benchmarking Manager of ERAS, at the request of the Implementation Authority, has designed a system of performance indicators for monitoring the provision of services by AySA. The system follows the guidelines established by the International Water

Association (IWA) and covers all aspects of service provision: coverage, asset management, service quality, consumer relations and economic and financial aspects. The system is compatible with the system of performance indicators of the Federal Association of Water and Sanitation Regulatory Bodies (AFERAS) and ADERASA. This facilitates comparison of AySA’s performance indicators at the national and regional levels in keeping with the regulatory framework. Institutional continuity between previous regulatory body and present controlling entities also makes it possible to track some performance indicators between the period when the company was privately managed and the state-owned period.

One of the central issues when conducting this kind of comparative exercise is to ensure the quality of the information, because if the data are misleading or inconsistent both the analysis and the findings will be inaccurate. In normal conditions the utility is expected to rate all the data provided according to its degree of accuracy and reliability. The methodology for such ratings is specified in the recent ISO 24500 standards.

The Technical and Accounting Auditors should review the ratings and certify that they are appropriate. In the case of AySA, the company does not rate the information and there is no auditor certification because the auditors were only recently appointed by the Implementation Authority. This situation casts a shadow of doubt over the representativeness and quality of the information that is being used; expectations are that these doubts will be dispelled when the auditors start to work.

Another issue that has to do with information is that it should be comprehensive and include all the data for conducting the necessary assessments. In this case, and despite the disclosure provisions of the regulatory framework, six years on from concession start-up the regulator still does not have all the information the company has been asked to provide. This hampers the regulator’s monitoring function.

At the end of the sixth year of the concession (2011), which is the last year for which information is available, some of the conclusions that can be drawn from the historical and regional comparisons, based on the limited set of performance indicators that could be calculated, are set out below:

Drinking water

- **Service accessibility:** Since the beginning of the company’s public management, the pace of new drinking water connections has picked up. But the data are not consistent, and there are distortions in need of clarification in order to assess the

expansion in a more realistic manner. In the regional comparison, the concession is in the lowest quartile of the sample, 10% below the average. In terms of affordability, billing per account is stable while continuing to take up an increasingly smaller portion of the purchasing power of the population.

- **Drinking water quality:** The control and monitoring analyses performed exceed the regulatory requirements by 20%. The drinking water quality aspects that have been possible to analyze indicate a slight deterioration since the management change, within the parameters required by current regulations, and a slight improvement in the sixth year that points to a trend reversal. In the regional comparison, the concession is in the quartile above the average for the sample.
- **Pressure and continuity of drinking water service:** There is no information for analyzing pressure or continuity. But the gradual increase in consumer complaints for technical reasons makes it safe to assume deterioration in these areas.
- **Provision of service under normal conditions and in emergencies:** The production of drinking water had increased during the first four years under new management, but it decreased in the following two years and returned to the starting point last year. In the regional comparison it is in the top quartile, 27% above the average for the sample. The use of reagents for potabilization marks a downtrend, consistent with the slight decline in the quality noted above. For emergencies, the company conducted the first Prevention and Emergency Plan drill six years after the change in management.
- **Conservation of assets and ability to meet present and future demand:** There is no information for assessing breaks in the network. The pace of descaling iron pipes is slow (on the order of 0.5% per year), although it is trending up. Mains were being replaced at the same rate (about 0.4% per year) as under the previous management. The replacement of house connections declined; valve replacement is about one fourth of the rate under the previous management. Overall, the level of these activities is below the levels prior to the change in management and falls short of the 2% parameter recommended for the industry. Stepping up these activities would help reduce the substantial rate of water losses. The use of installed potabilization capacity is well within available capacity.
- **Environmental protection:** Drinking water losses have increased and resource use

efficiency has decreased compared with the previous management. In both cases, the concession is near the average figure in regional comparisons. There has been no progress in micro-metering, which is barely above 20%; in the international comparison it is in the bottom quartile and 66% below the average. It has not been possible to assess energy efficiency, because of the lack of needed information.

Sewerage

- **Service accessibility:** Gains in new sewerage connections are barely keeping pace with population growth. There are still doubts as to the consistency of the information reported. In the regional comparison, the concession is in the second quartile, 16% below the 73% average for the sample. In terms of affordability, sewerage billing per account is the same as for the last period under the previous management and takes up a very low share of the purchasing power of the population. In the regional comparison, billing per account is one of the lowest in the sample.
- **Protection of public health (quality and continuity):** Blockage density has been declining in recent years, but it is higher than under the previous management. In the regional comparison it is the utility with the largest number of blockages per kilometre of network. No information is available to analyze changes in volumes of wastewater discharged prematurely into the stormwater system or water bodies because of insufficient transportation capacity.
- **Conservation of assets and ability to meet present and future demand:** No information on breaks is available to assess the condition of the networks. The pace of network cleaning has been increasing since the change in management and is reflected in the aforementioned decline in blockages. There has been a slight incremental trend in replacement of mains and household connections, although it has not yet reached half of the recommended 2% per year. The use of pumping capacity in the sewerage network has decreased slightly, coinciding with the drop in water dispatched and is still far from the installed capacity limit.
- **Provision of service under normal conditions and in emergencies:** Sewer overflows into streets have been a growing trend since the management change. Installed capacity use at sewage treatment plants is very high and incompatible with good performance. In the regional comparison, this utility ranks best in quality of treated wastewater. There is no information on industrial discharges. The

company conducted the first sewerage system Prevention and Emergency Plan drill six years after the change in management.

- **Environmental protection:** The proportion of wastewater treated rose slightly, but it is still very low. In the international comparison, this is one of the service providers with the lowest wastewater treatment coverage. The proportion of sludge that is disposed of appropriately is trending slightly up but is still far from the desired values. It should be noted here that several treatment plants and two subfluvial outfalls are under bidding or under construction; once they become operational these indicators will improve significantly. There is no information for assessing internal sewer flooding incidents or the energy efficiency of the sewerage system.

For both services together

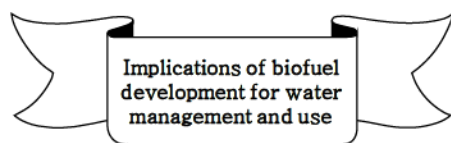
- **Meeting consumer needs and expectations:** Consumer complaints have been steadily on the rise since the management change and are more frequent than under the previous management regime. In the international comparison, the utility is in the second quartile, close to the average for the sample. Complaints related to commercial aspects have been fluctuating but are more or less at the same level as under the previous management, indicating that technical complaints are up and service conditions are deteriorating.
- **Operational sustainability:** The number of employees per connection has been increasing since the management change. The trend reversal in the sixth year can be attributed to the massive number of new drinking water connections. In the regional comparison the utility is in the second quartile of the sample, slightly below the average. The number of hours of training per employee has been increasing from year to year since the management change, reflecting the company's attention to staff training.
- **Financial sustainability:** Total costs continue to grow and billing is virtually unchanged, so the cost coverage ratio has fallen below break-even. In the regional comparison, this is the service provider with the lowest cost coverage, far from the average. Past-dues have trended up since the management change and are, in the regional comparison, in the top quartile of the sample. Indebtedness has remained at levels lower than the previous management and is holding steady, in the third quartile of the utilities in the regional comparison and below the average. The return on net assets turned negative over the past three

years, showing a slight downtrend to stand in the first quartile of the comparison between regional service providers. Service viability is being ensured by substantial subsidies from the State that, together with international sources, help fund the massive investment plan that has been under way since the management change. Investment execution is increasing gradually, to more than 90% in the sixth year.

- **Activity-based costing:** The costs of all activities are increasing quickly but remain among the lowest in the industry in the Latin-American region. The lack of information made it impossible to assess some costs.

This overview of some of the aspects that could be assessed clearly shows how useful this tool can be for utility managers for determining adjustments and monitoring their impact, and for regulators for tracking trends in certain aspects of the service. This type of analysis can also benefit other stakeholders such as shareholders, public authorities and consumers themselves, provided that the studies are representative enough to appropriately reflect the technical and economic reality of the services and are properly disclosed to add transparency to the system.

Providing the missing information would deepen the study concerning important aspects of the services provided, with the aim of identifying the changes needed to make management more efficient, equitable and sustainable.



Set out below are the main conclusions and recommendations of the study on *water-management implications of biofuel development* (LC/W.445, November 2011) by Florencia Saulino (see Circular N° 36). The study analyzes the impact of increasing biofuel production on water availability (in quantity and quality) for other water uses and identifies tools and strategies that can help reduce potential negative effects.

First, there are significant differences in water demand and productivity among the different combinations of crops/geographical regions/technology used, so that any strategy to address the impacts of biofuels on water resources should begin with an analysis of the impact at the local, regional and river basin area level.

Second, there are opportunities for improving water use efficiency in the

production of biomass. Water productivity can be boosted by adopting more efficient irrigation techniques. But in some cases more efficient irrigation can negatively affect the sustainability of the resource (depending on the treatment of return flow and on changes in consumptive use). On the other hand, identifying and promoting the use of crops with lower water requirements can help reduce pressure on water resources. Finally, environmental management of the territory and the issuance of zoning standards can be useful tools to regulate the expansion of biomass crops so as to reduce their impact on water availability.

Third, it is also possible to improve water use efficiency in biofuel production. Improvements to industrial processes, promoted by appropriate legislation, can help decrease industrial water extraction significantly, thereby reducing its impact on water availability. Here, it is key to establish water use rights combined with payment of adequate compensation to serve as an incentive and with proper follow-up of the concessions granted by the water authority. Mechanisms for cooperation between industry and the State for improving the technologies used can also contribute to the achievement of this goal.

Finally, the impacts on water quality can be reduced by improving agricultural practices and industrial processes. During the agricultural phase, the main sources of pollution are fertilizers and pesticides, along with sediment runoff due to soil erosion. Addressing these impacts calls for developing programmes that encourage the adoption of best practices. Implementing strategies to correct the way that fertilizers are applied and promote the use of integrated pest management practices can reduce the likelihood of these pollutants reaching water bodies. In addition, strategies based on runoff water management such as the creation of wetlands around the perimeter of fields can be effective in curbing the increase in nutrients. Conservation practices like direct seeding help reduce sediment pollution by increasing soil organic matter while reducing nutrient leaching.

As for industrial phase impacts, it is essential to adopt effluent discharge and water quality standards as well as appropriate compliance monitoring by the enforcement authority. In this regard, standards based on the best available technology make monitoring easier than it is with rules banning the discharge of effluents. Furthermore, cooperation between industry and the State can help change the industrial processes involved (provided that this does not mean capture of the State by industry), decreasing effluent volume and improving effluent treatment.

In conclusion, there are different strategies that can help improve biofuel and biomass production processes and reduce their impact on water quality and quantity. In this context, the development of biofuels may be seen as an opportunity to improve legislative strategies and public policies aimed at protecting the quality of water resources and ensuring their efficient and sustainable use.



Below we present *reflections of URSEA (Energy and Water Services Regulatory Unit) in the water and sanitation sector of Uruguay, 10 years after its creation*, by Sandra Rodríguez and Daniel Greif.

Experiences and lessons learned

URSEA dates back a decade, but most of the population, as well as political circles, does not know that it exists because they are unaware of its mandate and because they think that the existence of state-owned utilities makes it unnecessary. Its jurisdiction over the drinking water supply and sanitation sector is even less known.

After the constitutional reform of 2004, the URSEA law was amended in 2010 to expand its powers. The reform could have eliminated its power to regulate and oversee drinking water supply and sanitation services had there been political interest in doing so, but this confirmed that regulation of the sector is here to stay.

Changes and contributions to the sector

- **Drinking water quality.** URSEA began sampling and testing quality parameters for drinking water, gaining an understanding of persistent problems. Up to then, service providers had not published nor reported on these issues. URSEA issues warnings to providers when samples are not acceptable. When deemed necessary it asks for action plans and issues notices, and it provides relevant advice at the ministerial level. It pushed for the updating of drinking water quality standards, and progress was made on regulating them.

- **Addressing complaints.** Users have consumer protection in the form of a specialized appeal board to which they can submit complaints not dealt with by service providers.
- **Rates.** An additional brief based on technical and sustainability criteria is issued to the executive branch (which determines any adjustments) and to the planning and finance authorities.
- **Follow-up of indicators.** There is a body with specific authority to follow up on service provider goals and targets.
- **Standardization of indicators.** Having identified the need to standardize coverage indicators used at the national level because each agency defined them differently, an effort has been made to build a consensus among the agencies involved.
- **Participation in benchmarking.** The service provider participates in ADERASA benchmarking, contributing with its indicators and receiving those of similar service providers and thus working to steadily improve data quality.
- **Inter-institutional effort.** URSEA participates in coordination and in drafting reports and regulations.
- **Dissemination.** URSEA helps raise awareness of the sector through the website and regular publications.

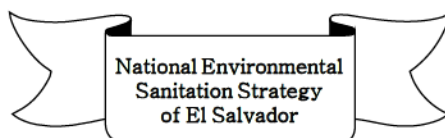
Reflections

Regulation of state-owned utilities differs from regulation of private service providers, primarily in that the interest of the private sector is to maximize profits while the goal of a public enterprise is general welfare, universal service and quality improvement. Accordingly, the following should be borne in mind when regulating state-owned utilities:

- Rates should be defined on the basis of the costs of the utility and the investment programme. Any external contributions to the utility should be clearly specified, as should any subsidies.
- There is information asymmetry between state-owned utilities and the regulator, but it can be regarded as minor because both are working for the general welfare and can thus work together.
- Support, participation and joint effort on the part of regulator and utility in benchmarking with service providers in the same sector from other countries based on company profiles and conditions (including climate, economic and cultural),

with appropriate data quality control, will reveal opportunities for improvement and identification and exchange of good practices in the provision of the service.

- Applying sanctions, which would lead to a rate increase rather than a decline in profitability, no longer makes sense. There should be support for compensating consumers in the event of substandard services.
- Regulator follow-up and evaluation of compliance with goals and targets set by utilities themselves is a way to “audit” management. This external oversight would oblige the service provider to conduct documented follow-ups of execution of plans and to meet the deadlines set out in them.
- Working for the resolution of complaints brought before the regulator has the potential to provide solutions for process improvement, which should translate into new regulations.
- The incentive to step up provider self-regulation, with input and validation by the regulator, will result in increased self-oversight and enhance management transparency. Provider transparency entails posting all relevant board of directors resolutions on its website.
- Sunshine regulation is a regulatory approach involving public disclosure of the management outcomes of individual utilities and the sector in general.



In order to reverse widespread environmental unhealthiness and attain minimum acceptable standards of environmental health, El Salvador's Ministry of Environment and Natural Resources recently announced its *National Environmental Sanitation Strategy*, which is divided into three main areas of action that in turn involve a set of measures:

- **Integrated solid and hazardous waste management.** The main lines of action in this area are: adoption of a reduce, reuse and recycle culture; improvement of solid and hazardous waste management coverage, accessibility and sustainability; extension of accountability to producers, importers and distributors; substitution of raw materials and substances; and soil decontamination and closure of open-pit dumps.
- **Industrial and domestic wastewater.** The main lines of action are: industrial

wastewater treatment; handling and treatment of domestic sewage; and reuse and recycling of treated wastewater.

- **Basic sanitation for the peri-urban and rural areas of the country.** The main lines of action are: expansion of coverage and quality of services; vector control and cleaning of public areas; and improvement of domestic air quality.

Useful data on unhealthiness and sanitation in El Salvador:

- In 38% of the sites sampled, water quality was poor or very bad; only 17% could be potabilized by conventional methods, and only 26% was suitable for irrigation.
- The Metropolitan Area of San Salvador discharges 3.6 cubic metres of wastewater per second. Domestic discharges account for 80% of the total and are the main cause of faecal contamination.
- The National Water and Sewage Administration (ANDA) manages 74 sewerage systems, with more than 530,000 household connections of which only 3.5% receive any form of treatment.
- Fifty-five municipal abattoirs operate without environmental and health permits and slaughter cattle and pigs in poor sanitary conditions. Only 18% of the abattoirs have a treatment system of some kind, but most are old and have not undergone any maintenance over their useful lives.

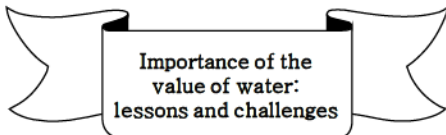
Additional information on the National Environmental Sanitation Strategy is available at <http://www.marn.gob.sv>.



The Natural Resources and Infrastructure Division worked with the Economic Commission for Europe (ECE) on organizing the *Workshop on Transboundary Water Cooperation “Latin American and European Regions: Sharing Experiences and Learning from Each Other”* (Buenos Aires, Argentina, 11-12 June 2013). The purpose of the meeting was to highlight the benefits of transboundary water cooperation in regard to economic and social development, growth and protection of the

environment, and to provide a platform for the exchange of information, lessons learned and demonstration of good practices in both regions. The discussions focused on the following themes:

- International legal instruments on transboundary waters, in particular the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, the Convention on the Law of the Non-Navigational Uses of International Watercourses, and the draft articles on the Law of Transboundary Aquifers drawn up by the International Law Commission of the United Nations.
- Institutional frameworks conducive to sustainable long-term cooperation, in order to reconcile different interests and uses and maximize the benefits of transboundary cooperation.
- Adapting to climate variability and change in transboundary river basins.



The Natural Resources and Infrastructure Division cooperated with the National Water Authority (ANA) of Peru in the *Symposium "Importance of the value of water: Lessons and challenges"* (Lima, 20-21 November 2012). The objectives of the event were:

- Highlight the importance of economic charges and their determination in the context of integrated water management.
- Analyze regional and international experiences related to the financing of water resources management.
- Learn about the methodology for setting economic charges for water abstraction and for discharge of treated wastewater in Peru.

Under Peru's current legal framework, the payment system for water use consists of a service fee and a tariff or rate. The service fee is a payment to the State for water resource

- In recent years, a number of Central American countries have embarked on decentralization of the provision of drinking water supply and sanitation services. Recognizing that conducting such transfers in an efficient manner poses a major challenge for national institutions and even more for local governments taking on these responsibilities, the Water Alliance (<http://alianzaporelagua.org>) has developed a *guide for municipal planning in water and sanitation* based on the work done by a number of agencies in Central American countries.

- Colombia's Drinking Water and Basic Sanitation Regulatory Commission (CRA) has submitted for citizen feedback the *draft of the new water and sewerage regulatory framework for utilities with more than 5,000 ratepayers*. The objective is to improve service quality by setting efficiency targets focused on areas such as broader coverage, service continuity, quality, and water loss reduction (<http://www.cra.gov.co>). The draft framework also consolidates and strengthens the role of users in monitoring service providers.

- The report on *the future availability of water resources in the face of climate change scenarios in Chile*, by Ximena Vargas (*Environment and Development Series* N° 149, LC/L.3592, December 2012), examines the potential impact of global climate change on the future availability of water resources in Chile (<http://www.cepal.org>). The findings make it possible to quantify the future impact that a change in global climate conditions would have on the availability of water resources for hydropower generation in Chile on the basis of projections for the Maule Alto and Laja river basins, which account for nearly 60% of total installed hydroelectric power in the central interconnected system.

- The *Caribbean Environment Programme*

- The article "*Chile: is the fee for non-use of water rights effective?*" by Christian Valenzuela, Rodrigo Fuster and Alejandro León, published in *CEPAL Review* N° 109, examines whether the licence fee for unused water rights implemented in Chile in 2005 (see Circular N° 22) has encouraged the use of these water rights (<http://www.cepal.org>). It makes two comparisons: fees charged versus fees collected, and the market price of water rights compared with the fees collected. The study found that successive licence fee collection campaigns boosted receipts from 67% of the total assessed in 2007 to 81% in 2009. It determined that several years of licence fee payments are equivalent to the market price of water rights. The study concludes that the licence fee has not been effective in discouraging non-use, because holders tend to pay what they are charged in order to not lose water rights whose market price is higher than the licences fees. The study also suggests some improvements in the legal design of the instrument.

- The Nature Conservancy (TNC) actively promotes *Water Funds* in Latin America. Its portfolio now includes 32 such initiatives in various stages of development, which provide a steady source of funding for the conservation of more than 2.8 million hectares of watersheds and secure drinking water for nearly 50 million people. Under this approach, water users pay into the funds in exchange for the product they receive, which is fresh, clean water. The funds, in turn, pay for forest conservation along rivers, streams and lakes, to ensure sustainable provision of safe drinking water (<http://www.nature.org>).

- The mission of the *Honduran Association of Water Systems Management Boards* (AHJASA) is to provide technical assistance to the management boards so they can develop organizations with the technical, administrative and financial

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