

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



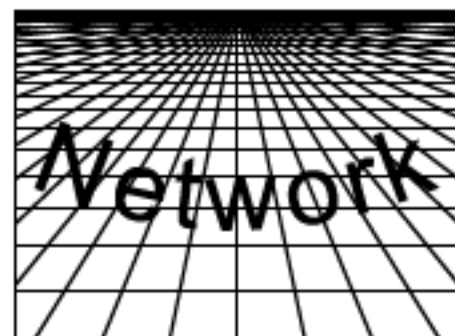
United Nations Economic Commission for Latin America and the Caribbean (ECLAC)

Nº 40

September 2014

## CIRCULAR Nº 40

As changes occur in the drinking water supply and sanitation sector, new issues may be identified in the areas of regulation and service provision. The emergence of these issues does not mean that the traditional regulatory, institutional and financial problems have been overcome, or that the focus should shift to other areas, but rather that these new questions should complement the existing agenda.



**Adapting to climate change.** As the climate has become more variable, the entire region has experienced events such as major flooding or droughts that have endured for longer than expected. As a result, it has become increasingly difficult to anticipate the nature of the seasons, which directly affects the water sector and renders the projection of service variables (for example, investment) more complex. This creates an environment more likely to draw complaints from consumers against authorities and utilities.

In responding to these new challenges, investments are one option for ensuring that infrastructure is more resistant, flexible and resilient, and thus able to cope with the disruptions of the climate system. This is complicated when water rates should be increasing, though this difficulty could be mitigated (at least partially) by introducing improvements in operational efficiency that drive down costs. Another possibility relates to a strategy of investment in green technologies needed to manage, protect against and mitigate the risks faced by assets and the services that they render. These technologies are understood as

unconventional ways of resolving problems, and can also be more economical. For example, in New York City, rather than investing heavily in a water treatment plant, watersheds were managed environmentally to produce drinking water of the same quality, but at a lower cost.

Considering these adaptation scenarios, which involve new technologies and investments, translated directly into service quality and value for ratepayers, it is important and necessary that these policy decisions are adopted on a participatory, community basis, with the expected service levels and costs agreed by society as a whole. Otherwise, in the absence of debate and without securing a consensus, the industry risks losing prestige and incurring the dissatisfaction of users. The sector is at various stages of development in the countries of the region, so it is likely that adapting to climate change will take place more slowly in some cases, especially considering the enormous need for investment to meet service quality and coverage targets.

**Energy and water efficiency.** More and more public and private organizations are taking steps to reduce environmental pollution and several of the countries of the world are implementing measures aimed at limiting their carbon footprints. For a sense of the water sector's scale in this regard, it is estimated that carbon emissions from the drinking water supply and sewerage industry in England and Wales account for about 1% of national emissions. In Latin America and the Caribbean, the efforts being made to expand service coverage could cause an increase in energy demand, and therefore the likelihood that the sector will be responsible for higher carbon emissions. In terms of water efficiency, it is crucial that the focus remains on regulatory policies that reduce non-revenue water (estimated at 40% in major cities). In parallel, governments must encourage the introduction of alternative technologies for reuse and recycling. For example, in Israel, 75% of treated wastewater is reused for irrigation purposes, saving

considerable resources and delivering environmental benefits.

**Environmentally sustainable services.** Questions related to the management of water resources and watersheds, and the protection of ecosystems from climate change, are aspects that traditionally have been regarded as falling outside the drinking water supply and sanitation sector, and therefore beyond the remit of regulators and utilities. However, these issues are closely connected to the sustainability, quality and cost of services, since ecosystems both collect and produce water, and determine the storage capacity.

### CONTENTS

- **Editorial remarks.**
- **Open discussion:**
  - Regulation under the public model of service provision.
  - Regulatory progress and challenges in Argentina.
  - Twenty years of SUNASS: development, experience, lessons learned and challenges.
  - Possible conflict between efficiency and sustainability.
  - Best practices in regulating State-owned and municipal water utilities.
- **News of the Network:**
  - Water use charge in the Province of Buenos Aires.
  - National Drinking Water and Sanitation Sector Policy of Guatemala.
  - Sanitation Services Modernization Law of Peru.
- **Internet and WWW News.**
- **Recent ECLAC publications on water resources management and drinking water supply and sanitation services.**

The countries of the region differ in this regard. Some have included payments for ecosystem services in their rates, with users in Bogotá and Quito, for example (see Circular Nº 32), paying into water protection funds. Incentives might also be created for investment in green infrastructure, promoting the reuse of treated wastewater and encouraging industries to comply with environmental quality standards, not only for



legal reasons, but also on ethical, moral, reputational and market-access grounds.

**Promoting competition in the sector.** It is broadly accepted that water and sanitation services present natural monopoly characteristics, especially considering the sizeable investments required by water networks. However, there are some areas in which regulation can offer greater scope for competition, particularly in respect of purchases and acquisitions. This can lead to cost savings and, consequently, efficiency gains. Regulators may also promote the active control of those unregulated activities that have an impact on competition, notably construction. These policies may be supported by working with antitrust authorities to penalize anti-competitive activities.

**Institutional framework.** Institutions related to the drinking water and sanitation sector have proliferated in many of the countries of the region, making up an institutional spider's web with possibly overlapping functions. This increases transaction costs and the risk of a lack of coordination, and ultimately reduces the negotiating power of utilities and regulators in the political arena. It is therefore important to reduce the number of actors and afford regulators greater independence, as well as strengthening disciplinary powers for inefficient practices.



Below are the conclusions of the Meeting of Experts on Tariff and Regulatory Policies in the framework of the Millennium Development Goals and the Human Right to Water and Sanitation (ECLAC headquarters, Santiago, Chile, 8 July 2013) in relation to *regulation under the public model of service provision* for drinking water supply and sanitation (see Circular N° 39).

Efforts to provide more efficient services require complex public policy initiatives for the building of institutions. This means getting the governance structures right (rules of the game) and the substantive actions right (play of the game). Since the sector is politically sensitive, the regulator also needs to develop tools for conflict resolution.

## Can State-owned and municipal utilities regulate themselves?

Service providers that supervise or regulate themselves at the same time as conducting operations are unlikely to place pressure on themselves to improve performance or recognize faults in their service provision. They will also find it hard to detect situations of capture or corruption. Independent regulators have the potential to accumulate technical knowledge, to distance themselves from short-term policy disputes and look to the long term. Best practices may be encouraged in this way.

Regulation is a task that is intensive in information (and technical analysis), which must be gathered, processed, disseminated and used to incentivize service providers. Key performance indicators may be used to guide the delivery of services in terms of economic and financial sustainability, quality, the expansion and maintenance of the network, and subsidies for the poor.

The sector is politically sensitive, owing to its intrinsic public-health and social dimensions. The presence of a technically sound and financially solvent autonomous regulator isolates service provision from adverse impacts that may arise from the politicization of technical and business-related decisions. Such impacts include: sacrificing long-term interests (maintenance and investments) for immediate necessities (low rates), establishing priorities according to political proximity or distance (in decision-making on expansion), granting subsidies along partisan lines (rather than according to need and health requirements), excess employment (due to patronage) and tolerating clandestine connections (in order to avoid taking unpopular decisions).

## How can services be improved through regulation?

Public policy shifts in response to pressures on and from institutions. The latter are broad social structures (reflecting norms and customs), formal organizations (such as regulatory agencies) and support systems (such as State bureaucracies). Independent regulatory agencies are created to reduce the power of ministries (or other executive institutions) over the decisions of service providers. In other words, their function is to partially depoliticize service provision planning, monitoring and control.

Regulatory agencies exist in various forms. The key questions are how these institutions generate information, implement incentives and evaluate performance. Some key indicators to bear in mind are the number of employees per thousand connections, non-revenue water, revenue collection, the

percentage of operating costs covered, funds for investment, and indicators of service quality and political interference in the expansion of the network and in other decisions (for which there is no simple indicator available).

## Regulatory governance

Key questions refer to the regulator's mandate (detail, responsibilities, clarity); the type of entity; decision-making autonomy; the ability to access, analyse and process information, to establish penalties and rewards for performance; the job stability and security of management and technical specialists; financial autonomy; and transparency in the decision-making process. Perhaps the most important factor defining the orientation, independence and potential capture of directors is their provenance and destination upon completion of their term of office (public sector, political activity, industry, etc.).

## Substantive elements of regulation

The substantive elements on which regulation relies to promote best practices are as follows: awarding and certifying operating licences, setting performance standards, overseeing service provision, establishing tariff levels and structures, adopting a uniform system of regulatory accounting, arbitrating disputes between interested parties, auditing, training specialized human resources, issuing reports on sectoral performance for the governmental authorities and the public, disseminating objective and consistent information, and promoting public debate based on this information.

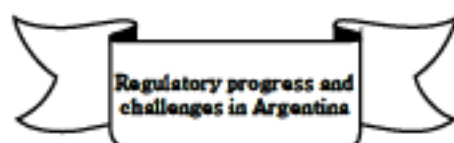
It has been suggested, given the ineffectiveness of imposing financial penalties on State-owned and municipal utilities, that these be applied to their authorities instead (for example, by depriving them of performance bonuses if they do not meet set targets). Although this may deter highly qualified human resources from serving on the utilities' boards of directors, it would contribute to more efficient management.

## How are State-owned and municipal utilities governed?

Good governance practices in State-owned utilities include the presence of independent directors, defined commercial targets, clear roles, consistent objectives, internal incentives for cost reduction, integrated information systems, a business plan and the involvement of personnel in its design. Moreover, water utilities that perform well follow some logical steps in their improvement: they identify trends based on past performance, they have a clear point of departure (analysis), they select measurable targets and create incentives that



lead to their fulfilment, they establish internal lines of communication for passing on information and learning, they appoint accountable managers and they review their results regularly.



Listed below are the central points of the presentation entitled *"Avances y desafíos de la Argentina en la regulación, con énfasis en el modelo de prestación pública de los servicios"* (Regulatory progress and challenges in Argentina, with emphasis on the public model of service provision) by Oscar Pintos, President of the Federal Association of Water and Sanitation Regulatory Bodies (AFERAS), Argentina.

In Argentina, 70% of the population lives in areas where the provision of drinking water and sanitation services is subject to regulation. Regulation in the country was gradually shaped and transformed according to Argentina's institutional organization and economic contexts:

- **National public utility, 1912-1980.** During this period there was a single national utility, Obras Sanitarias de la Nación (OSN), which provided services in the country's main cities. In areas not covered by OSN, services were delivered by provincial or municipal authorities, or by cooperatives.
- **Provincial public utilities, 1980-1990.** In 1980, OSN services were decentralized and provincialized, with OSN remaining in charge of service provision solely in the Metropolitan Area of Buenos Aires. This forced many provinces to set up *ad hoc* utilities based on OSN infrastructure, personnel and even its tariff regime, however these did not have economic or even the technical capacity to effectively deliver services. As a result, high levels of disinvestment brought about a drop in service quality and a major setback in its development. Similar consequences were noted in provinces that opted to transfer the services to the municipalities, which had even less financial and technical capacity.
- **Contracting to the private sector, 1990-1995.** The privatization of services was driven and supported by the national government. Some of these processes occurred rapidly and were somewhat disorderly, so that existing shortcomings were perpetuated under the new system. In this context, regulatory agencies were set up almost "accidentally", without much theoretical knowledge or experience of regulation. These agencies gradually improved as they went along through "trial

and error". Argentina has no single regulatory agency with national jurisdiction, but has multiple regulators, which for the most part are provincial in scope. The Consumer Protection Act was approved in 1993 as a further tool for the protection of users. Regulatory and control bodies were only recognized in the constitutional reform of 1994.

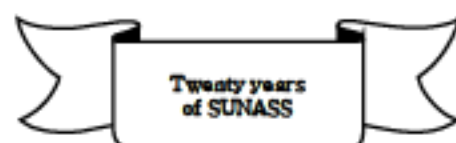
- **Expansion of private-sector services, 1995-2000.** As private ownership increased, a number of disputes arose and the first economic and social symptoms of the subsequent crisis emerged.
- **Crisis and renationalization, 2000-2005.** The socioeconomic and political crisis of 2001, and the subsequent exit from the currency-board regime, created tensions between the State and private companies that wanted to adjust tariffs, with the result that complaints were filed before international arbitration bodies. Services were eventually renationalized in the country's main cities, and new service providers were formed.
- **A crisis of regulation, 2005-2010.** Structural problems have been noted in the sector: insufficient economic capacity in the provinces where services were renationalized, hampering the expansion of networks; renationalized utilities governed by political boards of directors; regulatory frameworks designed for private service providers; the relative weakening of regulatory agencies in comparison with State-owned public utilities; delays in attending to users' complaints and their consequent dissatisfaction; and scepticism regarding the role played by regulators in protecting their rights during the earlier stage of privatization.

The regulation process has been changing constantly as it adapted to different institutional realities. Initially, the regulatory model was provided by the State (national and subsequently provincial governments), which also operated the public utility. All direct relations with users were maintained by the utility. In the 1990s, a "regulatory triangle" emerged, the three sides of which were the State (executive branch), private utilities, and users, with regulators endeavouring to coordinate the relationship between them.

Following the renationalization of water services, private utilities disappeared as an actor, and the State became both the licensor and the licensee, thereby dominating two sides of the triangle. The relationship between State and utility strengthened and, compounded by the decoupling in the legal framework (designed during the period of private-sector service provision), resulted in the weakening of the regulator's capacity to exert influence over public utilities, to deal with users' complaints and to inform the executive branch of service failings.

One frequently asked question is, if utilities are State-owned, is there any reason for a regulator? Those who think that not, justify their response by saying that it makes no sense for the State to regulate itself, that the common good is already inherent to the concept of the State, and even that if the government is elected by the citizens, the public service that it provides should not be controlled and regulated by an unelected technical body. However, regulatory agencies are essential because: (i) all natural monopolies tend towards inefficiency, regardless of the nature of the service provider (public or private sector); (ii) complaints need to be resolved immediately and users cannot wait for the next elections to express their dissatisfaction with a State-owned company and the service that it provides; (iii) it is difficult for the State to self-regulate and to penalize itself in the event of a complaint from a weaker third party (the consumer); and (iv) regulators must help redress the balance between the monopolistic power and the consumer by acting as an "interested judge" and by providing new and broader forms of participation and citizen oversight (access to information, public hearings, user councils).

The current limitations facing regulators under the public system of service provision are as follows: (i) greater difficulty and longer delays in accessing information from the service provider and in the latter's resolution of user complaints; (ii) financial penalties for non-compliance must be met, one way or another, by the State; and (iii) there is no threat of withdrawing the licence to exert a disciplinary influence on the service provider. To overcome these difficulties, it is hoped that a new "triangular" regulatory framework will be rebuilt, keeping users on one side and the legislative branch on the other (given its constitutional powers and its plural political makeup). The aim is to guarantee the independence of the regulator and that its actions (oversight of the State-owned utility and the protection of users' rights) cannot be easily disregarded by the third side, comprising the executive branch and the State-owned utility, which are much more closely linked than the executive branch and the regulatory body.



At the Meeting of Experts, the Chair of the Board of the National Superintendency of Sanitation Services (SUNASS) of Peru, Fernando Momiy Hada, delivered a presentation on *"SUNASS luego de 20 años: Desarrollo, Experiencias, Lecciones Aprendidas y Desafíos"* (Twenty years of SUNASS: development, experiences, lessons learned and challenges).



Since the 1990s, drinking water and sanitation services have been transferred from the national government to the provincial authorities. SUNASS was created in 1992, and has been regulating both public-sector and private-sector service providers for more than 20 years. Regulated suppliers deliver services to 65% of the population. Regulation of the sector evolved in four stages:

- **Institution-building and regulatory framework (1992-1999).** The main laws having been adopted, SUNASS efforts focused on developing its regulatory framework. Aside from regulation, its functions included those of promoting and developing service providers.
- **Adaptation of service providers and development of the regulatory framework (2000-2005).** In 2000, Peru adopted the Framework Act on Regulatory Agencies, along with its main regulations. The functions of regulating and promoting service providers were separated, paving the way for SUNASS to act as a traditional regulator of State-owned utilities.
- **Implementation and consolidation of optimized master plans and tariff studies (2006-2010).** During this stage, optimized master plans, known as PMOs, were submitted by 45 water utilities. SUNASS approved tariff studies relating to the first five years, thus ensuring a tariff plan and, consequently, management targets and sustainable rates. This does not mean that tariff revenue was able to fund major investment. In fact, in the last five-year period, there was a large supply-side subsidy of US\$ 2 billion that was not passed on to users in the form of tariffs.
- **Adjustments to the regulatory model (since 2011).** The first adjustments to the tariff model were made. SUNASS adopted a new approach in public-private partnership contracts, and placed emphasis on the oversight of drinking water quality. In 2013, the Sanitation Services Modernization Law was adopted (see "News of the Network") and the Technical Agency for the Management of Sanitation Services (OTASS) was created. The functions of OTASS are as follows: to issue regulations on the composition of water utilities' boards of directors, to issue guidelines and protocols for their proper management, to assess their technical capacity and economic and financial solvency and, where appropriate, to determine whether to apply the temporary support regime, to select board members and managers under said regime, and to intervene in non-viable utilities and thereby promote the merging and reverse the fragmentation of service providers.

Even where water utilities are state-owned, the regulatory function is justified by the need to balance the interests of the State, the

service provider and the users. Although the regulator is part of the State, its autonomous and technical nature means it can protect users' interests against utilities who would use their market power to increase tariffs or reduce service quality. In this regard it is worth mentioning some of the lessons learned during the twenty years in which public utilities have been regulated in Peru:

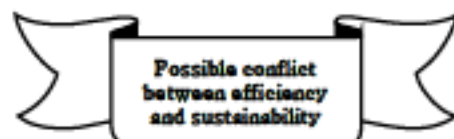
- The limited planning capacity of municipal utilities and long-term project cycles make it advisable that tariffs be reviewed every three years.
- If national, regional or local investment does not take the optimized master plan into account, the resultant infrastructure will not be sustainable.
- Since mayors (who are directly or indirectly responsible for running the utilities) are generally reluctant to raise tariffs because it is unpopular, making tariff increases conditional on the fulfilment of management targets generates perverse incentives.
- Where regulatory accounting is not yet in place, tariffs may be determined using the "model company" methodology. The asymmetry of information is due to: (i) utilities' weakness in presenting a true cost structure; (ii) ignorance of central, regional and local government investment programmes; and (iii) the fear that tariff increases might provoke a reaction from the principal.
- Where parts of the system are contracted out to the private sector, the regulator must participate in all stages of the process. SEDAPAL (a State-owned water utility) awarded a number of concessions for construction work in which the regulator had no involvement. The methods of these private contractors did not always respond to the needs of the utility, with concessionaries tending to increase their costs and pass them on to SEDAPAL. The company then passed them on to the users.

Also in relation to private-sector participation, in the case of Aguas de Tumbes the municipalities did not properly assume their role as licensors (they failed to implement some of the regulator's actions), while the State failed to comply with its investment obligations. It was therefore learned that the private sector management should not depend on third parties (even where these are State-owned).

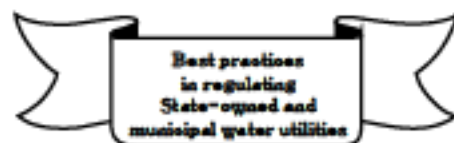
Another lesson learned is that it is advisable to prioritize the quality of the operator over the experience of the constructor in bidding processes. While concessions might entail major infrastructure works, it is the operators who must administer the concession over a 30-year period, and for this they must have experience in the operation of the infrastructure rather than its

construction (part of their knowledge will be contracting the best constructor).

The main regulatory challenges currently facing the sector are as follows: (i) expanding regulation to cover utilities that operate in small cities (with differential treatment, considering their peculiarities); (ii) designing and improving the tariff regulation model (efficient costs, the discount rate, restoring economic-financial balance, regulation during periods between regulatory reviews and calculation of the capital base including investments made through subsidies); and (iii) dealing with the problems caused by the multiplicity of principals.



Normally only a small part of the water withdrawn from a stream—30% in the case of furrow irrigation—is consumed (in irrigation, in the process of evapotranspiration). The water that is not consumed returns to the water body at a certain point downstream, whether directly, through the surface return flow, or indirectly via aquifer recharge, and in consequence may be utilized downstream. Obviously it might not also be available for other beneficial uses, for example, if it drains into the saline aquifer. Utilization may take different forms: users with or without formal water use rights, or environmental and other instream uses not expressed in said rights. This situation means that a conflict may arise between efficiency and sustainability: if greater efficiency in the use of water (such as the introduction of sprinkler irrigation) means greater consumptive use and therefore a lesser return flow that previously had another, beneficial use, then greater efficiency in a water use may negatively affect the sustainability of the other use. These adverse impacts may be significant, but some time usually passes before they become noticeable. Often it is difficult to determine if they are the result of the stochastic nature of flows or of the actions of a user upstream, as well as to identify the cause. It is thus necessary to conduct a comprehensive analysis of water-use decisions, ideally at the level of the river basin, rather than focusing on individual uses.



Set out below are the main conclusions and recommendations of the study "Best practices in regulating State-owned and municipal water utilities" (LC/W.542, May 2013) by Sanford V. Berg (also available in Portuguese) (see Circular N° 39).



- **Independent directors.** The role of the utility's Board of Directors is a topic that is under-studied, yet it surely belongs on the list of issues warranting greater attention. If those monitoring and evaluating management (on behalf of the owners—the nation or the municipality) are driven by political concerns, they will tend to have a short term view of outcomes: keep tariffs low, “do not rock the boat”, and leave technical management alone since “they know best”. Certainly, regular interference by Directors is to be avoided: let managers do their job. However, if business plans and executive performance are not monitored, then the Board's governance responsibilities are abrogated. Little is known about the selection process, retention, and other aspects of the boards of state-owned water utilities (assuming that they are, indeed, corporatized). However, best practice suggests that having highly respected representatives of different professions (law, engineering, business, and accounting, for example) can promote healthy discussions and more careful reviews of management performance. Note that if Board members primarily come from (and return to) the realm of politics, they are likely to be more concerned with future political opportunities (and so will tend to be “captured” by those making the appointments).
- **Managerial commercial orientation.** If the utility is fully embedded in a ministry or within a municipality, the likelihood that its managers will have a commercial orientation is reduced. A focus on cost-containment requires that financial sustainability be emphasized rather than (current) social concerns, since future performance will be weak if the utility acts like a charitable organization. This point runs counter to the orientation of many water utilities. Yet waving the flag of “social needs” over utility operations does not justify the inefficiencies that characterize many state-owned and municipal water utilities. In fact, those who speak loudest on behalf of a “social orientation” are often the same ones who appoint politically-connected individuals to positions of responsibility in utilities: managers who lack the expertise and professionalism required for making sound business decisions.
- **Clarity of roles.** Within the utility, each job description requires careful work. An organizational chart is only useful to the extent that it reflects actual interactions. If the enterprise consists of silos that hardly interact (engineering vs. sales, for example) then customer-orientation becomes subservient to political infighting. Promoting interactions and

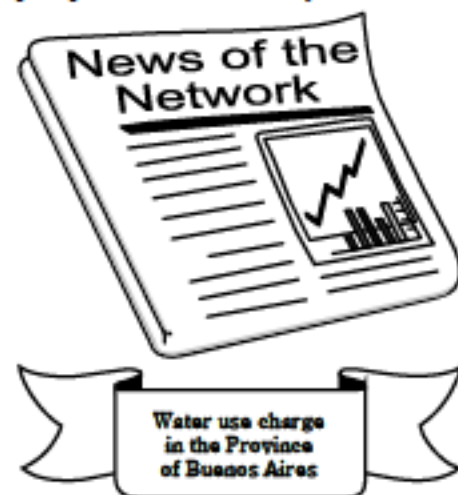
learning among different units contributes to improved performance.

- **Coherence among objectives.** If managers have not prioritized objectives, there is likely to be some inconsistency in decision-making. Keeping tariffs low is one popular objective, but it is totally inconsistent with expanding service coverage to the poor (unless a donor or government provides funds consistently over time). Thus, there is a clear need for a business plan that reflects reality. Similarly, a customer orientation promotes community and trust and supports the legitimacy of the water utility activities.
- **Internal performance incentives.** A strong case can be made that incentives and information are the cornerstones of good performance—both require that governance systems monitor trends over time and that Boards take action when there is weak performance. Executives manage what they measure. One objective of a benchmarking study is to measure productivity and efficiency so that the analyst can make comparisons. Productivity considers the link between utility inputs and outputs. Efficiency is related to productivity, but it involves establishing a standard and determining how close the utility comes to meeting that standard: how far is it from “efficient practice”?
- **Integrated information system.** Data represent the raw material for decision-making. Investment decisions cannot be made in a vacuum. Maintenance requires an asset registry and information about reported leaks and customer complaints. Multi-period information on operations and financial conditions is essential for sound decision-making. Retaining historical data provides analysts with the opportunity to identify trends and conduct more robust statistical analyses. When managers make investment and operational decisions, they need to be clear about the objectives of the project, the techniques being used, and the level of detail required for the dataset. The absence of such specificity limits accountability and diminishes organizational learning.
- **Business plan.** Together, objectives, past outcomes, and expected revenues, costs, and other outlays serve as the basis for a business plan. Customer usage data and population growth can be used for forecasting likely future demand. Business plans serve as reality checks for decision-makers: are the cash flows reasonable and will the operational and expansion targets be met under current financial constraints? Will quality of service be improved under the business plan? This element of utility

governance reinforces the need for a commercial orientation and for trained engineers and managers who can develop a sound business plan.

- **Staff participation.** Staff buy-in is important for setting goals and developing incentives. Their support requires that they have input into the business plan, performance incentives, and other aspects of utility operations. A top-down approach is not an effective way to run a complex organization where information is widely diffused and those in closest contact with customers and operations need to have a voice in how things are done. Given the potential importance of political appointments, there can be a lack of continuity within the regulatory agency. Also, staff training and capacity building may be given inadequate attention by top management.

These elements of governance and utility organization lead to decisions that improve its performance. Advocates (and incentives) for efficiency are crucial. Sound engineering is necessary but not sufficient for improved performance. That means that governance within water utilities must be addressed (including selection of chief executive officers and Boards of Directors via non-patronage routes) just as external oversight of utilities (sector regulators and government ministries) needs to be improved. Institutions matter—perhaps even more than money.



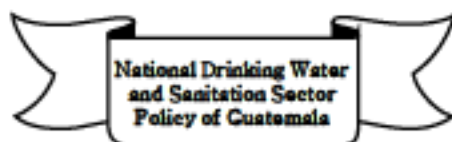
Decree N° 429/2013, issued by the Province of Buenos Aires, implemented a *water use charge*. The charge will be the main economic instrument used to fund integrated water resources management plans in the province's hydrological regions and sub-regions.

To calculate the charge, a formula will be determined by the water authority, which will include the concept of the water footprint and any other factors arising from the improvement of hydrological knowledge of the region and of water utilization. The final formula will consider:



- The type of user.
- The water footprint resulting from the metering of water volumes required for the performance of activities.
- A weighting for vulnerability, availability or other characteristics or circumstances inherent to supply sources or water bodies.
- Costs incurred in user management and administration; studies, hydrological monitoring, planning and control; the application of incentive systems for the improved water use efficiency, the reuse of water within establishments and complementarity in the utilization of rainwater and/or brackish or salt water from aquifers, and the protection of strategic areas that provide hydrological services.

Until the direct metering of water use is put into effect, the consumptive uses that make up the water footprint will be calculated on a temporary basis using the withdrawal measurements reported annually in sworn statements signed by the user and/or calculated by the water authority. Non-consumptive uses will not be included in the charge formula until metering is in effect. Consequently, until water footprint concepts can be included, the charge will be determined as the sum of a fixed charge plus the declared volume of water use multiplied by a factor of between 0.015 and 1 depending on the water body from which the supply is drawn and the impact on reserves or environmental flows. The revenues generated will be allocated in full to the water authority.



In 2013, with the approval of Government Agreement 418-2013, Guatemala enacted the *National Drinking Water and Sanitation Sector Policy*. The policy sets out guidelines for action, with strategies, time frames (to 2017 and 2025) and responsible agencies. These guidelines are as follows:

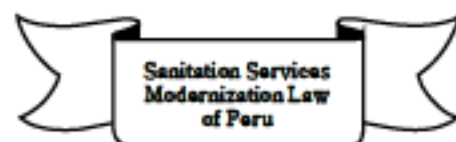
- *Expanding the coverage and improving the performance of public water and sanitation services.* The aim is to improve service provision through increased coverage and support for the renovation, reconstruction and expansion of existing systems, with emphasis on priority municipalities (those with high levels of undernourishment, child morbidity and mortality, and extreme poverty), considering factors related to culture, technology, gender and population trends.
- *Structuring and strengthening the drinking water and sanitation sector, defining, organizing and clearly exercising the functions of guidance,*

*regulation and service provision.* The main objective is to improve the sustainable management of services by restructuring and strengthening various institutions and actors in the sector. Special emphasis will be placed on defining, organizing and exercising the functions of guidance, regulation and service provision. The regulatory role of the State must be defined in order to ensure proper and comprehensive coordination between utilities and users, to strengthen municipalities in their capacity as service providers, and to develop the community authorities that operate their services. Special attention should also be paid to the administration and operation of service provision systems so that they meet the criteria of social equity, economic efficiency, effectiveness, solidarity and environmental sustainability.

- *Monitoring and improvement of water quality for human consumption and sanitation.* The fundamental aim is to ensure that utilities supply good quality, safe-to-drink water to public establishments and households, while reducing environmental pollution through the comprehensive management of sewage, wastewater and solid waste, in order to help create and maintain healthier environments.
- *Prioritization of actions based on a national drinking water and sanitation information system, which guides the generation and management of sector information, to support decision-making, reorganization and modernization.* The objective is to supply timely information on the water and sanitation situation at national level, for the purposes of analysis and decision-making. This is achieved through the coordination of public and private institutions at national, regional, departmental, municipal and local levels.
- *Social management, promoting community involvement with equal opportunities and representation for men and women, respecting the forms of organization of indigenous peoples and the recovery of their ancestral knowledge and practices in the management of drinking water and sanitation.* This guideline is intended to promote user involvement in the identification, prioritization, management and sustainability of services; and to strengthen social organization so that it is representative, legally constituted, recognized by institutions, and actively and continuously involved. The guideline also seeks to promote health and environmental education in order to change attitudes, behaviours and practices so as to attach strategic value to drinking water and

sanitation in the human development process.

- *Strengthening the technical, administrative, financial and legal capacities of municipal governments, so that services are properly managed, operated and maintained.* This action aims to support capacity-building in the administration, operation and maintenance of systems, thereby ensuring service quality, improving or facilitating access, and guaranteeing the sustainability of drinking water and sanitation systems. An important aspect of this is the development of alternative models for the delivery and sustainability of services, considering the technical and legal procedures for estimating and applying tariff models and other means of guaranteeing the sustainability of services.
- *Promoting and managing knowledge.* This guideline is designed to generate and transfer existing knowledge, information and experience by developing initiatives to research and systematize information, disseminate learning and put experiences into practice. The population will be encouraged to participate, both individually and collectively, in the sustainable use of water, as well as in relation to water-related knowledge, traditions, attitudes and behaviours.



Peru recently adopted a *Sanitation Services Modernization Law* (N° 30045/2013), whose measures are designed to increase coverage and ensure the quality and sustainability of national drinking water and sanitation services, as well as promoting development, environmental protection and social inclusion. Under this law, the modernization of services is essentially grounded in the following principles:

- *Universal access.* It is the population's right to have access to sustainable, good quality services; it is the State's obligation to deliver these through service providers.
- *Social inclusion.* Plans, programmes and initiatives at all levels of the State must be developed in keeping with the policy of promoting development and social inclusion. Particular emphasis must be placed on reducing the gap in relation to services infrastructure and the access of low-income population groups, especially in rural areas, to said services under the appropriate conditions of quality and sustainability.
- *Environmental protection.* All levels of State are responsible for the sustainable



management of water resources in accordance with environmental standards. Water utilities and SUNASS must establish, as part of the optimized master plans, mechanisms for environmental compensation and watershed management.

- **Entrepreneurial autonomy.** Water utilities, working under the operating rights granted by the provincial authorities, are exclusively responsible for managing services, as well as designing and implementing projects in their sphere of influence. They must ensure that their management practices abide by the applicable regulations set forth under the policies, plans and guidelines approved by their governing body, in accordance with the provincial urban development and land management plans for which local governments are responsible.
- **Efficiency.** Services should be organized in such a way as to promote a constant improvement in efficiency levels, prioritizing economies of scale, the application of technologies and the modernization of management.

The provisions of the Law in relation to environmental management and water resources are as follows:

- Service providers must promote environmentally friendly technologies for wastewater treatment, avoiding the pollution of recipient water bodies and complying with the maximum permissible limits and applicable environmental quality standards.
- Utilities are also authorized to sell the solid waste generated in the process of water treatment, in wastewater treatment plants, and in services for the treatment of treated wastewater, for the purposes of reuse.
- Water utilities must draw up climate change adaptation plans.
- SUNASS, in coordination with the water utilities, must ensure that tariffs include environmental compensation mechanisms intended to promote efficiency in water use and wastewater treatment.



Some websites worth visiting for information on water-related issues are listed below:

- The *Commission for Regulating Drinking Water and Basic Sanitation* (CRA) of Colombia issued Resolution N° 665 of 27

December 2013, "by which the general terms and conditions regulating the advance payment option for home water and sewerage services are established". Its purpose is to facilitate the payment of these services, since users will be able to "top up" their water supply in accordance with their financial situation and household income, while utilities will benefit from a reduction in the number of clients in arrears, as well as in the costs associated with reading meters, delivering bills, invoicing and disconnecting and reconnecting the supply (<http://cra.gov.co>).

- A report on *institutional analysis and strategy for coordinating and strengthening the water and sanitation sector of Honduras* is available on the website of the Regulatory Entity for Drinking Water and Sanitation Services (ERSAPS) (<http://www.ersaps.hn>).
- The *World Water Development Report* (WWDR) is an annual study that gives an overall picture of the state of the world's freshwater resources. The 2014 edition, which contains a section on Latin America and the Caribbean, is on the subject of "water and energy" and underscores the interdependence of these two sectors (<http://www.unesco.org>).
- The *Joint Monitoring Programme (JMP) for Water Supply and Sanitation* of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) published coverage estimates for 2012 (<http://www.wssinfo.org>). According to these data, more than 94% of the Latin American and Caribbean population consumes water from improved sources, and almost 82% uses improved sanitation facilities. This means that the region as a whole has already met the Millennium Development Goal on water supply, and it is possible that it will reach the target on sanitation.
- The mission of the *National Groundwater, Irrigation and Drainage Service* (SENARA) (<http://www.senara.or.cr>) of Costa Rica is: (i) to promote agricultural development by installing and operating irrigation, drainage and flood protection systems; (ii) to contribute to the preferential development of agriculture projects underpinned by the fair distribution of land; and (iii) to seek a rational and democratic change in land ownership in territories benefiting from the installation of irrigation and drainage.

- ECLAC, the Spanish Climate Change Office and the Environmental Hydraulics Institute of the University of Cantabria have developed a specific methodology for *assessing climate change impacts on*

*coastal areas* (<http://www.cepal.org>). This methodology, and the tools associated with the regional study of the effects of climate change on the coast of Latin America and the Caribbean may be highly useful for evaluating impacts, proposing adaptation measures and conducting an economic analysis of said measures.

- The *National Federation of Drinking Water and Sanitation Workers* (FENTAP) of Peru is a union organization that represents workers in the country's drinking water supply and sanitation sector (<http://www.fentap.org.pe>).
- The website of the *Uruguayan Council for International Relations* (CURI) (<http://cui.org.uy>) has published a study on *climate signal in the binational Mirim Lagoon Basin: rainfall increase between thirty-year periods causes possible biotic stress*.
- The mission of the *National Programme for Sustainable Rural Development* (PRONADERS) of Honduras (<http://www.pronaders.hn>) is to design and implement programmes and projects in support of human development in the rural sector, seeking to improve living standards based on the criteria of inclusion, equity, self-management and decentralization, and to manage natural resources in a rational and sustainable way.
- The *Revista Andesco* is available on the website of the National Association of Public Utilities and Communications Companies (ANDESCO) of Colombia (<http://www.andesco.org.co>). Issue 27 of this magazine contains two articles of note, one on *economies of scale in the supply of drinking water*, which cites economies of scale as the main reason for adopting the river basin as the basic unit of regionalization in the provision of drinking water and sanitation services; and another on *comprehensive management project on non-revenue water*, which analyses the strategy adopted by the company Empresas Públicas de Medellín (EPM) to reverse the growth trend in water losses, while echoing the regulatory signals of the CRA.



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



- *"Natural resources: status and trends towards a regional development agenda in Latin America and the Caribbean"* (LC/L.3748, December 2013) by Hugo Altomonte, Jean Acquatella, Andrés Arroyo, Caridad Canales and Andrei Jouravlev (also available in Spanish and Portuguese). This document is an ECLAC contribution to the Community of Latin American and Caribbean States (CELAC). Among other aspects, it examines the evolution of the water resources sector, especially in relation to drinking water supply and sanitation services, from the perspective of their vital contribution to inclusive development in the region, as well as trends in the hydroelectric power generation. By way of conclusion, it highlights public policy recommendations that emerge from the analysis.
- *"Políticas tarifarias y regulatorias en el marco de los Objetivos de Desarrollo del Milenio y el derecho humano al agua y al saneamiento"* (*Tariff and regulatory policies in the framework of the Millennium Development Goals and the human right to water and sanitation*) (*Recursos Naturales e Infraestructura Series* N° 164, LC/L.3790, March 2014) by Emilio J. Lentini and Gustavo Ferro (available in Spanish only). The Natural Resources and Infrastructure Division organized a Meeting of Experts on Tariff and Regulatory Policies in the framework of the Millennium Development Goals and the Human Right to Water and Sanitation (see Circular N° 39). The main objective of the event was to analyse current developments in the drinking water supply and sanitation sector in the region: achieving the Millennium Development Goals; the challenges of regulation and control under the public model of service provision (State-owned and municipal utilities); regional trends and the state of the art in tariff policies, self-financing and

subsidies; and the implications of recognizing the human right to water and sanitation, both for sectoral policies and the post-2015 development goals. Moreover, experiences in certain key areas were shared between the regulatory bodies of the countries of the region (Argentina, Brazil, Chile, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, Peru and Uruguay), and priorities identified for future work and cooperation, with the emphasis on new items on the sectoral agenda (energy and water use efficiency, adapting to climate change, watershed management, new water sources, etc.).

- *"Notas sobre la teoría de la empresa pública de servicios de infraestructura y su regulación"* (*Notes on the theory of state-owned infrastructure utilities and their regulation*) (*Recursos Naturales e Infraestructura Series* N° 165, LC/L.3793, March 2014) by Patricio Rozas Balbontin and José Luis Bonifaz (available in Spanish only). With rare exceptions, the regulation of drinking water and sanitation utilities in Latin America and the Caribbean commenced in the early 1990s as many governments became interested in promoting private-sector involvement in the provision of these services. This initiative was launched as part of the structural reforms that followed the fiscal and production crisis that struck the region in the 1980s. In this context, international private operators were permitted and encouraged to invest in the sector, in the hope that they would provide funding and business-management and technological knowledge to overcome its shortcomings. Under these reforms, various regulatory bodies emerged in several countries of the region, intended and designed to supervise, control and oversee the behaviour of private-sector service providers who —it was thought— would invest in the drinking

water and sanitation industry. However, in most cases private participation was unable to consolidate its presence, with the effect that in the 2000s many of the international operators who had entered the market in the 1990s withdrew from the region and many services had to be renationalized. Consequently, the legal frameworks originally designed to regulate the conduct of private utilities ended up being applied to public-sector operators, sparking a debate over the regulation of State-owned and municipal service providers. This situation raises a number of question marks, the first of which relates to the need for the regulation of activities defined as public services when these are undertaken by the State and remain its responsibility. A second set of questions refers to the structure of the industry and the regulatory models presumably applicable to State-owned enterprises, which involves addressing several aspects related to service providers' performance and compliance with the targets established under sectoral policy. By answering these questions, the main problems observed in the regulation of state-owned infrastructure utilities, as well as in the monitoring of their performance, may be identified. Such an approach also helps countries prioritize the fundamental conditions that they must meet, based on elements of economic theory and the analysis of best practices, in order to improve regulatory management and the performance of state-owned utilities.

The publications of the Natural Resources and Infrastructure Division are available in two formats: (i) electronic files (PDF) which can be downloaded from <http://www.eclac.org/dm/> or requested from [Caridad.CANALESC@cepal.org](mailto:Caridad.CANALESC@cepal.org); and (ii) printed (hard) copies which should be requested from the ECLAC Distribution Unit (either by e-mail to [publications@cepal.org](mailto:publications@cepal.org), by fax to (56-2) 2 210-20-69, or by mail to ECLAC Publications, Casilla 179-D, Santiago, Chile).

UNITED NATIONS

NACIONES UNIDAS



NATIONS UNIES

Economic Commission for Latin America and the Caribbean  
Natural Resources and Infrastructure Division  
Casilla 179-D  
Santiago  
Chile

PRINTED MATTER  
AIR MAIL