

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



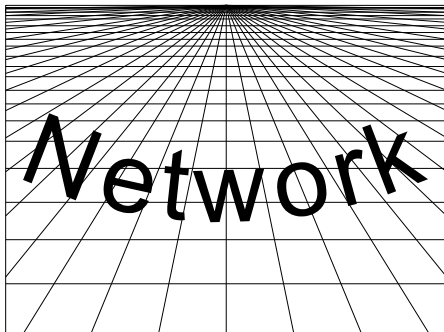
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The Sustainable Development Goals (SDGs) replaced the Millennium Development Goals (MDGs) in 2016 as the principal framework for international targets for the drinking water and sanitation sector. This represents a significant change insofar as SDG 6—which seeks to “ensure availability and sustainable management of water and sanitation for all”—entails meeting stricter standards than those of the MDGs.



While the MDGs referred to access to improved sources of drinking water and to improved sanitation facilities, SDGs introduce new considerations. With regard to water services, SDG 6 stresses the need for universal and equitable access to safe and affordable drinking water for all and to substantially increase water-use efficiency (which would imply reducing losses and controlling non-rational consumption), as well as the need to ensure sustainable withdrawals and supply of freshwater (i.e. protecting supply sources). With regard to sanitation, SDG 6 refers specifically to achieving access to adequate and equitable sanitation and hygiene for all, halving the proportion of untreated wastewater, and protecting and restoring water-related ecosystems. This significant change in the qualitative content of targets makes it advisable to rethink the indicators to be used in monitoring the achievement of the SDGs.

The World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) Joint Monitoring Programme for Water Supply, Sanitation and Hygiene

(JUMP) has recently presented the first baseline estimates for the new SDG indicators of “safely managed” drinking water and sanitation services:

- Proportion of population using safely managed drinking water services. This means having access to an improved source meeting three criteria: it should be accessible on premises, water should be available when needed, and the water supplied should be free from contamination.
- Proportion of population using safely managed sanitation services. This means people should use improved sanitation facilities which are not shared with other households, and the excreta produced should either be treated and disposed of *in situ*, stored temporarily and then emptied, and transported to treatment off-site, or transported through a sewer with wastewater and then treated off-site.

What is the level of coverage of drinking water and sanitation services in Latin America and the Caribbean, according to these new definitions? It is estimated that, in 2015, 65% of the region’s population had access to safely managed drinking water services and a further 31% to at least a basic service. With regard to sanitation, 22% of the population had access to safely managed services and a further 63% to at least a basic service. Coverage levels for drinking water compare positively with those of other developing regions, but the comparison turns negative in the case of sanitation.

SDG 6 commits countries to achieve universal and equitable access to safe and affordable drinking water for all and equitable access to sanitation services for all, by 2030. Taking into account current coverage levels, achieving SDG 6 will require a significant effort on the part of the countries. Increasing investment in the sector will not be easy considering that, despite some positive trends, overall economic conditions in the region have deteriorated after the end of commodity price boom of the last decade. Consequently,

public policies will need to improve substantially in order to increase efficiency and effectiveness in the provision of services, as in the use of resources allocated to the sector. These topics are discussed in the study “*Latin America and the Caribbean towards the Sustainable Development Goals in water and sanitation: recent reforms in sectoral policies*” by Gustavo Ferro, which we will present in the following number of the Circular (see “*Publications*”).

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We continue presenting the study entitled “*Water security challenges in Latin America and the Caribbean*” by Humberto Peña (see Circular N° 46).

The key role played by water resources in the social and economic development of the region means that achieving adequate water security is high on the list of priorities of Latin American and Caribbean countries. This assertion is based not only on the importance of water resources in the satisfaction of the population's basic domestic and health needs, but also on their impact on major activities related to the use of natural resources, which are the cornerstone of the region's geographic output and exporting activities. In addition, water bodies are a central component of the environment and the backbone of a great part of the region's enormous biodiversity.

The region's societies are undergoing an accelerated process of social, economic, political and technological change. These changes are influenced by the interaction of significant internal and external forces, including the dynamics of global natural resources markets, urbanization and climate change, and the major expansion of the middle classes brought about by changes in demography and economic income.

These transformations are accompanied by new governance demands from civil society in areas such as democratization, participation, transparency and equity. Thus, water management is affected by a complex dynamic that manifests itself in many forms, such as: changes in water resources availability and demand; increased wastewater treatment requirements to avoid pollution; social demands for better standards in the quality of services; greater sensitivity towards the respect for human rights and, in particular, the rights of indigenous peoples and the weakest and most vulnerable groups of the population, including urban populations marked by poverty and marginalization; changes in the conditions of river basins; increased vulnerability of the population to extreme hydrological events; and a greater appreciation of civil society's environmental demands.

These processes have been underway for at least 10 years in Latin America and the Caribbean and cannot be seen as something new. It is highly likely that they will continue or intensify in the future, thus posing an additional challenge to the region's already precarious water management capacity. Accordingly, in the absence of any changes, water security could face further deterioration in areas that are already compromised. Thus, water security in the region—despite already being at a precarious level—cannot be seen as an irreversible milestone, and could decrease in the future.

Generally, water security levels depend on both physical and human systems operating in various sectors, which are directly or indirectly related to the use and management

of water. The region's shortfalls in water security result from weaknesses in the human system—the institutional (management) and the constructed (infrastructure) spheres—to properly regulate, in a context of rapid economic and social change in society, all the variables involved in the management of water. With regard to infrastructure, changes in governmental priorities have led to weaker efforts in recent decades. For its part, the institutional side has also shown severe shortfalls, which tend to be accentuated by society's continuous development and growing complexity, and its greater use of natural resources.

With regard to the way the institutional system works, it is important to describe the nature of the region's failings. Although they are often interrelated, three types of deficiencies can be identified:

- **System design:** these arise when there are inconsistencies or gaps in the instruments provided in the institutional framework to respond to the development needs of water resources or their regulation. That is, when faced with certain situations that need to be corrected (for example, the release of pollutants from diffuse sources), the region lacks instruments, regulations or institutions to take care of the problem. One of the shortcomings frequently observed in the region's institutional systems is the significant dispersion and fragmentation in the management of water and other related natural resources, as well as the absence of institutional structures and instruments to coordinate and provide solutions—with an integrated and long-term view—to the different interactions that take place in river basins.
- **State-related:** when State agencies do not have the capacity, resources, or the power to control or implement, as required, the matters entrusted to them, or their action is affected by corruption or capture. States are often too weak to develop measurement networks, which are essential for proper water management, or to implement effective monitoring of pollution problems, even though regulations may clearly define their powers and responsibilities. Furthermore, there are innumerable cases in which legal provisions are rendered meaningless because of institutional weakness or a lack of political will on the part of the responsible bodies. Reaching higher levels of water security will require specialized management agencies to prevent anarchy and ongoing conflict, with adequate records, and control and planning capabilities, as well as conflict resolution mechanisms.
- **User-, civil society- and market-related:** these failures become evident when

individuals, organized groups of individuals, or markets do not comply with the roles assigned to them by the institutional system. Among many examples, such failures are observed when user organizations do not carry out the tasks for which they were created in the first place; when individuals do not carry out their expected monitoring duties regarding the use of water without legal rights; or when market incentives to expand irrigated areas without limit compromise the water sustainability of farms.

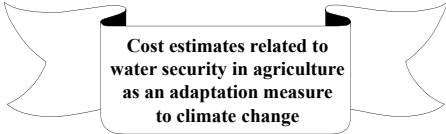
To achieve greater water security with acceptable levels of risk, the institutional system must take into account the costs entailed and balance the available options to satisfy society's different water security requirements, in a context of limited resources. This involves deciding on priorities and on the acceptable and feasible levels of service and risk in all aspects of water security, bearing in mind that such acceptable levels will vary over time, depending on the economic development of each country and on the changes in the economic aspirations, preferences and possibilities of the different social groups. The region's significant changes in recent decades mean that water policies need to adapt constantly to new levels of development and income, by defining staggered targets that consider its process of gradual improvement.

Public policies and the institutional system must consider the high level of existing uncertainty attributable not only to water variability and climate change, but also to the profound social, economic and political transformations currently taking place. This involves prioritizing the design of robust and flexible policies, plans and programmes, which consider a full range of future scenarios. For example, a flood defence plan should also include effective measures for mitigation of damages, in any event, and in no case allow these to escalate or become an obstacle for the best solution. Moreover, the institutional system must be designed with a dynamic approach, including effective mechanisms for feedback and for the system to adapt to new situations. To that end, its design should pay particular attention to:

- The effectiveness of the procedures for monitoring and detecting changes in water security over time that result from hydrological, climate, social or economic causes.
- The institutions responsible for addressing the threats detected and the feedback mechanisms or channels.
- The instruments and procedures to implement the correction or adjustment.

Achieving adequate water security in different areas implies having a resilient

institutional system capable of identifying problems and providing the mechanisms and instruments to ensure adaptation to new scenarios.



Cost estimates related to water security in agriculture as an adaptation measure to climate change

The Sustainable Development and Human Settlements Division published a study entitled “*Estimación de costos asociados a la seguridad hídrica en la agricultura como medida de adaptación al cambio climático en Chile. Un estudio en el contexto del Plan de Adaptación al Cambio Climático del Sector Silvoagropecuario*” (*Cost estimates related to water security in agriculture as an adaptation measure to climate change in Chile. A study in the context of the climate change adaptation plan of the forestry and agriculture sector*) by Francisco Meza (LC/TS.2017/47, June 2017).

Its close dependence and exposure to climate make agriculture one of the most vulnerable sectors to climate change. Forecasts for the central region and the southern and central parts of Chile indicate that temperatures could rise between 2°C and 4°C and that rainfall could decline by as much as 30% in the course of this century. These environmental changes could have a profound impact on the hydrology of Chile, altering the magnitude and seasonality of river flows.

To avoid compromising the country’s food security and its capacity to generate export-related hard currency, it is imperative that agriculture adapts to these changes. This study aims to assess different adaptation alternatives, propose a methodology to estimate costs and analyse two pilot river basins. From a water balance perspective and by simplifying the determinant factors of water withdrawals, actions can be grouped into: (1) measures aimed at reducing demand, (2) measures oriented at increasing availability or supply, and (3) measures focused on increasing use efficiency.

The first includes agronomic measures to reduce water use (shade nets) —the effect of which is yet to be evaluated— and to replace crops with others, more efficient in terms of water consumption. These types of advances have not been included in the study, as there is no reliable information on the potential reduction in water use for a wide range of crops. It is also difficult to evaluate crop replacement solely on the basis of water use, prices and relative costs, as decisions by farmers tend to depend on a series of factors.

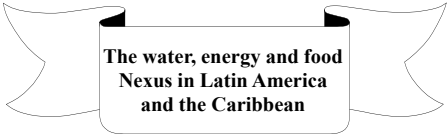
Although the costs have not been included, it must be stressed that agriculture should establish a research programme on

sustainability and genetic improvement with high-calibre contributions from national research centres. This programme should be promoted and financed with public and private resources.

The second group considers increasing available water supply. It includes measures such as construction of reservoirs, groundwater use, canal lining, desalination, water transfers from other river basins, etc. Present day costs of such measures are high and cannot compete with other alternatives associated with better water resources management. The main constraint to incorporate such measures in a system of economic evaluation is that their dimension is determined by specific feasibility studies which assess their negative consequences. Until now, only minor farm infrastructure works have been assessed (for which the cost per cubic metre is similar to that of measures for larger infrastructure works). Deserving special attention in the case of river basins is the water harvesting and capture programme (ephemeral and rainfall courses), but future weather conditions cast a shadow of doubt on the programme’s ability to address these problems.

The third group of measures is related to increases in water use efficiency (better management or irrigation systems replacement). The assumption in this study is that savings in water consumption derived from implementing these measures are not used to increase farmed areas (otherwise, the net result would be zero or even negative, as it would imply an increase in crop exposure). Depending on the characteristics of each area, management measures may prove to be cost effective or not. In the case of Maipo (which has a higher share of surface irrigation) management measures can be effective when facing moderate climate changes. Beyond these types of conditions, measures aimed at replacing irrigation systems are more attractive.

Finally, it should be noted that adaptation is a process that depends on each locality’s characteristics in relation to climate regime, projected impacts and production conditions. Estimating the costs of an adaptation plan requires detailed information from each production system, as well as duly validated hydrological and crop models in order to estimate, for every region, the loss of production and the impact of the introduction of adaptation measures in terms of satisfaction of water requirements and effects on yields.



The water, energy and food Nexus in Latin America and the Caribbean

We present the study entitled “*El Nexo entre el agua, la energía y la alimentación en América Latina y el Caribe: planificación,*

marco normativo e identificación de interconexiones prioritarias” (*The water, energy and food Nexus in Latin America and the Caribbean: planning, regulatory framework and identification of priority interconnections*) by Antonio Embid and Liber Martín (see Circular N° 46).

This study analyses the water, energy and food Nexus in Latin America and the Caribbean. It aims to define the Nexus —in the specific context of the region— as a new model for action that is informed by the interconnections between the different sectors. Built on a long history of integrated management approach, the main premise of the Nexus construct is that the water, energy and food sectors are increasingly interdependent, and that the impacts on one affect the rest. In a world dealing with the pressure of climate change and subject to increasing demands from a growing population, understanding and taking these interdependencies into account is vital to achieve long-term economic, environmental and social goals.

The Nexus approach seeks to provide mechanisms for decision-making to achieve certain economic, environmental and social goals, considering the pressures arising from climate change and the demands of a growing urban population. It also suggests a method to propose general policies on water, energy, agriculture, food security and nutrition, and the environment, which from the outset and throughout the process —adoption of policies, legislation, planning and management— considers the relationship between water, energy, production and marketing of food, which is sometimes only bilateral, but many other times trilateral.

Most of the literature does not treat the three components of the Nexus equally. From the beginning of the Nexus theoretical construct, water has been the key element of the triple conceptual order as it is heavily intertwined with both energy security and food security. Water is also vulnerable to climate change and environmental degradation. Hence, it is the first point of entry for the implementation of the Nexus approach.

While there has always been a connection between these three elements, the Nexus construct gained a foothold in international discussions after the World Economic Forum (WEF) in 2008, which stressed the need to develop a better understanding of the way in which water is linked to economic growth through its relationship with other areas, and to address the challenge to food security represented by the commercial approach to water resource management. The Bonn 2011 Conference on the Water, Energy and Food Security Nexus — Solutions for the Green Economy, was held against this backdrop. It is

understood that the approaches of the green economy and of the bioeconomy will result in improved human well being and social equity, as well as in the significant reduction in environmental risks and ecological scarcities. Carbon dioxide emissions will be progressively lower and resource efficiency will increase.

Acknowledging the Nexus is a reflection of the scientific and technological progress which has permitted making medium- and long-term forecasts. These projections show the increase in consumption (or demand) of water, energy and food, which, owing to their magnitude, raise the need for policies which could enable reaching those targets or, on the contrary, reduce expected increases through greater efficiency in resource use. This requires more effective connections between Nexus components, which could be achieved through new technologies or new forms of energy production. On many occasions, the frequency of catastrophic events and their harmful consequences lead to reflections that validate the Nexus approach.

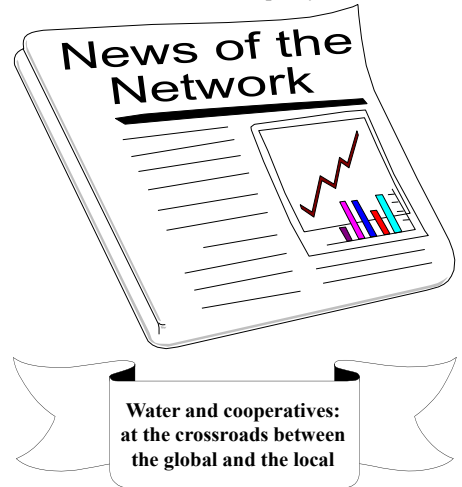
Water is at the heart of all interrelationships, which explains its preferential treatment in studies and policies revolving around the Nexus. This is attributable to its importance in food production and in many sources of power generation, and to its role in developments based on an intensive exploitation of water resources, supported by very low prices (or tariffs) of water resources and of the energy required for its withdrawal, as well as by the policies for their regulation and control, including the implementation of very weak water use rights.

This is why so called water “bubbles” have started to appear in different places, in the beginning having seemingly positive effects, which can subsequently become negative. In the short term this phenomenon creates a sense of wealth in markets and the citizenship; it allows the transformation of dry land into irrigated land, allowing increases in farmers’ short- and medium-term income; and it also opens possibilities for recreational uses, which generate well-being for beneficiaries. However, the challenges posed by sustainability soon appear. Overexploitation cannot continue indefinitely, and environmental problems can lead many times to the salinization of land and the lowering of water tables, as well as to water pollution. Hence, it is not possible to supply water indefinitely for irrigation, recreational activities and others, given that human consumption inevitably takes precedence, apart from also being threatened by these uses.

Here lies the main crux of the discussions in hydrological science on the concept of “overexploitation” or, on the more modern

“intensive use of groundwater resources”. These scientific controversies shed light on the potentialities and problems identified in this study: overexploitation can yield benefits in the short term, but it is unsustainable over time.

The central role of water in the Nexus is based on the acknowledgement that it has no substitutes or alternatives—in contrast with energy—which is why it is at the heart of social, economic and political issues. Worth mentioning are the viewpoints by a minority who consider that the three components of the Nexus should be treated equally.



We present the article entitled “*Agua y cooperativas: en la encrucijada entre lo global y lo local*” (*Water and cooperatives: at the crossroads between the global and the local*) by Ariel Enrique Guarco, President of the Cooperative Confederation of the Argentine Republic (COOPERAR).

The combined effect of population growth, rising incomes and the expansion of cities will result in the exponential growth of water demand, against a backdrop of increasingly erratic and uncertain supply. Reduced availability of freshwater and competition from other uses—energy and agriculture—could lead to a reduction in water availability of almost two thirds in 2050, compared with 2015 levels.

Water insecurity could multiply the risk of conflicts. Sharp increases in food prices caused by drought could activate latent conflicts and lead to migration. Economic growth can be affected by rainfall, droughts and flooding, potentially leading to migratory waves and outbreaks of violence within countries. Many regions in the world are already in a situation of “water stress” as a result of demographic and economic growth. Indeed, 2.5 billion people (36% of the world’s population) live in “water stress” areas and more than 20% of global GDP is produced in areas under risk of water shortages.

Does cooperativism have something to offer at this juncture? We believe that it does,

namely through the participation and empowerment of communities with regard to access to safe drinking water supply and sanitation, based on self-management of services by communities.

Access to water is experiencing many conflicts: between uses (irrigation, drinking water, mining, etc.), among users (irrigators using a common river basin, central neighbourhoods vs. peripheral urban areas), with non-users (deforestation or construction processes that affect nature’s capacity to provide water), intergenerational (tensions between current needs and preferences, and the rights of future generations) and interjurisdictional (when river basins fall under different jurisdictions).

This is why it has been said that water management is tantamount to conflict management. Hence, conflict resolution becomes a question of power: if we want to settle conflicts and include all (ensuring that, in the terms of the SDGs, “no one is left behind”), we must ensure the effective participation of all. The best way of achieving this is by not limiting participation to sporadic invitations to legitimize decisions that have already been taken, but rather, that users themselves manage their water and sanitation services. This is the proposal of cooperativism.

The world has a long tradition of cooperatives and other community-based organizations devoted to drinking water supply and sanitation services (OCSAS) (see Circular N° 42). This rich experience should be enhanced and expanded in the interest of equity, territorial integration and protection of the environment. In Latin America and the Caribbean alone there are approximately 70,000 OCSAS, most of them rural or small-scale services.

Within this broad universe of self-management experiences, cooperatives tend to find themselves in one of three stages of development. The first includes those providing services by organizing their community on the basis of mutual assistance criteria. In the absence of adequate services, the community takes on the responsibility of, for example, drilling the well, building a distribution network for drinking water, building a sewerage system and a treatment plant, and then managing all these facilities, funding its activities through tariffs charged to members and users, usually with the financial support of the State, as the entity responsible for the right of access to water.

In a second stage, based on the community’s learning process, the cooperative begins to take an active role in all issues related to the sustainability of the service and the environment. Cooperative organizations become interested in and act on issues such as

loss reduction, responsible domestic water use, and groundwater or river pollution caused by production activities. The cooperative is no longer simply the entity or company that provides a service on the basis of mutual assistance. It becomes a channel of participation enabling community discussions and promoting the desired form of development for its territory.

In its third stage of development, the cooperative considers itself an integral part of a river basin and takes part in its comprehensive management on behalf of its members, addressing the community's short- and long-term interests. Of course, many cooperatives never go beyond the first phase and only a few reach the third, because there is no integrated system in place to manage the river basin, or because they lack the economic capacity for action in such a context.

Water cooperatives find themselves at a crossroads: either they remain in the first stage of development, or they take on the role of platform to enable their community's participation in the global challenge of sustainable water management. This is no small undertaking and cannot be decided unilaterally by any organization. To this end, strengthening civil society's knowledge of water and securing the commitment of public authorities are both of vital importance. However—either as a result of more evident environmental degradation or of greater education efforts—concern and commitment regarding the protection of the planet continue to grow, which can and should be channelled to boost the social transformation required to achieve sustainable development.

To that end, cooperatives must act in accordance with their values and principles, understanding their advantageous position to align local action with global objectives on the basis of the supportive mobilization of the community. The very same institution engaged in discussions on how to take water to an isolated location or on how to solve a neighbourhood's sewerage problems, is also the institutional platform for the community to take part in the discussion of global issues and be part of humanity's greatest challenge: the survival of civilization as we know it today, confronted by the risks of the environmental crisis.

More information on COOPERAR is available at <http://www.cooperar.coop>



We present the article entitled “*La creación del Fondo de Inversión Agua Segura en el Perú*” (*Launch of the Safe Water Investment*

Fund in Peru) by Arturo Barra Zamalloa, former Chief of Staff of Advisers to the Ministry of Housing, Construction and Sanitation (MVCS) of Peru.

The Safe Water Investment Fund (FIAS), which falls under the MVCS, was established in Peru through Legislative Decree N° 1284, published on 28 December 2016. The purpose of the fund is to finance water, sewerage and wastewater treatment projects at the national level, which are designed to bridge infrastructure gaps in a framework that contributes to the economic and operational efficiency and sustainability of service providers.

FIAS, as a financial one-stop-shop of the public sector, will coexist for some time with the National Programme for Urban Sanitation (PNSU) and the National Programme for Rural Sanitation (PNRU). The differences with these programmes are that FIAS seeks to interact primarily with service operators—as opposed to political stakeholders—on the basis of a better identification of the interventions to be financed, their quantitative and qualitative benefits, as well as the capacities needed to implement investments and to operate services and infrastructure. In addition, access to its financial resources is subject to a strict and binding monitoring and evaluation system during the entire project cycle. The feedback from this performance monitoring system will ensure better management of public investment, minimizing the waste of resources and increasing the likelihood of success of interventions aimed at addressing the problems that need to be solved.

In contrast, PNSR and PNSU focus more on financial transfers to local governments for infrastructure construction and rehabilitation, with some efforts in monitoring and follow up to ensure the effectiveness of investment outlays. Over time, and depending on its results, FIAS should absorb PNSU and PNSR, although this is not an explicit goal of FIAS today.

The Fund seeks to build and strengthen sectoral institutions, primarily at the level of operators, but also at that of the governing body. FIAS is governed by a board of directors, responsible for defining the Fund's policies and strategies, and approving its financing operations. It also has a technical secretariat that manages the fund administratively and coordinates the work of the financing, oversight and supervision committees, which must operate in an autonomous, independent and mostly technical fashion. It would be desirable to outsource the work of these committees so as to incorporate expertise from the international private sector in the economic, financial, technological and operational assessment of projects and applicants, as well as in the monitoring and assessment of their impacts.

Why create a fund such as FIAS? For the past ten years, expansion of drinking water and sewerage coverage in Peru has been materialized mostly through investments made by provincial and district-level governments. Funding was provided on a project-by-project basis by the central government, in the framework of PNSU or PNSR, as resources at the local level were insufficient to finance the investments. Moreover, in the last five years investment has moved from cities—where it had been mainly deployed—to rural settings.

Under the rationale of financial transfers aimed at expanding infrastructure, the implicit problem was the lack of investment resources. The absence of a proper management structure was overlooked or seen as a secondary problem, albeit a complementary one. At present, however, management at both the urban and the rural levels has become the main limitation. In urban areas, management is carried out mostly by sanitation services providers, although these need to be strengthened. However, rural areas lack established management models capable of ensuring minimal sustainability of newly built or rehabilitated infrastructure.

Under a public policy model based on transfers and in the absence of key capabilities and operators, the natural allies for the expansion of coverage were local municipalities, who nonetheless lacked the necessary capabilities to execute investments in drinking water and sanitation, and much less to operate services. Advocates of the market as universal solution to all economic problems could argue that these capabilities can be hired out. However, they would be wrong. There are not many companies at the national level sufficiently capable of executing drinking water and sanitation projects, nor is there a sufficiently large supply of skilled service operators. Quite possibly, this is a situation mirrored in many countries of our region.

Even if the market could supply these services, local municipalities would need a minimum level of experience and capability to hire and supervise them, which again is not the case. In this scenario, launching a massive investment programme in drinking water and sanitation infrastructure, without meeting the necessary conditions at the main stakeholder level was potentially beneficial only from a political governance viewpoint. However, it also entailed financial, technological and operational risks, which eventually materialized. In the past decade, Peru has invested more than US\$ 8 billion in the drinking water and sanitation sector, but that still falls short of covering the gap estimated at more than US\$ 16 billion.

FIAS will also operate under the rationale of financial transfers, but it will also demand

the existence of adequate institutions, corporate governance and sustainability criteria. Importantly, not all conditions need to be met at the time of submitting applications, as FIAS promotes their development and strengthening as a requisite for funding. Therefore, FIAS funding is focused mostly on urban and rural service providers, and not subnational governments. The funding policy is not determined by demand as in the case of PNSU—which faces huge political pressure—but rather by supply, namely that of FIAS and of the governing body, after comprehensive assessment and prioritization of proposed projects. In this regard, the autonomy of the financing, oversight and supervising committees is of vital importance.

Apart from reviewing a project’s merits and benefits—from both the service and the provider viewpoint—past and present performance of providers is also analysed so as to understand their capabilities, strengths and weaknesses, and to rate their success as managers of the funding they have received. FIAS adopts a strict financial policy whereby funds are disbursed in instalments, depending on achieved targets and milestones. Disbursements can be interrupted in the case of intervention or execution deficiencies, thus allowing for timely corrections.

Interestingly, FIAS may fund sanitation service providers through common and/or preferred stock, and can also provide collateral in the case of loans from private financial institutions. From the viewpoint of service providers this is very different to receiving an unconditional transfer, which does not have to be paid back. The fact that the MVCS is a shareholder of the sanitation service providers exerts healthy pressure on them to behave as efficient managers. After a period set out in the financing agreement, the Ministry can sell its shares to the service provider, who has the right of first refusal, or to a specialized third party.

Why does Peru lack a market for funding drinking water and sanitation operators? As is probably the case in other countries of the region, the Peruvian financial system has kept away from water companies mainly because of their chronic financial and operational weakness. In reality, only a small number of sanitation service providers have access to bank loans, and these are mostly short-term instruments. In this regard, banks have not become as acquainted with this sector—nor have they made efforts to do so—as they have with other industrial activities of greater interest to them.

The channelling of FIAS funds through the financial system could have three unintended effects: (1) objectives pursued by MVCS and FIAS, in terms of better institutions, corporate

governance and sustainability, would probably not be safeguarded with such zeal by financial institutions, thus generating principal-agent problems; (2) financing would become unnecessarily expensive, simply feeding banks’ operating margins; and (3) when operating with FIAS resources, banks may adopt a more flexible financial policy with a view to maximize their short-term profits, potentially creating problems of moral hazard.

Hence, FIAS should be considered as one in a series of tools aimed at improving the sector, helping to establish more and better institutions and enhancing corporate governance and sustainability. Additional elements are needed to achieve these goals, namely, solid regulatory actions, a stronger governing body and improved management of services by municipalities, the promotion of private operators in the sector, as well as education efforts to increase the population’s understanding of the water value chain.



The *National Water Plan* (PNA) was developed by the Secretariat of Water Resources of Argentina, with the overall objective of establishing a compact between the national State, the provinces, the private sector and civil society, on the basis of which public policies and guidelines could be established and whose implementation would result in universal coverage for drinking water, 75% coverage for sanitation, reduction of the population's vulnerability to extreme climate events, increase of potentially expandable areas under irrigation by 15%, and development of multipurpose projects (water storage, irrigation, flood protection, recreation and tourism, industrial development and hydropower). All of the above in a framework of water resource preservation as regards quality and quantity (minimal environmental standards), demand management, innovation and public participation.

The Plan is based on the four pillars of water policy:

- **Drinking water and sanitation:** expand the provision of drinking water and sanitation services, including drinking water and sewage treatment plants.
- **Adaptation to extreme climate events:** increase protection of the population, especially of the most vulnerable (women, children, the elderly, indigenous peoples, the poor and destitute), from floods, droughts and other threats through infrastructure, early warning systems and contingency plans.

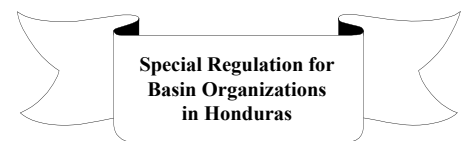
- **Water for production:** provide water for primary, secondary (agro-industry) and tertiary productive activities, especially tourism services. Among primary activities, irrigated agriculture and reforestation stand out.
- **Biomass and multipurpose uses:** achieve adequate performance and generation of materials and energy from biomass.

Also considered are four cross-cutting pillars that combine with the aforementioned:

- **Preservation of water resources:** use and preservation of water by stakeholders.
- **Capacity building:** enhancing stakeholder capabilities in relation to their use of water.
- **Innovation:** optimizing innovation to achieve practical solutions.
- **Participation:** engage different water stakeholders and users, making them accountable.

The strategy for the formulation and implementation of PNA follows a four-stage sequence for water management, which is repeated as a result of multiple public and private decisions that must be coordinated:

- **Stage 1** consists of the formulation of the water policy, the definition of the strategy and institutional organization, as well as the identification of the initial actions agreed with the various provincial jurisdictions and which are part of the first package of engineering measures.
- **Stage 2** includes integrating actions throughout the time horizon of PNA—on the basis of agreements at the federal level—which are conducive to the achievement of targets set out in each one of the policy pillars for 2019.
- **Stage 3** relates to the implementation of actions through calls for tenders, competitions and invitations, from which actions are initiated.
- **Stage 4** consists of monitoring and following up on the actions implemented and verifying the fulfilment of goals.



In Honduras, the Ministry of Energy, Natural Resources, Environment and Mines (MIAMBIENTE) adopted, through Ministerial Agreement N° 0300 published on 7 February 2017, the *Special Regulation for Basin Organizations*, whose purpose is to establish the general provisions to regulate the creation, legalization and operation of the Basin Organizations as established in the General Water Act.

Basin Organizations are responsible for the coordination and agreement on actions by

public and private entities involved in multisectoral management activities within their geographic scope. Their main objective is to propose, reach agreements and implement projects and actions for water management, development and maintenance of water infrastructure, and protection and conservation of water resources within their geographic scope.

Basin Organizations operate through councils at the microbasin, sub-basin and basin levels. Councils at the basin level are made up of representatives from the sub-basin and microbasin councils, and sub-basin councils must also include representatives of the microbasin level.

Basin Organizations bring together representatives from the central Government, local governments, organized civil society and the private sector. Care must be taken to ensure numerical parity in the composition of these organizations, with 50% allocated to the government sector and the other 50% to civil society (25% to civil organizations and 25% to water users). Furthermore, to achieve gender parity within these basin organizations, each constituent entity must, to the extent possible, be made up by 50% of women representatives and by 50% of men.



The Latin American and Caribbean Institute for Economic and Social Planning (ILPES) organized a workshop on “*Desalinización como Alternativa para el Abastecimiento de Agua Potable*” (*Desalination as an alternative for drinking water supply*), held at ECLAC headquarters in Santiago, Chile, on 22-24 August 2017.

The purpose of the course was to strengthen the institutional capacities of the Ministry of Social Development of Chile in the spheres of social development and evaluation of public investment projects related to desalination plants for human water consumption in rural areas. Interest in the development of desalination plants in Chile has been growing as a possible solution to address water scarcity problems in aquifers and the poor quality of remaining resources in the latter.



Websites worth visiting in relation to water issues include the following:

- In El Salvador, the **River Lempa Executive Commission** concentrates mainly on generating and selling electric power (<http://www.cel.gob.sv>). It also carries out associated tasks such as monitoring and safeguarding the Lempa river basin, development of new hydroelectric power projects and research into other alternative energy sources.
- The **Minamata Convention on Mercury**, which came into force in August 2017 (<http://www.mercuryconvention.org>), is a global treaty to protect human health and the environment from the adverse effects of mercury. Major highlights of the Convention include a ban on new mercury mines, the phase-out of existing ones, the phase out and phase down of mercury use in a number of products and processes, control measures on emissions to air and on releases to land and water, and the regulation of the informal sector of artisanal and small-scale gold mining. The Convention also addresses interim storage of mercury and its disposal once it becomes waste, sites contaminated by mercury as well as health issues.
- We invite you to visit the revamped website (<http://www.revistatyc.org.mx>) of the Mexican journal **Tecnología y Ciencias del Agua**.
- **Globalwaters.org** is a global knowledge resource for USAID staff, implementing partners, and the broader community working in the international development water sector.
- The **Chilean Irrigation and Drainage Association** (AGRYD) is a trade association that brings together a wide spectrum of stakeholders in the Chilean irrigation and drainage industry, including consultants, manufacturers, design and installation companies, academics, technicians and law firms (www.agryd.cl).
- One of the main objectives of the **Observatory of Water Policies** (OPPA) is to provide useful and vetted information on water policy in Spain, particularly with

regard to the fulfilment of the Water Framework Directive (DMA) (<https://fnca.eu/oppa>).

- The **Provincial Department of Water** (DPA) is the sole water authority responsible for overall management of water resources in the province of Río Negro, Argentina (<http://dpa.gov.ar>). It is an autonomous and self-sufficient organization linked to the provincial executive power through the Ministry of Public Works and Services.
- The **Handbook on Human Rights to Water and Sanitation in Latin America and the Caribbean** (in Spanish), published by the Inter-American Development Bank (IDB), seeks to clarify the content and implications of human rights to water and sanitation for key stakeholders in the sector (<https://publications.iadb.org>).
- The **Information and monitoring system of the upper basin of the Guayllabamba river and of the eastern microbasins** in Ecuador, provides information on water management in this river basin (<http://www.infoagua-guayllabamba.ec>).
- The Ministry of Energy of Chile published a **guide on best practices in water uses for thermoelectric plant cooling** (<http://www.minenergia.cl>).
- The mission of the **Madrid Institute for Advanced Studies (IMDEA) in Water** is to promote multidisciplinary research and innovation in water with the aim of generating profitable and sustainable solutions to water-related issues and their management, and establishing an efficient model for scientific and technological development in collaboration with the productive sector (www.agua.imdea.org).
- The edition of the **FAL Bulletin** published in July 2016 by the Natural Resources and Infrastructure Division examines the **challenges and opportunities related to the development of inland waterways in South America** (<http://www.cepal.org>). The review focuses mainly on the regulation and financing challenges in the development of inland waterways, with a view to support their key role in a more sustainable transport system in the future.
- **Newenko Foundation** is a civil society organization, whose objective is to promote the human right to water access and the social management of this vital resource in Chile (<http://newenko.org>).
- The **Technological Research Centre for Water in the Desert** (CEITSAZA) conducts research and technological development for sustainable and efficient

water management, especially in arid areas, in an environmentally-friendly manner (<http://www.ceitsaza.cl>).

- The book entitled “*Historia ambiental del Perú: Siglos XVIII y XIX*” is available at <http://www.minam.gob.pe>.
- The *National Water and Sewerage Authority* (NAWASA) of Grenada has the following responsibilities: provision of water supplies and conversion, augmentation, distribution and proper use of water resources, including preservation and protection of catchment areas; and the treatment and disposal of sewerage and other effluents (<http://nawasa.gd>).
- *Wealth Accounting and the Valuation of Ecosystem Services* (WAVES) is a World Bank-led global partnership that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts (<https://www.wavespartnership.org>).
- *EcoDecision* is based in Quito, Ecuador and works throughout Latin America to develop new ways to fund biodiversity conservation and sustainable rural livelihoods, including financing mechanisms for climate change mitigation, water source protection and biodiversity conservation (<http://ecodecision.com.ec>).
- *WaterPolicy.online* blog aims to be the authoritative online resource for research-based water policy information about Asia.

Its mission is to enhance understanding of the social and economic dimensions of water governance and contribute to improved water management in Asia.

- The periodic thematic digest on *Water and Hazards*, prepared for members of Mountain Forum, Mountain Partnership and other regional and global networks, is available at <http://www.icimod.org>.

Publications



Recent publications of the Natural Resources and Infrastructure Division on water resources management and provision of drinking water supply and sanitation services:

- “*América Latina y el Caribe hacia los Objetivos de Desarrollo Sostenible en agua y saneamiento: Reformas recientes de las políticas sectoriales*” (*Latin America and the Caribbean towards the Sustainable Development Goals in water and sanitation: recent reforms of sectoral policies*) (*Natural Resources and Infrastructure Series* N° 180, LC/TS.2017/17, March 2017) by Gustavo Ferro. This study aims to describe and analyse, from an economic, regulatory and institutional point of view, the most important changes in the regulatory

framework of the drinking water and sanitation sector, undertaken or proposed in the countries of Latin America in the past 15 years, identifying common trends, lessons learned, challenges ahead and recommendations to overcome them. It analyses the overall situation of the sector in the region, in terms of coverage, quality of services, institutional structure, industrial organization, regulatory frameworks, governance of service providers, financing policies, tariffs and subsidies, and private sector participation; the MDGs in drinking water and sanitation; and the implications of the new SDGs for the sector and the challenges their achievement will pose for the region. It also elaborates on a set of specific regulatory reforms that serve as benchmarks for best practices. To this effect, the study describes and summarizes the context of each new policy, analysing it from an economic, regulatory and institutional viewpoint.

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/drni> or requested from andrei.jouravlev@cepal.org; and (ii) *printed (hard) copies* which should be requested from the ECLAC Distribution Unit (either by e-mail to publications@cepal.org or by mail to ECLAC Publications, Casilla 179-D, Santiago, Chile).

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