

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



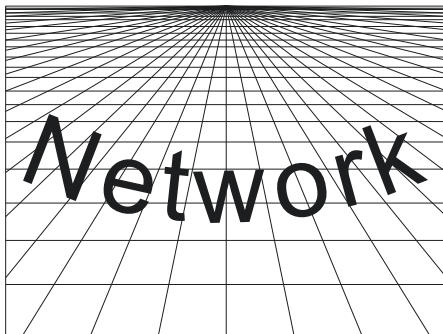
United Nations Economic Commission for Latin America and the Caribbean (ECLAC)

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According to ECLAC, inequality is one of the most salient features of Latin American societies and overcoming it is therefore a key challenge in efforts to achieve sustainable socio-economic development. The income inequality indices of Latin American and Caribbean countries are among the highest in the world. At the same time, social gaps persist that reproduce income inequalities; for instance, with respect to access to infrastructure and public utility services, life expectancy, infant mortality and illiteracy.



Against this backdrop, all member states of the United Nations committed to the Sustainable Development Goals (SDGs) partly in order to narrow the above-mentioned social inequality gaps. SDG6, in particular, poses the specific challenge of achieving, by 2030, “universal and equitable access to safe and affordable drinking water for all” and “access to adequate and equitable sanitation and hygiene for all”.

In the case of water and sanitation, the social gaps to be overcome are both quantitative and qualitative. Thus, as regards access, according to our estimates based on information in the Household Surveys Database (BADEHOG), drinking water coverage is 13% greater in households in the top income quintile than in those pertaining to the lowest income quintile. In sanitation, the difference is almost 26%. In most cases, the differences in drinking water and sanitation coverage are substantially greater in rural than in urban areas. Those gaps have slowly narrowed: faster with respect to drinking water than for sanitation.

These inequalities are also qualitative. For example, the technological solutions used in lower-income households may mean lower quality service than in higher income ones, that is, a public sink or water source at some distance from the home; or there may be a well or a truck that delivers water, rather than a connection in the home to a drinking water network; and a latrine or septic tank instead of a home connection to a sewerage network. Access to drinking water for lower-income households is often intermittent and subject to interruptions (due to droughts and other causes), with only limited control of the quality of the water delivered. Moreover, the water supplied is not always properly disinfected.

These considerations suggest that, in the absence of public policies specifically targeting low-income groups, and without supply subsidies (for utilities) or demand subsidies (for clients), water and sanitation services will not reach a substantial portion of the population. As a result, without a gradual narrowing and, at some point, elimination of the gaps, it will be difficult to maximize the economic, social and environmental benefits of these services and make the most of them for the benefit of society as a whole.



We present the conclusions of the study entitled “*Latin America and the Caribbean towards the Sustainable Development Goals in water and sanitation: recent reforms of sectoral policies*” by Gustavo Ferro (see Circular N° 47).

The efforts of Latin American and Caribbean countries to achieve the Millennium Development Goals (MDGs) entailed not only sizeable financial investments in drinking water supply and sanitation, but also considerable work on building, strengthening and improving institutions to promote efficiency in the provision of these services. Given that the MDGs period was one of highly favourable macroeconomic conditions for the region, which for decades had not experienced such a boom in international (agricultural and mining) export prices, in the new SDG stage, the countries will need to redouble those efforts to strengthen and perfect institutions for two reasons: more financing will be needed because the goals are more ambitious, and resources are likely to be less abundant.

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In terms of institutional development, worldwide, the drinking water and sanitation sector has gone through three stages: a works-

intensive phase, another centred on services, and the third focusing on environmental conservation. Latin American and Caribbean countries have not yet completed the first two stages and are starting the third. As regards the institutions themselves, two stages can be discerned in their sectoral development: the traditional “service providers stage” in which one provider performs all the functions; and a “modern stage” in which various agencies perform separate roles, and services are provided by an enterprise or company with clearly defined obligations that complies with them for purposes that may or may not be commercial, but always using professional and specialized management. Such institutions have been established in most countries of the region. However, with a few exceptions, the part they play is partial, because the service provision continues to be affected by political considerations, detrimental to sound practices focused on efficiency and equity.

For “modern political economy”, a sector's performance is shaped by policies and institutions that largely set the rules governing the behaviour by the actors which produces the final outcomes. Recently these ideas have begun to be applied to sectoral analysis with a view to achieving a better understanding of the problems diagnosed, detecting underlying obstacles, and devising solutions. Institutions constitute a society's “rules of the game” or, put another way, the restrictions developed and imposed by human beings to shape social interaction and outcomes. They are, therefore, collective structures and mechanisms that regulate the conduct of individuals. The term “institutions” is regularly used to refer both to a society's important habits and customs and to its organizations. Institutionalization is a feature of some interaction systems associated with more robust recognition and formalization of particular ways of taking and enforcing decisions.

The trends and common denominators found in the institutional structures of the drinking water and sanitation sector in the region point to slow progress in many countries in defining the roles to be played by the various actors; rushed decentralization processes that have made it impossible to take advantage of the economies of scale and to professionalize service provision; the politicization of technical and financial issues; the freezing or under-indexing of tariffs for macroeconomic purposes or local short-term political gains, all in a context in which universal service coverage has not yet been achieved; as well as serious shortcomings with respect to the quality of the services and efficiency in their delivery.

The main institutional aspects were examined to identify best practices, including a legal framework for organizing the sector;

depoliticization and professionalization of service delivery and its regulation through corporatization; aggregation to achieve economies of scale; the terms and conditions to govern the financing of the investments needed to expand coverage; economic and social sustainability with tariffs that cover the actual costs and subsidies to ensure adequate inclusion of disadvantaged groups; and, finally, accountability based on reporting systems.

With respect to these institutional factors, there have been several interesting developments in recent years, from which lessons can be drawn. For instance, Brazil, the largest country in the region with a complex water and sanitation sector, has addressed the issue by passing a law to organize the sector according to constitutional provisions, while at the same time recognizing historical trends. Brazil's solution has been pragmatic and flexible, and has envisaged several ways in which municipalities can exercise their jurisdiction in this sector including delegating service provision to public or private state-level or micro-regional enterprises. At the same time, the system allows for economically self-sufficient entities and autarkic municipal departments. It makes autonomous and professional regulation mandatory and allows for a variety of contractual arrangements by which jurisdictions can delegate delivery of services to companies. Brazil's broad set of rules can serve as a guideline for large, complex and federal countries.

Uruguay—a smaller, more compact and homogeneous country with sound institutions and one of the highest standards of living in the region—completed its institutional set-up with a policy-making body, which also coordinates all the institutions in the sector. The key player there is the centralized national service provider.

At the other end of the spectrum is Guatemala: a smaller, less well-off, densely populated country with a unitary political structure, that has fairly recently emerged from a prolonged internal conflict. It has not yet achieved an orderly drinking water and sanitation sector, despite some ambitious initiatives in that direction. Perhaps it would be best initially to restrict the scope of plans for the sector and gradually achieve the consensus needed for further progress.

Argentina, another large, federal country with one of the highest standards of living in the region, but with serious sectoral shortcomings in terms of infrastructure and institutions due perhaps to a series of macroeconomic ups and down in its recent past, is currently attempting to quickly make up for decades of stop and go policies. It is attempting to improve sectoral institutions but there is no national regulatory framework for the sector as a whole, although a National

Plan was recently approved with ambitious goals. Responsibility for the services is fragmented by province and, in some of them, by municipality. The country is attempting to rapidly close gaps in coverage, quality and efficiency.

Several interesting initiatives are also being implemented with regard to incentives for service aggregation, depoliticization and professionalization. Colombia's drinking water and sanitation sector was fragmented and sought to take advantage of economies of scale by consolidating service providers within the same department. Some municipal and regional providers do exist that operate efficiently and on a sufficiently large scale alongside many small poorly managed and economically weak providers. The departmental plans approach (see Circular N° 34) offers pecuniary incentives (national funds) to enterprises that operate under those plans and leave the political structure of the municipalities, report to regulators, gradually bring their management into line with regulatory mandates, and scale up their operations through aggregation. National financing for the sector is centralized in a single window and only those who submit to a plan and discipline themselves to abide by it can apply for funding. Conceptually, this approach is attractive. However, it has been criticized for being too bureaucratic and achieving too little.

In Peru, in similar scenarios but with different players, an effort is being made to bring small service providers together and even to consolidate them at the scale of departments. The procedure devised envisages temporary national intervention—which may, however, last as long as 15 years—in which an *ad hoc* agency rates the service providers and takes over the running of them in the event of financial mismanagement. The core idea is that municipalities cease to manage the sector and instead become shareholders of a separate service provider and that those providers follow recognized managerial practices and abide by national regulations with respect to tariffs and service quality, as well as other requirements.

In both Colombia and Peru, management is guided by a plan with targets and time frames. Unlike in Colombia, in Peru it is not that clear that municipalities can only access national funds if they cede control of their enterprises and, since they are able to obtain funds directly, they do not have a clear incentive to hand over management of those companies to an operator. Moreover, in cases in which the enterprises have been intervened, there have been problems replacing their senior staff with national representatives and getting them to operate due to a lack of budgetary funds. Once again, the mechanism is noteworthy, but actual practice is less promising.

In Colombia, Peru and Chile, good corporate governance practices have been written into the regulations for service providers, which vary according to the particular characteristics of each country, although the points dealing with the practices suggested are very similar. In general, the idea is to safeguard stakeholders from those exercising control over the companies and service provision, and to make the latter accountable, without any special advantage. Their actions and practices must be transparent, so as to avoid acts of corruption, theft and misappropriation of funds.

While they look good, regulatory frameworks are, however, indicative; they do not necessarily establish penalties and rewards. They are a first and certainly insufficient step towards getting rid of undesirable practices and thereby achieving efficiency and greater transparency in the drinking water supply and sanitation sector.

In Peru, a regulation has been approved for fostering public-private partnerships in the water and sanitation sector. In the region as a whole, there is one country (Chile) that has successfully privatized the sector. There have also been occasional partial successes and several resounding failures. Some countries have even banned privatization in this sector. Peru has not undergone any traumatic experiences and private sector participation is not looked down upon, as it is in other places. For that reason, the strategy allows for several public-private partnership options and assigns roles to various state entities for taking part in such processes. The strategy is broad, although no major contracts have yet materialized under its institutional umbrella. It views political viability and social acceptance as preconditions for progress.

In several countries, sectoral indicator systems are up and running, and in some of them, like Brazil, they have been in place for many years. The most notable systems are found in Brazil, Chile, Colombia, and Peru. Argentina is planning to implement one soon. These various national efforts are not coordinated, even though the type of information gathered and accumulated in each system has many common features thanks to international and regional cooperation and that of sectoral agencies that strive to reach consensus as to which data are relevant and which indicators should be used.

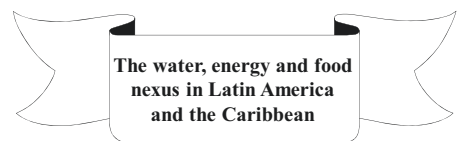
Here it is worth highlighting the work done on this for over a decade by the Association of Drinking Water and Sanitation Regulators of the Americas (ADERASA) through its Regional Working Group on Benchmarking (GRTB) (see Circular N° 15). For its part, the Latin American Association of Water and Sanitation Operators (ALOAS), is working on its own selection of indicators.

Nevertheless, close scrutiny of the existing databases reveals breaks and temporary discontinuities, missing data, better coverage of indicators for large, rather than small, service providers, and for physical rather than financial parameters, weird shifts over time in the values of some variables that for an outside observer or expert are difficult to explain, and so on.

Finally, as an important step toward getting away from political tariff-setting, several countries have standardized and implemented technically sound tariff calculation mechanisms that attempt to project the future of companies based on some master plan covering operation, maintenance, and improvement of existing infrastructure and works, designed to expand service coverage and capacity. Relatively recent methodologies in Colombia and Peru are being analysed that have several features in common and are moving in the right direction.

Some features in common worth highlighting are the separation of macroeconomic factors (inflation, for instance) from microeconomic data (costs of delivering the services) and more or less automatic indexation between tariff-setting periods. In some cases, there are “trigger” clauses when a certain inflation threshold is reached, which prevent the accumulation of too big a lag in tariffs. In other cases (as in Uruguay), a polynomial cost equation is used, which actually condenses several indices. Brazil uses a procedure involving a hybrid system with automatic linking to a set of costs and an adjustment for higher costs of certain specific items considered “unmanageable” for the companies.

The reforms referred to above point to a major institution-building effort accompanying the expansion of drinking water and sanitation coverage called for in the SDGs. They provide excellent lessons to replicate in countries that are lagging, relative to others.



Below are presented the findings of the study entitled “*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° 47).

It is important to emphasize one factor that needs to be considered in any analysis regarding the water, energy and food nexus: financial issues, in general, and specifically the level the economy that is taken as a point of reference. Thus, mention must be made of

energy, food, or water prices at the time the investigations are carried out and, above all, when conclusions or recommendations are adopted. By that token, the years 2007-2011 were characterized by high oil and food prices. In contrast to that period, today’s scenario is one of relatively low prices, for both oil and most foods and other raw materials.

In the context of high oil prices, renewable energy sources become competitive, so that it is understandable, based on even financial considerations and not just for environmental reasons, to recommend increasing the use of these other forms of energy (wind power, solar energy, hydroelectricity, and the utilization of energy from the biomass of agricultural and food waste, otherwise known as biorefining). But that can become harder to accept, from a purely financial point of view, when, on the contrary, oil prices are low, given that thus far it has been costlier to produce most of the renewable forms of energy, most likely because costs comparisons do not always take into account environmental impacts or externalities involved in traditional forms of energy production.

From another standpoint, low food prices may pose a problem for exporting countries, whereas for importers they help increase welfare. In any case, those low relative prices are a major obstacle to implementation of certain policies normally singled out as being useful for the water, energy and food nexus.

That is true, for instance, of the policy aimed at modernizing irrigation systems which, theoretically, boosts efficiency in water use. However, in many cases, water consumption intensifies (which reduces return flows and aquifer recharge, which means that less water is available for uses and users downstream; see Circular N° 40), water quality declines (because of effluents contaminated with agricultural chemicals), and there is greater parallel energy demand for implementation of technologically more sophisticated (drip or sprinkler) irrigation systems. Finally, this whole scenario requires a volume of investment that farmers producing low-price crops may or may not be able to sustain over the long term.

In general, economic cycles are sensitive to any nexus-related considerations. The economic crisis that began in the United States in 2007 and in Europe in 2008 spread at varying intervals through a number of geographical areas, with consequences for manifestations of the nexus that public policy-makers need to take into account, along with their future, projected sequels. Nevertheless, and paradoxically, all considerations regarding the nexus are based on permanent, global growth of the economic parameters used to project increases in the demand for

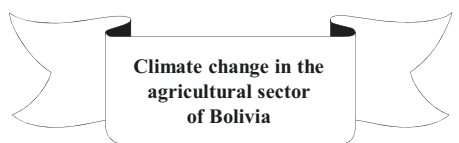


water, energy and food. Despite that, experience with the current economic crisis should alert us to the possibility that future economic growth may not be as buoyant as it was in practically all the first decade of the Twenty-first Century. The impact that falling oil prices have had in the region and, in particular, on countries such as Bolivia, Ecuador and Venezuela, which are highly dependent on oil and gas exports, serves as a powerful lesson regarding the need to diversify the currently dominant development model.

Another factor that needs to be taken into account is the diminished economic importance of water-related transactions in comparison with the energy and food markets, above all in the context of countries where no “water market” exists, which is the case for most of the world. In general, the cost of water is incorporated into that of other products and services (food or electricity prices), which may cause the predominance of water in global consideration of the nexus to be distorted due to the unequal economic levels of the respective markets. That harbours a risk of over-exploitation of the resource that serves other considerations or other elements of the nexus (energy and food).

Consideration also needs to be given to the role of research and innovation in the quest for new technologies for the production and distribution of food, water and energy. Innovation is tied to the requirement to meet high demands for water, energy and food in the projections for the years 2030 or 2050.

It is worth noting, finally, that nexus-related instruments and policies also need to help prevent and resolve the multiple social and environmental conflicts surrounding water, that often have a lot to do with the other two elements of the nexus (see Circular N° 44). Conflicts over water resources in general, and in the region in particular, are indicators of priority and especially problematic nexus interactions, because they are manifestations of local and specific conditions that need to be addressed with flexibility and innovation. Addressing them is therefore an urgent top priority.



The Sustainable Development and Human Settlements Division published a study entitled “*Impactos, medidas de adaptación y costos sociales del cambio climático en el sector agrícola del Estado Plurinacional de Bolivia*” (*Impacts, adaptation measures and social costs of climate change in the agricultural sector of the Plurinational State of Bolivia*) by Federico Ernesto Viscarra Riveros, Carlo Giupponi and Robert Mendelsohn.

In recent years, the expansion of the agricultural frontier in the Plurinational State of Bolivia has rapidly picked up pace. One of the factors driving the expansion has been the production of soya on dryland, with very low yields compared to those of neighbouring countries. Furthermore, and due to climate change, variations in both temperature and rainfall are expected that could further reduce yields. That situation, together with growing demand for food, will lead to further expansion of the agricultural frontier.

In order to reduce the pace of deforestation, enhance farmers’ welfare and guarantee food security, agriculture must become more efficient and include microeconomic adjustments to increase crop yield. At the same time, it should pursue macroeconomic policies to protect natural resources in order to achieve sustainable and inclusive development.

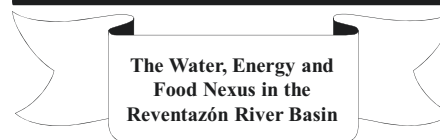
To quantify the impact and effectiveness of the policies, mathematical simulation models are used for crop yields, tied to the Computable General Equilibrium (CGE) model. On the one hand, the exercise assesses microeconomic adjustment measures that counteract the impacts of climate change and increase crop yields: fertilization, irrigation, changes in sowing dates, and comprehensive improvement of production technology (all three measures together).

The findings show that the comprehensive improvement of production technology is the most effective microeconomic adjustment measure for increasing crop yields, gross domestic product (GDP) and average household income. However, the increase in crop yields is accompanied by an adverse incentive for more demand for land.

To counteract that demand, a set of macroeconomic policies is implemented; that is to say, the comprehensive improvement of production technology is applied along with the following macroeconomic policies: taxes on agricultural assets and agricultural activity, and export price restrictions. Here the best macroeconomic policy is restrictions on export prices, which reduce the pace of deforestation stemming from microeconomic policy, but maintaining GDP growth rates.

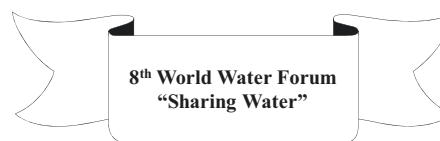
Based on the outcomes of applying these policies and after identifying the best policy-mix, an estimate is made of the social costs of protecting forests per hectare in the short and long term. These estimates provide a good starting point for negotiation processes relating to Reducing Emissions from Deforestation and Forest Degradation (REDD) or Payment for Environmental or Ecosystem Services, in connection with the global agreements on climate change mitigation and adaptation.

# Meetings



The *National Workshop “The Water-Energy-Food Nexus in the Reventazón River Basin”* took place in San José, Costa Rica, on June 7 and 8, 2017. The discussions focused on the following topics:

- The concept of the water, energy and food nexus and the priority interrelations between its components in Latin America and the Caribbean.
- Regionally important public policy instruments for better management of nexus interdependencies.
- Conclusions and recommendations of the case study of the Reventazón river basin in connection with the interdependence of the Costa Rican Electricity Institute (ICE) and the Costa Rican Water Supply and Sanitation Institute (AyA) for the supply of drinking water to the Greater Metropolitan Area (GAM) of San José.
- Conclusions and recommendations of the case study regarding the shortage of water for agriculture and its availability for hydroelectric power generation.
- Conclusions and recommendations of the case study regarding the implications of an outdated legal framework of the energy sector for multiple use of water.
- Experience with applying the nexus approach in Germany, the Economic Commission for Europe (ECE) and in the Inter-American Development Bank (IDB).



The Natural Resources and Infrastructure Division worked with the Inter-American Development Bank (IDB) on the *Regional Process of the Americas in the run-up to the 8th World Water Forum “Sharing Water”* (Brasilia, Brazil, 19-23 March 2018). The main focus was on the drafting of the Regional Report for Latin America and the Caribbean. The report argues that the role of water in the economy and its contribution to national welfare depend on a set of economic, social and geographical factors that are external to the way it is managed and on how

the institutional system responds to the characteristics of water resources and the challenges involved in developing them. In this issue, we present the proposals put forward with respect to improving governance. In the next, we will conduct a more in-depth discussion of participation and financing.

Sometimes there are inconsistencies, lacunae, or shortcomings in the legal instruments envisaged in the institutional framework for responding to the need to develop and regulate water resources. Areas in which lacunae or insufficient development are often found include, but are not limited to, resource inventories, the registration and granting of titles and water rights, planning, conflict settlement, groundwater, land planning, basin and flood management, environmental and water quality regulations, dam safety, diffuse pollution and the development of green infrastructure. Thus there are cases in which, in certain matters that need to be regulated in the public interest, there are no instruments, regulations, or institutions for addressing the issue. Likewise, planning, evaluation, and control or oversight functions very often lack the instruments needed for their implementation so that they have no real effect on water management or on users.

Public policies and institutional arrangements need to take into consideration current high levels of insecurity due to hydrological fluctuations and climate change as well as far-reaching social, economic and political changes. This means that governments have to espouse methodologies and criteria that contemplate the possibility of prioritizing the formulation of robust yet flexible policies, plans and programmes in a wide range of possible future scenarios. Resilient institutional arrangements need to be developed that are capable of detecting the issues and endowed with the mechanisms, instruments and procedures needed to adapt to those new scenarios.

It is vital to overcome the scattered and fragmented institutional set-up for managing water and other related natural resources and the dearth of institutional structures and instruments needed to coordinate and find integrated, long-term solutions to the interactions that arise in connection with river basins. The resource occurs in natural systems and fragmented management of it, whether for political or administrative reasons, detracts from the effectiveness and efficiency of water use, in addition to facilitating erratic transmission of negative externalities. Fragmentation adds to the costs of managing water resources and of providing public services related to it.

The issue of scale is important when designing institutional arrangements, both in respect of productive and sustainable

management of the resource and the handling of natural disasters related to it and for the delivery of public services in which water is an input. In all these cases, there are optimal scales from an effectiveness and economic efficiency perspective that need to be taken into account.

Often enough, State agencies lack both the capacity and resources needed to fulfil their responsibilities; have failed to adopt professional criteria for selecting, promoting and training their technical staff; lack the oversight and implementation authority they need to perform the duties entrusted to them; or else they are plagued by acts of corruption or collusion. There are also innumerable cases of legal provisions that in practice are a dead letter due to the weakness of institutions or lack of political will on the part of the agencies in charge.

Even though significant progress has been made in several countries, in general, water sector institutions, like most public sector organizations, are sorely lacking in transparency and openness about their activities and in effective accountability to users and the general public.

Water is associated with conflicts. In some countries, these can only be settled by the judiciary, usually through long and expensive proceedings, in which users with fewer resources are normally at a disadvantage. In others, arbitration is used. This option, by definition, is voluntary and the parties benefiting from the *status quo* normally have no incentive to accept it. Finally, there are places, like Mendoza in Argentina and the United States, where administrative jurisdiction is mandatory for settling conflicts at the request of one of the parties. These systems have the advantage of being based on expertise; they are relatively straightforward; and they cost less than exclusively judicial systems. In addition, the dissatisfied party can always file an appeal through the courts. At the same time, it is worth bearing in mind that the longer conflicts last without being settled, the less willingness there is to cooperate and invest in the development of water resources.

It is also to be noted that many of the region's water resources pertain to river basins shared by different countries and state and provincial jurisdictions. More in-depth consideration needs to be given to the principles applicable in those cases, such as the principle of equitable and reasonable use; the obligation not to cause significant harm; and protection of existing economies.

For water use to benefit a country, it must be economically efficient. Some countries have managed to achieve objectivity in their programmes, plans, subsidies, and public investments, separating water management

and management of the sectors that use it, requiring utilization permits or licences for public and private users; and evaluating and approving subsidy or investment programmes by State agencies independent of the sectors (economy and finance, for example) based on pre-established objective performance criteria. The same countries have attempted to ensure that the risks and guarantees granted and taken on by the State are shared with the beneficiaries of programmes related to them and with the companies running them, as a way of reducing the associated moral hazard and financial risk.



*The Regional Political-Technical Dialogue on the Water, Energy and Food Nexus in Latin America and the Caribbean*, organized by the Natural Resources and Infrastructure Division, with German Cooperation and European Union support, was held at ECLAC headquarters on 14-15 May 2018.

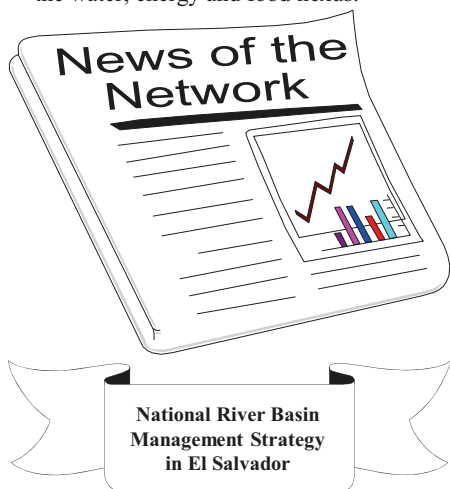
The work done at the Regional Dialogue revolved around the following core themes: the water, energy and food nexus in Latin America and the Caribbean; national case studies; sectoral and intersectoral nexus perspectives; regional and international approaches; public policy guidelines for better handling of the interrelations between the nexus components; the appropriate sectoral regulatory framework; intersectoral coordination systems; planning in the three components of the nexus; economic, fiscal and financial framework; support for agriculture; promotion of renewable energies; plans and national demands for institutional support on nexus issues; and conclusions and recommendations.

The participants of the Regional Dialogue recognized the importance of the nexus as a framework for inter-agency coordination and activities to support implementation and follow-up of the 2030 Agenda for Sustainable Development and the Paris Agreement, and they underscored the desirability for the countries of the region to adopt that approach as State policy. To advance in that direction, they reached consensus on the following recommendations:

- That ECLAC, the European Union, and German Cooperation continue research and technical advisory assistance activities for countries in the region on the subject of the nexus and that other regional, bilateral and international agencies and countries in other parts of the world join this process.
- That advantage be taken of the results achieved in applying the nexus approach

by ECLAC and the German Agency for International Cooperation (GIZ) in order to deepen and expand those experiences to other countries and assist them with the design, restructuring and development of integral policies and sustainable implementation frameworks that incorporate this approach.

- That support be given to building institutional capacities, information systems and conceptual frameworks for implementing the nexus approach, evaluation methodologies and technical cooperation activities, paying particular attention to countries' specific needs.
- That periodical regional, subregional, national and local meetings continue, bringing the key public and private actors together to exchange experiences and best practices for analysing and managing interrelationships among the components of the nexus.
- That bilateral, multilateral and regional technical and financial cooperation agencies be called upon to continue supporting and cooperating with research and technical advice activities related to the water, energy and food nexus.



The Ministry of Agriculture and Livestock

solutions to conflicts over the use of natural resources, especially water and soil, throughout the country, as this will boost productive system resilience in agriculture, forestry, aquaculture and fishing.

Given El Salvador's vulnerabilities with regard to climate change, the Strategy proposes identifying options for adapting to it, which include efforts to reduce poverty and foster sustainable socioeconomic and environmental development. The Strategy includes disaster prevention management, combining awareness-raising among the population, capacity-building, technology transfers and adaptation and mitigation measures to diminish the impacts of climate change.

The Strategy is built around four pillars:

- **Promoting inter-agency and intersectoral coordination for sustainable and adaptive management of river basins.** This pillar envisages establishing opportunities for dialogue regarding joint work to facilitate consensual coordination, decision-making, and the implementation, monitoring and evaluation of actions in different parts of the country.
- **Sustainable agriculture resilient to climate change.** This pillar is geared to fostering a type of agriculture that includes the restoration and conservation of resources in their natural setting and combines productive adaptation, sustainability and profitability of crops.
- **Management of agro-climatic risks.** The purpose of management of agro-climatic risks is to prevent and reduce hazards and vulnerability to the effects of climate change and the volatility associated with them; to enhance disaster preparedness and the speed of response; and to facilitate the recovery of production systems. The Strategy likewise envisages integrating the management of risks and climate change hazards into river basin management plans and municipal environmental plans.

by the government entities responsible for those areas. This initiative is an attempt to establish guidelines that will strengthen comprehensive resource management by harnessing efforts already under way through effective inter-agency coordination. The Plan addresses three key processes identified as:

- The **"governance" process** pursuing two strategic lines of action: local governance for integrated management of water, forest and soil resources; and strengthening of the legal-institutional framework and financial mechanisms.
- The **"knowledge management" process**, which also pursues two strategic lines of action: the generation and management of information needed for decision-making; and human capacity-building and skills development.
- The **"implementation of sustainable practices" process**, to be executed through two more strategic lines of action: conservation, restoration and sustainable exploitation of water, forests and soil; and the development of infrastructure for treating and making efficient use of rain and waste water.



The chief objective of Peru's **National Sanitation Policy**, adopted by Supreme Decree N° 007-2017-VIVIENDA, is to achieve universal, sustainable, and quality access to sanitation services. The entire urban population is expected to have access to sanitation by 2021, with 100% of the rural population covered by 2020.

The specific objectives of the National Policy are:

- To serve the population currently without sanitation services, according priority to

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