



*Quality control of water by technicians of the ANA*

Photography: National Water Authority (ANA).



Report

# Integrated water resources management in ten basins of Peru

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Peru is among the ten highly diverse countries in the world. Its territory encompasses the second largest portion of the Amazon forest after Brazil, the largest tropical mountain range, 71% of tropical glaciers, 27 out of the 32 existing climates in the world, and 84 out of the 104 life zones identified on the planet.

Moreover, Peru is rich in land and water resources, ranking eighth in the world regarding the availability of surface water resources. However, these resources are not equally distributed among the three slopes (Pacific, Atlantic, and Titicaca), since there is only 1.8% of the available

water in the coastal zone towards the Pacific slope; despite being the region that concentrates 62% of the total population<sup>1</sup>, the main cities, major agricultural and industrial development, and the best land for agriculture.

Peru covers an area of 128.5 million hectares, of which only 7.6 million (6%)<sup>2</sup> can be used for cultivating agricultural crops intended for nutrition.

Unfortunately, in this context of water shortage, 53% of the water that flows towards the coast is thrown into the sea, while the remaining 47% is used with an

<sup>1</sup>Third National Communication on Climate Change, based on Peru: Environmental Statistics Yearbook 2014 10 (National Institute of Statistics and Informatics [INEI for its acronym in Spanish], 2015) and Water resources in Peru (National Water Authority [ANA for its acronym in Spanish], 2012), cited by UNDP (2013).

<sup>2</sup> CCited by Diario Gestión "Agrarian Statistical Compendium by the Office of Economic and Statistical Studies (OEEE for its acronym in Spanish) of the Ministry of Agriculture and Irrigation of Peru (abbreviated as MINAGRI in Spanish)."

efficiency that barely oscillates between 25% and 40%. In addition, in the city of Lima, 400 million m<sup>3</sup> of waste water flows into the sea annually, instead of being treated in order to recycle its use.

Regarding the water use in Peru, it is estimated that 12% is destined to domestic consumption, 80% to agriculture, and the remaining 8% to the industrial and mining sector.<sup>3</sup>

Furthermore, the agricultural land used in Peru covers 5.4 million hectares, while the remaining area (2.2 million hectares) is not used. Additionally, 17 million hectares, which equal 13% of the national territory, are destined to lands suitable for pasture; while 48.7 million hectares comprise forested areas, representing 38% of the national soil. The rest of the territory encompasses protection areas.

In these circumstances, the Peruvian government promulgated the Water Resources Law, which establishes the creation of the National Water Resources Management System. This system includes the following planning tools: the National Environmental Policy (NEP), the National Water Resources Policy and Strategy (NWRPS), the National Water Resources Plan (NWRP), and the Basin-level Water Resources Management Plans (PGRHC for its acronym in Spanish).

<sup>3</sup> Idem.



**Social Validation Workshop**

Photography: National Water Authority (ANA).

### **Integrated Water Resources Management Project (PGIRH)**

In order to contribute to the implementation of the plans and policies adopted by the government, Peru has received a committed credit of US \$40 million from the IBRD (World Bank) and allocated US \$ 48 million with the aim of improving the water resources management in the river basins of Peru. Accordingly, the capacity of the institutions responsible for the water resources management at national, regional, and local levels is strengthened with the goal of achieving an efficient and effective water resources management; encouraging environmentally sustainable resource usage and integrated, multisectoral participatory management.

*“In the city of Lima, 400 million m<sup>3</sup> of waste water flows into the sea annually, instead of being treated in order to recycle its use”*



These resources constitute a significant help for implementing the National Determined Contributions (NDCs), established in the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC).

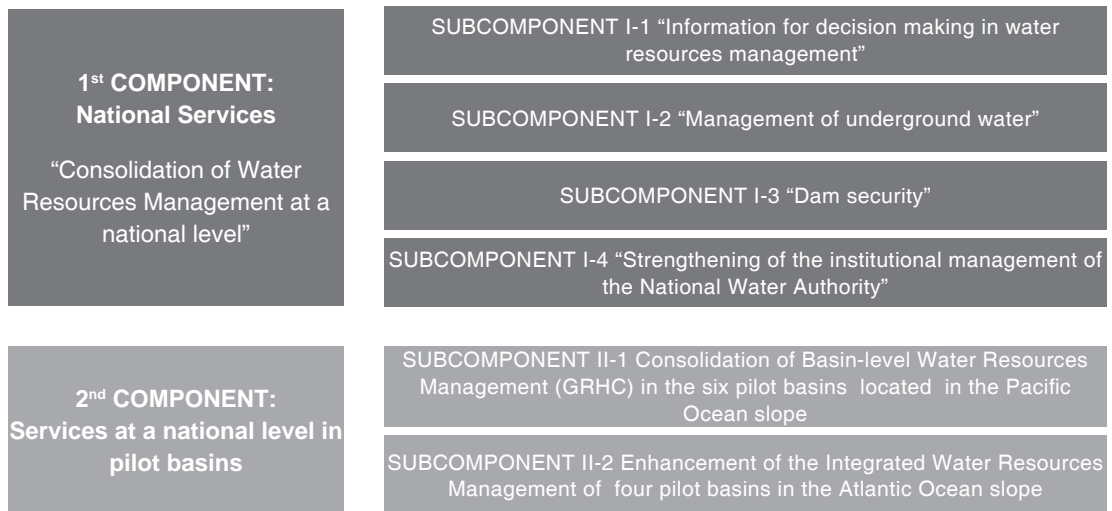
With the aim of meeting NDC targets, the National Water Authority (ANA) has carried out the Integrated Water Resources Management Project (PGIRH for its acronym in Spanish) in ten basins of the country, focusing on the concept of water security, understood as the reliable access to adequate quantities of acceptable quality water for ensuring human health, the production of goods and services, and livelihoods. In addition, water risks must be considered when understanding the concept. Consequently, there is a need to develop some water supply planning over time by going through an

information management process for making informed decisions, as well as national and regional participatory processes; promoting shared visions and commitments with the several public and private actors.

The Integrated Water Resources Management Project (PGIRH) has been conceived taking into account the visions and perspectives of civil society, local authorities, and organized population; including the all indigenous populations from the diverse areas of intervention, and valuing their knowledge and cultural practices.

PGIRH comprises two components. The first component has an impact on national services, and the second one is focused on 10 pilot basins; integrating, at the same time, six subcomponents, as illustrated in the following table:

**Components of the Public Investment Project No 302961 for the Integrated Water Resources Management Project (PGIRH) in ten basins:**



Source: National Water Authority (ANA).

The expected results are the following:

- 153 hydrometeorological stations installed in 20 regions of the country.
- 200 adequate structures for water control in irrigation blocks, 77 rehabilitated structures, 1,145 new structures, and 160 new structures in water intakes equipped with automatic water measurement devices, serving 1,582 irrigation blocks on approximately 200,000 hectares with 50,000 users.
- 30 river basins equipped with 33 automatic stations and mobile water quality equipment.
- Groundwater management in two pilot basins (Ica and Tacna), using automatic measurement and monitoring systems. Three management and surveillance committees with their respective aquifer management plans already created and under implementation.
- A technical dam safety unit established by ANA, structural hydraulic evaluation of six dams, and 40 operators trained in dam safety management.
- Water resources database consolidated nationally.
- A National Water Monitoring Center level two, four centers on the pilot basin level, and a system of water resources information for users, which is developed and under implementation.
- Strengthening of ANA's Conflict Prevention and Management Unit (CPMU).
- Establishment of a mechanism for payment and economic remuneration assignment through resource usage
- Four IWRM plans (Mayo, Mantaro, Pampas and Vilcanota - Urubamba) with identified financing mechanisms.
- Strengthening of technical and management capacities of the installed basin councils.



*Participatory process of water quality control*

Photo: National Water Authority (ANA)

Areas of intervention of the PGIRH



### Formulation of water resources management plans

The Integrated Water Resources Management Project has proposed to carry out, in the next five years, the consolidation of the functioning of the water resources councils in the Pacific hydrographic region and in four selected basins of the Amazon hydrographic region.

One of the first activities developed in the Mayo, Urubamba, Pampas, and Mantaro basins has been the support provided to the regional governments of San Martín, Cusco, Ucayali, Pasco, Junín, Ayacucho, Huancavelica, and Apurímac in order to create the water resources councils of the aforementioned basins. The primary function of these councils is to achieve the active participation of public and

private entities and user organizations in the planning, coordination, and agreement for the sustainable use of water resources in their respective areas, through the Basin-level Water Resources Management Plan (PGRHC).

These plans constitute public, binding instruments of mandatory compliance, which must count with the validation of the water resources council of each basin and with ANA’s approval. Such plans are prepared in accordance with the National Environmental Policy, the National Water Resources Policy and Strategy (NWRPS), the National Water Resources Plan (NWRP), and the Concerted Development Plans of the Regional and Local Governments. They seek to incorporate new paradigms and approaches, such as water security, natural infrastructure, Sustainable Development Goals (SDG), national commitments of adaptation to climate change and risk management, Nationally Determined Contributions (NDC), interculturality, gender equity, association with the Multi-year Investment Program (MYIP) and budget programs. The plans are intended to be binding as established by the Water Resources Law.

In order to formulate PGRHC, the project has selected two international consulting companies in charge of the development of processes that actively involve the entities present in each basin, applying the shared vision planning methodology. This

methodology integrates three practices: (i) strategic planning, (ii) structured participation of actors, and (iii) collaborative modeling.

Carrying out the shared vision planning requires generating a favorable environment for the interaction among the different groups that are related to management or usage of water resources, as well as groups affected by them. This participation must have a structure to ensure an environment suitable for reaching consensus and adaptation of water resources management plans (PGRH). All the members must know the participation roles of each group, which must be properly established, as explained in the figure below:

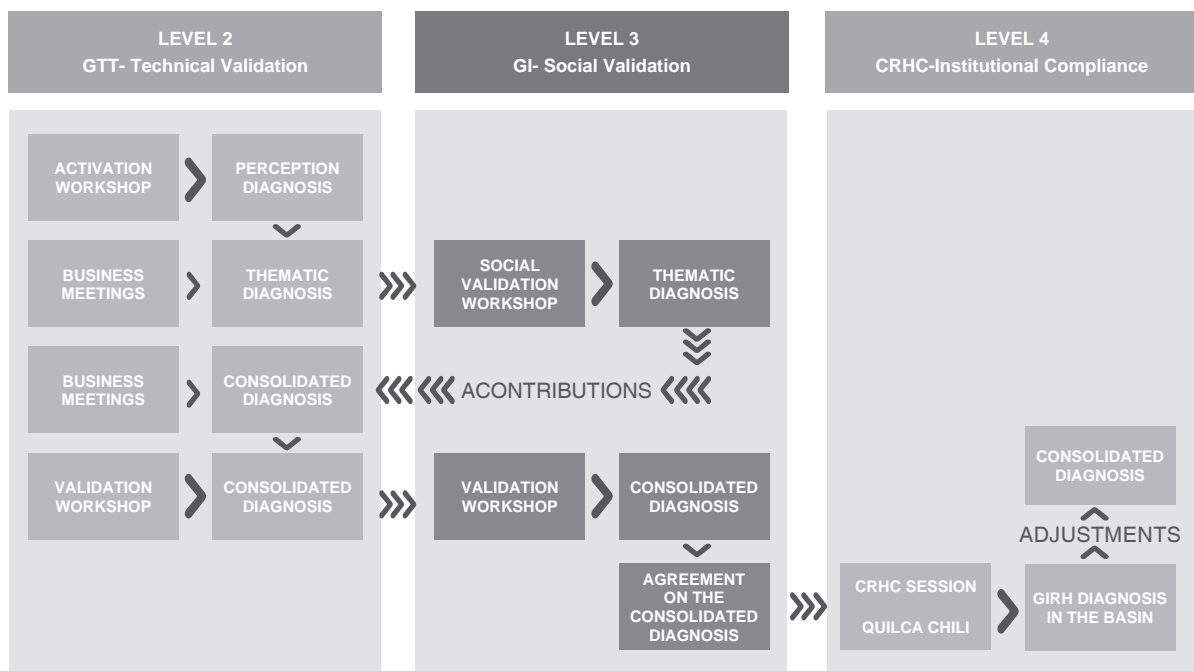
“Circles of Influence” for structured participation in shared vision planning



The technical validation of the PGRHC formulation stages and its products initiates from the moment when thematic groups, territorial groups, and Basin Water Resources Councils (CRHC for its acronym in Spanish) take into consideration the documents and corresponding products that are prepared by consulting

firms; making a general presentation of them to all the members through workshops, and seeking their technical validation, social license, and institutional consent.

The figure below shows the process developed in one of the stages of the PGRHC formulation.



Source: National Water Authority (ANA).

Since mid-March of the present year, the government, through emergency decrees and on the alert raised by the World Health Organization (WHO) because of the new coronavirus pandemic, has adopted exceptional measures aimed at strengthening the health surveillance and response system against COVID-19 in the national territory; measures that will remain in effect until December 31st, 2020. These implemented measures have a direct impact on the execution

of the participatory process in the PGRHC formulation.

This extraordinary situation has compelled the modification of the proposed methodology for the participatory process in the PGRHC, focused initially on the participation of the actors through scheduled workshops that legitimize the shared and consensual decision-making process. That way, an individualistic vision of the actors can be replaced for a shared



vision, built through dialogue, personal approach, and trust when analyzing the water resources management problems, defining solutions and real commitments to mitigate them. Nevertheless, that

methodology must now change to a non-face-to-face or virtual modality that, although it has limitations that affect us emotionally, socially and cognitively, allows us to meet the objectives and expected results.



The new alternative methodology focuses on indispensable aspects of the participatory process and comprises the following criteria:

- To maintain the participatory nature of the PGRHC formulation process, supported by four levels:
  - Level 1: Planning group
  - Level 2: Technical working groups
  - Level 3: Territorial groups
  - Level 4: CRHC
- To continue with the implementation of shared vision planning.

- To develop the participation and dissemination plan, using the internal and external communication channels proposed at the different levels.
- To share information in a way that can be understood by actors so that they are informed when it comes to making decisions.
- To adapt information, methodologies, and participatory techniques depending on each target audience.
- To implement communication strategies that allow to overcome barriers created by different interests and social groups.

Having proposed measures of social isolation, travel reduction, and health security measures, the new methodology suggests holding sessions aimed at collecting contributions, as well as achieving interaction, dialogue, and participatory analysis by means of:

- Workshops composed of reduced groups of representatives (no more than six members), which require a more detailed and more decentralized selection process.
- Convocations and communications through the radio, the internet, and individual telephone calls.
- Transfer of the representatives of the entities involved to nearby places in order to participate in work meetings. This measure implies receiving support from some people in each constituted territorial unit, with whom communications and execution of sessions can be coordinated.
- Design of shorter and more precise sessions, which foster motivation for achieving a more continuous and effective participation.
- Design of the rules of the game, making use of motivational videos and providing training in the use of the selected program.
- Communication with the participants via WhatsApp and phone calls, clearing up their doubts, stimulating their participation, and jointly reviewing their results.
- Creation of a synthesis of the products developed collectively to be given back to the participants in virtual workshops.

According to the Integrated Water Resources Management Project (PGIRH), this new methodology is an attractive option to continue with the participatory process in the formulation of PGRHC. Moreover, at the same time, it constitutes a challenge because it depends not only on the efforts made by the project's technical staff and consulting firms, but success rests on the commitment of representatives and technicians of public and private entities and user organizations that are directly and indirectly involved in the water resources management, actively participating in scheduled virtual workshops.