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Opening the Tap:
State of Finance for Natural Infrastructure for Water Security in Peru, 2021

Natural Infrastructure
for Water Security

FOREST TRENDS | CONDESAN | SPDA | EcoDecisión | Imperial College London

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Photo: Carlos Alberto Vergara Manrique de Lara

Content

Acronyms

APCI	Peruvian Agency for International Cooperation (“Agencia Peruana de Cooperación Internacional”)
ARCC	Authority for Reconstrucción con Cambios (“Autoridad para la Reconstrucción con Cambios”)
CONDESAN	Consortium for the Sustainable Development of the Andean Ecoregion (“Consorcio para el Desarrollo Sostenible de la Ecoregión Andina”)
COVID	Coronavirus Disease
IOARR	Investments in Optimization, Marginal Expansion, Rehabilitation and Repositioning (“Inversiones de Optimización, Ampliación Marginal, Reposición y Rehabilitación”)
MEF	Ministry of Economy and Finance of Peru (“Ministerio de Economía y Finanzas”)
MERESE	Compensation Mechanisms for Ecosystem Services (“Mecanismos de Retribución por Servicios Ecosistémicos”)
MIDAGRI	Ministry of Agricultural Development and Irrigation of Peru (“Ministerio de Desarrollo Agrario y Riego”)
MINAM	Ministry of the Environment of Peru (“Ministerio del Ambiente”)
NDC	Nationally Determined Contribution
PRODERN	Program for Sustainable Economic Development and Strategic Management of Natural Resources (“El Programa de Desarrollo Económico Sostenible y Gestión Estratégica de los Recursos Naturales en las regiones de Ayacucho, Apurímac, Huancavelica, Junín y Pasco”)
SEDAPAL	Water utility servicing Lima, Peru (“Servicio de Agua Potable y Alcantarillado de Lima”)
SPDA	Peruvian Society of Environmental Law (“Sociedad Peruana de Derecho Ambiental”)
SUNASS	National Superintendence of Water and Sanitation Services of Peru (“Superintendencia Nacional de Servicios de Saneamiento”)
TNC	The Nature Conservancy
USAID	United States Agency for International Development

Photo: Fiorella Inés Villanueva Berrospi

About the Natural Infrastructure for Water Security project

The Natural Infrastructure for Water Security (NIWS) project works to scale the conservation, restoration and sustainable use of ecosystems and ancestral technologies, in order to reduce water risks, such as droughts, floods and water pollution in Peru. To achieve this objective, NIWS works to improve the enabling conditions for scaling natural water infrastructure approaches, improve the information generated and used for decisions on natural water infrastructure, and develop, secure financing, and facilitate implementation of natural infrastructure projects. Throughout these components, NIWS works to reduce gender inequalities in water resource management and natural infrastructure solutions.

NIWS is funded and supported by the United States Agency for International Development (USAID) and the Canadian Government. It is implemented by a consortium led by Forest Trends, with local partners the Consortium for the Sustainable Development of the Andean Ecoregion (CONDESAN) and the Peruvian Society for Environmental Law (SPDA), international experts from EcoDecisión, and researchers from Imperial College London. It began implementation in December 2017 and is programmed to conclude in June 2023.

Photo: Mauricio Núñez Oporto

Photo: Julio Angulo Delgado

Prologue

In Peru, policymakers and water managers are increasingly recognizing the indispensable role natural infrastructure and ancestral technology play in managing water risks. As this report shows, investments in the maintenance and restoration of natural infrastructure that play key roles for water security, from forests and grasslands to *amunas* (pre-Incan canals that support aquifer recharge), are growing at an accelerated rate. Financing for natural infrastructure for water security in Peru grew by a factor of 13 between 2014 and 2020, reaching the equivalent of USD 10.2 million executed in 2020, despite impacts of the COVID-19 pandemic on public resources and the ability to execute activities in the field.

These numbers are only the tip of the iceberg. While financing was mostly executed by regional governments and public ministries in 2020, water utilities have also begun to invest and develop projects, recognizing that fulfilling their mission to provide public water supply also depends on natural infrastructure. The beginnings of this multisectoral effort can be seen in resource allocations from sanitation and agriculture sectors shown in this report. There are also signs of longer-term commitment, as the agriculture, sanitation, energy and environment sectors have included climate change adaptation measures in Peru's Nationally Determined Contribution, and the Authority for Reconstruction with Changes has developed an unprecedented investment portfolio in natural infrastructure.

This silent revolution in the way Peru values nature has been possible due to the transformative vision and new regulatory framework promoted by multiple sectors across the Peruvian government over the last ten years. On one hand, the regulatory framework now recognizes natural infrastructure as an asset, allowing a new approach to public investment and spending that goes beyond previous investments in biodiversity and landscape conservation. On the other hand, new legal instruments such as Compensation Mechanisms for Ecosystem Services (MERESE, for its Spanish acronym) promote the participation of local communities in this new approach, including both upstream communities who provide ecosystem services through the conservation, recovery and/or sustainable use of ecosystems, as well downstream communities that benefit from these services.

We recognize that significant efforts are still needed to consolidate this vision. A gap between investments planned and executed remains despite improved capacities of the executing entities. In addition, there is a need to strengthen the monitoring and evaluation of hydrological benefits of these interventions, the incorporation of a gender approach, and compensation to communities who carry out positive land and water management practices.

As part of the Natural Infrastructure for Water Security (NIWS) project funded and supported by USAID and the Canadian government, Forest Trends works with the Peruvian government, civil society, water users, communities in upper watersheds, academia, and the private sector to bridge gaps and address bottlenecks that limit the adoption of natural infrastructure within the Peruvian water sector; improve knowledge generation and information management to support science-based decision making; and implement initiatives that can serve as models for replication across Peru.

We renew our commitment to continue working with the entities that have contributed to the great advances highlighted in this report, as well as others who are just joining the effort, to strengthen natural infrastructure for water security in Peru.

Michael Jenkins
President, Forest Trends

Fernando Momiy Hada
Director, Natural Infrastructure for Water Security Project, Forest Trends

Photo: Juan Carlos Casafranca Sayas

Executive Summary

Current Context

In 2020, USD 10.2 million[1] was invested in natural infrastructure for water security in Peru. 83% of these investments came from public Peruvian sources, and 17% were from international development agencies.

» Between 2014 and 2020, finance for natural infrastructure for water security in Peru grew rapidly, increasing 13x overall, and reaching the high point of this period in 2019, just before the COVID-19 pandemic, when USD 13.1 million was invested.

» Public financing led investments in natural water infrastructure in Peru; within this field, regional governments took the lead with almost 86% of the public funds executed in 2020, followed by local governments with 9%, and the national government with 5%.

» In 2020, 86% of the public financing was concentrated in six regions: Cusco, Ica, Huancavelica, Junín, Piura, and Apurímac.

» Of the projects analyzed, the most common objective driving investment was promoting water infiltration (mentioned by 56% of projects), followed by increasing the natural capacity for water regulation (41%).

» The most common interventions financed through these projects included reforestation or afforestation, followed by infiltration ditches, rustic water and soil conservation practices (often known as water sowing and harvesting), and the construction of permeable micro-reservoirs (known in Peru as *qochas*).

» International development agencies have been investing in natural water infrastructure since the beginning of the period studied (2008-2020), playing a key role in laying the groundwork for the transformative change documented in this report. In recent years, subnational governments have overtaken international funding sources as the leaders in natural water infrastructure financing; their participation is responsible for the exponential growth documented in this study.

» The extraordinary growth tracked in this report reflects an evolution in Peru's public investment system and regulatory framework that recognizes and promotes investments in nature that go beyond a traditional nature conservation approach, towards one in which ecosystems are also understood as assets for managing water and water risks. This evolution took place through a series of legal and regulatory shifts, driven by multiple sectors, over the last ten years.

[1] All values are reported in United States Dollars (USD) and based on the 2020 exchange rate of 3.5 Peruvian Soles to 1 USD.

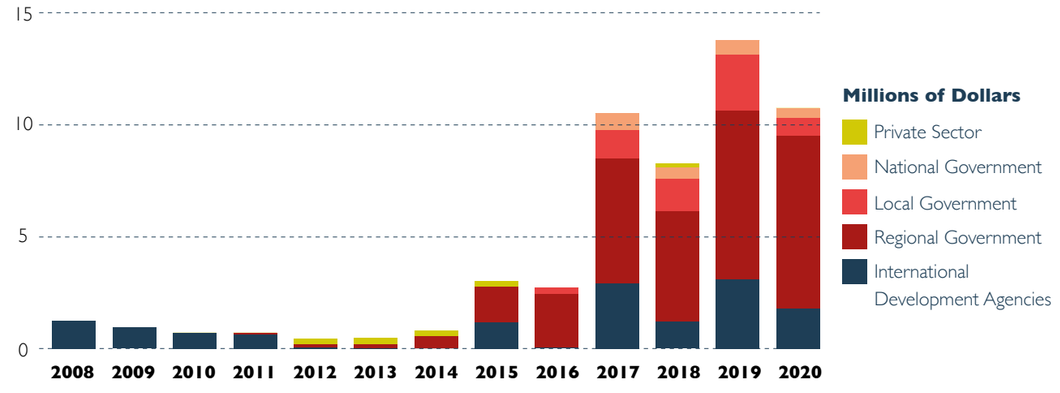


Figure 1. Finance (USD) for natural infrastructure for water security in Peru executed between 2008-2020, by type of financing source. Source: prepared by the authors.

Challenges and Bottlenecks

» The exponential growth in financing of natural water infrastructure has also been accompanied by an execution gap: the last years of the period studied showed consistently lower execution of investment than had been planned and budgeted. This gap closed slightly in 2020 when 91% of planned amounts were executed, although this could be because the total planned amount for 2020 was smaller than previous years.

» A critical factor contributing to this execution gap is the complexity of the public investment system used to finance actions in natural infrastructure in Peru, which involves several extended bid and contract processes during project development. According to our analysis, public financing of natural infrastructure for water security by regional governments and ministries in Peru takes an average of 4.5 years to progress from an approved project profile to physical execution.

» Even though the finance tracked in this report was justified by hydrological objectives, the projects executed in 2020 lack precision in the description, quantification, and monitoring of expected hydrological outcomes. In almost all cases – except, notably, the most recently developed initiatives by the drinking water sector – monitoring and evaluation of hydrological results is absent.

» The project descriptions analyzed did not demonstrate any consideration for gender differences in their design. This omission reflects a broader gender bias in the water sector and represents a risk to the efficacy and sustainability of the investments.

Photo: Juan Patiño

New Trends and Opportunities

» While regional governments led financing of natural water infrastructure in recent years, we are starting to see new key players enter the field, like water utilities. Their entry marks a recent trend in the expansion of financing of natural infrastructure beyond providers of public goods such as regional and national governments, to incorporate downstream beneficiaries of ecosystem services.

» As new actors entering this field do not have much experience in formulating, executing, or managing natural infrastructure investments, their successful incorporation will require additional capacity building and new partnerships.

» As this new field develops, Peru is building new capacities and fine-tuning the regulatory framework for natural water infrastructure that is helping to address some of the challenges identified. For example, new implementation mechanisms are now available that could significantly accelerate the formulation of public investments.

Introduction

Peru is on the front lines of the water and climate crises. Between 2016 and 2017, the country was hit by successive states of emergencies – first droughts and forest fires in Northern Peru and then floods and landslides along the Pacific coast– with the latter resulting in damages valued at over USD 3 billion.[2] Climate change has caused an accelerated melting of Peru's glaciers, large natural reservoirs that have stored water over thousands of years, and deforestation of riverbanks and upper watersheds for human activities add further urgency to address water and climate risks.

Natural infrastructure—like forests, grasslands, and wetlands—buffers the effects of climate variability and its extremes that cause droughts and floods.[3,4] In addition, natural infrastructure improves the performance of gray infrastructure by reducing suspended solids in water and their sedimentation, and offers additional benefits such as food security, recreational opportunities, and climate change mitigation.[5] Ancestral techniques for water regulation, especially in Peru,[6] have long played a key role in the effective management of natural infrastructure and represent an enormous untapped potential to address modern water risks in Peru.[4,7]

Understanding the role nature plays in reducing water risks has led to a new way of thinking about the conservation of nature: natural infrastructure is an asset for water risk management beyond the traditional conservation of ecosystems, and should be recognized as the base of a critical supply chain that safely delivers water where it's needed. Both public good providers, like central governments, and water users are starting to recognize the importance of natural infrastructure in meeting their water resource management objectives and to act accordingly by investing directly in natural infrastructure projects.[4, 7]

This report shows how Peru has begun to act based on this new way of thinking about nature and water resource management. It describes how much is being invested in natural infrastructure for water security in the country, who is investing, where they are spending, and what actions they are financing. This report also summarizes key changes in the regulatory framework that have allowed this remarkable change to take place and identifies challenges and opportunities for growth in the years to come.

Annex 1 of this report details the scope, methods, and key definitions used to prepare this study. Annex 2 lists the projects and initiatives in natural infrastructure for water security analyzed.

[2] Redaccion EC. "Daños de El Niño: US$3.124 millones hasta ahora, Macroconsult". *El Comercio*. 24 March 2017.
[3] Bonnesoeur V., Locatelli B., Ochoa-Tocachi B.F., 2019. Impactos de la Forestación en el Agua y los Suelos de los Andes: ¿Qué sabemos? Resumen de políticas. , Forest Trends, Lima, Perú.
[4] Molina A., Vanacker V., Rosas Barturen M., Bonnesoeur V., Román F., Ochoa-Tocachi B.F., Buytaert W. 2021. Infraestructura natural para la gestión de riesgos de erosión e inundaciones en los Andes: ¿Qué sabemos? Resumen de políticas, Proyecto "Infraestructura Natural para la Seguridad Hídrica", Forest Trends, Lima, Perú.
[5] IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondízio E.S., H.T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany. 56 pages.
[6] Willems B., Leyva-Molina WM, Taboada-Hermoza R., Bonnesoeur V., Román F., Ochoa-Tocachi BF, Buytaert W., Walsh D., 2021. Impactos de andenes y terrazas en el agua y los suelos: ¿Qué sabemos? Resumen de políticas, Proyecto "Infraestructura Natural para la Seguridad Hídrica", Forest Trends, Lima, Perú
[7] Ochoa-Tocachi, B. F., Bardales, J. D., Antiporta, J. et al. "Potential contributions of pre-Inca infiltration infrastructure to Andean water security". Nat Sustain 2, 584–593 (2019).
[8] Bennett, G. and Reuf, F. (2016). *Alliances for Green Infrastructure: Investments in Watershed Services 2016*. Washington, DC: Forest Trends.

Photo: Infraestructura Natural para la Seguridad Hídrica

Current Context

In 2020, more than USD 10.2 million was invested in natural infrastructure for water security in Peru, 83% came from Peruvian public financing (Figure 2). This compares to 17% from international development agencies, reflecting the current leadership of the domestic public sector in nature-based solutions for water in Peru.

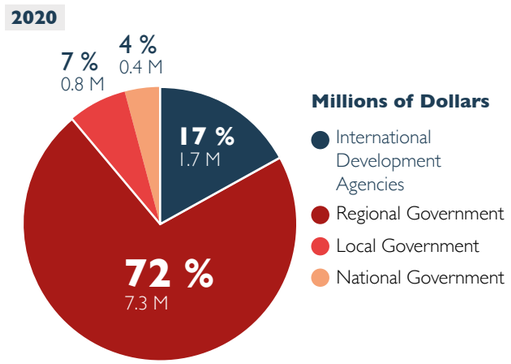


Figure 2. Finance (USD) for natural infrastructure for water security in Peru executed in 2020, by financing source. Source: prepared by the authors.

Financing for natural infrastructure for water security is still in development and relatively small compared to other public and private spending. For example, the annual public budget for the environmental sector in 2020, as defined by official public classification, was USD 0.9 billion, more than 80 times the total investment in natural infrastructure for water security in the same year.

However, the growth in financing in this area is extraordinary. **Between 2014 and 2020, the annual execution of financing of natural infrastructure for water security in Peru grew by a factor of 13 (Figure 3)**. Before 2014, public financing of natural infrastructure interventions for water security was not significant; however, as of 2014, this trend began to change, coinciding with initial changes to the legal framework **(Box 1)**. The growth between 2016 and 2019 is the most remarkable, with an average annual growth rate of 110%, in contrast to the average annual growth rate of public investments in the environmental sector at the same time, which was around 3%.

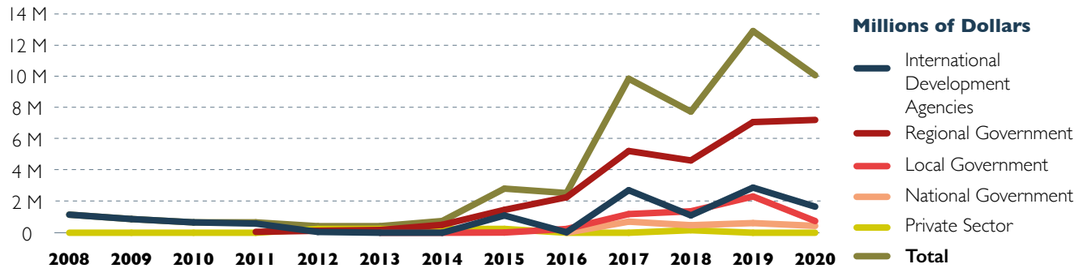


Figure 3. Evolution of financing (USD) of natural infrastructure for water security executed in Peru. Source: prepared by the authors.

Photo: Orlando Rogelio Silva Palma

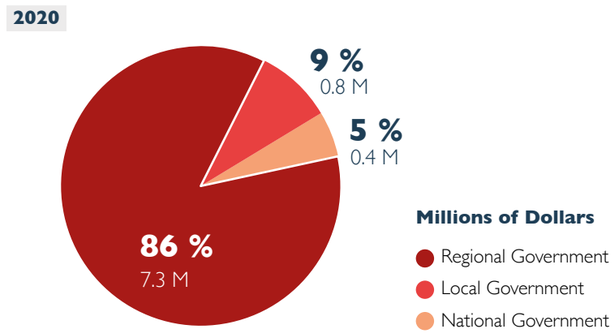


Figure 4. Public finance (USD) for natural infrastructure for water security executed in 2020, by level of government.
Source: prepared by the authors.

This remarkable growth in finance for natural infrastructure can largely be attributed to the growth of financing from regional governments over the last decade, despite decreases in 2019 and 2020. In 2020, regional governments led the execution of public funding for natural infrastructure (86%), followed by local governments (9%) and the national government (5%) **(Figure 4)**.

The private sector has been investing in natural infrastructure for several years, although the total amount of its financing — USD 1.2 million during the full period analyzed— is still considerably lower than public sector financing. Private companies usually work with partners to implement their projects; for example, many companies in Lima invest through Aquafondo, and the hydroelectric company Celepsa invests through the Nor Yauyos Cochas Landscape Reserve. The private investments we analyzed primarily focused on infiltration ditches, followed by the restoration of grasslands, wetlands, and infiltration channels.

In 2020, public financing of natural infrastructure for water security was concentrated in six departments: Cusco, Ica, Huancavelica, Junín, Piura, and Apurímac. These departments represent 86% of the public financing of natural infrastructure for water security in Peru across different levels of government **(Figure 5).**

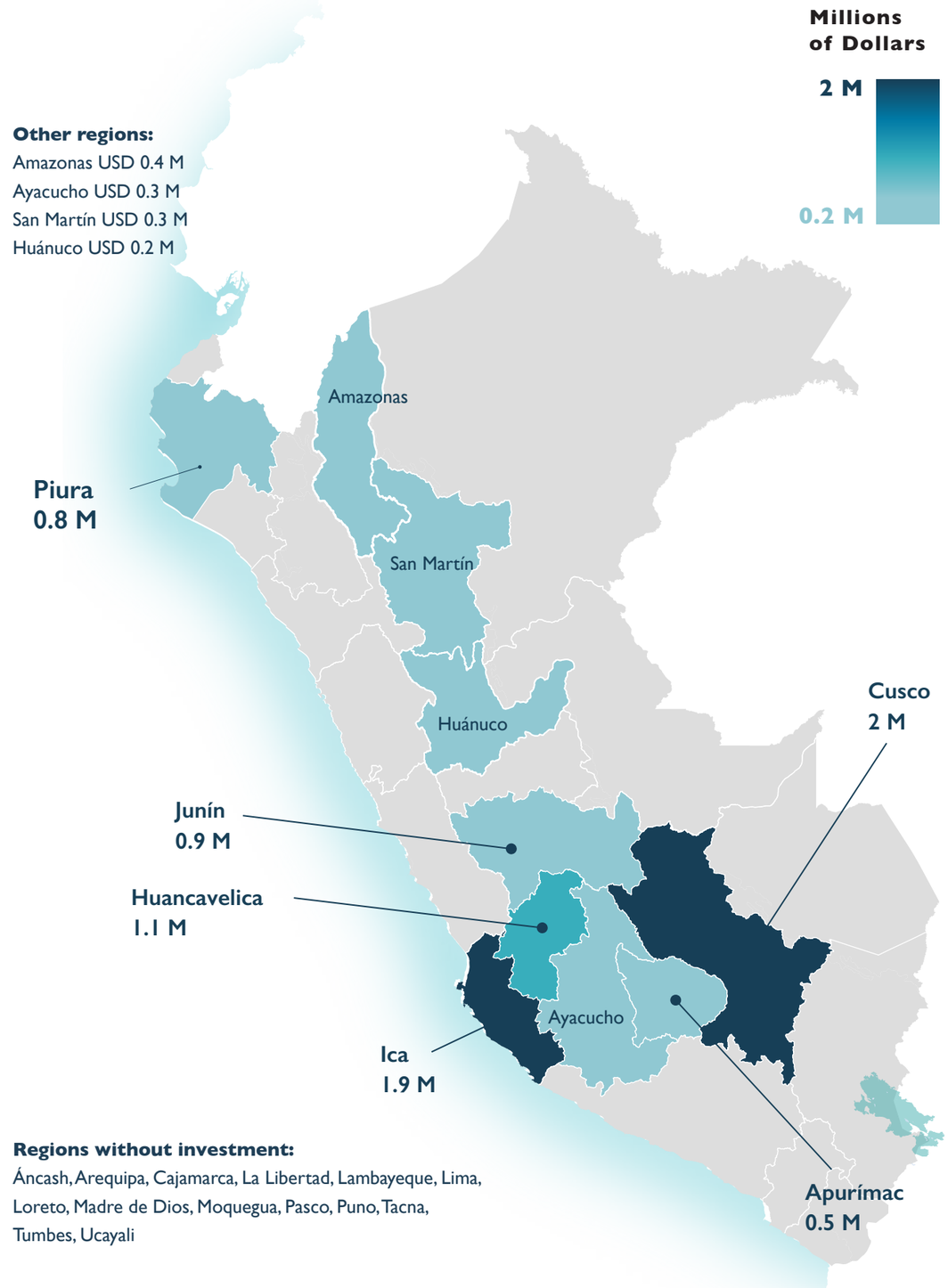


Figure 5. Public finance (USD) of natural infrastructure for water security executed in 2020, by region.
Source: prepared by the authors.

The amount of public financing executed per project in 2020 ranges widely, from USD 1,700 to USD 1.5 million, the majority of which was executed by just six large projects. Figure 6 shows the total amount of public financing of natural infrastructure for water security executed in 2020: each project is represented by a different colored column and the width of the columns represents the amount of financing. Six projects (30% of projects) concentrate 66% of the financing, while the remaining 70% of projects only account for 34% of total financing. On one hand, this distribution suggests that this area of public investment is very sensitive to the execution of a few projects —if a few major projects were discontinued, the annual financing would be dramatically reduced. On the other hand, the fact that there are so many projects with such small levels of execution suggests that high transaction costs impact this sector.

Of all the public projects analyzed between 2008 and 2020, promoting water infiltration was the most common hydrological objective. The projects also mentioned increasing the natural capacity for water regulation, responding to water scarcity in the dry season or excess in the rainy season; groundwater recharge; and erosion control **(Figure 7).**

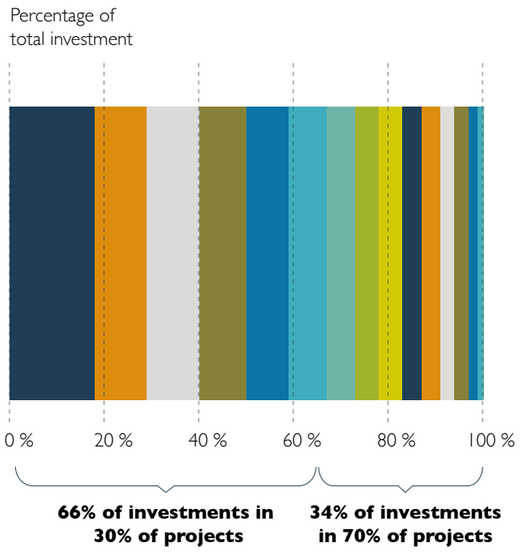


Figure 6. Distribution of public financing of natural infrastructure for water security executed in 2020, by project. Source: prepared by the authors.

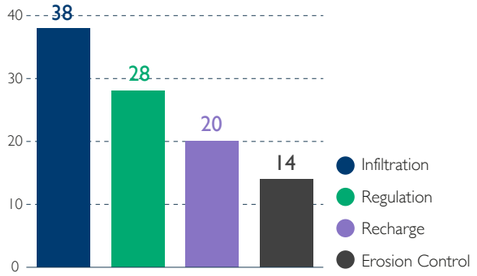
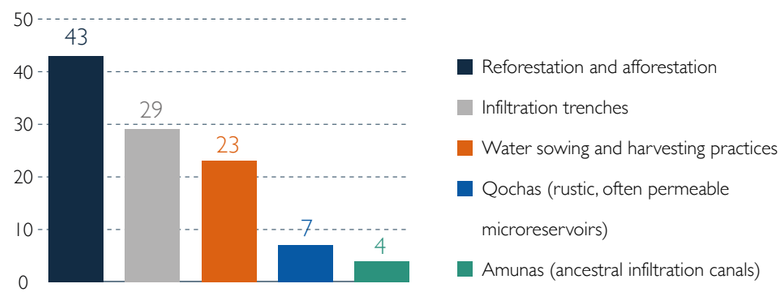


Figure 7. Frequency of hydrological objectives included in public investments for natural water infrastructure in Peru executed between 2008 and 2020. Source: prepared by the authors.

Public financing was most frequently directed at reforestation and afforestation efforts, followed by infiltration ditches, practices for sowing and/or harvesting water, *qochas* (reservoirs, often permeable, for water retention and aquifer recharge), and *amunas* (ancestral infiltration canals) **(Figure 8).**

This distribution contrasts with investments in natural infrastructure for water security globally, which tend to focus more heavily on forest conservation. In Latin America, the most popular intervention for watershed conservation is reforestation, followed by sustainable grazing.[9]

Figure 8. Frequency of interventions included in public investments in natural water infrastructure in Peru executed between 2008 and 2020. Source: prepared by the authors.



[9] Bennett, G. & Ruef, F. (2016). *Alliances for Green Infrastructure: State of Watershed Investment 2016.* Washington, DC: Forest Trends.

BOX 1. REGULATORY CHANGES THAT OPENED THE TAP, 2013-2020

The extraordinary growth in finance for natural infrastructure documented in this report was enabled by a series of key regulatory changes implemented by visionary leaders across the environmental, drinking water, and public finance sectors in the last decade. These changes allowed public investment to flow to efforts to restore and conserve ecosystems as natural assets that provide critical services for water management, much as it does for built infrastructure.

2013

The **MODERNIZATION OF SANITATION SERVICES LAW** established a new tariff for environmental compensation mechanisms to be charged to users by water utilities, which should be included in the utilities' long-term planning instruments, known as Optimized Master Plans, with the approval and supervision of the national water utility regulator, SUNASS.

2014

The **COMPENSATION MECHANISMS FOR ECOSYSTEM SERVICES (MERESE) LAW** established a pathway for using public funds for the conservation of ecosystems that contribute to water security.

2015

The Ministry of Economy and Finance (MEF) and MINAM published **GUIDELINES FOR THE DEVELOPMENT OF PUBLIC INVESTMENT PROJECTS FOR BIOLOGICAL DIVERSITY AND ECOSYSTEM SERVICES.**

The Ministry of the Environment (MINAM) published **GUIDELINES FOR PUBLIC INVESTMENT POLICY FOR BIOLOGICAL DIVERSITY AND ECOSYSTEM SERVICES (2015-2021),** which established specific objectives and lines of action to promote public investment in this area.

2016

The **FRAMEWORK LAW FOR THE MANAGEMENT AND PROVISION OF SANITATION SERVICES** was published, specifying that water utilities are authorized to develop, evaluate, approve, and execute MERESE projects and are responsible for their operation and maintenance costs, even when the projects have been executed by third parties.

MINAM approved the **REGULATION FOR THE MERESE LAW**, to promote, regulate and supervise the design and implementation of MERESE, which establish actions for the conservation, recovery, and sustainable use of ecosystems through voluntary agreements.

The Ministry of Housing, Construction and Sanitation (MVCS) approved the **REGULATION FOR THE MODERNIZATION OF SANITATION SERVICES LAW,** further clarifying that water utilities are authorized to develop, evaluate, approve, and execute MERESE projects and are responsible for their operation and maintenance costs.

2017

MEF issued the **REGULATION FOR THE NEW NATIONAL SYSTEM FOR MULTI-YEAR PROGRAMMING AND INVESTMENT MANAGEMENT, INVIERTE.PE,** which explicitly recognizes that any reference to infrastructure also includes natural infrastructure.

SUNASS published the **RAPID HYDROLOGICAL DIAGNOSTIC TOOL** to help water utilities identify opportunities to use MERESE to manage water risks they face through coordination with local actors.

2018

MINAM issued **GUIDELINES FOR INCORPORATING CRITERIA ON NATURAL INFRASTRUCTURE AND RISK MANAGEMENT TO ADDRESS CLIMATE CHANGE UNDER RECONSTRUCTION WITH CHANGES,** which was a result of coordination between MVCS, MIDAGRI, the Council of Ministers, the National Center for the Estimation, Prevention and Reduction of Disaster Risk, and the National Institute of Civil Defense.

MINAM approved the **TECHNICAL DATASHEET FOR STANDARD INVESTMENTS AND/OR SIMPLIFIED INVESTMENT PROJECTS FOR THE RECOVERY OF ANDEAN ECOSYSTEMS,** with the objective of streamlining the project development process for public investments in natural infrastructure.

2019

MEF approved **GUIDELINES FOR THE IDENTIFICATION OF INVESTMENTS IN OPTIMIZATION, MARGINAL EXPANSION, REPLACEMENT AND REHABILITATION (IOARR),** which opens a simplified, much more agile pathway for investment in natural assets.

MINAM published **GUIDELINES FOR PROJECT DEVELOPMENT FOR ECOSYSTEMS, SPECIES, AND SUSTAINABLE USE OF BIODIVERSITY,** a key instrument on which other policies for natural infrastructure are based.

2020

MINAM approved the **SIMPLIFIED TECHNICAL DATASHEET FOR INVESTMENT PROJECTS IN THE RECOVERY OF WATER REGULATION ECOSYSTEM SERVICES,** which provides a specific instrument to design and evaluate public investment projects in natural infrastructure related to ecosystem services that provide water regulation.


Photo: Héctor Armando Arrunátegui Ochoa

Challenges and Bottlenecks

In 2020, the financing for natural water infrastructure in Peru slowed down, due in part to the redirection of public spending towards public health needs, like the response to the COVID-19 pandemic. Between March 2020 and December 2021, the Peruvian government issued at least five Emergency Decrees to prioritize and facilitate public health spending by regional governments, as well as an Emergency Decree to allow water utilities to use earmarked resources, including their MERESE funds, to cover operating and maintenance costs for water and sanitation services since the economic impacts of the pandemic affected the general public's ability to pay their fees.

Even in this context, the public sector budgeted USD 9.4 million for natural water infrastructure investments in 2020, and 91% of that was actually executed – suggesting that resource diversions to cover public health needs did not overcome the growing momentum to prioritize investments in natural assets for water management. Moreover, the improvement in the execution gap compared to the previous two years suggests that capacities for managing natural infrastructure investments in line with growing demand are improving over time. However, this execution efficiency could be a result of the lower total amount planned for the year and could be anecdotal if the trend is not confirmed over the longer term.

Challenge #1: Delays in Project Execution

The gap between allocated and executed funds is due, in part, to bottlenecks in the public investment process that slow down the development and evaluation of projects. According to our analysis, Peruvian public investments in natural water infrastructure take an average of 4.5 years to go from an approved project profile to physical execution.

A number of bottlenecks in public investment development contribute to delays in project development, approvals and mobilization —such as lengthy processes for hiring and contracting the development of project profiles, detailed designs, and implementation. These bottlenecks, while not specific to natural infrastructure, may be accentuated in this field because they intersect with technical capacities that are also in early stages of development in the myriad agencies involved in developing, evaluating, and executing natural infrastructure investments.

The exponential growth in financing of natural water infrastructure has also been accompanied by an execution gap: recent years show consistently lower execution of investment than had been planned and budgeted **(Figure 9)**. This gap could simply reflect that the implementation capacities are catching up with the large growth of planned financing. Improvements in capacities and processes may lead to improved efficiency in the future.

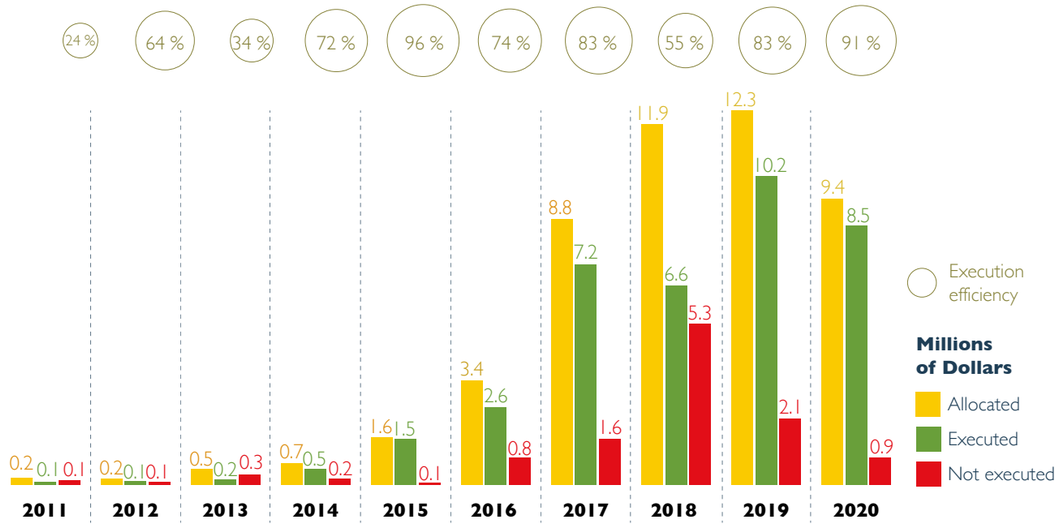


Figure 9. Allocated vs. executed public financing (USD) of natural infrastructure for water security in Peru, between 2011 and 2020. Source: prepared by the authors.

Photo: Liz Tasa

Challenge #2: Inconsistencies in the Estimation of Project Benefits

Despite having specified hydrological objectives, the projects analyzed lack a consistent approach to describe, quantify, and monitor their hydrological benefits. Peru's public investment system does not currently require the quantification of hydrological benefits related to improved ecosystem services for these types of investments, mainly because of the practical difficulties associated with this type of estimation. As a result, the identification and quantification of the benefits and beneficiaries of projects has been inconsistent. Of the financing destined for natural infrastructure for water security in 2020, there is a very large variability when comparing the ex ante estimates for project budget and number of beneficiaries. For example, one project with a budget of USD 23,000 is estimated to serve 2,000 beneficiaries, while another of USD 2.8 million is only estimated to serve 850 beneficiaries **(Figure 10).** Even though the projects are very different, a normal distribution should be expected for the project budget per beneficiary, however, the standard deviation is very high, approximately ± 1075.

In almost all cases – except, notably, for the projects recently developed by the drinking water sector – the monitoring and evaluation of hydrological results is completely absent. A number of actors, including the Ministry of the Environment (MINAM), the national water utility regulator (SUNASS), the Initiative for Hydrological Monitoring of Andean Ecosystems (iMHEA), and the Natural Infrastructure for Water Security project, are promoting monitoring and evaluation through the generation of technical and methodological tools as well as new capacities, in order to address this need.

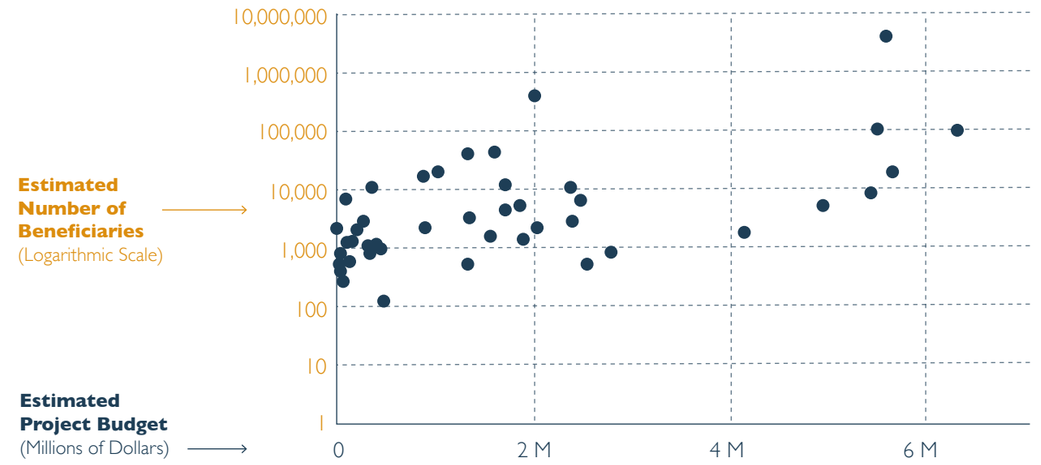


Figure 10. Number of beneficiaries estimated ex ante compared to the total project budget, for public natural infrastructure for water security projects, between 2008 and 2020. Source: prepared by the authors.

Challenge #3: Lack of a Gender Approach

An approach to project development and implementation that recognizes gender inequality—and differentiated needs, knowledge, and roles between men and women—is essential for the efficacy and sustainability of financing. In most communities in the upper watersheds where many natural infrastructure projects intervene, most young men and women travel outside the community for work or education, leaving primarily older women at home.[10] Not involving these women in the development and implementation of natural infrastructure investments misses important opportunities to benefit from their valuable knowledge and participation. In addition, a key opportunity to close gender gaps and address public policies prioritized by the Peruvian government is lost.

The projects analyzed do not explicitly include a gender approach, which puts their efficacy and sustainability at risk. Although many women have been great agents of change in favor of the implementation of natural infrastructure for water security, a gender approach is not documented within the projects: the projects do not mention the difference in water risks for women and men; the differences in knowledge and uses for natural infrastructure between women and men are not explicitly stated in the description of the interventions; and women and men are not differentiated among the beneficiaries.

[10] Carrillo, P. 2020. Brechas de género en la gestión de la infraestructura natural y el agua en el Perú. Forest Trends.

New Trends and Opportunities

In the last six years, international development agencies have executed an average of USD 1.6 million per year in direct interventions in natural infrastructure in the field; while there is some fluctuation year-to-year in this financing, the contribution of international donors has been relatively consistent over the period studied. For example, the largest project financed by international development agencies in natural infrastructure in execution in 2020 was the "Conservation and sustainable use of Peru's high Andean ecosystems through Payment for Environmental Services for rural poverty alleviation and social inclusion" project funded by the International Fund for Agricultural Development and executed by the Ministry of the Environment.

While outside of the scope of this study, it should be noted that international donors have added a new emphasis in recent years that has supported the rise of Peruvian-led investments by investing in the enabling conditions for scaling and enhancing the impacts of natural infrastructure finance. The German and Swiss development agencies were early movers in this space, supporting some of the first public investments in natural water infrastructure and the development of key elements of the technical-regulatory framework[11] presented in Box 1. Since 2017, the Natural Infrastructure for Water Security project, funded and promoted by the development agencies of the United States and Canada, has invested even greater resources in strengthening these enabling conditions and mobilizing a new generation of scaled investment in natural water infrastructure.

While the environmental sectors of regional governments are currently leading financing of natural infrastructure for water security, there have recently been new actors entering the scene with modest amounts. Among public sources, as shown in **Figure 11**, since 2016 we have seen financing implemented for natural infrastructure not only by the environmental sector, but also by the agriculture and sanitation sectors.[12] Their entry indicates an incipient trend to expand financing of natural infrastructure beyond providers of public goods (i.e., regional and national governments investing through the environment sector) and include downstream beneficiaries of the watershed services provided by nature.

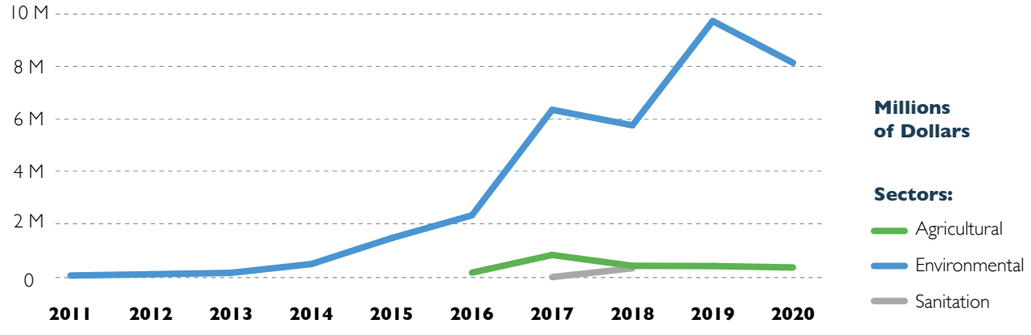


Figure 11. Financing (USD) in natural infrastructure for water security executed between 2011 and 2020, by public sector. Source: prepared by the authors.

[11] Coxon, C., Gammie, G., and Cassin, J. 2021. Mobilizing funding for nature-based solutions: Peru's drinking water tariff. Jan Cassin, John Matthews, Elena Gunn (Eds.). Nature-Based Solutions and Water Security: An Action Agenda for the 21st Century (pp. 241-262). Elsevier.

[12] In this case, sector (*Función* in Spanish) is an official public classification that refers to a category of public spending.

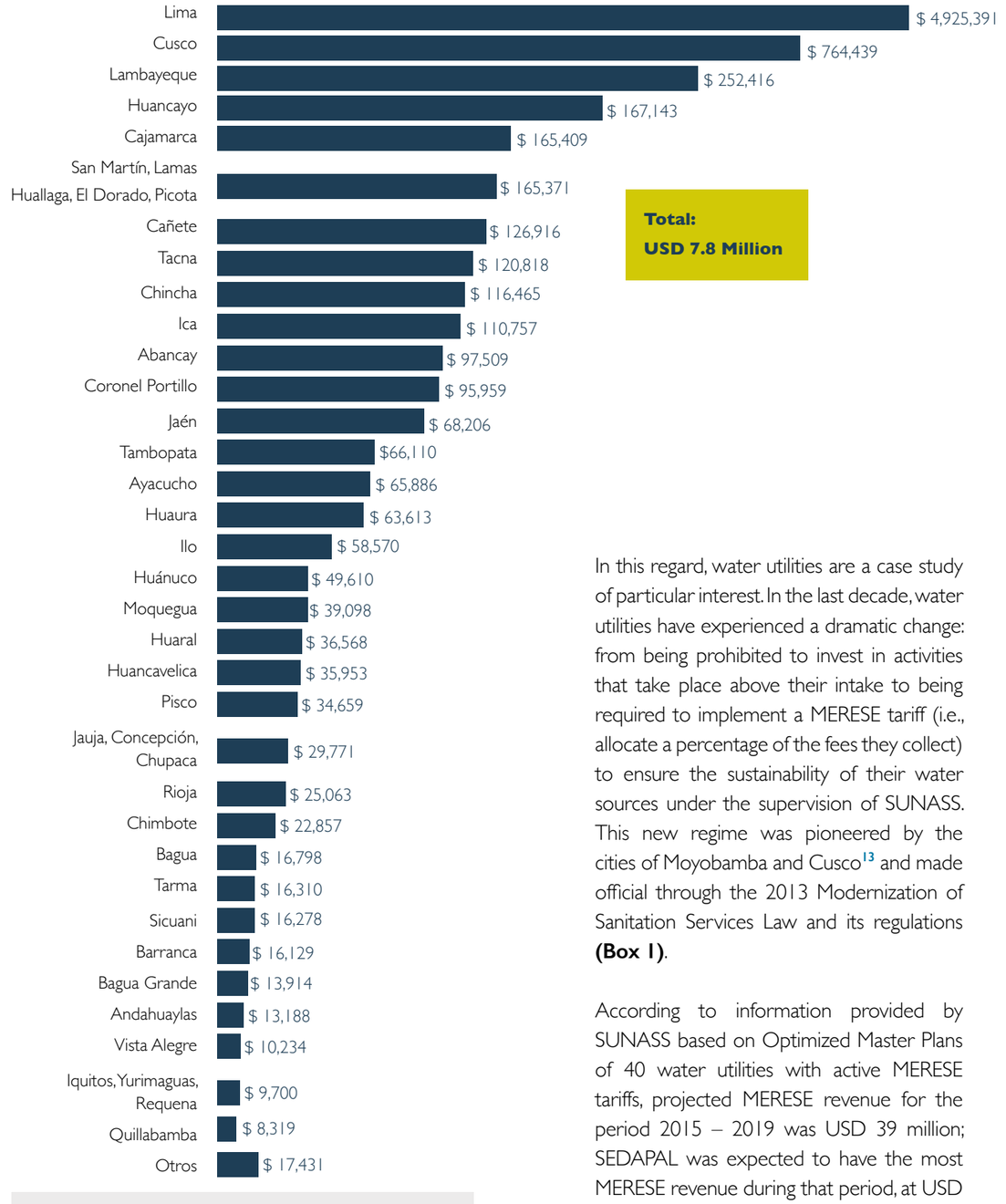


Figure 12. Estimated MERESE revenue (USD) of the 40 water utilities in 2019, by location. The annual revenue is based on rates established by the water utilities on a five-year basis. Source: prepared by the authors, based on information provided by SUNASS.

In this regard, water utilities are a case study of particular interest. In the last decade, water utilities have experienced a dramatic change: from being prohibited to invest in activities that take place above their intake to being required to implement a MERESE tariff (i.e., allocate a percentage of the fees they collect) to ensure the sustainability of their water sources under the supervision of SUNASS. This new regime was pioneered by the cities of Moyobamba and Cusco[13] and made official through the 2013 Modernization of Sanitation Services Law and its regulations **(Box 1)**.

According to information provided by SUNASS based on Optimized Master Plans of 40 water utilities with active MERESE tariffs, projected MERESE revenue for the period 2015 – 2019 was USD 39 million; SEDAPAL was expected to have the most MERESE revenue during that period, at USD 25 million.[14] Taking a yearly average, we estimate that the total MERESE revenue of the 40 water utilities together in 2019 was USD 8 million,[15] as shown in **Figure 12.**

[13] Coxon et al. (2021).

[14] This estimation is based on an *ex-ante* calculation of the water utilities' rates.

[15] The year 2019 is used because the collection of water fees –and therefore also MERESE tariffs—was disrupted in 2020 by the pandemic.

Despite this impressive ability to raise new funds for natural water infrastructure, so far the water utilities have executed less than 1% of the estimated MERESE revenue. This represents an important opportunity—if the water utilities had executed all the funds anticipated for 2019, it would have resulted in an increase of 77% of the public investment on natural infrastructure for that year **(Figure 13).**

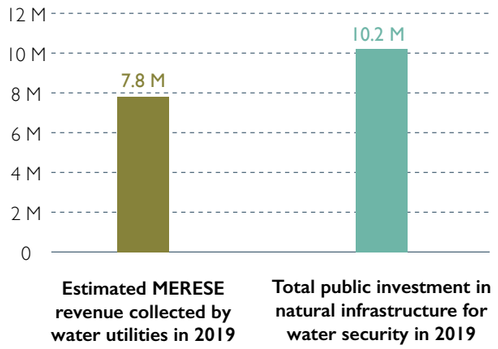


Figure 13. Estimated MERESE revenue (USD) collected by water utilities vs. the total public investment in natural infrastructure for water security in 2019. Source: prepared by the authors.

Although water utilities have been gradually improving their implementation processes, their budget planning still far exceeds execution capacity. For most water utilities, significant amounts of planned financing have yet to be executed; the most efficient among them has only achieved 70% execution **(Figure 14).**

A great opportunity that has presented itself in the last two years is the incorporation of natural infrastructure interventions in the field by the Authority for Reconstruction with Changes (ARCC). The ARCC has ten projects in advanced stages of development, representing more than USD 203 million, which are expected to be implemented in the coming years and increase total public financing for natural infrastructure by an order of magnitude.

The ongoing fine-tuning of the regulatory framework has created new implementation mechanisms that represent important opportunities to accelerate the process of formulating public financing. For example, in December 2019, the Ministry of the Environment approved guidelines for applying the Investments in Optimization, Marginal Expansion, Rehabilitation and Repositioning (IOARR) mechanism to natural

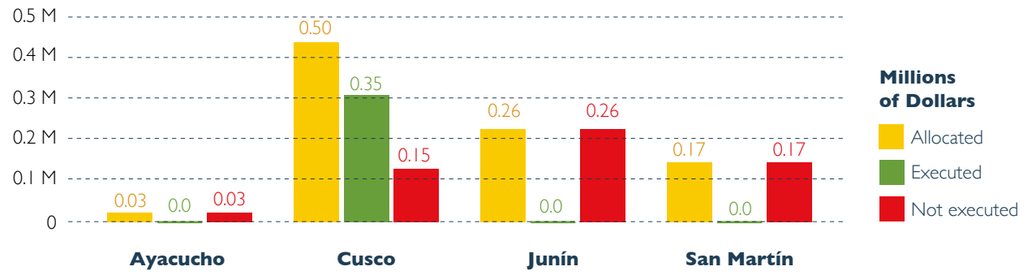


Figure 14. Total allocated vs. executed financing (USD) of natural infrastructure for water security by water utilities in 2018. Source: prepared by the authors.

infrastructure.[16] The guidelines define how IOARRs, which apply broadly to gray infrastructure, can also be used for natural infrastructure. The IOARR implementation mechanism has enormous potential to accelerate investment in specific natural assets by simplifying the design and justification required for a given intervention in natural infrastructure. For example, a regional government can use IOARR to quickly respond to wildfires and restore affected areas. The use of IOARR allow public institutions to avoid the extensive bureaucratic processes and approvals associated with public investment projects. IOARRs also enable public entities to quickly acquire or replace monitoring equipment for natural and ancestral infrastructure, including for hydrological monitoring.

On the other hand, direct contracts with local land users, as an alternative to financing through large public investment projects, represent an important opportunity to directly compensate land users, benefit local communities, and align their interests with effective natural infrastructure management practices. This contract mechanism is still being developed and will likely require additional changes to the regulatory framework to facilitate its implementation.

[16] R. M. No. 410-2019-MINAM. *El Peruano*. Lima, 31 December 2019.

Photo: Renny Daniel Díaz Aguilar

Annex 1

Scope, Method, and Definitions

Approach and objectives

The objective of this study is to characterize the financing of direct interventions in favor of natural infrastructure that intend to contribute to water security.

The study seeks to:

» Describe the current state and trends of financing for the recovery, protection, or sustainable use of natural infrastructure as a strategy to manage water risks, specifically:
  • who is funding the interventions,
  • how much is executed,
  • where the interventions take place, and
  • what specific measures are executed.

» Analyze the factors that contribute to the trends observed, and
» Identify opportunities and challenges for growth

The study does not intend to:

» Rate the quality of the design or execution of the interventions, or
» Evaluate the impacts of the interventions.

This study follows a similar methodology and format used in a series of international studies produced by Forest Trends that cover ecosystem services markets and investments, such as the State of Forest Carbon Finance, State of Watershed Investments, and State of Biodiversity Investments.

Definitions

Natural infrastructure is the network of spaces that preserve the values and functions of the ecosystems, and provide ecosystem services.

Direct interventions in favor of natural infrastructure include all physical actions performed to recover, maintain, or sustainably use natural infrastructure.

Water security is the ability to maintain acceptable levels of the following four water risks: scarcity (including droughts), excesses (including floods), low quality, and the deterioration of the resilience of freshwater systems. Water security takes into consideration all uses and users of water, as well as all activities and entities affected by water risks.

Scope

All financing projects and initiatives considered in this report must explicitly state the following selection criteria in their primary design documents:

1. Implementation of direct interventions in favor of natural infrastructure that
2. Seek to contribute to water security, whether in part or by its entire definition.

Practices for "sowing and harvesting water" are included in the scope of the study if their design explicitly includes biotic elements (i.e., vegetation). For example, the construction of a qocha for the capture, storage and infiltration of water would not be considered if it is not associated with other practices such as pasture management, replanting natural pastures, reforestation with native species, etc.

We consider it important to include these practices, given their historical use in Andean culture to manage natural spaces (using mixtures of abiotic and biotic actions) to ensure the provision of ecosystem services such as water regulation and erosion control.

For example, a financing initiative to secure water for a community that builds a qocha for storage, reforests the water catchment, and provides sedimentation control, would be included. Among others, the following factors do not impact the decision to include or exclude a given financing initiative:

» Sector (the project can be from any public level/ sector or private).
» Category, production unit, or any other technical criteria beyond the two criteria referenced above.
» Quality of design or execution. In other words, the study does not question whether the interventions will successfully generate the hydrological ecosystem services as designed.

Photo: Sharon Castellanos Tuesta

The main unit of analysis is the project but can vary due to the nature and objective of the financing.

For public investments:

» When the entire public investment project is about investing in 1) interventions in favor of natural infrastructure, 2) to provide water security, the entire public investment project is considered as the unit of analysis. This includes public investment projects implemented under MERESE, as well as other mechanisms.

For other public spending:

» Public spending, executed outside of public investment projects, may also be considered as long as they verifiably comply with the two primary selection criteria.

For financing by the private sector or international development agencies:

» All projects, programs, and initiatives that meet the selection criteria are analyzed according to their defined unit – in general, these are usually projects.

For all projects:

» When a project or program (public or private) is primarily about natural infrastructure for water security, intangible actions like capacity building (training, organization, management instruments, legal clearances, etc) will be considered if they complement physical actions.

Photo: Frank Egoavil Granados

Annex II

Database of Natural Infrastructure for Water Security Projects and Initiatives Included in the Study

Number	Project ID/APCI Code	Name	Entity	Category	Initial Date of Financial Execution	Region	Budget (USD)	Amount executed (USD)	Amount executed in 2020 (USD)
1	2398144	RECUPERACIÓN DEL SERVICIO ECOSISTÉMICO DE REGULACIÓN HÍDRICA EN LA MICROCUENCA JUNINGUILLO, DISTRITO DE MOYOBAMBA - PROVINCIA DE MOYOBAMBA - REGIÓN SAN MARTÍN	GOBIERNO REGIONAL DE SAN MARTÍN	ECOSISTEMAS	1/8/2019	SAN MARTÍN	1 595 603	464 397	255 238
2	2394643	RECUPERACIÓN DEL SERVICIO ECOSISTÉMICO DE REGULACIÓN HÍDRICA EN LA MICROCUENCA DE HUAYLLAHUAYCCO DE LA COMUNIDAD CAMPESINA DE PATACANCHA, PATACANCHA - DISTRITO DE HUANCARANI - PROVINCIA DE PAUCARTAMBO - DEPARTAMENTO DE CUSCO	GOBIERNO REGIONAL DE CUSCO	ECOSISTEMAS	1/7/2018	CUSCO	460 631	521 376	256 498
3	2399797	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICO PARA LA REGULACIÓN HÍDRICA EN EL SECTOR DE CAN CAN Y MONITOREO EN EL SECTOR MILLPU EN EL DISTRITO DE CHINCHERO - PROVINCIA DE URUBAMBA - REGIÓN CUSCO	MUNICIPALIDAD PROVINCIAL DEL CUSCO	SISTEMA DE SANEAMIENTO URBANO	1/12/2017	CUSCO	423 981	372 608	0
4	2334603	RECUPERACIÓN DEL SERVICIO DE REGULACIÓN HÍDRICA EN LA SUBCUENCA ALTA SAN PEDRO ARENALES DE LOS DISTRITOS DE FRIAS, SAPILLICA, LAGUNAS Y PACAIPAMPA, PROVINCIA DE AYABACA, DEPARTAMENTO PIURA	GOBIERNO REGIONAL DE PIURA	-	1/10/2018	PIURA	2 804 677	1 128 741	838 256
5	2191829	RECUPERACIÓN DEL SERVICIO AMBIENTAL DE PROVISIÓN HÍDRICA EN EL BOSQUE ANDINO EN LA CABECERA DE LA CUENCA DEL RÍO HUANCABAMBA, PROVINCIA DE HUANCABAMBA - PIURA	MUNICIPALIDAD PROVINCIAL DE HUANCABAMBA	-	1/6/2015	PIURA	1 329 053	18 085	0
6	2344101	RECUPERACIÓN DEL SERVICIO ECOSISTÉMICO DE REGULACIÓN HÍDRICA EN LAS MICROCUENCAS DE LAS COMUNIDADES CAMPESINAS DE LUCARQUI, JORAS, CUYAS, SOCCHABAMBA, ARAGOTO, CHOCAN, MOSTAZAS, SAMANGA, SANTA ROSA, SICCHEZ, MARMAS Y COOPERATIVA LA TINA DE LOS DISTRITOS DE AYABACA, SUYO, SICCHEZ Y JILILI, PROVINCIA DE AYABACA, DEPARTAMENTO PIURA	GOBIERNO REGIONAL DE PIURA	-	1/7/2017	PIURA	342 831	235 801	0
7	2378489	RECUPERACIÓN DEL SERVICIO DE REGULACIÓN HÍDRICA EN LA CUENCA DE PACHATUSAN, EN LAS LOCALIDADES DE PATABAMBA, CCAJYAPATA, KEHUAR Y PATACANCHA, DISTRITO DE OROPESA - QUISPICANCHI - CUSCO	MUNICIPALIDAD DISTRITAL DE OROPESA	-	1/4/2018	CUSCO	341 751	847 186	0
8	2306031	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICOS DE PROVISIÓN Y REGULACIÓN HÍDRICA EN LA MICROCUENCA DE POMACANCHI, DISTRITO DE POMACANCHI - ACOMAYO - CUSCO	MUNICIPALIDAD DISTRITAL DE POMACANCHI	-	1/12/2016	CUSCO	243 662	122 182	25 210
9	2223165	MEJORAMIENTO DE LOS SERVICIOS AMBIENTALES PARA LA CAPTACIÓN Y FILTRACIÓN DE AGUA EN EL ACUIFERO DE MISMINAY, EN EL SECTOR DE MISMINAY DE LA COMUNIDAD CAMPESINA DE MULLAKAS MISMINAY DEL DISTRITO DE MARAS, PROVINCIA DE URUBAMBA - CUSCO	MUNICIPALIDAD PROVINCIAL DE URUBAMBA	-	1/12/2014	CUSCO	140 261	113	0
10	2216437	RECUPERACIÓN DEL RECURSO HÍDRICO MEDIANTE REFORESTACIÓN EN PARTES ALTAS Y FRANJAS DE LAS QUEBRADAS ASANZA, LIMON, ATUNRARCA Y PALLCANA, DISTRITO DE ALONSO DE ALVARADO - LAMAS - SAN MARTÍN	MUNICIPALIDAD DISTRITAL DE SAN ROQUE DE CUMBAZA	INFRAESTRUCTURA DE RIEGO	1/5/2013	SAN MARTÍN	22 857	429	0
11	2430118	RECUPERACIÓN DE LOS SERVICIOS DE REGULACIÓN HÍDRICA EN LA CABECERA DE LA CUENCA DEL RÍO ICA, EN SEIS DISTRITOS DE LA PROVINCIA DE HUAYTARÁ - DEPARTAMENTO DE HUANCAVELICA	GOBIERNO REGIONAL DE HUANCAVELICA	-	1/11/2018	HUANCAVELICA	6 333 392	77 471	0

N/A = Not Available.

Number	Project ID/APCI Code	Name	Entity	Category	Initial Date of Financial Execution	Region	Budget (USD)	Amount executed (USD)	Amount executed in 2020 (USD)
12	2430120	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICOS DE REGULACIÓN HÍDRICA EN LA CABECERA DE LA CUENCA DEL RÍO GRANDE, EN SEIS DISTRITOS DE LA PROVINCIA DE HUAYTARÁ - DEPARTAMENTO DE HUANCAVELICA	GOBIERNO REGIONAL DE HUANCAVELICA	-	1/11/2018	HUANCAVELICA	5 602 814	81 653	0
13	2430119	RECUPERACIÓN DE LOS SERVICIOS DE REGULACIÓN HÍDRICA EN LA CABECERA DE LA CUENCA DEL RIO PISCO. EN CUATRO DISTRITOS DE LA PROVINCIA DE HUAYTARÁ - DEPARTAMENTO DE HUANCAVELICA	GOBIERNO REGIONAL DE HUANCAVELICA	-	1/11/2018	HUANCAVELICA	5 511 091	79 205	0
14	2421778	MEJORAMIENTO DE LOS SERVICIOS ECOSISTEMÁTICOS DE LA SIEMBRA Y COSECHA DE AGUA EN LA MICROCUENCA COLECTORA DE LA LAGUNA DE QUEROCOCHA, DISTRITO DE PAUCAS - PROVINCIA DE HUARI - DEPARTAMENTO DE ÁNCASH	MUNICIPALIDAD DISTRITAL DE PAUCAS	-	1/12/2018	ÁNCASH	1 347 328	465 619	0
15	2318699	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICOS DE REGULACIÓN HÍDRICA EN LAS MICROCUENCAS DE HUAC-HUAS, LLAUTA, LARAMATE, OCAÑA, SAN PEDRO DE PALCO, OTOCA, LEONCIO PRADO, SAISA, SANTA LUCÍA Y SAN CRISTÓBAL, AFLUENTES DEL RÍO GRANDE EN LUCANAS - AYACUCHO	MANCOMUNIDAD MUNICIPAL DE LAS CABEZAS DEL SUR DE LUCANAS AYACUCHO MANSURLA	-	1/3/2017	AYACUCHO	5 675 917	1 199 589	300 200
16	2307484	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICOS DE REGULACIÓN HÍDRICA EN LAS MICROCUENCAS DEL RÍO SAN JUAN, EN LOS DISTRITOS DE SAN JUAN DE YANAC, CHAVÍN, SAN PEDRO DE HUACARPANA Y HUANCANO, PROVINCIAS DE CHINCHA Y PISCO - REGIÓN ICA	GOBIERNO REGIONAL DE ICA	-	1/8/2018	ICA	5 458 831	2 944 245	1 512 836
17	2301073	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICOS DE REGULACIÓN HÍDRICA EN LAS MICROCUENCAS DE LOS RÍOS YAUCA, TINGUE Y SANTA CRUZ EN LOS DISTRITOS DE YAUCA DEL ROSARIO Y TIBILLO, PROVINCIAS DE ICA Y PALPA - REGIÓN ICA	GOBIERNO REGIONAL DE ICA	-	1/6/2016	ICA	4 965 625	5 463 915	418 473
18	2344683	MEJORAMIENTO DE LA SEGURIDAD HÍDRICA MEDIANTE LA SIEMBRA Y COSECHA DE AGUA CON FINES AGRARIOS EN LAS LOCALIDADES DE CHONGOS ALTO, LLAMAPSILLON, PALMAYOC Y PALACO, DISTRITO DE CHONGOS ALTO, HUANCAYO - JUNÍN	MUNICIPALIDAD DISTRITAL DE CHONGOS ALTO	-	1/6/2017	JUNÍN	4 128 980	6 000	0
19	2342329	RECUPERACIÓN DE LOS SERVICIOS AMBIENTALES DE ECOSISTEMAS HÍDRICOS, FORESTALES Y SUELOS PARA LA ADAPTACION AL CAMBIO CLIMÁTICO EN LA MICROCUENCA DE OPAMAYO DISTRITO DE LIRCAY, PROVINCIA DE ANGARAES - HUANCAVELICA	MUNICIPALIDAD PROVINCIAL DE ANGARAES - LIRCAY	-	1/6/2018	HUANCAVELICA	2 474 226	9 086	0
20	2250276	MEJORAMIENTO DEL SERVICIO AMBIENTAL DE REGULACIÓN HÍDRICA DE LAS PRADERAS NATURALES ALTOANDINOS EN LA UNIDAD HIDROGRÁFICA DEL RÍO ANTABAMBA - REGIÓN APURÍMAC	GOBIERNO REGIONAL APURÍMAC	-	1/9/2017	APURÍMAC	2 405 500	1 170 809	541 856
21	2192787	RECUPERACIÓN DE LOS SERVICIOS AMBIENTALES CON ENFOQUE EN EL RECURSO HÍDRICO, MEDIANTE LA REFORESTACIÓN EN LAS SUBCUENCAS DE LA PROVINCIA DE ABAGUA - REGIÓN AMAZONAS	MINISTERIO DE AGRICULTURA - MINAG	-	1/12/2016	AMAZONAS	2 404 905	2 285 278	446 412
22	2194260	RECUPERACIÓN DE SERVICIO ECOSISTÉMICO DE LA PROVISIÓN HIDROLÓGICA DEL ACR HUAYTAPALLANA - REGIÓN JUNÍN	GOBIERNO REGIONAL DE JUNÍN	-	1/12/2015	JUNÍN	2 023 703	1 836 488	91 6071
23	2251597	INSTALACIÓN Y RECUPERACIÓN DE LOS SERVICIOS AMBIENTALES DE PROTECCIÓN DE SUELO Y REGULACION DE AGUA EN LA SUBCUENCA DEL RÍO VILCA, DE LA PROVINCIA Y DEPARTAMENTO HUANCAVELICA	GOBIERNO REGIONAL DE HUANCAVELICA	-	1/3/2015	HUANCAVELICA	1 893 623	1 802 978	0
24	2250861	RECUPERACIÓN Y CONSERVACIÓN DE LOS RECURSOS HÍDRICOS PARA EL MEJORAMIENTO GANADERO EN CABECERA DE LA SUBCUENCA DEL RÍO ICHU DEL DEPARTAMENTO DE HUANCAVELICA	GOBIERNO REGIONAL DE HUANCAVELICA	-	1/9/2017	HUANCAVELICA	1 848 143	1 264 793	712 744
25	2234952	RECUPERACIÓN DEL SERVICIO ECOSISTÉMICO DE REGULACIÓN HÍDRICA EN LA CUENCA DEL RÍO CONTUMAZÁ Y EN LA CUENCA DEL RÍO HUERTAS, PROVINCIA DE CONTUMAZÁ, REGIÓN CAJAMARCA	GOBIERNO REGIONAL DE CAJAMARCA	-	1/3/2017	CAJAMARCA	1 040 076	34 514	0

Number	Project ID/APCI Code	Name	Entity	Category	Initial Date of Financial Execution	Region	Budget (USD)	Amount executed (USD)	Amount executed in 2020 (USD)
26	2190869	RECUPERACIÓN HIDROLÓGICA DE LA MICROCUENCA DEL RÍO HUACRACHUCO, MEDIANTE LA FORESTACIÓN Y REFORESTACIÓN CON ESPECIES NATIVAS EN EL DISTRITO DE HUACRACHUCO, PROVINCIA DE MARAÑON Y DEPARTAMENTO DE HUÁNUCO	GOBIERNO REGIONAL DE HUÁNUCO	-	1/10/2014	HUÁNUCO	888 658	1 125 022	213 033
27	2234430	RECUPERACIÓN DEL SERVICIO AMBIENTAL HIDRICO DEL ÁREA DE AMORTIGUAMIENTO DEL BOSQUE DE PROTECCION PAGAIBAMBA, DISTRITO DE QUEROCOTO, PROVINCIA DE CHOTA - REGIÓN DE CAJAMARCA	GOBIERNO REGIONAL DE CAJAMARCA	-	1/8/2014	CAJAMARCA	881 653	792 177	0
28	2378147	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICOS DE REGULACIÓN HÍDRICA EN LAS LAGUNAS COLORADA Y LIVICHACO DEL DISTRITO DE LAMPA, PROVINCIA DE LAMPA - REGIÓN PUNO	GOBIERNO REGIONAL DE PUNO	-	1/9/2017	PUNO	428 846	376 571	0
29	2330761	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICOS DE REGULACIÓN HÍDRICA, EN LA MICROCUENCA CHANCAMAYO DEL, DISTRITO DE HUEPETUHE - MANU - MADRE DE DIOS	MUNICIPALIDAD DISTRITAL DE HUEPETUHE	-	1/4/2017	MADRE DE DIOS	201 338	201 330	0
30	2294012	INSTALACIÓN DE SERVICIOS DE CONSERVACIÓN DE SUELOS PARA CONTROL DE LA EROSIÓN DE LAS MICROCUENCAS DEL RÍO MAGDALENA, CHETILLANO, CHACTARUME, SILIMAYO Y LA RETAMA, DISTRITO DE MAGDALENA, CAJAMARCA - CAJAMARCA	MUNICIPALIDAD DISTRITAL DE MAGDALENA - CAJAMARCA	-	1/3/2016	CAJAMARCA	85 586	55 397	0
31	2378608	RECUPERACIÓN Y CONSERVACIÓN DE SUELOS, AGUAS E INCREMENTO DE COBERTURA VEGETAL EN LAS PARTES ALTAS DE LA COMUNIDAD MORCCO, DISTRITO DE LOS MOROCHUCOS, CANGALLO - AYACUCHO	MUNICIPALIDAD DISTRITAL DE LOS MOROCHUCOS	-	1/12/2017	AYACUCHO	70 763	58 132	0
32	2326634	RECUPERACIÓN DE ACUÍFEROS EN LAS COMUNIDADES DE CCOLLPA, ANTILLA, CCOCHA Y OCCORURO, DISTRITO DE CURAHUASI, ABANCAY - APURÍMAC	MUNICIPALIDAD DISTRITAL DE CURAHUASI	-	1/10/2016	APURÍMAC	35 263	38 047	0
33	2403963	MEJORAMIENTO DEL SISTEMA DE SIEMBRA Y COSECHA DE AGUA PARA RIEGO EN LAS MICROCUENCAS DEL RÍO AMPU Y PEKÍN EN EL CENTRO POBLADO DE MAYA - DISTRITO DE CARHUAZ - PROVINCIA DE CARHUAZ - REGIÓN ÁNCASH	MUNICIPALIDAD PROVINCIAL DE CARHUAZ	-	1/7/2018	ÁNCASH	2 549 194	9 143	0
34	2325319	CREACIÓN DE QOCHAS DE SIEMBRA Y COSECHA DE AGUA PARA RECARGA HÍDRICA CON FINES AGRARIOS EN LOS DISTRITOS DE ANGARAES, PROVINCIA DE ANGARAES - HUANCAVELICA	MUNICIPALIDAD PROVINCIAL DE ANGARAES - LIRCAY	-	1/10/2016	HUANCAVELICA	1 365 555	1 550 515	340 897
35	2313549	RECUPERACIÓN DE HUMEDAD DE SUELOS E INSTALACIÓN DE RESERVORIOS CON FINES DE COSECHA DE AGUA EN LA PARTE ALTA Y PARTE MEDIA DE LA, PROVINCIA DE SANTIAGO DE CHUCO - LA LIBERTAD	MUNICIPALIDAD PROVINCIAL DE SANTIAGO DE CHUCO	-	1/6/2016	LA LIBERTAD	2 052 239	598 716	0
36	2134116	ADECUAMIENTO AL CAMBIO CLIMÁTICO: COSECHA DE AGUA EN MICROCUENCAS LACUSTRES DE PHAUSIHUAYCCO, HUILLCAMAYO, KENQONAY, QUEHUAYLLO, HUANCALLO Y RAJACHAC EN LA CUENCA MEDIA DEL RÍO APURÍMAC	GOBIERNO REGIONAL DE CUSCO	-	1/8/2011	CUSCO	1 705 258	2 172 004	923 153
37	2146309	ADECUAMIENTO AL CAMBIO CLIMÁTICO: COSECHA DE AGUA EN MICROCUENCAS LACUSTRES DE PUMACHAPI, QUILLAYOC, SOCLLA, SORACCOTA, QEUÑAYOC, CANTA CANTA, CASUIRA, LARANMAYU DE LA CUENCA ALTA DEL VILCANOTA	GOBIERNO REGIONAL DE CUSCO	ECOSISTEMAS	1/12/2011	CUSCO	1 702 199	4 661 908	727820
38	2150277	ADAPTACIÓN AL CAMBIO CLIMÁTICO: COSECHA DE AGUA EN MICROCUENCAS LACUSTRES DE JACHOJO, QUISHUARANI, SAUSO Y PARHUAYSO EN LAS CUENCAS DEL ALTO VILCANOTA Y MEDIA DEL RÍO APURÍMAC	GOBIERNO REGIONAL CUSCO	FORESTACIÓN Y REFORESTACIÓN EN ECOSISTEMAS FORESTALES Y OTROS ECOSISTEMAS DE VEGETACIÓN SILVESTRE	1/7/2012	CUSCO	1 539 691	2 968 890	15 667
39	2337804	CREACION COSECHA DE AGUA EN LA MICROCUENCA DE YANAMA, DISTRITO DE YAULI - YAULI - JUNÍN	MUNICIPALIDAD DISTRITAL DE YAULI - JUNÍN	-	1/11/2018	JUNÍN	116 019	114 215	0
40	2441434	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICOS DE CONSERVACIÓN DE SUELO, AGUA E INCREMENTO DE COBERTURA VEGETAL EN LA LOCALIDAD DE SAN JUAN DE CORRAL PAMPA DEL DISTRITO DE PARAS, PROVINCIA DE CANGALLO - DEPARTAMENTO DE AYACUCHO	MUNICIPALIDAD DISTRITAL DE PARAS	-	12/8/2019	AYACUCHO	126 616	104 638	1 714

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41	2441449	RECUPERACIÓN DE LOS SERVICIOS ECOSISTÉMICOS DE CONSERVACIÓN DE SUELO, AGUA E INCREMENTO DE COBERTURA VEGETAL EN LA LOCALIDAD DE SANTA FE DEL DISTRITO DE PARAS, PROVINCIA DE CANGALLO - DEPARTAMENTO DE AYACUCHO	MUNICIPALIDAD DISTRITAL DE PARAS	-	14/8/2019	HUÁNUCO	N/A	139 932	0
42	12621 / 17113	CONSERVACIÓN DE LA ZONA DE AMORTIGUAMIENTO Y DE RESERVA HÍDRICA EN LA CUENCA DEL ALTO IMAZA, CON FORESTALES Y FRUTAS NATIVAS-AMAZONAS	CENTRO DE ESTUDIOS SOCIALES SOLIDARIDAD	FORESTACIÓN Y REFORESTACIÓN EN ECOSISTEMAS FORESTALES Y OTROS ECOSISTEMAS DE VEGETACIÓN SILVESTRE	10/3/2011	CUSCO	N/A	96 216	0
43	31714	CONSERVACIÓN DE LOS RECURSOS HÍDRICOS EN LA COMUNIDAD DE QUEROSH CON UN MECANISMO DE RETRIBUCION POR EL SERVICIO ECOSISTÉMICO DISTRITO DE SAN PEDRO DE CHAULÁN HUÁNUCO	ORGANISMO NO GUBERNAMENTAL DE DESARROLLO ISLAS DE PAZ PERU	SIEMBRA Y COSECHA DE AGUA	2/11/2017	HUÁNUCO	N/A	25 739	0
44	6134	GESTIÓN INTEGRADA DE LOS RECURSOS HÍDRICOS EN LA SUBCUENCA DE HUATANAY - CUSCO, PERÚ	CENTRO DE EDUCACIÓN Y COMUNICACIÓN GUAMÁN POMA DE AYALA	-	1/8/2008	ICA-HUANCAVELICA	N/A	2 682 745	0
45	31866	GESTIÓN SOSTENIBLE DEL RECURSO HÍDRICO EN LAS MICROCUENCAS DE YACUS Y YARUMAYO, PROVINCIA DE HUÁNUCO	DIACONIA, ASOCIACIÓN EVANGELICA LUTERANA DE AYUDA PARA EL DESARROLLO COMUNAL	-	12/5/2017	LIMA	N/A	25 215	0
46	4132	PROTECCIÓN EN GESTION SOSTENIBLE DEL RECURSO HÍDRICO Y DE LOS SUELOS DE LAS CUENCAS DE LOS RÍOS ICHU Y PISCO-PROGREHSU	CENTRO DE DESARROLLO INTEGRAL DE COMUNIDADES	-	1/6/2008	CAJAMARCA	N/A	481 108	0
47	17149	RECUPERANDO ACEQUIA DE INFILTRACIÓN HÍDRICA PARA LA SIEMBRA DE AGUA EN LA MICROCUENCA UCANAN DE HUAMANTANGA, PARA MEJORAR RENDIMIENTO DEL SISTEMA DE AMAMANTAMIENTO DE HUAMANTANGA, CANTA	ALTERNATIVA CENTRO DE INVESTIGACIÓN SOCIAL Y EDUCACIÓN POPULAR	-	1/2/2012	APURÍMAC	N/A	17 500	0
48	10152	RESTAURACIÓN DE LA ESPONJA HÍDRICA DE LA CABECERA DE LA MICROCUENCA DE DOÑA AÑA	INSTITUTO DE INVESTIGACIÓN, CAPACITACIÓN Y PROMOCIÓN (IINCAP) JORGE BASADRE	-	20/7/2010	CUSCO	N/A	89 483	0
49	27302	RESTAURACIÓN Y GESTIÓN SOSTENIBLE DE HUMEDALES DE ALTA MONTAÑA EN LAS CABECERAS DE LAS CUENCAS CACHI MARIÑO Y PAMPAS PARA MEJORAR LA DISPONIBILIDAD HÍDRICA PARA USO POBLACIONAL Y AGROPECUARIO	CENTRO DE ESTUDIOS Y DESARROLLO SOCIAL APURÍMAC	-	11/1/2015	LIMA	N/A	119 544	0
50	6752	REVALORACIÓN DE LA TECNOLOGÍA ANDINA EN EL MANEJO DEL RECURSO HÍDRICO EN LA CUENCA DEL RÍO PITUMARCA	INSTITUTO DE MEDIO AMBIENTE Y GÉNERO PARA EL DESARROLLO	-	1/9/2009	LIMA	N/A	19 522	0
51	-	CLIMATE ADAPTATION & ECOSYSTEMS IN LIMA WATERSHED	The Nature Conservancy		1/5/2015	LIMA-JUNÍN	N/A	1 000 000	0
52	-	DISEÑO E IMPLEMENTACIÓN DE MICRORESERVORIO EN LA COMUNIDAD CAMPESINA DE SAN MATEO DE HUANCHOR, DISTRITO DE SAN MATEO DE HUANCHOR, PROVINCIA DE HUAROCHIRÍ, REGIÓN LIMA	AQUAFONDO	- -	1/1/2016	ÁNCASH	N/A	165 000	0
53	-	AFIANZAMIENTO HÍDRICO DE LA CUENCA HÚMEDA DE LA RPNYC	Patronato RPNYC		1/5/2015	PIURA	N/A	990 000	0
54	4897	MÁS AGUA Y MEJOR SALUD, SIEMBRA Y COSECHA DE AGUA EN LOS ANDES Y MEJORA DE LA SALUD EN DIEZ DISTRITOS DE CUATRO PROVINCIAS DE ÁNCASH	CENTRO DE ESTUDIOS PARA EL DESARROLLO Y LA PARTICIPACIÓN	- -	20/2/2020	PASCO	N/A	92 872	92 872
55	4094 / 1909	SIEMBRA Y COSECHA DE AGUA CANON DE SERVICIOS HÍDRICOS Y RECONOCIMIENTO DE PAGO DE SERVICIOS AMBIENTALES EN EL MARCO DE LA COOPERACIÓN SUR SUR	AIDER	-	15/2/2019		N/A	755 442	426 147
56	1425	CONSERVACIÓN Y GESTIÓN SOCIAL DE LA CUENCA ANDINO AMAZÓNICA DEL RÍO PACHITEA - PRO PACHITEA	INSTITUTO DEL BIEN COMÚN	-	1/1/2020		N/A	142 486	142 486

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57	5438	AMUNA RESTORATION NEAR LIMA PERÚ	THE NATURE CONSERVANCY	-	6/1/2020	LIMA	N/A	50 796	50 796
58	4014 / 283	CONSERVACIÓN Y USO SOSTENIBLE DE ECOSISTEMAS ALTOANDINOS DEL PERÚ A TRAVÉS DEL PAGO POR SERVICIOS AMBIENTALES PARA EL ALIVIO DE LA POBREZA RURAL Y LA INCLUSIÓN SOCIAL	MINAM	-	30/7/2016	CAJAMARCA-LIMA	N/A	5 378 262	578 099
59	2480770	MEJORAMIENTO Y AMPLIACIÓN DE LOS RECURSOS HÍDRICOS DE LA COMUNIDAD CAMPESINA DE VILLA LA LIBERTAD (MATASENCCA) DEL DISTRITO DE ACRAQUIA, PROVINCIA DE TAYACAJA - DEPARTAMENTO DE HUANCAVELICA	MUNICIPALIDAD DISTRITAL DE ACRAQUIA	-	16/9/2020	HUANCAVELICA	N/A	37 105	37 105
60	2480771	MEJORAMIENTO Y AMPLIACIÓN DE LOS RECURSOS HÍDRICOS DEL CENTRO POBLADO CENTRO UNIÓN DEL DISTRITO DE ACRAQUIA, PROVINCIA DE TAYACAJA - DEPARTAMENTO DE HUANCAVELICA	MUNICIPALIDAD DISTRITAL DE ACRAQUIA	-	1/8/2020	HUANCAVELICA	55 142	3 143	3143
61	2480772	MEJORAMIENTO Y AMPLIACIÓN DE LOS RECURSOS HÍDRICOS DE LA COMUNIDAD CAMPESINA UNIÓN PROGRESO (PUSQUI) DEL DISTRITO DE ACRAQUIA, PROVINCIA DE TAYACAJA - DEPARTAMENTO DE HUANCAVELICA	MUNICIPALIDAD DISTRITAL DE ACRAQUIA	-	1/9/2020	HUANCAVELICA	51 912	3 143	3143
62	2488255	MEJORAMIENTO DE LOS SERVICIOS ECOSISTÉMICOS DE REGULACIÓN HÍDRICA Y CONTROL DE EROSIÓN DE SUELOS MEDIANTE FORESTACIÓN Y REFORESTACIÓN EN LAS COMUNIDADES DEL DISTRITO DE LAMAY, PROVINCIA DE CALCA - DEPARTAMENTO DE CUSCO	MUNICIPALIDAD DISTRITAL DE LAMAY	-	1/10/2020	CUSCO	330 688	42 892	42 892
63	2502150	MEJORAMIENTO Y AMPLIACIÓN DE LOS RECURSOS HÍDRICOS DE LA LAGUNA CALLHUARCCOCHA, DISTRITO DE CHURCAMPA, PROVINCIA DE CHURCAMPA - DEPARTAMENTO DE HUANCAVELICA	MUNICIPALIDAD DISTRITAL DE CHURCAMPA	-	1/12/2020	HUANCAVELICA	53 486	5 658	5 658
64	70 / 3426 / 551 / 3	ADAPTACIÓN DE LA GESTIÓN DE RECURSOS HÍDRICOS AL CAMBIO CLIMÁTICO: DESARROLLO DE HERRAMIENTAS DE GESTIÓN Y MECANISMOS DE FINANCIACIÓN SOSTENIBLES EN TRES ECOREGIONES REPRESENTATIVAS DEL PERÚ.	CENTRO DE ESTUDIOS REGIONALES ANDINOS BARTOLOMÉ DE LAS CASAS, THE NATURE CONSERVANCY, ASOCIACION PARA LA INVESTIGACIÓN Y DESARROLLO INTEGRAL, FONDO DE AGUA PARA LIMA Y CALLAO - AQUAFONDO	-	1/4/2017	CUSCO, LIMA. PIURA	N/A	1 525 690	390 481
65	690	ESCALANDO LA ADAPTACIÓN BASADA EN ECOSISTEMAS DE MONTAÑA: CONSTRUYENDO EVIDENCIA, REPLICANDO EL ÉXITO E INFORMANDO POLÍTICAS	THE MOUNTAIN INSTITUTE, INC	-	1/7/2017	LIMA	N/A	492 321	0
66	1426	SIEMBRA Y COSECHA DE AGUA EN LAS CABECERAS DE CUENCA DE LAS COMUNIDADES DEL DISTRITO DE OROPESA, CUSCO, PERU	CENTRO DE EDUCACIÓN Y COMUNICACIÓN GUAMÁN POMA DE AYALA	-	1/1/2019	CUSCO	N/A	21 623	0
67	200 / 4151	PROMOVIENDO LA SEGURIDAD DEL AGUA Y LA SOSTENIBILIDAD ECONÓMICA EN EL PERÚ	THE NATURE CONSERVANCY	-	1/10/2018		N/A	24 886	2 680
68	2688 / 7556	MEJORA DE GESTIÓN DE LA MICROCUENCA DE CHALLHUAYOC CON PARTICIPACIÓN ACTIVA DE MUJERES Y VARONES	CARITAS ABANCAY	-	1/9/2019	APURÍMAC	N/A	13 106	10 938

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The Natural Infrastructure for Water Security (NIWS) project promotes the conservation, restoration and recovery of ecosystems across Peru, forming alliances with public and private organizations to reduce water risks such as droughts, floods and water pollution.

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