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The World Bank

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Report No: PAD2411

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$70 MILLION

TO THE

REPUBLIC OF PERU

FOR A

MODERNIZATION OF WATER SUPPLY AND SANITATION SERVICES PROJECT

July 05, 2018

Water Global Practice
Latin America and the Caribbean Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 31, 2018)

Currency Unit =	Peruvian Soles Nuevos (PEN)
PEN 3.27 =	US$1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ANA	National Water Authority (*Autoridad Nacional de Agua*)
ARAP	Abbreviated Resettlement Action Plan
CAF	Development Bank of Latin America (*Corporación Andina de Fomento*)
CU	Coordinating Unit
DA	Designated Account
DFIL	Disbursement and Financial Information Letter
EBITDA	Earnings before Interest, Taxes, Depreciation, and Amortization
EMAPA Huacho	Municipal Water and Sanitation Services Company of Huacho (*Empresa Municipal Prestadora de Servicios de Agua Potable y Saneamiento de Huacho now known as Aguas de Lima Norte)*
EMAPA Huaral	Municipal Water and Sanitation Services Company of Huaral *Empresa Municipal Prestadora de Servicios de Agua Potable y Saneamiento de Huaral*
EMAPACOP	Municipal Water and Sewerage Company of Coronel Portillo (*Empresa Municipal de Agua Potable y Alcantarillado Coronel Portillo)*
EPS	Public Utility (*Empresa Prestadora de Servicios de Saneamiento)*
ESMF	Environmental and Social Management Framework
FIAS	Safe Water Investment Fund (*Fondo de Inversión Agua Segura*)
FM	Financial Management
FU	Functional Unit
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoP	Government of Peru
IDB	Inter-American Development Bank
IPPF	Indigenous People's Planning Framework
ISC	Implementation Support Consultant
JASS	[Water Supply and] Sanitation Community Boards (*Juntas Administradoras de Servicios de Saneamiento*)
JICA	Japan International Cooperation Agency
M&E	Monitoring and Evaluation
MEF	Ministry of Economy and Finance
MIS	Management Information System

MVCS	Ministry of Housing, Construction, and Sanitation (*Ministerio de Vivienda, Construcción y Saneamiento*)
NLTA	Non-Lending Technical Assistance
NRW	Nonrevenue Water
NWSP	National Water and Sanitation Plan
O&M	Operation and Maintenance
OTASS	Technical Organization for the Administration of [Water and] Sanitation Services (*Organismo Técnico de la Administración de los Servicios de Saneamiento*)
OTASS-PIU 2	OTASS Project Executing Unit No 2
PCC	Project Coordinating Committee
PDO	Project Development Objective
PIU	Project Implementation Unit
PMO	Optimized Master Plan (*Plan Maestro Optimizado*)
PNSU	National Program for Urban [Water and] Sanitation (*Programa Nacional de Saneamiento Urbano)*
POM	Project Operational Manual
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy for Development
RAP	Resettlement Action Plan
RAT	Temporary Intervention Regime (*Régimen de Apoyo Transitorio*)
RPF	Resettlement Policy Framework
SDG	Sustainable Development Goal
SECO	Swiss State Secretariat for Economic Affairs
SEDACUSCO	Potable Water and Sanitation Services [Company] of Cusco *(Servicio de Agua Potable y Saneamiento del Cusco*
SEDAPAL	Potable Water and Sewerage Services [Company] of Lima (*Servicio de Agua Potable y Alcantarillado de Lima)*
SEDAPAR	Potable Water and Sanitation Services [Company] of Arequipa (*Servicio de Agua Potable y Saneamiento de Arequipa)*
SEMAPA Barranca	Municipal Potable Water and Sewerage Service Provider of Barranca (*Servicio Municipal de Agua Potable y Alcantarillado de Barranca)*
SIAF	Integrated Financial Administration System (*Sistema Integrado de Administración Financiera)*
SNIP	Peruvian National Investment System
SUNASS	National Superintendence of [Water and] Sanitation Services (*Superintendencia Nacional de Servicios de Saneamiento*)
TA	Technical Assistance
VMCS	Vice Minister of Construction and Sanitation
WRM	Water Resources Management
WSS	Water Supply and Sanitation
WWT	Wastewater Treatment

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BASIC INFORMATION

Country(ies)	Project Name	
Peru	Modernization of Water Supply and Sanitation Services	
Project ID	Financing Instrument	Environmental Assessment Category
P157043	Investment Project Financing	B - Partial Assessment

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Disbursement-linked Indicators (DLIs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	

Expected Approval Date	Expected Closing Date
26-Jul-2018	31-Dec-2023

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The proposed Development Objectives are to increase access to, and quality of, water and sanitation services in selected areas, and develop the Borrower's sectoral institutions and participating service providers' management capacity to provide efficient water and sanitation services.

Components

Component Name	Cost (US$, millions)
Improving Governance of Water Supply and Sanitation Service Providers	38.73

Improving and Expanding Water Supply and Sanitation Services in the participating EPS	151.52
General Project Administration	9.75

Organizations

Borrower:	Republic of Peru
Implementing Agency:	The Technical Organization for the Administration of WSS services (OTASS)

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	200.00
Total Financing	200.00
of which IBRD/IDA	70.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	70.00

Non-World Bank Group Financing

Counterpart Funding	130.00
Borrower	130.00

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2018	2019	2020	2021	2022	2023
Annual	0.00	3.50	14.00	28.00	14.00	10.50
Cumulative	0.00	3.50	17.50	45.50	59.50	70.00

INSTITUTIONAL DATA

Practice Area (Lead)

Water

Contributing Practice Areas

Environment & Natural Resources, Governance, Social, Urban, Rural and Resilience Global Practice

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?	
a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	Moderate
2. Macroeconomic	Low
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	High
6. Fiduciary	Substantial
7. Environment and Social	Moderate
8. Stakeholders	High
9. Other	
10. Overall	Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[✓] Yes [ ] No

Have these been approved by Bank management?

[✓] Yes [ ] No

Is approval for any policy waiver sought from the Board?

[ ] Yes [✓] No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36	✓	
Pest Management OP 4.09		✓
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10	✓	
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50	✓	
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

Schedule 2, Section I.A.2. (a, b, c and d). Institutional Arrangements.

The Borrower shall:

(a) cause OTASS to operate and maintain, throughout Project implementation, a unit ("OTASS PIU 2") within OTASS, with structure, functions and responsibilities acceptable to the Bank, as set forth in the Operational Manual, including *inter alia*, the responsibility to implement Part 1 and 3 of the Project and monitor and supervise the carrying out of all activities under the Project (including its financial,

procurement and safeguard aspects);

(b) not later than ninety (90) days after the Effective Date, cause OTASS to hire the following key staff in OTASS PIU 2: a coordinator, a financial management specialist and a procurement specialist, all with functions, experience, responsibilities and qualifications acceptable to the Bank, as described in the Operational Manual;

(c) operate and maintain, throughout Project implementation, a unit ("PNSU FU") within PNSU, with functions and responsibilities acceptable to the Bank, as set forth in the Operational Manual, including *inter alia*, the responsibility to implement, monitor and supervise the carrying out of Part 2 of the Project (including its financial, procurement and safeguard aspects); and

(d) not later than ninety (90) days after the Effective Date, through the PNSU, hire the following PNSU FU staff: a coordinator, a financial management specialist and a procurement specialist, all with functions, experience, responsibilities and qualifications acceptable to the Bank, as described in the Operational Manual.

Sections and Description

Schedule 2, Section I.A.3. Institutional Arrangements.

Not later than sixty (60) days after the Effective Date, the Borrower shall create and thereafter maintain until completion of the Project, a committee (the Project Coordinating Committee) to oversee the implementation of the Project. Said committee shall have membership and functions acceptable to the Bank, including representatives from MEF, MVCS, PNSU, OTASS and SUNASS, as further defined in the Operational Manual.

Sections and Description

Schedule 2, Section 1.B – Implementation Agreements

Section I.B.1: To facilitate the implementation of the Project, the Borrower, through PNSU, shall enter into an agreement with OTASS (the Cooperation Agreement) which shall establish the responsibilities of OTASS and PNSU in the carrying out of their respective Parts of the Project and the obligation of OTASS to carry out Parts 1 and 3 of the Project in accordance with the provisions of this Agreement.

Section I.B.2(a): Prior to the carry out of any Infrastructure Subproject under Part 2 of the Project, the Borrower, through PNSU shall, and shall cause OTASS to, enter into an agreement with each Participating EPS (the Participation Agreement), under terms and conditions acceptable to the Bank.

Section I.B.3: The Borrower shall cause OTASS to ensure compliance with the targets for the performance indicators at the participating EPS level, as outlined in Schedule 4 of the Legal Agreement.

Section I.B.4(a): To facilitate the carrying out of Part 1.1. of the Project, the Borrower shall cause OTASS to enter into an agreement with SUNASS (the SUNASS Cooperation Agreement) under terms and conditions acceptable to the Bank

Sections and Description
Schedule 2, Section I.D. Safeguards.

Section 1.D.1.: The Borrower, through PNSU, shall, and shall cause OTASS to: (a) implement the Project in accordance with the ESMF, and, if applicable, the EIAs; (b) comply with the procedures detailed in said ESMF for environmental screening, evaluation, implementation and monitoring of Infrastructure Subprojects, including the procedures for the preparation of environmental and/or social management plans, if applicable; and (c) if applicable, implement and/or cause to be implemented, the pertinent environmental and social management plan, in accordance with its terms and in a manner acceptable to the Bank.

Section 1.D.2: The Borrower, through PNSU, shall, and shall cause OTASS to: (a) implement the Project in accordance with the IPPF; (b) adopt the procedures detailed in said IPPF for screening, evaluation, implementation and monitoring of Subproject, including the procedures for the preparation of indigenous peoples development plans, if applicable; and (c) if applicable, implement and/or cause to be implemented, the pertinent indigenous peoples development plan in accordance with its terms and in a manner acceptable to the Bank.

Section 1.D.3: The Borrower, through PNSU, shall, and shall cause OTASS to: (a) implement the Project in accordance with the RPF and the ARAP; (b) adopt the procedures detailed in said RPF for screening, evaluation, implementation and monitoring of Infrastructure Subproject, including the procedures for the preparation of resettlement action plans, if applicable; (c) implement the ARAP; and (d) if applicable, implement and/or cause to be implemented, the pertinent resettlement action plan in accordance with its terms and in a manner acceptable to the Bank.

Section 1.D.4: The Borrower, through PNSU shall, and shall cause OTASS to, ensure that the terms of reference for any consultancies related to the technical assistance provided under the Project, shall be acceptable to the Bank and, to that end, such terms of reference shall require that the advice conveyed through such technical assistance be consistent with the requirements of the Bank's Safeguard Policies.

Section 1.D.5: The Borrower through PNSU shall, and shall cause OTASS to, ensure that OTASS and PNSU shall ensure that all bidding documents and contracts for civil works under the Project include the obligation of the relevant contractors and subcontractors to: (i) comply with the obligations under the relevant Safeguard Documents; (ii) adopt and implement measures to assess and manage the risks and impacts of labor influx and workers' camps; and (iii) adopt and enforce code of conducts that shall be provided to and signed by all workers; all in a manner satisfactory to the Bank and as applicable to such civil works commissioned or carried out pursuant to said contracts.

Section 1.D.6: The Borrower through PNSU shall, and shall cause OTASS to, maintain, throughout Project implementation, and publicize the availability of a grievance redress mechanism, in form and substance satisfactory to the Bank, to hear and determine fairly and in good faith all complaints raised in relation to the Project, and take all measures necessary to implement the determinations made by such mechanism in a manner satisfactory to the Bank.

Conditions

Type	Description
Effectiveness	the Cooperation Agreement has been executed by the relevant parties thereto, in form and substance satisfactory to the Bank

Type Effectiveness	Description the OTASS PIU 2 has been created in form and substance satisfactory to the Bank
Type Effectiveness	Description the Operational Manual has been adopted in a form and substance satisfactory to the Bank

PERU
MODERNIZATION OF WATER SUPPLY AND SANITATION SERVICES

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I. STRATEGIC CONTEXT

A. Country Context

1. **Peru has a population of over 31 million people, of whom 79 percent live in urban areas and 21 percent in rural areas.** The population is expected to reach 39 million by 2040. Despite recent slowdowns in the global economy, it remains one of the strongest economies in Latin America. Peru posted a gross national income per capita of US$5,950 in 2016 and an annual gross domestic product (GDP) growth rate of 4.2 percent (2017).[1] The country's steady economic growth is predominantly due to the abundance of natural resources, high commodity prices for mining products in the global market, prudent macroeconomic policies, and strong investments.

2. **The effects of this strong growth on employment and incomes have helped over nine million Peruvians escape poverty between 2004 and 2015.** The poverty incidence rate fell from 58 percent to 22 percent, and extreme poverty dropped from 16 percent to 4 percent during this period, but rose again to 5 percent in 2016.[2] The country's Gini index has also seen a steady decline from 0.49 to 0.44 during the same period. However, rapid urbanization poses a challenge as the poor who migrate to cities generally settle in marginal peri-urban areas lacking access to basic social services, including water and sanitation. Access rates for the 21 percent of the population that make up the urban poor are lower than the national average by nearly 20 percent for water and 42 for sewerage.[3]

3. **On the external front, the main challenges that could affect economic growth include a potential decline in commodity prices and a possible period of financial volatility associated with anticipated higher interest rates in the United States.** Domestically, GDP estimates are vulnerable to the impact of the *El Niño* phenomenon on the real economy. The scope of public transfers is limited to buffering a slowdown or volatility in the economy, which implies that nearly a third of the population remains vulnerable to shocks and could fall back into poverty due to impacts on their labor incomes. In 2017, severe flooding and landslides due to the *El Niño* phenomenon devastated the Peruvian piedmont and resulted in the death of nearly 200 people, the displacement of an estimated 700,000 others, and roughly US$3.12 billion in damages to critical infrastructure, equivalent to 1.6 percent of GDP.[4] The Government of Peru (GoP) has established a dedicated agency under the Presidency of the Council of Ministers to focus reconstruction financing and efforts on rebuilding more resilient infrastructure including water supply and sanitation (WSS) systems that have been affected.

4. **Water plays a critical role in the growth of the Peruvian economy.** In addition to supporting human development through providing access to basic services as an essential contribution to increasing health and eradicating poverty, the performance of WSS services has been found to be closely correlated to stimulating business competitiveness and thus economic growth. Moreover, continuity and quality of

[1] World Bank data: http://data.worldbank.org/country/peru. However, GDP growth slowed down in 2014 due to adverse external conditions, a decline in domestic confidence, and reduced investments, although its growth rate remained above the regional average (2.4 percent versus 0.8 percent, respectively).
[2] World Bank. 2017. *Peru - Systematic Country Diagnostic*. Washington, DC: World Bank Group. Report No. 112694. https://hubs.worldbank.org/docs/ImageBank/Pages/DocProfile.aspx?nodeid=27287614.
[3] INEI (*Instituto Nacional de Estadistica e Informática*). 2014. *Perfil de la Pobreza*. INEI, Peru. *https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1306/cap06.pdf*.
[4] *Agencia de Reconstrucción con Cambio.* 2017. *"Reconstrucción con Cambios - Respuesta, Rehabilitación y Reconstrucción."* National Congress, Lima, Peru. April 24, 2017. Session of Congress. http://www.pcm.gob.pe/wp-content/uploads/2017/04/Reconstrucci%C3%B3n-Con-Cambios.pdf.

WSS services have a direct impact on the operational capacity (increased sales) and production efficiency of commercial and small- and medium-scale industrial sectors.

B. Sectoral and Institutional Context

5. **Throughout the last decade, Peru has made steady progress in increasing WSS coverage, meeting the Millennium Development Goals targets in 2015.** National coverage rates for WSS in 2015 were 87 percent for access to improved water sources and 76 for improved sanitation[5]—compared to 60 percent coverage for water supply and 49 for improved sanitation in 1993.[6] Although the coverage rates have increased, they are still below the regional averages for Latin America, where, in 2015, 95 percent of the population had access to improved water supply and 83 percent had access to improved sanitation.

6. **The relatively high service coverage levels mask a complex reality that is characterized by severe issues in continuity of supply, quality of service, and infrastructure performance.** Both the coverage and quality of services vary widely among socioeconomic levels and geographical (Coastal, Andean, and Amazon) regions. Coverage rates in the Coastal region are relatively higher at 91 percent for water supply and 89 percent for sanitation; compared to the Andean region, which posts 77 percent and 69 percent, respectively; and the Amazon region, which provides the lowest coverage rates at 59 percent and 55 percent, respectively. Urban and rural disparities indicate that access levels in rural areas lag significantly behind those in urban areas. In total, roughly 3.8 million people in Peru lack access to water supply and another 9.7 million have no access to sanitation—60 percent of whom live in rural areas.[7]

7. **Despite considerable investments, the quality, efficiency, and reliability of WSS services in Peru are below what could be expected of an upper-middle-income country.** The high priority given by the GoP to WSS is reflected in the amount of resources allocated to WSS infrastructure development. Between 2010 and 2015, the GoP spent, on average, US$1.45 billion per year on WSS investments aimed at improving overall access, quality, and efficiency of services,[8] a fivefold increase in comparison to investments in the 1990s and 2000s. This level of investment represents 0.8 percent of GDP and 13 percent of the annual investment budget, which is high by Latin America and the Caribbean standards.[9] Results, however, are not commensurate with investment and spending levels (see Table 4.1 in Annex 4).

8. **Institutional setup.** WSS policy-setting, enforcement, regulation, technical assistance (TA), and service provision functions are allocated among national and subnational institutions. At the national level, the Ministry of Housing Construction and [Water &] Sanitation (*Ministerio de Vivienda, Construccion y Saneamiento* - MVCS) oversees policy making and national planning, including prioritization and allocation of public investments at the national level. The Technical Organization for the Administration

[5] Joint Monitoring Program (JMP). It should be noted that the GoP has set much higher standards of service than those included under the wider definition of 'improved services' of the JMP. For sanitation, the GoP defined coverage in terms of 'dignified sanitation', under which certain solutions, generally accepted in other developing country contexts, no longer qualify as coverage in Peru. Hence, according to the GoP data, the actual coverage rates for WSS were 88 percent and 68 percent in 2015.
[6] INEI (*Instituto Nacional de Estadistica e Informatica*). 1993. *National Census Data*.
[7] NWSP 2017–2021. Ministry of Housing, Construction, and Sanitation (*Ministerio de Vivienda, Construcción y Saneamiento*, MVCS).
[8] MVCS report based on data collected from the *Plan Nacional de Saneamiento 2006–2016*, *Sistema Integrado de Administración Financiera* (SIAF), *Cuenta General de la República*, *Fondo Nacional de Financiamiento de la Actividad Empresarial del Estado*, *Servicio de Agua Potable y Alcantarillado de Lima* (SEDAPAL), *Agenda de Promoción de la Inversión Privada* (PROINVERSION).
[9] For instance, the Development Bank of Latin America (*Corporación Andina de Fomento*, CAF) (2011) has estimated that investments needed to reach universal WSS coverage in Latin America and the Caribbean is in the order of 0.31 percent of GDP (2010 values).

of WSS Services (*Organismo Técnico de la Administración de los Servicios de Saneamiento*, OTASS), which is mapped to the MVCS, is the apex institution charged with promoting and executing the national government's policy on administration and management of public utilities (*Empresas Prestadoras de Servicios de Saneamiento*, EPSs), through technical assistance. The OTASS also has the legal mandate to temporarily intervene in nonperforming EPSs, known as the Temporary Intervention Regime (*Régimen de Apoyo Transitorio*, RAT), to support their transformation. The National Program for Urban [Water and] Sanitation (*Programa Nacional para Saneamiento Urbano*, PNSU) and the National Program for Rural [Water and] Sanitation (*Programa Nacional para Saneamiento Rural*) are the two executing branches of the MVCS specifically tasked to design and implement WSS infrastructure using the national budget (subsidies) and hand over the operation and maintenance (O&M) of such infrastructure to regional or local governments. The National Superintendence of [Water and] Sanitation Services (*Superintendencia Nacional de Servicios de Saneamiento*, SUNASS) is an independent entity responsible for the economic regulation of WSS services and resolution of customer service complaints to the regulator.

9. **Both regional and local governments are responsible for ensuring that investments in WSS in their jurisdictions are provided efficiently and according to applicable institutional, economic, financial, and policy standards.** WSS services in urban areas are primarily provided by public EPSs, which are incorporated as limited liability stock companies whose shares are owned by regional and local governments. EPSs currently serve over 85 percent of the urban population and roughly 62 percent of the national population. Other service providers include municipalities, through smaller utilities or municipal divisions (which serve 9 percent of the population), and WSS Community Boards (*Juntas Administradoras de Servicios de Saneamiento*, JASS) in rural areas, which serve 29 percent of the population.

Sector Challenges (Refer to Annex 4 for More Details)

10. **An unfinished decentralization process has not yet delivered the expected results in terms of access to sustainable services and the establishment of efficient, autonomous utilities.** The decentralization of WSS responsibilities was introduced by the GoP through a series of regulations beginning in the early 1990s with the transfer of service provision responsibilities to the regional governments,[10] apart from the WSS utility for metropolitan Lima (SEDAPAL) that remained under the auspices of the national government. This was followed by regulations that outlined sector objectives and created 49 EPSs.[11] However, the devolution of responsibilities to regional and local governments was not accompanied by adequate incentives and capacity building. This gave rise to weaknesses in the policy and institutional frameworks, overlapping planning, and inefficient financing mechanisms, including budgetary allocations at various levels of government and complex administrative norms that continue to hamper improvements in WSS service delivery.

11. **Peru's WSS sector exhibits misaligned incentives that have led governments to prioritize high-visibility infrastructure projects rather than focusing on the quality and sustainability of services.** Limited efforts have been made to strengthen policy and institutional frameworks and establish intergovernmental arrangements for municipal WSS services that would foster improved WSS sector performance. Low tariffs that are insufficient to cover utility operational and maintenance (O&M) expenses have sent incorrect pricing signals to consumers, leading to inefficient water usage. This misalignment of incentives has also contributed to inadequate human resource capacities and a neglect of consumer preferences due to the lack of accountability and transparency mechanisms. Moreover, the

[10] *Ley de Organización y Funciones del Ministerio de Vivienda, Construcción y Saneamiento* No. 574 approved in April 1990.
[11] *Ley General de Servicios de Saneamiento* No. 26338 approved in July 1994.

focus on funding infrastructure without ensuring meaningful local ownership and accountable management of the systems has resulted in the 'build-neglect-rebuild' paradigm.

12. **Lack of sustainability of service providers.** Apart from SEDAPAL, which serves nearly a third of the country's population, few EPSs generate sufficient revenues to contribute to investment or debt financing. The MVCS reports that EPSs are 141 percent overindebted and unable to effectively manage their operations.[12] Technical capacity and human resources within these EPSs are a continuing challenge. Low remuneration has contributed to a vicious cycle with difficulties in attracting qualified personnel to effectively plan, implement, and manage WSS service delivery.

13. **Challenges in WSS service delivery are exacerbated by uncertainty in water security.** Although the coastal Pacific watershed, which is characterized by its aridity, accounts for roughly 1.8 percent of the country's water resources, it is home to 70 percent of the population and produces 80 percent of national GDP. In contrast, the Atlantic watershed to the east of the Andes Mountains, accounts for 97.7 percent of water resources, 26 percent of the population, and 18 percent of GDP. Peru has historically responded to the uneven distribution of water resources by increasing supply to water-scarce coastal areas through costly infrastructure projects, including large dams and interbasin transfers, with limited attention to measures aiming at increasing the efficiency of water use, controlling the use of groundwater, preventing water pollution, and protecting the water needs of the environment and vulnerable groups. Water spatial variability is compounded by temporal variability resulting in chronic shortages in dry seasons. The Peruvian piedmont and coastline are also prone to floods and mudslides due to high precipitation in degraded upper basins. In general, the frequency and intensity of floods and droughts has increased in some basins due to the continuous deterioration of watersheds and climate change impacts, including glacial retreat and variability in precipitation patterns. Climate variability poses a continuous risk to WSS services, resulting in rationing and intermittent water services during episodes of drought that disrupt services to households and local businesses. Floods present downside risks due to flows of heavily polluted water as well as damage to WSS infrastructure.

The Government's Response

14. **Upon assuming office in July 2016, the new administration declared universal access to WSS among its top priorities.** The GoP subsequently launched important legal and institutional reforms aimed at achieving this goal. These include a new legal framework,[13] WSS Public Policy,[14] and the 2017–2021 National Water and Sanitation Plan (NWSP). The four major pillars of this plan are: (a) targeting unserved and vulnerable populations; (b) optimizing technical solutions; (c) financial sustainability, and (d) institutional sustainability. The design of the new legal and institutional framework captured relevant regional experiences and lessons of previous experiences in Peru in defining the overall regulatory framework, the decentralization structure, the aggregation of service providers (to gain economies of scale), and the role of the national government as an enabler of the reforms.

15. **These reforms center on gradually transforming the current EPSs into public corporations, as the drivers to achieve universal WSS access.** The EPSs are expected to expand their coverage by first tackling urban areas not yet under their administration and, subsequently, rural areas under their geographical jurisdiction. These legal and legislative frameworks provide the strategic underpinnings for the proposed operation.

[12] SUNASS. Benchmarking 2014. *http://www.sunass.gob.pe/doc/Indicadores2017/indicadores_1t2017a.pdf*.
[13] *Decreto Legislativo* No. 1280. (*Ley Marco de la Gestión y Prestación de los Servicios de Saneamiento*). December 2016.
[14] *Decreto Supremo* No. 007. (*Ley Marco de la Gestión y Prestación de los Servicios de Saneamiento*). March 2017.

16. **The new legal framework and sector policy envisage changes in the enabling environment to provide adequate incentives to the EPSs, including more transparent resource allocation processes, better targeting of subsidies, and clearer roles and responsibilities for municipal and regional governments.** Economic regulation by SUNASS is now expected to gradually extend beyond the coverage of large EPSs to the rest of the population—expanding the scope of SUNASS to include all urban and rural areas. In addition, OTASS will have a clear role in the transformation of EPSs through the provision of TA and the legal mandate to intervene and reform EPSs that fail to meet service and legal requirements. Policy instruments have been strengthened to allow both OTASS and SUNASS to better orient and incentivize corporate governance and reduce interference. Yet, implementing the wide reforms envisaged under the new legal and policy framework would entail significant challenges. Therefore, the proposed operation includes important activities supporting the transformation of the EPSs as well as strengthening the institutional architecture.

C. Higher Level Objectives to Which the Project Contributes

17. **The project constitutes a key instrument to operationalize sector reforms.** Through significant analytical, knowledge, and convening activities, the World Bank has established a strong partnership with the GoP on Water. At the outset of the current Administration, the *Peru: Support to the Water Sector Modernization Program Non-Lending Technical Assistance* (NLTA; P150824) provided just-in-time critical support in the design of the new legal framework (*Decreto Legislativo* 1280, enacted in December 2016) and the sector policy, anchored around the transformation of service providers and the reform of the national-level institutions to achieve universal sustainable service delivery. This project is designed to support the Government to effectively implement the reforms program.

18. **The project contributes to the Government's objective to reach universal access to safe WSS in urban areas.** The ambitious goals of the GoP's NWSP 2017–2021[15] include attainment of 100 percent urban and peri-urban in-house coverage of WSS services as a key social goal to help reduce the inequality in access prevalent in Peru. This is consistent with the objective of setting the country on a path to meet the Sustainable Development Goal 6 (SDG6) "Ensure availability and sustainable management of water and sanitation for all." The proposed project will support utilities serving prioritized intermediate cities with the aim of contributing to the objectives of the NWSP and policy framework through the revision of management and financing models for sector investments, working simultaneously at the national policy, institutional, and local levels to improve the efficiency of service providers.

19. **The project is also fully aligned with the new Country Partnership Framework (CPF) for FY2017–21.**[16] More specifically, it will directly contribute to CPF Pillar II - Services for Citizens across the Territory, Objective 5: Improve water and sanitation services in key urban areas. Also, acknowledging the impact of water on economic growth and human development, the project will likewise indirectly contribute toward attaining Pillar I - Productivity for Growth, Objective 4: Enhance the environment for sustainable private sector investments, and Pillar III - Natural Resource and Climate Change Risk Management, Objective 8: Strengthen the management of natural resources. The enhancement and reliability of water supply service delivery will contribute to increases in productivity of small and medium industrial and commercial sectors that rely on water and wastewater services from public service providers, while water use for urban WSS services is a key element in sustainable management of water resources.

[15] MVCS. 2017. *Política Nacional de Agua Potable y Saneamiento*.
[16] World Bank. 2017. *Peru - Country Partnership Framework for the Period FY17–FY21*. Report Number 112299-PE.

20. **Through these objectives, the project is directly linked with the World Bank's twin goals and directly contributes to poverty reduction through access to sustainable basic water supply and sanitation services.** Access to improved WSS services is a basic step in the fight against extreme poverty and a crucial element of achieving shared prosperity because it will improve the quality of life of targeted populations. Small and medium enterprises provide local employment opportunities that are essential to alleviate poverty and boost shared prosperity. Sustainable management of water resources mitigates the risk of negative environmental externalities that have the potential of undermining poverty alleviation, shared prosperity, and access to basic services through the cost of pollution and natural resource degradation. The project's efficiency improvements in water resources management (WRM) and WSS delivery and availability will, therefore, help improve local resilience to climate change in the areas covered by selected EPSs. Increasing connections to sewerage and sanitations services will alleviate burgeoning water pollution challenges that are exacerbated by floods and droughts.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

21. The Development Objectives are to increase access to, and quality of, water and sanitation services in selected areas, and develop the Borrower's sectoral institutions and participating service providers' management capacity to provide efficient water and sanitation services.

B. Project Beneficiaries

22. **The project will directly benefit selected EPSs, namely *Servicio de Agua Potable y Saneamiento del Cusco S.A.* (SEDACUSCO), *Servicio de Agua Potable y Saneamiento de Arequipa* (SEDAPAR), *Empresa Municipal de Agua Potable y Alcantarillado Coronel Portillo* (EMAPACOP), *Empresa Municipal Prestadora de Servicios de Agua Potable y Saneamiento de Huacho* (EMAPA Huacho),[17] *Servicio Municipal de Agua Potable y Alcantarillado de Barranca* (SEMAPA Barranca), and *Empresa Municipal Prestadora de Servicios de Agua Potable y Saneamiento de Huaral* (EMAPA Huaral), and the households receiving services from these EPSs through improvements in service delivery and the expansion of services.** The six EPSs are currently serving 1.97 million people. Additional households that are currently outside the service areas of these utilities will also potentially benefit directly from investments in infrastructure to expand services. Other EPSs and municipal service providers will indirectly benefit from the support and TA through OTASS and enhanced planning capacity of the MVCS.

C. PDO-Level Results Indicators[18]

23. **The Project Development Objective (PDO) will be measured against the following indicators:**

(a) People provided with access to improved water sources (number; female)[19]

(b) People provided with access to improved sanitation services (number; female)

[17] EMAPA Huacho has recently changed its name to *Aguas de Lima Norte*.

[18] PDO-Level Results Indicators (c) and (d) shall be included in the Optimized Master Plans (*Planes Maestros Optimizados*, PMO) of each of the selected EPSs.

[19] The JMP defines access in the following five categorties: safely managed (accessible on premises, available when needed, and free from contamination), basic (collection from an improved source takes not more than 30 minutes), limited (more than 30 minutes to collect water from an improved source), unimproved source, and surface water.

(c) Working ratio reduced in selected utilities[20]

(d) Nonrevenue water reduction achieved in selected utilities[21]

(e) Percentage of population served by service providers regulated by SUNASS

III. PROJECT DESCRIPTION

A. Project Components

24. **The project consists of three components: (a) Improving Governance of Water Supply and Sanitation Service Providers, (b) Improving and Expanding Water Supply and Sanitation Services, and (c) General Project Administration.** The selection of the participating utilities is based on criteria that prioritize the objectives set forth in the new sector policy, as well as their potential to contribute to pillars outlined in the NWSP 2017–2021. Refer to Annex 1 and the Project Operational Manual (POM) for details on selection criteria for participating EPSs and project interventions.

Component 1: Improving Governance of Water Supply and Sanitation Service Providers (US$38.73 million, of which US$16.27 million IBRD financing)

25. **This component will contribute to improving the efficiency of the sector by financing activities that will support national-level sector entities,** primarily the MVCS, OTASS, and SUNASS, as well as the efficiency of the six selected EPSs. The component comprises the following three subcomponents:

Subcomponent 1.1: Improving Institutions, Policy, and Regulation of Water Supply and Sanitation Services (US$7.82 million)

26. **This subcomponent will support the implementation of policy instruments and regulations geared at:** (a) developing a sector-wide management information system (MIS) to facilitate both coordination between sector entities and the regulation of all service providers (EPSs, municipal service providers, and rural water boards); (b) strengthening the systems and capacity of the regulator, SUNASS, including reformulating regulatory and tariff setting instruments;[22] (c) developing guidelines or procedures for regulating small EPSs and rural areas and for improved targeting of subsidies to enhance the financial efficiency of the sector; (d) developing a methodology and supporting the implementation of the aggregation of service providers, including defining the minimal scale and size of EPSs and a progressive approach to formally integrate municipal service providers into EPSs; (e) preparing multiannual investment plans—which are the GoP's primary budgeting tools—for the regions of Arequipa, Ucayali, and Cusco and Lima Province that will serve as planning instruments to define WSS service gaps (across the region and various types of service providers) to adequately introduce economies of scale of infrastructure investments, embed resilience, and prioritize the GoP's targeting of grant funding; and (f) developing instruments, such as standard contracts and revised procedures, for public-private partnerships (PPPs) in wastewater treatment (WWT).

[20] Working ratio is understood as the ability to recover operating costs from annual revenue. Calculated by taking the company's total annual expenses—operating and administrative costs (excluding depreciation and debt-related expenses)—and dividing it by the annual gross income.
[21] Nonrevenue water (NRW): net water lost as a share of net water produced.
[22] PMOs are instruments used by SUNASS to review and approve tariffs. They consist of detailed plans prepared by each EPS, outlining the investment needs that can be covered by a potential tariff adjustment.

Subcomponent 1.2: Strengthening of OTASS and PNSU (US$3.89 million)

27. **This subcomponent will support OTASS and PNSU to enhance coordination between technical assistance and infrastructure implementation of WSS projects**, including: (i) provision of technical assistance, including financing of an Implementation Support Consultant (ISC) firm, to support OTASS in Project implementation; (ii) development of a policy proposal for remuneration and incentive programs to promote voluntary retirement and human resources development in the participating EPSs, and the development of a communications strategy for OTASS and Service Providers; and (iii) design and implementation of a training program for personnel in PNSU's regional Citizen Service Centers, and supporting organizational improvements to enhance PNSU's response in preparing and executing civil works projects.

Subcomponent 1.3: Improving efficiency and sustainability of participating EPS (US$27.02 million)

28. **This subcomponent will support a series of management efficiency measures aimed at improving the performance of selected EPSs.** Formal participation agreements will be signed between OTASS and each participating EPS, establishing the obligations of the national government and each selected EPSs, which will be included in and enforced through the optimized master plan (PMO) of these selected EPS, to ensure their implementation.

29. Specifically, this subcomponent will support OTASS to improve the performance of the participating EPSs, including institutional and planning improvements, strategic planning, capacity building, implementation of communication and client orientation programs, operational and commercial improvements, and development and contracting of management contracts, through the following activities: (i) developing master plans in SEDAPAR, SEDACUSCO and EMAPACOP; (ii) designing and implementing information systems in the participating EPS; (iii) carrying out of tariff and subsidies studies in the participating EPS; (iv) improving and modernizing current commercial systems in the participating EPS; (v) improving and modernizing operational and management systems in the participating EPS; and (iv) designing and implementing a management contract for EMAPACOP.

Component 2: Improving and Expanding Water Supply and Sanitation Services in the participating EPS (US$151.52 million of which US$53.03 million IBRD financing)

30. **This component will finance the rehabilitation and expansion of WSS infrastructure of participating EPSs.** The proposed activities and efforts will improve efficiency through the reduction of physical water losses, increasing energy efficiency, and putting in place tangible mitigation measures to reduce emissions (information on greenhouse gas (GHG) emission targets can be found in Annex 1). Similarly, the expansion of wastewater treatment (WWT) and household connections intends to increase access, and reduce environmental pollution, potential health hazards, and carbon emission. Some infrastructure investments have been identified in the business plans, as well as in the PMOs approved by SUNASS under the tariff review process, or directly by the EPSs as part of their expansion efforts. Investments that will be considered for financing under this project must meet the criteria set forth in Annex 1. Potential investments include, among others, civil works, goods, and consultant services for: (a) the rehabilitation and extension of existing water supply and sewerage networks and household connections; (b) rehabilitation and expansion of existing water and sewerage treatment plants, water storage tanks, and pumping systems; (c) development of new decentralized WSS treatment capacity; (d) the expansion of water and sewerage household connections within areas lacking formal services; and (e) the installation of macro and micro meters.

31. **The rehabilitation of infrastructure financed under this component will be closely linked with efficiency measures in Subcomponent 1.3 to optimize Non-Revenue Water (NRW) reduction and reduce stress on finite water resources.** In the case of Cusco, to address broader water security challenges, diversifying water sources to avoid overreliance on sources vulnerable to drought and overexploitation is also envisioned. Decisions about infrastructure to be rehabilitated or expanded under this project will pay attention to vulnerabilities in water supply systems and build resilience to climate change. This component will finance feasibility, detailed engineering designs, and associated social and environmental management (safeguards) implementation. The remaining infrastructure subprojects will be identified (through preparation of the Government prefeasibility studies) during project implementation.

32. **At the prefeasibility stage, ten subprojects (five from SEDAPAR and five from SEDACUSCO) were vetted and have been provisionally included for financing under this project.** Of these subprojects, two have detailed engineering designs and encompass both expansion and improvements of existing WSS systems. These activities will be closely implemented with activities under Subcomponent 1.3 to ensure communities can affordably connect to both water supply and sanitation services. Further details are found in Annex 1.

Component 3: General Project Administration (US$9.75 million, of which US$0.7 million IBRD financing)

33. **This component will support the management and monitoring of activities associated with project implementation and include TA and administrative support to the day-to-day implementation of procurement and financial management (FM) activities, the environmental and social safeguards monitoring, monitoring and evaluation (M&E), and final project evaluation.** It will also finance training, communication campaigns, and operating costs incurred to implement the project.

B. Project Cost and Financing

34. **The lending instrument will be Investment Project Financing.** Table 1 reflects project costs and financing by component and cost distribution between the GoP and IBRD. The total project cost is US$200 million.

Table 1. Project Costs and Financing (US$, millions)

Project Components	Project Cost	IBRD Financing	Counterpart Funding
Component 1: Improving Governance of Water Supply and Sanitation Service Providers	38.73	16.27	22.46
Component 2: Improving and Expanding Water Supply and Sanitation Services in the Participating EPS	151.52	53.03	98.49
Component 3: General Project Administration (*)	9.75	0.70	9.05
Total Project Cost	200.00	70.00	130.00
Total Financing Required	200.00	70.00	130.00

(*) Front End Fee is included in Component 3 and covered with Counterpart funding.

C. Lessons Learned and Reflected in the Project Design

35. **Global experience demonstrates that the achievement of SDG6 requires the adoption of new approaches that address institutional, policy, and regulatory aspects of WSS service delivery necessary to incentivize sustainable access and efficient service delivery.** Accordingly, the project takes a two-pronged approach to improve the performance of participating service providers by: (a) financing service access and quality improvements; and, (b) creating positive incentives for service providers to undertake the management and operational improvements needed to ensure their financial sustainability. The World Bank's long-term engagement in the sector in Peru, Latin America and the Caribbean, and elsewhere highlighted many lessons necessary to achieve sustainable universal access to WSS services, including the following:

(a) **The project design needs to address gaps and weaknesses in sector institutions, failing which, the risk to achieving project outcomes and timely implementation would significantly increase.** Global experience and development trends in Peru with the provision of WSS services show the importance of institutional design to driving service improvements. Under both public and privately managed approaches, key factors determining the effectiveness of service provision are: (i) sufficient autonomy of the service provider to undertake necessary investment and operational decisions to meet service needs; (ii) tariff structures that are sufficient to provide the bulk of revenues while protecting the basic needs of the poor and directly linking payments to services provided; (iii) alignment of any government (central or local) fiscal transfers to the service provider and investments to policy objectives including well-defined performance criteria; (iv) direct mechanisms for engaging customers in the improvement of services through feedback mechanisms, such as citizen report cards; and, (v) provision of verifiable performance information to the public as a basis for determining comparative, overall performance and improvements. The project's design focuses on supporting the implementation of comprehensive sector policies and legal reforms factoring in this important suite of lessons.

(b) **Shortcomings of decentralization may hinder utilities' efficiency improvement process**. When subnational service providers cannot recover their costs through tariff revenues, they depend on the national government to fund their operations. This may hinder the predictability of the level and timing of the funding, which poses a risk to the financial viability of the service provider. This dependence on financial transfers from the central government also reduces local accountability. The proposed project will address this challenge by strengthening the roles of: (i) the regulator (SUNASS) in ensuring the financial sustainability of the service providers; (ii) OTASS in providing adequate technical support to EPSs to improve efficiency and prepare reliable business plans as a means of aligning national and subnational sector objectives; and, (iii) participating EPSs, which will enter into participation agreements with the national government to meet certain performance targets, which can be used to determine the EPSs' future access to national government grants and/or fiscal transfers.

(c) **Efforts to replicate successful experiences from other contexts must carefully consider the local context as well as the receptivity of the implementing institutions and beneficiaries.** Global experience may provide potentially useful elements to draw on but cannot be packaged as an absolute panacea to redress current WSS sector issues in Peru. In this case, extensive TA and analysis have been carried out to plan and prioritize activities such as aggregation of service providers to achieve economies of scale, implementation of a RAT (take-over of an EPS by the national government to support the turnaround of said utility), and application of management

models to improve WSS service delivery in the selected EPSs, all of which have duly accounted for the local context.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

36. **Project implementation responsibilities.** The recipient of the loan will be the Republic of Peru, through the Ministry of Economy and Finance (MEF), which will transfer the proceeds to OTASS and MVCS-PNSU, as co-implementing units of the project. The Project Implementation Unit (PIU) under OTASS (OTASS PIU 2) will implement activities under Components 1 and 3, and PNSU as an existing PIU will create a Functional Unit (FU) within PNSU to implement activities under Component 2, under the supervision of OTASS. OTASS PIU 2 will have an additional role of overall project coordination and will be responsible for internal and external communications, FM, procurement, and compliance with safeguards policies. OTASS PIU 2 will interact directly with PNSU FU and coordinate with OTASS's directorates, the Coordinating Units (CU) within the Vice Minister of Construction and Sanitation (VMCS), SUNASS, the EPSs, and the World Bank. OTASS will review the status of the performance indicators included in the Results Framework. PNSU has extensive experience in implementing WSS infrastructure and in implementing activities financed by the Inter-American Development Bank and bilateral partners. OTASS is a relatively new entity[23] and requires support. To strengthen technical capacity within OTASS PIU 2 and PNSU FU, staff will be contracted by the project. Overall coordination has been delegated to OTASS despite its relatively nascent status due, primarily, to OTASS's legal standing, which provides more financial autonomy, which will facilitate fiduciary implementation and oversight during implementation.

37. **Roles and responsibilities of participating utilities have been outlined in agreements between each EPS and the national government (OTASS/PNSU).** Based on individual capacity assessments, EPSs that demonstrate adequate capacity will be given greater responsibilities and will have higher agreed targets to achieve. Each EPS will be required to support PNSU in: (i) monitoring the pertinent Infrastructure Subproject; (ii) providing the agreed counterpart financing for the implementation of the Infrastructure Subprojects; (iii) complying with the provisions of social and environmental safeguards instruments adopted by the Project; (iv) launching and implementing communication and awareness campaigns and ensuring that contractors are in compliance with the applicable Safeguards procedures; (v) meeting the targets for the agreed-upon performance indicators at the participating EPS and locality levels; (vi) submitting to OTASS annual reports on the status of each performance indicator; and (vii) supporting PNSU and OTASS with supervision activities related to financial management and procurement. OTASS and PNSU will provide hands-on fiduciary support to strengthen the capacity of these EPSs.

38. **Participation and coordination mechanisms.** The project requires the engagement of multiple stakeholders at the national, regional, and local levels. OTASS will sign cooperation or participation agreements to define roles and responsibilities in the implementation of the project between the participating entities: OTASS-PNSU, OTASS-PNSU-EPSs (with each EPS), OTASS-SUNASS, and OTASS-VMCS. A multisectoral project coordinating committee (PCC) will provide high-level guidance, oversight, and control to the project. It will be chaired by the Executive Director of OTASS and composed of representatives from: (a) the MEF; (b) the MVCS; (c) the Executive Director of PNSU; (d) the General Manager of SUNASS; and (e) the Project Coordinator. There will be three levels of coordination: strategic meetings through the PCC meetings (annual); executive meetings of OTASS and PNSU (quarterly); and

[23] OTASS was created in 2013 by Law N°30045 and became operational in 2015.

operative meetings with OTASS, OTASS PIU 2, PNSU FU, and other entities (when needed). Representatives from MEF and EPSs will meet at interinstitutional PCC meetings annually. Additional details on the PCC are outlined in the POM.

39. **Project implementation will require close coordination with regional and municipal governments that are owners of the participating EPSs as well as other government entities responsible for water and environment.** Project preparation has benefited from substantial engagement with regional and municipal governments to prioritize investments and service provision improvement activities. Moreover, the relevant subnational government entities are expected to participate in the preparation of the multiannual investment plans carried out by the MVCS. As shareholders of the targeted EPSs, they will also review and approve master plans developed by each service provider. Engagement and coordination between the National Water Authority (*Autoridad Nacional de Agua*, ANA), responsible for managing water resources at a national level, for providing water rights (surface water and groundwater) and discharge permits, as well as the Ministry of Environment, responsible for setting the quality standards of effluents that are discharged from WWT plants, and the selected EPSs is also necessary. The MVCS, through OTASS, will facilitate engagement with these entities when needed.

B. Results Monitoring and Evaluation

40. **The M&E unit within OTASS, with the support of the FU within PNSU, will have overall responsibility for the project's M&E.** This unit will monitor and evaluate project progress based on the Results Framework. OTASS PIU 2 will submit semiannual progress reports to the World Bank covering the status of implementation in terms of outputs, outcomes, financial statements, procurement plans, environmental and social safeguards instruments, and actions taken to ensure satisfactory project implementation. Baseline studies including a tailored gender gap analysis for each EPS (linked to preparation of master plans or any other relevant planning instruments), citizen engagement, satisfaction surveys, a midterm review, and a final evaluation will be conducted. Annex 2 and the POM provide more details on the M&E arrangements.

C. Sustainability

41. **The GoP has put in place a series of critical reforms, including a new legal framework and sector policy, and the NWSP 2017–2021.** These instruments provide legislative and policy foundations for reforms to be supported by this project. The NWSP articulates the GoP's vision and goals with measurable indicators and demonstrates commitment to ensuring increased access and sustainability of WSS services and improved efficiency of service providers.

42. **The GoP has also taken steps to streamline the financing of the sector,** through the establishment of the Safe Water Investment Fund (*Fondo de Inversión Agua Segura*, FIAS) to finance programs and projects aimed at closing the gaps in access to water supply, sanitation, and WWT.

43. **With a solid legislative foundation in place, the project aims to support the implementation of key interventions to operationalize existing policies and intervene in selected EPSs to support improvements in efficiency of management and infrastructure.** The GoP aims to heavily invest in closing the WSS service gaps and plans to use this project to support the strengthening of selected service providers as a pilot to ensure that investments made in the sector are managed sustainably and contribute to the national targets.

44. **The project design includes a series of measures to ensure sustainability of the investments financed.** First, participating EPSs will be required to have an updated business plan addressing long-term sustainability issues that will be reviewed by SUNASS and validated by OTASS, to be incorporated to the

PMOs of the selected EPSs, as well as to other instruments as applicable. These planning instruments will outline mechanisms to meet water supply and sanitation targets, embed resilience into planning, adequately address growing demands in line with water resources availability, and link development of investments to regional multiannual investment plans as well as basin master plans. Second, Subcomponent 1.3 will support specific measures to improve the efficiency and sustainability of participating EPSs. Finally, by strengthening national-level institutions (mainly the VMCS, SUNASS, OTASS, and PNSU) through Subcomponents 1.1 and 1.2, the project will provide specific instruments that will contribute to the overall sustainability of the sector and investments undertaken.

D. Role of Partners

45. **Several development partners have been actively supporting the GoP in this reform process.** The Inter-American Development Bank (IDB) has supported the development of the FIAS, which will be the primary vehicle to assess and finance investments in the sector. CAF is supporting implementation of the FIAS. The Japan International Cooperation Agency (JICA) has also played an active role, and there is an ongoing dialogue between the GoP and JICA to support the MVCS and OTASS through the framework that this project is putting in place. Further, the Swiss State Secretariat for Economic Affairs (SECO), in partnership with the German Development Bank (*Kreditanstalt für Wiederaufbau*, KfW), has also been supporting OTASS in structuring its activities for two utilities currently under RAT. In addition, the Water Global Practice and SECO have joined forces to support the GoP in the preparation of the reform program; therefore, it is expected that the project implementation will further benefit from this partnership as well as from contributions by other development partners. These interventions have provided valuable lessons that have oriented activities to support OTASS. The interventions of all sector partners are aligned to the GoP's NWSP, which was adopted as the official national policy in March 2017.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

46. **The overall risk of achieving the PDO is assessed as Substantial.** The key risks and associated risk management measures include the following:

(a) **Institutional Capacity for Implementation and Sustainability** - **High.** This rating responds to the fact that OTASS is a relatively new entity and therefore lacks experience in implementing World Bank-financed operations. This risk will be mitigated by hiring a dedicated firm to provide technical backing and support to the day-to-day project implementation[24]. Infrastructure subprojects will be implemented through PNSU, which has extensive experience in designing and implementing civil works projects for the MVCS.

(b) **Fiduciary** - **Substantial.** The FM arrangements, including flow of funds as well as eligible expenditures to be financed under the project, were evaluated. The evaluation identified complex organization and staffing arrangements through two PIUs; project-specific planning and budgeting procedures; accounting and financial information system that need to comply with the use of official Government Budgeting System (SIAF); and the need to consolidate financial reports from the OTASS PIU 2 and PNSU FU, and concluded that, taken together, these elements pose a substantial risk. From the procurement standpoint, the project's design, which leaves the

[24] The Terms of Reference for procurement of this firm will include the requirement to demonstrate experience in projects financed by the Bank and/or regional development banks as well as building capacity of implementing agencies as this will be one of the activities that the firm would be expected to carry out.

definition of the core procurement processes and entities involved until after the approval of the project, also represents a substantial risk that may have an impact on the achievement of the PDO. To mitigate these challenges, OTASS and PNSU have contracted dedicated fiduciary staff to strengthen their current capacity. Implementation of infrastructure subprojects in several EPSs will be jointly coordinated with PNSU, which has substantially more capacity in the management of such activities. OTASS and PNSU will be trained on World Bank policies and procedures. Coordination of fiduciary activities with OTASS, PNSU, and EPSs will be handled through the dedicated PIU to be established within OTASS.

(c) **Stakeholders - High.** There could be potential changes in local governments (mayors and regional governors) who are the primary stakeholders of the EPSs, which may result in resistance to proposed interventions or requests for changes in scope that could impede or delay project implementation. This risk is greater for utilities that are not currently under temporary intervention (SEDAPAR, SEDACUSCO, and EMAPA Huacho). The other three EPSs are under the RAT through OTASS, which retains full control over their operations. The other potential risk is increased social conflict in EPSs where quality of service is poor and citizens raise complaints that are not resolved. A contract between OTASS/PNSU and the participating EPSs will be signed, outlining the roles and responsibilities of each entity. Activities under Subcomponents 1.2 and 1.3 aim to support the development of corporate communication strategies (including effective engagement of key stakeholders), while Subcomponent 1.3 will support EPSs to enhance or develop client orientation programs (redress mechanism, as well as programs to facilitate household connections).

VI. APPRAISAL SUMMARY

A. Economic and Financial (if applicable) Analysis

47. **The major quantifiable benefits of the project are derived from the economic impacts of institutional actions supported under the project and from the economic and social appraisal of ten infrastructure subprojects currently identified under the project, which were available from only two EPSs.** The analysis of the infrastructure subproject is based on a Cost-Benefit Analysis (CBA) for the water subprojects and a Cost Effectiveness Analysis (CEA) of sewerage subprojects. The CBA only considers the benefits generated from time savings and costs. Based on consumption trends, the net benefits are calculated to be US$63.8 million. The average economic rate of return (ERR) is estimated at 37 percent (60 percent in SEDACUSCO and 24 percent in SEDAPAR). In addition, health benefits were estimated at US$105 million (US$15 million and US$90 million for water and sanitation projects, respectively). Net benefits for the ten subprojects add up to US$168.8 million (net present value [NPV] with a 9 percent discount rate). All ten subprojects are targeting communities living under Peru's poverty line. The institutional economic analysis shows indicative benefits of US$70 million from potential systemic efficiency gains due to capacity increases in four key WSS national-level institutions related to better sector coordination, multiannual planning, and improved regulation. Refer to Annex 5 for further details.

48. **The financial analysis included the following:** (a) the financial impact of TA interventions; (b) the infrastructure subprojects' contribution to the sustainability of the EPSs, SEDACUSCO and SEDAPAR; (c) the impact on these EPSs' cost recovery ratios and EBITDA from infrastructure investments; and, (d) the impact on these EPSs' cost recovery ratios and EBITDA from a sensitivity analysis of soft measures contained in their medium- to long-term sustainability plans.

49. **Benefits of the financial impact of the TA are estimated between US$13 million and US$56 million per year.** The contribution to sustainability was estimated to be positive with existing tariffs higher

than long-term O&M average costs. The impact on the cost recovery from infrastructure and soft actions to increase active connections and reduce costs are also estimated to be positive with a total net benefit of US$19.6 million (and a benefit-cost ratio of 1.8).

B. Technical

50. **The project design is based on approaches and methodologies that are in line with international best practices,** appropriate to the Peruvian context, and technically robust, with a view to strengthening the WSS sector's capacity to plan and regulate service delivery to expand access and improve quality of WSS services.

51. **All project activities fall within the scope of NWSP 2017–2021.** The project approach builds upon outputs of the aforementioned NLTA, which supported the development of business plans for EPSs as a mechanism to effectively diagnose areas of inefficiencies and prioritize investments. The technical appraisal included assessment of activities for: (a) improvements of regulatory instruments; (b) enhancement of sector planning capacity; (c) strengthening of TA capacity of the sector agency, OTASS, and (d) investments and other activities in the EPS as prioritized in the business plans and/or PMOs approved as part of the tariff review process. Activities prioritized in the business plans will be financed through a combination of grants from the national GoP and tariff revenues from the selected EPSs.

52. **The project has divided the selected EPSs into two typologies:** (a) EPSs requiring improvements to management models to achieve the goals set forth in the GoP's NWSP, and (b) EPSs that require intervention and intensive TA to move toward positive operating margins. For EPSs under typology 1, which includes SEDAPAR and SEDACUSCO, activities prioritized within the business plans will be financed through a combination of grants and tariff revenues. The grants will be targeted toward activities that support the goals of the NWSP. For EPSs that fall under typology 2, such as EMAPACOP and EMAPA Huacho, all activities within their business plans will be supported through grants, because it is the national government's responsibility to induce the effective turnaround of those utilities.

53. **Business plans for EMAPA Huaral and SEMAPA Barranca will be developed as part of the project following the methodology and framework of previous plans.** Based on the outcomes of the business plans, activities will be agreed upon and implemented following a signed participation agreement between OTASS and these EPSs to outline roles and responsibilities and targets for performance indicators.

54. **For infrastructure investments, eligible subprojects have been screened and will be approved based on the criteria set forth in Annex 1.** The scale of infrastructure needs in the selected EPSs is well beyond the scope of this project. The implementation of new infrastructure subprojects will be subject to assessment of progress set forth by the national regulator, SUNASS, to ensure that each EPS has the means needed to adequately operate and manage new infrastructure and to optimize installed capacity. Aspects such as technology selection, O&M, and programs to ensure household connectivity (technical and financial) are among the several criteria that will be vetted as part of the implementation of investment subprojects. The project will also influence infrastructure subprojects financed by the GoP in Pucallpa and Arequipa.

55. **A climate and disaster risk screening was undertaken for the project.** The screening identified droughts and extreme precipitation, landslides, earthquakes, and, to a lesser extent, storm surges as the main natural hazards in the planned project intervention areas. The project is mitigating these risks by supporting: (a) activities to improve planning at the sector and service provider levels to account for climate shocks; (b) preparation and/or updating of master plans for rehabilitation, expansion, and

maintenance of WSS infrastructure, embedding resilience in technical designs, and establishing robust indicators to prioritize investments; (c) implementation of efficiency measures at the service provider level to enhance demand-side management of WSS services; and, (d) rehabilitation and expansion of WSS infrastructure using robust technical designs and technologies that mitigate against identified climate change–related natural hazards. At appraisal, it was estimated that US$58.54 million of the US$70 million in World Bank financing could be assessed as yielding climate change co-benefits. Further details on the assessment of climate change mitigation measures associated with the proposed interventions and GHG emissions are highlighted in Annex 1.

C. Financial Management

56. **In accordance with proposed institutional arrangements,[25] OTASS and PNSU serve as the implementing agencies through OTASS PIU 2 and PNSU FU.** An assessment of institutional capacity was carried out to identify optimal implementation arrangements and highlighted institutional strengthening needs to establish implementing units with adequate capacities. OTASS PIU 2 will have an additional role to provide overall coordination and oversight including reconciling fiduciary activities and monitoring. The Project will be implemented under the frameworks established by Peru's laws governing budget management and FM, including the use of SIAF and the General Chart of Accounts established in SIAF. The General Comptroller Office will carry out the selection process of the firm to audit the project with audited terms of reference acceptable to the Bank. The World Bank funds will be disbursed to the Designated Accounts (DA) opened at *Banco de la Nación* for each PIU.

57. **The relevant challenges faced by the project include the following:** (i) delays in the establishment of the PIU at OTASS and the FU at PNSU; (ii) lack of experience of the staff in both PIUs in working with World Bank funds; (iii) ineffective coordination that may affect aspects such as budget approval, implementation of activities, definition of roles and responsibilities, and timely submission of financial reports of the project; (iv) delay in recruiting the fiduciary key staff with the capacity to rapidly get acquainted with FM guidelines to avoid situations of misprocurement or ineligible expenditures, and (v) potential delay in the signing of cooperation agreement between OTASS and PNSU.

58. **Considering the project's complex institutional arrangements and the above-listed risks and challenges, it is recommended that the fiduciary risk be rated Substantial.**

59. **To manage the fiduciary risk, the implementation of the following mitigating measures are recommended:** (i) establishment of the PIU in OTASS and the FU in PNSU; (ii) approval of the POM with the World Bank's No-Objection including a FM chapter; and (iii) no later than three months after effectiveness, hiring of the key fiduciary staff (Budget Specialist, Accountants, FM Specialist, and Procurement Specialist) who desirably have experience in implementing World Bank-financed projects so that the staff can rapidly get acquainted with procurement and FM requirements to support project implementation.

D. Procurement

60. **Procurement for the project will be carried out in accordance with the World Bank's 'Procurement Regulations for Borrowers: Procurement in Investment Project Financing', July 2016, revised November 2017, and the provisions stipulated in the Loan Agreement.** A procurement capacity assessment of OTASS and PNSU was carried out by the World Bank and reviewed mainly the organizational structure for implementing the project, to determine the risk and mitigation measures. The assessment

[25] The Financial Management Assessment (FMA) reflects implementation arrangements discussed with OTASS and PNSU.

concluded that OTASS and PNSU need to improve their procurement capacity to implement the project, incorporating staff with knowledge and specific experience in using Multilateral Development Banks' procurement rules. A detailed procurement assessment will be carried out by the World Bank prior to effectiveness as OTASS and/or PNSU decided to delegate the selection and contracting of low-value/low-risk contracts (e.g. consultancies for design, supervision and monitoring) to the EPSs.

61. **The borrower has developed a Project Procurement Strategy for Development (PPSD)** under the support of the World Bank. The Procurement Plan for the duration of the project was defined based on the results of the PPSD. In addition to the prior supervision review to be carried out by the World Bank, an annual supervision mission will perform a post review of procurement actions. A Procurement Plan for Components 1 and 2 based on the PPSD was agreed upon (Annex 2 provides more details). Lastly, the POM outlines the roles and responsibilities of the participating entities and units.

E. Social (including Safeguards)

62. **The project triggers two World Bank social safeguard policies:** Indigenous Peoples (OP/BP 4.10) and Involuntary Resettlement (OP/BP 4.12). A review of the social implications of the project activities has been conducted.

63. **Indigenous Peoples (OP/BP 4.10).** The policy will be triggered given the project´s national scope and the presence of indigenous peoples across the country, totaling around 7 million people and comprising 23 percent of the population. Since this is a project with multiple subprojects around the country, an IPPF has been prepared by the client and has been disclosed by OTASS through its website[26] on March 6, 2018, and by the World Bank on March 2, 2018.[27]. The IPPF will be used to guide implementation of activities to ensure adequate representation and participation of indigenous communities in project activities and to ensure that specific issues and needs of indigenous peoples are adequately identified, assessed, and taken into consideration. Two subprojects were in an advanced state of design, specifically Chuquibamba and Caravelí water treatments plants and expansion of sewerage networks located in remote areas in the Arequipa region. After conducting site visits and reviewing the consultation process conducted by the client, these plants are not expected to have any potential negative impact on indigenous peoples in the area; on the contrary, they will benefit an important number of communities in the area that have been part of the sub-project consultation process.

64. **Involuntary Resettlement (OP/BP 4.12).** Due to the nature of this project with multiple subprojects around the country that will potentially require acquisition of small plots of land and management of right-of-way for water transmission pipelines, the client has prepared a RPF. To that effect, the RPF was submitted for public consultation on October 13, 2017, and publicly disclosed on OTASS's website[28] on March 6, 2018, and on the external website of the World Bank on March 2, 2018. Regarding the two subprojects with an advanced stage of design, and after conducting site visits and reviewing the subprojects, the technical documents concluded the following: (a) **Chuquibamba.** No resettlement impacts are expected, as the work will be done on municipal land and the water and sewerage networks will run along already existing roads and no access closings are needed; and (b) **Caravelí.** Three private properties will be affected by the construction of new water and sewerage networks; therefore, an Abbreviated Resettlement Action Plan has been prepared by the client, consulted with the three land owners, and disclosed accordingly in February 2018 locally in the region of Arequipa

[26] http://www.otass.gob.pe/publicaciones/otras-publicaciones.html.
[27] http://documents.worldbank.org/curated/en/206871520007770243/pdf/SFG4095-IPP-SPANISH-P157043-PUBLIC-Disclosed-3-2-2018.pdf.
[28] *http://www.otass.gob.pe/publicaciones/otras-publicaciones.html*.

as well as on the websites of the utility, SEDAPAR and the co-implementing agency, OTASS. The rest of the networks will run along already existing roads, and no road or access closings are needed.

65. **In both cases, special attention will be given to the preparation and proper execution of the Code of Conduct of the contractor,** as well as the Grievance Redress Mechanisms, since both sites are in remote areas.

66. **Gender.** Preliminary assessment carried out during preparation identified: (i) lack of gender sensitive information disseminated by service providers related to sanitation and importance of upgrading sanitation facilities; (ii) women in peri-urban communities are disproportionally impacted by lack of reliable services and confined to homes to wait for informal water trucks that do not keep formal schedules; (ii) limited number of women in managerial positions within EPSs and largely found in administrative roles. The project is gender tagged as: (i) social analysis will be embedded in the preparation and/or updating of each EPS's master plan and will include a gender analysis of patterns of access and uses of WSS services, social profiles, and vulnerability and drivers of social exclusion, particularly in peri-urban areas of potential expansion of services; (ii) it will include assessing the macro trends in the specific social assessments per subproject throughout the project cycle; and, (iii) it will develop gender-sensitive messages for delivery in relation to sanitary education activities.[29] The outcomes of the detailed social analyses will be utilized to support SUNASS's efforts to prepare a strategy for effective targeting of subsidies. At the EPSs' level, human resources considerations that take gender into account (including increasing engagement of women at technical and managerial levels) will lay out prioritized actions that each EPS will identify and promote to reduce gender gaps. The analysis will also guide the development of client orientation programs (for example, targeting of subsidies for household connections to women-headed households). The project aims to directly support women in peri-urban areas who have inadequate service by providing or rehabilitating household connections to water supply and thereby close gender gaps in access to reliable WSS services, and women's access to water and sanitation will be tracked in the project's results framework. For sanitation, in addition to the provision of household sewerage connections, the project will also support preparation and dissemination of gender-sensitive sanitary communications materials to ensure households are adequately make informed decisions about sanitation investments in the households. Where possible, the project will measure the time saved by women and caregivers because of new water connections.

67. **Citizen engagement.** The project seeks to engage citizens through the citizen engagement units of the EPSs. Engagement with these units will entail: (i) improvements to grievance redress and feedback channels; (ii) strengthening of complaint handling through surveys, citizen report cards, mobile phone hotlines, information and communication technology-enabled ticketing systems so that complaints are transparently managed; (iii) review of each EPS's current household connectivity strategies and putting in place mechanisms to ensure affordability and accessibility of household connections for WSS services, and (iv) review of SUNASS's efforts to strengthen citizen redress systems as well as complaints and queries management mechanisms to enhance its guidelines to service providers to ensure wider stakeholder participation and promote greater accountability. Annex 1 provides more information.

F. Environment (including Safeguards)

68. **The project is expected to have overall positive environmental impacts by: (a) connecting people to rehabilitated or expanded sewage collection and water supply systems in selected cities and**

[29] Gender-sensitive messages in sanitary education activities comprise messages that are aligned with and tailored to specific interests and concerns of men and women, for example, by considering major ways of how men and women obtain information, specific literacy rates of men and women, or the explicit elaboration and presentation of benefits.

towns, thereby improving human and environmental health conditions of the population to be served, and (b) increasing the efficiency of the WSS services provided by selected EPS. Increased efficiency through reductions in water losses is critical in some cities whose main water resources come from glaciers in the highlands that are rapidly retreating due to climate change. The rehabilitation of sewerage systems will decrease the rate of breaks in pipes that expose the population to waterborne diseases with significant human health impacts. The provision of full pressure, 24-hour service will also eliminate the need for storage devices, change water use patterns, and facilitate the adoption of better hygiene practices. Improved sewage collection systems will also have a positive impact on the quality of aquifers and surface water in selected urban and rural centers, as well as provide a healthier urban environment. The project triggers the following World Bank environmental operational (safeguard) policies: Environmental Assessment, Natural Habitats, Forests, Physical Cultural Resources and International Waterways.

69. **Environmental Assessment (OP/BP 4.01).** According to this operational policy, the project has been classified as Category B, because most investments involve relatively standard rehabilitation and expansion works with no likely significant or long-term environmental or social impacts, and risks that can be readily avoided or mitigated with standard measures. The potential negative environmental risks and impacts associated with the construction works and operation could include noise and dust from equipment and earthworks, spills of oil based products, discharge of treated wastewaters into river streams, worker health and safety, traffic congestion and related risks and nuisances, and odors associated with works to rehabilitate sewage pipes and WWT plants.

70. **The general location (cities) of some investments and associated works is already known.** The GoP has prepared project profiles (prefeasibility studies) for eight out of ten identified subprojects. Only two projects—located in Arequipa (Chuquibamba and Caravelí)—have prepared detailed engineering designs, and each has an environmental safeguards instrument—in addition to other seismic, geological, archeological, and occupational safety studies—in a format acceptable to the World Bank and in compliance with Peruvian environmental standards. An ESMF, in accordance with the safeguard policy on Environmental Assessment (OP/BP 4.01) and the World Bank Group Environmental, Health and Safety Guidelines on WSS has been prepared to guide the preparation of specific environmental safeguard instruments for identified infrastructure subprojects that currently lack technical designs and related social and environmental studies. The ESMF as well as the two social safeguards instruments (IPPF and RPF) were subject to consultations on October 13, 2017, and the description of this consultation process is reflected in the ESMF. A copy of the ESMF was made available through the World Bank's website on March 2, 2018.[30] The final ESMF document was also made publicly available through OTASS's website[31] on February 20, 2018. SEDAPAR disclosed engineering (technical) designs and related studies (social, environmental, archeological, seismic, geological, and so on) for localities of Chuquibamba and Caravelí on February 16, 2018.

71. **Natural Habitats (OP/BP 4.04).** Some infrastructure subprojects and operation of utilities may affect natural habitats located in water resource catchment areas and rivers. Appropriate screening criteria was developed as part of the ESMF to ensure that impacts and risks on natural habitats and critical natural habitats are properly assessed, mitigated, and monitored. The ESMF articulates that no sub-projects that involve the significant conversion of natural habitats will be financed by the project.

[30] *http://documents.worldbank.org/curated/en/411861520007352160/pdf/SFG4107-EA-SPANISH-P157043-PUBLIC-Disclosed-3-5-2018.pdf*.
[31] http://www.otass.gob.pe/publicaciones/otras-publicaciones.html.

72. **Physical Cultural Resources (OP/BP 4.11).** Peru has a well-developed legislative and normative framework for management of physical cultural resources, which is under the oversight of the Ministry of Culture. At the subnational level, there are subprojects of EPSs in Cusco and Arequipa where pre-Columbian and colonial physical cultural resources are abundant. In accordance with local legislation and World Bank requirements, selected EPSs will include procedures for screening any known cultural physical resource and incorporate 'chance find' procedures if culturally significant resources are discovered during project implementation. These chance-find procedures, along with procedures on surveying of physical cultural resources during sub-project preparation, have been described in the ESMF.

73. **Forests (OP/BP 4.36).**. This policy is triggered as the project will finance multi-annual investment plans in Ucayali that could potentially impact forest ecosystems.

74. **International waterways (OP/BP 7.50).** This policy was triggered as water supply and sewerage infrastructure works are planned within the Vilcanota basin, which is a tributary upstream of the Amazon River Basin, shared between Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela. Given that the project activities will not adversely change the quantity or quality of water flows to these riparians, the exception to the riparian notification requirement under OP 7.50 was granted by the Regional Vice President on April 26, 2018.

75. **Borrower capacity to plan and implement the described management.** OTASS, which is considered the technical arm of the MVCS for the WSS sector, will be responsible for the day-to-day project management, including fiduciary and environmental and social management (safeguards) aspects. Depending on the fiduciary capacity of the selected EPSs, a decision has been taken to allow some EPSs (SEDAPAR and SEDACUSCO) to carry out contracting of pre-investment (low-value contracts), supervision of construction of civil works, and independent monitoring. The MVCS has experience implementing World Bank social and environmental operational (safeguard) policies in projects such as the National Rural Water Supply and Sanitation Program (PRONASAR, P065265, approved on August 29, 2002) and other sectors such as urban, disaster risk management, and transport. PNSU has experience in applying World Bank environmental operational policies and social operational policies on Involuntary Resettlement and Indigenous Peoples, but it does not have dedicated staff for dealing with these issues. Many EPSs have citizen engagement units that have the potential to support the implementation of these policies, but capacity will vary depending on the size of the EPS. Environmental and social specialists (consultants) will be hired by OTASS and will be placed in EPSs included in this project to support the follow-up of environmental and social management instruments implementation. Some EPSs such as SEDAPAR have assigned focal points to engage on social and environmental safeguards.

G. World Bank Grievance Redress

76. Communities and individuals who believe that they are adversely affected by a World Bank supported Project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service.

For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

Project Development Objective(s)

The proposed Development Objective is to increase access to, and quality of, water and sanitation services in selected areas, and develop the Borrower's sectoral institutions and participating service providers' management capacity to provide efficient water and sanitation services.

PDO Indicators by Objectives / Outcomes	DLI	CRI	Unit of Measure	Baseline	End Target
Improve access to water and sanitation services in selected areas.					
People provided with access to improved water sources		Yes	Number	0.00	161,000.00
A.2. Of which female			Number	0.00	80,661.00
People provided with access to improved sanitation services		Yes	Number	0.00	93,000.00
B.2. Of which female			Number	0.00	46,593.00
Improve Borrower's capacity to provide efficient water and sanitation services					
C. Working ratio reduced in selected utilities			Number	0.00	6.00
C.1. Working ratio reduced in SEDAPAR			Number	77.49	62.00
C.2. Working ratio reduced in SEDACUSCO			Number	75.09	65.00
C.3. Working ratio reduced in EMAPACOP			Number	83.13	65.00
C.4. Working ratio reduced in SEMAPA Barranca			Number	127.16	75.00
C.5. Working ratio reduced in EMAPA Huaral			Number	103.89	75.00
C.6. Working ratio reduced in EMAPA Huacho			Number	96.09	70.00

PDO Indicators by Objectives / Outcomes	DLI	CRI	Unit of Measure	Baseline	End Target
D. Nonrevenue water reduction achieved in selected utilities			Percentage	0.00	6.00
D.1. Nonrevenue water reduction achieved in SEDAPAR			Percentage	34.13	27.00
D.2. Nonrevenue water reduction achieved in SEDACUSCO			Percentage	37.81	32.00
D.3. Nonrevenue water reduction achieved in EMAPACOP			Percentage	45.98	35.00
D.4. Nonrevenue water reduction achieved in SEMAPA Barranca			Percentage	60.04	40.00
D.5. Nonrevenue water reduction achieved in EMAPA Huaral			Percentage	38.60	32.00
D.6. Nonrevenue water reduction achieved in EMAPA Huacho			Percentage	34.02	29.00
E. Percentage of population served by service provider regulated by SUNASS			Percentage	63.00	80.00

Intermediate Results Indicators by Components	DLI	CRI	Unit of Measure	Baseline	End Target
Improving Governance of Water Supply and Sanitation Service Providers					
3. Development and integration of a performance-based mechanism in utilities' planning tools			Number	0.00	6.00
4. Comprehensive budgeting, planning and monitoring MIS established and operationalized			Yes/No	N	Y
6. Number of utilities (EPS) supported by the Project that use gender-sensitive messages in their sanitary education activities			Number	0.00	6.00

Improving and Expanding Water Supply and Sanitation Services					
1.1. New piped household water connections that are resulting from the Project intervention			Number	0.00	23,239.00
1.2. New household sewerage connections that are resulting from the Project intervention			Number	0.00	19,418.00
2.1. Piped household water connections that are benefiting from rehabilitation works undertaken by the Project			Number	0.00	14,791.00
2.2. Household sewerage connections that are benefiting from rehabilitation works undertaken by the Project			Number	0.00	7,364.00
5. Customer satisfaction increased in selected utilities			Number	0.00	8.00
5.1. Customer satisfaction in SEDAPAR			Number	68.00	85.00
5.2. Customer satisfaction in SEDACUSCO			Number	78.00	85.00
5.3. Customer satisfaction in EMAPACOP			Number	66.00	75.00
5.4. Customer satisfaction in SEMAPA BARRANCA			Number	64.00	75.00
5.5. Customer satisfaction in EMAPA HUARAL			Number	67.00	75.00
5.6. Customer satisfaction in EMAPA HUACHO			Number	61.00	75.00
7. Operating margin increased in selected utilities.			Percentage	0.00	5.00
7.1 Operating margin reduced in SEDAPAR			Percentage	2.80	10.00
7.2 Operating margin reduced in SEDACUSCO			Percentage	16.50	21.00
7.3 Operating margin reduced in EMAPACOP			Percentage	-1.90	8.00
7.4 Operating margin reduced in SEMAPA BARRANCA			Percentage	4.40	10.00
7.5 Operating margin reduced in EMAPA Huaral			Percentage	0.60	8.00
7.6 Operating margin reduced in EMAPA Huacho			Percentage	5.70	12.00

8. Return on Assets (ROA) increased in selected utilities			Percentage	0.00	3.00
8.1 ROA increased in SEDAPAR			Percentage	1.30	3.00
8.2 ROA increased in SEDACUSCO			Percentage	2.20	7.00
8.3 ROA increased in EMAPACOP			Percentage	0.00	3.00
8.4 ROA increased in SEMAPA Barranca			Percentage	0.20	3.00
8.5 ROA increased in EMAPA Huaral			Percentage	0.00	3.00
8.6 ROA increased in EMAPA Huacho			Percentage	0.60	4.00
9. Return on Equity (ROE) increased in selected utilities.			Percentage	0.00	2.00
9.1 ROE increased in SEDAPAR			Percentage	1.60	4.00
9.2 ROE increased in SEDACUSCO			Percentage	7.10	8.00
9.3 ROE increased in EMAPACOP			Percentage	0.10	4.00
9.4 ROE increased in SEMAPA Barranca			Percentage	-2.70	2.00
9.5 ROE increased in EMAPA Huaral			Percentage	0.00	4.00
9.6 ROE increased in EMAPA Huacho			Percentage	0.90	5.00
10. Metering increased in selected utilities			Percentage	0.00	5.00
10.1 Metering increased in SEDAPAR			Percentage	80.00	90.00
10.2 Metering increased in SEDACUSCO			Percentage	89.00	94.00
10.3 Metering increased in SEMAPA Barranca			Percentage	15.00	70.00
10.4 Metering increased in EMAPA Huaral			Percentage	26.00	70.00
10.5 Metering increased in EMAPA Huacho			Percentage	80.00	90.00

Monitoring & Evaluation Plan: PDO Indicators	
Indicator Name	People provided with access to improved water sources
Definition/Description	Number of people who are provided with household connection for water supply
Frequency	Biannual
Data Source	Project progress reports and information from INEI (Census 2017)
Methodology for Data Collection	Number of new and rehabilitated connections to an improved water source installed by the Project multiplied by the average number of people per household. This number is calculated by the sum of intermediate indicators 1.1 and 2.1
Responsibility for Data Collection	OTASS
Indicator Name	A.2. Of which female
Definition/Description	Number of project beneficiaries that are female that are provided with household connections for water supply
Frequency	Biannual
Data Source	World Bank Data (2016)
Methodology for Data Collection	This number is calculated by dividing indicator A.1 by the percentage of the female population in Peru, which was 50.1% in 2016.
Responsibility for Data Collection	OTASS

Indicator Name	People provided with access to improved sanitation services
Definition/Description	Number of people who are provided with professional sanitation services that include sewerage, decentralized sanitatoin treatment (septic tanks, imhoff tanks) that are professionally managed by the utility
Frequency	Biannual
Data Source	Project progress reports and infromation from INEI (Census 2017).
Methodology for Data Collection	Number of new and rehabilitated connections to improved sanitation services installed by the Project multiplied by the average number of people per household.
Responsibility for Data Collection	OTASS
Indicator Name	B.2. Of which female
Definition/Description	Number of project beneficiaries that are women who are provided with improved sanitation facilities that include household sewerage network or equivalent service that reduces needs for use of precarious sanitation installations and reduces open defecation (where still prevelant)
Frequency	Biannual
Data Source	World Bank Data (2016)
Methodology for Data Collection	This number is calculated by dividing indicator A.1 by the percentage of the female population in Peru, which was 50.1% in 2016.
Responsibility for Data Collection	OTASS

Indicator Name	C. Working ratio reduced in selected utilities
Definition/Description	The ratio calculated between operational expenses (personnel costs, energy, chemicals, goods and services), without depreciation, and operational income (water and sewerage revenues, other technical services revenues and accounts receivable).
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated by taking the company´s total annual expenses -operating and administrative costs- (excluding depreciation and debt-related expenses) and dividing it by the annual gross income.
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMOs of each EPS.
Indicator Name	C.1. Working ratio reduced in SEDAPAR
Definition/Description	The ratio calculated between operational expenses (personnel costs, energy, chemicals, goods and services), without depreciation, and operational income (water and sewerage revenues, other technical services revenues and accounts receivable).
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated by taking the company´s total annual expenses -operating and administrative costs- (excluding depreciation and debt-related expenses) and dividing it by the annual gross income.
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	C.2. Working ratio reduced in SEDACUSCO
Definition/Description	The ratio calculated between operational expenses (personnel costs, energy, chemicals, goods and services), without depreciation, and operational income (water and sewerage revenues, other technical services revenues and accounts receivable).
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated by taking the company´s total annual expenses -operating and administrative costs- (excluding depreciation and debt-related expenses) and dividing it by the annual gross income.
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	C.3. Working ratio reduced in EMAPACOP
Definition/Description	The ratio calculated between operational expenses (personnel costs, energy, chemicals, goods and services), without depreciation, and operational income (water and sewerage revenues, other technical services revenues and accounts receivable).
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated by taking the company´s total annual expenses -operating and administrative costs- (excluding depreciation and debt-related expenses) and dividing it by the annual gross income.
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	C.4. Working ratio reduced in SEMAPA Barranca
Definition/Description	The ratio calculated between operational expenses (personnel costs, energy, chemicals, goods and services), without depreciation, and operational income (water and sewerage revenues, other technical services revenues and accounts receivable).
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated by taking the company´s total annual expenses -operating and administrative costs- (excluding depreciation and debt-related expenses) and dividing it by the annual gross income.
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	C.5. Working ratio reduced in EMAPA Huaral
Definition/Description	The ratio calculated between operational expenses (personnel costs, energy, chemicals, goods and services), without depreciation, and operational income (water and sewerage revenues, other technical services revenues and accounts receivable).
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated by taking the company´s total annual expenses -operating and administrative costs- (excluding depreciation and debt-related expenses) and dividing it by the annual gross income.
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	C.6. Working ratio reduced in EMAPA Huacho
Definition/Description	The ratio calculated between operational expenses (personnel costs, energy, chemicals, goods and services), without depreciation, and operational income (water and sewerage revenues, other technical services revenues and accounts receivable).
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated by taking the company´s total annual expenses -operating and administrative costs- (excluding depreciation and debt-related expenses) and dividing it by the annual gross income.
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	D. Nonrevenue water reduction achieved in selected utilities
Definition/Description	The ratio calculated between operational expenses (personnel costs, energy, chemicals, goods and services), without depreciation, and operational income (water and sewerage revenues, other technical services revenues and accounts receivable).
Frequency	Biannual
Data Source	SUNASS and EPS’s reports
Methodology for Data Collection	Net water lost as a share of net water produced.
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	D.1. Nonrevenue water reduction achieved in SEDAPAR
Definition/Description	Reduction in the amount of water produced by SEDAPAR that is lost or unaccounted for due to operational and commerical inefficiencies
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated through comparision of data collected from macro and micrometering to accurately determine the amount of water produced by the EPS versus amount of water billed to account for water loss
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	D.2. Nonrevenue water reduction achieved in SEDACUSCO
Definition/Description	Reduction in the amount of water produced by SEDACUSCO that is lost or unaccounted for due to operational and commerical inefficiencies.
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated through comparision of data collected from macro and micrometering to accurately determine the amount of water produced by the EPS versus amount of water billed to account for water loss
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	D.3. Nonrevenue water reduction achieved in EMAPACOP
Definition/Description	Reduction in the amount of water produced by EMAPACOP that is lost or unaccounted for due to operational and commerical inefficiencies
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated through comparision of data collected from macro and micrometering to accurately determine the amount of water produced by the EPS versus amount of water billed to account for water loss
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	D.4. Nonrevenue water reduction achieved in SEMAPA Barranca
Definition/Description	Reduction in the amount of water produced by SEMAPA Barranca that is lost or unaccounted for due to operational and commerical inefficiencies
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated through comparision of data collected from macro and micrometering to accurately determine the amount of water produced by the EPS versus amount of water billed to account for water loss
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	D.5. Nonrevenue water reduction achieved in EMAPA Huaral
Definition/Description	Reduction in the amount of water produced by EMAPA Huaral that is lost or unaccounted for due to operational and commerical inefficiencies
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated through comparision of data collected from macro and micrometering to accurately determine the amount of water produced by the EPS versus amount of water billed to account for water loss
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	D.6. Nonrevenue water reduction achieved in EMAPA Huacho
Definition/Description	Reduction in the amount of water produced by EMAPA Huacho that is lost or unaccounted for due to operational and commerical inefficiencies
Frequency	Biannual
Data Source	SUNASS and EPS's reports
Methodology for Data Collection	Calculated through comparision of data collected from macro and micrometering to accurately determine the amount of water produced by the EPS versus amount of water billed to account for water loss
Responsibility for Data Collection	SUNASS EPS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	E. Percentage of population served by service provider regulated by SUNASS
Definition/Description	Percentage of population served by provider regulated by SUNASS.
Frequency	Biannual
Data Source	Source: SUNASS
Methodology for Data Collection	National Statistical Agency's Household Surveys; management information system operated by SUNASS; annual surveys submitted by service providers to SUNASS
Responsibility for Data Collection	SUNASS

Monitoring & Evaluation Plan: Intermediate Results Indicators	
Indicator Name	3. Development and integration of a performance-based mechanism in utilities' planning tools
Definition/Description	Inclusion of targets, incentives for increasing efficiency and programs to promote enhanced operational efficiency included in master plans and/or PMOs of EPSs
Frequency	Biannual
Data Source	Project progress reports
Methodology for Data Collection	Using indicators and data collected as part of development and implementation of EPS' master plans
Responsibility for Data Collection	OTASS

Indicator Name	4. Comprehensive budgeting, planning and monitoring MIS established and operationalized
Definition/Description	Development of anagement information system that aggregates information of all investments in WSS infrastructure financed by various sources (national, regional, municipal) and planning to reduce duplication of investments in same geographic area and to optimize targeting of grants and subsidies
Frequency	Biannual
Data Source	Number of service providers regulated by SUNASS Source: SUNASS reports
Methodology for Data Collection	System developed and operational that is accessed by pertinent sector agencies to input data and access information to better inform budgeting, planning and monitoring
Responsibility for Data Collection	SUNASS
Indicator Name	6. Number of utilities (EPS) supported by the Project that use gender-sensitive messages in their sanitary education activities
Definition/Description	Number of utilities that have developed communication material to better orient engagement and interventions in sanitation education and behavior change campaigns to be gender-informed.
Frequency	Biannual
Data Source	Project progress reports.
Methodology for Data Collection	Surveys and data reported by EPSs
Responsibility for Data Collection	OTASS

Indicator Name	1.1. New piped household water connections that are resulting from the Project intervention
Definition/Description	Number of household connections established due to expansion of supply systems
Frequency	Biannual
Data Source	Project progress reports
Methodology for Data Collection	Information collected site visits, billing
Responsibility for Data Collection	OTASS
Indicator Name	1.2. New household sewerage connections that are resulting from the Project intervention
Definition/Description	Number of household connections established due to expansion of treatment systems
Frequency	Biannual
Data Source	Project progress reports
Methodology for Data Collection	Information collected from site visits
Responsibility for Data Collection	OTASS
Indicator Name	2.1. Piped household water connections that are benefiting from rehabilitation works undertaken by the Project
Definition/Description	Existing networks that are rehablitated to provide more efficient and continuous water supply systems
Frequency	Biannual
Data Source	Project progress reports
Methodology for Data Collection	Surveys, information collected from site visits, billing
Responsibility for Data Collection	OTASS

Indicator Name	2.2. Household sewerage connections that are benefiting from rehabilitation works undertaken by the Project
Definition/Description	Existing sewerage connections that are rehabilitated to reduce blockages and overflows onto personal or public property
Frequency	Biannual
Data Source	Project progress reports
Methodology for Data Collection	Surveys, information collected from site visits
Responsibility for Data Collection	OTASS
Indicator Name	5. Customer satisfaction increased in selected utilities
Definition/Description	Degree of satisfaction with the services provided by the EPS as measured through a customer satisfaction survey.
Frequency	Biannual
Data Source	EPS customer satisfaction surveys. SUNASS
Methodology for Data Collection	Survey prepared by SUNASS.
Responsibility for Data Collection	SUNASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	5.1. Customer satisfaction in SEDAPAR
Definition/Description	Degree of satisfaction with the services provided by the EPS as measured through a customer satisfaction survey.
Frequency	Biannual
Data Source	EPS customer satisfaction surveys. SUNASS
Methodology for Data Collection	Survey prepared by SUNASS.
Responsibility for Data Collection	SUNASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	5.2. Customer satisfaction in SEDACUSCO
Definition/Description	Degree of satisfaction with the services provided by the EPS as measured through a customer satisfaction survey.
Frequency	Biannual
Data Source	EPS customer satisfaction surveys. SUNASS
Methodology for Data Collection	Survey prepared by SUNASS.
Responsibility for Data Collection	SUNASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	5.3. Customer satisfaction in EMAPACOP
Definition/Description	Degree of satisfaction with the services provided by the EPS as measured through a customer satisfaction survey.
Frequency	Biannual
Data Source	EPS customer satisfaction surveys. SUNASS
Methodology for Data Collection	Survey prepared by SUNASS.
Responsibility for Data Collection	SUNASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	5.4. Customer satisfaction in SEMAPA BARRANCA
Definition/Description	Degree of satisfaction with the services provided by the EPS as measured through a customer satisfaction survey.
Frequency	Biannual
Data Source	EPS customer satisfaction surveys. SUNASS
Methodology for Data Collection	Survey prepared by SUNASS.
Responsibility for Data Collection	SUNASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	5.5. Customer satisfaction in EMAPA HUARAL
Definition/Description	Degree of satisfaction with the services provided by the EPS as measured through a customer satisfaction survey.
Frequency	Biannual
Data Source	EPS customer satisfaction surveys. SUNASS
Methodology for Data Collection	Survey prepared by SUNASS.
Responsibility for Data Collection	SUNASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	5.6. Customer satisfaction in EMAPA HUACHO
Definition/Description	Degree of satisfaction with the services provided by the EPS as measured through a customer satisfaction survey.
Frequency	Biannual
Data Source	EPS customer satisfaction surveys. SUNASS
Methodology for Data Collection	Survey prepared by SUNASS.
Responsibility for Data Collection	SUNASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	7. Operating margin increased in selected utilities.
Definition/Description	The margin calculated by dividing the operating income (net revenues – all operating expenses) by the net revenues during a specific period.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Calculated using information collected from EPSs annual reports and surveys/data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	7.1 Operating margin reduced in SEDAPAR
Definition/Description	The margin calculated by dividing the operating income (net revenues – all operating expenses) by the net revenues during a specific period.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Calculated using information collected from EPSs annual reports and surveys/data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	7.2 Operating margin reduced in SEDACUSCO
Definition/Description	The margin calculated by dividing the operating income (net revenues – all operating expenses) by the net revenues during a specific period.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Calculated using information collected from EPSs annual reports and surveys/data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	7.3 Operating margin reduced in EMAPACOP
Definition/Description	The margin calculated by dividing the operating income (net revenues – all operating expenses) by the net revenues during a specific period.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Calculated using information collected from EPSs annual reports and surveys/data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	7.4 Operating margin reduced in SEMAPA BARRANCA
Definition/Description	The margin calculated by dividing the operating income (net revenues – all operating expenses) by the net revenues during a specific period.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Calculated using information collected from EPSs annual reports and surveys/data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	7.5 Operating margin reduced in EMAPA Huaral
Definition/Description	The margin calculated by dividing the operating income (net revenues – all operating expenses) by the net revenues during a specific period.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Calculated using information collected from EPSs annual reports and surveys/data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	7.6 Operating margin reduced in EMAPA Huacho
Definition/Description	The margin calculated by dividing the operating income (net revenues – all operating expenses) by the net revenues during a specific period.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Calculated using information collected from EPSs annual reports and surveys/data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	8. Return on Assets (ROA) increased in selected utilities
Definition/Description	Ratio of annual net income to average total assets during a financial year
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	8.1 ROA increased in SEDAPAR
Definition/Description	Ratio of annual net income to average total assets during a financial year
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	8.2 ROA increased in SEDACUSCO
Definition/Description	Ratio of annual net income to average total assets during a financial year
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	8.3 ROA increased in EMAPACOP
Definition/Description	Ratio of annual net income to average total assets during a financial year
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	8.4 ROA increased in SEMAPA Barranca
Definition/Description	Ratio of annual net income to average total assets during a financial year
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	8.5 ROA increased in EMAPA Huaral
Definition/Description	Ratio of annual net income to average total assets during a financial year
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	8.6 ROA increased in EMAPA Huacho
Definition/Description	Ratio of annual net income to average total assets during a financial year
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	9. Return on Equity (ROE) increased in selected utilities.
Definition/Description	Return on equity is the net income divided by common equity.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	9.1 ROE increased in SEDAPAR
Definition/Description	Net income divided by common equity.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	9.2 ROE increased in SEDACUSCO
Definition/Description	Return on equity is the net income divided by common equity.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	9.3 ROE increased in EMAPACOP
Definition/Description	Return on equity is the net income divided by common equity.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	9.4 ROE increased in SEMAPA Barranca
Definition/Description	Return on equity is the net income divided by common equity.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	9.5 ROE increased in EMAPA Huaral
Definition/Description	Return on equity is the net income divided by common equity.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	9.6 ROE increased in EMAPA Huacho
Definition/Description	Return on equity is the net income divided by common equity.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	calculated using data reported by EPSs in annual reports and data collected by SUNASS
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	10. Metering increased in selected utilities
Definition/Description	The percentage of water connections with micro-meters installed, properly working and read.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Connections equipped with micro-meters out of total connections in the system.
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	10.1 Metering increased in SEDAPAR
Definition/Description	The percentage of water connections with micro-meters installed, properly working and read.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Connections equipped with micro-meters out of total connections in the system.
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	10.2 Metering increased in SEDACUSCO
Definition/Description	The percentage of water connections with micro-meters installed, properly working and read.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Connections equipped with micro-meters out of total connections in the system.
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

Indicator Name	10.3 Metering increased in SEMAPA Barranca
Definition/Description	The percentage of water connections with micro-meters installed, properly working and read.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Connections equipped with micro-meters out of total connections in the system.
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	10.4 Metering increased in EMAPA Huaral
Definition/Description	The percentage of water connections with micro-meters installed, properly working and read.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Connections equipped with micro-meters out of total connections in the system.
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.
Indicator Name	10.5 Metering increased in EMAPA Huacho
Definition/Description	The percentage of water connections with micro-meters installed, properly working and read.
Frequency	Biannual
Data Source	EPS
Methodology for Data Collection	Connections equipped with micro-meters out of total connections in the system.
Responsibility for Data Collection	OTASS The End Target values shall be included in the PMO's of each EPS.

ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY: Peru
Modernization of Water Supply and Sanitation Services

1. **This annex provides a more detailed description of the selection criteria for the six participating EPSs and activities to be financed by the proposed project.** Annex 4 provides details on sector context and background information on the selected EPSs.

Selection of Utilities

2. **This project has prioritized its intervention in six EPSs based on a diagnostic and review of intermediate cities that play a key role as centers of economic development.** The following EPSs were selected:

(a) EMAPACOP, Pucallpa, Ucayali, given that they post the lowest coverage rate (estimated at 52 percent, with a high number of inactive connections) in a region with high rates of poverty and the need for increased social inclusion

(b) The cluster of EPSs: EMAPA Huacho, EMAPA Huaral, and SEMAPA Barranca in the Lima Region, given the high degree of fragmentation impeding the achievement of economies of scale

(c) SEDAPAR, Arequipa, due to its lack of regional autonomy to plan, implement, and manage WSS services across its service area, covering the entire Arequipa region

(d) Finally, SEDACUSCO, Cusco, given the need to balance the pressures of expansion with management for environment protection and to address water security issues (water quantity and quality)

3. **The World Bank NLTA[32] allowed for the development of business plans for four selected EPSs: SEDAPAR, SEDACUSCO, EMAPACOP (Pucallpa), and EMAPA Huacho.** This experience has allowed the definition of a methodology for EPS business plan formulation, for replication to other EPSs. This activity proposed reforms to the EPS management models and developed accompanying business plans for each of the four EPSs. The proposed project seeks to validate solutions (management models) in these prioritized EPSs, with a view to replicating these in other EPSs in the country within the context of subsequent projects in a series. The MVCS has also requested guidance on how to improve the efficiency of urban service providers through the aggregation of WSS utilities, which has led the inclusion of the three EPSs in northern Lima where aggregation is envisioned. Overall, the project aims to serve as an 'incubator of new management models', seeking to transform the performance and the integral management of each of the prioritized EPSs to improve efficiency, equity, sustainability, and environmental conditions related to the provision of WSS services.

4. **Table 1.1 provides an overview of the performance of the selected EPSs.** Table 1.2 highlights the challenges (general and institutional/managerial) per EPS. A brief description of the rationale underlying

[32] World Bank. *Peru: Support to the Water Sector Modernization Program (P150824)*. 2015–2017.

the selection of each EPS, touching on the type and level of intervention intended for each, is provided below. More details on the activities per component to be included in this project are provided below in this annex.

5. **As is evident in the following paragraphs, each of the proposed interventions per EPS has a specific objective, with different intervention modalities.** Each project addressing each selected EPS can be developed independently. Nevertheless, all converge to a common goal—the modernization of the WSS services provided by the service provider. Modernization of the prioritized EPSs is regarded as follows and is tailored to each EPS's characteristic weaknesses and challenges:

SEDACUSCO Cusco

6. **SEDACUSCO's main area of jurisdiction is the city of Cusco, comprising the districts of Cusco, Santiago, Wanchaq, and San Sebastián and part of the district of San Jerónimo, as well as the locality of Paucartambo.** SEDACUSCO is not the only service provider in urban Cusco because the whole area of the district of San Jerónimo, which has a population of 29,678 inhabitants and 8,970 connections, is served by the District Municipality (JASS). Similarly, JASS Santa María and JASS San Isidro serve part of the population of the peri-urban areas of the Cusco district, adjacent to the Huatanay River. The region of Cusco also has three other EPSs serving other towns and urban areas in the region.

7. **The project's efforts in SEDACUSCO seek to implement an integrated management model to balance issues of water security (water availability and water quality) with pressure for expansion and formal aggregation of communities surrounding SEDACUSCO's area of influence.** Ultimately, the aim is to ensure improved access to quality WSS services in the EPS's area of jurisdiction and ensure an EPS with adequate institutional and management capacity for the provision of WSS services, responsible for the sustainable management of water source protection in accordance with environmental standards.

SEDAPAR Arequipa

8. **SEDAPAR has a water coverage rate of 93.56 percent, sanitation coverage rate of 80.82 percent, and 13.80 percent rate of collected and treated wastewater (SUNASS 2014[33]).** These figures are primarily skewed by high coverage rates in the city of Arequipa. This EPS has the mandate to provide WSS services to the entire region of Arequipa. Its headquarters is in the city of Arequipa (where commercial and administrative activities take place). Another office in charge of operational activities is located nearby in the central neighborhood of Miraflores, a water treatment plant (La Tomilla) in the nearby district of Cayma, and the WWT plant (Chilpina) in the district of Socabaya. SEDAPAR currently relies on incomplete management systems while the utility has a customized Enterprise Resources Planning (ERP) system, which is not yet fully integrated with its administrative system.

9. **SEDAPAR was selected to address its inadequate organizational structure, which hinders the provision of adequate WSS services in its area of administration (the entire region of Arequipa).** This weakness also results in a lack of monitoring and control mechanisms and hinders interinstitutional coordination and decentralized WSS service delivery. Although the city of Arequipa has relatively high-performance standards, other urban centers and towns under SEDAPAR's purview demonstrate drastically lower performance. Also, SEDAPAR relies on limited human resource capabilities that are highly

[33] SUNASS. *Reporte de Indicadores*, 2016 (Q2 2017): *http://www.sunass.gob.pe/doc/Indicadores2017/indicadores_2tri2017.pdf*.

centralized in the region's capital, experiences deficiencies in operational and commercial management (evidenced by the high number of complaints and the presence of social conflicts such as citizen protests and blockades due to inadequate service quality), and in the scope of intervention of the EPS, and still relies on inadequate and outdated information technology (IT) systems. The project likewise seeks to improve the quality of services through small but specific investments in water, sanitation, and WWT and to increase investments in sanitation and hygiene education programs and improve the efficiency of EPS management.

EMAPACOP Pucallpa, Ucayali

10. **EMAPACOP has the mandate to provide coverage for the province of Coronel Portillo in the region of Ucayali, whose capital is Pucallpa.** EMAPACOP is currently under the RAT program of OTASS, and its administration is in the hands of the national government. The main weaknesses of Pucallpa concern the EPS's poor institutional and management capacity for the provision of drinking WSS services, predominantly the inadequate organizational structure and lack of monitoring; limited human resources capabilities, which is reflected in low productivity; inadequate remuneration scale for professionals, specialists, and managers; deficiency in operational and commercial management; presence of social conflicts in the area of intervention of the EPS; lack of a commercial cadastral; and inadequate and outdated IT systems. Although the self-reported coverage rates submitted to SUNASS stand at 52 percent, there is a high degree of inactive connections, and it is estimated that actual coverage rates are around 35 percent.

11. **EMAPACOP was selected to improve the institutional capacity and management of an EPS currently in OTASS's RAT scheme, allowing it to improve the overall efficiency in providing WSS services.** Ultimately, the aim is to put EMAPACOP on a path where it is no longer under intervention through the RAT, but rather equipped with the adequate organizational structure, a pool of human resources with high productivity, an adequate remuneration scale, efficient operational and commercial management that can reduce social conflicts in the jurisdiction of the EPS, and a functioning micro-metering system and IT systems, and it is responsible for the sustainable management of water resources in accordance with environmental standards. Intervention in EMAPACOP also allows fine-tuning of OTASS's RAT intervention program.

EPSs in Northern Lima (Barranca, Huaral, and Huacho)

12. **The EPSs EMAPA Huaral, EMAPA Huacho, and SEMAPA Barranca are all located in the northern region of Lima.** EMAPA Huaral and SEMAPA Barranca are small in scale, and the EPS performance of these two has been poor, providing low coverage and quality of services. Both are now formally intervened by the national government through the RAT:

(a) EMAPA Huaral has a water coverage rate of 80.91 percent and sanitation coverage rate of 75.11 percent; the EPS does not currently provide wastewater collection and treatment services. EMAPA Huaral is intervened under the RAT program. Service continuity is variable, with customers experiencing chronic rationing and shortages.

(b) SEMAPA Barranca has a water coverage rate of 84.57 percent and sanitation coverage rate of 68.54 percent. SEMAPA Barranca does provide wastewater collection and treatment

services; however, this is low at 3.60 percent. SEMAPA Barranca is intervened under the RAT program. Like EMAPA Huaral, service continuity is variable.

13. **EMAPA Huacho has higher coverage rates and is considered a medium-size EPS:** EMAPA Huacho has a water coverage rate of 94.49 percent and sanitation coverage rate of 93.05 percent. Unlike EMAPA Huaral and SEMAPA Barranca, EMAPA Huacho is not intervened under the RAT program. However, this EPS does not provide wastewater collection and treatment services. It also has many neighboring districts surrounding its jurisdiction that require formalization into the EPS.

14. **Although EMAPA Huacho is performing slightly better, the three utilities face similar weaknesses in poor institutional and management capacity, hampering their ability to adequately provide WSS services to the Lima Norte region.** The project seeks to improve the delivery of WSS and water treatment to the northern Lima area, by identifying opportunities to achieve economies of scale and other managerial, administrative, and operational efficiencies. More specifically, the project aims to promote aggregation for increased economies of scale through the development and implementation of a proposal for long-term aggregation reform unifying the three EPSs, allowing for coverage expansion; increased investments in sanitation and hygiene education programs; and improvements in the efficiency of the EPSs' management. The current project will seek to enhance the efficiency of these three utilities and identify areas and modalities under which aggregation may be feasible and beneficial for all three entities. Ultimately, the aim is to see increased coverage of WSS and WWT services and improved service delivery within the scope of the northern Lima region. The unified EPSs will have adequate institutional and management capacity for the provision of potable water and sewerage services, and responsibility for the sustainable management of water resources in accordance with environmental standards and sufficient coverage and quality of the services provided. Unification and aggregation may not necessarily result in the creation of a single utility in place of the existing three; rather, there is scope to unify processes such as commercial management; network rehabilitation; maintenance, procurement, and operation of specialized equipment; and so on.

Table 1.1. Performance of Participating EPSs

Indicator		Lima Norte			Ucayali	Cusco	Arequipa
		SEMAPA Barranca S.A.	EMAPA Huacho S.A.	EMAPA Huaral S.A.	EMAPACOP S.A.	SEDACUSCO S.A.	SEDAPAR S.A.
Served Urban population		76,820	120,522	87,037	301,764	406,046	1,072,400
Water	Population served	64,893	113,782	72,993	155,890	400,116	1,007,182
	Coverage (%) (2016)	88.00	94.00	86.00	46.00	99.00	86.00
Sanitation	Population served	60,228	112,041	66,532	156,083	392,529	874,997
	Coverage (%)	81.00	88.00	77.00	46.00	97.00	79.00
Wastewater	Volume collected	4,522,276	4,846,487	3,984,708	9,674,556	14,599,997	42,589,507
	Volume treated	212,063	0	0	196,820	14,154,829	4,595,021
	Volume treated/collected (%)	3.83	0.00	0.00	2.35	95.00	15.83
Connections	Water (2016)	17,774	27,645	17,311	27,936	83,527	305,195
	Sanitation (2016)	16,332	27,016	15,811	27,606	79,771	268,916

Indicator	Lima Norte			Ucayali	Cusco	Arequipa
	SEMAPA Barranca S.A.	EMAPA Huacho S.A.	EMAPA Huaral S.A.	EMAPACOP S.A.	SEDACUSCO S.A.	SEDAPAR S.A.
Continuity (average hours) (2016)	16.05	13.39	11.89	18.17	20.32	22.95
Pressure (mWC)	9.92	13.42	8.62	8.07	31.1	29.65
Micro-metering (2016)	14.70	79.98	25.65	17.33	89.22	80.05
NRW (%) (2016)	60.04	34.02	38.06	45.98	37.81	34.13
Utility size	Medium	Medium	Medium	Medium	Large	Large
Number of employees	88	146	80	109	231	694
Working environment (%) (2016)	3.68	3.88	4.07	3.62	3.46	3.65
Customer satisfaction (%) (2016)	59.00	n.a.	67.20	67.20	78.00	68.60
RAT[a]	Yes	1 and 2	Yes	Yes	No	No

Source: SUNASS 2016 Annual Benchmarking Report, OTASS 2015.
Note: a. RAT: Yes, EPS is under RAT; No, EPS is not under RAT; # EPS is not under RAT but has grounds to enter under possible reasons: 1 - economic or financial solvency; 2 - sustainable business management; 3 – sustainability.

Table 1.2. Main Institutional/Managerial Challenges per Selected EPS

EMAPACOP Pucallpa	• Inadequate organizational structure and inadequate monitoring and control • The technical and managerial capabilities of the staff are limited, reflected in low productivity • Inadequate remuneration scale: unequal remuneration scale among professionals, specialists, and managers • Deficiency in operational and commercial management (presence of social conflicts in the EPS's area of administration, outdated commercial cadastral, problems in reading meters, and so on) • Inadequate and outdated IT systems
SEDACUSCO Cusco	• Varying levels of service quality provided by different service providers to the same urban population; related to managerial problems given the multiplicity of relatively small service operators • Inadequate organizational structure and inadequate monitoring and control • Limited human resources and capacitated staff capabilities, reflected in low productivity • Inadequate remuneration scale: unequal remuneration scale among professionals, specialists, and managers • Deficiency in operational and commercial management (presence of social conflicts in the EPS's area of administration, outdated commercial cadastral, problems in reading meters, and so on) • Inadequate and outdated IT systems • Water security issues that impede expansion of services
SEDAPAR Arequipa	• Inadequate organizational structure and inadequate monitoring and control to provide adequate services outside the metropolitan area of Arequipa • Technical and managerial capabilities of the staff are limited, reflecting in low productivity • Deficiency in operational and commercial management (presence of social conflicts in the EPS's area of administration, outdated commercial cadastral, problems in reading meters, and so on)

	• Inadequate and outdated IT systems
SEMAPA Barranca	• Inadequate organizational structure and inadequate monitoring and control • Limited human resource capabilities: constant managerial instability due to the high turnover of managers and lack of an incentives program, among others • Inadequate remuneration scale: unequal remuneration scale among professionals, specialists, and managers • Deficiency in operational and commercial management: it lacks a public relations plan; the office of institutional image is limited only to immediate action; the procedures manuals for each of the areas involved in administrative, commercial, and operational management are not readily available; it lacks a technical cadastral; it has a high percentage of unbilled water; it has a low percentage of micro-metering; and it has a low level of tariff collection; among others • Inadequate and outdated IT systems
EMAPA Huaral	• Inadequate organizational structure and inadequate monitoring and control • Limited human resource capabilities • Inadequate remuneration scale: salaries are under the market average, unattractive in the labor market • Deficiency in operational and commercial management: the cadastral is not 100% updated in relation to the commercial and operational system, among others • Inadequate and outdated IT systems: lack of cost structure development and specific procedures manuals are not available
EMAPA Huacho	• Inadequate organizational structure and inadequate monitoring and control • Limited human resource capabilities • Inadequate remuneration scale: the project management unit does not have qualified staff, due to low pay offered to professionals • Deficient operational and commercial management: low level of continuity in the town of Huacho, high rate of unbilled water, low average pressure level in the town of Huacho, lack of maintenance programs of systems, high rate of clandestine users, lack of updated technical and commercial cadastral, and high costs of electricity for water treatment, among others • Inadequate and outdated IT systems: lack of user manuals for computer systems (SIGO and SICIPD, for its acronyms in Spanish for: Sistema de Información de Gestión Operativa, and Sistema de Información Comercial), among others

Source: Perfil: "MODERNIZACIÓN DE LA PRESTACIÓN DE LOS SERVICIOS DE AGUA POTABLE Y SANEAMIENTO EN LAS EPS EMAPACOP, SEDACUSCO, SEDAPAR, SEMAPA BARRANCA, EMAPA HUARAL Y EMAPA HUACHO INFORME FINAL DEL PERFIL PROGRAMA DE INVERSIÓN".

Component 1: Improving Governance of Water Supply and Sanitation Service Providers (US$38.73 million, of which US$16.27 million IBRD financing)

15. This component will contribute to improving the efficiency of the sector by financing activities that will support national-level sector entities, primarily the MVCS, OTASS, and SUNASS as well as the efficiency of the six selected EPSs. The component comprises the following three subcomponents:

Subcomponent 1.1: Improving Institutions, Policy and Regulation of Water Supply and Sanitation Services (US$7.82 million)

16. **This subcomponent will support the implementation of key policy instruments and regulations, as follows:**

(a) Develop a sector-wide MIS to facilitate coordination between sector entities and facilitate regulation of all service providers (EPSs, municipal service providers, and rural water boards).

(b) Strengthen the systems and capacity of the regulator, SUNASS, including:

(i) Reformulating regulatory and tariff-setting instruments such as the PMOs;[34]

(ii) Developing guidelines or procedures for regulating small EPSs and rural areas; and

(iii) Developing guidelines and procedures for improved targeting of subsidies to enhance the financial efficiency of the sector.

(c) Develop a methodology for and support implementation of the aggregation of service providers, including defining the minimal scale and size of EPSs and a progressive approach to formally integrate municipal service providers into EPSs.

(d) Establish planning and equipping of a unit within the MVCS to enhance coordination and transparency in the sector.

(e) Develop multiannual investment plans (budgeting tools) to identify gaps, prioritize investments (both expansion and efficiency measures), and define sources of funding (grants, loans, PPP, and so on) for the regions of Arequipa, Ucayali, and Cusco and Lima Province that will serve as planning instruments for a newly created planning unit to define gaps in WSS services and adequately target sector financing.

(f) Develop instruments, such as standard contracts and revised procedures, for PPP in WWT.

Subcomponent 1.2: Strengthening of OTASS and PNSU (US$3.89 million)

17. **This subcomponent will support the following:**

(a) Integrated ISC that will be embedded within OTASS to carry out the following activities, among others:
(i) Structure the management of 11 EPSs under the RAT by OTASS:
- Evaluate existing institutional structure for OTASS as a 'holding'.
- Organize structure of control of EPSs under the RAT.
- Measure performance indicators.
- Monitor results.
- Analyze costs.
- Analyze performance of EPS management and designated professionals contracted by OTASS for the EPSs.

(ii) Develop TA program for OTASS to provide specialized services to EPSs:

[34] PMOs are instruments used by SUNASS to review and approve tariffs. They consist of detailed plans prepared by each EPS outlining the investment needs that can be covered by a potential tariff adjustment.

- Institutional and planning:
  - Human resources.
  - Development of planning instruments
- Commercial management
- FM
- Operational:
  - Structuring NRW reduction program
  - Sectorization
  - WWT
- Communications

(iii) Develop and implement a new organizational structure for OTASS.

(iv) Prepare standards and procedures for analysis, preparation, and evaluation of investment projects.

(v) Provide implementation support.

(b) Develop policy proposal for remuneration and incentive programs to promote voluntary retirement and promote human resources development in EPSs.

(c) Develop communications strategy for OTASS and service providers.

18. **For PNSU, this subcomponent will support its institutional strengthening through**

(a) Design and implementation of a training program for personnel in PNSU´s regional Citizen Service Centers that provide TA to EPS and municipal service providers during the implementation of WSS infrastructure projects and

(b) Support in determining improvements that the organization requires to respond to the increased demand in preparing and executing civil works projects.

Subcomponent 1.3: Improving efficiency and sustainability of service providers (US$27.02 million)

19. **This subcomponent will support a series of management efficiency measures aimed at improving the performance of selected EPSs.** For SEDAPAR, SEDACUSCO, EMAPACOP, and EMAPA Huacho, planning documents or business plans have been developed through a World Bank NLTA[35] that provided a diagnostic of challenges and articulated a series of activities including investments that can support improvement of the EPSs' performance. Similar planning instruments will be developed for EMAPA Huaral and SEMAPA Barranca. Activities prioritized in these plans will be financed through a combination of resources from this project and counterpart financing from the GoP.

20. **More specifically, this component will finance:**

(a) Institutional and planning improvements including preparation or updating of master plans that include demand studies, water resources studies (hydrology, assessment of new water sources, water quality, and so on), and the development of new business models to enhance service delivery to existing customers and extend services to decentralized urban populations and peri-urban areas. Planning activities will also include the development and/or updating of contingency plans to prepare for and increase service delivery resilience to droughts and other natural disasters. In some utilities, specific sanitation master plans will be financed. Specifically, the following will be financed:

[35] World Bank. *Peru: Support to the Water Sector Modernization Program (P150824)*. 2015–2017.

(i) Strategic planning (master plans) that include demand studies and development of new business models to enhance service delivery to existing customers and extend services to decentralized urban populations and peri-urban areas
(ii) Sanitation master plans prioritized in business plans
(iii) Capacity building - training program for technical and managerial staff
(iv) Implementation of communication and client orientation programs;

(b) Operational improvements such as software for ERP, improvements of commercial and FM systems, establishment of district management areas (sectorization), development and implementation of nonrevenue programs (hydraulic studies of networks, needs assessment for macro and micro-metering, leak detection and control, and so on), automation of WSS infrastructure (Supervisory Control and Data Acquisition [SCADA]), and the development and implementation of communication and client orientation programs;

(c) Commercial management improvements including Improvements of commercial systems and enhancement of commercial cadastral.

21. **This subcomponent will also finance the development and contracting of management contracts to be implemented in coordination with EPSs.** These contracts will include management contracts to provide technical and operational support to EPSs and contracts to support the professionalization as well as outsourcing of processes (such as performance-based NRW contracts), among other contract typologies.

22. **For EPSs such as SEDAPAR and SEDACUSCO that have adequate tariff-generated revenue resources, the project will leverage these resources to support activities aligned to the NWSP.** A breakdown of activities to be financed through government grants and tariff revenues in each EPS are outlined in Table 1.3.

Table 1.3. Financing Source for Activities by EPS

SEDAPAR		
Activity	**Financing Source (US$, millions)**	
	SEDAPAR	**Project**
Development of master plan	—	2.00
ERP	—	3.00
Updating of commercial cadastral	1.60	—
Digital/electronic invoice delivery/distribution	0.02	—
Commercial management program	0.32	—
Hydraulic modernization	0.65	—
SCADA (control center and remote)	—	8
Energy efficiency for turbines and pumping stations	0.65	—
Specific regional studies	1.00	—
Updating of cadastral (technical and commercial) onto geographic information system (GIS) platform	1.29	—

SEDAPAR		
Activity	Financing Source (US$, millions)	
	SEDAPAR	Project
Regional management tools (to support management of decentralized offices in region of Arequipa)	3.23	—
Sewerage technical cadaster/registry	2.10	—
Communication and sanitation and hygiene education	0.16	—
Sewerage master plan	—	1.30

SEDACUSCO		
Activity	Financing Source (US$, millions)	
	SEDACUSCO	Project
Development of master plan	—	1.29
ERP	—	1.61
Updating of commercial cadastral	1.00	—
Micro meter installation	0.25	—
Commercial management program	0.20	—
Lake Piuray turbine (rehabilitation of turbine for water abstraction)	0.65	—
SCADA	—	1.30
Study to create macro-sectors (district zones)	0.25	—
Establish district metered areas (sectors)	1.29	—
Installation of macro meters	0.29	—
Program to activate inactive connections	0.32	—
Vilcanota hydrogeological study (diversification of water sources to meet growing demands)	0.11	—
Updating of cadastral (technical and commercial) onto GIS platform	0.61	—
Database for electromechanical equipment	0.10	—
Sewerage technical cadaster	0.90	—
Communication and sanitation and hygiene education	0.16	—
Sewerage master plan	—	1.29
Archeological monitoring plan	0.48	—

EMAPACOP		
Activity	Financing Source (US$, millions)	
	GoP	Project
Improvement of water quality	—	1.22
Energy efficiency	—	0.50
Operational improvement of the drinking water distribution system	—	1.00
Strengthening of operational management capacity	—	0.40
Optimization of commercial management	—	2.00
Optimization of operational control in selected sectors 1A, 1B, 1C, 2B, and 3B*	—	1.25
Optimization of billing and collection	—	0.70
Business development and planning	—	1.00
Improvement of the information system	—	0.55
Improvement of customer service	—	0.01
Formalization of land rights for existing and planned infrastructure	0.10	—

EMAPACOP		
Activity	Financing Source (US$, millions)	
	GoP	Project
TA to implement the activities in emergency plan	—	0.43

EMAPA Huacho		
Activity	Financing Source (US$, millions)	
	HUACHO or GoP	Project
Development of master plan	—	0.10
New commercial system and GIS (open source tool)	—	0.61
Feasibility studies for water abstraction and primary trunk to supply the districts of Huacho, Hualmay, Santa Maria, Carquin, and Huaura including development of district metered areas for the new system's operation	—	1.45
SCADA	—	1.30
Modernization and outsourcing of commercial management	—	2.50
Investments in IT, equipment, transportation, and labs	—	0.88
Application of new tariff scheme	—	0.20

23. **The project will finance planning instruments for EMAPA Huaral and SEMAPA Barranca.** Based on activities prioritized in these plans, the project will identify activities to be financed through this project and additional government resources. Both Huaral and Barranca are currently under OTASS's RAT and have been formally intervened by the national government. The project will support OTASS in the development of a work program to support the turnaround of these nonfunctioning EPSs.

Component 2: Improving and Expanding Water Supply and Sanitation Services in the Participating EPS (US$151.52 million, of which US$53.03 million IBRD financing)

Table 1.4. Summary of Potential Investments to Be Evaluated under Component 2

Activity	Financing Source	
	GoP or EPS	Project
SEDACUSCO		
Enhancement of water distribution system (33.8 km of network) and installation of 1,672 household connections in the districts of Cusco, Wanchaq, Santiago, San Sebastián, and San Jerónimo		X
Rehabilitation and improvement of sewerage in the districts of Cusco, Wanchaq, Santiago, San Sebastián, and San Jerónimo (estimated beneficiaries, 25,600)		
Expansion of sewerage for city of Cusco (38.2 km) and installation of 1,267 household connections (estimated beneficiaries, 26,200 people)		X
Rehabilitation and improvement of service continuity of Kor Kor water supply system (estimated beneficiaries, 51,700)		X
Expansion of water supply distribution system for the city of Cusco and installation of 815 household connections		X
Storm water drainage rehabilitation and expansion to reduce damage to San Jerónimo WWT plant	X	

Activity	Financing Source	
	GoP or EPS	Project
SEDAPAR		
Provision of water and sewerage services through decentralized systems in peri-urban areas of metropolitan area of city of Arequipa - Cerro Colorado (estimated beneficiaries, 15,000 people)		X
Expansion of WSS services in peri-urban areas of metropolitan area of Arequipa - Cerro Colorado—includes installation of 4,500 new connections (estimated beneficiaries, 15,300)		X
Rehabilitation of water supply and sewerage infrastructure in the locality of La Joya and expansion of WSS services to 485 households		X
Rehabilitation and expansion of WSS services in Caravelí locality, including installation of 837 new household connections (estimated beneficiaries, 6,000)		X
Improvement and expansion of WSS services in the locality of Chuqiuibamba (estimated beneficiaries, 3,000)		X
Expansion of WSS services in four districts in the town of Camaná	X (SEDAPAR)	
Expansion of WSS services in town of Islay (estimated beneficiaries, 150,000 people)	X (GoP-PNSU)	
EMAPACOP		
Rehabilitation of existing water treatment plant and associated pumping equipment	X	
Expansion of water treatment capacity (new treatment plant with estimated capacity 1,162.82 L/s)	X (GoP-PNSU)	
Expansion of WWT capacity (consideration of waste stabilization ponds)	X (GoP-PNSU)	
Rehabilitation of existing WSS networks	X (GoP-PNSU)	
Expansion of WSS services (44,300 water supply connections and 37,900 sewerage connections)	X	
EMAPA Huacho		
WSS network projects in Nueva Vida and expansion of Santa María, Vegueta, and Sayan (8,650 new connections)		X
WSS expansion investment implementation in South Huacho (1,500 new connections)		X
WSS network expansion investment implementation in Ciudad Satélite (3,000 new connections)		X
New aqueduct and main trunk for expansion of water supply and rehabilitation of existing water supply networks associated with targeted sectors		X
Rehabilitation and expansion of sewerage in targeted sectors		X

24. **Under this project, ten infrastructure subprojects that are currently in viable stage have been vetted and provisionally considered for further detailed engineering designs and financing.** The approved project profiles (concept notes) have been reviewed to ensure that each project is in accordance with the criteria set forth below (in paragraph 29 of this annex). The identified subprojects are listed in Table 1.5.

Table 1.5. Subprojects Identified

Utility	Subproject	Investment (US$, millions)
SEDAPAR	Creation of Water Supply Systems reliant on Reservoir N31 and Sanitation for Cerro Colorado's District in Arequipa's Province, Department, and Region	16.21

Utility	Subproject	Investment (US$, millions)
SEDAPAR	Creation of Water Supply Systems reliant on Reservoir N39 and Sanitation for Cerro Colorado's District in Arequipa's Province, Department, and Region	16.76
SEDAPAR	Improvement and Expansion of Water Supply and Sanitation in Caravelí	6.28
SEDAPAR	Expansion, Renovation, and Improvement of Water Supply and Wastewater (including Household Connections of La Joya District)	6.04
SEDAPAR	Improvement and Expansion of Water Supply and Sanitation in Chuquibamba District	2.10
SEDACUSCO	Improvement of the Water Supply Distribution System in Cusco, Wanchaq, Santiago, San Sebastián, and San Jerónimo Districts in Cusco Province	3.01
SEDACUSCO	Expansion of the Water Supply Distribution System of Cusco City	2.10
SEDACUSCO	Improvement of Water Continuity in the Integrated System of Kor Kor, Hatun Huaylla, and Jaquira of SEDACUSCO EPS in Cusco	2.38
SEDACUSCO	Expansion of the Sewer System and Sewerage Connections in Cusco City	2.87
SEDACUSCO	Improvement of Waste Water Drainage System of Cusco, Wanchaq, Santiago, San Sebastián, and San Jerónimo Districts.	3.03

Source: Estudio de Factibilidad: "MODERNIZACIÓN DE LA PRESTACIÓN DE LOS SERVICIOS DE AGUA POTABLE Y SANEAMIENTO EN LAS EPS EMAPACOP, SEDACUSCO, SEDAPAR, SEMAPA BARRANCA, EMAPA HUARAL Y EMAPA HUACHO INFORME FINAL DEL PERFIL PROGRAMA DE INVERSIÓN".

25. **Subprojects that include rehabilitation or expansion of WSS networks will be accompanied by targeted campaigns (implemented under communications in Subcomponent 1.3) to ensure connectivity to services**. Depending on the specific EPSs and their current programs, household connections will either be incorporated into contracts of main civil works or carried out by EPS using its own resources or outsourcing to local contractors. As all the beneficiaries in the targeted communities fall below Peru's poverty line, dedicated programs to ensure affordability of connections will be assessed and adequate measures will be put in place. Each EPS will enter into an agreement with the respective households to grant the EPSs and its designated contractors entry into private property. Peruvian legislation does not provide public service providers with access rights to carry out inter-domiciliary connections. To ensure that intended benefits are achieved, programs that encompass construction or rehabilitation of an existing connection will be put in place. In EPSs with high poverty rates and limited financial ability to pay for connections, considerations for developing a subsidized revolving fund to support households to upgrade their existing sanitation facilities will be considered.

26. **Two of the projects for SEDAPAR have detailed engineering designs.** In Caravelí, the subproject seeks to invest in the rehabilitation of parts of the existing water supply system as well as in the expansion of services through improvement and augmentation of network components. This includes improvements to existing tanks and construction of new storage tanks, expansion of the capacity and operationalization of the distribution network, and installation of new and rehabilitation of existing household connections. For the sanitation system, it includes the construction of a new WWT plant, rehabilitation of emission pipes and the collection network, and the rehabilitation of existing and installation of new household connections. Total cost for this subproject is estimated at US$5.2 million.

27. **In Chuquibamba, SEDAPAR, the subproject will finance improvements to the existing network of water supply by investing in the protection of the existing water source, in the expansion of the distribution network, and the installation of a new drinking water treatment plant together with**

improvements to existing storage and household connections. For sanitation, rehabilitation and improvements are planned for the network pipes and the emission pipes, as well as the expansion of existing treatment plans. Total cost for this subproject is estimated at US$2.1 million.

28. **Climate change mitigation and GHG emissions.** The net emissions of the project are estimated at −22,557 tCO_2-eq over the life of the project, while the gross emissions are estimated to be 85,474 tCO_2-eq. On average, the project generates estimated net emissions of −1,127 tCO_2-eq annually. The new water supply production increases are estimated to experience net emissions of 15,877 tCO_2-eq. NRW reduction activities will see total net emissions of −909 tCO_2-eq, which represents a net decrease in emissions due to energy efficiency gains. The wastewater activities for SEDACUSCO will see estimated net emissions of −19,779 tCO_2-eq, while the wastewater activities for SEDAPAR will see estimated net emissions of −17,746 tCO_2-eq. The wastewater and NRW activities all result in net emissions reductions. These emissions reductions are attributable to the water and wastewater activities under Component 2.

29. **The following criteria have been put in place for consideration of infrastructure subprojects:**

(a) Subprojects must be aligned with the NWSP to increase access to WSS services to unserved populations (with an emphasis on expansion to areas with low-income populations).

(b) Subprojects must be aligned with the NWSP to promote efficiency and sustainability of service delivery, which includes reduction of NRW, optimization of existing infrastructure, and retrofitting to incorporate resilience to climate change.

(c) Subprojects must be identified in the participating EPS's planning instrument and/or tariff-setting instrument (PMOs).

(d) Subprojects must promote aggregation and economies of scale between the existing EPSs and neighboring municipal services providers, other EPSs, or rural water boards.

(e) Compliance with the economic, financial, legal, technical, institutional, social, and environmental eligibility criteria will be documented in relevant feasibility studies approved by PNSU (MVCS) and have the formal no-objection of the World Bank.

(f) Estimated revenues of subprojects or the EPS should cover O&M of investment. Subsidies from regional and national governments can be considered as contributions to meet O&M demands.

30. **The ten selected subprojects were also vetted to ensure the technical proposals are aligned with the guidelines of the project's ESMF to ensure compliance with applicable social and environmental safeguard policies, including preparing the necessary instruments and undertaking consultations and disclosure.** Newly identified projects will be developed in accordance with the project's ESMF.

Component 3: General Project Administration (US$9.75 million, of which US$0.7 million IBRD financing)

31. **This component will support the management and monitoring of activities associated with project implementation through OTASS.** It will include TA and administrative support to the day-to day implementation of procurement and FM activities including preparation of quarterly reports and financing

of annual audits; TA to the project participating agencies, including the preparation of the semiannual, midterm, and final reports and the environment and social safeguards monitoring including the implementation of the RPF; development of settlement plans (if needed), IPPF, and ESMF; M&E including baseline surveys (for example, social and gender); and final project evaluation. It will also finance training, communication, and incremental costs incurred to implement the project.

ANNEX 2: IMPLEMENTATION ARRANGEMENTS

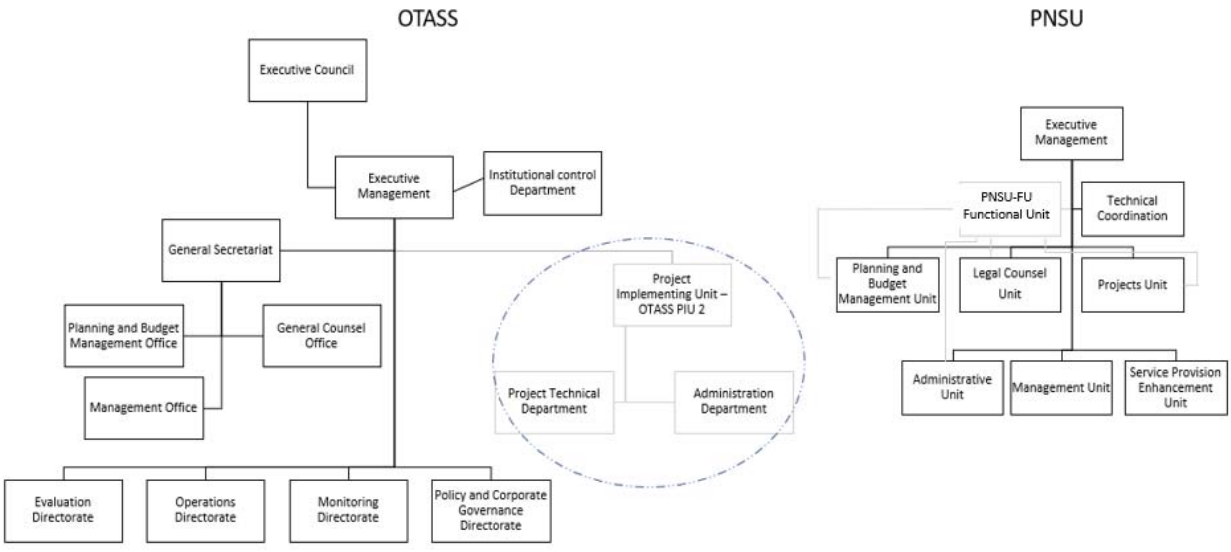
COUNTRY: Peru
Modernization of Water Supply and Sanitation Services

Project Institutional and Implementation Arrangements

1. **Borrower.** The recipient of the loan will be the Republic of Peru, through MEF, which will transfer the loan proceeds to OTASS and MVCS-PNSU, as co-implementing units of the project. OTASS will be the main implementing agency through OTASS PIU 2, which will be responsible for the implementation of all project activities under Components 1 and 3, as well as overall project coordination, which includes internal and external communications, FM, procurement, and compliance with safeguards policies. PNSU, as a PIU, will create a FU, which will be responsible for activities under Component 2, under the supervision of OTASS.

2. The institutional arrangements for the execution of the project are shown in Figure 2.1. The coordination functions shown in the middle of the schematic will be physically located within OTASS PIU 2.

Figure 2.1. Project Institutional Arrangements



3. **OTASS PIU 2.** OTASS PIU 2 will be created and staffed by and within OTASS, through a Resolution of the Executive Board of OTASS satisfactory to the World Bank, to coordinate, implement, manage, operate, and monitor the project, led by the Project Coordinator with the support of the ISC. OTASS PIU 2 will have the following main duties and responsibilities: (i) managing the implementation of the project and compliance with the strategy and processes established in the POM; (ii) reporting to OTASS, PNSU, VMCS, SUNASS, and World Bank about the project's progress; (iii) monitoring the implementation of the project; (iv) managing the project's material and financial resources; (v) developing annual operational

plans and management instruments; (vi) ensuring the successful and integral execution of the project; (vii) performing the procurement processes; (viii) approving contracts and agreements; (ix) establishing FM arrangements (budget, accounting systems, financial and internal control, financial reporting, and audit) to ensure proper management of resources and allocation of funds; (x) carrying out M&E activities; (xi) coordinating with OTASS and PNSU's directorates/areas to ensure support and proper execution; and (xii) ensuring compliance with the contractual conditions of the project. There will be other coordinating mechanisms: at the strategic level, through PCC annual meetings; at the executive level, through quarterly meetings between OTASS and PNSU; and at the operative level, through meetings with the PIUs and other entities involved depending on coordinating needs.

4. The POM provides details related to the project's institutional setup, fiduciary arrangements, M&E procedures, safeguards compliance arrangements, and governance arrangements. OTASS PIU 2 will have two primary roles: to partially implement the project and to provide overall project coordination. It will oversee the implementation of Components 1 and 3 and will support PNSU administratively and financially and supervise PNSU implement Component 2 of the project. The OTASS PIU 2 will coordinate with OTASS's managers, the FU within PNSU, and the CUs within SUNASS, VMCS, and the EPSs to inform the implementation of Component 1, and with the CUs of the EPSs for Component 2.

5. **OTASS PIU 2 - overall project coordination.** Overall coordination will consist of the following three areas:

(a) **The general coordination will be formed by the Project Coordinator and an Assistant.** The Project Coordinator, named by the PCC and satisfactory to the World Bank, will provide overall leadership to the project with the support of an ISC firm. The duties and responsibilities of the Project Coordinator will include, among others, managing the coordination of the project, representing the project, proposing programmatic strategies and operational plans to the PCC, directing project implementation according to the management tools and the POM, approving and monitoring the budget execution, approving management documents, approving the selection and contracting of the technical and administrative staff, assuming the role and tasks of the Executive Secretary of the PCC, complying with the Loan Agreement, and providing advice to OTASS's Executive Director on WSS issues.

(b) **The Technical Supervision Unit will consist of two technical teams (each formed by the Head of Technical Supervision and several specialists) that will support OTASS and PNSU in the implementation, supervision, and monitoring of Component 1 and Component 2, respectively.** The team working on Component 1 will prepare terms of reference and monitor and supervise consultancy services; the team working on Component 2 will coordinate the implementation of subprojects from preparation to approval and their supervision with PNSU. This unit will supervise the day-to-day operations of the project. It will be supported by an Integrated Management (firm). The duties and responsibilities of this unit will include, among others, supporting the Executive Director in proposing programmatic strategies and operational plans to the PCC; leading technically the project activities to be implemented in the six selected EPSs; preparing the annual operating plans and associated budgets; overseeing M&E activities and safeguards and supervising the preparation of progress reports as requested by OTASS, MVCS, MEF, and the World Bank; coordinating and supervising the implementation of nonstructural efficiency measures as

well as selection and implementation of civil works subprojects; and contributing to administrative and budgetary control, led by the PIU administrative units.

(c) **The Administrative Unit, in charge of the fiduciary aspects of the project.** This area will work closely with the administrative unit within PNSU to reconcile fiduciary activities and report on overall project progress. This area will manage financial resources allocation; carry out personnel, operations, procurement, budget, accounting, administrative, and documenting activities for the project; update Systematic Tracking of Exchanges in Procurement (STEP); and prepare financial reports and internal audits. These three units will operate under the Executive Director's supervision. The management units will formulate rules and procedures, develop procurement and disbursement plans, prepare biannual and annual financial reports, and ensure compliance with all contracts in accordance with the procedures of OTASS, and World Bank. The main functions of these management units are described in the following paragraphs:

(i) **Planning, Budget, and Monitoring Unit.** This unit will be responsible for planning the work program of the project, developing the budget, and monitoring the implementation considering fiduciary and technical aspects. Its main duties will include planning, elaborating, and monitoring the annual budget; coordinating the elaboration of annual operations plans and biannual budgets with technical areas; M&E of the annual operation plans and budgets; coordinating with the MVCS, OTASS, PNSU, MEF, and the World Bank, for the programming and execution, financing, and supervision of the project; keeping the POM up to date; and providing advice to the Technical Supervision Director and Executive Director in the areas of planning, budget, and M&E.

(ii) **Administrative Unit.** This unit will be responsible for carrying out administrative functions. Its principal duties will include managing the economic, financial, and human resources of the project; directing, executing, and supervising the administrative strategies, norms, and internal policies that allow to optimize the activities; ensuring compliance with the standards issued by the public sector and the World Bank regarding all administrative activities; assisting the Executive Director and Technical Supervision Director in all matters related to administration and FM, procurement, budget execution, and disbursements; assisting the technical coordination subunits of the six selected EPSs in the execution of their annual budget; establishing the administrative and financial control of the project activities; establishing the administrative and financial internal control system to manage the project; coordinating with the external auditor under the terms of the Loan Agreement and providing any documentation that they may request; and carrying out any other duties as requested by the Executive Director or Technical Supervision Director.

(iii) **Legal Unit.** This unit will be responsible for ensuring that the PIU operates within the current legislation's framework. Its main duties will include coordinating and supervising the correct application of World Bank guidelines in processes such as procurement; preparing, proposing, and expressing opinions about the regulations and legal provisions that contribute to the improvement of the legal framework that could affect the project; carrying out the monitoring, analysis, and interpretation of the norms that may affect the project; supporting the heads of units such as the MVCS

(OTASS and PNSU), six selected EPSs, and regional and local governments, among others, in their endeavor to achieve the agreements and documents to be signed with institutions involved in project execution; and designing internal norms that contribute to compliance with the current legislation.

6. **OTASS PIU 2 - Implementation of Components 1 and 3.** OTASS PIU 2 will be the financial PIU, in charge of financial and accounting administration of Components 1 and 3 and the preparation of financial statements of the project. OTASS PIU 2 will be responsible for:

(a) Implementing Components 1 and 3 of the project;
(b) Managing financial resources allocation for the project;
(c) Coordinating personnel, operations, procurement, budget, accounting, and financial reporting activities of Components 1 and 3;
(d) Implementing the MIS and keeping it up to date;
(e) Preparing financial statements for the project and sharing them with the Project Coordinator for reconciliation of project-level reports;
(f) Preparing and supervising the Accounting and Financial Plan, the project operative plan, the annual budget and the Procurement Plan of the project; and
(g) Consolidating information and integrating it with the Project Coordinator's quarterly, semiannual, and annual financial and progress reports.

7. **PNSU FU.** PNSU, as an existing PIU, will create a FU within PNSU to support technical and fiduciary activities of the project. PNSU will be the technical PIU, which will lead the implementation of subprojects under Component 2, with the participation of the EPSs, except for EMAPACOP and activities (consultancy services) to strengthen PNSU under Component 1 of the project. It will respond to the Executive Director of PNSU, will be under the supervision of OTASS PIU 2, and will have the support of PNSU's departments. This FU will have the following main duties and responsibilities:

(a) Implementing Component 2
(b) Managing financial resources allocated for Component 2
(c) Coordinating the personnel, operations, procurement, budget, accounting, and financial reporting activities of Component 2
(d) Preparing the annual operative plan, annual budget, and Procurement Plan for Component 2 and sharing them with the FU for project-level reporting
(e) Coordinating with the OTASS PIU 2 (overall project coordination), PNSU departments, and PNSU FU
(f) Providing reports and updates regarding Component 2 of the project

8. **Implementation arrangements in the six selected EPSs.** In EPSs with limited capacities, according to a preliminary institutional capacity assessment for the participating EPSs, a coordinating unit (CU) will be established. This may be the case for EMAPACOP, EMAPA Huacho, EMAPA Huaral, and SEMAPA Barranca. Within each EPS CU, a Technical Coordinator will be supported by other staff that will work closely with EPS units to strengthen operational and fiduciary capacity. Their main functions will be to support each of the EPSs in implementing project activities and will include executing and coordinating the interinstitutional management at the EPS level; providing guidance and overseeing consultancies for the design, development, and implementation of efficiency measures; working closely with EPSs' operations units to supervise design and implementation of infrastructure subprojects; and coordinating

the budget assigned to the respective subunit. If SEDAPAR and SEDACUSCO demonstrate adequate capacity, they will be responsible for technical implementation of Component 2 at the EPS level and will play a key role in the contracting and supervision of civil works with oversight and approvals from PNSU.

9. **ISC.** OTASS PIU 2 will be assisted by an ISC firm that will have relevant national and international experience and will play an essential role in the overall project management and coordination and provide critical support to OTASS, including on project management, planning of projects and activities, supervision, assistance in procurement processes, and quality assurance relating to the implementation of the project. The ISC firm is also expected to provide specific support to OTASS on the preparation of terms of reference and procurement processes for management contracts with EPSs under the RAT.

10. **PCC.** By effectiveness, OTASS will establish a PCC for the project. The PCC will be the highest governing body of the project and will designate the Project Coordinator (subject to the World Bank's no-objection). It will provide general strategic guidance and ensure technical implementation and managerial oversight. The PCC will be chaired by the Executive Director of OTASS or his/her representative and its members will include representatives from the MEF and the MVCS, the Executive Director of PNSU, the General Manager of SUNASS, and the Project Coordinator, who will also act as the Executive Secretary to the PCC. These members will be appointed by Ministerial Resolution and should be acceptable to the World Bank. The PCC will meet regularly (at least twice a year) to review implementation progress, provide guidance on implementation issues, and coordinate actions needed to resolve problems that may adversely affect the performance of the project. More specifically, the main functions of the PCC are to:

(a) Provide guidance and approve project implementation policies and project programmatic strategies;
(b) Follow up on the implementation of the activities and take any corrective action to achieve project goals;
(c) Promote coordination;
(d) Approve the annual operating plan and annual budget, annual reports, and other documents as needed;
(e) Revise the partial results about reducing the gap between water uses and discharge fees collection and operational and administrative cost of the basin and the decrease of percentage of payment delay in the tariff and fees; and
(f) Participate in the selection of the Executive Director and the Heads of the Technical Supervision and Administrative Units.

Financial Management

11. **An FMA was carried out to evaluate the adequacy of the FM arrangements for the implementation of the project.** The assessment deemed that OTASS and PNSU, with the establishment of dedicated implementation and coordination units, will have adequate arrangements to carry out financial management functions of the Project. This assessment reflects the FM arrangements proposed for the entities: OTASS, which will be a PIU attached to the MVCS, and PNSU, which is a PIU of the MVCS. Both entities will be responsible for implementing and carrying out the fiduciary activities of the project.

12. **In accordance with proposed institutional arrangements, OTASS will create a new Project Executing Unit No 2 (OTASS PIU 2) with administrative autonomy, and PNSU will create (within the PIU) a FU to support technical and fiduciary aspects of the project implementation.**

13. **A PCC will be established to provide high-level guidance and oversight of project implementation.** It has also been defined that OTASS will implement the Components 1 and 3, and PNSU will implement Component 2 of the project. To this end, a cooperation agreement will be signed between OTASS and PNSU. The project design's main features comprise the participation of two PIUs to implement the project, which will require extra coordination. The project will be implemented under the frameworks established by Peru's laws governing budget management and FM, including the use of SIAF and the General Chart of Accounts established in SIAF. The General Comptroller Office will carry out the selection process of the audit firm to audit the project. The World Bank funds will be disbursed through two Designated Accounts, one for each of the implementing entities, opened at *Banco de la Nación*.

14. **The relevant potential challenges faced by the project include:**

(a) Lack of experience of the designated PIUs in working with World Bank procedures;
(b) Delay in the establishment of the PIU at OTASS and PNSU, respectively;
(c) Ineffective coordination, which may affect aspects such as budget approval, implementation of activities, definition of roles and responsibilities, and timely submission of financial reports for the project;
(d) Delay in recruiting the key fiduciary staff with the capacity to rapidly get acquainted with procurement and FM guidelines to avoid situations of misprocurement or ineligible expenditures; and
(e) Delay in the signing of cooperation agreement between the PIUs.

15. **Considering the project's complex institutional arrangements and the above-listed risks and challenges, the fiduciary risk is rated Substantial. During Appraisal and Negotiations, OTASS and PNSU have been able to provide an acceptable:**

(a) Draft version of the cooperation agreement that includes clear roles and responsibilities between OTASS and PNSU, including identification of key controls that need to be strengthened and adapted considering the design of the project
(b) Definition of the format for the financial reports for the project
(c) FM chapter of the POM, including the terms of reference of the fiduciary staff

16. **To manage fiduciary risk, the implementation of the following mitigating measures is recommended:** (i) establishment of the PIU in OTASS and the FU in PNSU; (ii) approval of the POM with the World Bank's no-objection; (iii) no later than three months after effectiveness, hiring of the key fiduciary staff FM and Procurement Specialists at OTASS PIU-2 and PNSU FU, who desirably have experience in implementing World Bank-financed projects so that the staff can rapidly get acquainted with procurement and FM requirements to support project implementation.

17. The overall conclusion of this assessment is that, once the mitigating measures have been put in place and the pending activities under staffing, budget, accounting, reporting, and internal controls have been defined, the proposed FM arrangements will meet the World Bank's minimum fiduciary requirements.

Organization and Staffing

18. **The MVCS will implement the project through two of its PIUs: OTASS and PNSU**. The OTASS is a specialized technical public entity attached to the MVCS, and PNSU is one of the executing units of the

MVCS. Both entities have administrative and budget autonomy. However, to cope with additional technical and fiduciary responsibilities of the project, PNSU will create a FU, which will report to the Executive Director of PNSU (see Figure 2.1).

19. **Before effectiveness, OTASS and PNSU will establish OTASS PIU 2 and the FU, respectively.** The OTASS PIU 2, once established and no later than three months after effectiveness, will be staffed with adequate fiduciary staff that will include an administrative coordinator, a procurement specialist, a procurement assistant, a budget specialist, an accountant, a treasurer, and an FM specialist (considered key staff). PNSU will be staffed with a project coordinator, a budget specialist, an accountant, and a financial specialist. The fiduciary staff will be recruited under terms of reference approved by the World Bank, and the selection of fiduciary staff will require the World Bank's no-objection.

20. **Specific roles and responsibilities of the participant entities were established in the POM.** Periodic revisions to address changes in implementation modalities and scope will be subject to approval by the Project Steering Committee and the 'no objection' of the World Bank.

Planning and Budgeting

21. **The preparation of an annual work program and a budget will be in accordance with the procedures established by MEF through its General Public-Sector Budget Office (*Dirección General de Presupuesto Público*).** Those procedures will be complemented by specific processes and procedures established in the POM (preparation of an annual operating plan with at least semiannual budget, including all sources of financing - IBRD and counterpart funds). The OTASS will be responsible for coordinating the budget proposal for the project as a whole; however, both entities will submit to the MVCS the budget requirements for the implementation of the project components under their respective responsibility.

22. **To ensure an adequate budget control, OTASS and PNSU will be responsible for:**

(a) Timely provision of resources for each year established in the approved work plan and budget;

(b) Proper recording of the approved budget in the respective information systems following a classification by project component/subcomponent; and

(c) Timely recording of commitments, accruals, and payments, to allow an adequate budget monitoring and provide accurate information on project commitments for programming purposes.

23. **In addition, OTASS PIU 2 will be responsible for consolidating the budget requirement, which will be submitted to the MVCS sector for MEF's approval.**

Accounting and Information System

24. **OTASS and PNSU have to comply with Peru's laws governing budget management and FM, including the use of SIAF and the General Chart of Accounts established in SIAF.** Accounting and payment transactions of the project will be recorded in SIAF. Considering the nature of project activities and information needs for monitoring purpose, both entities will complement the use of SIAF with the module

of project execution (*Módulo de Ejecución del Proyecto*, MEP) in SIAF for further issuance of financial reports and prepare Statements of Expenditures (SOEs) according to the project components in U.S. dollars. In addition, OTASS PIU 2 will be responsible for consolidating the financial reports of both entities for monitoring purposes and for submitting them to the World Bank.

Financial Reporting

25. **Each PIU will prepare the interim financial reports (IFRs) from the transaction information recorded in SIAF, which will be downloaded in the MEP-SIAF.** The IFRs will include:

(a) A statement of sources and uses of funds, including reconciling items (as needed) and cash balances, with expenditures classified by project component/subcomponent/category;

(b) A statement of cumulative use of funds, reporting the current semester and the accumulated operations against each component under ongoing plans, with footnotes explaining any important variances; and

(c) Consolidated statement of cumulative use of funds, which will be the responsibility of OTASS.

26. **The reports will include loan proceeds and local counterpart funds.** The IFRs will be prepared in local currency and in U.S. dollars and submitted to the World Bank on a semiannual basis no later than 45 days after the end of each calendar semester. The format and content of the IFRs were agreed and are satisfactory to the Bank.

27. **On an annual basis, the PIUs will also prepare project financial statements including: statement of source and use of funds, cumulative figures, and SOEs for the beginning of the year and as of the end of the year, and explanatory notes in accordance with International Public Sector Accounting Standards.** The OTASS will prepare the consolidated financial statement of the project. Those financial statements, duly audited in accordance with the World Bank's requirements, will be submitted to the World Bank within six months after the end of the Government's fiscal year (December 31). Working papers for the preparation of the semester and annual financial statements will be maintained by the PIU and made easily accessible to World Bank supervision missions and to external auditors.

Internal Controls and Audit

28. **Internal controls.** Overall, OTASS and PNSU must comply with local requirements related to FM, including internal controls and internal procedures. In addition, the World Bank will review and agree with both the PIUs on specific processes and procedures for project implementation. Procedures for the approval and processing of payments to suppliers and service providers for all components will be reviewed and agreed with the World Bank. Those procedures are reflected in the POM showing clear segregation of responsibilities among the PIU, FU, CUs, and Administrative Offices and authorization for disbursements/approval of physical progress for project activity implementation. The POM was submitted to the World Bank reflecting adequate internal control processes and procedures to implement the project.

29. **Internal audit.** The MVCS's organizational structure includes an Internal Control Office (*Oficina de Control Interno*, OCI) that oversees the PIUs attached to the MVCS. The OCI may play a role in ex post internal control on project transactions.

External Audit

30. **Annual audit reports on project financial statements, including management letters, should be submitted to the World Bank, within six months of the end of the borrower's fiscal year (December 31).** The audit should be conducted by an independent audit firm acceptable to the World Bank and under terms of reference approved by the World Bank. The selection of the audit firm should be performed through the General Audit Comptroller Office. The Audit cost can be financed out of loan proceeds. The scope of the audit would be defined by the PIU in agreement with the World Bank based on project-specific requirements and responding, as appropriate, to identified risks including a management letter and review of compliance with agreed processes and procedures. Audit requirements would include those listed in Table 2.1:

Table 2.1. Audit Due Dates

Audit Type	Due Date
Project financial statements	June 30
Special opinion: SOE	June 30

Disbursements

31. **The World Bank loan proceeds will follow the World Bank`s disbursement policies and procedures, as described in the Disbursement and Financial Information Letter (DFIL).** The World Bank will disburse the loan proceeds using advance, reimbursement, and direct payment methods.

Designated Account

32. **Two DAs in U.S. dollars would be opened and maintained in *Banco de la Nación* by OTASS PIU 2 and PNSU.** Both entities would have direct access to funds advanced by the World Bank to the respective DAs. Funds deposited into the DA as advances would follow the World Bank's disbursement policies and procedures, as described in the Legal Agreements and DFIL. To process payments, OTASS and PNSU will be able to withdraw the required amount from their respective DA to a local currency bank account from which payments can be made to consultants, suppliers, and beneficiaries' bank accounts. The payment process and procedures are established in the POM.

Counterpart Funds

33. **OTASS PIU 2 and PNSU will manage the counterpart funds for the project using the Single Treasury Account established by the Government.** Funds for the project will be identified with a specific project code and account in SIAF to process payments.

Retroactive Financing

34. No retroactive financing amount has been considered for the project.

Disbursement Methods

35. The following disbursement methods may be used to withdraw funds from the loan:

(a) **Advance method.** The DAs will have a flexible ceiling based on quarterly forecast.

(b) **Direct payment.** The minimum application size for direct payment requests would be US$1,000,000.

(c) **Reimbursement method.** The minimum application size for the reimbursement method would be US$1,000,000.

Supporting Documentation

36. **SOE.** Supporting documentation for project expenditures under the disbursement methods authorized for the project should be in accordance with the provisions established under the DFIL.

Disbursement Deadline Date

37. **The disbursement deadline date is four months after the closing date specified in the Loan Agreement.** Any changes to this date will be notified by the World Bank.

Disbursement Categories

38. Loan proceeds will be disbursed against the following expenditure categories:

Table 2.2. Table of Loan Proceeds (US$)

Category	Amount of the Loan Allocated	Percentage Expenditures to be Financed (exclusive of taxes)
Component 1. Goods, works, non-consulting services, and consulting services for Part 1 of the Project	16,264,309	100%
Component 2. Goods, works, non-consulting services, and consulting services for Part 2 of the Project	53,033,379	100%
Component 3. Goods, Consulting services, Training and Operating Costs for Part 3 of the Project	702,312	100%
Total Amount	70,000,000	

Supervision Plan

39. On a preliminary basis, the World Bank plans to conduct at least two supervision missions per year, while also reviewing the annual audit reports and the semester IFRs.

Procurement

40. **A PPSD has been developed by the borrower, establishing the best procurement arrangements that will ensure the delivery of value for money while efficiently achieving the agreed PDOs.** The PPSD is focused on the high-value contracts financed under Components 1 and 2, namely the principal consultancy services to support OTASS and PNSU, and the rehabilitation and expansion of WSS infrastructure of participating EPSs. Based on market analysis, timing of the designs and studies, geographic distribution, local capacities, and lessons learned from similar experiences, the final analysis concluded that the best approach is to proceed with independent bidding processes for each work.

41. **Procurement capacity of the implementing agency.** The OTASS and PNSU are the co-implementing entities for this project, and the administrative units of OTASS and PNSU will oversee the procurement aspects of the project. An auto assessment of OTASS's and PNSU's capacity to implement procurement activities for the project was carried out in June 2017. The capacity assessment considered the FU's: (i) facilities and support capacity, (ii) qualifications and experience of the staff that will work in procurement, (iii) record-keeping and filing systems, (iv) procurement planning and monitoring/control systems used, and (v) capacity to meet the World Bank's procurement contract reporting requirements. It also reviewed the procurement arrangements proposed in the PPSD and the Procurement Plan.

42. The corrective mitigating measures proposed are listed in Table 2.3:

Table 2.3. Procurement Risk Mitigating Measures

Mitigating Measures	Stage
The hiring of a skilled procurement staff	By effectiveness
The Procurement Plan must be included and managed through STEP	During implementation

43. **Frequency of procurement supervision.** In addition to prior review supervision to be carried out by the World Bank, annual supervision missions will be carried out to visit the field and conduct post review of a sample (approximately 20 percent) of procurement actions.

44. **The project will finance works, goods, consulting services, non-consulting services, training, and operating costs.** The project will finance the improvement of WSS network and rehabilitation of water treatment plants, two SCADA systems, goods to improve IT capacities and consulting services to development a master plan, commercial systems, regional management tools, and sewerage technical cadaster and registry and others. A detailed list is part of the PPSD Document.

Table 2.4. PPSD, Procurement Approach Options, and Recommendation

Attribute	Selected Provision	Summary of Justification/Logics
Market access	National International	There exists locally the capacity of contractors to execute the type of work to be financed, as well as interest of contractor firms and consultants to work in Peru. No restrictions will be included for participation in any process, and the works will be grouped by lots to promote the participation of large and small contractors.

Attribute	Selected Provision	Summary of Justification/Logics
Selection methods	Works/goods/Services • Request for Bids (RFB) • Request for Qualifications (RFQ) • Direct Selection Consulting Firms • Quality and Cost Based Selection (QCBS) • Consultant Qualification Selection (CQS) • Direct Selection Individual Consultants • Competitive • Direct Selection	Due to the level of technical complexity of the consultancies, works, and services to be acquired, the use of more complex methods of selection is not foreseen. In the event that the OTASS/PNSU procedures for the selection of human resources are used to support the operation, they must be validated by the World Bank.
Supervision	Prior Post	Both schemes will be used, according to the risk and complexity of the procurement processes.
Standard Procurement Document	Standard Procurement Document • Request for Bid (RFB) • Request for Proposal (RFP)	Both documents will be used according to the needs of each selection process.
Special contract conditions	None	
Contract price/costing method	Works/goods and services • Global sum, fixed price • Unit prices Consulting • Global sum • Time worked	
Adjustment/price review	None	There are no construction periods longer than one year. Consulting contracts will be selected following SBCC methods.
Negotiation	Technique in the case of consultancies	
BAFO	None	
Value engineering	None	
Proposal evaluation method/offers	Highest combined score Lowest evaluated cost	
Contract management approach	Standard Form	The contract format provided in the World Bank documents will be used; due to the type and complexity of the works, no major difficulties are foreseen in the contractual stage.

Note: BAFO: Best and Final Offer; CQS: Selection Based on Consultants' Qualifications; DS: Direct Selection; QCBS: Quality- and Cost-Based Selection; RFB: Request for Bids; RFP: Request for Proposals; RFQ: Request for Quotations; SBCC: Social Behavior Change Communication.

45. **Procurement Plan.** The Procurement Plan was prepared by the borrower based on the PPSD and agreed with the World Bank. In accordance with paragraph 5.9 of the 'World Bank Procurement Regulations for IPF Borrowers' (July 2016, revised November 2017), the World Bank STEP system will be used to upload and update the Procurement Plan.

Environmental and Social (including Safeguards)

46. **The OTASS will recruit a social development specialist to supervise the overall implementation of the project and ensure that social safeguards policies are implemented and monitored in each of the subprojects.** The incumbent will be knowledgeable about resettlement planning and management, as well as indigenous people's affairs. The consultant will provide periodic inputs on the status of implementation of social safeguards policies to OTASS and its M&E team. The specialist will work with the regional bodies and their contractors to ensure the application of principles laid out in the IPPF and the RPF wherever appropriate. The specialist will also conduct capacity-building and orientation seminars to personnel of regional bodies and their contractors relative to the application of social safeguards in each of the subprojects. It is expected that regional bodies will have a dedicated specialist dealing with the social aspects of project design and implementation to ensure compliance with the World Bank policies.

Monitoring and Evaluation

47. **The M&E unit within OTASS will have overall responsibility for the project's M&E.** This unit will monitor and evaluate based on the Results Framework in section VII. The OTASS will submit semiannual progress reports to the World Bank covering the status of implementation in terms of outputs, outcomes, financial statements, Procurement Plans, environmental and social safeguards instruments, and actions taken to ensure satisfactory project implementation. Baseline studies including a poverty targeting analysis, citizen engagement satisfaction surveys, a midterm review and a final evaluation will be conducted.

Role of Partners (if applicable)

48. **Several development partners have been actively supporting the GoP in this reform process.** The IDB has supported the development of the FIAS, which will be the primary vehicle to assess and finance investments in the sector. The CAF is supporting the implementation of the FIAS. JICA has also played an active role, and there is an ongoing dialogue between the GoP and JICA to support the MVCS and OTASS through the framework this project is putting in place. Further, SECO, in partnership with KfW, has also been supporting OTASS in structuring its activities for two utilities currently under the RAT. In addition, the World Bank and SECO have joined forces to support the GoP in the preparation of the reforms program; therefore, it is expected that project implementation will further benefit from this partnership as well as from contributions by other development partners. These interventions have provided valuable lessons that have oriented activities to support OTASS. The interventions of all sector partners are aligned to the GoP's NWSP, which was adopted as official national policy in March 2017.

ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY: Peru
Modernization of Water Supply and Sanitation Services

Strategy and Approach for Implementation Support

1. **The approach for the Implementation Support Plan is built on the lessons learned from the NLTA (P150824) and the experience gained from the preparation of this project.**

Implementation Support Plan and Resource Requirements

2. **Many of the project team members are based out of the World Bank's Country Office in Lima, which helps provide timely and effective implementation support to the client.** Semiannual supervision missions and targeted follow-up technical missions will focus on the areas described in the following paragraphs.

3. **Strategic support.** The World Bank implementation support missions will meet with national and local authorities to:

(a) Review progress on the project's activities;

(b) Discuss strategic alignment of the project's different activities and the activities of relevant stakeholders; and

(c) Evaluate progress on cross-cutting issues, such as M&E, gender, training, communication, dissemination of project results and experiences, and coordination between relevant stakeholders.

Technical

4. **Fiduciary.** Periodic supervision of procurement and FM aspects will be carried out by the World Bank semiannually to:

(a) Perform desk reviews of project IFRs and audit reports, following up on any issues raised by auditors, as appropriate;

(b) Assess the performance of control systems and arrangements;

(c) Update the FM rating in the Implementation Status and Results Report (ISR) as needed;

(d) Provide training and guidance on carrying out the procurement processes in compliance with the Procurement and Anticorruption Guidelines and the POM;

(e) Work with OTASS and PNSU PIUs to enhance their capacity in procurement and FM to facilitate project implementation;

(f) Review procurement documents and provide timely feedback to the PIUs;

(g) Carry out a post review for at least one out of every ten procurement actions; and

(h) Help monitor the project progress against the Procurement Plan.

5. **Safeguards.** A project launch workshop will be organized immediately after the project has been declared effective. All EPSs will be required to attend, as well as PNSU and OTASS. The scope of the workshop is to provide a broad overview of safeguards requirements during all phases of project implementation, including the design and execution of subprojects. The workshop will also create a community of practice among the social and environmental practitioners working for all the EPSs. Yearly workshops will also be held to capture good practices as well as challenges faced by the client and its contractors and find optimal solutions with the contribution of all practitioners. Close supervision of safeguards implementation and compliance will be carried out at least twice a year, throughout project implementation. Biannually, social and environmental safeguards ratings will be updated in the ISR as needed.

Thematic Support

Time	Focus	Skills Needed	Resource	Partner Role
First 12 months	Procurement and FM training and safeguards training	Procurement and FM and safeguards	Supervision budget	Provide support, national expertise, and technical advice
12–48 months	Technical support		Supervision budget	Provide support, national expertise, and technical advice
Other	Drawing lessons learned and mainstreaming best practices	M&E and technical	Supervision budget	n.a.

Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task Team Leaders (2)	20	4	Based in CO and HQ
Environmental Specialist	8	4	Based in CO
Social Specialist	8	4	Based in CO
Procurement Specialist	6	2	Based in CO

Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
FM Specialist	6	0	Based in CO
M&E Specialist	6	2	Based in HQ
Communications Specialist	4	2	Based in CO
Technical Experts	10	—	Consists of several World Bank staff/consultants of different technical disciplines

Note: CO = Country office; HQ = Headquarters.

ANNEX 4: DETAILED SECTOR CONTEXT

COUNTRY: Peru
Modernization of Water Supply and Sanitation Services

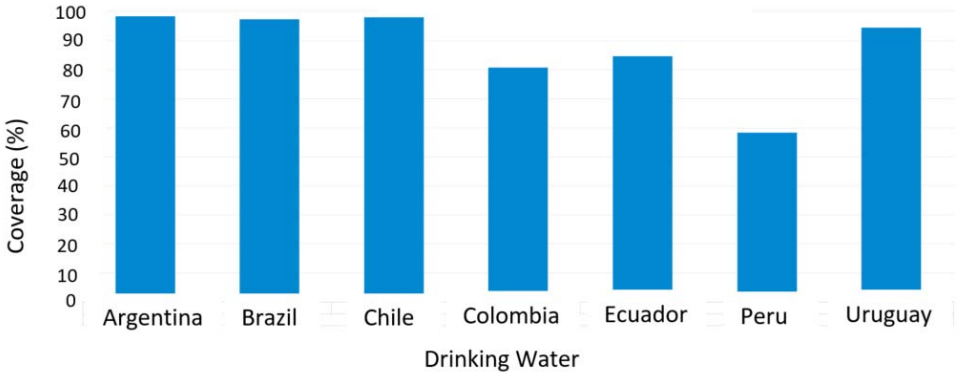
1. The World Bank's long-standing engagement in the sector reveals a number of challenges that continue to prevent expenditures from translating into universal access to and enhancement of WSS service delivery. Since 1990, the World Bank's strategic engagement in the sector has comprised a series of TAs, lending operations and reimbursable advisory services in urban WSS, rural water supply, and WRM with the Lima Water and Sewerage Service Company's (SEDAPAL). Throughout the 1990–2000s, the World Bank supported a program geared toward rehabilitating and optimizing networks within two of Lima's three regions: the southern and central areas (Lima Water Rehabilitation and Management Project),[36] which has helped: (a) reduce NRW in these areas from rates higher than 50 percent to an average of 29 percent; (b) increase average hours of continuity from 17 in 2004 to the current 21; (c) reduce corrective maintenance costs, and (d) significantly increase cost recovery. Support to SEDAPAL to enhance demand-side management and improve efficiency in the northern service area is ongoing through the Additional Financing of the Optimization of Lima Water and Sewerage Systems Project[37] which has recently expanded to cover new sectors in the northern region. Through the National Rural Water Supply and Sanitation Program (PRONOSAR),[38] the World Bank has supported Government initiatives to increase sustainable use of WSS facilities in rural areas and small towns, which provided many lessons for scale-up. The World Bank has also provided guidance to key reforms for the management of water resources, which led to the approval of the Water Resources Law[39] to address water scarcity and pollution. This law created The National Water Authority (Autoridad Nacional del Agua – ANA) with a clear mandate for integrated, participative basin-scale management of water resources. Through the WRM Modernization Project,[40] the World Bank has successfully promoted the implementation of the Water Resources Law through the creation, capacity building, and operation of river basin organizations in three pilot basins and strengthened ANA at the central level to manage the country's water resources.

Making EPS Sustainable Utilities

2. Despite positive trends, the quality and efficiency of services are still not commensurate with the expected levels of an upper-middle-income country such as Peru. Figure 4.1 shows Peru's performance in provision of 'safely managed water supply' in comparison to some Latin American and Caribbean countries.[41]

[36] Peru Lima Water Rehabilitation and Management Project (P008051), US$150 million, approved in 1994 and closed in 2008.
[37] Peru Optimization of Lima Water and Sewerage Systems (P117293), US$54.5 million, approved in 2011 and closed in 2019. Additional Financing - Peru Second Optimization of Lima Water and Sewerage (P133287), US$55 million, approved in 2015 and closed in 2019.
[38] Peru National Rural Water Supply and Sanitation Project (P065256), US$75 million, approved in 2002 and closed in 2013.
[39] *Ley de Recursos Hídricos,* approved on March 2009.
[40] Peru Water Resources Management Modernization (P107666), US$10 million, approved in 2010 and closed in 2015.
[41] JMP 2015.

Figure 4.1. Urban 2015: Safely Managed Service Levels



Source: JMP jointly managed by World Health Organization and United Nations Children's Fund.

3. The provision of urban and rural WSS services in Peru falls under the responsibility of an array of providers. The WSS utility SEDAPAL serves the metropolitan area of Lima, while another 49 WSS utilities are responsible for 62 percent of the country's urban population, mostly in intermediate cities. In addition, there are about 500 smaller municipalities that directly manage services in small cities, which hold about 14 percent of the total population. This scenario is complemented by community grassroots organizations, JASS, and other organizations that have 24 percent of the total population under their responsibility in rural areas. Except for SEDAPAL, which is owned by the Peruvian Central Government, the 49 WSS utilities are municipal entities that have been incorporated as joint stock companies.

4. The 49 corporatized utilities, known as EPSs, provide WSS services to Peru's main metropolitan areas outside Lima. Each EPS charges a distinct tariff; service quality—as well as operational and financial efficiency—still exposes significant asymmetries across service providers. Despite the massive increases in sector investments in recent years, indicators of quality of the EPSs reveal disappointing results highlighting the challenges that remain: service continuity has stagnated, NRW has increased, the EPS working ratio remains largely unchanged, and the number of pipe breaks has gone up dramatically.

5. This program has been designed within the framework of the Water Sector Modernization Law, which establishes measures aimed at increasing coverage and ensuring the quality and sustainability of water and sanitation services at the national level. The Water Sector Modernization Law promotes sector development, environmental protection, and social inclusion. The five key components of the Law are the following:

(a) **Universal access.** The right of the population to have access to sustainable and quality WSS services and the state's obligation to provide these services through the service providers.

(b) **Social inclusion.** All state efforts must be framed in the policy of promoting development and social inclusion, with a focus on reducing the infrastructure gap to reach those populations with scarce resources.

(c) **Environmental protection.** The state is responsible for the sustainable management of water resources in accordance with environmental standards. EPSs and the National Superintendence of Sanitation Services (SUNASS) should establish mechanisms for environmental compensation and watershed management in the PMO.

(d) **Business autonomy.** The EPSs have exclusive competence to manage, design, and implement WSS projects within their sphere of influence, subject to the policies, plans, and guidelines approved by the governing body and in accordance with the urban development and provincial territorial planning.

(e) **Efficiency.** The arrangement of service provision must promote permanent increases in efficiency favoring the use of economies of scale, application of technologies, and modernization of management and administration.

6. NWSP 2017–2021 further emphasizes that to achieve universal access to drinking water and sanitation services in rural and urban areas by 2030, in a sustainable manner, and in accordance with the SDGs, the sector must work toward developing efficient and sustainable service providers. This implies the transformation of existing service delivery entities into efficient, transparent, and financially sustainable companies.

EPS Performance

7. Levels of service provided by the EPS fall short of expectations for a Latin American middle-income country such as Peru. The performance of EPSs in Peru shows that EPS indicators have not improved despite a great financial effort by the MEF and the MVCS in recent years to transfer investment funds to local agencies[42] and despite the efforts of the sector's regulatory agencies (see table 4.1). In fact, some EPSs are in a critical financial state; performance indicators from recent years show a continued decline, and the conclusion is that the EPSs are not sustainable and that the institutions at the national level do not function as intended. The vulnerable situation of the EPSs led to the creation of OTASS under the Modernization Law, and the design of the RAT as the instrument to intervene in the weakest EPSs. The results of OTASS' intervention in 11 utilities under the Temporary Support Regime are unclear.

[42] The great strides Peru has made in its socio-economic development have been accompanied by substantial investment increases in the WSS sector. During 2000–2004, sector investment averaged US$127 million per year. During the following five-year period (2005–2009), investment levels nearly quadrupled, averaging US$465 million per year. More recently (2010–2015), annual WSS investments have soared to US$1.45 billion, representing more than a 10-fold increase in comparison to investment levels at the turn of the millennium.

Table 4.1. Performance Indicators for EPS Urban Service Providers

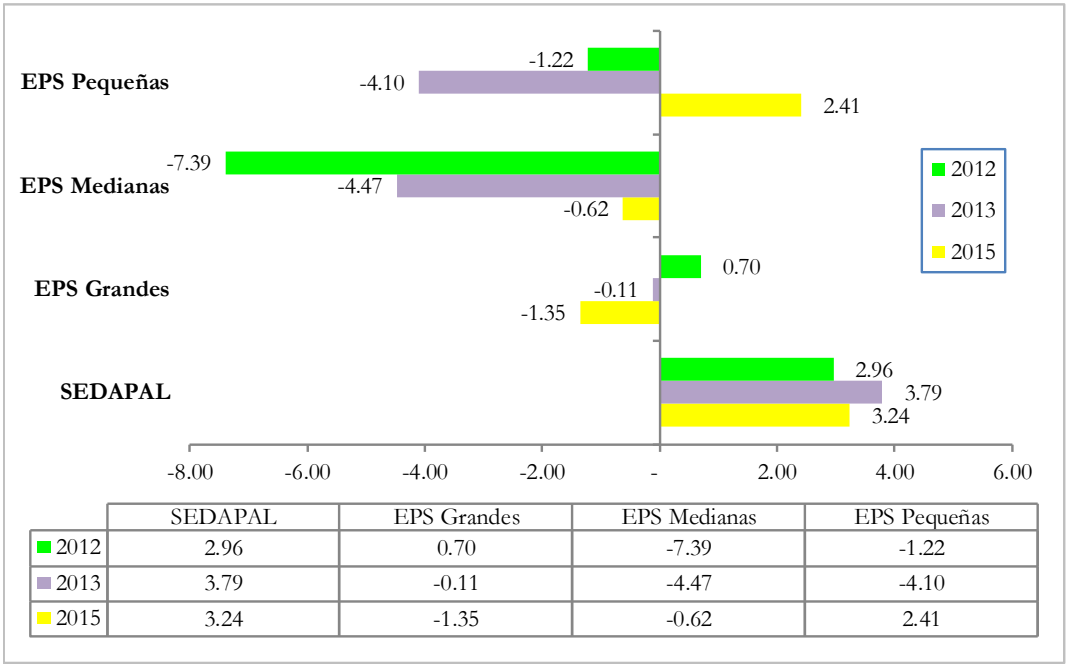
Indicator	1996	2016		Benchmark
		With SEDAPAL	**Without SEDAPAL**	
Equitable services				
Water coverage	63%	92%	89%	100%
Sewerage coverage	60%	84%	78%	100%
Continuity (hours per day)	16.7	18.3	16.2	24
Safety of water	Unsafe	99.8% safe	99.6% safe	100% safe
Efficient services				
Metering coverage	22%	70%	58%	100%
NRW	39%	44%	36%	15%
Staff per 1,000 connections	4.00	2.53	3.16	2.00
Sustainable services				
Financial operating ratio	0.85	0.75	0.82	0.50
Operating margin	n.a.	10.81	−6.90	—
Pipe breaks per km per year	0.90	0.52	0.92	0.20
Wastewater treated	16%	66%	50.4%	100%

Source: International Benchmarking Network (IBNET) 1996 and SUNASS 2016 Annual Benchmarking Report.

8. **Value generation by EPSs.** State-owned companies control assets that governments manage on behalf of their citizens. Ensuring that they create the maximum value for society is the main goal of good governance.[43] WSS utilities are not generating value proportionally to their assets and patrimony. SUNASS data in figure 4.1 show that, on average in the last three years, all EPSs except SEDAPAL yielded negative returns on equity and are therefore destroying assets.

[43] Christiansen, H and Kane, K. (2015): "*State-owned enterprises: Good governance as a facilitator for development*." Corporate affairs Division, Directorate for Financial and Enterprise Affairs, OECD, April 2015.

Figure 4.2. Return on Equity (%)



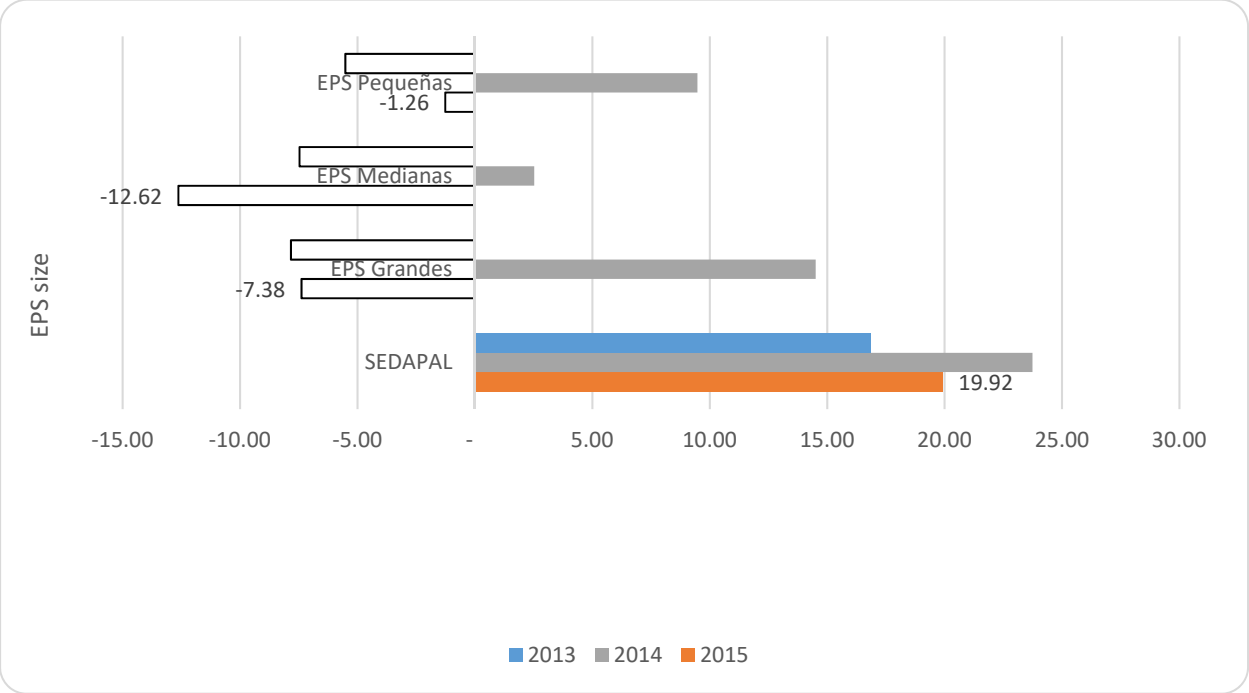
	SEDAPAL	EPS Grandes	EPS Medianas	EPS Pequeñas
2012	2.96	0.70	-7.39	-1.22
2013	3.79	-0.11	-4.47	-4.10
2015	3.24	-1.35	-0.62	2.41

Source: SUNASS 2015.

9. **Other performance indicators of service provider entities.** The performance of the 49 EPSs can be measured through a range of indicators. SUNASS has prepared a complete database on all EPSs and has operational and financial data from the EPS universe since 1996. Recently OTASS, as part of its institutional task, prepared an evaluation called 'Administration Capacities and Governance'. Three of these indicators are: (a) a financial indicator: the utilities' operating margin, periodically evaluated by SUNASS; (b) a technical efficiency indicator, nonrevenue EPS water; and (c) a ranking of administration capacities and governance that OTASS has recently started to compute annually for Peruvian EPSs in operation. None of the 49 provider utilities meet the minimum standards for any of the indicators, as shown below:

(a) **Operating margin.** Calculated as the ratio between operational costs and operational revenues of the EPSs, it shows to what extent revenues pay the cost of operating each utility and provide a margin for network expansion and replacement. The data reported by SUNASS and summarized in Figure 4.3 for 2012 to 2015 show that SEDAPAL is the only system utility with a positive operating margin (20 percent in 2015, 24 percent in 2014, and 17 percent in 2013), while the remaining EPSs all are in negative territory in two of the three years (2013 and 2015).

Figure 4.3. EPS Operating Margin



Source: SUNASS 2015.
Note: The recurring negative EPS indicators, as reported by SUNASS, show that this situation is indeed structural, that is, the EPSs' revenues are not sufficient to pay even their operational costs. This points to several things, either that tariffs are not systematically covering their costs or that tariff increases are absorbed by costs that rise faster than revenues, or a combination of both. Having two entities in charge, SUNASS and OTASS, has not stopped the negative trend in any utility, except for SEDAPAL.

(b) **NRW.** A second management indicator shared by sanitation utilities is the NRW index, measured by SUNASS as the ratio of volume of unbilled water to water produced. SUNASS data for this indicator show a worsening EPS performance. Smaller utilities show very high and rising levels of NRW, up to 52 percent of water produced, while medium and large companies stood at 40 percent and 42 percent, respectively, last year.

Table 4.2. Efficiency and NRW of EPSs in Peru, 2014

All EPSs	Number of EPSs	NRW (in %)
Good (+8.5 to 10)	0	0.0%
Mediocre (+6.5 to 8.5)	9	18.7%
Poor (+5 to 6.5)	12	24.5%
Very poor (0 to 5.0)	28	57.1%

(c) **Administration capacities and governance.** Recently, OTASS began to measure these indicators for EPSs, defining governance as the ability of EPSs to operate within an external policy and institutional framework and to manage the utilities appropriately in a changing environment comprising different interest groups that affect and are affected by sanitation utilities' activities and governance as ways to run a utility that leads to achieving objectives

and goals through consensus, coordination, articulation of policies, norms, and procedures within a company, as well as effective accountability and transparency. EPS results are overwhelming; none of the 49 companies under evaluation were rated 'good' (see Table 4.2).

10. **The problem of minimum efficient scale.** According to SUNASS, SEDAPAL is the only utility in Peru that serves more than 1 million customers (Sedapal serves about 9 million people); out of the 49 remaining EPSs, 16 serve between 40,000 and 1,000,000 connections, 13 EPSs serve between 15,000 and 40,000 connections, and finally, 20 EPSs serve between 2,000 and 15,000 connections.

11. **Several analyses on economies of scale in Peru are available**. From a practical standpoint, the issue of scale is solved by determining the sector's minimum efficient scale, This analysis has already been done for Peru by Cadillo and Villaverde (2014), who estimated that "considering an average supply of 200 liters per day and an average of six persons per connection, the Minimum Efficient Scale in number of connections would be approximately 45,600 at Peruvian EPSs."[44] It is therefore clear that a universe of Peru's EPSs that are not viable at the scale where they operate, that is, under 45,000 connections. Unless this issue is resolved, no effort will suffice to make these utilities self-sustaining. On the contrary, their failing performance will make the demand for Government grants a permanent fixture. Studies on the minimum efficient scale of below 45,000 connections reveal at least 33 EPSs rank below this indicator; see table 4.3.

Table 4.3. EPS by Number of Safe Potable Water under Management

EPS Size	Water Connections	Number of EPSs	Population Served by EPS	
			Population in Millions	Percentage of Urban Population
Very Large (SEDAPAL)	Over 1 million	1	8.7	39
Large EPSs	40,000–1,000,000	16	6.4	29
Intermediate EPSs	15,000–40,000	13	1.3	6
Small EPSs	2,000–15,000	20	0.6	3
Total		**50**	**17.0**	**77**

12. **Nature of EPSs - Corporate Law and Governance.** The EPSs originated from the two-stage decentralization process of *Servicio Municipal de Agua Potable y Alcantarillado* (SEMAPA): (a) first, the responsibility for providing sanitation services was transferred to the provincial municipalities together with the right to operate sanitation services, although the assets supporting that right were not directly transferred, and (b) second, the law transferred both fixed and operating assets of the SEMAPA system as grants to the municipalities. These entities were mostly incorporated as public limited companies and, in order to grant the EPS the right of exploitation, the law required the municipalities and the EPS to sign an 'operations contract'.

13. The newly created companies' assets had to be handed over to their new shareholders, that is, the municipalities, in proportion to the number of inhabitants in the new utility's jurisdiction, and not as

[44] Cadillo, M. and Villaverde, D. (2014): "*Economías de Escala en la Prestación de los Servicios de Agua Potable y Alcantarillado en el Perú: El caso de las Empresas Prestadoras de Servicios de Saneamiento (EPS) Municipales."* (Gesellschaft für Internationale Zusammenarbeit, Mimeo, April 2014).

capital contributions, as is typical of business regardless of their public or private nature. The law also gave these entities a specific corporate governance structure, not proportional to the number of shareholders, as in typical corporations, but based on political and administrative criteria.

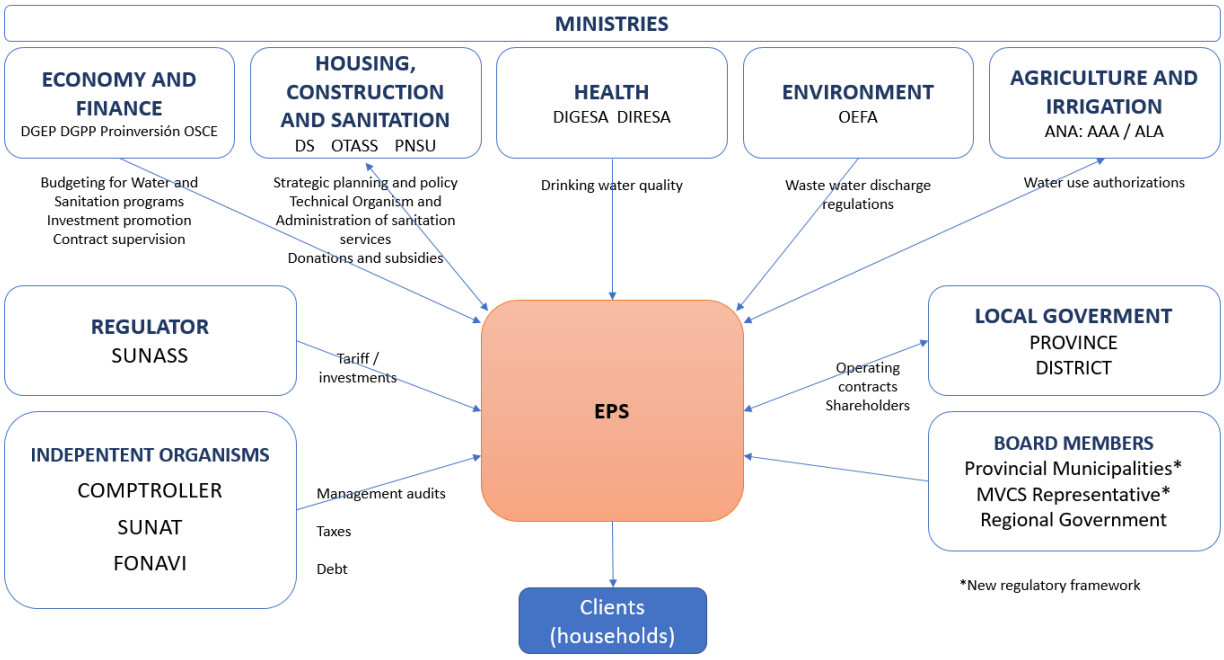
14. The law originally established that "the Board of Municipal Sanitation Services Providing Entities shall seat a maximum of 5 members for the Larger Provider Entities, which shall necessarily include one member from the Regional Government, and two members of local governments, thus ensuring the presence of users, while smaller Municipal Sanitation Services Providing Entities' boards should seat three members, necessarily including one representative from the Regional Government and one from the local government. Board Directors will be responsible for management." This board setup has gone through various changes and recently OTASS exercised its right to change the board's composition one more time.

15. Evidence on the EPSs reveals they were not imagined as corporations and therefore their corporate governance principles show no congruence between ownership, assets, and exploitation rights. Ownership rights are acknowledged in shares denominated by the number of inhabitants, not capital contributions, and they therefore follow political and administrative rules rather than the interests of investors for efficiency and sustainability. Service providers do not have defined goals or objectives nor do they prepare strategic plans in an orthodox sense of the term. Peru must therefore examine if the sector's development will be built on corporations with set objectives, goals, responsibilities, and corporate governance structures. As has recently been diagnosed by OTASS, the problem of EPSs can be explained, among others, by "structural reasons: ownership regime and scale of operations."[45]

16. **Weak EPS autonomy**. Based on documents from SUNASS and the World Bank, the EPSs get entangled in regulations from different entities that have intervened throughout their existence and have created a host of interacting, and sometimes conflicting, permits, regulations, rules, and sanctions. As can be seen in Figure 4.4, the EPSs directly involve five ministries and four directors at MEF issuing regulations on external debt, entities' budget, promotion of private investment, oversight of Government procurement, and EPS staff salary regulations. Three entities under the MVCS are also involved, namely, the Sanitation Department concerned with sector planning, the Urban Sanitation Program that contributes financial resources for investments in the sanitation sector, and OTASS that directly intervenes in the utilities' management.

[45] Murrugarra, G. (2016): "*Financiamiento de las EPS"*, OTASS Evaluation Department, World Bank Workshop, May 2016.

Figure 4.4. EPS Ecosystem



Note: AAA/ALA: *Autoridad Administrativa del Agua, Autoridad Local del Agua;* DGEP: *Dirección General Endeudamiento Público;* DGPP: *Dirección General de Presupuesto Público;* DIGESA: *Dirección General de Salud Ambiental;* DIRESA: *Dirección Regional de Salud Ambiental;* DS: *Dirección de Saneamiento;* FONAVI: *Fondo Nacional de Vivienda;* OSCE: *Organismo Superior de Contrataciones del Estado*.

17. Other agencies involved include the Ministry of Health's Directorate General for Environmental Health, charged with issuing environmental regulations, and its Regional Health Directorates that oversee water quality. The Ministry of the Environment's Environmental Assessment and Control Organization regulates environmental standards and is complemented by ANA under the Ministry of Agriculture and the administrative and local water authorities. Moreover, the decisions of other agencies such as SUNASS; the General Comptroller of the Republic; the National Superintendence of Customs and Tax Administration (*Superintendencia Nacional de Aduanas y Administración Tributaria*); and the provincial, regional, and departmental governments all add to the rules and regulations affecting the EPSs.

18. **Weak client orientation and citizen engagement mechanisms.** Limited or ineffective engagement of EPSs with communities they serve has led to misinformation and misconceptions and lack of value of services (water supply and sewerage) and, in some instances, has led to social strife with communities staging protests against their respective service providers and raising complaints due to the poor quality of service. Lack of clear communications channels between EPSs and their customers has also allowed for political interference and level of service delivery to be swayed by political discourse. SUNASS regularly monitors customer satisfaction through surveys carried out by the EPSs. The project will strengthen SUNASS's capabilities in this area with the aim of enhancing client participation and citizen engagement activities, together with EPSs capacity to respond to client demands. Interventions aimed at strengthening redress and grievance mechanisms will be coupled with technical support under the project to enhance EPSs' capacity, so as to ensure that service providers have adequate capacity to respond to citizens' grievances and thereby reduce the potential for social strife related to WSS services.

ANNEX 5: ECONOMIC ANALYSIS

COUNTRY: Peru
Modernization of Water Supply and Sanitation Services

1. **The economic and financial analysis contains assessments of infrastructure and non-infrastructure investments.** This annex provides a detailed description of the methodology used.

2. **The economic analysis of the project comprises two parts:** an assessment of the economic impact of institutional actions considered in the project (Component 1, Subcomponents 1.1 and 1.2), which is only indicative, and an economic and social appraisal of ten infrastructure projects (Component 2) available to the team (previously approved by the Peruvian National Investment System, SNIP). The latter, in turn, has been divided by Cost-Benefit Analysis (CBA) of water subprojects and Cost-Efficiency Analysis (CEA) of sewerage subprojects. Additionally, health- and social-related returns were estimated separately for each kind of subproject group.

3. **Regarding infrastructure investments,** the CBA and CEA were carried out on ten infrastructure, water, and sewerage subprojects available only from two participant utilities (SEDAPAR and SEDACUSCO) to be implemented starting in 2018 in various mostly peri-urban sites.[46] These subprojects will provide service to either poor or very poor peri-urban/urban populations. Data collected by the utilities when preparing their subproject's profile submitted and approved by the SNIP reveal that most of the population to be served by these 10 subprojects is either poor or vulnerable. As of 2016, the poverty line in Perú was PEN 328 per capita per month (or PEN 1,312 for a family of four). In the urban sierra region where most of these subprojects will be implemented, the per capita poverty line is PEN 290. Family density in Arequipa's areas of subproject influence is around four members per family. This means that a family should earn at least about PEN 1,160 to be considered non-poor. However, in the area of influence of each subproject in Arequipa, families' monthly income ranged between PEN 729 (US$220 or US$7.30 per day) and PEN 862 (US$261 or US$8.70 per day); hence, they are below the poverty line. In Cusco, the situation is slightly better. In one project where information on family income was available, the monthly observed income was PEN 963, which is still below but closer to the poverty line than in Arequipa.

4. **For water subprojects, CBA included investments for rehabilitation and expansion of water production and the extension of water distribution.** The analysis of economic returns was based on the expected project benefits during the life cycle of the project (20 years). Accordingly, estimations of consumer benefits included those arising from two areas: one that comes from time and money savings because users replace a previous source and quantity of water use that is more expensive and fetched nearby with a cheaper, piped source; the other comes from a net increase in water consumption (consumer surplus). Benefits to users from improved health were also estimated. These benefits materialize only when consumers understand the relationship between water and health and use water properly. Usually, this is reflected in users' willingness to pay for good quality water, and willingness to pay can be derived from the demand function. However, if this willingness to pay is not integrating these

[46] Only this set of subprojects was available to the team at the time of evaluating the project.

health benefits, they need to be added. The team considered that the new population with access to piped water did not necessarily link water and health properly.[47]

5. **Results.** The net economic returns for water subprojects in the project total US$78.8 million, which is the result of adding net benefits from the value of time, income savings, and more consumption worth US$63.8 million (discounted at 9 percent over 20 years), together with net health-related benefits estimated to be nearly US$15 million (DALYs, discounted at 9 percent over 18 years).[48] The average ERR for infrastructure subprojects (excluding health-related benefits) is about 37 percent (close to 60 percent in SEDACUSCO and 24 percent in SEDAPAR).

6. **For sewerage subprojects, CEA included expansion of sewerage and WWT.** In addition to CEA method to assess these subprojects, an economic analysis of health benefits accrued only to new users connected to the network was carried out, adopting a methodology that estimates the benefits of a household moving from unimproved ladder of services or latrine service level to using a bathroom connected to the network sewerage. All ratios show that the projects will improve social welfare because their values per user are below the values considered by the GoP for sewerage projects.

7. **The economic-social benefits for sewerage subprojects that arise from a household's new connections in SEDAPAR are worth US$75.8 million, while in SEDACUSCO they are worth US$14.2 million.**[49] The total economic-social benefits of sewerage subprojects at present value are worth US$90 million while costs are worth US$30.6 million, for a net benefit of US$59.4 million.

8. **To summarize, the economic-social evaluation shows positive results for both water and sewerage infrastructure subprojects.** Total net benefits add up to US$138.2 million (Table 5.1), which is the result of adding economic and social benefits worth US$78.8 million from water subprojects and US$59.4 million from sewerage subprojects.[50]

Table 5.1. Summary of Infrastructure Economic and Social Net Benefits (US$, million)

	Time and Money Saved	Health-related Benefits	Cost	Net Benefits
Water subprojects	90.1	15.0	26.3	78.8
Sewerage subprojects		90.0	30.6	59.4
Total	**90.1**	**105.0**	**56.9**	**138.2**

Note: a. NPV was estimated using 9 percent discount rate.

[47] Health benefits were monetized through the Disability Adjusted Life Years (DALYs) parameters using a monthly salary in the area of influence of the project to then estimate the gains from avoided disease incidence and subsequent reductions in waterborne DALYs estimated for Peru by the World Health Organization/Health Metrics Institute. Analysis of economic returns was discounted on the basis of 18 years rather than 20 years because it was assumed that civil works will last 2 years before health benefits start to occur.

[48] As a rule of thumb, health benefits are close to one-third of total benefits. In this case, they are close to that rule: 26 percent. This should be considered a conservative estimate because two years of benefits were not discounted.

[49] NPV was estimated using 9 percent discount rate for 18 years.

[50] Benefits from WWT plants have not been added.

(a) **Systemic institutional economic analysis shows indicative benefits valued at an additional US$70 million.** This includes the evaluation of potential systemic efficiency gains because of actions taken by the GoP to improve the capacity of four key WSS national-level institutions to deliver better sector coordination, multiannual planning, improved regulation, and so on. A conservative approach was taken for estimating benefits: the basic assumption is that efficiency gains will start to appear around year 4 of reform implementation and in the order of ten percent per year of the 'hidden subsidies' annual value estimated by the Public Expenditure Review Water Chapter.[51]

(b) **The financial analysis of the program comprises four parts:**

(i) An analysis of the financial impact of the TA provided by OTASS

(ii) An analysis of each of the ten infrastructure subprojects' contribution to the sustainability of SEDAPAR and SEDACUSCO

(iii) The impact on SEDAPAR and SEDACUSCO's cost recovery ratios and earnings before interest, taxes, depreciation, and amortization (EBITDA) from infrastructure investments

(iv) The impact on SEDAPAR and SEDACUSCO's cost recovery ratios and EBITDA from a sensitivity analysis of soft measures contained in their medium- to long-term sustainable plans (as they are now expressed in their business plans)

(c) **According to the financial impact of the TA provided by OTASS to 48 utilities[52]**, benefits would range between US$13 million and US$56 million per year in years 4-5 of the project.[53]

(d) **According to the contribution of each subproject to sustainability, a comparative analysis between the existing tariff charged by each utility and the resulting average long-term cost of O&M, and capital costs (CAPEX) plus O&M costs, was carried out for each subproject.** For SEDAPAR, except for one sewerage subproject, existing tariffs are larger than the long-term O&M average costs, indicating that each subproject contributes to the sustainability of the utility. For SEDACUSCO, existing tariffs will contribute to the financial sustainability of the utility, except for one water subproject.

(e) **According to the financial impact on cost recovery and EBITDA,** Table 5.2 summarizes the results that vary depending on whether infrastructure and/or soft actions (to either reduce costs or increase active connections) are assessed:

[51] Peru's Public Expenditure Review, WSS Sector Chapter. Pages 30–32.

[52] Analysis excludes SEDAPAL and ATSUA (the water and sewerage company of the city of Tumbes), which is under private operation and has varying characteristics from the other 48 publicly managed utilities.

[53]

Table 5.2. Impact on EBITDA - Cost Recovery Improvements as Reflected in EBITDA Incremental (US$, millions) (Five-year Period)

Utility	Infrastructure	Soft Actions to Increase Active Connections	Soft Actions to Achieve Cost Reductions
SEDAPAR	2.5	9.5	0.0
SEDACUSCO	2.6	1.5	3.5
Total	5.1	11.0	3.5

9. **Table 5.3 summarizes the analysis.** While the economic impact horizon of infrastructure subprojects is 20 years and analysis is for 10 subprojects of only two utilities, the financial impact is mostly a five-year horizon analysis on two utilities as well.

Table 5.3. Summary of Economic and Financial Benefits of the Project (US$, millions)

Beneficiary	Economic (20 Years)	Social Health (2 Years of Investment + 18 Years of Benefits)		Financial Infrastructure (5 Years)	Financial Soft (5 Years)	Total	Project Cost in Component	Benefit-Cost Ratio
The scope of this economic-social estimation is 10 subprojects from 2 utilities (the project will fund many more), and the time frame is 20 years for the economic assessment and 18 years for social/health evaluation.								
Family[a]	90.1 (Gross Benefit)	15.0 (Water)	90.0 (Sewerage)	—	—	195	56.9[b]	3.4
The scope of this financial estimation is only for 2 utilities out of 6 in the project, and the time frame is 5 years.								
Utility	—	—		5.1	14.5	19.6	11.2 (cost of soft actions in business plans)	1.8
The scope of this estimation is systemic, and benefits are both economic and financial assuming they start to emerge in years 4 and 5.								
WSS	35.0 (Per year starting in year 4) × 2 = 70	—		13–56 (per year emerging in year 4) or 34.5 average × 2 = 69		139 (for the project period)[c]	29 (for the project)	4.8

Note: a. Benefits from wastewater plant investments are included in this evaluation through the CEA; b. Refers to the NPV of capital expenditure + O&M costs at social prices; c. There may be some overlapping between the estimates of systemic gains and those due to OTASS TA.

ANNEX 6: PERFORMANCE INDICATORS

COUNTRY: Peru
Modernization of Water Supply and Sanitation Services

Performance Indicators at Participating EPS level

Indicators	SEDAPAR					SEDACUSCO					EMAPACOP				
	Without project	With Project				Without project	With Project				Without project	With Project			
	Baseline (2016)	Year 5 (target)	Year 10	Year 15	Year 20	Baseline (2016)	Year 5 (target)	Year 10	Year 15	Year 20	Baseline (2016)	Year 5 (target)	Year 10	Year 15	Year 20
Non-revenue water (%)	34	27	25	25	25	38	32	30	28	26	46	35	33	31	29
Working ratio (%)	77	62	60	60	60	75	65	62	60	60	83	65	65	63	61
Operating margin (%)	2.8	10	12	14	16	16.5	21	23	24	25	-1.9	8	10	12	14
Return on assets (ROA) (%)	1.3	3	4	5	5	2.2	7	8	8	9	0.0	3	4	4	5
Return on equity (ROE) (%)	1.6	4	5	6	6	7.1	8	9	9	10	0.1	4	5	5	6
Customer satisfaction (%)	68	85	89	93	95	78	85	89	93	95	66	75	80	85	90
Metering	80	90	93	95	97	89	94	96	98	99	17	17	17	17	17

Indicators	SEMAPA BARRANCA					EMAPA HUARAL					EMAPA HUACHO				
	Without project	With Project				Without project	With Project				Without project	With Project			
	Baseline (2016)	Year 5 (target)	Year 10	Year 15	Year 20	Baseline (2016)	Year 5 (target)	Year 10	Year 15	Year 20	Baseline (2016)	Year 5 (target)	Year 10	Year 15	Year 20
Non-revenue water (%)	60	40	37	34	31	39	32	30	28	26	34	29	27	25	25
Working ratio (%)	127	75	72	70	68	104	75	72	70	68	96	70	68	66	64
Operating margin (%)	4.4	10	12	14	16	0.6	8	10	12	14	5.7	12	14	16	18
Return on assets (ROA) (%)	0.2	3	4	5	5	0.0	3	3	4	5	0.6	4	5	5	6
Return on equity (ROE) (%)	-2.7	2	3	3	4	0.0	4	4	5	6	0.9	5	6	7	7
Customer satisfaction (%)	64	75	80	85	90	67	75	80	85	90	61	75	80	85	90
Metering	15	70	75	80	85	26	70	75	80	85	80	90	93	95	97

Performance Indicators at Participating Locality level

Service Quality Indicators
Baseline (2016)

EPS/ Locality	Incremental Continuity at Year 5 (hours per day)	Incremental Water pressure at Year 5 mwc*	Incremental water quality at Year 5 % residual chlorine	Incremental volume of wastewater treated at Year 5 liters/second
SEDAPAR				
Arequipa (Metropolitan)	0.02	0.1	0.0	-
La Joya	0.00	1.0	0.0	3.6
Caravelí	8.59	0.2	0.3	0.6
Chuquibamba	2.49	1.0	0.3	2.2
Camaná	0.39	0.2	0.0	-
Atico	0.93	0.9	0.0	-
Chala	0.64	0.4	0.0	-
Yauca	0.49	0.7	0.0	-
Aplao	0.00	0.3	0.0	-
Chivay	0.00	0.7	0.0	-
El Pedregal	0.15	0.1	0.0	0.2
Mollendo	0.54	0.2	0.0	-
Cocrachacra	0.19	0.3	0.0	0.4
La Curva	0.40	0.6	0.0	-
Matarani	0.00	0.7	1.1	-
Mejía	0.16	0.0	1.6	-
Punta de Bombón	0.70	0.3	1.6	0.9
El Arenal	0.32	0.4	0.0	-
Cotahuasi	0.04	0.5	4.1	-
SEDACUSCO				-
Cusco	0.00	0.4	0.0	0.4
Paucartambo	0.57	0.6	0.0	0.4
SEMAPA BARRANCA				-
Barranca	0.99	0.8	0.1	131.3
Supe	6.53	3.6	0.0	18.0
EMAPA HUARAL				-
Huaral	1.32	3.1	0.0	-
EMAPA HUACHO				-
Huacho	0.70	1.0	2.2	147.0
Végueta	0.88	0.9	0.9	9.0
Sayán	0.00	0.3	0.0	7.0
EMAPACOP		0.0	0.0	-
Pucallpa	0.28	0.0	5.4	0.6

* mwc, meters of water column

Local areas for proposed infrastructure sub-projects[54]	Year 5					
	New water connections	New installed sewerage connections	New Metering installed	Improved water connections	Improved sewerage connections	Improved Metering
SEDAPAR						
Arequipa (Metropolitan)	9,474	9,474	9,474	-	-	-
La Joya	485	984	485	-	-	-
Caravelí	100	140	100	1,011	697	1,011
Chuquibamba	65	120	65	180	467	180
Total SEDAPAR	**10,124**	**10,718**	**10,124**	**1,191**	**1,164**	**1,191**
SEDACUSCO						
Cusco	5,615	-	5,615	7,300	-	7,300
Total SEDACUSCO	**5,615**	-	**5,615**	**7,300**	-	**7,300**
SEMAPA BARRANCA						
Barranca	800	900	800	1,400	1,400	1,400
Supe	1,100	1,400	1,100	400	300	400
Total SEMAPA BARRANCA	**1,900**	**2,300**	**1,900**	**1,800**	**1,700**	**1,800**
EMAPA HUARAL						
Huaral	1,200	1,500	1,200	1,700	1,600	1,700
Total EMAPA HUARAL	**1,200**	**1,500**	**1,200**	**1,700**	**1,600**	**1,700**
EMAPA HUACHO						
Huacho	4,100	4,100	4,100	2,300	2,400	2,300
Végueta	200	600	200	300	300	300
Sayán	100	200	100	200	200	200
Total EMAPA HUACHO	**4,400**	**4,900**	**4,400**	**2,800**	**2,900**	**2,800**
TOTAL	**23,239**	**19,418**	**23,239**	**14,791**	**7,364**	**14,791**

[54] Service indicators for areas where infrastructure sub-projects are proposed. No investments in infrastructure through this project will be made in EMAPACOP.

ANNEX 7: MAPS

COUNTRY: Peru
Modernization of Water Supply and Sanitation Services