

Trip Report
WEFTA Site Visit to Amazonas, Peru
June 2019

Introduction

The Department of Amazonas is in north central Peru and is one of 25 Departments in Peru. Amazonas has about 380,000 people living in its 39,200 square kilometers, which are respectively about 1.2 percent of the total population and about 3.0 percent of the total land area of Peru. Amazonas is primarily an agricultural area, and has significant variations in elevation and climate, ranging from an elevation of about 700 feet in the southern part of the Department to about 7,500 feet at the capital of Chachapoyas in the north central part of the Department. There are many smaller communities (populations less than 2,000 people) in Amazonas, and many of the communities do not have clean drinking water. Very few of the smaller communities have any wastewater treatment at all, and the wastewater treatment plants that have been constructed in the past are generally old and not adequately maintained.

Lou Harrington of WEFTA paid a brief visit to Amazonas in December 2018 and met with Peace Corps volunteers that work in the area. Based on Lou's site visit, it was determined that a follow-up visit was warranted to determine if the Peace Corps and WEFTA could work together to address some of the water supply and sanitation issues confronting Amazonas. Tim Wellman and John Lincoln of WEFTA conducted a follow-up site visit in late June 2019 and met with Peace Corps personnel and representatives from various government agencies that work in water supply and sanitation.

This trip report provides a summary of the visits to several communities to evaluate the condition of the water supply and sanitation situation in those communities, and a description of the meetings with several of the government entities that oversee water supply and sanitation in Amazonas.

Itinerary

6/22	Fly to Lima, Peru
6/23	Lima: exploration
6/24	Lima: meeting with Temby Caprio, Peace Corps Country Director and Jorge Izaguirre, WASH Program Manager. Discussion on the WASH program, WEFTA objectives and potential collaboration.

- 6/25 Fly to Jaen, Cajamarca Department. Breakfast with Lianna Kardeman, PCV in Jaen. Drive to Cajaruro, Amazonas Department: meeting with the Mayor of the Cajaruro District, Hildebrando Tineo Díaz, the Municipal District Director, Willis Tantaleán Pizarro, and the Director of the Municipal Technical Area (ATM), Cinthia De La Cruz to discuss water and sanitation projects. Travel to El Ron. El Ron: informal discussion with Lianna about the PC WASH program.
- 6/26 Aguas Turbias: water and sanitation evaluation site visit. El Ron: water and sanitation evaluation site visit. Mandingas Alto: sanitation evaluation site visit. We then travel to Bagua Grande and take a taxi to Chachapoyas.
- 6/27 Chachapoyas: meeting with PNSR (National Rural Sanitation Program) to hear about their water and sanitation program and national water/sanitation goals. Meeting with the Amazonas WASH PCVs, Regional Leader (PCV) and the Regional Coordinator (PC staff) to talk about PC-WEFTA collaboration.
- 6/28 Chachapoyas: meet with SUNASS (National Superintendent for Sanitation Services) to hear about their program, regulations and technical assistance.
- 6/29 Drive to Jaen, flight back to Lima.
- 6/30 Return to the USA

Peace Corps Water, Sanitation, and Health (WASH) Program

The Peace Corps has been involved in Peru from 1962 to 1974, and from 2002 to the present, and there are currently about 190 volunteers working in Peru. Peru is one of only two countries where the Peace Corps has a Water, Sanitation, and Health (WASH) program. The other is in Panama, where Tim Wellman was a Peace Corps WASH Program Director for four years (2007-2011). About 48 of the total 190 Peace Corps volunteers in Peru are involved in the WASH program. Four of the WASH volunteers are located in Amazonas. One of these five WASH volunteers is Lianna Kardeman, who served as the primary contact with WEFTA. Lianna also arranged transportation and scheduled meetings with the communities and government entities visited by Tim and John.

While in Lima prior to the site visit to Amazonas, Tim and John met with Temby Caprio (Country Director for Peace Corps in Peru) and Jorge Izaguirre (Country Director for WASH programs in Peru) on June 24th. The most important information learned in this meeting relative to WEFTA is that the Peace Corps is no longer constructing or assisting with construction of projects; rather the Peace Corps is concentrating on “capacity building” (public education, community committee formation and training, and working these committees to access local government officials and funding on WASH issues). This means that Peace Corps personnel cannot function as in-country representatives for construction of typical WEFTA water supply projects. About the most that

the Peace Corps volunteers can do relative to construction projects is to identify the potential projects, provide introductions to appropriate local and regional government personnel, and potentially to provide some ongoing coordination.

Site Visits and Meetings with Government Officials

Tim and John visited several communities in the Department of Amazonas, along with Lianna Kardeman of the Peace Corps (this will be referred to as the PC/WEFTA team in the remainder of this report). The communities visited included Cajaruro, Bagua Grande, Aguas Turbias, El Ron, and Mandingas Alto (see the Map for the location of these communities). For the visits to the various communities, the PC/WEFTA team was accompanied by Cinthia de la Cruz, who leads the Asistencia Técnica Municipal (ATM) for the communities. The ATM provides technical advice to the communities and is also responsible for surveying the communities to determine water, sanitation, and health needs of the communities (Photo 1). The PC/WEFTA team also met with regional government officials and with other Peace Corps WASH volunteers in the Amazonas capital city of Chachapoyas.

Site Visits to Communities

Cajaruro—The PC/WEFTA team and the ATM met with Hildebrando Diaz, the mayor of the Cajaruro District and Willis Pizarro, the manager of the district. Cajaruro is composed of the main municipality and 150 smaller communities in the surrounding area. The total population of the Cajaruro area is about 30,000. Tim and John explained that WEFTA typically works with smaller communities to provide technical assistance and some funding for construction of water supply systems. However, John also indicated that WEFTA could potentially assist communities in Amazonas with technical advice for improvements/renovations of existing water supply systems and assistance with operation and maintenance (O&M). The mayor indicated that the biggest problem facing Cajaruro and other communities in Amazonas was a shortage of funding, especially for O&M. However, the mayor understood that WEFTA is a small organization that focuses on technical assistance and does not have the resources to provide significant funding of projects. The mayor was intrigued with the concept of WEFTA providing technical advice for improvements/renovations and O&M for existing water supply systems for smaller communities.

Aguas Turbias—The PC/WEFTA team and the ATM met with the water committee for the community of Aguas Turbias, which is a small community of 42 families (See Photos 4-10). The Peruvian government recently provided funding for a water treatment plant for the community. The water treatment plant treats creek water and consists of the following:

- Two sets of sedimentation tanks in series about 1/4 mile apart. Each set of sedimentation tanks includes two parallel sedimentation tanks separated by a central valve box for flushing the settled solids.

- Two slow sand filters operated in parallel. Each sand filter contains about three feet of graded materials (sand underlain by gravels underlain by rocks). The filtered water is collected by a perforated piping system located within the rock layer.
- A chlorinator and chlorine contact tank. The chlorinator uses a sodium hypochlorite injection system.

The water treatment plant is well-designed and uses appropriate technologies. It appears that the plant is well-maintained. The only improvement suggested by the WEFTA team is that the sedimentation tanks should be covered to reduce the growth of algae in the sedimentation tanks (note the algae on the surface of the left-hand sedimentation tank).

El Ron—The PC/WEFTA team and the ATM visited both the water treatment plant and the wastewater treatment plant for El Ron. The community includes about 300 families. The mayor of El Ron, Damien Guerrero, joined us for the visit to the wastewater treatment plant. (Photos 2, 3, 11-17)

- Water Treatment Plant—The water treatment plant (WTP) is about 45 years old and no longer provides significant water treatment. The original source for the WTP was a pipeline from a spring; the flows from this spring were subsequently augmented by a diversion from a nearby creek, so the source is now a combination of spring and creek waters. The WTP consists of a single sedimentation tank, two slow sand filters, and a chlorinator and chlorine contact tank. The sedimentation tank is poorly designed which results in short circuiting. The slow sand filters are no longer functional and have been bypassed. The chlorinator has been removed, and the chlorine contact chamber has been bypassed. The concrete walls of both the slow sand filters and the chlorine contact chamber are about 4 feet higher than necessary, which results in difficult access to these structures. The WTP is essentially non-functional, with the only treatment being a minor amount of sedimentation. It might be possible to rehabilitate the WTP to make it functional, but this would require significant work since the WTP is likely now under-designed, given the augmented creek flow for the source water to the WTP.
- Wastewater Treatment Plant—The wastewater treatment plant (WWTP) is a single lagoon which was constructed less than 2 years ago. The original design called for two parallel treatment trains consisting of primary lagoons followed by secondary lagoons. The existing lagoon appears to be one of the primary lagoons. According to the mayor, the remainder of the treatment plant was not constructed because the land for the lagoons could not be purchased from the existing landowner at a reasonable cost. In addition, the headworks, chlorinator, chlorine contact chamber and discharge structures were not constructed. The one lagoon is about 150 feet long by 80 feet wide, and water depth appears to be about 5 feet. It is lined with 2 layers of 20 mil high density polyethylene (HDPE). The lagoon is minimally functional because much of the HDPE liner has holes, and much of the liner appears to have been removed. Much of the lagoon is also filled with significant vegetation. There is seepage

from the lagoon, which discharges into farmland downgradient from the lagoon. It would require significant work to make the WWTP functional, including construction of the headworks, secondary lagoon, chlorinator and chlorine contact chamber. It would also require removal of the vegetation and re-construction of the HDPE liner.

Mandingas Alto—The PC/WEFTA team and the ATM visited the existing wastewater treatment plant (WWTP) at Mandingas Alto (Photos 18-19). There are 118 houses and about 400 people in Mandingas Alto. The WWTP was probably constructed at least 30 years ago judging by the condition of the existing structures. The WWTP consists of two parallel treatment trains. Primary treatment utilizes rectangular Imhoff Tanks, approximately 30 feet long and 10 feet wide. The depth is unknown but is probably about 10 feet. The effluent from the Imhoff tanks flows into 3 cylindrical tanks per treatment train (6 total tanks), each of which is about 10 feet in diameter and about 10 feet deep. These cylindrical tanks appear to be primarily for sedimentation because they are almost completely full of sludge. There is no provision for periodic removal of sludge from the Imhoff tanks or from the sedimentation tanks, since there is no vehicular access to the WWTP.

It appears that there has been very minimal maintenance on the WWTP, and that most of the wastewater flows on top of the sludge layers in both the Imhoff tanks and the sedimentation tanks. There is therefore likely minimal actual treatment of the wastewater. The WWTP could be rehabilitated if vehicular access were re-established such that the sludge in the Imhoff tanks and the sedimentation tanks could be pumped out regularly. If the sludge were pumped out, the WWTP would still only provide primary treatment with removal of no more than about 30-40 percent of the organics and solids.

Meetings with Government Officials and WASH Volunteers

Tim, John, and Lianna Kardeman (the PC/WEFTA team) travelled to Chachapoyas, the capital city of Amazonas during the evening of June 26. During the morning of June 27th, Tim and John went for a walking tour of Chachapoyas with the intention of stocking up on foodstuffs in case they became stranded. They were able to purchase a good supply of some Peruvian oranges (Photos 20-21). Later on June 27th, the team met with representatives of the Amazonas office of the Programa Nacional de Saneamiento Rural (PNSR), and with the other WASH volunteers that work for the Peace Corps in Amazonas. On June 28th, the PC/WEFTA team met with the Superintendencia Nacional de Services de Saneamiento (SUNASS).

Programa Nacional de Saneamiento Rural (PNSR)

The PC/WEFTA team met with Imer Mena and Jorge Zaldivar, two civil engineers with the PNSR. Other representatives of the PNSR sat in for portions of the meeting (Photo 23). The PNSR is the implementation arm of the national government for design, funding, and construction of water and wastewater systems (see the attached PNSR presentation slides). Each department has a PNSR office, and the Amazonas PNSR works with communities with populations from 150 to

2,000 (approximately 20 percent of the population lives in communities smaller than 2,000 people). The results of the meeting included the following information:

- Recently, the Peruvian national government recognized that smaller communities that have existing wastewater treatment plants were not properly maintaining the existing treatment plants. Therefore, the national government placed a moratorium on construction of any new wastewater treatment plants for communities of less than 2,000 people. The emphasis on wastewater for the smaller communities will be to construct individual wastewater treatment and/or disposal systems. These include such technologies as septic tanks/drain fields, composting toilets (elevated toilets with two tanks for waste—one tank is used for active wastes while the other is composting old wastes), or “filtros anaerobicos” (a small manufactured plastic tank that functions much like an Imhoff Tank).
- Most of the sources for water systems for smaller communities are either surface water sources or superficial spring/groundwater systems. The groundwater sources may or may not be contaminated. Regardless, the PNSR indicated that some form of treatment is required for most small community water systems. The PNSR indicated that simple water treatment systems are best for Amazonas, and they therefore encourage appropriate technologies such as sedimentation, followed by slow sand filtration, followed by chlorination.
- Currently, approximately 31 percent of the rural population does not have adequate and safe drinking water. To address this, the national government has a goal to provide safe drinking water to 95 percent of the rural population by 2030. The national government has committed to spend approximately 50 million USD per year to improve drinking water systems for the rural communities.
- The PNSR recognizes that one of the biggest issues regarding safe drinking water for the rural population is proper operation and maintenance (O&M) of the water treatment systems. As is typical of much of Latin America, the smaller communities do not have trained operations personnel, they do not have adequate (or any) funding for O&M, and usually there is not even an O&M manual for existing treatment facilities. Unfortunately, the PNSR does not currently have a plan for addressing the lack of O&M for existing systems or for addressing O&M of the new treatment systems after they are constructed.

Peace Corps WASH Volunteers in Amazonas

Tim and John met with the Peace Corps volunteers that work in the Water, Sanitation, and Health (WASH) program in Amazonas (Photo 22). In addition to Lianna Kardeman, this included Marcelina Williams, Maggie Switzer, and Miles Tryon-Petith. Also present were Miguel Moreno, the Regional Coordinator for the Peace Corps (staff) in Amazonas and Alejandra Garcia a volunteer coordinator in the region (3rd year PCV). Tim and John described that the types of projects that WEFTA does in Latin America typically include technical advice, designs, construction supervision, and some funding for small water systems for rural communities. Given the program for water supply for small communities that the PNSR is conducting, it does not

appear that the typical WEFTA projects make sense in Peru. However, it appears that there is an important role that WEFTA could play in Peru. This role would be to improve the operation and maintenance (O&M) of existing water and wastewater treatment systems, and potentially for improving the O&M at the new treatment systems that will be constructed under the PNSR program. The WASH volunteers recognize that O&M is often neglected or not performed properly at the existing water and wastewater treatment systems in Amazonas (and in other areas of Peru). Therefore, they were quite enthusiastic about the WEFTA approach to improving O&M. The WASH volunteers indicated that they could help identify communities that needed improved O&M. They could also provide introductions to the appropriate community leaders, and could serve as liaisons for future projects that WEFTA may develop to improve O&M.

Superintendencia Nacional de Servicios de Saneamiento (SUNASS)

SUNASS is the enforcement arm of the Peruvian national government, whose primary role is to assure proper monitoring and O&M of water and sanitation systems. It is a new organization (established in 2016) and, as such, is still in a learning mode. Their ultimate goal is to evaluate all public water and sanitation systems for communities greater than 400 people with regards to water quality, O&M, and the commitment of local government organizations to provide clean water and proper sanitation. They have the authority to issue non-compliance letters to local communities along with schedules for compliance (Photo 24).

Summary and Recommendations

It does not appear that there are significant opportunities to pursue typical WEFTA projects in Amazonas, such as providing water systems for small communities in remote areas. The Peace Corps volunteers are prohibited from being involved in any significant construction projects, and therefore could not serve as local representatives for typical WEFTA construction projects. In addition, the national government has an ambitious program (and apparently adequate funding) to provide safe drinking water to 95 percent of the rural population by 2030. WEFTA would not want to duplicate or pre-empt projects that the government will eventually fund.

However, there appear to be significant opportunities for WEFTA to assist the communities and the government agencies with:

- operator training in operation and maintenance of existing facilities,
- identification of water and wastewater systems deficiencies and repair/renovation of those deficiencies,
- field engineer training/peer review of system design for improved treatment and operation.

This has not been an area of significant WEFTA focus in the past, but it is an area where WEFTA could really make a significant impact in Amazonas, and indeed, throughout all of Latin America.

Looking toward the future, there are several potential areas where WEFTA could improve the O&M of existing water and wastewater systems in Amazonas. These could include:

- Prepare a generic O&M manual for a typical water treatment system that includes diversion, sedimentation, slow sand filtration, and chlorination. Share this generic O&M manual with the government agencies and/or the local communities that express interest in improving the O&M of their existing treatment facilities.
- Identify one or more communities for a pilot O&M project. The pilot project could include: a review of existing water treatment facilities; recommendations for upgrading and/or improving the existing facilities; assistance with funding, design and/or construction of the upgrades; preparation of an O&M manual; training for the operator(s) of the upgraded treatment system; and preparation of a report summarizing lessons learned and recommendations.
- Meet with the government entities before and during the pilot water treatment O&M project to obtain their input into the process. More importantly, meet with the government agencies to present the findings of the pilot project report, and to assist the agencies in improving O&M for all treatment facilities under their purview.
- Encouragement and assistance to a small, private company that is interested in O&M. This could potentially entail contract operations for water treatment plants for several communities in an area. It could also entail contract pumping operations for the individual wastewater treatment/disposal systems that will be constructed in the smaller communities. The contractor responsible for pumping of individual wastewater treatment systems would have to operate a central disposal system for the pumped sludge. WEFTA could assist with the design of the sludge disposal system.
- Develop the relationship with the Peace Corps WASH program to integrate Peace Corps volunteers into the O&M, training, and government agency processes.



Map of the Visit Area in the Department of Amazonas, Peru

Contacts

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Photos



John Lincoln and
Tim Wellman

WEFTA Peru Trip 2019

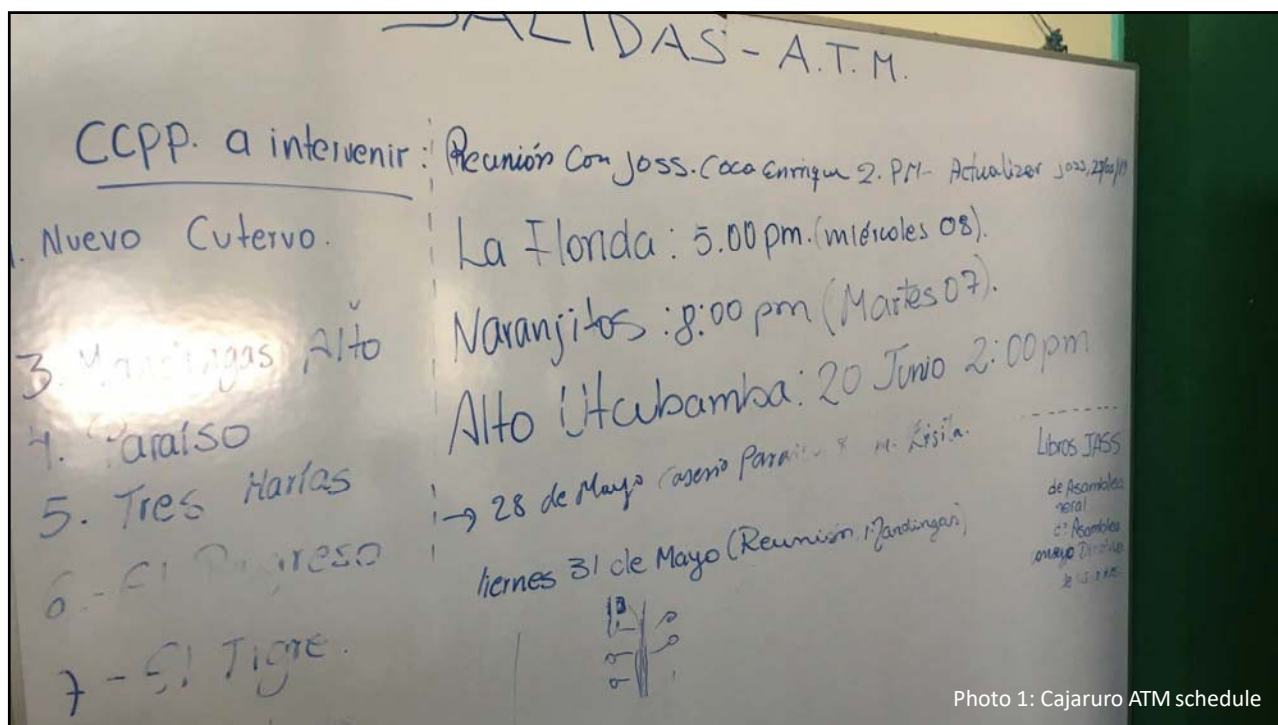


Photo 1: Cajaruro ATM schedule



Photo 2: El Ron, Cajaruro, Amazonas



Photo 3: John Lincoln and Lianna Kardeman in El Ron, Cajaruro District, Amazonas



Photo 4: Rice fields in Aguas Turbias, Cajaruro, Amazonas



Photo 5: Visit to Aguas Turbias. From left: Tim Wellman/WEFTA, John Lincoln/WEFTA, Cinthia De La Cruz/ATM, Lianna Kardeman/Peace Corps, Representative from Water Committee of Aguas Turbias



Photo 6: JL calculating flow rates through the slow sand filter, Aguas Turbias



Photo 7: Aguas Turbias water committee members with the ATM and PCV



Photo 8: Aguas Turbias operator and the slow sand filter



Photo 9: Sedimentation tanks for Aguas Turbias. The parallel sedimentation tanks are separated by a valve box to flush out accumulated solids.



Photo 10: Unsightly pit latrine in Aguas Turbias



Photo 11: JL, PCV and ATM looking at the slow sand filters in El Ron



Photo 12: Primary settling basin, El Ron



Photo 13: Slow sand filter, El Ron



Photo 14: Slow sand filter, El Ron



Photo 15: JL approaching the El Ron WW oxidation pond



Photo 16: Damaged and missing HDPE liner at El Ron WWTP lagoon



Photo 17: Vegetation growing in the bottom of the El Ron WW lagoon



Photo 18: JL, PCV, ATM and water committee of Mandingas Alto



Photo 19: Imhoff Tanks at Mandingas Alta WWTP. Three of the cylindrical sedimentation tanks are on the right side of the photograph



Photo 20: Orange vendor, Chachapoyas, Amazonas



Photo 21: Chachapoyas market



Photo 22: JL with the WASH PCVs, the regional leader and volunteer coordinator of Amazonas



Photo 23: JL and PCV Kardeman with PNSR staff



Photo 24: JL and PCV Kardeman with SUNASS staff



Photo 25: Miraflores and Pacific, Lima, Peru

PNSR Presentation



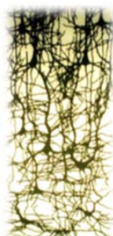
AGUA Y SANEAMIENTO ES UNO DE LOS FACTORES QUE CONTRIBUYEN A LA REDUCCIÓN DE LA DESNUTRICIÓN CRÓNICA INFANTIL

Niño desnutrido

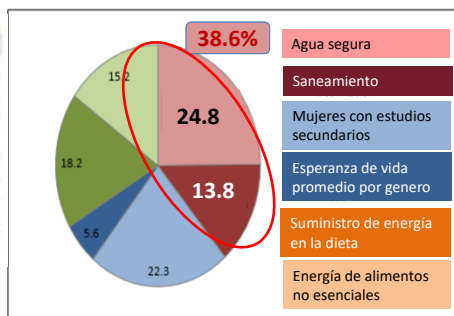


Nutrición diferente

Niño nutrido



Oportunidades diferentes



Fuente: Smith and Haddad 2014: Reducing Child Undernutrition: Past Drivers and Priorities for the Post MDG-Era

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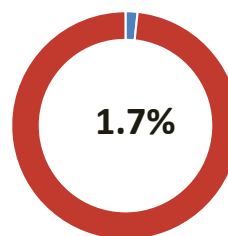
3

En el PP 0083 los GR y GL programan acciones orientadas a resolver el **PROBLEMA** de:

“Limitado acceso de la población rural a servicios de agua y saneamiento de calidad y sostenibles”



HOGARES RURALES CON ACCESO A AGUA CLORADA (Año 2017)



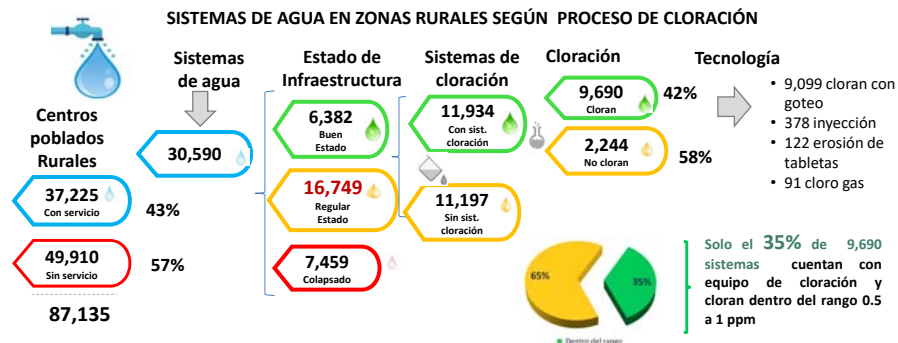
Fuente: INEI-ENAPRES

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4

DIAGNÓSTICO: ¿QUÉ TENEMOS?

Solo 42% del total de sistemas de agua de zonas rurales realizan cloración,



- ✓ 60% de los sistemas de agua no cuentan con sistemas de cloración.
- ✓ 55% de sistemas es estado regular

Fuente: Diagnóstico Rural

5

HOGARES RURALES CON ACCESO A AGUA CLORADA (Año 2017)

Meta al 2021

75%

Que el 75% de hogares en el área rural cuenten acceso a servicios de agua con presencia de cloro residual libre mayor o igual a 0.5 mg/l.



6

ROL DEL GOBIERNO LOCAL EN LA SOLUCIÓN DEL PROBLEMA



- **Administrar y reglamentar**, directamente o por concesión el servicio de agua y saneamiento*.

- **Garantizar** la prestación de los servicios de saneamiento en condiciones de eficiencia, sostenibilidad y calidad**.

- **Apoyar técnica y financieramente** en el desarrollo de infraestructura y **registrar** a las organizaciones comunales prestadoras de servicios de saneamiento**.

(*) Ley 27972 LOM (Artículo 80: Saneamiento, Salubridad y Salud)
 (**) Reglamento DL 1280 aprobado por D.S. 019-2017 y modificado por el D.S. 001-2019 (Art.10)

7

ARTICULACIÓN TERRITORIAL DE LOS TRES (03) NIVELES DE GOBIERNO PP 0083 PNSR

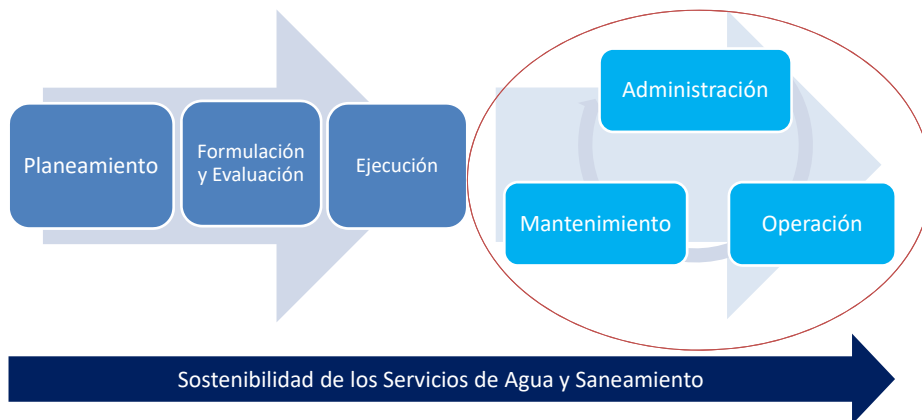


8

Ciclo del Servicio de Agua y Saneamiento Rural

Fase: Implementación

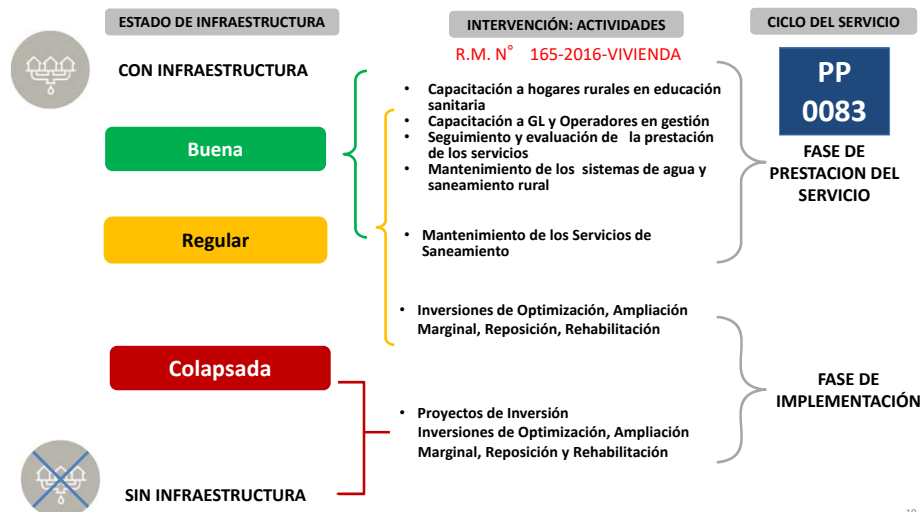
Fase: Prestación del Servicio



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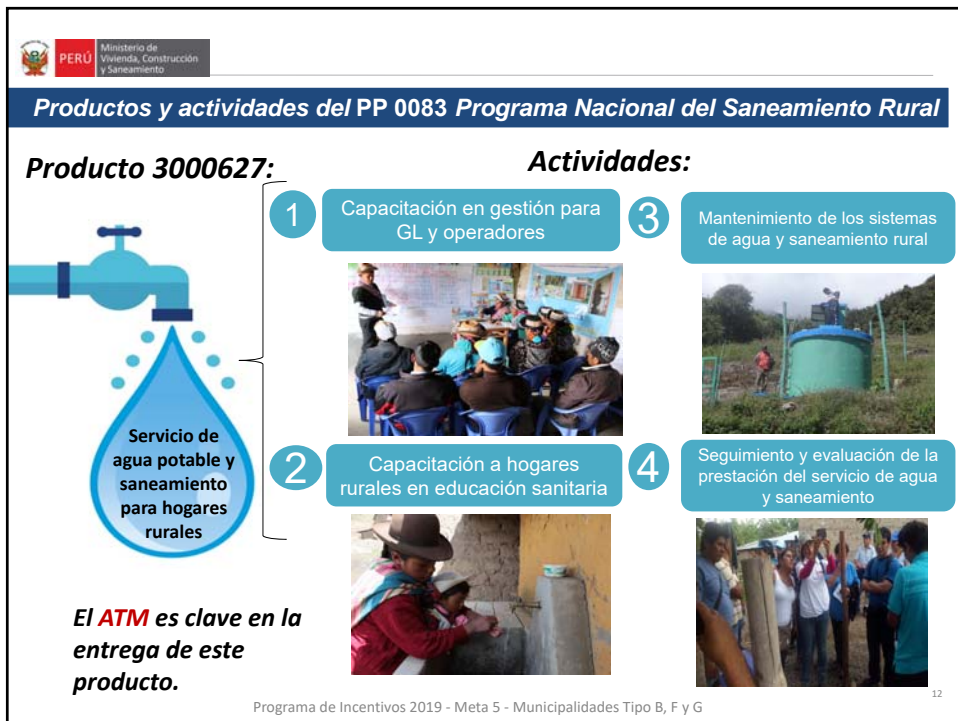
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La intervención del PNSR en los Centros Poblados considera el enfoque de presupuesto por resultados (Programa Presupuestal 0083) y se realiza según las necesidades de infraestructura y el ciclo del servicio



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10



Estructura Programática del PP 0083 Programa Nacional del Saneamiento Rural 2019

MEF/DGPP

23/04/2018

16:00:16

PROCESO PRESUPUESTARIO DEL SECTOR PUBLICO

COMBINACION DE CADENAS FUNCIONALES PROGRAMAS PRESUPUESTALES 2019

GOBIERNOS LOCALES

MAR39C1

PAGINA: 1

CATEGORIA PRESUPUESTAL	PRODUCTO - PROYECTO	ACTIVIDAD / OBRA	FUNCION	DIVISION FUNCIONAL	GRUPO FUNCIONAL	FINALIDAD	UNIDAD MEDIDA
PROGRAMA PRESUPUESTARIO							
0001 PROGRAMA NACIONAL DE SANEAMIENTO RURAL	3000627 ACCIONES COMUNES	3000627 GESTION DEL PROGRAMA	18 SANEAMIENTO	040 SANEAMIENTO	000 SANEAMIENTO RURAL	004175 GESTION DEL PROGRAMA	001 ACCION
		300178 TRANSFERENCIA DE RECURSOS PARA AGUA Y SANEAMIENTO RURAL	18 SANEAMIENTO	040 SANEAMIENTO	000 SANEAMIENTO RURAL	001008 TRANSFERENCIA DE RECURSOS PARA AGUA Y SANEAMIENTO RURAL	006 PROYECTO
		300470 CAPACITACION EN GESTION PARA GOBIERNOS LOCALES Y OPERADORES	18 SANEAMIENTO	040 SANEAMIENTO	000 SANEAMIENTO RURAL	010386 CAPACITACION EN GESTION PARA GOBIERNOS LOCALES Y OPERADORES	100 ENTIDAD
		300471 SEGUIMIENTO Y EVALUACION DE LA PRESTACION DEL SERVICIO DE AGUA Y SANEAMIENTO	18 SANEAMIENTO	040 SANEAMIENTO	000 SANEAMIENTO RURAL	010381 SEGUIMIENTO Y EVALUACION DE LA PRESTACION DEL SERVICIO DE AGUA Y SANEAMIENTO	100 SISTEMA
		300506 CAPACITACION A HOGARES RURALES EN EDUCACION SANITARIA	18 SANEAMIENTO	040 SANEAMIENTO	000 SANEAMIENTO RURAL	010813 CAPACITACION A HOGARES RURALES EN EDUCACION SANITARIA	277 HOGAR CAPACITADO
		300509 MANTENIMIENTO DE LOS SISTEMAS DE AGUA Y SANEAMIENTO RURAL	18 SANEAMIENTO	040 SANEAMIENTO	000 SANEAMIENTO RURAL	021012 MANTENIMIENTO DE LOS SISTEMAS DE AGUA Y SANEAMIENTO RURAL	100 SISTEMA

Producto 3000627:
Servicio de agua potable y saneamiento para hogares rurales

ATM

Municipalidades Tipo B, F y G

“Nuestra prioridad es mejorar la calidad de vida de los peruanos”

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