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Water For People Investment Trends in Sanitation in Bolivia Municipalities

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Translated Spanish to English
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Introduction

In the implementation of basic sanitation projects with a focus on sustainability of basic services, Water for People has been working for fifteen years together with partner municipalities in the Valle Alto Department of Cochabamba.

The implementation of drinking water systems has been a main focus of Water For People, with an emphasis on sustainable services, and applying Community Development principles according to sector norms, achieving tariffs that recover costs of operations and maintenance of infrastructure and also recovering a portion of the original investment.

Sanitation is very relevant in complementing hygiene, health and water services, which is why Water For People's purpose is also to implement access to sanitation at the family level, with solutions that benefit children and the elderly.

Over the years, Water For People has applied various types of interventions for constructing bathrooms with a focus on sustainability and has carried out various co-financing programs with international agencies as well as partner municipalities.

This document analyzes work carried out by Water For People in Bolivia and explains the investments made between 2013 and 2018 implementing basic family sanitation units, family composting toilets or simply bathrooms.

Objective

After implementing several steps of sanitation, Water For People requires verification of Global Investment in Sanitation and determines the cost of constructing a family sanitary bathroom unit, including: technical personnel, social personnel, consultants, materials, and other costs, as well as the expenses assigned to these projects by the executive personnel of Water For People in Bolivia. This way, it is possible to know Water For People's total investment for each bathroom constructed. It should also be mentioned that this analysis will not consider the cost contributed by the beneficiaries, which is not the purpose of this document.

Partner Municipalities

There are five Water For People partner municipalities in Valle Alto of Cochabamba, and one in the Santa Cruz department (Table 1). In these municipalities, a large number of drinking water systems have a focus on sustainability and have been completed with various methodologies and experiences in access to sanitation.

Table 1: Municipalities in Water For People Action Areas

Department	Province	Municipality
Cochabamba	Punata	Villa Gualberto Villarroel
Cochabamba	Punata	Villa Rivero
Cochabamba	Punata	San Benito
Cochabamba	Arani	Arani
Cochabamba	Tiraque	Tiraque
Santa Cruz	Andrés Ibáñez	San Pedro

Financial Policies of Water For People

With the goal of motivating partners in the intervention and incremental coverage in sanitation, Water For People has brought financing of infrastructure for construction of toilets, and for implementing demonstration models in the cycle of sanitation.

The financing of toilet infrastructure culminated in 2015, and in the following years has been supported with technical assistance. Currently, there is zero financing for constructing toilet infrastructure with funds from Water For People.

Cooperating Finance Entities

Between 2013 and 2018, Water For People in Bolivia had the ability to obtain financing from various entities that are shown in Table 2.

Table 2: Cooperating Finance Institutions partnering with Water For People

Entity	Time Period	Purpose
Holland Technical Service (SNV) / Swiss Cooperation Agency (ASDI)	2013 to 2015	Financed by the Swiss Cooperation Agency for implementation of Ecological Sanitation Program in suburban areas of Santa Cruz and Riberalta.
UNICEF	2014 to 2015	Implementation of Sanitation Program in rural communities of Chuquisaca department with the methodology of generating demand, applying Total Sanitation Led by the Community (CLTS).
Interamerican Development Bank – Multilateral Investment Fund (BID-FOMIN)	2015 to 2017	Develop the sustainable Sanitation Program through generating access to credit of financing entities.
Water For People donors	2013 to 2018	Implement sustainable Sanitation Program, reducing infrastructure subsidies to zero.

Intervention Modalities in Sustainable Sanitation by Water For People

The work based on agreements with the municipal governments was the main element for the implementation of toilets at the family level. In some cases, there was co-financing between Autonomous Municipal Governments (GAMs, for the Spanish acronym), families, and Water For People. In other cases, only GAM and families. And finally, only families.

Financing in Sanitation Projects

From 2006 until 2015, Water For People co-financed the construction of toilets, taking advantage of its own contributions as well as other external donating agencies.

Table 3: Description of the Intervention Modalities for Implementation of Sanitation at the Household Level

Code	Modality	Description of the Modality
1	Water For People Sanitation Program	Co-financing of toilets until 2015 between Water For People and municipal partners and/or families.
2	Villa Rivero Model	Co-financing of toilets with low municipal subsidies and high family contributions generated with social marketing.
3	Replica of Villa Rivero Model	Financing of toilets in other partner municipalities with families.
		Co-financing of toilets by NGOs, Area Development Program (PDA), Tiraque Municipality, and families.



		Co-financing of toilets by PDA, Vacas Municipality, and families.
		Co-financing of toilets by Pueblo Foundation and families in Yunchara Municipality in Tarija.
4	Sanitation associated with construction of Potable Water Systems	Construction of toilets financed 100% by interested families, generated demand by CLTS methodology, modified by Water For People and where intervening with water systems.
5	Access to Credit Model	Construction of toilets self-financed 100% by users, tied to obtaining of credit by the financing entities.
6	Plan for Housing and Others	Construction of toilets associated with National Program "Social Rural Housing Plan" financed in large proportion by National Government and in small proportion by family beneficiaries.

For the present analysis, financial data is used based on data from Water For People administration records between 2013 and 2018. It should be mentioned that Water For People fiscal years begin in October and end in September.

The expense details for sanitation projects completed by Water For People that correspond to total implementation expenses, including technical assistance, supervision, materials, and labor, are shown in Table 4.

Between 2013 and 2018, Water For People organized sanitation financing each year, totaling \$122,308 USD. In the years 2013 to 2015, financing was received from ASDI through SNV with financial support of \$604,791 USD. In 2014 and 2015, through an agreement with UNICEF, \$160,052 USD was received. Finally, from 2015 to 2017, under an agreement with BID-FOMIN, financing was obtained for \$104,972 which was combined with a \$21,446 counterpart from Water For People. In total, \$1,013,570 USD were invested for construction of 1,455 family sanitation units (composting toilets).

Table 4: Investments achieved annually between 2013 and 2018 by entities partnering with Water For People for Sanitation Implementation

Financiers or Donors	Periods						Total
	2013	2014	2015	2016	2017	2018	
Water For People	33,779	51,440	25,391	9,592	575	1,532	122,308
Counterpart Water For People to BID/FOMIN	0	0	0	13,109	8,337	0	21,446
Contribution from Swedish ASDI with SNV	206,178	143,647	210,696	44,269	0	0	604,791
UNICEF	0	974	159,079	0	0	0	160,052
BID/FOMIN	0	0	29,000	37,984	37,989	0	104,972
Total	239,957	196,061	424,166	104,954	46,900	1,532	1,013,570

Source: Based on financial data from Water For People; Exchange rate: 1 USD = 9.69 Bolivianos

The development of this work by Water For People with partner municipalities has been to promote sustainable sanitation, while the financing from ASDI/SNV, UNICEF, and BID-FOMIN has helped implement pilot projects with different modalities. The ASDI/SNV financing allowed the implementation and servicing of dry composting toilets that separate urine and feces with closed cycle sanitation. With UNICEF, it allowed implementation of toilets generating demand with the CLTS methodology with self-construction. And with BID-FOMIN, it allowed for construction of toilets with access to credit for families and with zero incentive for infrastructure.

The quantities of toilets constructed between 2013 and 2018, with financing from various entities (ASDI/SNV, UNICEF, BID-FOMIN), and with help from the partnering municipalities, are shown in Table 5.

Table 5: Quantity of Toilets Constructed between 2013 and 2018 by Water For People and the Co-Financing Institutions

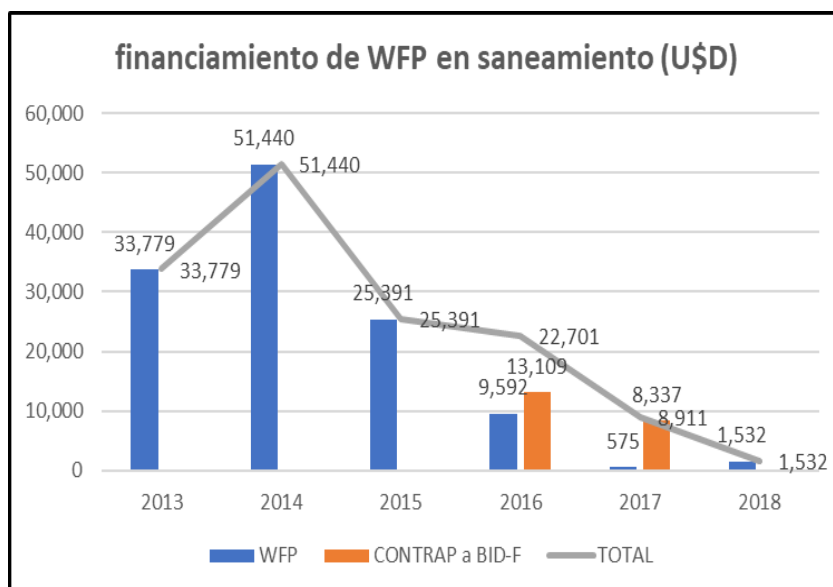
Year	Quantity of Toilets by Financing Entities						Total
	WFP and GAM Villa Rivero	ASDI/SNV	UNICEF	BID/FOMIN	Replica Villa Rivero	MMAyA* Housing Plan	
2013	85	198					283
2014	47	40					87
2015	218	100	336				654
2016	70			36			106
2017	43			56			99
2018	6				244	145	417
Total	469	338	336	92	244	145	1.646

*Bolivian Ministry of Environment and Water

Financing of Sanitation Projects by Water For People

Financing for implementation of access to family sanitation between 2013 and 2018 (December 2017), is shown in Figure 1. The largest investment, by Water For People with its own funds, occurs between 2013 and 2015, making a total of \$110,610 USD for the implementation of 350 toilets (Figure 2) for families in rural areas of the municipalities of Valle Alto in Cochabamba District. During these years, Water For People arranged co-financing for building infrastructure.

Figure 1: Performance of Sanitation Financing by the Financing Entities





After this period, financing is reduced to only technical assistance and zero investment in infrastructure, in order to adopt the zero-subsidy policy and apply the “Villa Rivero” Model that was proven in 2015 with broad positive results, using a method of social marketing. Thus, showing a trend toward substantially reduced financing for toilet infrastructure.

Figure 2 shows details of the quantity of toilets built between 2013 and 2018. In 2016 an agreement was signed with BID-FOMIN and financing was obtained from them to create a working team in sustainable sanitation with access to credit. There was zero investment in infrastructure and 100% financing by the families for the construction of toilets, paid by themselves, with technical, social, and financial assistance from Water For People and support from the BID-FOMEN team. This agreement ended in 2017 and proved that these families can construct their toilets, agreeing to credit from

the financing agencies, and with support from the sanitation chain, including construction workers and materials. This achieved construction of a 92 toilets with access to credit paid 100% by the families in 2016 and 2017 (Figure 2). In this program, Water For People had a contribution of \$22,020 USD to provide technical assistance and personnel for the project.

Between 2016 and 2017, with the “Villa Rivero” modality, 113 toilets were constructed where Water For People did not provide a cent for infrastructure. Having success with the Villa Rivero method, Water For People reduced the infrastructure investment budget considerably and reached technical assistance only in the partner municipalities, achieving a contribution of only

Figure 2: Quantity of Bathrooms Constructed Annually with donor financing

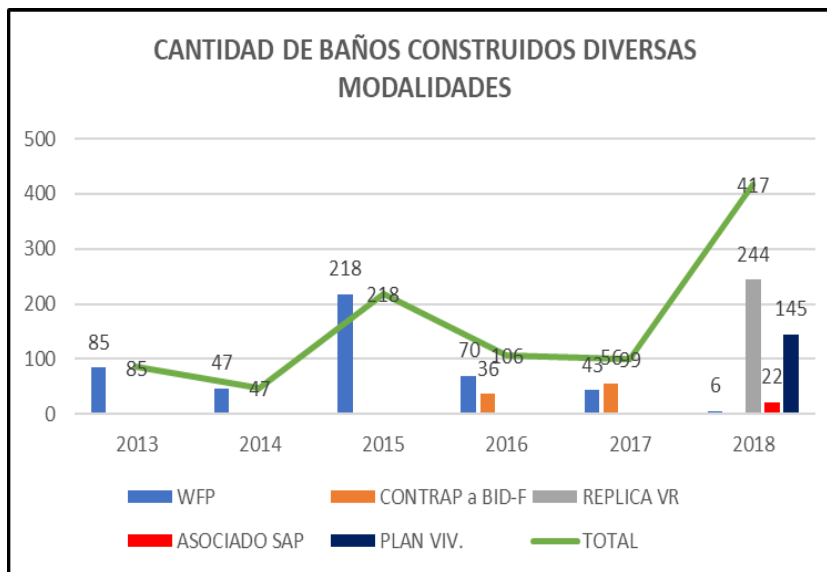
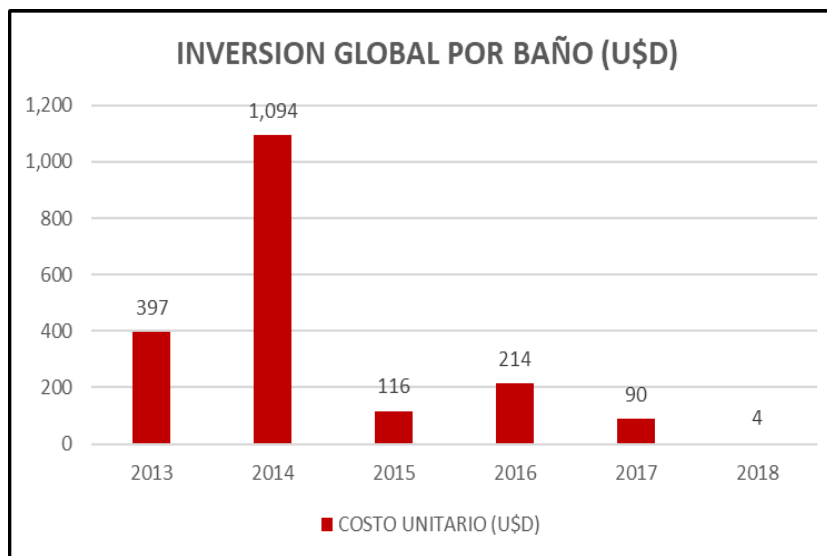


Figure 3: Investment per Year (USD)



\$2,107 USD in 2017 and 2018. This resulted in the construction of 417 toilets (Figure 2) that include the Villa Rivero, sanitation with potable water systems, and Housing Plan methodologies.

Investment Per Toilet Unit

The analysis of the total investment costs (technical assistance and materials) versus the quantity of toilets built annually between 2013 and 2018 (December 2017) shows that the year 2013 had financing from Water For People of \$397 USD per-toilet (Figure 3).





In 2014, it increased to \$1,094 USD because of pilot testing composting toilets, which required additional work and costs. In 2015, it reduced considerably to \$116 USD per toilet. In 2016, the BID-FOMIN project was implemented, including obtaining access to credit, resulting in a cost of \$214 USD per toilet. In 2017 the BID-FOMIN project ended, and the total investment reduced to \$90 USD per toilet. Finally, we can conclude that during the period 2013-2018 (December 2017), there was a total investment of \$143,754 USD of resources, and, a total of 972 toilets were constructed at an average cost of \$148 USD per toilet.

This data can serve as a reference for planning budgets for future programs to carry out the modalities indicated. The detailed data for each year is shown in Table 6.

Table 6: Calculation of Unit Cost Invested per Toilet

PER UNIT COST OF TOILETS CONSTRUCTED			
YEAR	WFP INVESTMENT (USD)	QTY TOILETS	UNIT COST (USD)
2013	33,779	85	397
2014	51,440	47	1,094
2015	25,391	218	116
2016	22,701	106	214
2017	8,911	99	90
2018	1,532	417	4
TOTAL	143,754	972	148

Lessons Learned

-  The generation of demand for toilets, at first required higher costs for technical assistance and investment in materials and labor to carry out demonstration projects.
-  It is possible to recapture the costs over time and help families understand the importance of using a composting toilet at home to improve health and hygiene. In this way, families contribute their portion of costs at a higher percentage.
-  It is possible to achieve zero subsidy and for families to access credit to pay for the construction of their own toilets.
-  It is necessary to use methodologies that create demand such as social marketing and the Villa Rivero model, and that families look for technical assistance and support for the construction of their toilets, rather than the institutions knocking on their doors to offer support.

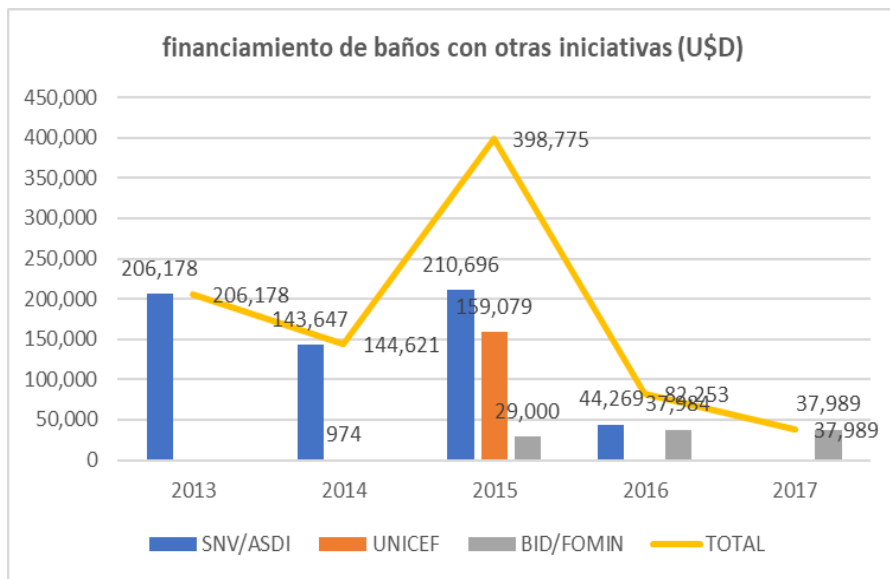
Other Initiatives in the Implementation of Sanitation

With the purpose of taking advantage of Water For People's experience and their institutional presence in the area, external financing organizations have made agreements with Water For People to implement sanitation projects with an eye toward coverage rates and sustainability.



Each financier has recommended a model of intervention and investment. Among these are the are financing from the Swedish Cooperative through the SNV Organization in Bolivia for the implementation of composting sanitation units in the suburban areas of Santa Cruz and Riberalta (Beni), having financed \$604,791 USD for the implementation of 421 composting toilets (with urine/feces separator and double chamber for alternating use). The total investment achieved was \$1,437 USD per toilet.

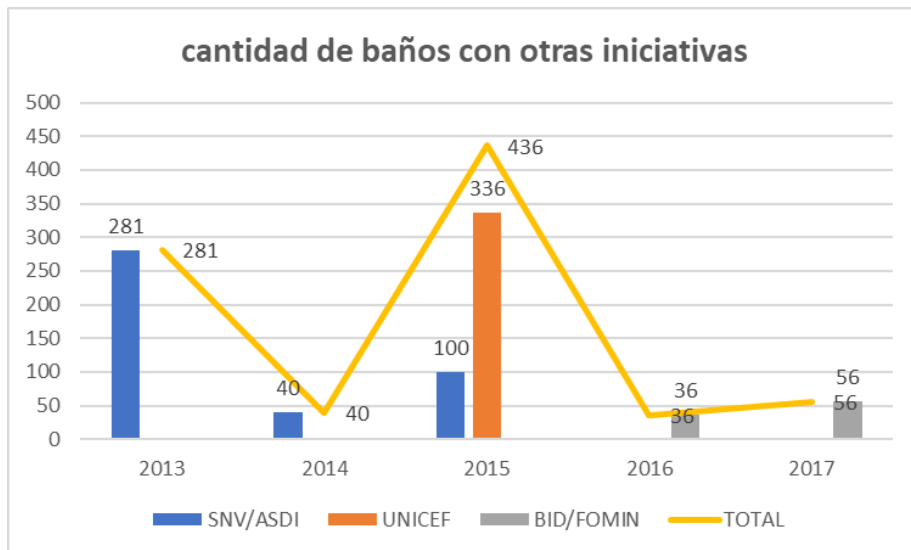
Figure 4: Annual Investments Made with Other Initiatives



The UNICEF international NGO, by agreement with Water For People, has financed \$160,052 USD, to be implemented in the altiplano municipalities, capital of the valley and zone of Chaco Chuquisaqueño (Tomina, Sopachuy, Monteagudo and Huacareta), with the construction of 336 toilets with self-constructed water coverage. This generates a total investment of \$476 USD per toilet. And BID-FOMIN has used a method of zero subsidy with access to credit from financing entities. With this model, 92 toilets were constructed, having invested a total of \$104,972 USD and a per-toilet investment of \$1,141 USD. The annual investments of each financial institution are shown in Figure 4 and the quantities of toilets per institution are shown in Figure 5.

The average investments per toilet are: ASDI/SNV \$1,437 USD, UNICEF \$476 USD, and BID-FOMIN \$1,141 (Figure 6). Clearly, we appreciate the average cost achieved by Water For People of \$148 USD. It is evident that the total investment cost per toilet is high with other initiatives. This is because they have used alternative and demonstration projects with technical options

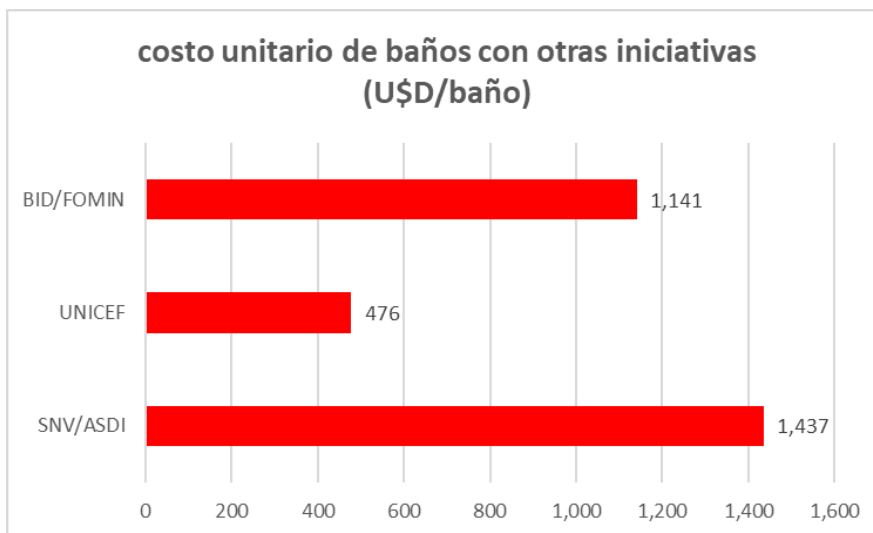
Figure 5: Toilets Constructed with Other Financing Initiatives





and intervention and inclusion models. Complementary work has been done to the toilets, such as in the ASDI/SNV case with the goal of improving the comfort and access to a bathroom, and closing the sanitation cycle with the installation of treatment plants (composting centers) of solid and liquid materials deposited in composting toilet chambers and production of organic fertilizer.

Figure 6: Unit Costs of Investment with Other Financing Initiatives



Scoring the Scaling Potential

With Water For People’s progress to date, according to the experience acquired, we can appreciate the potential for scaling three modalities for implementing access to sustainable sanitation (Villa Rivero, access to credit, and sanitation associated with water services models).

During the Water For People Country Directors meeting in Denver in November 2017, Steve Sudgen, sanitation expert, emphasized the importance of evaluating the potential or lack of potential for “scaling” the experiences applied by Water For People in the implementation of sanitation solutions to improve coverage. For testing ideas and technologies based on Sanitation as a Business, Water For People uses a plumbing scheme, where the process is evaluated at each stage. Steve proposed a scoring instrument with eight criteria to verify the feasibility of scaling the experiences in sanitation, using only two colors to indicate “complete” or “not complete” and avoiding central criteria that create ambiguity. The scoring colors are green to indicate complete, and red to indicate incomplete. The proposed criteria are shown in Table 7.

Table 7: Water For People Criteria to Verify the Feasibility of Scaling the Experience in Sanitation

SCORING CRITERIA FOR SANITATION SCALING (mark green or red)
The processes of business or providers, do not depend on subsidies or external donors
WFP is not part of the supply chain, not directly or indirectly (e.g. in the training of plumbers)
There are good margins or earnings for businesses and providers, in general
Client satisfaction is high
The business or providers have access to financial resources for income or to expand their business
The business skills are sufficient to manage the business
There is recognition and support from the public sector with which we are working
The supply chain is solid and sustainable for materials, technology, and other products



To qualify the sanitation idea or experience, the criteria should be marked only with the colors green or red. If 8 criteria are marked green, the experience should be scalable. If only 6 or 7 are marked green, one should consider modifying the idea or experience. If zero to 5 are marked green, the idea should be abandoned.

It is convenient to apply these criteria in the modalities for the implementation of sanitation solutions in the “Villa Rivero” model, the “access to credit” model, and the “sanitation associated with water service” model. Their qualifications with their corresponding justifications are shown in the tables below.

“Villa Rivero” Model

The “Villa Rivero” method, according to the plumbing scheme, is in the phase of validated market alliances and ready to scale, has the conditions to scale toward total coverage, and meets all criteria (Table 8). The municipal government is the principal director of the chain (providers of materials, services, and users) as the head of the sector in the municipality.

Table 8: Color Scoring the “Villa Rivero” Access to Sanitation Model

Score	Sanitation	Justification
1	The processes of businesses or providers do not depend on external studies or donors.	There is no intervention by donors in the functioning of the providers. The businesses are independent.
2	WFP is not part of the supply chain, neither directly nor indirectly.	The supply chain is autonomous and does not require intervention by WFP. There are plumbers and builders in the market trained in construction of sanitation projects.
3	There are generally good margins or earnings for businesses and providers.	Businesses and providers earn good profit on materials and services in larger volumes. Sales or services in small volumes are less profitable.
4	Client satisfaction is high.	Technical options in decentralized family sanitation (toilets) are adequate and satisfactory for consumers; the models have been carried out based on demand from families, and will be selected according to financial ability.
5	The businesses or providers have access to financial resources to increase income and expand their businesses.	In order to expand their businesses, there are financial institutions to offer credit, and there are wholesale providers that support the small and medium size businesses, offering materials on consignment.
6	The business skills are sufficient to run a business.	The municipal government of Villa Rivero handles contracting through open and public noticing by printed media for providing materials and services. This facilitates the business capacity.
7	There is recognition and support of the Public Sector that we work with.	The National and Municipal government offer broad support of expanding sanitation coverage and generates demand for services and materials to expand sanitation coverage, creating projects and soliciting proposals for construction.
8	The supply chain is solid and sustainable for materials, technology, and other products.	All participants in the supply chain, including providers of materials and services, have access to technologies and materials, models of sanitation and services, and can meet the needs of the customers by applying the various technologies. Because of their diversity, the products are affordable.



“Access to Credit” Model

This model, according to the plumbing scheme, is in the phase of understanding the economy, market, and clients, but does not yet meet the conditions for scaling. It should continue to be tested, as it is necessary to analyze, improve, or change the idea or intervention, with the goal of improving the scores of criteria 3, 6, and 7. At least 10 toilets should be installed by contract, and the financing entities should be involved with service providers, clients, and the GAMs as the head of Sector (Table 9).

Table 9: Color Scoring “Access to Credit” Model for Access to Sanitation

Score	Sanitation	Justification
1	The processes of businesses or providers do not depend on external studies or donors.	There is no intervention from donors in the functioning of the providers.
2	WFP is not part of the supply chain, neither directly nor indirectly.	The supply chain is autonomous and does not require intervention from WFP. The market has plumbers and builders trained in construction of sanitation projects.
3	There are generally good margins or earnings for businesses and providers.	The costs of service for labor and materials are not subsidized and are obtained at market prices, with access to utilities, especially when the quantity of toilets is greater than 10, which is a limiting factor.
4	Client satisfaction is high.	Technical options in decentralized family sanitation (toilets) are adequate and satisfactory for consumers; the models have been carried out based on demand from families, and will be selected according to financial ability.
5	The businesses or providers have access to financial resources to increase income and expand their businesses.	In order to expand their businesses, there are financial institutions to offer credit, and there are wholesale providers that support the small and medium size businesses, offering materials on consignment.
6	The business skills are sufficient to run a business.	The director of this business is the financing entity, since it generates demand for loans for construction of toilets and could organize directly or indirectly (through the creditors) the providers of materials and services. Currently, this role is not being filled, and it should be emphasized that this needs to be improved.
7	There is recognition and support of the Public Sector that we work with.	The financing entities do not have formal agreements with the public sector (GAM) to coordinate specific actions toward the users. The public sector has information about sanitation coverage and the MFIs could have coordination to verify the zones needing sanitation. The financial entity should promote the product (credit for toilets) with conditions that are affordable for the consumers.
8	The supply chain is solid and sustainable for materials, technology, and other products.	All participants in the supply chain, including providers of materials and services, have access to technologies and materials, models of sanitation and services, and can meet the needs of the customers by applying the various technologies. Because of their diversity, the products are affordable.



“Sanitation Associated with Potable Water Systems” model

According to the plumbing scheme, this model is in the phase of new businesses and technology solutions. It has the conditions to scale and be replicated and is strongly binding in the interventions to expand coverage of drinking water service. It has great opportunity to motivate families to build toilets, since they have access to water service. The key entity is the Public Water and Sanitation Service (EPSAs, for the Spanish acronym) or Potable Water and Sanitation Committee (CAPs, for the Spanish acronym) with support from the Municipal Office of Basic Sanitation (DMSB, for the Spanish acronym) within the Autonomous Municipal Governments (GAMs).

Table 10: Scoring of Access to Sanitation “Associated to Construction of Water Systems”

Score	Sanitation	Justification
1	The processes of businesses or providers do not depend on external studies or donors.	There is no intervention from donors in the functioning of the providers.
2	WFP is not part of the supply chain, neither directly nor indirectly.	The supply chain is autonomous and does not require intervention from WFP. The market has plumbers and builders trained in construction of sanitation projects.
3	There are generally good margins or earnings for businesses and providers.	The costs of labor service and the provision of materials are not subsidized, market costs are managed, and the profits have a good margin. The construction companies take advantage of the stay in the community to generate demand and build bathrooms, and the costs of their services can become cheaper.
4	Client satisfaction is high.	Technical options in decentralized family sanitation (toilets) are adequate and satisfactory for consumers; the models have been carried out based on demand from families, and will be selected according to financial ability.
5	The businesses or providers have access to financial resources to increase income and expand their businesses.	In order to expand their businesses, there are financial institutions to offer credit, and there are wholesale providers that support the small and medium size businesses, offering materials on consignment.
6	The business skills are sufficient to run a business.	The advantage in this modality is that families go directly to the builders, which facilitates demand and business management.
7	There is recognition and support of the Public Sector that we work with.	The National and Municipal Government widely support the increase in coverage in sanitation and generate demand for the provision of services and materials to expand the coverage in sanitation, generating projects and calling for proposals for construction.
8	The supply chain is solid and sustainable for materials, technology, and other products.	All participants in the supply chain, including providers of materials and services, have access to technologies and materials, models of sanitation and services, and can meet the needs of the customers by applying the various technologies. Because of their diversity, the products are affordable.



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