Private local service providers in Tigray, Ethiopia

Water supply maintenance and spare parts management

June 2024

Woord en Daad

AFAS FOUNDATION inspireert beter doen

Contents

About SNV

SNV is a global development partner, deeply rooted in the African and Asian countries where we operate. With 60 years of experience and a team of approximately 1,600 people, we strengthen capacities and catalyse partnerships that transform the agri-food, energy, and water systems, which enable sustainable and more equitable lives for all. We work on the core themes of gender equality and social inclusion, climate adaptation and mitigation, and strong institutions and effective governance. By tailoring our approaches to different contexts, we contribute to impact at scale.

About iWET

Inspiring Water Entrepreneurship in Tigray (iWET), was a five-year project that contributed to rural communities' improved health and productivity in 22 *woredas*. Concluded in April 2024, the AFAS-supported consortium project harnessed private sector engagement in rural water post-construction services. The project created new markets for drinking and productive water use, generated water-related jobs for young entrepreneurs by setting up 12 functional private local service provider enterprises and shops for spare parts, and maintained or constructed over 4,000 drinking and irrigation water schemes. In doing so, the project made it possible for more than 1.2 million people to gain access to clean water.

The project was implemented by Woord and Daad (Lead), SNV, Digital Opportunity Trust (DOT), and The Well in Action (TWA).

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Summary

Ethiopia's national and regional governments have focused for many years on building new water infrastructure, successfully reaching a significant number of people across the country and in Tigray Region in particular. However, less emphasis has been given to post-construction services. This has resulted in frequent faults and breakdowns in the constructed schemes and lengthy delays for repairs. Communities also face financial challenges due to the rising cost of spare parts.

In response, Tigray's Water and Energy Resources Development Bureau is working in collaboration with local and international partners to encourage the private sector to fully engage in water service delivery, as provisioned in national and regional water policies and strategies. Gradually, the Bureau plans to transfer water service maintenance and the supply of spare parts to the private sector, enabling the Bureau to focus on regulatory functions and the provision of clean and adequate water to communities according to national standards. This transition requires full engagement by actors throughout the maintenance service system – including the public sector, local and international non-governmental organisations (NGOs), microfinance institutions (MFIs), the private sector, and end users – and clear understanding on their respective roles for sustainable water service delivery. Under such a model, the regional water sector coordinates the process, but all actors must improve their practices in line with sector priorities to professionalise water service delivery.

This technical paper outlines the process of setting up functional private local service providers (PLSPs) for drinking and productive water scheme maintenance services in rural and peri-urban areas. It explains crucial aspects needed to achieve sustainable PLSP teams, effective relationships between key stakeholders, and high-quality and affordable service provision. Evidence is presented on the reliability of the PLSP model and the challenges to be addressed for region- and nationwide adoption in Ethiopia.

The paper serves as a guide for partners seeking to cooperate with the Water and Energy Resources Development Bureau to roll out the PLSP model to other woredas in Tigray Region. It is also a relevant resource for partners in other regions or countries looking to introduce a similar approach in their water service delivery efforts.

Background

Water is life. At the same time, it is a public good that should be delivered to end users clean, in adequate amounts close to homesteads, and at an affordable price. The government has a duty to ensure the delivery of water to communities.

Delivering water for productive and domestic purposes involves four major components:

1. source identification and design,
2. construction of new infrastructure,
3. production and post-construction services, and
4. regulation of these activities to meet the current and future water needs of people and nature.

For many years, Ethiopia's national and regional governments have focused on building new water infrastructure. They have succeeded in reaching a significant number of people across the country, and in Tigray Region in particular.

However, less emphasis has been given to post-construction services, meaning that the constructed schemes have not met expectations in service delivery. The infrastructure breaks down frequently, there are long downtimes in service provision, and communities face unaffordable costs for spare parts. Whereas the country's limited financial resources continue to be invested in sustaining those schemes that have been constructed, an estimated 30%–40%[1] of people in Tigray do not receive a water service that meets the required quality, quantity, and accessibility standards.[2]

Non-functionality of a water system is defined differently by sector experts. Here, it is defined as a condition where a pump or developed water system is broken or abandoned and it is not in use by the community. This can happen for various reasons, including:

- an old scheme that has reached the end of its service life;
- frequent pumping due to a growing population so pump parts wear out;
- lack of preventive maintenance so pump parts become damaged;

[1] Tigray Region Water and Energy Resource Development Bureau, *Mid-2020 progress report* (unpublished).

[2] According to the Regional Emergency WASH Assessment report published in October 2022, non-functional rural water schemes jumped to more than 70% following the devastating war in the Tigray region.

- the failure of water, sanitation, and hygiene committees (WASHCOs) to mobilise end users for proper operation and protection of the pumps, to collect water user fees, and to undertake timely maintenance;
- poor construction quality that leads to early scheme failure; and/or
- the drying up of wells due to poor siting or climate-induced depletion of the groundwater table.

Long downtimes are attributed (but not limited) to:

- lack of sufficient maintenance technicians to match the growing number and complexity of water infrastructure sites;
- lack of accountability, especially when the regulatory body is also responsible for the maintenance of broken schemes and the supply of spare parts;
- high costs for spare parts that communities cannot afford;
- poor financial and administrative performance of WASHCOs;
- lack of awareness by WASHCOs of the need for timely maintenance to prevent water-related disease spread;
- dependency on NGOs to provide free or subsidised maintenance and spare parts to fix infrastructure; and
- lack of capacity among service providers (e.g., in terms of transportation facilities) to respond timely to maintenance requests.

In Ethiopia, national and regional water policies, including the Ethiopia Water Resources Management Policy, support private-sector engagement at all stages of water resource development and management, including post-construction services.[3] In line with this, Tigray's Water and Energy Resources Development Bureau and its water, sanitation, and hygiene (WASH) partners are delegating post-construction services (maintenance and spare parts service delivery) for rural and peri-urban areas to the private sector. The Bureau, in turn, focuses on creating an enabling environment for the private sector to operate efficiently and overcome the challenges around non-functionality and downtimes.

Private local service providers – also known as PLSPs – are now operating in more than 32 woredas (districts) in Tigray Region. The providers undertake maintenance and spare parts supply services for domestic and productive water schemes in rural and peri-urban areas. They operate within a PLSP model, which was introduced by SNV.

The Bureau collaborates with other development partners to implement the same model in the remaining *woredas* and is ready to scale up the model to become a regionwide approach. It also monitors the model's performance and operations to ensure that it is meeting communities' needs, as well as to inform service improvements.

[3] See Ministry of Water Resource, *Ethiopian Water Resources Management Policy,* Addis Ababa, Ministry of Water Resource of the Government of Ethiopia, 1999, https://www.fao.org/faolex/results/details/en/c/LEX-FAOC158196/ (accessed 22 May 2024); and Council of Ministers, Ethiopian Water Resources Management Proclamation (no. 197/2000), *Federal Negarit Gazet*a, No. 66, 5th year, 30 July 1999, pp. 1146–1147, https://www.fao.org/faolex/results/details/en/c/LEX-FAOC044004/ (accessed 22 May 2024).

Photo: A heavily damaged and abandoned water point.

Photo: PLSPs, supported by local communities, engaging in heavy maintenance works on a rural water scheme.

What is a PLSP?

PLSPs comprise a team of two or more graduates from universities or a technical and vocational training (TVET) centre. Often considered start-ups of enterprising individuals, PLSPs are largely youth-based. They are licensed by local authorities with a letter of competency obtained from the regional Water and Energy Resources Development Bureau. They are set up as tax-paying private micro and small enterprises (MSEs) based on a guideline issued by the regional Water and Energy Resources Development Bureau and the MSE Bureau. PLSP members are trained, equipped, and deployed to deliver a service, under the close supervision of and with support from the respective woreda Water and Energy office and MSE office.

PLSPs are socially responsible micro and small enterprises (MSEs) that work with small profit margins. Their work is carried out at an affordable tariff set by the regional Water and Energy Resources Development Bureau. The PLSPs form and register regional PLSP associations that voice individual enterprises' concerns and pursue their interests by influencing the policy around water service delivery.

Evidence shows that PLSPs outperform the regional public-sector functionality average by approximately 20 percentage points. Furthermore, PLSPs repair over 90% of water system non-functionality incidences within three days as part of their rapid breakdown response.[4]

Multiple factors influence levels of cost recovery for PLSPs, and most service areas do not break even on operating costs. A working ratio calculates the proportion of operating costs covered by local customer revenues, with analysis covering the total direct and indirect costs incurred by an operational unit, excluding capital costs. Piped PLSP schemes show a range of working ratios, with some approaching or achieving operational cost recovery. While these schemes are an improvement over handpumps, which typically incur a financial shortfall in all cases, it must be noted that handpumps remain a common source of water in rural areas. The range of working ratios observed for PLSPs also differs depending on other factors, such as payment methods and contracting arrangements.[5]

Actors in the water service delivery system

Private local service providers operate within the broader water service delivery system. Consequently, PLSPs must establish connections with and ensure their services complement the water governance and service delivery framework within a woreda. It is crucial to understand the context in which a PLSP model is to be installed.

The following key actors have indispensable roles in strengthening the water service delivery system of the region. This is also shown in Figure 1.

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[4] D. McNicholl, et al. 'Performance-based funding for reliable rural water services in Africa', *Working Paper 1*, Oxford, Uptown Consortium, 2019, https://static1.squarespace.com/static/5d5fc19961d87c00011689d2/t/5f02887c0e31a70a9c5fc990/1594001552517/Performance-based+funding+for+reliable+rural+water+services.pdf (accessed 17 May 2024).

[5] H. Lockwood, *Sustaining rural water: a comparative study of maintenance models for community managed schemes*, Washington DC, Globalwaters.org, United States Agency for International Development, July 2019, https://www.globalwaters.org/resources/assets/sws/sustaining-rural-water-comparative-study-maintenance-models-community-managed (accessed 17 May 2024).

Figure 1 Key actors in the water service delivery system

Public-sector actors

The regional Water and Energy Resources Development Bureau and woreda water offices

The regional Bureau and *woreda* water offices coordinate the formation of PLSPs in all *woredas*, build the capacity of PLSPs, and set an affordable tariff for different services. Tariffs consider the full-cost recovery of maintenance and operation services (labour and material) and are reviewed annually. During the review process, they consider negotiated margins to sustain the service delivery system.

The regional Bureau and water offices co-create an enabling environment to sustain current and future water service delivery models. This includes, but is not limited to:

- passing legislation to support and incentivise private sector actors to maintain the water system and supply spare parts.
- coordinating with public-sector offices that have a direct role in water supply service delivery to communities and strengthening private-sector involvement.
- refraining from providing free services unless justified.
- building the capacity of and mobilising WASHCOs at woreda level to perform better financially and administratively, including pre-auditing WASHCOs' accounts and providing cash collection vouchers, etc.
- guiding and coordinating WASH partners (new and existing) to align with the new service delivery approach and mobilising financial resources to meet the needs of PLSPs.
- linking PLSPs with WASHCOs, financing institutions, NGOs, and private water users etc., to enhance their performance and contribution to the water system.
- monitoring and evaluating the service delivery and performance of the system and upgrading it to a more sustainable and stable business model as needed.

The regional MSE Bureau and respective woreda MSE offices

In collaboration with the regional Water and Energy Resources Development Bureau and respective woreda water offices, the MSE Bureau and MSE offices facilitate the establishment of PLSPs for water services. Additional support may include:

- linking PLSPs with MFIs and facilitating the process of business registration and licensing.
- building the capacity of and coaching registered PLSPs in implementing their business plans.
- supporting PLSPs to perform better, and to grow and develop as businesses.

Partners

Local and international NGOs

Local and international NGOs support water infrastructure development and management. Some NGOs may respond to emergency situations and others are developmental organisations support the Ethiopian government's growth and transformation plans. Nonetheless, all are expected to align with government priorities and community needs.

There are a few instances where NGOs maintain water services and provide spare parts to communities for free. Should this be the case, NGOs are expected to:

- plan their intervention in coordination with regional and woreda water offices and align their activities with the PLSP water service model. This includes, but is not limited to sub-contracting the maintenance of services and the supply of spare parts, and engaging PLSPs in WASHCO refresher training.
- build the capacity of existing PLSPs and, in consultation with the regional Bureau, establish new PLSP teams in *woredas* where these do not currently operate.
- share experiences and lessons from other countries that might strengthen the existing service delivery system and identify opportunities for new approaches.

TVET centres for technical and business skill capacity building

TVET centres are the main source for the water service delivery workforce, and some members of PLSPs are university graduates. TVET centres:

- collaborate with key sector bureaus in providing theoretical training to new PLSPs and delivering refresher courses.
- develop training curriculum according to market needs, in collaboration with the regional Water and Energy Resources Development Bureau.

MFIs and banks

Finance is key to achieving business goals. Generally speaking, credit can be accessed from national or private banks; however, businesses such as PLSPs do not usually meet their requirements. Respective water sector offices support PLSPs to meet the requirements of MFIs.

Depending on circumstances, MFIs such as the Dedebit Credit and Savings Institution (DECSI) in Tigray Region can provide tailored credit, such as youth loan schemes. In this scheme, 20% of the total amount requested from DECSI is matched by savings from the youth applicant and 10% is a guarantee fund provided by the government or any other partner. The scheme allows PLSPs to access loans at a reduced interest rate of 8%, and the guarantee fund can be utilised for future loan rounds for similar end users as decided by a committee of government sector bureaus. In the event of liquidity problems at the MFIs, the government and partners may need to inject a revolving fund instead of a guarantee fund.[6]

MFIs have an essential role to play in:

- developing and availing PLSPs with targeted credit.
- promoting the financial requirements of PLSPs and continuing to improve credit packages.
- supporting PLSPs to run successful businesses and to repay loans on time.
- influencing policies around financial services to PLSPs and, depending on prevailing circumstances, improving interest rates, loan amounts, and repayment schedules.

WASHCOs

WASHCOs are elected rural water scheme managers within communities. They are responsible for mobilising communities for water user fee collection and service operation and undertaking minor tasks to maintain their schemes. WASHCOs:

- work towards being self-reliant in funding their water service delivery system by mobilising resources from end users.
- undertake preventive maintenance and minor repairs and mobilise communities to safeguard their scheme.
- are responsible for the transparent collection and utilisation of community resources (financial and non-financial), e.g., by engaging in legalised collection and payment of vouchers methods and using resources for approved water service development-related purposes only.
- refrain from using other service providers.
- deposit cash at banks or MFIs and apply bylaws in their day-to-day activities.
- are in continued dialogue with end users and partners to improve and sustain water service delivery, regularly reporting their performance to woreda water supply offices.
- request immediate services from PLSPs if their water scheme breaks down or ceases to function properly.

[6] MFIs offer different types of loan arrangements to beneficiaries, such as a guaranteed fund and a revolving fund. The former represents funds set aside by MFIs when cash is available in abundance. This fund is then used to compensate potential losses from defaulters. On the other hand, when MFI accounts have insufficient cash, the revolving fund is activated. This fund is deposited by a party into the account, and the MFI manages loan disbursements and repayments.

Photo: PLSP-owned spare parts shop.

MSEs (PLSP enterprises)

Representing the private sector in general and MSEs in particular, PLSP enterprises are private entities established to provide affordable and sustainable water service maintenance and spare part supply to rural communities. A PLSP enterprise's mandate is to provide the service to one or more woredas depending on the number of water schemes assigned to it within its proximity.

Farmers

Farmers are a key group of potential customers for PLSPs and an important revenue source that supports the water delivery system. Thousands of farmers use fossil fuels or renewable energy for their irrigation pumps. When their facilities break or need maintenance, professionally trained mechanics who live nearby are the preferred providers. By working with PLSPs, farmers can minimise the risks of income loss due to long waiting times, unregulated fees, or the need to transport the equipment to a nearby town's electro-mechanical experts. Additionally, when farmers can produce multiple yields in a year, their communities gain the financial means to maintain their drinking water schemes.

Households

Individual households, whether they are farmers or petty traders living in rural and peri-urban areas, constitute a vital funding stream for PLSPs and the rural water delivery system. WASHCOs collect user fees from households to cover the community's use of PLSP services. For the collection system to remain sustainable and maintenance works to be conducted regularly and promptly, households must understand the benefits of using clean water sources. Raising awareness among households is a key task managed and regulated by the public sector offices (the regional and district Water and Energy Resources and Health Bureaus).

The solution offered by the PLSP model

The maintenance of rural community water schemes and the supply of spare parts could be undertaken by any private company. However, the maintenance of these systems does not offer profit margins that are attractive to private businesses. PLSPs fill this gap by supporting governments in their mandated duty to ensure the human right to water and sanitation. PLSPs offer a solution until such a time that communities gain the skills, capacity, and resources to fully cover the operational and maintenance costs of rural community water systems, as per national and regional policies.

The youth-based PLSP service delivery model aims to:

- reduce non-functionality of drinking and productive water schemes to less than 7% at any given time;
- reduce scheme downtime to a maximum of three days;
- ensure accountability by allowing the utilisation of legal and auditable financial transactions between service providers and customers (through WASHCOs);
- ensure access to and sustainability of spare parts; and
- create job opportunities for youth now and in the future as demand grows.

The PLSP model enables communities to enjoy sustainable access to clean water, which reduces water-related health risks and promotes productivity.

Photo: iWET team discussing with WASHCOs the state of their water scheme and their plans to improve the scheme's management and financial performance.

Establishing a PLSP and building capacity

To establish a PLSP team, it is not enough for the regional and district Water and Energy Resources and Development Bureaus and the regional and woreda MSE Bureaus to link up job-seeking youth, train and equip them, and leave them to seek out business opportunities. Many technical, personal, behavioural, and bureaucratic issues require attention until PLSP businesses mature.

The following steps must be accomplished by the respective bureaus to establish a sustainable PLSP team.

1. A transparent call is put out for interested youth who have graduated from TVETs or universities in auto mechanics, mechanical or electrical engineering, or plumbing; or, in special circumstances, those who have previous experience in the maintenance of drinking and productive water schemes, regardless of their educational qualifications.
2. Candidates are registered and selected based on written and oral exams, alongside interviews to identify their capability, understanding of the working modality, physical fitness, and business mindset.
3. In-school and on-the-job training is provided on technical skills, entrepreneurship, and business plan development, followed by implementation support and coaching, and then follow-up support towards the second year of PLSP establishment.
4. PLSPs are supported in the development of their Memorandum of Association and Article of Association, become licensed, and enter into an agreement with the respective woreda water office. PLSPs are provided with the necessary financial and technical documents, maintenance and operational manuals, and bylaws to guide their day-to-day operations.
5. PLSPs are linked with spare parts suppliers, end users, WASHCOs, NGOs, and MFIs to establish their financial requirements based on negotiated interest rates and PLSP-focused financial products.
6. PLSPs collaborate with key stakeholders (e.g., local water and MSE bureaus), who create an enabling environment for PLSPs to operate. These stakeholders might facilitate the process through the provision of work premises or by prohibiting unauthorised and unqualified individuals from engaging in water scheme maintenance and spare parts delivery in the region.
7. Maintenance service agreements are signed between WASHCOs and PLSPs. Public-sector offices provide regular guidance and supervision to PLSPs, and they monitor and audit WASHCOs.
8. PLSPs are encouraged to support business development and healthy competition as part of a peer-to-peer network (under existing or new associations), sharing their knowledge and experience with one another.
9. PLSPs are supported in the identification of and engagement in core business-related side enterprises.

PLSP model: the preferred choice for Tigray and the Ethiopian context

Awareness and perceptions towards paid water servicing are generally very low in Tigray, and in Ethiopia more broadly. Currently, communities tend to access water services for free that are provided by humanitarian and development partners. Others get their water from unsafe sources. For this situation to change, it requires a transitional period during which end users become accustomed to and appreciate the benefits of having a private sector that is responsive to the needs of the community and the water system in place.

The PLSP system brings many benefits and will enable the region and the country to transition gradually to having a cost-effective and sustainable water services system. PLSPs are:

- organised with due social responsibility, generating only small margins instead of being purely for-profit entities;
- taxpaying and licensed operators; they operate formally and are accountable;
- responsive to customer needs, providing maintenance services within three days of a fault or downtime being reported;
- held to account through service level agreements signed with a local water office;
- guaranteed to provide ongoing repairs and maintenance for persistent faults as required;
- permitted to sign combined contracts for the provision of both maintenance services and spare parts;
- able to service remote areas, with local technicians often willing to travel on foot if transport means are limited;
- able to provide services on credit and even in kind when customers are short of cash;
- tied to tariffs set by the Water and Energy Resources Development Bureau that take into account affordability for the community;
- required to issue formal receipts for the funds they receive from WASHCOs, as part of an accountable and auditable financial management system;
- able to engage with NGOs without going through lengthy bid processes because they provide services using government-fixed rates;
- operating as water sector agents in promoting proper water scheme operation and protection; and
- providing job opportunities for local unemployed youth.

An enabling environment for the PLSP model

Like any start-up, PLSPs face challenges that limit business development. Some of these challenges can be addressed through an effective regulatory framework and public-sector support, and others through careful project implementation and stakeholder engagement at different levels.

The most important precondition for PLSPs to thrive is the existence of a public sector that is committed to change and that believes in the delegation of roles and responsibilities from government to an efficient private sector. This commitment can be measured through the continuous provision of support and guidelines and the functioning of an effective regulatory environment.

Box 1: Learning from rural water service models in other African countries

Different approaches and models are being used elsewhere in Africa to cope with the challenges of rural water service delivery. Lessons can be learned from these initiatives to enhance and scale up the PLSP model in Ethiopia or to pilot combinations of these practices in view of building an efficient and sustainable water sector.

Two models – UDUMA and Whave – both improved functionality rates. Awareness and understanding of a fee-based water service are currently too low in Tigray Region for either modality to be accepted by communities; however, lessons can be learned. Community engagement would be critical for such a fee-based system to succeed.

UDUMA in Mali[7]
UDUMA offers a sustainable management model for rural water facilities and equipment in Mali. Under the UDUMA model, the management of multiple water points is delegated to one private service provider who oversees the entire service chain: from rehabilitation of water points, to operation, maintenance, water quality, and contract renewal. Payment is collected from end users based on the volume of water fetched, using an electronic payment mechanism that ensures close monitoring of water use and maintenance for high-quality service delivery.

Whave in Uganda[8]
Whave is a private maintenance company that enters into service level agreements with districts and communities. Under the Whave model, service fees are paid upfront to ensure high-quality service. Whave operates under a preventive maintenance agreement, with the service fee fixed, independent of whether maintenance is required. Unlike the PLSP model, which works with independent SMEs, Whave is managed by one company that employs local mechanics for service provision.

[7] See https://www.uduma.net/en/

[8] See https://www.whave.org

The following conditions also need to be met for the business development of PLSPs:

- the existence of responsible WASH partners (local and international NGOs) who are willing to engage PLSPs;
- functioning WASHCOs that are capable of mobilising communities for the collection of user fees;
- community satisfaction with the services delivered in terms of water quality, timeliness of repairs and maintenance, and guaranteed after-sales services for persistent faults;
- the existence of private water construction companies/contractors who engage PLSPs in their work;
- demand from rural and peri-urban communities who require support from the private sector and are willing to pay for services;
- an accessible and sustainable supply chain for spare parts; and
- support from financial institutions that prioritise private-sector efforts to serve under-privileged segments of the community.

In terms of the physical environment, PLSPs are based in the capital town of an assigned woreda but are able to place a mechanic or group of mechanics close to the communities in need. Some work from home but many have business premises that can be reached easily by customers. In all cases, mechanics are required to share their telephone number with customers and other stakeholders. PLSPs work in contexts where transport facilities are poor, therefore mechanics may use motorbikes to access communities or even travel on foot and stay overnight within a community.

PLSP teams consist of two to five mechanics, depending on the number of water points they are assigned to and the population size served by those water points.One mechanic can service approximately 100 water points both for preventive and corrective maintenance, serving a population of 25,000 people.

The synergistic effect of implementing and strengthening the PLSPs model

The PLSP model has the potential to connect and benefit multiple sectors working with rural communities. Furthermore, a functioning beneficiary-service provider relationship can improve community ownership of utilities, which will lead to a more sustainable and accountable system overall.

Safe water is key to creating a healthy and productive society. Without water, farmers cannot produce enough to sustain themselves or the markets they serve. School compounds cannot function effectively without a clean water supply for students and staff. Likewise, health facilities and services cannot operate. As drinking and productive water schemes utilise different forms of energy to drive pumping and distribution systems, PLSPs have the potential to supply and maintain devices that are powered by fossil fuel, solar or wind power, or biogas, thus linking with the energy sector too.[9]

[9] PLSPs can also engage in additional enterprises and services, including, (a) the supply and maintenance of rural solar equipment and lighting systems; (b) the construction and maintenance of household biogas systems; (c) the supply of sanitary materials; (d) the maintenance and supply of irrigation equipment and pumps; and (e) the supply of construction materials.

Photo: PLSPs performing maintenance works on an irrigation pump.

Evidence that the PLSP model is working

The following evidence can be used to gauge the appropriateness and success of the PLSP model in a particular context.

The market – Ideally, a minimum of 200 water schemes are needed in one woreda that require close follow-up and maintenance services from PLSPs for the model to be viable. Currently, the market in many woredas is not up to this required level due to free and subsidised services provided by international humanitarian organisations. However, there are up to 1,000 water schemes available in some woredas, which makes it easier for PLSP teams to survive as businesses even in the presence of subsidised services. There is high demand from communities for spare parts for water equipment, solar lighting systems, and sanitation materials, which PLSPs can supply to customers at reasonable cost.

Key success factors – The success of the model can be assessed according to commitment demonstrated from the PLSPs; binding regulatory support from the appropriate authority that creates a condition for private-sector engagement in water service delivery; progressive improvement in the technical and business skills of the PLSPs; and diversification of business streams to address customer needs.

Assumptions – Water schemes achieve an average functionality rate of 92.5% for the minimum number of schemes available per woreda (n=200). It is ideal for all WASHCOs to have the capacity to cover maintenance costs on their own.

Cost-benefit analysis – Table 1 shows the cost-benefit analysis of the PLSPs model, taking the following assumptions into consideration:

- 92.5% functionality rate at any given time (one month is the minimum assessment period);
- two technicians per woreda with a minimum of 200 schemes per woreda;
- technicians take a 200,000 birr loan from a bank with an interest rate of 15% over a five-year repayment period;
- 20% profit annually from selling spare parts; and
- an average fee of 1,000 birr charged by PLSPs for each maintenance service.

Table 1 Cost-benefit analysis

	Component	Unit	Qty	Unit cost/income (Birr)	Year 1
1	**Cost**				
1.1	House rent (1,000/month)	month	12	1,000	12,000
1.2	Fuel and lubricants (20km per scheme, 15 schemes per month @25km per litre)	litres per month	15	80	1,200
1.3	Salary (2 mechanics @2,500 birr per mechanic per month)	month	12	5,000	60,000
1.4	Maintenance for motorbike	month	12	1,000	12,000
1.5	Depreciation cost of motorbike (5 yrs), @50k salvage value	year	1	30,000	30,000
1.6	Loan repayment (including 15% interest fixed periodical payment and principal)	month	12	4,659	55,908
	Total cost				**207,108**
2	**Benefit**				
2.1	Revenue including 20% profit on goods sold worth 200,000 birr	year number of schemes per year @15 per month	1	240,000	240,000
2.2	Revenue collected from service fees averaging 1,000 birr per service (200 water points per woreda @92.5% functionality at any given time)		180	1,000	180,000
	Total revenue				**420,000**
	Net benefit after tax (2%)				**411,600**
	Benefit/cost ratio				**1.99**

Tsige's story:

a female PLSP in Adwa

Surrounded by majestic mountains, Adwa town is located 200 km northwest of the capital Mekele. Tsige is a young female member of Adwa woreda PLSP team that started the business with only 400 birr.

'During the early days of my engagement as a maintenance provider, I happened to be in a village that didn't believe in women's equality when it came to maintaining hardware. They refused to accept me as a capable technician and asked for a male member. I refused and convinced them to accept me. After doing a satisfactory job, I astonished the male-dominated crowd. They regretted saying those words, apologised, and rewarded me with some honey, eggs and so on. They also accompanied me down the road until I reached the area where I would have to take the public transport.'

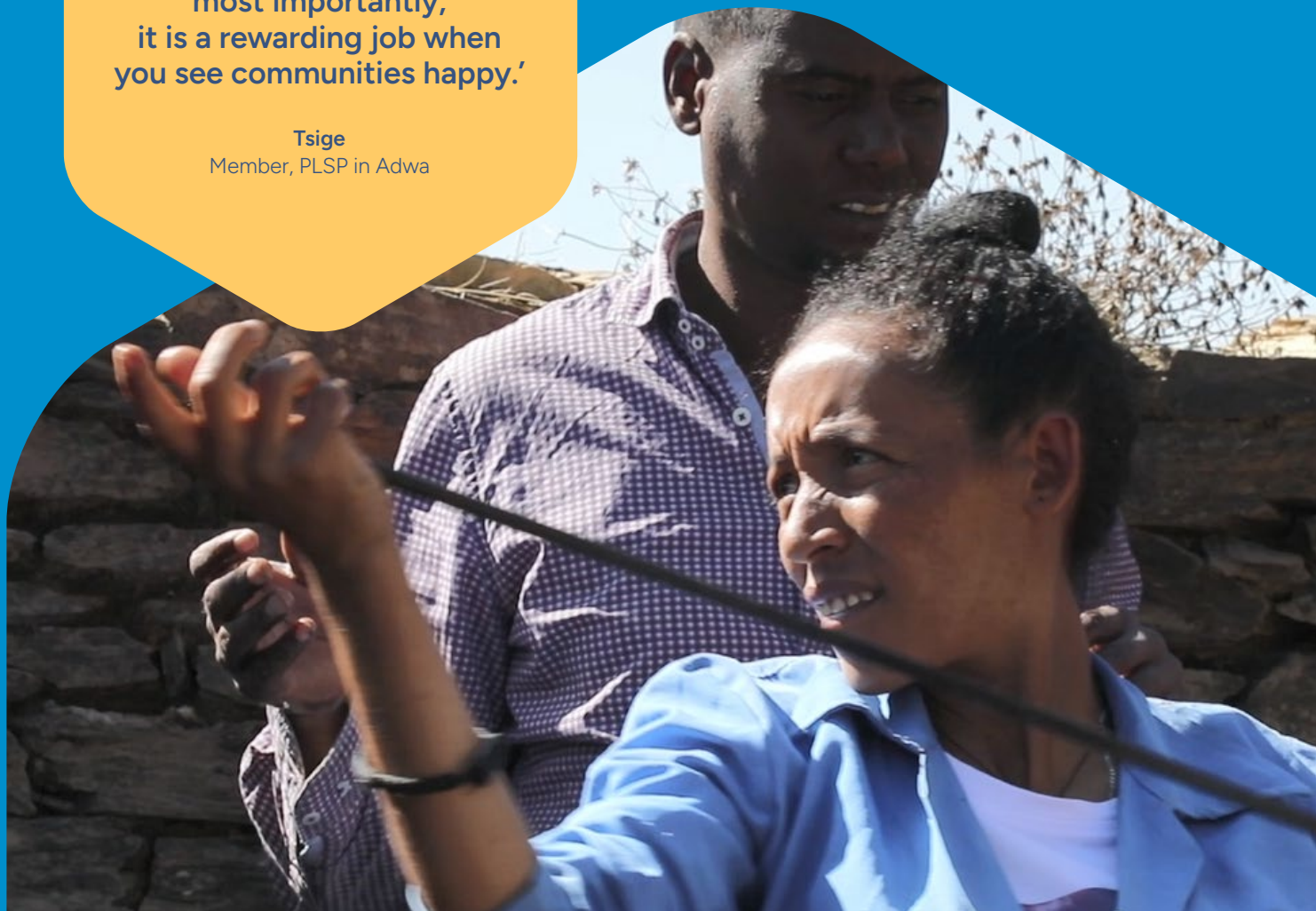
Tsige proudly and confidently said that she has also helped her brother who otherwise would have headed to Arab countries in search of a job. She lent him money to buy an irrigation pump. Today, her brother's horticulture crop production business is faring well. Tsige added, 'He was able to generate about 150,000 ETB in just six months and paid back the loan I gave him.'

Tsige also said that she helped a farmer visiting the PLSP's shop to buy an irrigation pump but who had insufficient money. 'I took the risk and accepted what he had. Soon, he came back another time to pay what he owed us and delivered a gift of half a quintal onion as a sign of gratitude. I refused to accept the gift, but the man promised to cover all the onion requirement of my future wedding', said Tsige, laughingly.

Tsige concluded by saying, 'The business is good for us, good for our families, but most importantly, it is a rewarding job when you see communities happy that their scheme is operational once again, at times, after three years of abandonment.'

'The business is good for us, good for our families, but most importantly, it is a rewarding job when you see communities happy.'

Tsige
Member, PLSP in Adwa



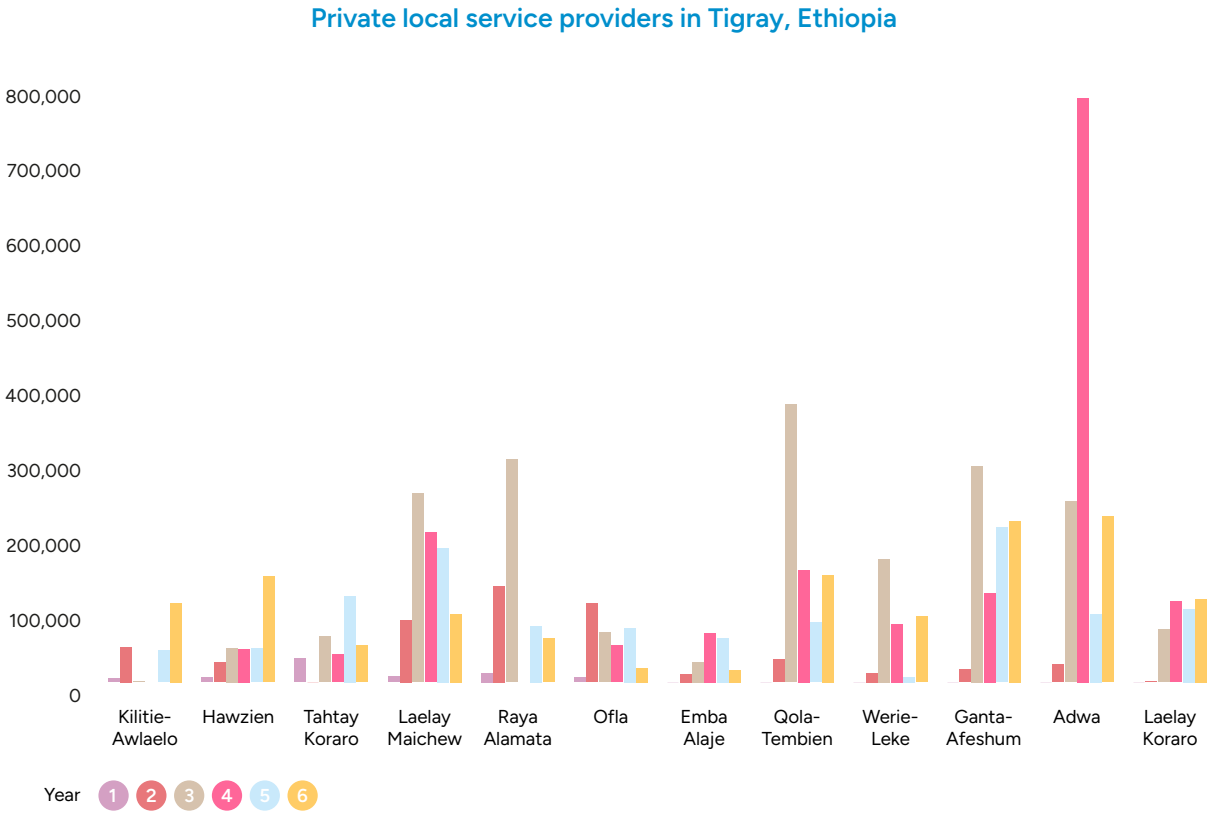


Figure 2 PLSPs revenue chart over the years

A total of 17 PLSP enterprises are already established and operational in Tigray Region. More than 4,100 rural community and institutional water facilities and irrigation pumps have been maintained by these PLSPs, which has benefited over 1 million people between 2017 and 2023 (excluding the two-year conflict period in between). Twelve NGOs already use these service providers, and end users (mostly WASHCOs) communicate with them directly for services. Some WASHCOs even reward the PLSPs financially for outstanding work. The PLSPs have also started side-businesses to meet some of the key needs of the community, such as supplying irrigation pumps and solar-powered household lighting systems at reasonable cost.

Financially, the PLSP teams have successfully turned their small start-up investments from family and friends into profitable enterprises during their first three years of establishment. Of the 12 PLSPs that have been followed up and that have recorded their revenues, the Adwa PLSP team generated the highest revenues at close to 780,000 birr in its third year of operation. Unfortunately, revenue dipped considerably during the conflict period but the PLSP was able to start afresh in 2023 and generate more than 220,000 birr.

Figure 2 shows the financial performance of 12 PLSPs, showing remarkable progress until the war broke out in November 2020, followed by a revival after signing of the Pretoria Peace Agreement in November 2022. Given the harsh circumstances under which the business community in Tigray Region had to operate during the war period, PLSP teams bounced back relatively quickly.

How can PLSPs evolve in 10 to 20 years?

Over time – and with the correct regulatory environment, financial support, and stakeholder engagement – it should be possible for PLSPs to evolve to become highly professionalised service providers capable of maintaining high-capacity submersible pumps and generator sets in well-equipped workshops.

Furthermore, PLSPs should be able to expand their revenue streams and create job opportunities for more youth as demand for their services increases. They should plan to grow to provide a full water service framework agreement with end users, aiming to secure a 99% functionality rate and the highest possible satisfaction levels among beneficiaries. Revenue streams could include new electromechanical installation and the commission of new water schemes.

Multiple woreda PLSPs could merge to form zonal or cluster-based maintenance provider enterprises. If organised in an association, such a network could provide peer-to-peer support and enable PLSPs to have a more prominent position in Tigray alongside other players in the water sector.

Recommendations for government

For PLSPs to thrive as businesses and deliver sustainable drinking and productive water services, it is recommended that the following actions are taken by the government and development partners working in the water sector:

- Support the PLSP model with an enforceable regulatory framework, comprehensive guidelines, and an effective monitoring tool to ensure system impediments are addressed in a timely manner.
- Formalise the WASHCOs' financial systems and ensure accountability through timely auditing.
- Nurture the direct linkages between WASHCOs and PLSPs.
- Unless a conscious decision is taken otherwise, refrain from providing free or subsidised water services.
- Incentivise the private sector for local production of basic spare parts.
- Scale up and integrate the PLSP initiative with appropriate financial systems and developmental partners.
- Commit to scale up the PLSP initiative to other woredas and/or regions.
- Monitor the performance of PLSPs and make sure that maintenance service is considered a core part of the business and that necessary measures are taken to revoke the license of PLSPs that fail to comply with quality standards.

Recommendations for PLSPs

For their part, it is recommended that PLSPs:

- Maintain their number of technicians to the allowable minimum set by the regional Water and Energy Resources Development Bureau, while the Bureau should monitor if the three-day response time is adhered to.
- Lobby the national government for duty free importations of spare parts.
- Adapt and upgrade their approaches, drawing on lessons learned from other water services models, to continue to deliver sustainable and stable services in the future.

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