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Rautanen, Sanna-Leena

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Portrait of a Successful Small-Town Water Service Provider in Nepal's Changing Landscape

Sanna-Leena Rautanen and Pamela White.

Abstract:

This study was made in Nepal's Tarai plains, where rapid population growth over the past decade has transformed a large number of rural bazaars and road-side hubs into vibrant small towns. This study draws a portrait of a distinctly successful small-town water supply scheme and its service provider, the Murgia Water Users and Sanitation Association. Exploring this particular case with regards to social, technological, financial and organizational systems, and by comparing the performance of this case against 63 other water service providers in Nepal, the study asks: how could there be more of this type of successful water service providers? This scheme was constructed during the bilateral Rural Water Supply and Sanitation Support Programme Phase III, Nepal-Finland cooperation (1999-2005), using the typical rural approach, namely community management, with strong capacity building. Since then the service modality in this study case has evolved towards a professional community managed service delivery. The success is rooted in good water governance principles: participation, responsiveness, financial transparency, accountability and overall strong commitment and vision, as well as strong technical assistance. They have resulted in re-investment in both the capital maintenance expenditure and into new infrastructure, even into an entirely new water supply scheme.

Keywords: Capacity; Nepal; small towns; water services; technical assistance

Introduction

This study takes the approach that water and sanitation service provision encompasses social, technological, financial and organizational systems which are strongly interdependent and which together form a specific service delivery system. It considers an 'in-between' settlement in Nepal's Tarai plains, where the rapid population growth over the past decade has transformed a large number of small rural bazaars and road-side hubs into vibrant small towns. The water supply schemes that were constructed as rural systems some 15-20 years have a rather different operational environment now. This case study represents one successful water service provider that has managed to evolve from rural to professionally operating small towns' service provider. The question is - how to have more water service providers such as the one being studied? Can this case be replicated?

Nepal made good progress in achieving its Millennium Development Goals, and met its target for water supply. In urban areas the water supply coverage is now 90.9% and in the rural areas 91.8% (WHO/UNICEF, 2015). However, even if the water supply coverage in urban areas appears high, the service levels are generally poor. A nation-wide functionality study concluded that out of 41,205 piped water supply schemes covered, 68.2% provided whole-year supply and only 25.4% were described as '*well-functioning*' (Government of Nepal, 2014a). The Urban Water Supply and Sanitation Sector Policy 2014 outlined that "*In the cities and towns water supply coverage is poor; supply pressure is low; supply is intermittent; water is not potable without further measures at household level to make it potable; non-revenue water is high; consumer satisfaction is low. All urban water supply services are in need of substantive improvements*" (Government of Nepal, 2014b). The

WASH sector status report attributes the shortcomings in the sector to several factors ranging from institutional weakness and reliance on donor money, to unsustainable practices that disregard rehabilitation and maintenance works, or pay little attention to environmental impacts (Government of Nepal, 2011).

Nepal has recently launched its Water Sector Development Plan (SDP) for the period of 2016-2030. This plan identifies the National Water Supply Corporation as the operator for the urban water supply while Water Users and Sanitation Committee (WUSCs) are the operators of small towns and village systems. While there is a 1,000 population cut-off point for whether the water supply schemes should fall under the Ministry of Water and Sanitation or the Ministry of Federal Affairs and Local Development, the same cut-off does not seem to apply to the water service provider. Therefore, WUSCs can be found from peri-urban and even in urban areas. SDP gives WUSCs several overlapping roles as “*the operator, service provider, regulator, monitor, fund raiser and manager*”, calling for WUSCs to include at least 33% representation of women and representation from disadvantaged groups (Government of Nepal, 2016). Top-down planning and implementation is still evident in many urban and semi-urban locations where there is a large population to be served. In these cases, the planning and implementation principles applied tend to focus on engineering standards, while the ultimate operator, the water service provider itself, gets less attention. This can lead to dysfunctional operators.

The purpose of this study is to draw a portrait of a successful small town water supply service provider, compare it to 63 other water service providers in Nepal, and explore to what extent and why it has been successful. In the last two decades, community based management, through Community Based Organizations (CBOs) became the widespread and most common model for management of rural and village water supply. (Moriarty et al, 2002). CBOs for water services have been promoted in many countries as they provide a structure that enhances ownership and empowers the recipient community. However, the successful implementation of these models also proved challenging and very much context dependent. It has been documented that for this model to work, a strong support from governmental forms or NGOs is required (Moriarty et al, 2002). However, the imposition of improved commercial practices also raises criticism as it is potentially abusing the initial design of the CBOs establishment which were originally established as organizations “of the community, by the community, and for the community” (WSP, 2011, p.6).

In the following sections we present a comprehensive description of the study area of Parroha and the local water provider, the Murgia Water Users and Sanitation Association (WUSA) and its Water Users and Sanitation Committee (WUSC) as WUSA’s executive body. In our analysis we compare the performance of our case study against other operations elsewhere in the country and provide a detailed description of how this performance can be explained in terms of social, technological and financial and organizational arrangements. We propose certain adaptations that could potentially pave the way to the implementation of sustainable services.

The study area

Until recent local elections, the Village Development Committee (VDC) was the lowest tier of local governance in Nepal. Parroha VDC was a road-side market area located some 15 km from Butwal municipality, in the Western Development Region of Nepal. Butwal is a major

market and transit hub since ancient times, given its strategic location connecting trade routes from north to south, and from east to west. Today the East-West highway running through the entire country is the biggest transportation corridor in Nepal. Parroha represents a typical fast growing bazaar area along this highway. The Tarai has the most important agricultural lands in Nepal, and the interest in groundwater irrigation has increased significantly over past decades with a number of donor-funded irrigation projects exploring both shallow and deep tube wells for irrigation (Sugden, 2014). The number of households has doubled in 15 years and the number of businesses has been growing and diversifying at equal pace. In 2001 Parroha VDC had already a total population of 19,055 (Government of Nepal, 2001) which made it a small or intermediate town by any definition already at that time (Figure 1). Parroha represents a typical ‘in-between’ settlement that has both rural and urban characteristics. The majority of households still rely on crop cultivation and livestock, even if an increasing number of people are involved in various businesses in the secondary or tertiary sectors (not agriculture), whether in Sainamaina municipality itself or in nearby Butwal.

Sources: *Government of Nepal, 2001; Government of Nepal, 2009; Personal Communication Murgia WUSA*

Figure 1. Parroha VDC, Rupandehi district – changing in time

Parroha VDC merged with the neighbouring Dudharakchhe VDC in May 2014, to form Sainamaina municipality¹. At the time of the 2011 Nepal census, Sainamaina Municipality had a population of 48,178 (Government of Nepal, 2011). Nevertheless, the approach taken for construction of the water supply scheme in Parroha 15 years ago was that of a community managed rural water supply.

¹ For the purposes of this article we will continue to refer to the area as Parroha.

Murgia WUSA is the water service provider in this study. It is the institution that delivers water to the users and is responsible for the day-to-day operations, from maintenance to administration. The operational body organized in the Murgia WUSC is an elected group of community members that manages the water network system, via community management (Lockwood & Smits, 2011).

Parroha is located in Nepal's southern belt, a plain area referred to as 'Tarai'. The area is generally regarded as having vast groundwater reserves, and millions of households depend on shallow tube well hand pumps for their domestic water. While the basin where Parroha is located is part of the broader groundwater regime of the overall Ganges Basin there is considerable local variation over relatively short distances. In Parroha these local hydrological conditions do not favour shallow tube wells, but demand deep tube wells (typical of northern Tarai). Ecological sustainability is hence a locality specific question that is largely unresolved in Nepal, while the demand for irrigation water grows as quickly as domestic water aspirations in new urban areas.

Murgia WUSC operates a piped water network, using groundwater lifted into an overhead tank. This technology is not a typical *rural* water supply system in Nepal, but rather something that has become very typical for the urban and small-towns areas of the country. The 63 water service providers from Nepal that we compare to include both water supply users' committees and associations, as well as water supply management boards and branches of the Nepal Water Supply Corporation.

The water supply scheme operated by this service provider was constructed under the Rural Water Supply and Sanitation Support Programme Phase III (RWSSSP III), with support from Nepal-Finland bilateral cooperation, which was active in the Lumbini zone of Nepal from 1999-2005. Under this programme, schemes were developed using a participatory interactive community management approach that was backed up with comprehensive step-by-step capacity development and close monitoring. The Finnish bilateral development support differed from many other sector donors, with international and Nepali technical advisers providing hands-on support to local government and WUSCs. This has ensured WUSCs' capacity development and institutional strengthening through learning-by-doing and targeted training at grassroots level. White et al (2015) described how this same Finnish method resulted in much greater functionality of rural water supply in far west Nepal, when compared with schemes constructed within the usual centralized government system (White et al, 2015).

The Completion Report of RWSSSP noted the importance of capacity development in the rapidly growing communities: *Particularly relevant in the large schemes by the road corridor involving overhead tanks, large gravity flow systems and one water treatment plant mean increased consumer expectations for higher levels of service and water quality (...)* (RWSSSP, 2005). Rautanen (2016) developed the ideas of several authors to consider the critical pre-project and post-project issues influencing the sustainability of rural water schemes. This paper demonstrates how these factors were addressed in Murgia, even as it crossed over from rural to small town setting.

Photos 1 and 2 show two Google Earth maps, one from 2003 and one from 2014. The overlay map in both cases is from 1993, prepared during the first phase of the project. The key

numbers on the overlay are the clusters of houses (number inside the circle) and the number of water sources shared by these households (smaller number above the circle).

In the 1993 overlay map it is evident that the area consisted of clusters of households sharing water sources locally, in this case usually hand pumps or open water sources on a self-help basis. In the year 2014 map the urban characteristics are manifested along the East-West highway corridor with dense housing. In the early 1990s there were only two roads, the East-West highway and another gravel road. The rest of the road network consisted of small earthen paths that connected the housing clusters to each other (Photo 1). In 2016 the road infrastructure had significantly improved. Electricity and water were available and the municipality declared as 'Open Defecation Free', moving fast towards Total Sanitation. The location of the Murgia overhead tank and the WUSC office compound are indicated in the maps with the white circles. These maps show how quickly the town has changed within one decade, with clearly increasing housing density.

Photo 1. Parroha VDC map 2003 with overlay map from 1993

Photo 2. Parroha VDC map 2014 with overlay map from 1993

Note: The present-day Murgia WUSA office and overhead tank are marked with white circle in the map. Source: His Majesty's Government of Nepal & FINNIDA, 1993

Methodology

The methodology is guided by a case study approach. Case study is an empirical inquiry that investigates a phenomenon within its real-life context, usually being based on an in-depth investigation of a single individual, group, or event. The information about this particular case - the Murgia WUSA and its WUSC - has been collected through interviews with key informants, site observation and an interaction workshop that could be understood as a focus group discussion. Murgia WUSC speaks in this paper through its own voice. The report builds further on monitoring reports and field notes made in 2013-2016 by two of the authors while monitoring other similar overhead tank water systems. The data was backed up by the RWSSSP III project reports (2000-2005). The financial figures originate from Murgia WUSC itself.

Case studies have sometimes been criticized for having a bias toward verification, understood as a tendency to confirm the researcher's preconceived notions (Flyver, 2006). In this study, this is a valid concern given one author's long-term engagement with the case. Yet, the objective is not to portray solely this case as a success story - which is already the case - but rather to find plausible interventions and practices that could explain the success and provide greater detail on these practices. The differences between the case study and other operators are derived from a comparison between the performances of 63 other Water Service Providers in Nepal against the Nepal Service Level indicators (Table 2). Furthermore, the data collection for this study included a random selection of consumers within the service area to verify that the perception from the reported performance figures match with the perceptions on the ground. There is an increasing demand for private connections and service level improvements, as well as lift schemes that call more professional management than what is typically practiced in the rural water systems, hence any learning from a successful case will be useful for other WUSCs. Below we present the comparison data.

What is the performance of the Murgia WUSA compared with 63 other small towns' water service providers in Nepal?

Using the Service Level categorization as practiced in Nepal (Government of Nepal, 2016) it is evident that the Murgia WUSA water services score ‘High’ against most of the service level indicators. With supply of 148 litres per capita per day, the Murgia WUSA is almost at the ‘high’ category (starting at 150 l/capita/day). The water is sufficient for hygiene needs. The Murgia WUSC tests water quality at a certified laboratory twice per year: once during the rainy season, and once during the winter season. All consumers have a private connection, and four public tap stands serve public needs. The reliability is high, with all day service. Any interruptions are mainly caused by the maintenance needs, including periodical emptying of the overhead tank for cleaning purposes. Services are usually restored within a day. All these aspects rank ‘high’ against the water service level indicators in Nepal.

The new service level indicators include a quarterly consumer satisfaction survey. This has not been done in Murgia, but given the low official complaint rate (none over the past year) and the fact that the consumers are paying their water tariffs, we deduct that the consumers are satisfied with the services. There is also a Suggestions Box available by the water tariff payment counter, another way of filing a complaint. Since the Office Manager is available in the compound daily, the users are welcome to contact him directly with any issues. An official complaint costs NPR 10 (USD 14 cents) which is unlikely to prevent customers filing a complaint should they have a reason to do so. If the Murgia WUSA goes ahead with its SMS plans, the same tool could be used for quarterly consumer surveys as well.

Table 1 shows how Murgia WUSA compares to 63 other small towns’ water supply providers (WSPs). The ranking follows the order of the Water Service Providers’ Data Book, 2070-2071 (2013-2014) (Government of Nepal, 2015). These include both the government mandated utilities as well as WUSAs operating on the same principles as Murgia. It is clear that Murgia scores better than average on most indicators. The performance is remarkable both in terms of coverage rates, as well as in economic and financial performance.

Table 1. Murgia WUSA compared against 63 other Water Service Providers in Nepal

Indicators	Unit	Murgia WUSA* (07/2016)	Average of 63 WSPs ** (07/2014)	Murgia WUSA *, ** position out of 63 WSPs
Water supply coverage = [population served with water supply] x 100 / [total population in the service area]	%	90%	63.4%	9
Consumption per capita = [total annual water sold (m ³) x 1,000/365] / [number of people served]	Litres/capita/ day	148.1	70.4	3
Connections metered	%	100%	93.40%	n.a.

New connection fee (residential, new connections)	NPR	14,500	10,661	18
Monthly bill per connection	NPR/ household /m ³	221.2	n.a.	30
Average tariff per m³ = [total annual billing (NPR)] / [total annual consumption (m ³)]	NPR/ m ³	8.4	15.4	56
Unit production cost = [annual O&M cost (NPR)] / [total annual production (m ³)]	NPR/m ³	4.3	n.a.	3
Operating ratio = [Total annual operation & maintenance cost (NPR) / total annual billing (NPR)]	%	54.6%	102%	8
Staff per 1000 connections = [number of utility staff] / [number of utility connections/1000]	Ratio	3	7.2	4

Sources: *Murgia WUSA communication September 9, 2016; ** Government of Nepal, 2015

Results in social, organisational and financial terms – are they replicable?

The original plan was to construct a 50,000 litre capacity overhead tank to serve 756 households, pumping from one deep well. In 2004 the operation started, serving 745 households with a population of 4,500. The number of connections increased rapidly within the first year of operation. After more than ten years of operation, the system serves 2,317 households (i.e. more than three times the original plan). Table 2 shows how various operational aspects have changed from the first year of operation compared to the fiscal year 2015/2016. The new boreholes that the Murgia WUSA financed from their own sources have made the increased production possible (even if one of the boreholes has dried up). From the technological point of view there is nothing different to what other water service providers have – this aspect is fully replicable.

Murgia WUSA has managed to establish a performance that over 10 years after commencement of operations has followed through with the indicative positive evolution registered in the initial years (2004-2006). In Murgia they have augmented the quantity of water supplied, not only in terms of population that increased by 300%, but also in water available and consumed per capita (litres/capita/day) that increased by 48%. They have also been able to become more efficient as it is distilled from the staff per 1000 connections ratio. We provide an analysis of the organizational set up, the financial arrangements and the social aspects related to functioning of the model that help explain the sustainability of these figures.

Table 2. Murgia WUSA and its services 2004-2016

Indicator	Unit	2004/2005 1 st year of operation	2005/2006 2 nd year of operation	2015/2016 Most recent year closing
Staff	number	3	5	7
Staff per 1,000 connections	number	4.0	5.8	3.0
Population served with water supply	population households	4,500 745	5,500 856	13,500 2,317
Total population in the service area	population households	10,000 1,656	11,000 1,712	15,000 2,574
Water supply coverage	%	45%	50%	90%
Number of private connections*	number	745	856	2,317
Connections metered	%	100%	100%	100%
Total billed consumption	m ³	164,250	219,000	730,000
Consumption per capita served	litres/ capita/ day	100	109	148
Production per capita	m ³ /day/ capita	0.10	0.11	0.15

Source: Murgia WUSA, personal communications September 9, 2016

* Other connections: four public tap stands and nine institutional taps (5 schools, 1 police office, 1 health post, 1 temple, 1 local government office)

Organizational set-up – is this replicable?

Murgia WUSA was established in 2001 in Parroha VDC. While WUSA is the executive body, the WUSC is its operational committee. Main WUSC has 11 members (four female and seven male). Although it has a few paid staff members, the main functioning is supported by volunteer staff. The members are elected during the General Assembly every three years. These are not paid positions. Murgia WUSC has the following three sub-committees for operational tasks, with one WUSC member as the coordinator in each, with members nominated by the WUSC itself: 1) a Procurement Committee which conducts market surveys, collects quotations, and provides instructions for the employees on what to purchase. In this way they guarantee that even the very minor day-to-day purchases remain transparent, 2) Repair and Maintenance Committee that plans the minor repair and maintenance and 3) Construction Committee that is set up when a new major construction is started, such as the new toilet-bathroom block and related compound improvements over the past year.

Apart from that, Murgia WUSA has the following other committees also based on volunteering manpower but external to the WUSC: 1) Advisory Committee that is nominated (as opposed to the WUSC which is elected) during the General Assembly when the new WUSC is elected (every three years). The members are invited to the WUSC meeting when there are relevant items in the agenda, such as the meeting before the General Assembly when preparing the next year's budget and programme, or when preparing proposals for new programmes and 2) an Internal Audit Committee whose members are nominated during the General Assembly and cannot include WUSC members. Its task is to audit the income and expenditure every three months. At the beginning, there were also 16 small cluster-wise sub-committees, consisting of three members only. These operated independently with their own

Chairperson, who was the first contact point for such issues like new connections within the cluster. At the beginning these sub-committees were needed to localize the community mobilization and consumer relations when applications for the connections started to arrive from various parts of the network. At present, these sub-committees are not active anymore. Instead, a WUSC member has been assigned as the first contact point in their locality.

The WUSC meets on the “8th of every month”. It is a non-negotiable event that has to take place at the given time. In this meeting, the Office Manager presents the monthly income and expenditure, among other deemed relevant things, and gives an opportunity for the WUSC members to respond to any critical issues in a timely fashion. The regular meeting practice makes the operation very transparent as the figures are shared systematically for the entire WUSC on a regular basis. These are recorded into the WUSC Minutes, which in turn are available to anyone interested. The flow of information among the community has proven to be one of the explanatory elements to their success. However, the permission to view the minutes is granted by WUSC, not by the staff members such as the Office Manager. The WUSC Treasurer has an active role as she closes the accounts every evening by signing the summary of the day’s income and expenditure. The monthly statement is based on these signed results, and is open to all interested people.

Initially Murgia WUSA had three full-time, paid staff, growing into five persons during the second year of operation when the number of connections started rising. 15 years later the staffing consists of seven full time employees: Office Manager; Sub-accountant; Plumber; Meter reader; Operator; Guard and Office assistant. The Murgia WUSC members are proud of their staff and their team spirit is strong. The present WUSC Chairperson described the seven full time staff as “loyal, efficient, and skilled, with strong team spirit, responding efficiently to customers’ needs”, and said each team member is ready to perform any task: “even the Office Manager will do meter reading if needed” (personal communication). Other WUSC members are also active, the garden around the overhead tank and office compound being one visible flourishing manifestation of their commitment and interest in maintaining the immediate environment.

The Office Manager considers that providing water is ‘holy work’, given that water itself is holy. They are proud to be members and staff of the Murgia WUSA. Being associated with this institution is esteemed. A WUSC member reported in September 2016 that “*there are several Chairpersons and Presidents in a number of committees and institutions in this locality. Yet, the position in this WUSC is seen as the most prestigious*” (personal communication). The authors assume that the reputation builds on the excellent track record in terms of reliable water services, transparency and accountability. The position is highly appreciated even if the only ‘income’ to be earned is the meeting allowance.

The functioning of the organisational structure of Murgia WUSA relies heavily on local social arrangements, and local pride and ownership. In this way, we consider that the organizational is theoretically replicable, but that its actual implementation will be better understood as part and parcel of the social considerations attached to the model.

We consider this organizational set-up replicable.

Social considerations – is this replicable?

The Murgia WUSC appears to be committed and motivated to provide sustainable high quality water services, while continuously attempting to improve and extend the operations. As we have seen earlier on, the commitment translates from a sense of pride in delivering a good service. There is a strong focus on representing and serving all community members, using principles of gender equality and social inclusion that were inculcated during the establishment of the scheme. This was an element emphasised by the project. One of the internal drivers that keeps Murgia WUSC moving forward, seeking new and improved ways of operations and services, appears to be the notion of ‘modernity’ – the emerging small town represents something new, something modern, something wealthy and promising, an opportunity. Water (including piped water to the household) and sanitation are important aspects of this type of ‘modern well-being.’

In the Tarai, migrants have arrived from both hill communities and from India, and there is a more diverse mix of religions, ethnicities, languages and castes than in rural hill villages. The social order of hill villages is diluted and the priorities for water use of farmers and non-farming populations vary. The slower progress in achieving national sanitation goals in the Tarai seems to be evidence, or a result, of less cohesion. Exclusion in the past led to the civil war, and very recently to strikes and violence. Social inclusion in Murgia has proven key to ensure a functional system. If groups are excluded, as is the case in some schemes elsewhere, resentment can lead to sabotage of pipes and taps, jeopardizing the work done by the operator.

At the same time, the local government level stakeholders, including the various interest groups, need to have a realistic understanding of what the proposed water and sanitation options and service delivery models mean, to avoid unrealistic expectations: what can truly be delivered, what are the technical and financial risks involved, what are the maintenance needs, and what are the other critical issues that may or may not appear later on? Water demand and wastewater management, sanitation, productive uses of water and sustainable offtake, pro-poor water governance, and public health issues are all relevant (Rautanen, 2016). These were all raised during the initial capacity building by the project. Murgia WUSC has managed to communicate this to its customers

During the first years of operation the internal armed conflict in Nepal was still active. Murgia WUSC decided early on that it had to stay impartial and neutral, not responding to political influence and not supporting any political party. Initially WUSC members were selected through open elections every three years, following the processes as practiced in local elections in Nepal. On two occasions there was heavy interference from the political parties, and the WUSC decided that open elections were not serving the purpose. Since then the WUSC members have been elected during the General Assembly. Within this political context, there was also pressure for donations, which in Nepal could sometimes be collected in a rather violent fashion. The WUSC’s decision on donations was clear: “absolutely not to anyone at all”. These two decisions that were made early on, have contributed to keep the system both socially and financially functional as revenues have been invested for the benefit and improvement of the system and the community. As reported in September 2016, all political parties are now fully supportive to Murgia WUSC, even doing fund-raising for the new works without expecting any favours in return. In the highly politicised environment of Nepal, this is an important lesson for replication elsewhere, or at least to ponder upon. In

other schemes, we have seen political appointments who do not bother to come to work, or ‘donations’ that drain the WUSC coffers.

Murgia offers an important lesson to other communities, that keeping the WUSC free of political pressure or community conflict can contribute to its sustainability.

Financial practices and performance – is this replicable?

Murgia was designed, planned and implemented within the local government context. Its investment funds were directed through the District Development Funds. The total scheme cost was estimated at NPR 17.5 million (about USD 240,000 in year 2001). Of this, the governments of Finland and Nepal provided support of NPR 7 million each (about USD 96,000 each in year 2001). Of the total cost, the two governments and the District Development Committee covered 81%, the Parroha VDC 6% and the users 27%. Half of the users’ contribution was in kind. The Murgia WUSC raised upfront with cash contributions from the beneficiaries: NPR 3,000 from each household and NPR 5,000 from each public tap stand, the latter cost being shared by those households that used these tap stands. The Murgia WUSA staff manages these tap stands. This cash was put into the Murgia WUSA’s bank account so that if the water supply system would not have been finalized, the WUSA could pay back the debt.

Each private water meter is read once per month. The WUSC is flexible in accepting both cash and in-kind contributions from the users. A clear stipulation of associated costs is known and shared with the users. For example, a new tap connection is NPR 14,500². The community is subject to a monthly progressive water tariff based on consumption, ranging from 80 NPR for the first 10 m³ to 100 NPR for consumptions above 50 m³. Penalties, water meter servicing, plumber’s services such as new connections or change of locations are also costed. Computerized billing software is in use. Consumers can pay in advance – an option that many find convenient as they can avoid the monthly payment routine and pay when they have cash available. Many households have a family member working outside Nepal, and periodically sending remittances. In addition, crops sales do not produce a steady income. The WUSC is now planning to start sending SMS messages to its users, showing their balance/due payment and the last payment date. They also have a vision for mobile banking, making the water tariff payment convenient to its customers. The Murgia WUSC makes it clear for the users what kinds of services are available, and what are the associated costs.

In September 2016, the WUSA reported an average income of NPR 800,000 per month, with an average operating expenditure of NPR 128,190. At the closing of the last fiscal year (July 16, 2016) they had a balance of NPR 25 million (equal at that time to about USD 230,000) even after major capital maintenance expenditure and new construction (below) over the fiscal year. Murgia WUSA is exceptional in comparison to other similar schemes in terms of having invested in new infrastructure and capital maintenance from its own resources and for having a high revenue/expenditure balance. It has been able to respond to the big challenge of how to expand services at a pace that allows the town to keep up with population growth, and maintain financial stability. Besides coping with regular operating and minor maintenance works such as salaries, allowances and service changes over the last Nepali Fiscal Year, the following capital expenditures (one-time costs of constructing fixed assets) were carried out:

² USD:NPR rate was 107 as of 25.12.2016

- Construction of a new, accessible sanitation block that features separate toilets for women and men and includes a shower facility.
- Construction of a new drainage system in Ward 3. Murgia WUSA has a separate contract with the Division of Water Supply and Sewerage for the system. Over the past year they completed 3,500 m, with 83 manholes. The drainage system includes a treatment system.
- Construction of a new (separate, smaller) overhead tank to serve Wards 2 and 3. This separate system will be managed by the same WUSC.

Under capital maintenance works (occasional) costs of renewing (replacing, rehabilitating, refurbishing, restoring) assets to ensure that services continue at the same level of performance that was first delivered: Murgia WUSA painted all structures within the compound and the overhead tank itself, including repairs on the structures themselves and carried out maintenance of borehole well development to clear out turbid water.

For the coming year the Murgia WUSA has planned major works, including paving its' compound access road, improving the customers' waiting area, a new deep borehole, and launching a SMS service to send the water tariff payment information (payments due and balance), possibly with instructions on how to pay through a mobile banking system. With the drainage and related treatment unit for drainage water, Murgia WUSA is now also moving towards sewerage connections. The WUSC actively promoted sanitation earlier, refusing to give a water connection to households without toilets. In this way, the locality was declared 'open defaecation free' fairly quickly.

The normal process with Government-supported water schemes is that the community does not procure the materials, nor is responsible for construction, even if all expect some form of local contribution. Capacity building is limited. This lack of community ownership and capacity is one reason for the problems with functionality in water schemes in general in Nepal (White et al, 2015). Murgia's experience is replicable if there is strong financial discipline and the funds are used in a transparent way. This practice is linked to the two above points, the organizational dynamics and social coherence within the WUSA/WUSC itself. Naturally there are risks if poorer households are unable to pay, but to date the management has been able to bring the whole community on board, with all households connected and paying their bills.

What kind of technical and capacity development support did Murgia WUSA receive in the beginning? How is this replicable?

This system was defined from its foundation differently than many other systems in Nepal. Therefore, looking at what type of support it received is not only important, but essential. RWSSSP III aimed to build self-reliance among communities (including Murgia) and mobilise local resources. The Project used a participatory Step-by-Step process and gender-sensitive approach to social mobilisation and scheme planning and implementation, clarifying the actions and responsibilities of various actors at each stage. The WUSC was established as the main managerial body at the first Step. Community level audits increased transparency and trust of the community, and hence their willingness to pay water tariffs. This community management functioned due to the hands-on support provided by the project in the form of technical advisors (Finnish and Nepali) and support persons based at community level. They

ensured quality scheme design and construction, but also facilitated the ‘soft’ elements of training, community participation and institutional development.

This level of ownership was unique in Nepal at the time, and highly appreciated by the communities, increasing transparency, direct participation and interest of both women and men, and leading to strong sense of ownership that was crucial for the long-term sustainability of the facilities. The Completion Report quoted a local government officer: “*the RWSSSP [is] unique in this sense. Usually in the projects there are recipients and providers. The RWSSSP special kind of modalities created the situation, where all stakeholders were the partners of the RWSSSP (...) (RWSSSP, 2005).* An evaluation of Finnish country programme in Nepal noted “*Finland’s bilateral water supply projects have supported the creation of local systems that attract community support, participation, maintenance and cost recovery. Such systems are rightly seen as best practices*” (Caldecott et al, 2012).

The Murgia WUSC members commented on the valuable role technical staff played in developing community management capacity, and quickly resolving problems, technical and social alike. The project modality was instrumental in ensuring that Murgia WUSA got off to a good start, even if the project modality has been criticized as hindrance and a subversion of local systems by some authors (eg. Tarp & Hjertholm, 2000; OECD/DAC, 2005). The project modality enabled local application of the key factors affecting post-construction sustainability – technical, financial, community and social, institutional and environmental factors (Bakalian & Wakenam, 2009; Rautanen, 2016). It is notable that the majority of the other schemes also constructed during RWSSSP, are also still functional (as seen in monitoring to date by Finland-Nepal cooperation). The key element appears to be the strong foundation of technical support and the Step-by-Step process. Table 3 shows how Murgia has been able to adapt to the small-town environment and changing role, following this good start.

Table 3. Factors influencing sustainability of rural water schemes – and how Murgia has responded as it moves to a small-town environment

Pre-project issues	Post-project issues	How Murgia has responded
Community participation	Community ownership; sense of ownership; definition of roles and responsibilities for system management; both for service authorities and service providers	Clear roles for community at several levels of management. Cluster-wise autonomous sub-committees responding and being accountable to their own communities, giving the WUSA a human face and bringing WUSC members closer to their organisation. Full time professional committed staff, while the voluntary Executive Committee still represents the community
Scheme financing, contributions; developing transparent and accountable	Tariff collection for both regular O&M; financing for capital maintenance expenditure and reinvestment/extension/service level improvements; public	Transparent procedures, regular audits, continuing financing of capital maintenance and reinvestments. Policy to avoid political

practices	audits and public hearings are continued to maintain transparency and accountability of the user committees to the users	involvement. Interest to improve financial tools (eg. online banking, etc.) Regular monthly meetings, ensuring that all Executive Committee members stay aware of social, technical and financial performance of the system, and can respond in a timely manner to any reported problems
Demand-responsive approaches; Serving-the-unserved; inclusion	User satisfaction; customers willing to pay for the expected services; reliable services meet the demand; inclusive services ensuring water for all as per the right to water	Willingness to pay Improving service levels to meet demand Active targeting of disadvantaged groups
Empowerment and capacity strengthening	Capacity of water user committees and its individual members; rights holders can call for their rights from the duty-bearers; duty bearers have capacity and willingness to respond	Murgia WUSC received significant capacity building. Acting as a duty bearer.
Appropriate technical design, construction quality, location of the structures, related environmental considerations and works	Linkages to government and private sector service providers and other local government/district level processes	Scheme was well designed, allowing service extensions. Employment of paid staff
Gender quality and Social Inclusion (GESI) on participation and benefits	GESI on capacity enhancement	Active participation of women in committees.
Training (for planning and implementation)	Continued learning-by-doing, refreshers, peer-networks (e.g., among pump operators, village maintenance workers, new water users committee members)	WUSC members train new members; out-going chairperson will continue as WUSC member in support of the new chairperson.

Source: Modified by Rautanen (2016) from Hodgkin & WASH Project staff 1994; Sara & Katz, 1997; Sugden, 2003, original in Bakalian & Wakenam, Eds. 2009, p. 9.

Conclusions

“Construction is not as important as operation and maintenance” (Murgia WUSA Chairperson Captain Moti Prasad Rana, 10.09.2016)

Murgia WUSA was successful even after ten years of operation when compared against 63 other small town water service providers in Nepal on several accounts. It provides a quality service at low cost, while carrying out capital maintenance and investment. From the institutional and financial points of view this case study concludes that transparency and accountability are key success factors. Consumers trust that the funds are used appropriately and there is a high willingness-to-pay. The managers (the WUSC itself), its staff and the consumers benefit as there seems to be neither funds nor water leaking out of this system. A sense of ownership has translated in Murgia into a sense of responsibility to pay the water tariff to ensure continued services and the responsibility for not vandalizing or abusing the structures, as well as responsibility for reporting the service problems for timely repairs.

From the social and organisational points of view, this case study concludes that the Murgia WUSA has been successfully organized into various committees and task forces that allow it to function efficiently and effectively in a small-town context. It received technical support and facilitation at local level, right from the start, building management capacities. Incentives and motivation of individuals is shown by the value given from and within the community to holding positions in any of the sub-committees.

As is typical for emergent small towns, Murgia WUSA's service area itself has changed radically, and will continue to change. Its position as a municipality next to the market corridor and the Indian border will ensure continued growth. Livelihoods will continue to diversify, and the related service expectations will continue to grow. Murgia WUSC continues to be pro-active by building another overhead tank water supply system and a drainage system with wastewater treatment, keeping itself up-to-date. The future plans include mobile banking and SMS service for water tariff payment. Its technical solutions are achievable by other schemes if they continue building on 'soft' capacities. Perhaps the only risk evident is sustainability of water supply, with the high current use of domestic water, and the competing need for agricultural water. It would be valuable for Murgia to consider consumer education to avoid waste.

Murgia WUSC's success is rooted in good water governance principles: participation, responsiveness, financial transparency, accountability and overall strong commitment and vision – all based on the initial Step-by-Step approach. We cannot claim these factors can be easily replicated, but they indicate that these factors are key to sustainability. These have kept the WUSA investing both in capital maintenance expenditure as well as new infrastructure. The findings from the Murgia WUSA resonate well with Ravet and Brailowsky (2014), who call for empowerment and dialogue with all relevant stakeholders, even in the implementation and operation of large, clearly urban water utilities. They conclude that soft engineering skills have proven their efficiency, identifying more profound locality-specific social issues at the root of many problems, rather than technology or financing itself. It is of utmost importance for a WUSC to establish its non-negotiable principles and show accountability and transparency to the public from the very beginning. At least, this proved to be crucial in the case of Murgia WUSA. This becomes more critical as small towns grow and their perhaps originally rather homogeneous community becomes more complex. In order to

guarantee the future of community led small town water systems, we advocate for maintaining the human face of the providers.

In the small towns' context, the non-governmental water service providers' capacity and attitudes become critical if and when the government shifts away from its service provider role towards service authority. One static model is unlikely to work in a typical small towns and emerging towns' context, given the dynamic growth and change in these locations.

These findings are relevant for programme and policy-level debates both in Nepal and globally, the challenge being *how to have more of these types of successful water service providers in Nepal?* One element is capacity development and technical support during the early stages, setting the 'rules of the game' and facilitating a strong service culture. The enabling environment keeps changing, with the entire local governance structure being reconstructed as federalism proceeds in Nepal. The position of small towns is being defined in more detail in Nepal. This is a chance for Nepal to address the regulatory and technical standards related to consumers' associations and users' groups. The real life operational experiences from cases such as Murgia WUSA are most valuable now, when the new policies and regulations are being defined. Programmatic approaches to small town water services should consider sub-national-level institutional arrangements, and give room for local adaptation and initiative.

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