Inclusive Urban Sanitation Stories

Waling's faecal sludge treatment plant as a recreation centre and learning hub

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Figure 1 – Waling municipality. Source: ENPHO.

Summary

Under the Municipalities Network Advocacy on Sanitation in South Asia phase 1 (MuNASS I) project, a Shit Flow Diagram (SFD) Survey was conducted in 2019. MuNASS I project was implemented in Nepal from March 2018 to December 2020 with the Municipal Association of Nepal (MuAN) as the implementing partner, the Environment and Public Health Organization (ENPHO) as the technical partner, the United Cities and Local Government Asia Pacific (UCLG ASPAC) as the Executing Agency and the Bill and Melinda Gates Foundation (BMGF) as the funding partner. The survey results reflected the need for interventions throughout the sanitation value chain to improve services and technologies. Existing containments at the household level, except for fully lined tanks, were not appropriate owing to groundwater pollution. The large

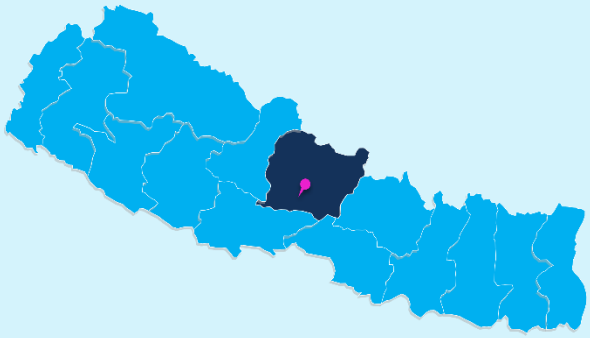
proportion of containments never emptied led to leakages or unauthorized open emptying practices into the environment with a potential threat to human health. Faecal sludge emptied and disposed of without any treatment was a serious issue. In the absence of regulations, regulating agencies and treatment plants, the problem could lead to an outbreak of disease. Hence, sharing findings from the SFD survey triggered Waling to immediately act to improve Faecal Sludge Management (FSM) for a better environment and to advance human health.

Endorsement of municipal FSM policy, allocation of an adequate budget with a proper FSM plan, initiation of desludging service and construction of a Faecal Sludge Treatment Plant (FSTP) was possible with determined and strong leadership of the municipality. The FSTP site was introduced as a Municipal Sanitation Centre with good social acceptance, and it is now one of the popular recreational centres for the people of Waling and a learning centre for many municipalities of Nepal.

Overview

Geographical information

Country: Nepal
City: Waling Municipality
City population: 50,000



Problem

- Existing containments in households of Waling municipality, except for fully lined tanks, were not appropriate as they are a source of groundwater pollution.
- The large proportion of containments never emptied led to leakages or unauthorized open emptying practices into the environment with a potential threat to human health.
- Faecal sludge (FS) collected and disposed of without any treatment was a serious issue.
- In the absence of regulations, regulating agencies and treatment plants, the presence of untreated FS could lead to an outbreak of disease.

Solution

- At the Shit Flow Diagram (SFD) Survey sharing meeting with municipal council members and officials, the municipality was recommended to act immediately to improve Faecal Sludge Management (FSM) to provide a better environment and to advance human health.
- Municipal leadership endorsed municipal FSM policy, allocated an adequate budget with a proper FSM plan and constructed a Faecal Sludge Treatment Plant (FSTP).
- A desludging service was initiated by the municipality along with private desludgers and disposal practice of the FS at the Municipal Sanitation Centre where the FS was treated.
- The municipality envisioned a development where an FSTP could be part of the whole Municipal Sanitation Centre. As envisioned, the centre is now being used as a picnic spot, space for dwelling and a recreational centre by the public. Not limited to being a recreational centre, it is now a learning hub for many municipalities of Nepal.

Problem

A SFD survey carried out in 2019 (Figure 2) showed that the municipality was at higher risk of waterborne diseases and groundwater pollution because of inappropriate FSM. The municipality had no sewerage but 2% of population practiced direct discharge from toilets into stormwater drains.

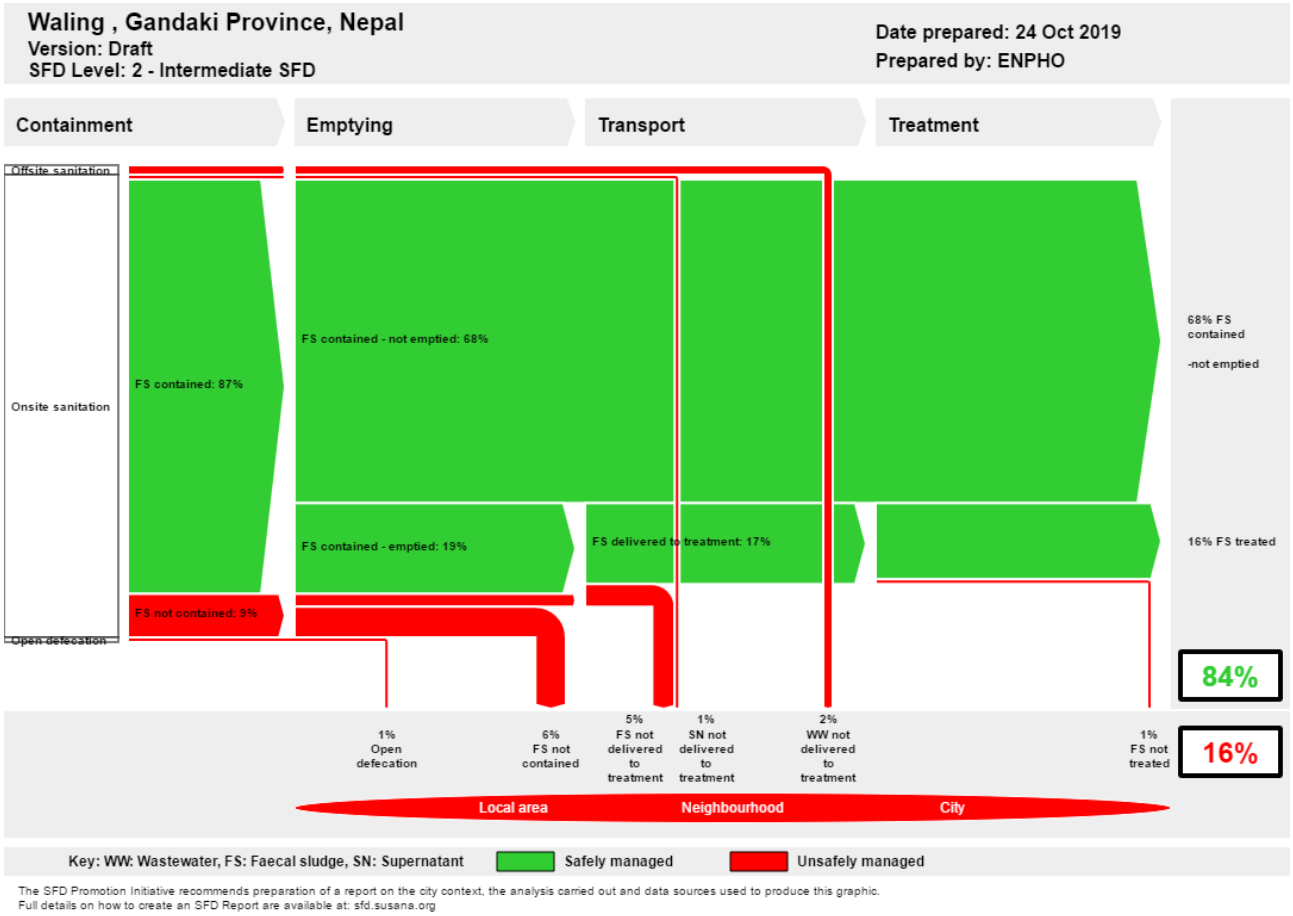


Figure 2 – SFD Graphic of Waling Municipality before operation of FSTP.

Lined tanks with impermeable walls and open bottoms were the predominant containment in most of the households (Figure 3). Upon assessment of the danger of groundwater contamination, it was found that 90% of containments connected to soak pits had a considerable risk of groundwater contamination. Similarly, 94% of containments connected to open drains had a major risk of groundwater contamination. Despite Waling municipality being declared an Open Defecation Free (ODF), 1% of the population still practiced open defecation in nearby forest/rivers/open lands.

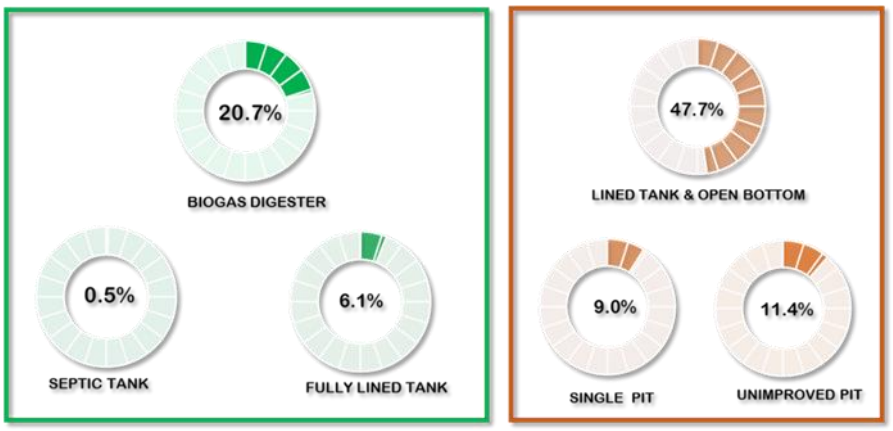


Figure 3 – Types of Containment.

The major source of drinking water was surface water. There was a high possibility that natural springs would get contaminated from improper management practices of faecal sludge (FS).

Only 4% of the containments had been emptied at least once since the installation, excluding anaerobic biogas digesters. Most of the containments that were never emptied were large in size (volume) (Table 1). The geographical landscape of Waling also favoured high infiltration from unlined walls and open bottom of containments.

Table 1: Description on average size, average number of users and average age of never emptied containment

No.	Type of containment	Average size (Volume) (m^3)	Average no. of users	Average age of containment (year)
1.	Septic tank	23	5	7.5
2.	Fully lined tank	17.5	5.2	6
3.	Lined tank and open bottom	14	5.1	6.6
4.	Single pits	1.8	5.5	6.3
5.	Unimproved pit	6	5.12	5.5

On average, the private desludger made three trips to empty containments and transport FS every month. The municipality had no FSTP, so FS that had been collected by the private desludging vehicle was dumped onto farmland (Figure 4), although the municipality had strictly prohibited such an action. So, the private entrepreneur had initiated a service only to those who had disposal options.

Figure 4 – Disposal of faecal sludge direct to the farm land. Source: ENPHO.

There was no regulatory provision regarding FSM in Waling municipality. FSM was not prioritised and the municipality lacked a designated unit for FSM. Also, a budget was not allocated for any FSM activities. The FS emptied and disposed without any treatment was a serious issue. In the absence of regulations, regulating agencies and treatment plants, the problem could lead to an outbreak of disease.

Solution

During implementation of the MuNASS I project, the findings from the SFD survey were shared at a meeting with the municipal council members and officials. MuNASS I also recommended that the municipality act immediately to improve FSM for a better environment and to advance human health. Waling municipal council and officials were so strongly triggered by the SFD findings that they committed to work for FSM in their municipality. A decision was made to endorse municipal FSM policy and prepare an action plan. The former Mayor of Waling municipality Mr Dilip Pratap Khand showed very good leadership and took the initiative in

working on FSM. The municipal council soon endorsed the municipal FSM policy. Septic tanks were made mandatory during the building construction permit stage which will ensure new dwellings have a constructed septic tank. There was promotion of anaerobic biogas digesters to farmers with enough space for installation.

The municipality envisioned their existing solid waste management site as the Waling Municipal Sanitation Centre which the public can visit as a recreational site with separate components to manage municipal solid waste and FS side-by-side (Figure 5). The FSTP has a treatment capacity of 6 m3 per day and was constructed utilizing the municipal budget without any financial support from donor agencies. The Municipality only sought technical support from ENPHO (technical partner of MuNASS I) for the preparation of FSTP detailed project report for Waling Municipality. The municipality also welcomed various institutions interested in learning.

Figure 2 – School children enjoying their picnic at premises of Municipal Sanitation Center. Source: ENPHO.

The municipality initiated mechanical desludging services along with the existing private mechanical desludging service providers. The maximum capacity of desludging vehicles is 5 m3 per trip. At present there is demand for four desludging trips per week at both household and

institutional level, and the demand is increasing gradually as the bigger and never-emptied containments are filling up. After treatment, the by-products are sludge cake and treated water. Sludge cake is kept in the storage house and made available to local farmers to use as fertilizer on their farmland whereas treated water is used for gardening and beautification of the Sanitation Centre.

Waling now is aiming for scheduled or timely desludging service that will increase the desludging frequency and ultimately the treatment plant will work as per design capacity of 6 m3 per day. As for now, on average, the FSTP is treating 2 m3 of FS per day.

During local festivals and public holidays, the flow of the public visiting the site is very high. Basically, the public use the centre as recreational site where they can rest or even make TikTok videos. Local schoolchildren use the Centre as a picnic spot as well. Now there are many visitors to the Waling Sanitation Centre each day for various purposes including learning visits by representatives from various municipalities of Nepal.

We believe this is the first FSTP in Nepal which has been developed as a sanitation centre where the faecal sludge of the local municipality is being treated and safely disposed.

Thus, Waling municipality is taking the initiative and intervening in all sanitation value chains to improve services and technologies for FSM.

Lessons learned

The SFD worked as a triggering tool for Waling municipality and sensitized the municipal leadership to the need for FSM in their municipality. SFD helped to identify the FSM issues/ challenges and supported the development of the FSM plan. Today Waling municipality sets an example for appropriate FSM. Strong and committed leadership at the municipal level makes a big difference in improving overall sanitation of the municipality.

If the municipality properly monitors desludging practices, haphazard disposal could be reduced. The FSTP used to be a challenging component in FSM, but we can generate social acceptance by simply making it a sanitation centre rather than just an FSTP. Apart from being a recreational site, the FSTP has also been a learning hub. Name plates have been placed at each component of the FSTP which will help the visitors to learn about the different processes operating. A 3D model of the FSTP along with 3D animation video describing the treatment process of the FSTP has been placed in the municipality office. Visitors who are interested can visit the municipality office for more information. Moreover, the caretaker of the FSTP also explains the operation of the plant when asked by visitors.

Useful links

https://sfd.susana.org/about/worldwide-projects/city/188-waling

Further reading and references

- ENPHO, 2019. Sanitation Status of Waling Municipality, s.l.: Environment and Public Health Organization: https://fsmnepal.org/wp-content/uploads/2021/03/Sanitation-Situation-Report-of-Waling-Municipality.pdf

About the author

Mr Buddha Bajracharya is a certified public health professional with over 9 years of experience working in the field of WASH and Emergency Response in various districts across Nepal. He has been working as a Project Coordinator at ENPHO in the programme department since 2017, with responsibilities to handle different projects assigned. He is also the President of Paschim Paaila, a youth-led network, working in the WASH sector. His areas of expertise, among others, include project and research proposal development; data collection, data processing, analysis, and research report writing; advocacy, coordination, and networking; training package development, facilitation and training skills on FSM, cholera/acute watery diarrhoea preparedness, E-WASH, Household Water Treatment System, and Sexual and Reproductive Health and Rights of Young People. He joined ENPHO in 2013 as Project Assistant. Mr Bajracharya earned a bachelor's degree in Public Health from Purbanchal University and a double master's degree in Executive MBA from Pokhara University and a master's degree in Sociology from Tribhuvan University.

About the institution / organisation

Established on 4 November 1990, the **Environment and Public Health Organization (ENPHO**) envisages a role in creating eco-societies by providing quality services on Water, Sanitation and Hygiene (WASH), environment and public health. Research, innovations and promotion of the WASH technologies and approaches have been the core priorities of ENPHO.

ENPHO, a service oriented, scientific, national non-governmental organization, is constantly striving towards sustainable community development, demonstration and dissemination of eco-friendly technologies including drinking water treatment options and sustainable sanitation systems. ENPHO promotes integrated community-based approaches for safe water, sustainable sanitation, hygienic behaviour, improving indoor air, and environmental and air quality monitoring for creating healthy and environment friendly societies. https://enpho.org/about-us/

About the IWA Inclusive Urban Sanitation Initiative

IWA's Inclusive Urban Sanitation initiative responds to a huge and growing public need - safe sanitation in combination with access to safe drinking water and hygiene underpins good health. The aim of this initiative is reshaping the global urban sanitation agenda by focusing on inclusive sanitation service goals--and the service systems required to achieve them - rather than the traditional singular focus on expanding sewer networks and treatment works. This forms part of IWA's larger agenda to promote inclusive, resilient, water-wise, and sanitation-secure cities.

About the Inclusive Urban Sanitation Stories

The Inclusive Urban Sanitation stories are documenting some of the policies, practices, and approaches that demonstrate how stakeholders especially those in urban areas (e.g., public sector, operators, academics, regulators, and other key actors) are taking part or contributing to Sustainable Development Goal 6 which require water and sanitation concepts and norms to look beyond technology and the usual focus on building infrastructure. Increased focus is on safety, inclusion, environment, public health, and multiple technology solutions tailored to different geographies and socio-economic contexts for building climate-resilient cities. The stories aim to inspire urban stakeholders to discuss ways for advancing inclusive urban sanitation, especially in low- and middle-income countries.