SFD Promotion Initiative

Waling
Nepal

Draft Report

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SFD Report Waling, Nepal, 2019

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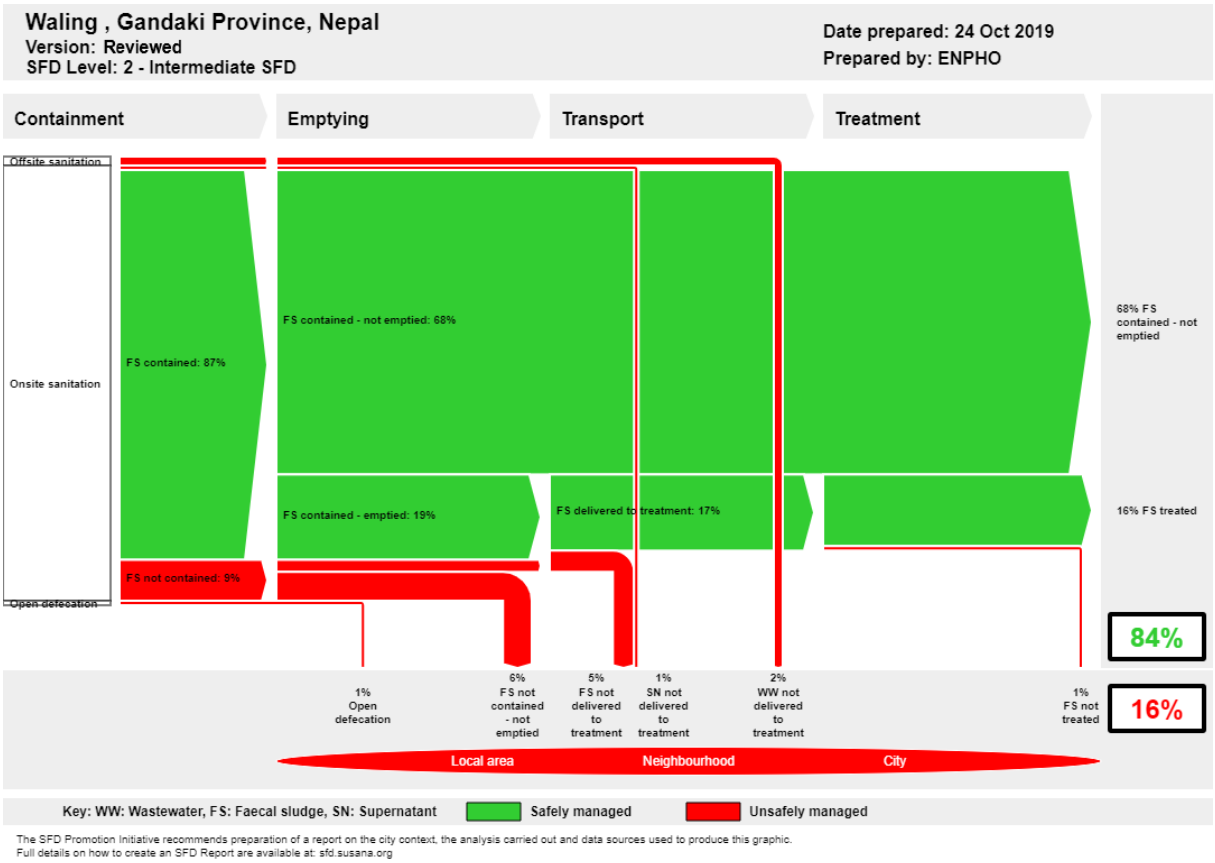
1. The Diagram



The SFD Promotion Initiative recommends preparation of a report on the city context, the analysis carried out and data sources used to produce this graphic.
Full details on how to create an SFD Report are available at: sfd.susana.org

2. Diagram information

Desk or field based:

Intermediate. Level 2 report.

Produced by:

Environment and Public Health Organization (ENPHO)

Collaborating partners:

Municipal Association of Nepal (MuAN), United Cities Local Government Asia Pacific (UCLG ASPAC)

Status:

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3. General city information

Waling municipality, established in 2053 BS (1997 AD), lies in Syangja district within Gandaki Province of Nepal. Municipality is located within latitude 28 ° 3 '2.412" North to 27 ° 55' 26.58 " North and longitude 83 ° 41 '36.852" East to 83 ° 50' 18.456 " East. The municipality stands at an elevation of 731-1596 m and is surrounded by Biruwa RM and Chapakot Municipality at East, Galyang Municipality at West, Bhirkot Municipality at North and Galyang and Chapakot Municipalities at South.

Municipality comprises of 14 wards with total land area of 163.41 km2. Total number of households is 11,366 with total population of 50,793 (CBS 2011). Population density of ward 9 is the highest whereas ward 1 has the lowest population density.

4. Service delivery context

Access to drinking water and sanitation has been defined as fundamental rights of every citizen by the constitution of Nepal. In order to respect, protect and implement the rights of citizen embedded in the constitution, the Government of Nepal (GON) has billed the Water Supply and Sanitation Law 2018 which has emphasized in a right to quality sanitation services and prohibited direct discharge of wastewater and sewage into water bodies or public places.

Several policies have been in placed to accomplish the sanitation need of people. Particularly, NSHMP 2011 has proved as an important strategic document for all stakeholders to develop uniform programs and implementation mechanism at all level. It strengthens institutional set up with the formation of water and sanitation coordination committee at every tier of government to actively engage into sanitation campaign. The document adopted sanitation facilities as improved, basic and limited in line with WHO/UNICEF guideline. The sanitation campaign throughout the country was focused to achieve universal access to improved sanitation.

The draft Sector Development Plan (SDP) has envisioned the delineation of roles and responsibility of federal, provincial and local government in an aim to initiate sustainability of Open Defecation Free (ODF) outcomes from sanitation campaign and way forward to post ODF. It mainly emphasized sector convergence, institutional and legal reforms, and capacity development of the service providers. Together, with a commitment to Sustainable Development Goal (SDG) and promulgation of Total Sanitation Guideline 2017, it assists the service provider with clear indicators and targets to be achieved. The latest outcome, specifically to manage Faecal Sludge Management (FSM) in the country is the Institutional and Regulatory Framework for Faecal Sludge Management. The framework envisaged featuring of FSM on national policies through the federal government and issuing policy directives at the local level along with enhancing the capacity of the service providers. The overall planning, implementation and regulating of FSM service chain have been authorized to local government. In this regard, the local government can develop a partnership with either private sector or water and sanitation user committee for effective service delivery. However, the local government has yet to develop rules and regulations, and standards to effectively deliver services across the sanitation value chain.

5. Service outcomes

6. Overview of stakeholders

Based on the regulatory framework for FSM, the major stakeholders for effective and sustaining service delivery are as presented in Table 1.

Table 1 Overview of Stakeholders

Key Stakeholders	Institutions / Organizations /
Public Institutions at Federal Government	National Planning Commission, Ministry of Water Supply and Sanitation, Ministry of Environment and Population, Ministry of Federal Affairs and General Administration, Department of Water Supply and Sewerage, Department of Environment, Local Government (Municipal Council)
Public Institutions at local Government	
Non-governmental Organizations	Environment and Public Health Organization (ENPHO)
Private Sector	DN Septic Tank Cleaners
Development Partners, Donors	MuAN, BMGF,UCLG ASPAC

7. Credibility of data

The major data were collected from random household sampling. Altogether, 377 households and 101 institutions were surveyed from all the wards of the municipality. The primary data on emptying and transportation were validated with KIIs from private entrepreneurs and sanitation section of the municipality. The overall data and findings were shared with the stakeholders of municipality and validated through sharing program.

Major limitation during the collection of data is the types of containments: whether it is lined or unlined is based upon the responses from the respondent.

8. Process of SFD development

The data on the sanitation situation is collected

through a household survey (ENPHO, 2019). The community mobilizers from the sub-metropolitan were mobilized after providing the orientation on sanitation technologies, objectives of the survey and using mobile application for the survey. Also, KIIs were conducted with officers form the municipality, water supply system, town development committee and private emptying entrepreneurs to understand the situation across the service delivery chain. For the production of the SFD graphic, initially, a relationship between sanitation technology used in a questionnaire survey and SFD PI methodology was made. Then, data were fed in the graphic generator to produce the SFD graphic.

9. List of data sources

- ENPHO, 2019. *Sanitation Status of Waling Municipality, s.l.: Environment and Public Health Organization.*
- MOWS, 2017. *Institutional and Regulatory Framework for Faecal Sludge Management in Urban Areas of Nepal. Kathmandu, Nepal: Ministry of Water Supply.*
- Dhakal, S. 2014. *Geological Divisons and Associated hazards in Nepal. Retrieved from Research Gate:* https://www.researchgate.net/publication/301479127
- KII2, 2019. *Interview with Mr. Padam Prashad Pandey: Officer of Waling Municipality, Sanitation Section.* [Interview] 2019.
- KII5, 2019. *Interview with Mr. Bhola Shah: Proprietor Bhola Septic Tank Cleaners.* [Interview] 2019.
- KII6, 2019. *Interview with Mr. Dependra Malla: Engineer of Waling Municipality, Sanitation Section.* [Interview] 2019.

Waling, Nepal, 2019

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Abbreviations

BGS	British Geological Survey
BMGF	Bill and Melinda Gates Foundation
CBS	Central Bureau of Statistics
DWSS	Department of Water Supply and Sewerage
ENPHO	Environment and Public Health Organization
FS	Faecal Sludge
FSM	Faecal Sludge Management
GON	Government of Nepal
IRF	Institutional and Regulatory Framework
KII	Key Informant Interview
MOF	Ministry of Finance
MOFAGA	Ministry of Federal Affairs and General Administration
MOPPW	Ministry of Physical Planning and Works
MOWSS	Ministry of Water Supply and Sanitation
NPC	National Planning Commission
NPR	Nepalese Rupees
NRWSSSP	National Rural Water Supply and Sanitation Sector Policy
NSHMP	National Sanitation and Hygiene Master Plan
NUWSSSP	National Urban Water Supply and Sanitation Sector Policy
ODF	Open Defecation Free
PPE	Personal Protective Equipment
PPP	Public Private Partnership
SDG	Sustainable Development Goal
SDP	Sector Development Plan
SFD	Shit Flow Diagram
SFD PI	Shit Flow Diagram Productive Intiative

STWSSP	Small Town Water Supply and Sanitation Project
UCLG ASPAC	United Cities of Local Government Asia Pacific
UNICEF	United Nations Children's Education Fund
USAID	United States
VDC	Village Development Committee
WASH	Water, Sanitation and Hygiene
WEDC	Water Engineering and Development Center
WHO	World Health Organization
WSUC	Water and Sanitation Users Committee

1 City context

Waling municipality, a historically and religiously popular city is located at Syangja district in Gandaki province of Nepal. The municipality was formed in 1997 and divided into 11 wards. It was restructured according to the federal structure of the nation in 2017. The neighbouring village development committees Jagat Bhanjyang, Malangkot, Kalikakot, Keware Bhanjyang, Sirsekot, Thumpokhara, Pelakot, Tindobato, Sworek, Chhangchhangdi, Majhkot Shiwalaya and Yaladi were either totally or partially merged. Currently the municipality is divided into 14 wards as shown in figure 1. It shares its boundary with Bhirkot Municipality at the North, Galjyang Municipality and Chapakot Municipality at the South. Similarly, it is bounded by Biruwa VDC and Chapakot Municipality in the East and Galjyan Municipality and Parbat District in the West.

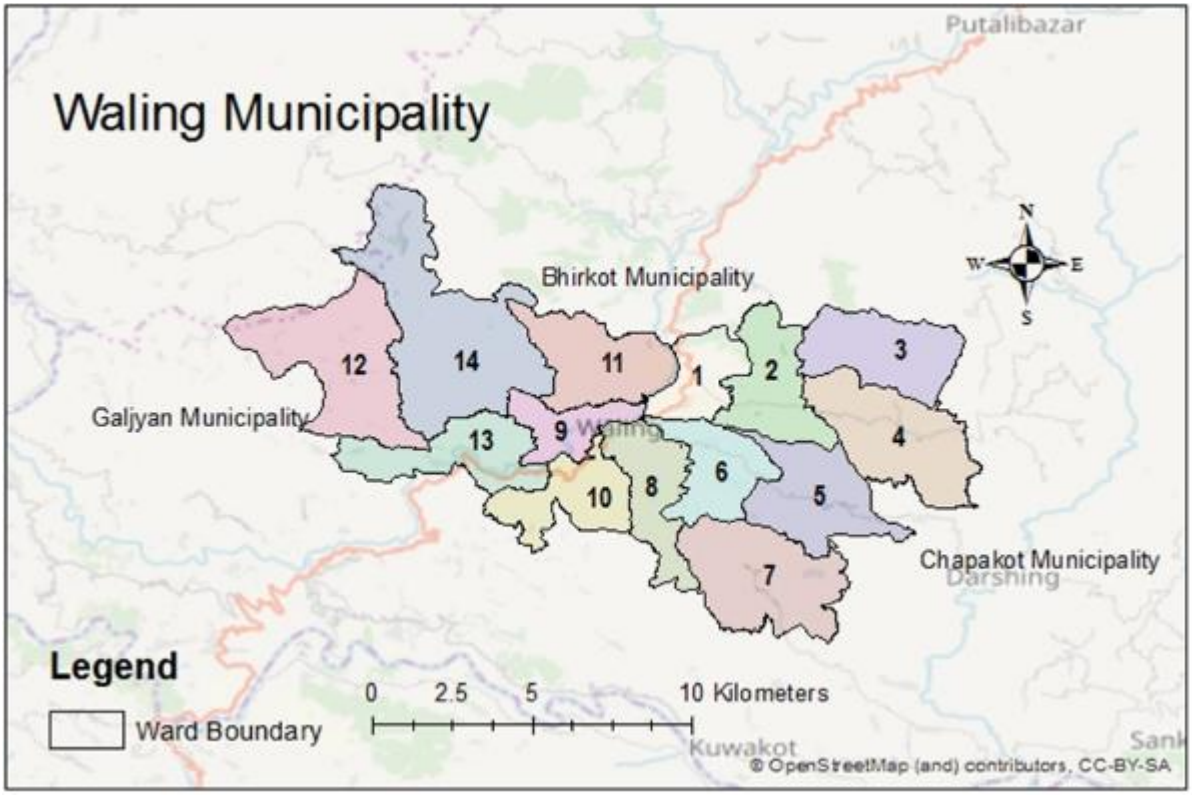

Figure 1: Location Map of Waling Municipality.

1.1 Population

The municipality is resided by 45608 populations in 11366 households. The average family size is 4.06 which is less than the national average family size of 4.6 (CBS, 2016). The average population density was 277 per square kilometre. Ward number 9, an urban cluster and ward number 1 has the highest and the lowest population density respectively. The ratio of female to male population was 100:86. The survey revealed that 8% of the population is below 5 years of children.

1.2 Geography

The municipality is located between the latitude of 83º 41'36" to 83º 50'18" and 28º 3' 2" to 27º 55' 26" longitude at the elevation between 731 meters and 1596 meter from mean sea level. It is extended in 128.40 square kilometres (Waling Municipality, 2018). Andhikhola River flows through almost middle of the municipality. The municipality is located in the fold of the mountains that are considered part of inner lesser Himalaya region (Dhital, 2008). A Lesser Himalayan crystallines consist of metamorphosed rock sequence somewhere overlies by fossiliferous sedimentary cover. Typical rock types are schists, phyllites, quartzites, limestones, dolomites as well as argillo-arenaceous and argillo-calcareous rocks with horizons of marble beds. This zone is intruded by granite rocks and gnessified (Dhakal, 2014).

1.3 Climate

Climate of the municipality ranges from tropical in areas within the altitude of 1, 000 metres to sub-tropical above this altitude up to 2, 000 metres. The maximum and minimum temperature is 32o C and 9.5 oC respectively. The average annual rainfall is 2265 mm (wikipedia, n.d.)

2 Service delivery context description

2.1 Policy, legislation and regulation

2.1.1 Policy

The constitution of Nepal 2015 has envisioned access to drinking water and sanitation as fundamental rights of the citizens that would be delivered and managed by federal, provincial and local governments in mutual coordination (GON, 2015). GON through its Ministry of Water Supply (MoWS) has billed Water Supply and Sanitation Law 2018 in its federal parliament to respect, protect, promote, fulfil and implement the provisions in the constitution. The billed law has entitled every citizen a right to quality sanitation services and prohibited the direct discharge of wastewater and sewage into water bodies or public places directly against the prescribed standard in section 38. Also, it has provision of imprisonment for term ranging from three months to one year or a fine of up to NPR 5, 00,000 (US$ 4,390) or both to the offender (MoWS, 2018).

Beside current developments in laws and policies, earlier National Sanitation Policy (1994) was the first sanitation specific policy that provided guidelines for the planning and implementation of sanitation programs. An unofficial revised version was produced in 2002, however, it was not ratified by GON instead National Rural Water Supply and Sanitation Sector Policy (NRWSSSP) was approved in 2004 (WEDC, 2005). The policy was formulated to provide a basic level of water supply to all people such that development of water supply and sanitation services supports the social and economic development of the nation and improves the health status. It mainly focused on participatory approach and community leadership project development with emphasized given on optimization of local resources and installation of locally appropriate technology (DWSS, 2004). Similarly, the GON approved National Urban Water Supply and Sanitation Policy (NUWSSSP) in 2009. The policy uses Water and Sanitation Hygiene (WASH) services as a tool for poverty reduction. Output-Based Aid Approach was adopted for supporting the construction of household toilets along with cost

recovery principles and decentralized waste management in urban areas (DWSS, 2009). A Unified National Water Supply and Sanitation Sector Policy (NWSSSP) was approved in 2014 by the GON to resolve existing inconsistent and incoherent in rural and urban sanitation policies. The NWSSSP aimed to grab many opportunities like new technologies and knowledge, and service delivery approaches emerged in the sector. Remarkably, NWSSSP was the first official document that recognized discharge of untreated wastewater and dumping of septic sludge heavily polluted into surface water sources in urban areas. Further, it pinpointed that densely located onsite sanitation facilities in urban and rural localities have been posing a risk of groundwater pollution. The policy set strategy to develop and enforce wastewater quality standards for discharging all kinds of wastewater into natural water bodies and agricultural lands. Reuse options with appropriate treatment were highly prioritized and mandatory provisions were set for constructing onsite treatment facilities in hospitals, industries and commercial buildings (DWSS, 2014).

Based upon these policies, National Sanitation and Hygiene Master Plan (NSHMP) 2011 was formulated and implemented by the GON. Coordination among various stakeholders and local leadership was highly emphasized to develop participatory integrated sanitation programs. It basically focused on universal access to sanitation through the construction of household toilets and declaration of Open Defecation Free zones. It has set ODF as a basic indicator to universal access on improved sanitation with due consideration on sustainable changes in hygiene behaviours including proper use of toilet and waste management practices in the urban and rural areas. It provided strategic direction for all the concerned stakeholders to formulate an enabling environment for harmonizing the efforts of stakeholders, maintaining uniformity and standards and developing institutional arrangement at all levels of government (NPC, 2011). It strengthens institutional set up with the formation of water and sanitation coordination committee at every tier of government in a participatory approach. Also, it defined what sanitation facility should be promoted to achieve universal access to improved sanitation.

The national sanitation coverage after the implementation of NHSMP 2011 is 95.5% until March 2018 (MoWS, 2018). Thus upon achieving good progress towards the sanitation coverage, the GON has drafted Nepal Water Supply, Sanitation and Hygiene Sector Development Plan (SDP 2016-2030) in 2016 emphasizing sector convergence, institutional and legal reforms, capacity development of the sector institutions and establishing coordination and harmonization. The draft SDP has classified service system and delineated roles and responsibilities accordingly for effective and sustainable service delivery as shown in Appendix 1.

Together, with a national commitment to pursuing and achieving the Sustainable Development Goals (SDGs) by 2030, National Planning Commission (NPC) formulated targets and indicators for coordinated efforts to achieve the goals in 2017. Similarly, Total Sanitation Guideline 2017 has envisioned sustaining ODF outcomes and initiating post-ODF activities through integrated water, sanitation and hygiene plan at every local level. It has set various indicators and remarkably redefined sanitation as management of services and facilities to safely dispose of/reuse faecal sludge, collection and treatment of solid waste and wastewater to establish the hygienic environment and promote public health (NPC, 2017).

All these above-mentioned policies and guideline states Faecal Sludge Management (FSM) as a component of the sanitation system. Lack of concrete policies, guidelines and indicators

on FSM was felt in the sector for effective planning, implementation and service delivery. Thus, through in-depth discourses on FSM, Ministry of Water Supply and Sanitation (MOWSS) through its Department of Water Supply and Sewerage (DWSS) articulated and endorsed Institutional and Regulatory Framework for Faecal Sludge Management in Urban Areas of Nepal in 2017.

The main objective of the FSM framework is to define the specific roles and responsibilities of key institutions for the effective management and regulation of FSM. It is framed upon existing laws such as Environmental Protection Act and Rules 1997, Self-Local Governance Act and Rules 1999, Environmental Standards on Effluent Discharge 2000, Nepal National Building Code 2003, and Land Acquisition Act amendment 2010 (MOWS, 2017). The framework primarily envisioned featuring FSM in the national policy and issuing policy directives into local government to incorporate FSM in their urban planning along with strengthening and enhancing the capacity of the local government to deliver effective services. A local government has been endowed with overall responsibility to plan, implement and regulate the FSM services within its jurisdiction. The provision of the ability to engage the private sector and other relevant stakeholders such as Water and Sanitation Users Committee (WSUC) in the framework reflects a participatory approach that would help in sustaining the interventions.

2.1.2 Institutional roles

At the federal government, National Planning Commission (NPC) is responsible for planning the national sanitation programs in coordination with the respective ministry. Department of Water Supply and Sewerage under Ministry of Water Supply and Sanitation (MOWS) is a leading authoritative agency for development and implementation of sanitation policy and programs. Earlier, the sanitation programs were implemented through its regional offices at the local level. The policies formulated had to be channelized through Ministry of Federal Affairs and General Administration (MOFAGA), a ministry at federal government accredited with the role of coordination, cooperation, facilitation and monitoring and evaluation of activities undertaken by local governments; regulation and management of the civil service in the country. The schematic diagram as shown in Figure 2 illustrates roles and responsibilities for effective management of faecal sludge at federal government.

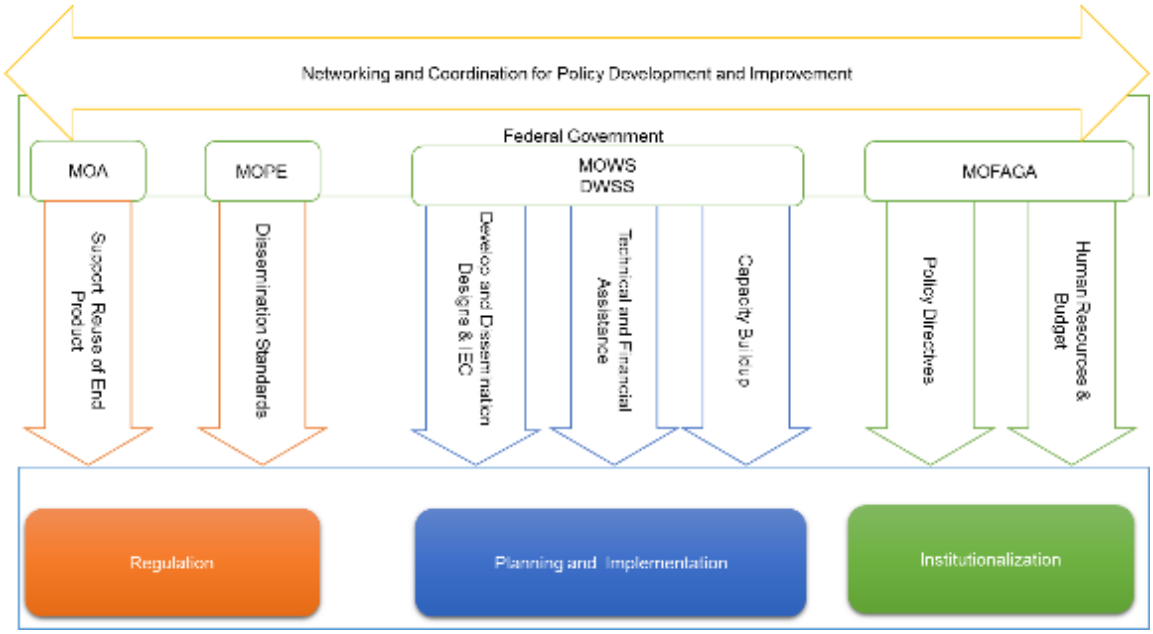

Figure 2 Institutional arrangements and their responsibility for FSM at the federal government.

Ministry of Physical Infrastructure and Development is entitled with authority for water supply and sanitation programs at the provincial government. The draft SDP has envisioned the role of the provincial government as roles of regulation and surveillance on small scale sanitation systems implemented by the local government whereas it is responsible to undertake implementation program of medium to mega-scale sanitation interventions in coordination with federal and local government.

The Constitution of Nepal 2015 and Local Government Operation Act 2017 enabled local government to implement sanitation interventions to enhance public health and living standards. Generally, local government in coordination and partnership with Water and Sanitation User Committee (WSUC) and developing agencies have been implementing water supply and sanitation programs. The IRF for FSM has delineated the roles and responsibility of local government across all sanitation values chain as presented in Figure 3.

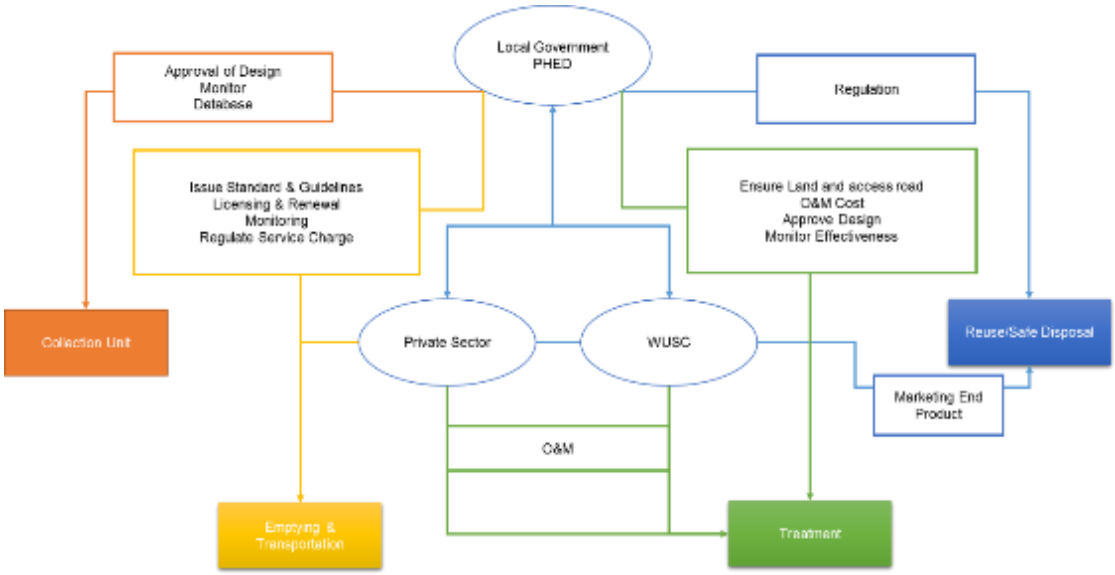

Figure 3 Roles and responsibility of local government (municipality) for FSM.

2.1.3 Service provision

Urban Water Supply and Sanitation Policy 2009 has emphasized the Public-Private Partnership (PPP) in water supply and sanitation to improve service delivery (MOPPW, 2009). Also, Public-Private Partnership Policy 2015 encourages private sector investment in development and operation of public infrastructure services for comprehensive socio-economic development. The policy has aimed to remedy challenges such as structuring of projects, land acquisition, coordination and approval, payments to private sectors and approval for environment impact (MOF, 2015).

Similarly, Drinking Water Rules 1998 has envisioned the formation of water users committee for effective service delivery of water supply and sanitation in the community. In line with this provision, Small Town Water Supply and Sanitation Users Association were formed through the implementation of Small Town Water Supply and Sanitation Project (STWSSP) in the municipality.

Specifically, in sanitation service chain, desludging services have been providing by municipality and private entrepreneur in Waling Municipality. Bhola Sanitary Service, a private entrepreneur started the desludging service in the area since 2015. The service is extended to neighboring municipalities from in Galjyang. The entrepreneur owns a two tanker with a capacity to carry 5000 litres per trip. These tankers are manufactured locally in Butwal Industrial State and are assembled into a tractor.

In an average three trips of faecal sludge per month is emptied and transported by the entrepreneur. A driver and a helper is mobilized during the service, both the labours lack Personal Protective Equipment (PPE) and education on health hygiene.

2.1.4 Service standards

The sanitation service standards have been proposed in the draft Nepal Water Supply, Sanitation and Hygiene Sector Development Plan (2016-2030). It has classified sanitation services as high, medium and basic on the basis of knowledge and facilities in place. The

sanitation service levels with indicators are shown in Table 1. However, FSM specific standards have yet to be developed and implemented.

Table 1 Sanitation Service Level and its Components.

S.N.	Service Components	Service Level		
		High	Medium	Basic
1	Health and Hygiene Education	✓	✓	✓
2	Household Latrine	✓	✓	✓
3	Public and School Toilets	✓	✓	✓
4	Septic tank sludge collection, transport, treatment and disposal	✓	✓	✓
5	Surface drains for collection, transmission and disposal of greywater	✓	✓	✓
6	Small-bore sewer collection for toilet and septic tank effluent, low-cost treatment and disposal		✓	
7	Sanitary sewers for wastewater collection, transmission, non-conventional treatment and disposal	✓		
8	Sanitary sewers for wastewater collection, the transmission of conventional treatment and disposal	✓		
9	Limited solid waste collection and safe disposal	✓	✓	✓

Source: MoWSS, 2017

3 Service Outcomes

3.1 Overview

The municipality was declared open defecation free zone on 14th of May 2013. Also, all VDCs merged to the municipality have been declared ODF zone from 2011 to 2013 (MuAN, 2017). Thus literally, all the households in the municipality have access and use either own or shared toilet for the defecation. However, it was revealed that 1.06% of households do not own toilet in their house.

3.1.1 Household Level Sanitation System

An anaerobic biogas digester which receives the excreta and flushing water directly from a toilet. The anaerobic biogas digester is designed for the integrated treatment of toilet products, animal manure and kitchen and garden waste. The slurry from the biogas digester was directly applied into farmland or co-compost and dried before application. The fully lined tank is constructed to safely manage the faecal sludge is observed in 6.1% of the households mostly located at urban clusters. Similarly, a septic tank, basically a containment and primary treatment unit at household was observed in minimal households. While majority of households have a lined tank with impermeable walls and open bottoms constructed to allow seepage such that emptying frequency would be reduced. Whereas single pits and unimproved pits were popular among households located in rural area of the municipality as shown in figure 4.

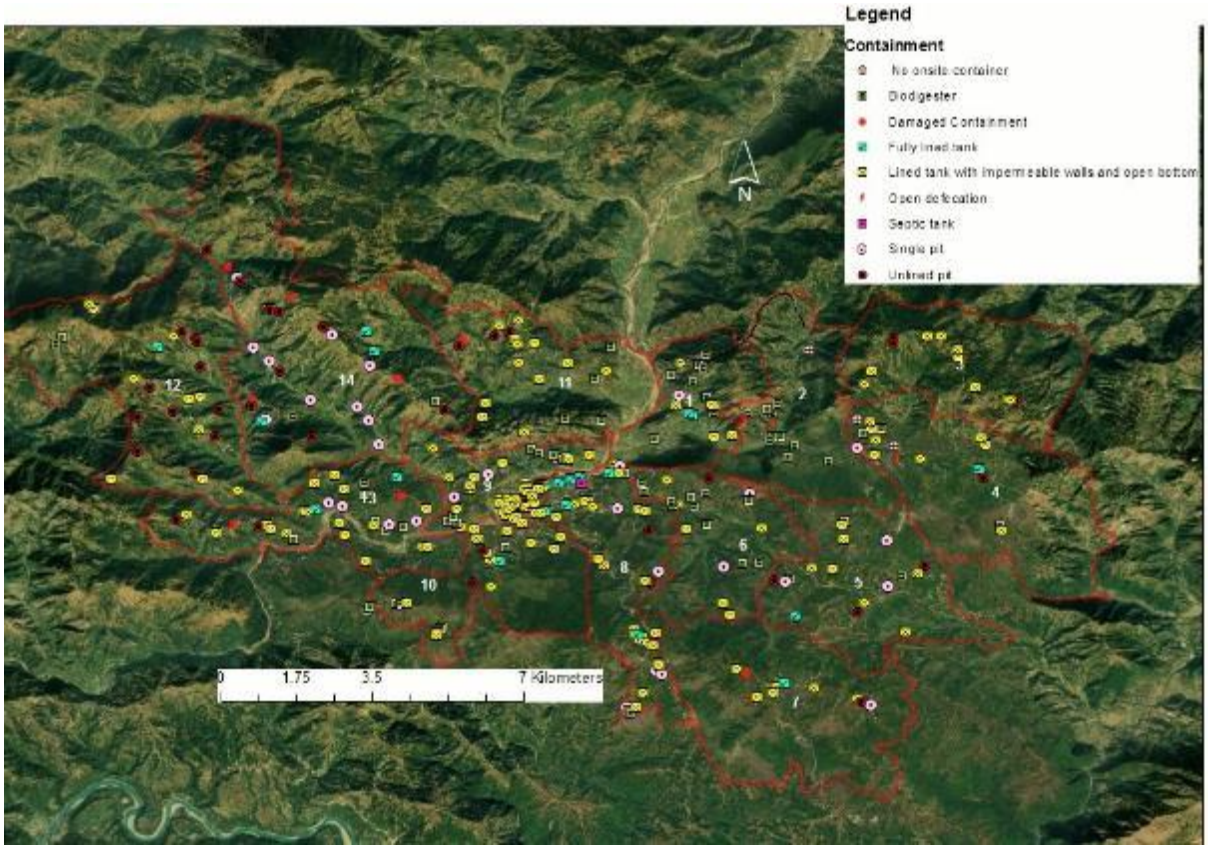

Figure 4: A map showing various types of sanitation technologies at household level

3.1.2 Institutional Level Sanitation System

Altogether 101 institutions from government sector, health care, financial, hotel and hospitality, educational and commercial sectors were surveyed. The location of each of the surveyed institutions is pointed in figure 5 and listed in Appendix 2. Approximately, 6% of toilets in institutions are connected to drainage system though municipality has not developed sewer network in the area. Lined tank with impermeable walls and open bottom (52.5%) were installed in majority of institutions followed by fully lined tank (28.7%). Majority of these institutional toilet have pour flush system while 15% have cistern flush system. Unlike household containments, 42% of these containments receive gray water from hand washing basins. While, few institutions established in rural area have anaerobic biogas digester and both single pits and unimproved pits.

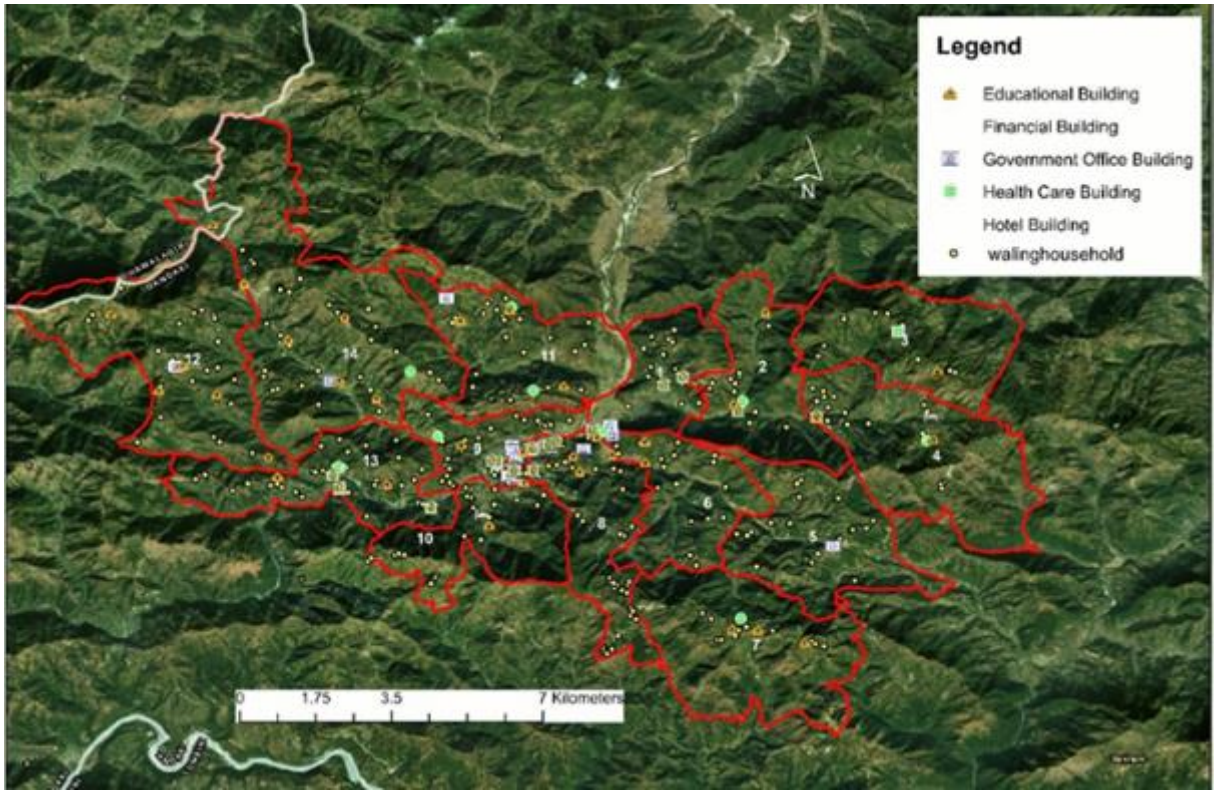

Figure 5: Type s and location of institutions surveyed in Waling Municipality

Based on both households and institutional survey, the types of sanitation technology, percentage of population using each types and connection was determined to develop SFD selection grid as listed in Appendix 3.

3.2 SFD Matrix

Figure 6 shows SFD matrix of Waling Municipality.

Waling , Gandaki Province, Nepal, 24 Oct 2019. SFD Level: 2 - Intermediate SFD
Population: 45608
Proportion of tanks: septic tanks: 50%, fully lined tanks: 100%, lined, open bottom tanks: 94%

System label	Pop	W4c	W5c	F3	F4	F5	S4e	S5e
System description	Proportion of population using this type of system	Proportion of wastewater in open sewer or storm drain system, which is delivered to treatment plants	Proportion of wastewater delivered to treatment plants, which is treated	Proportion of this type of system from which faecal sludge is emptied	Proportion of faecal sludge emptied, which is delivered to treatment plants	Proportion of faecal sludge delivered to treatment plants, which is treated	Proportion of supernatant in open drain or storm sewer system, which is delivered to treatment plants	Proportion of supernatant in open drain or storm sewer system that is delivered to treatment plants, which is treated
T1A1C6 User interface discharges directly to open drain or storm sewer	2.0	0.0	0.0					
T1A2C6 Septic tank connected to open drain or storm sewer	1.0			0.0	0.0	0.0	0.0	0.0
T1A3C10 Fully lined tank (sealed), no outlet or overflow	27.0			63.0	100.0	94.0		
T1A4C5 Lined tank with impermeable walls and open bottom, connected to a soak pit	10.0			2.0	0.0	0.0		
T1A4C6 Lined tank with impermeable walls and open bottom, connected to an open drain or storm sewer	6.0			45.0	0.0	0.0	0.0	0.0
T1A4C9 Lined tank with impermeable walls and open bottom, connected to 'don't know where'	1.0			0.0	0.0	0.0		
T1A4C10 Lined tank with impermeable walls and open bottom, no outlet or overflow	30.0			3.0	0.0	0.0		
T1A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow	9.0			7.0	0.0	0.0		
T1A6C10 Unlined pit, no outlet or overflow	11.0			4.0	0.0	0.0		
Contain T1B10C10 d tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded -	2.0			9.0	0.0	0.0		
T1B11 C7 TO C9 Open defecation	1.0							

Figure 6: SFD matrix of Waling Municipality

3.2.1 SFD Matrix Explanation

The sanitation technologies and the corresponding percentage of the population using these systems in the municipality are shown in Table 2.

Table 2 Sanitation technologies with SFD reference variable and percentage of the population using each type.

S.N.	Sanitation Technologies	SFD Reference Variable	Percentage of Population
1	User interface discharged directly to open or stormwater drain	T1A1C6	2%
2	Septic tank connected to open or stormwater drain	T1A2C6	1%

3	Fully lined tank (sealed) no outlet or overflow	T1A3C10	27%
4	Lined tank with impermeable walls and open bottom connected to soak pit	T1A4C5	10%
5	Lined tank with impermeable walls and open bottom connected to an open drain or storm sewer	T1A4C6	6%
6	Lined tank with impermeable walls and open bottom, connected to don't know where	T1A4C9	1%
7	Lined tank with impermeable walls and open bottom, no outlet or overflow	T1A4C10	30%
8	Lined pit with semi-permeable walls and open bottom, no outlet or overflow	T1A5C10	9%
9	Unlined pit, no outlet or overflow	T1A6C10	11%
10	Containment (septic tanks, fully lined tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded – connected to water bodies, or open ground or "don't know where"	T1B10C10	2%
11	Open defecation	T1B11C7 To C9	1%

The municipality have not developed any forms of sewer network but approximately 2% of population in ward number 1 and 4 have practiced direct discharge of waste from toilets into open drain or stormwater drain (T1A1C6). The technically appropriate septic tank has been rarely installed in the municipality. Only 1% of population have septic tanks and these are connected to open drain or stormwater.

The anaerobic biogas digesters are considered as fully lined tank which is regularly emptied and efficiently treated for the preparation of SFD matrix. Thus in an aggregate27% of populations used fully lined tank with no outlet or overflow (T1A3C10) to manage FS.

Lined tanks with impermeable walls and open bottoms are predominant containment installed in majority of households. The containment has either no outlet or connected to various sinks. Upon assessment of risk of ground water pollution, the following types were estimated for preparation of SFD matrix.

i. Connected to soak pit without significant risk of groundwater pollution (T1A4C5) is 10%,
ii. Connected to an open drain without significant risk to groundwater contamination (T1A4C6) was 6%,
iii. Connected to 'Don't Know Where' (T1A4C9) is 1%.
iv. No outlet or overflow without a significant risk of groundwater pollution (T1A4C10) is 10%

In rural areas of the municipality, pits either lined or unlined are popular among households. Lined pit with semi-permeable walls and open bottom, no outlet or overflow (T1A5C10) was used by 9% of the population while unlined pits (T1A6C10) by 11%. Unfortunately, 2% containments of 2% of the population have been damaged (T1B10C10). Open defecation still exists in the municipality, where approximately 1% of the population defecates in nearby forest, rivers or open lands (T1B11 C7 TO C9).

Figure 7: Construction of Anaerobic Biogas Digester, Lined tank with open bottom and semipermeable lined pit with open bottom

3.2.2 Risk of Groundwater Pollution

The major source of drinking water in the municipality is surface water. Natural springs and streams have tapped and delivered in households. Waling Small Town Water Supply and Sanitation Organization (WSTWSSO) is the largest water service provider in the municipality. The organization has been distributing drinking water in wards 1, 8, 9 and 10 through Lalupate Drinking Water Scheme, Madikhola Drinking Water Scheme, Mushisanwara Drinking Water Supply Scheme, Sete Kahery Drinking Water Scheme and Chisapaani Drinking Water Scheme. The organization has been connected 1704 private and public taps (source). Similarly in other wards community managed water supply scheme have been developed. The household surveyed conducted by ENPHO in 2019 revealed that 72% of

Figure 8: Office building and Various Units of Waling Small Town Water Supply Scheme

households tap connected through piped water supply schemes, 16% depends on public taps from those schemes and rest have tapped natural springs and streams (source).

The data provided by the WSTWSSO on water quality report shows that water samples from source, reservoir and taps were not contaminated as shown in Appendix 7. The microbiological parameters were with National Drinking Water Quality Standards (NDWQS) of the country. Similarly, no any complaints on water contamination has been reported in the municipality from community water users. Hence, the risk to groundwater pollution from containments is assumed to be low. However, there is possibilities that natural springs get contaminated from current management practices of the faecal sludge.

3.2.3 Emptying of Faecal Sludge

Emptying is one of the major components of the sanitation value chain. It ensures proper functioning of containment basically for septic tank which functioned well until the volume of sludge is one-third of the total volume of the tank. Also, in other containments, regular emptying prevents overflow of the sludge and blockages. Anaerobic biogas digester has been designed such that treated slurry is automatically overflowed from the outlet chamber which is used as manure. Thus, toilet connected to anaerobic biogas digester has been assumed as regularly emptied.

Figure 9: Desludging Labour in action without any protective equipment

Both traditional manual scavenging and mechanical emptying of the containments are practised in the municipality. However, only 4% of containments have been emptied at least once since the installation excluding anaerobic biogas digester. The assessment on never emptying containments showed most of the containments are bigger and geographical setting has favoured high infiltration from unlined walls and open bottom. The average size, number of users and age of the containment of never emptied containment is shown in table 3.

Table 3: Description on average size, average number of users and average age of never emptied containment

S.N.	Types of Containments	Average Size (m^3)	Average no. of Users	Average Age of Containment
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

The description of types of technology and portion of emptied FS is shown in table 4.

Table 4: Description on types of sanitation technology and proportion of faecal sludge emptied

S.N.	Sanitation Technologies	SFD Reference Variable	Percentage of Emptied containment	Emptied Proportion of FS	Actual Proportion of emptied FS
2	Fully lined tank (sealed) no outlet or overflow	T1A3C10	77%	90%	63%
3	Lined tank with impermeable walls and open bottom connected to soak pit	T1A4C5	2.5%	90%	2%
4	Lined tank with impermeable walls and open bottom connected to an open drain or stormwater	T1A4C6	50%	90%	45%
5	Lined tank with impermeable walls and open bottom, no outlet or overflow	T1A4C10	3.5%	90%	3%
6	Lined pit with semi-permeable walls and open bottom, no outlet or overflow	T1A5C10	9%	80%	7.2%
7	Unlined pit, no outlet or overflow	T1A6C10	4.5%	80%	4%
8	Containment (septic tanks, fully lined tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded –connected to water bodies, or open ground or “don’t know where”	T1B10C7 to C9	11%	80%	9%

The value for the emptied portion of FS (column 4 in table 4) was obtained with reference to household survey and KII with desludging service providers. It was revealed in manual emptying practises the tank was emptied completely. In mechanical emptying, the portion of FS emptied is determined by amount of liquid present in the sludge and height of filter cap installed with suction hose to prevent blockages in it during pumping. Also, the increase in depth of containment reduce emptying portion of FS from the containment. Generally, lined tanks with higher volume of liquid 90% of FS is pumped out while in pits due to high viscosity and lengthy-time for adding water and stirring, almost 25% to 30% are left in the containment (source KII). Thus, the portion of FS emptied from lined tank and pits were estimated 90% and 80% respectively with respect to both mechanical and manual emptying practises.

3.2.4 Treatment and Disposal/Reuse

Figure 10: Direct Disposal of Faecal Sludge in farmland

The municipality does not have any forms of the treatment plant for faecal sludge. However, the percentage of population using anaerobic biogas digester in good condition were considered as proportion of emptied FS delivered to treatment plant (F4). It was observed of the anaerobic biogas digester were properly maintained. Among these, 94% of population used treated slurry as soil conditioner or mixed in with compost pit before applying into farmland. Hence, the portion of the FS delivered to treatment which is treated (F5) is assumed at 94%. While the FS emptied and transported by the private desludging entrepreneur is disposed in available farmland as shown in figure 10, though the municipal authority has been prohibited the act.

3.3 SFD Graphic

Figure 16 shows the SFD graphic for Waling Municipality. It shows that, currently, 84% of faecal sludge is being safely managed. More accurately, 16% of faecal sludge has been safely managed in the household level anaerobic biogas digester where FS is treated and applied as a soil conditioner. 68% of faecal sludge accumulated in the containment ensures a safe level of protection from faeces that are not emptied and safely stored, i.e. pathogen transmission to the user or the general public is limited. However, a significant proportion of this safely managed sludge comes from tanks and pits with semi-permeable walls and open bottom without outlet or overflow (T1A4C10 and T1A5C10) which are not emptied. Similarly, the other portion comes from FS not emptied from fully lined tank (T1A3C10). In the long term use as the population and population density increases, this practice would not be sustainable and improve sanitation management services may well be required since those tanks eventually will require emptying services. Also, currently the effect caused by infiltration from tanks with semi permeable and open bottoms on groundwater is unknown. Thus, the figure would not remain same once the consequences of current practice is observed. Whereas, FS is emptied but disposed into environment without treatment and discharge of FS directly into stormwater drain is seen as unmanaged FS that accounts to 8% of total FS. Also, 6% of FS is not contained- not emptied and gets infiltrated into groundwater from technically inefficient containment such as unlined pits, damaged containment, lined tank or pit with open bottoms.

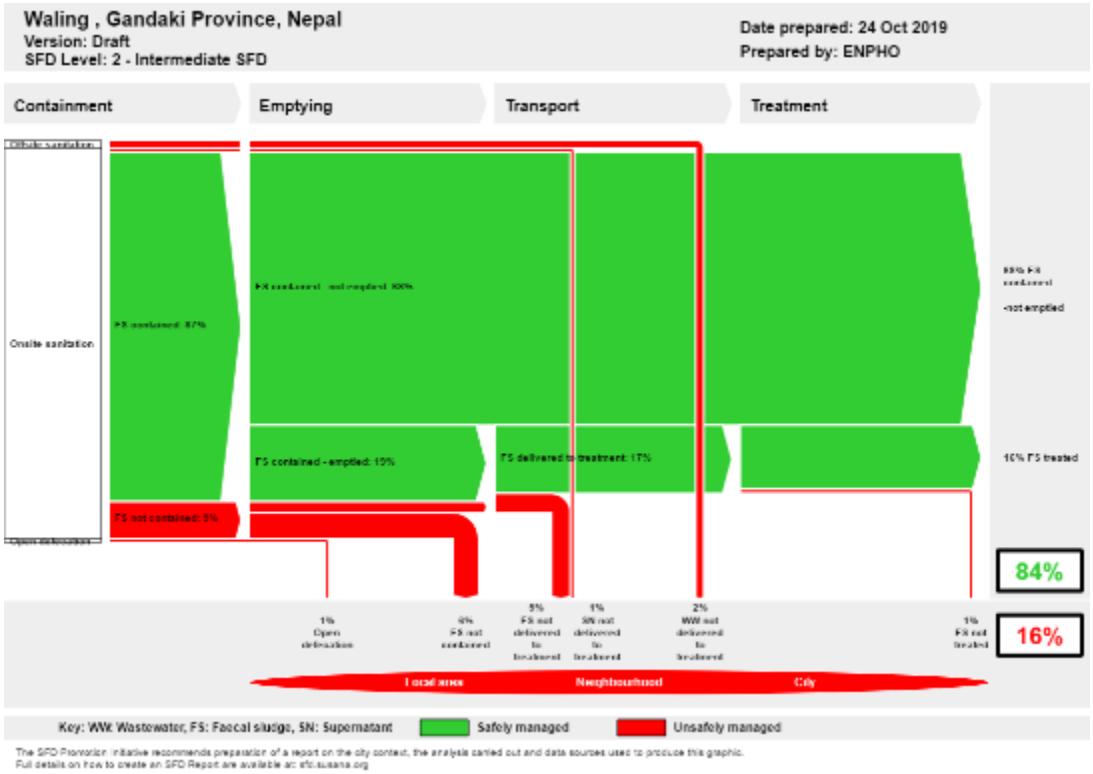

Figure 11 SFD graphic of Waling Municipality.

Offsite Sanitation System

Nepal Demographic and Health Survey reported that 6.9% of the urban population in the country have offsite sanitation systems connected to piped sewer networks (MoH, Nepal, New ERA and ICF, 2017). However, no piped sewer networks have been developed in Waling Municipality. Despite the fact, 3% of FS is being either directly discharge from toilet or septic tank.

Onsite Sanitation System

The population relying on onsite sanitation system is 96%. Among them, 87% are using technically effective containment that safely stores faeces and 9% with unsafe containment. The descriptions on flow of FS from the onsite sanitation system as shown in the SFD graphic is explained in Table 5.

Table 5 Description of the percentages of the SFD graphic.

Variables	Description	Per cent
FS contained not emptied	FS that is contained within an onsite sanitation technology and not removed where there is no significant risk to groundwater pollution. These containments are fully lined tanks (T1A3C10), lined tanks with impermeable walls and open bottom without outlet or overflow (T1A4C10), lined pit with semi-permeable walls and open bottom without outlet or overflow (T1A5C10) and Unlined pits (T1A6C10) without significant risk to groundwater.	68%
FS contained – emptied	FS that is contained in onsite sanitation technology and emptied either mechanically or manually.	19%

FS delivered to a treatment	FS that is removed from onsite technology and delivered to the treatment plant. In this particular case, there is no FSTP and anaerobic biogas digester at household level is considered as the treatment facility.	17%
FS not treated	FS delivered into treatment plant but not treated and disposed of haphazardly.	1%
FS treated	FS treated in a well functioned anaerobic biogas digester	16%
FS not contained	FS that is not contained within an onsite sanitation technology such as unlined pits connected to an open	9%
FS not contained emptied	FS that is removed from an onsite sanitation technology where FS is not contained which is emptied using either motorized or manual emptying equipment.	3%
FS not contained – not emptied	FS that is not contained within an onsite sanitation technology and not removed which may either remain in the containment or infiltrate to ground polluting groundwater.	6%
FS not delivered to the treatment	FS emptied from an onsite sanitation system either FS contained or not but not delivered to the treatment plant.	2%
SN not delivered to the treatment	SN not contained from septic tanks connected to open drain or storm sewer.	1%

Open Defecation

Despite declaring Open Defecation Free zone, approximately 1% of the population practised open defecation in the nearby jungles, rivers and open spaces.

4 Stakeholder Engagement

4.1 Key Informant Interviews

The KIIs and sharing of the objective of the study were conducted with the major stakeholders in sanitation sector in the municipality. Mayor of the municipality and staffs from sanitation section of the municipality were interviewed on current sanitation services. Also, officer from Waling Small Town Water Supply and Sanitation Organization was interviewed focusing on sources of drinking water and their quality.

Also, the proprietor of private desludging service provider was interviewed on emptying services in the municipality. The interview was mainly focused on their current service area, a number of emptying vehicles, its registration, service charges and challenges they faced in the business.

4.2 Household Survey

A random household survey was conducted in all wards of the municipality through mobilization of volunteers selected by the municipality. The household survey was conducted using mobile application “KOBOCOLLECT” after orientation. Two days orientation training was conducted to make volunteer understand the objective of the survey, technical terms regarding

sanitation, use of mobile application and conducting random sample survey as shown in Figure 18.

4.2.1 Determining Sample Size

The number of households to be sampled in the municipality was determined by using Cochran (1963:75) sample size formula $n_o = \frac{Z^2 pq}{e^2}$ and its finite population correction for the proportion $n = \frac{n_0}{1+\frac{(n_0-1)}{N}}$.

Where,

Z^2	1.96	At the confidence level of 95%.
p	0.5	Assuming that about 50% of the population should have some sanitation characteristics that need to be studied (this was set at 50% since this percentage would yield the maximum sample size since the percentage of the population practising some form of sanitation is not clearly known at the intervention sites).
q	1-p	
e	±5%	Level of precision or sampling error.
N		A total number of population (households in the municipality).

This is followed by proportionate stratification random sampling such that each ward in the municipality is considered as one stratum. The sample sized required in each ward is calculated as

$n_h = \frac{N_h}{N} \times n$, where, N_h is a total population in each stratum.

Thus, a total of 377 households were sampled from 10917 households distributed in 9 wards with proportionate stratification random sampling as shown in Appendix 5.

4.2.2 Direct Observation

Various sanitation technologies in the households in all the wards were observed and visual references were kept. Also, observation of the emptying and transportation of the containments was carried out. The disposal site of both the municipality and private entrepreneur was observed during the usage.

4.2.3 Sharing and Validation of Data

The sharing and validation of findings on sanitation status were conducted in the municipality hall participated by the mayor, ward chairpersons, general members of municipal council, municipal staff and other relevant stakeholders, shown in Figure 12. 51 participants attended the program. The participants responded that the findings of this study reflected the current sanitation situation of the municipality. During the program Mayor of Waling municipality stressed need of FSM plan and policy at their municipality, which will help further in Faecal

Sludge Management of the municipality. The list of participants with their designation is attached in Appendix 8.

Figure 12 A Sharing program on findings on sanitation status of Waling Municipality

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We would like to acknowledge United Cities Local Government - Asia Pacific (UCLG ASPAC) for funding the Municipalities Network Advocacy on Sanitation in South Asia (MuNASS) and Municipal Association of Nepal (MuAN) for coordination with the municipality.

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7 Appendix

7.1 Appendix 1: Roles and Responsibility of Various Tiers of Governments Delineated in Drafted SDP 2016 - 2030

Table 6: Roles and responsibilities of various tiers of governments delineated in drafted SDP 2016 - 2030

System Classification		Minimum Key HR Required	Regulation & Surveillance	Financing & Construction	Ownership of System	Service Delivery	
Size	Sanitation					Provision	Production
Small	Onsite sanitation	Water Supply and Sanitation Technician (WSST)	Federal and or Provincial Government	User+/ community+/ other			
Medium	Septage Management	Sub-engineer	Federal and or Provincial Government	Provincial+/ Local Govt+/ Community+/ Private Sector		Local Govt	Users committee/ Utility manager
Large	Septage or FSM Management	WASH Engineer + finance & admin staff	Federal and or Provincial Government	Provincial+/ Local Govt+/ Community+/ Private Sector		Local Govt	Utility Manager
Mega	Septage / FSM Management	WASH Engineer + finance & admin staff	Federal and or Provincial Government	Provincial+/ Local Govt+/ Community+/ Private Sector		Local Govt	Utility Manager

7.2 Appendix 2: Number of Institutions in the survey

Table 7 Number of the surveyed institution.

Ward	Financial Institutions	Hotel/ Home Stay	Educational Institutions	Government /Non-government Office	Health Care Center	Total
1	5		1	1		7
2	2		2		1	5
3			2	1	1	4
4	1	1	3		1	6
5			2	2		4
6			2	3	1	6
7			3		1	4
8	16		2	1	1	20
9	3	1	3	3	1	11
10	1	3	2			6
11	1		3		2	6
12			5	1		6
13	6		2		1	9
14			5	1	1	7
Total	**35**	**5**	**37**	**13**	**11**	**101**

7.3 Appendix 3: SFD Selection Grid

List A: Where does the toilet discharge to? (i.e. what type of containment technology, if any?)	List B: What is the containment technology connected to? (i.e. where does the outlet or overflow discharge to, if anything?)									
	to centralised combined sewer	to centralised foul/separate sewer	to decentralised combined sewer	to decentralised foul/separate sewer	to soakpit	to open drain or storm sewer	to water body	to open ground	to 'don't know where'	no outlet or overflow
No onsite container. Toilet discharges directly to destination given in List B					Significant risk of GW pollution Low risk of GW pollution	T1A1C6				Not Applicable
Septic tank					Significant risk of GW pollution Low risk of GW pollution	T1A2C6				
Fully lined tank (sealed)					Significant risk of GW pollution Low risk of GW pollution					T1A3C10
Lined tank with impermeable walls and open bottom	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution T1A4C6	T1A4C6			T1A4C9	Significant risk of GW pollution T1A4C10
Lined pit with semi-permeable walls and open bottom	Not Applicable									Significant risk of GW pollution T1A5C10
Unlined pit										Significant risk of GW pollution T1A6C10
Pit (all types), never emptied but abandoned when full and covered with soil										Significant risk of GW pollution Low risk of GW pollution
Pit (all types), never emptied, abandoned when full but NOT adequately covered with soil										
User interface failed, damaged, collapsed or flooded										
Containment (septic tank or tank or pit latrine) failed, damaged, collapsed or flooded										T1R10C10
No toilet. Open defecation	Not Applicable								T1B11 OT TO C9	Not Applicable

7.4 Appendix 4: Stakeholder identification

Table 8 Stakeholder Identification.

S.N.	Stakeholder group	In Waling Municipality context
1	Municipal Council	Municipal Council, Waling Municipality
2	Ministry in charge of water supply and sanitation	Department of Water Supply and Sewerage Management
3	Ministry in charge of environmental protection	Department of Environment
4	Service provider for solid waste management	Sanitation Section of Waling Municipality
5	Service provider for construction of onsite sanitation	Local masons
6	Service providers for emptying and transportation	Sanitation section of Waling Municipality, Private mechanized emptying service entrepreneurs
7	Service provider for operation and maintenance of treatment infrastructure	N/A
8	Market participants practising end-use of FS end products	N/A
9	Service provider for disposal of FS (sanitary landfill)	Private mechanized emptying service entrepreneurs
10	External agencies associated with FSM services	Municipal Association Nepal, Environment and Public Health Organization

7.5 Appendix 5: Tracking of Engagement

Table 9 Tracking of Stakeholder engagement.

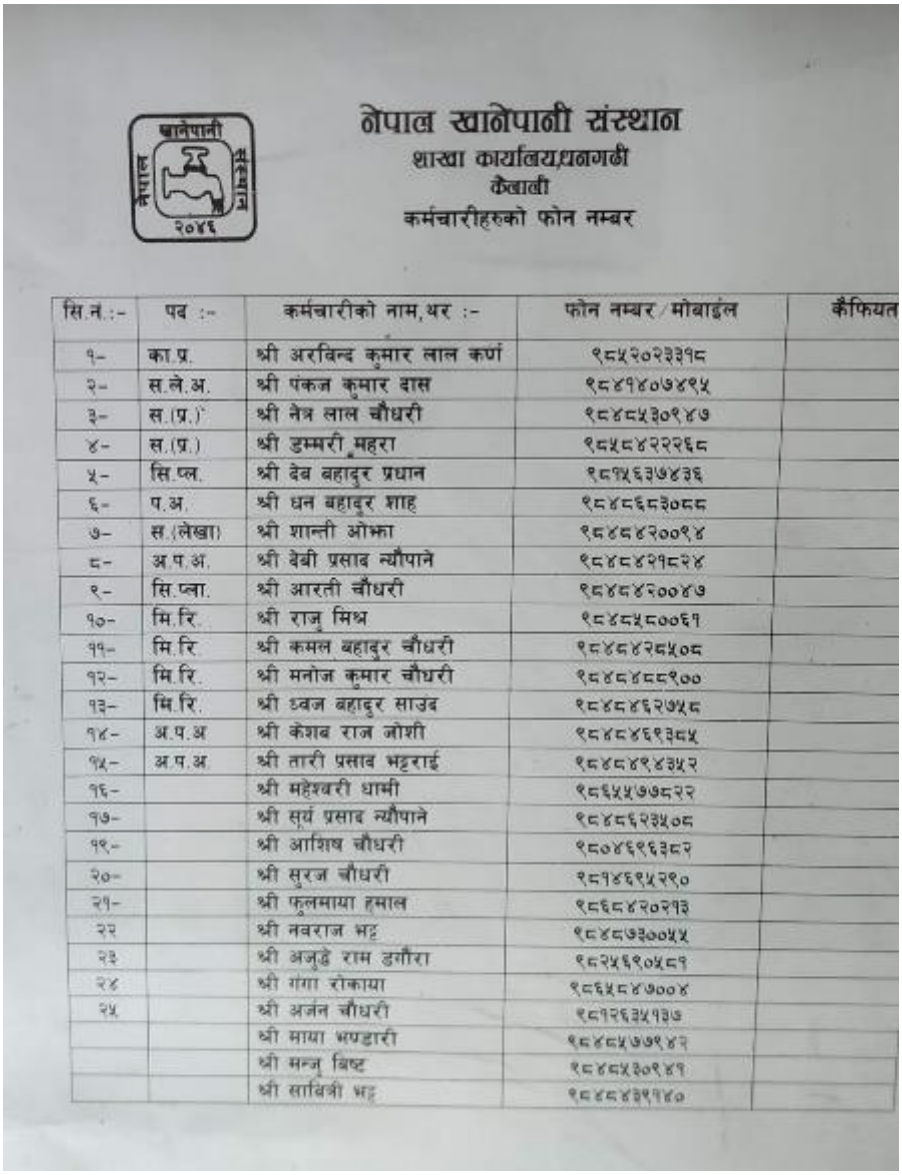
S.N.	Name of Organization	Person	Designation	Date of Engagement	Purpose of Engagement
1	Waling Municipality	Dilip Pratap Khand	Mayor		KII (1)
2	Sanitation Section, Waling Municipality	Padam Prashad Pandey	Officer		KII (2)
3	Waling Small Town Water Supply and Sanitation User's Organization		Secretary		KII (3)
5	Bhola Septic Tank Cleaners	Bhola Shah	Proprietor	24 April 2019	KII (5)
6	Waling Municipality	Dependra Malla	Engineer	19 April 2019	Household survey
7	Waling Municipality		Local Volunteers	19 to 24 April 2019	Household survey

7.6 Appendix 6: Number of household in each ward and sampled number of household

Table 10 Number of total household in each ward and sampled households.

Ward	Households	Sample
1	837	28
2	527	16
3	346	12
4	511	17
5	562	19
6	740	24
7	499	14
8	1,209	45
9	1,670	60
10	717	30
11	673	25
12	619	24
13	900	33
14	1,107	30
Total	**10917**	**377**

7.7 Appendix 7: Water Quality Report from Waling Small Town Water Supply and Sanitation User's Organization



नेपाल खानेपानी संस्थान
शाखा कार्यालय,धनगढी
कैलाली
कर्मचारीहरुको फोन नम्बर

सि.नं.:-	पद :-	कर्मचारीको नाम,थर :-	फोन नम्बर / मोबाईल	कैफियत
१-	का.प्र.	श्री अरविन्द कुमार लाल कर्ण	९८५२०२३३१८	
२-	स.ले.अ.	श्री पंकज कुमार दास	९८४१४०७४९५	
३-	स.(प्र.)	श्री नेत्र लाल चौधरी	९८४८५३०९४७	
४-	स.(प्र.)	श्री डम्मरी महरा	९८५८४२२२६८	
५-	सि.प्ल.	श्री देब बहादुर प्रधान	९८१५६३७४३६	
६-	प.अ.	श्री धन बहादुर शाह	९८४८६८३०८८	
७-	स.(लेखा)	श्री शान्ती ओझा	९८४८४२००९४	
८-	अ.प.अ.	श्री बेबी प्रसाद न्यौपाने	९८४८४२१८२४	
९-	सि.प्ला.	श्री आरती चौधरी	९८४८४२००४७	
१०-	मि.रि.	श्री राजु मिश्र	९८४८५८००६१	
११-	मि.रि.	श्री कमल बहादुर चौधरी	९८४८४२८५०८	
१२-	मि.रि.	श्री मनोज कुमार चौधरी	९८४८४८८९००	
१३-	मि.रि.	श्री ध्वज बहादुर साउद	९८४८४६२७५८	
१४-	अ.प.अ	श्री केशब राज जोशी	९८४८४६९३८५	
१५-	अ.प.अ	श्री तारी प्रसाद भट्टराई	९८४८४९४३५२	
१६-		श्री महेश्वरी धामी	९८६५५७७८२२	
१७-		श्री सूर्य प्रसाद न्यौपाने	९८४८६२३५०८	
१९-		श्री आशिष चौधरी	९८०४६९६३८२	
२०-		श्री सुरज चौधरी	९८१४६९५२९०	
२१-		श्री फुलमाया हमाल	९८६८४२०२१३	
२२		श्री नवराज भट्ट	९८४८७३००५५	
२३		श्री अजुढे राम डगौरा	९८२५६९०५८१	
२४		श्री गंगा रोकाया	९८६५८४७००४	
२५		श्री अर्जन चौधरी	९८१२६३५१३७	
		श्री माया भण्डारी	९८४८५७७९४२	
		श्री मन्जु बिष्ट	९८४८५३०९४१	
		श्री सावित्री भट्ट	९८४८४३९१४०	

7.8 Appendix 8: List of Participants in Sharing and Validation of findings

S.N.	Name	Organization	Designation
1	Dilip Pratap Khand	Waling Municipality	Mayor
2	Kalpana Tiwari	Waling Municipality	Deputy Mayor
3	Guru Datta Subedi	Waling Municipality	CAO
4	Nara Bahadur Poudel	Waling Municipality	Legal section Chief
5	Bigyan Ghimire	Waling Municipality	Smart City Expert
6	Saroj Sharma Wagle	Waling Municipality	IT Officer

7	Dependra Malla	Waling Municipality	Civil Engineer/ Project focal person
8	Padam Prashad Pandey	Waling Municipality	Health Officer
9	Baburam Sapkota	Waling Municipality	Under Secretary
10	Anand Prashad	Waling Municipality	Ward Chairperson
11	Mani Prashad Pangeni	Waling Municipality	Water section
12	Nil Krishna Gaire	Waling Municipality	Sub Engineer
13	Kasturi Aslami	Waling Municipality	Agriculture Section
14	Anusha Kafle	Waling Municipality	Environment unit
15	Sankhawati Lamichane	Waling Municipality	Jobs Coordinator
16	Dhruba Subedi	Waling Municipality	Waling 8
17	Gana Bahadur Gurung	Waling Municipality	Social development
18	Danu bahadur Pandey	Waling Municipality	Waling 8 representative
19	Dhana Bahadur Kamal	Waling Municipality	Waling 10 representative
20	Er. Mani Prasad Tiwari	Waling Municipality	Engineer
21	Debu kumara Shrestha	Waling Municipality	Chief animal service
22	Sanjay Pandey	Waling Municipality	Engineer, Reconstruction
23	Hemanta Air	Waling Municipality	Engineer
24	Kamal Prasad Pandey	Waling Municipality	Public Health Inspector
25	Satish Jung Shahi	UCLG ASPAC	KMO
26	Jony Mainaly	MuAN	Environment Law Expert
27	Parasu Ram Lamsal	Waling Municipality	Police
28	Anantaraj Gaire	Waling Municipality	10 Ward president
29	Khumkanta Aryal	Waling Municipality	Officer
30	Jhamar Bahadur Shrestha	Waling Municipality	14 ward president
31	Pandu Kumar thapa	Waling Municipality	7 ward president
32	Shyam Krishna Shrestha	Waling Municipality	6 ward president
33	Kamal Prasad subedi	Waling Municipality	8 ward president
34	Hopali syanjali	Waling Municipality	7 ward representative

35	Gita khanal	Waling Municipality	8 ward representative
36	Jamuna K C	Waling Municipality	5 ward representative
37	Yug maya pangeni	Waling Municipality	8 ward representative
38	Er. Prakash Aryal	Waling Municipality	7 ward representative
39	Lekhnath aryal	Waling Municipality	Animal service section
40	Bidhya Shrestha	Waling municipality small town project	Small town drinking water
41	Dol raj Gaire	Waling Municipality	Animal Service
42	Muskan Shrestha	MuAN	Specialist
43	Swom Bahadur Sarki	Waling Municipality	Municipal Council member
44	Jagam Shrestha	ENPHO	SWO
45	Pot Prasad Lamsal	Waling Municipality	2 ward representative
46	Buddha Bajracharya	ENPHO	Project coordinator
47	Gyan prashad aryal	Waling Municipality	Officer
48	Krishna Rana	Waling Municipality	Officer
49	Durga Sharma	Waling Municipality	Assistant
50	Chabi Ale	Waling Municipality	Secretary
51	Kailash Aryal	Waling Municipality	Sub Engineer

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आज मिती २०७६ साल कार्तिक २२ गते सोमवारका दिन नेपाल नगर पालिका संघ को आयोजनामा वातावरण तथा जनस्वास्थ्य संस्था (एन्को) को प्राविधिक सहयोगमा संचालित Municipalities Network Advocacy on Sanitation in South Asia परियोजना अन्तर्गत वालिङ नगरपालिकामा "दिसाजन्य लेदो व्यवस्थापन नीति निर्माण" कार्यशाला तथा "Detail Project Report (DPR) तयारी प्रारम्भीक बैठक" वालिङ नगरपालिकाको नगर प्रमुख श्री दिलीप प्रताप खाँडको अध्यक्षतामा निम्न उपस्थीती बिच तपसीलका विषयमा छलफल भै सम्पन्न भयो।

उपस्थीती :

(१) श्री दिलिप प्रताप खाँड, नगर प्रमुख, वालिङ न.पा.
(२) श्री कल्पना तिवारी नगर उपप्रमुख वालिङ न.पा.
(३) श्री शुक्ला सुवेदी प्रमुख प्रशासकिय अधिकृत
(४) श्री नर बहादुर पौडेल कानुन शाखा प्र.
(५) श्री मिलन थिमिरे स्मार्ट सिटि विज्ञ
(६) श्री सरोज शर्मा वाग्ले IT Officer
(७) श्री दिपेन्द्र मल्ल / Project focal person Civil Engineer / Project focal person
(८) श्री पदम प्रसाद पाण्डे अधिकृत (सा. ई.)
(९) श्री लालुराम सापकोटा - सहसचिव की.नि.पा.
(१०) आनन्द प्रसाद क्षे.अध्यक्ष की.नि.पी.१३
(११) प्रजित प्रसाद पंगेनी स.का.पा. वा.न.पा.
(११) लिला काठ गैहे सब-इन्जिनियर वा.न.पा.
(१२) कस्तुरी अर्याल नि.प्रा.अ. (कृषि विकास शाखा)
(१३) मञ्जुला कोइराला स.सा.कि. (वा.न.पा.)
(१४) सरस्वती लामिछाने रोजगार संयोजक
(१५) ध्रुव चुँदी वालिङ ट -
१६. राम बहादुर गुरुङ वालिङ - ट. प्रमाणिकरण
१८ नवराज कोइराला पाण्डे वा.न.पा. ट.
१९ [illegible] पाण्डे ट
१९ खम ब. कुमाल वालीङ १०
२०. ई० हरिप्रसाद तिवारी वालिङ न.पा. कार्यालय
२१. बेबु कुमारी श्रेष्ठ पशु सेवा शाखा प्रमुख

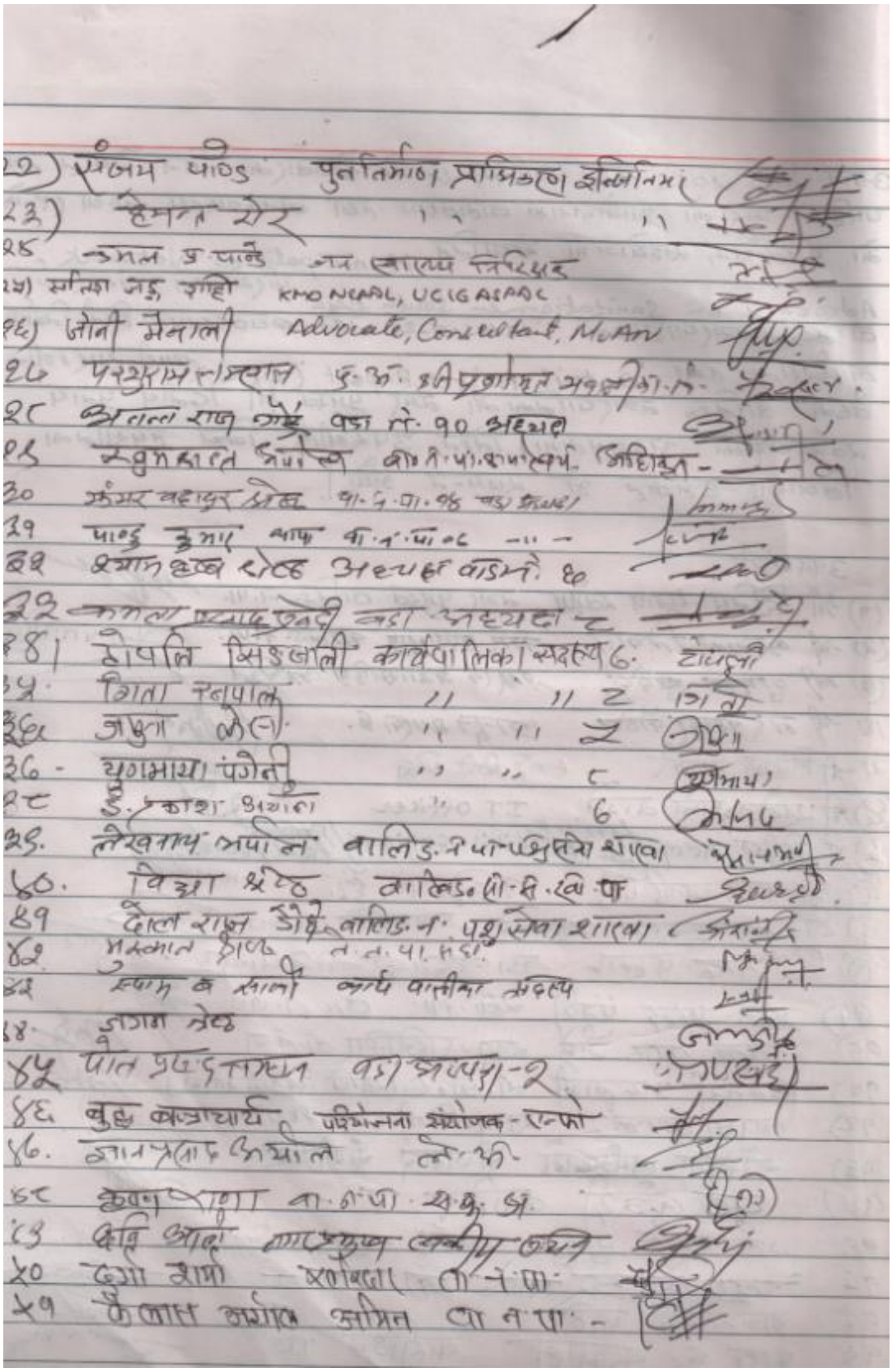

Figure 13 Attendance sheet of sharing program in Waling Municipality