

# Municipal Sanitation Synopsis of Madhesh Province, Nepal -2023



Municipalities Network Advocacy on Sanitation in South Asia Phase II (MuNASS-II)

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**Disclaimer:** The content presented in the Municipal sanitation Synopsis relies on the data available (on the date of the survey) and further validated with respective municipalities. Please note that the information and suggestions may be revised due to dynamic circumstances, updated surveys, or alterations in municipal policies. It is recommended that readers validate and compare the data with the most recent sources to ensure precision and accuracy. While the overviews strive to offer a broad perspective and recommendations, it is important to recognize that specific local conditions can differ, and stakeholders are encouraged to undertake additional research or seek guidance from local authorities for thorough decision-making.

# ACKNOWLEDGEMENT



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Furthermore, we are thankful to Mr. Ashok Kumar Byanju Shrestha, Immediate Past President and Mr. Bhim Prashad Dhungana, President of Municipal Association of Nepal (MuAN) for their gracious support.



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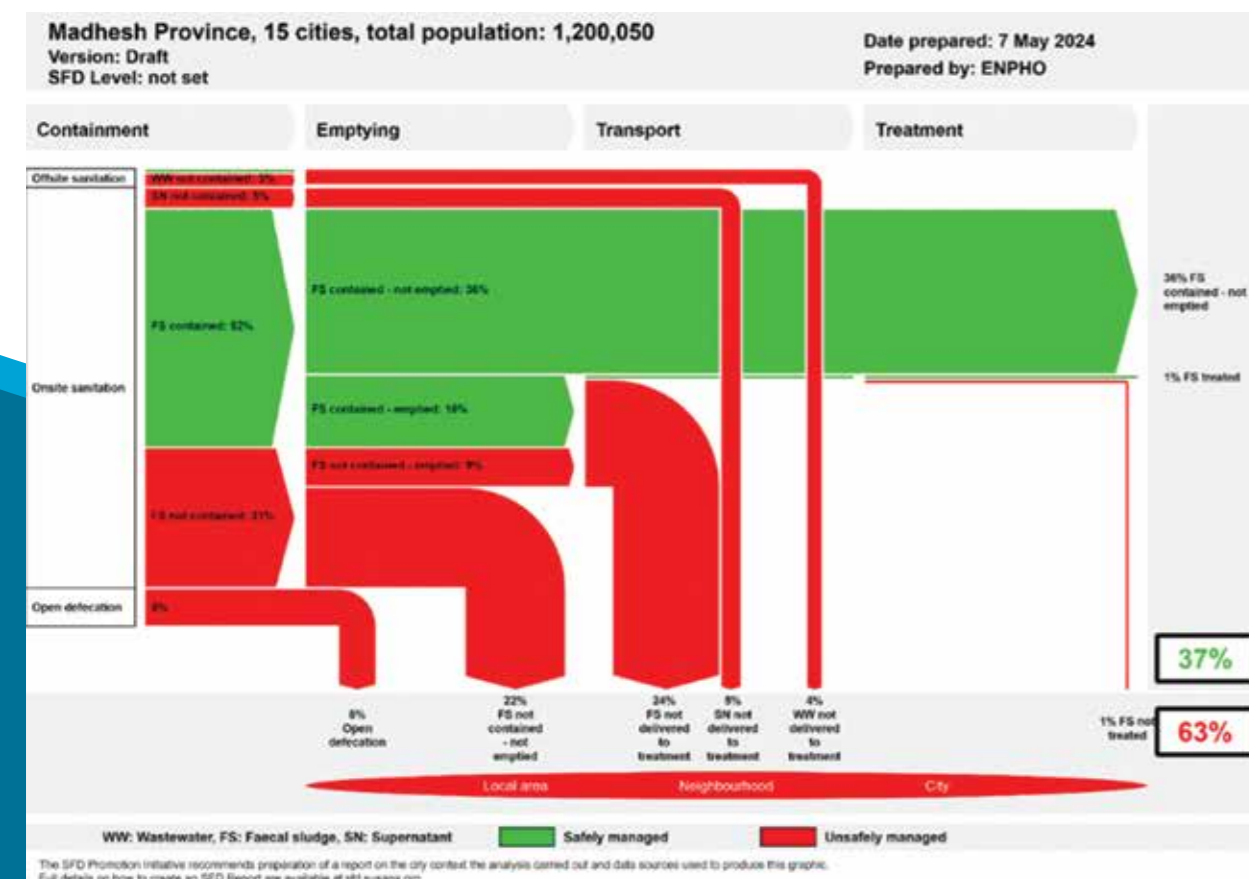


## SHIT FLOW DIAGRAM (SFD)

The shit flow diagram (SFD) illustrates that FS generated by 37% of the population is safely managed (Green). Initially, 52% of FS is safely contained and the percentage decreases to 36% when 16% of FS is emptied. This implies that 36% of FS remains safe until emptied, furthermore among 16% emptied FS, only 1% is considered treated, primarily from biogas digesters. The emptied FS remains safe depending on the emptying mechanism and the available treatment options/facilities.

In contrast, 63% of FS is managed unsafely (Red). This includes 4% of WW (1% contained and 3% not contained)

and 5% from supernatant not delivered to treatment plant. Additionally, 24% of FS is emptied (16% FS-contained and 9% FS-not contained) but not transported for treatment. Another 22% of FS neither contained nor emptied which possess the increased environmental risks. Moreover, 8% of the population still practices open defecation, exacerbating sanitation challenges. These findings highlight critical gaps that must be addressed to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATION

**Attain full ODF Status:** Continue the campaigns to sustain open defecation free status and promote behavior change.

**Upgrade infrastructure:** Retrofit and replace unsafe containment systems with appropriate techniques and technologies such as septic tanks, biogas digesters and twin pits.

**Promote Mechanical Desludging:**

- Establish formal registration process for private desludging service providers operating within municipalities.
- Raise awareness of city dwellers on the benefits of mechanical desludging service.

**Regulate Sanitation Service:**

Formulate and enforce policies and regulations mandating the use of safe sanitation technologies in new construction or renovations.

**Ensure safe disposal:** By establishing FS treatment facilities and ensure proper operation and maintenance of the facilities.

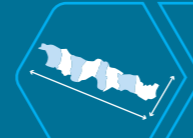
## SANITATION SYNOPSIS OF MADHESH PROVINCE, NEPAL -2023



## DEMOGRAPHICS



HOUSEHOLD: 1,156,715



AREA : 9,661 KM2



POPULATION : 6,114,600  
MALE : 3,065,751  
FEMALE : 3,048,849



POPULATION GROWTH RATE: 1.19%



METROPOLITAN CITY : 1  
SUB-METROPOLITAN CITY : 3  
MUNICIPALITIES : 73



STUDIED METROPOLITAN CITY : 1  
STUDIED SUB-METROPOLITAN CITY : 1  
STUDIED MUNICIPALITIES : 13

SOURCE: CENSUS, 2021

## ABOUT

A study on faecal sludge management is conducted in 65 municipalities across Nepal as part of the Municipalities Network Advocacy on Sanitation in South Asia II (MuNASS II) program. Specifically, study has been carried out in 15 municipalities of Madhesh Province, which include Birgunj Metropolitan City, Janakpurdharm Sub-Metropolitan City, Bardibas, Dakneshwari, Gaur, Hariwan, Jaleswar, Kolhabi, Malangwa, Mirchaiya, Mithila Bihari, Parsagadhi, Rajbiraj, Rajpur and Siraha Municipality.

## OBJECTIVE OF THE STUDY

The study aims to assess the sanitation conditions with a focus on the faecal sludge management (FSM) and develop Shit Flow Diagram (SFD) for these 65 municipalities in Nepal.

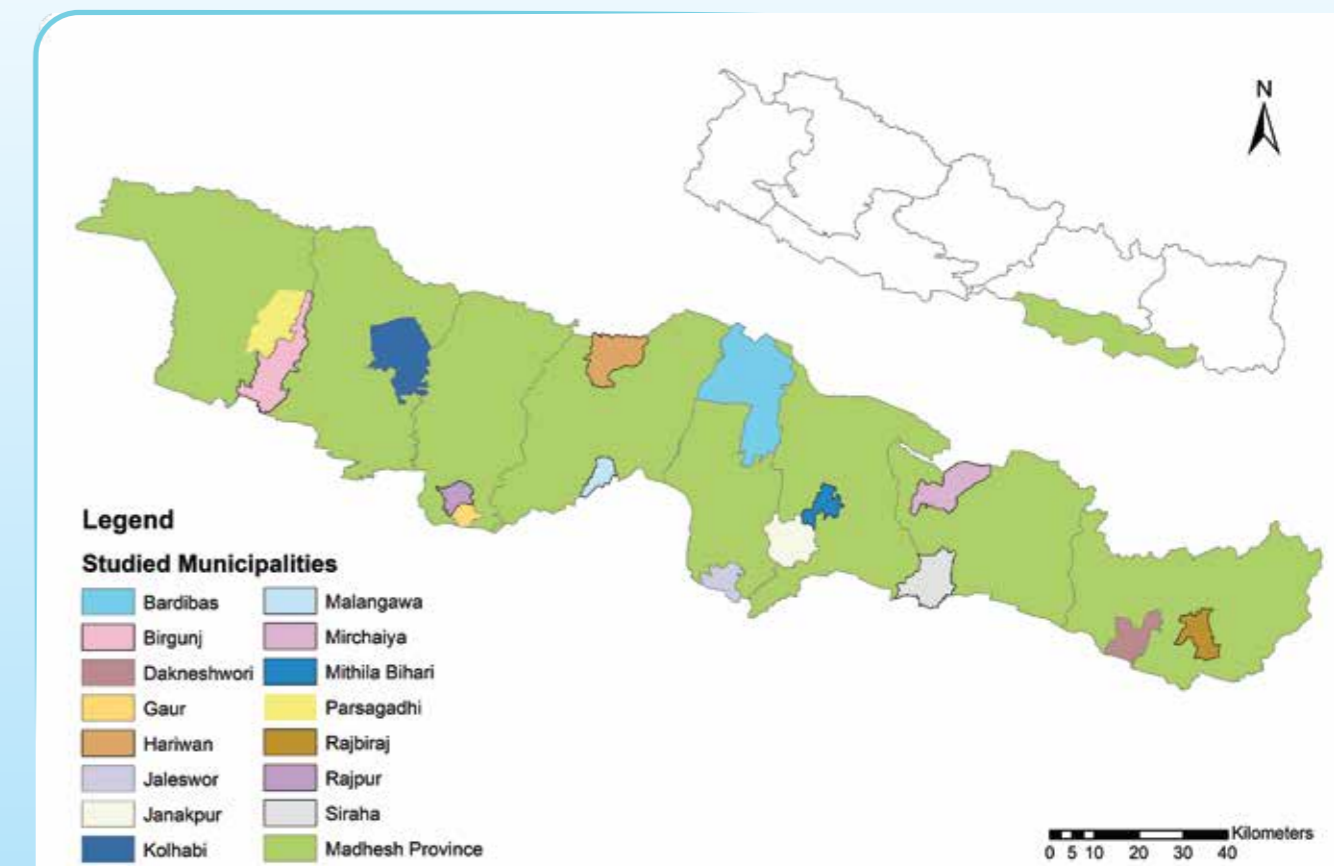
## METHODOLOGY OF THE STUDY

The methodology involved conducting a random questionnaire survey using the KOBO mobile application. Proportionate stratified random sampling was applied to determine the sample size of the households. Local enumerators selected by respective municipalities were mobilized for the survey. The enumerators, trained intensively for two days, were mobilized by respective municipalities to collect survey data. Additionally, Key Informant Interview (KII) was done with concerned stakeholder in surveyed municipalities. Analysis included computing frequency distributions, means and cross tabulations.

## PROVINCE PROFILE

Madhesh Province, covers 9,661 km<sup>2</sup> of Terai region of Nepal, comprising 6.56% of the total area of the country. It is located at 26o23'38" to 27o28'17" North latitude and 84o27'0" to 86o54'30" East longitude. It borders Koshi Province to the east and north, Bagmati Province to the north and west, and India to the south.

## MAP LOCATING STUDIED MUNICIPALITIES IN MADHESH PROVINCE





संकलन  
(User Interface)

The Sanitation Service Chain (SSC) is a comprehensive service framework delineating the sequential stages

अण्डारण  
(Containment)

रित्याउने र ढुवानी  
(Emptying & Transportation)

of faecal sludge management from excreta generation to safe disposal. It encompasses five key phases:

प्रशोधन  
(Treatment)

collection, containment, emptying and transportation, treatment, and reuse/safe disposal.

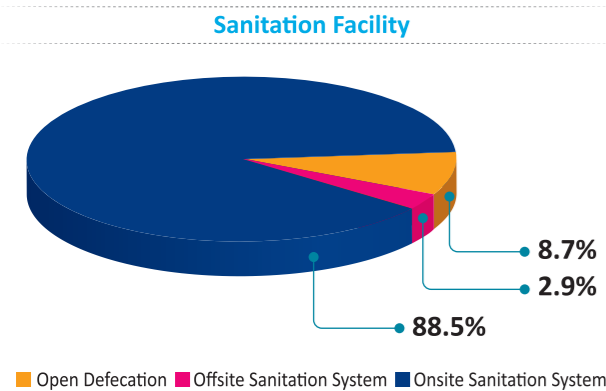
पुनः प्रयोग वा सुरक्षित विसर्जन  
(Re-use or Safe Disposal)

## USER INTERFACE FACILITY

The sanitation facility, commonly known as toilet, serves as collection point for human waste, directing it to either onsite or offsite sanitation systems.

In Madhesh province, only 2.9% of households (HHs) have toilets connected to offsite sanitation systems, such as sewerage and stormwater/open drain networks. The Birgunj Metropolitan City stands as the sole municipality with wider coverage of sewerage system connectivity.

Meanwhile, 88.5% of the HHs rely on onsite sanitation systems. Approximately 8.7% of HHs lack access to basic sanitation facilities, resorting to open defecations, while few rely on neighbors' or community toilets in the certain part of the municipalities.



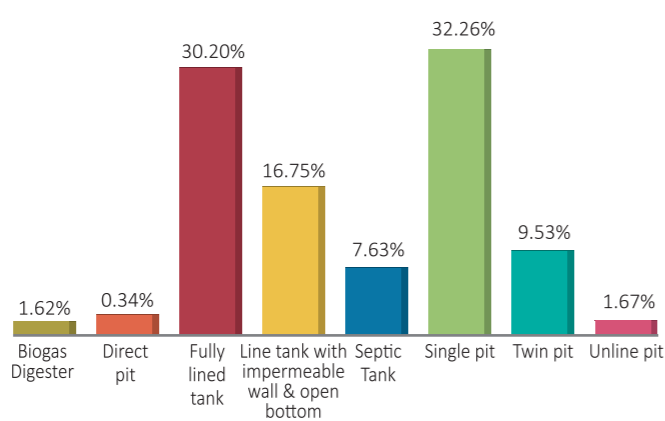
## CONTAINMENT



In areas without sewer network, human waste from toilets is stored in various types of tanks like septic tanks, biogas digesters, Eco-San vaults, pits, holding tanks, etc., for a specific period which is known as containment and the stored human waste is known as faecal sludge (FS).

In the province, 7.63%, 1.62% and 9.53% of HHs use septic tanks, biogas digesters and twin pits respectively, which is considered as safe containment. Additionally, 30.20% use fully lined tanks. However, a significant percentage i.e. 32.26% use single pits, 16.75% use lined tanks with impermeable walls and an open bottom, and 1.67% and 0.34% using unlined pits and direct pits, respectively, poses high risks of groundwater contamination.

Types of containments prevalent in Madhesh province



## EMPTYING AND TRANSPORTATION

Regular emptying is crucial for maintaining the functionality of the containment systems. The survey has revealed that 34.8% of the HHs have emptied their containments at least once since it is installed.

The containments are typically emptied at an interval of 3 to 5 years, while few systems are emptied more frequently.



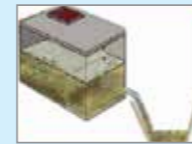
90.62% of HHs emptied mechanically (Municipal or private desludging service providers)



Both – 0.43%

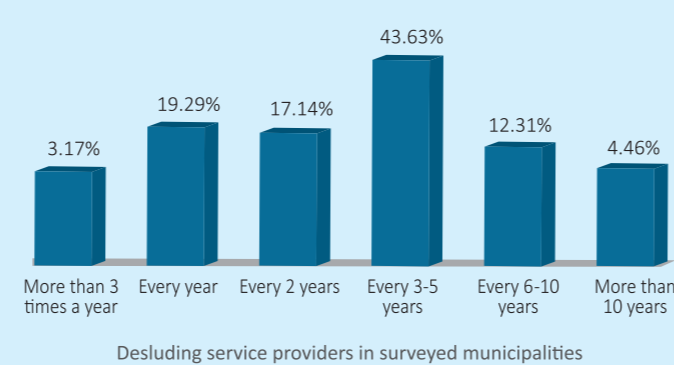


8.76% of HHs emptied containments manually - (3.19% self - emptying and 5.57% traditional sanitation workers.)



0.19% practice open emptying (Disposed into open drain during rainy season)

Emptying Interval



## TREATMENT

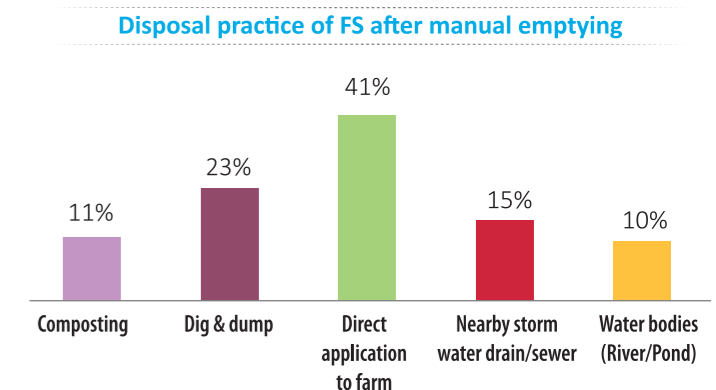
In the Madhesh province, biogas digesters are minimally utilized for FS treatment, and none of the surveyed municipalities have a dedicated Faecal Sludge Treatment Plant (FSTP). However, Birgunj Metropolitan City has a Wastewater Treatment Plant (WWTP), though currently it is non-operational; while certain components, such as unplanted sludge drying beds are being used for treating the faecal sludge.



Service Provider	Private	Municipality
No. of service providers	33	5
No. of vehicles	54	6
Capacity of vehicle (Litres)	4,000-7,500	5,000
Average trips per day per vehicle	2	2
Average service charge per trip (NPR)	Rectangular-1,500-4,000 per trip Circular-250-500 per ring	1500 - 4000

## SAFE DISPOSAL OR REUSE

The mechanically emptied FS is commonly applied directly on farmlands or dumped into the open environment. Moreover, a notable proportion of manually emptied FS is applied to farmlands or discarded into water bodies, posing serious environmental challenges.



## ESTIMATION OF FAECAL SLUDGE

The estimation of faecal sludge production in the Madhesh province was derived based on containment volume and average emptying intervals. Notably, faecal sludge from biogas digesters, which does not require emptying like other containments, was excluded from the calculation.

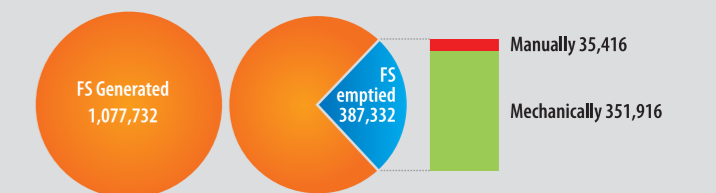
**Total estimated volume of FS generation in the 77 municipalities of Madhesh Province:** 1,077,732 m<sup>3</sup> per year which is 2,952.7 m<sup>3</sup> per day

**Total estimated volume of FS emptied in the 77 municipalities of Madhesh Province:** 3,87,322 m<sup>3</sup> per year which is 1,061.2 m<sup>3</sup> per day.

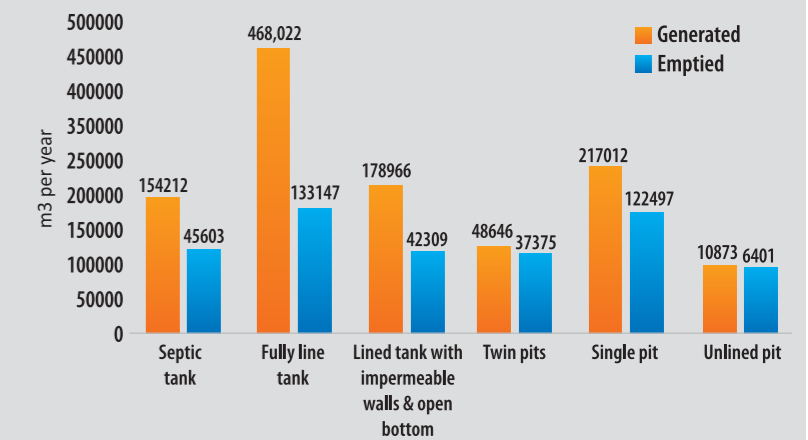
**Total estimated volume of mechanically FS emptied:** 3,51,916 m<sup>3</sup> per year which is 9,64.2 m<sup>3</sup> per day.

**Total estimated volume of manually emptied FS:** 35,416 m<sup>3</sup> per year which is 97 m<sup>3</sup> per day.

Summary on faecal sludge produced, emptied, and transported in Madhesh province (cubic meter)



FS Generated and Emptied





# BARDIBAS MUNICIPALITY

Municipal Sanitation Synopsis, Study Year-2023



## DEMOGRAPHICS



Area : 315.57 km<sup>2</sup>



Household : 16,824



POPULATION : 74,361  
Male : 36,711  
Female : 37,650



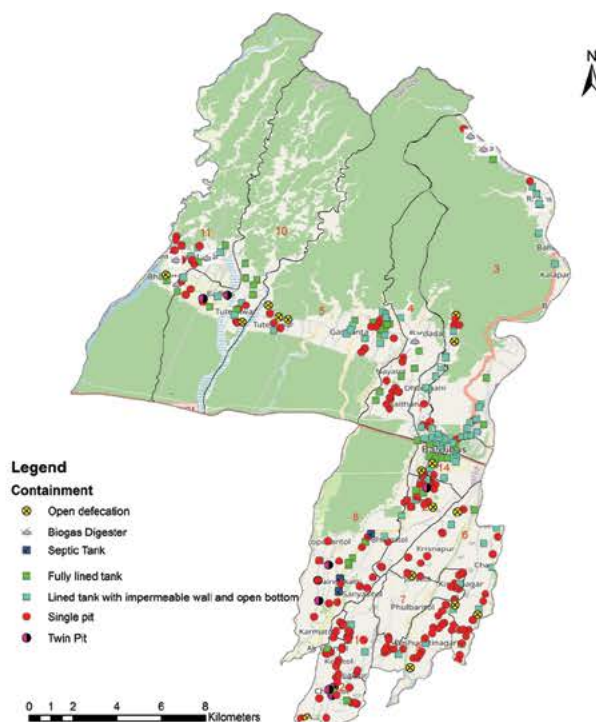
Wards : 14

Source: Census 2021

## CITY PROFILE

Bardibas Municipality is located in the Mahottari District of Madhesh Province, spanning from approximately 26°54'7"N to 27°08'46"N latitude and 85°47'42"E to 85°56'42"E longitude. The municipality's elevation ranges from 136 meters to 774 meters above sea level.

### Types of sanitation technologies at household level in Bardibas Municipality





संकलन  
(User Interface)



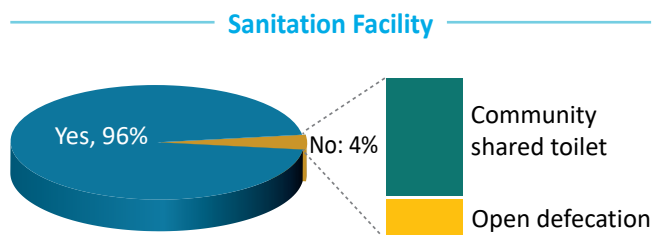
अण्डारण  
(Containment)



रिच्याउने र ढुवानी  
(Emptying & Transportation)

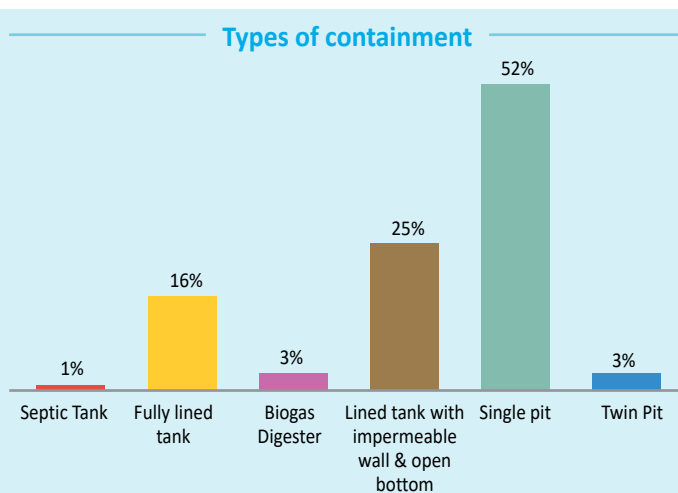
## USER INTERFACE FACILITY

The municipality attained Open Defecation Free (ODF) status on May 26, 2017. However, a HH survey revealed that 4% of HHs still lack access to toilets and practice open defecation as well as few HHs using community-shared toilets.



## CONTAINMENT

The majority of HHs rely on single pits, and lined tanks with impermeable walls and open bottoms, allowing leachate percolation, possessing a risk to groundwater contamination. Moreover, a few proportion of HHs have opted for safe technologies such as septic tanks and biogas digesters.

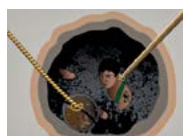


## EMPTYING AND TRANSPORTATION

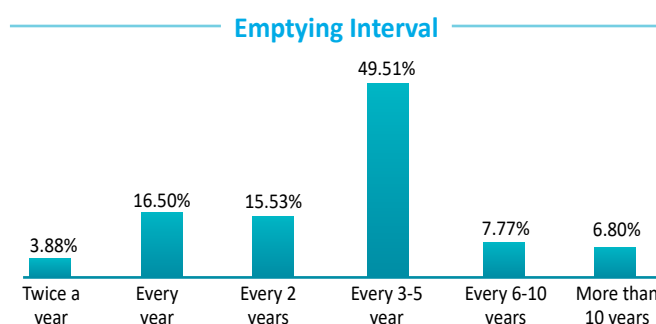
According to the survey, 29% of the HHs have emptied their containments at least once since installation. Typically, about half of the containments are emptied every 3 to 5 years.



76% emptied mechanically by private desludging service providers.



24% emptied manually (self or traditional sanitation workers)

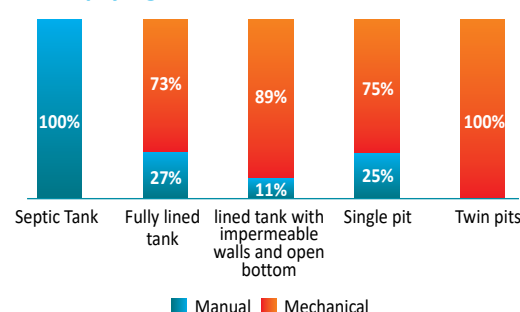


The desludging services are provided solely by private sectors in the municipality.

### Details of desludging service providers

Service Provider	Private
No. of service provider	2
No. of vehicles	4
Capacity of vehicle (Litres)	5,000 -6,000
Average trips per day per vehicle	1
Average Service Charge (NPR)	Rectangular containments - 2,000 - 2,500 per trip Circular pits - 300 per ring

### Emptying mechanism of containments





प्रशोधन  
(Treatment)



पुनः प्रयोग वा सुरक्षित विसर्जन  
(Re-use or Safe Disposal)

## ESTIMATION OF FAECAL SLUDGE

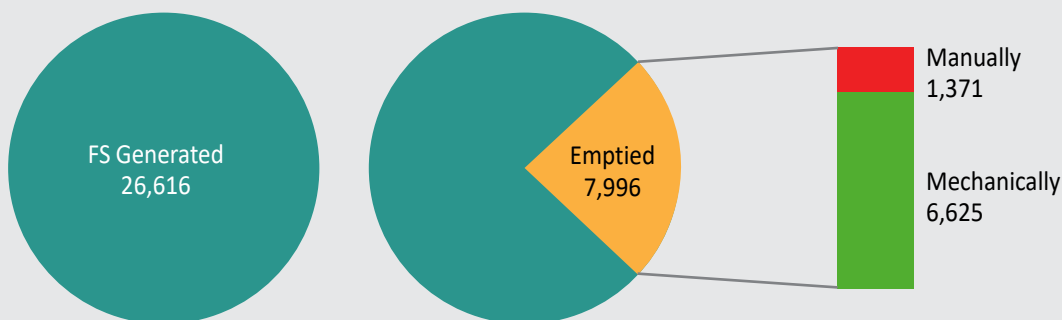
Total estimated volume of FS generation in the municipality: 26,616 m<sup>3</sup> per year or 72.9 m<sup>3</sup> per day

Total volume of FS emptied in the municipality: 7,996 m<sup>3</sup> per year or 21.9 m<sup>3</sup> per day.

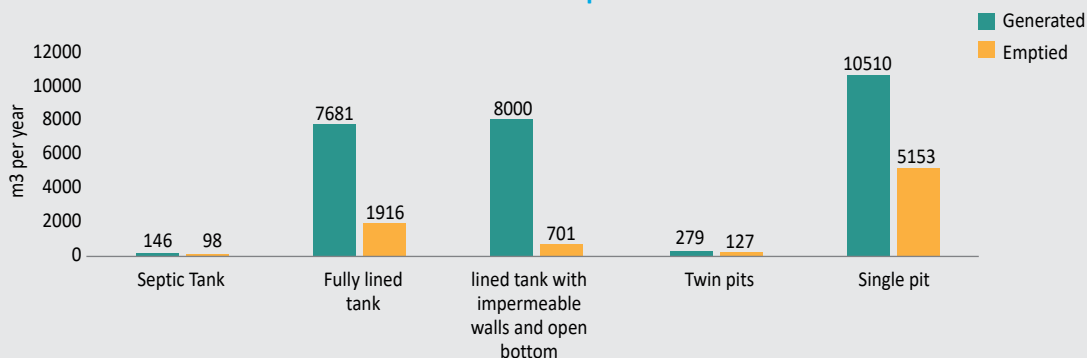
Total volume of FS emptied mechanically in the municipality: 6,625 m<sup>3</sup> per year or 18.2 m<sup>3</sup> per day

Total volume of FS emptied manually in the municipality: 1,371 m<sup>3</sup> per year or 3.8 m<sup>3</sup> per day

### Summary of faecal sludge produced, emptied and transported in Bardibas Municipality (cubic meter)



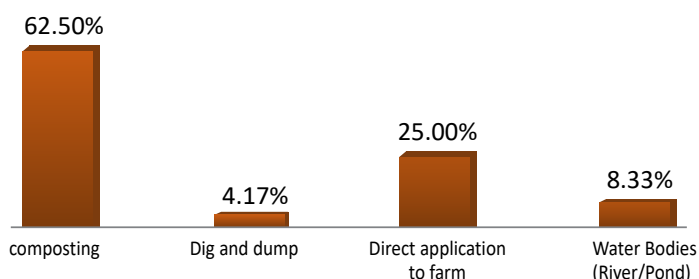
### FS Generated and Emptied



## SAFE DISPOSAL OR REUSE

The municipality does not have faecal sludge treatment plant. Mechanically emptied faecal sludge is commonly applied in farmlands or disposed of in nearby forest areas and water bodies. Manually emptied FS is often mixed with organic solid waste at HH level and used as compost, directly applied to farm, dig and dump, and some are discharged into water bodies without proper treatment.

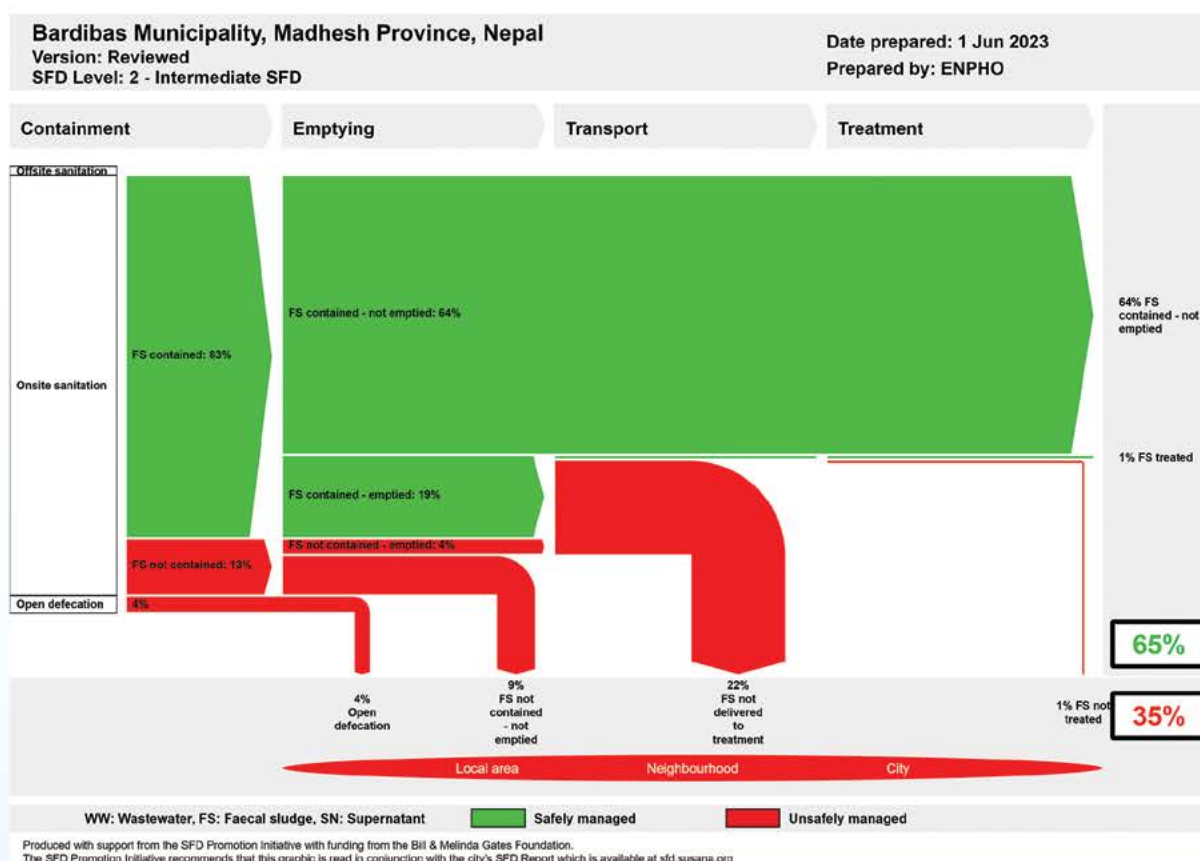
### Disposal practice after manual emptying



## SHIT FLOW DIAGRAM (SFD)

The SFD of Bardibas Municipality visually represents the status of sanitation practices across the municipality through the entire sanitation value chain. The diagram illustrates that FS generated by 65% of the population is safely managed (Green). Initially, 83% of FS is safely contained. However, this proportion drops to 64% considering the unemptied FS is safe. The remaining 19% of FS which is contained and emptied, remains safe depending upon the nature of emptying mechanism and further availability of treatment facilities. This points out the necessity of proper emptying and treatment of FS. Thus, only 1% of FS undergoes proper treatment and is considered safely managed.

Likewise, FS generated by 35% of the population is unsafely managed (Red). It includes the 1% of FS that is discharged untreated into the environment, possessing risks of pollution. 9% of FS is not contained and not emptied, and 22% of emptied FS are not delivered to treatment plant. Additionally, 4% of the population still practices open defecation exacerbating sanitation challenges. This percentage of unsafely managed FS highlights the significant gaps that must be addressed to mitigate environmental and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Upgrade existing unsafe containment systems to safe technologies such as septic tanks, fully lined tanks, biogas digesters or twin pits.
- Formalize and regulate private desludging service within the municipality.
- Construct a faecal sludge treatment plant to manage FS effectively, reduce environmental pollution, and safeguard public health.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.

# BIRGUNJ METROPOLITAN CITY

Municipal Sanitation Synopsis, Study Year-2023



Ghadiarwa Pond

## DEMOGRAPHICS



Area : 75.24 km<sup>2</sup>



Household : 47,114



POPULATION : 272,382

Male : 142,195

Female : 130,187



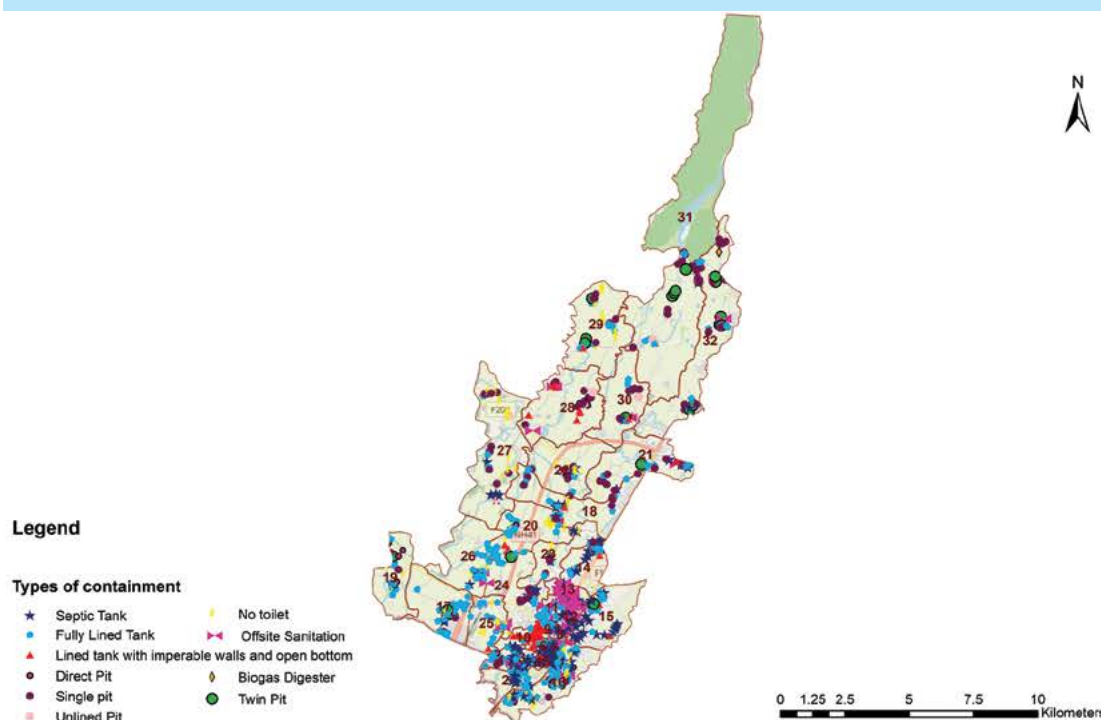
Wards : 32

Source: Census 2021

## CITY PROFILE

Birgunj Metropolitan City is located in the Parsa District of Madhesh Province, Nepal, with geographical coordinates approximately at 27°0'46.8" N and 84° 52' 39.36" E and at an elevation of 85 meters above sea level. The city stands as a vibrant urban center and major commercial hub and is pivotal for trade between Nepal and India along the southern border.

### Types of sanitation technologies at household level in Birgunj Metropolitan City





संकलन  
(User Interface)



अण्डारण  
(Containment)



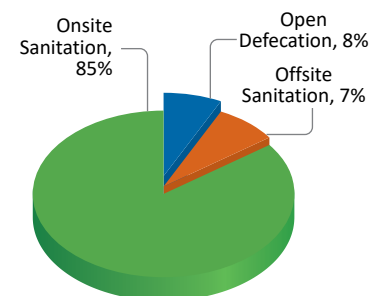
रिचार्जने र ढुवानी  
(Emptying & Transportation)

## USER INTERFACE FACILITY

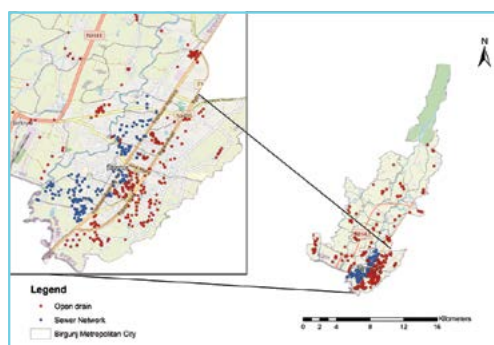
Birgunj Metropolitan City achieved ODF status on September 26, 2019. Despite this achievement, approximately 8% of HHs still lack access to basic sanitation facilities and practice open defecation.

Among HHs with offsite sanitation systems, 5% are connected to stormwater or open drainage systems. Birgunj metropolitan city has a sewerage system extending over 15.3km, serving approximately 2% of the city's population. The metropolitan city faces challenges in managing offsite sanitation systems due to illegal connections from containments to the open drains in the core area.

### Sanitation Facility



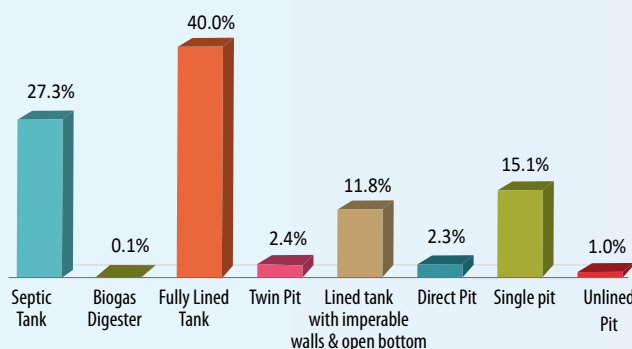
Households connected to sewer network and open drain



## CONTAINMENT

Among HHs with onsite sanitation facilities, fully lined tanks are the predominant type, accounting for 40% of HHs. Interestingly, 27.3% of HHs have toilets connected to septic tanks.

### Types of containment



## EMPTYING AND TRANSPORTATION

Approximately 33.3% of HHs have emptied their containments. Usually, these containments are emptied at an interval of 3 to 5 years. Both, the metropolitan city and private service providers offer desludging services in city.

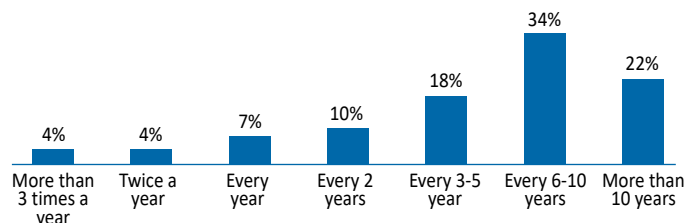


90% emptied mechanically by municipal or private desludging service providers.

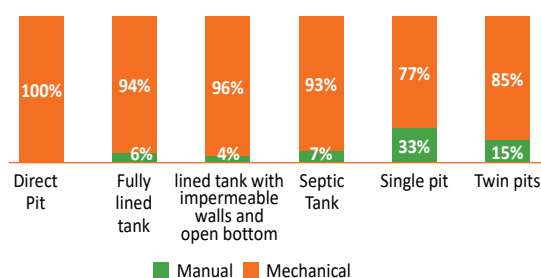


10% emptied manually (self or traditional sanitation workers)

### Emptying Interval



### Emptying Mechanism



### Details of desludging service providers

Service Provider	Private	Municipality
No. of service providers	1	1
No. of vehicles	2	2
Capacity of vehicle (Litres)	5,000	5,000
Average trips per day per vehicle	3	3
Average service charge per trip (NPR)	2,000-4,000	2,000



प्रशोधन  
(Treatment)

पुनः प्रयोग वा सुरक्षित विसर्जन  
(Re-use or Safe Disposal)

## ESTIMATION OF FAECAL SLUDGE

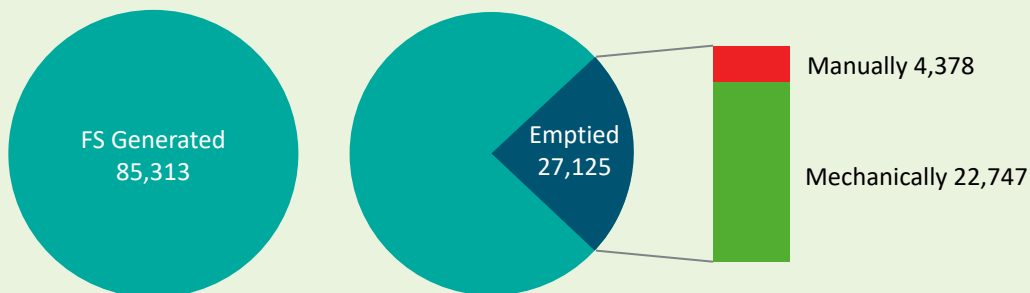
Total estimated volume of FS generation in the municipality: 85,313 m<sup>3</sup> per year which is 233.7 m<sup>3</sup> per day

Total volume of FS emptied in the municipality: 27,125 m<sup>3</sup> per year which is 74.3 m<sup>3</sup> per day

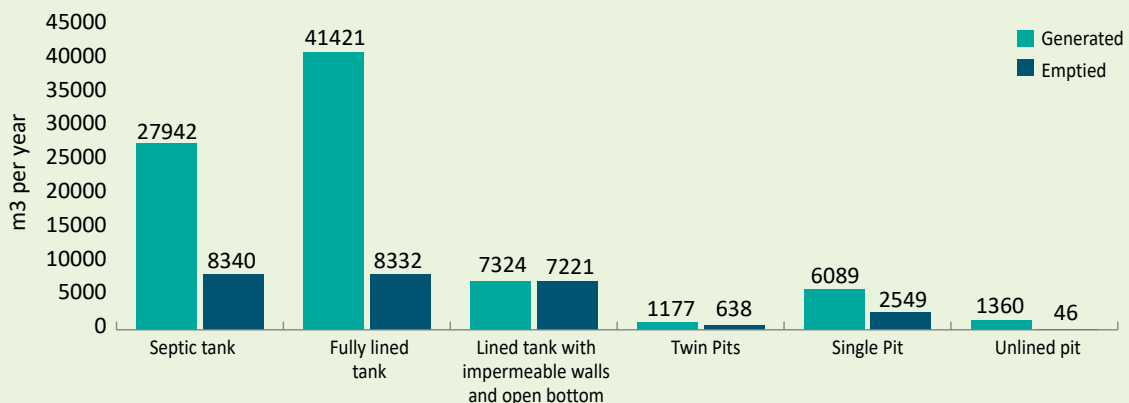
Total volume of FS emptied mechanically in the municipality: 22,747 m<sup>3</sup> per year or 62.3m<sup>3</sup> per day

Total volume of FS emptied manually in the municipality: 4,378 m<sup>3</sup> per year or 12 m<sup>3</sup> per day

### Summary of faecal sludge produced, emptied and transported in Birgunj Metropolitan City (Cubic Meter)



### FS Generated and Emptied



## TREATMENT

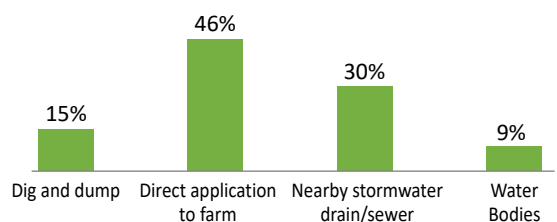
Birgunj Metropolitan City, has a Wastewater Treatment Plant (WWTP) with a capacity of 10 MLD, located in ward 2. The treatment plant, at the time of survey, was not functional due to an issue on wastewater conveyance to the WWTP. However, the drying beds of WWTP are being used for the treatment of FS, collected by the municipal desludging vehicles.



## SAFE DISPOSAL OR REUSE

The private desludgers usually apply untreated FS into agricultural lands as per demand or discard into water sources, open drains, and open environments. While the manually emptied FS is directly applied on farmlands, dig and dump into land, and disposed in nearby stormwater drain and water bodies.

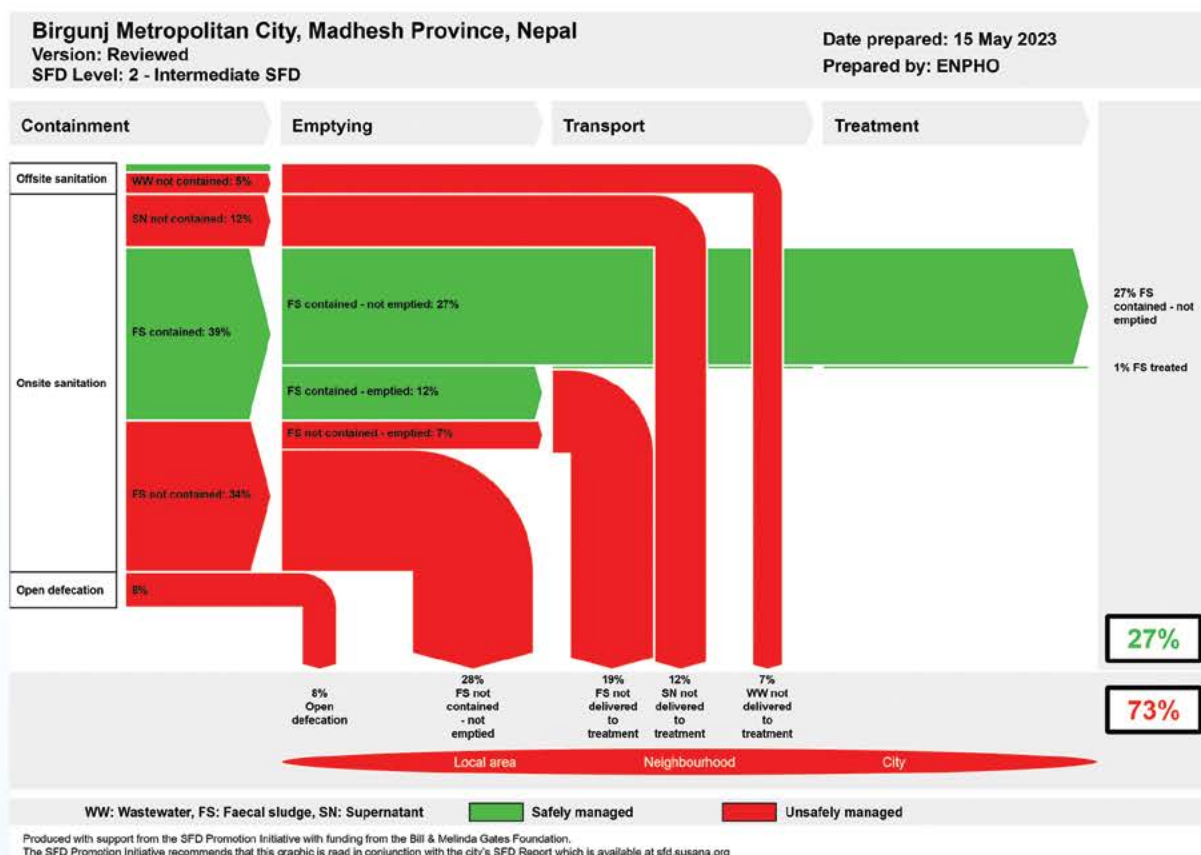
### Disposal practice after manual emptying



## SHIT FLOW DIAGRAM (SFD)

The SFD illustrates that FS generated by 27% of the population is safely managed (Green). Initially 39% of FS is safely contained. However, this percentage drops to 27% when 12% of the contained FS is emptied. Since only 1% of the emptied FS, primarily from biogas digester users, is transferred for treatment, it can be considered safe. Additionally, 27% of FS that remains safely contained can be considered safe until it's not emptied.

Furthermore, 73% of FS is unsafely managed (Red). This includes 7% of WW (2% contained and 5% not contained) and 12% supernatant (SN) which is not transported to treatment plant. Additionally, 28% of FS are neither safely contained nor emptied, and 19% of FS emptied (12% FS contained, 7% FS not contained) are not transported to treatment plant. This untreated FS directly possesses environmental threat and leads to unsafe management of FS. Moreover, 8% of the population still practice open defecation, exacerbating the sanitation challenges. These findings highlighted the critical gaps that must be addressed to mitigate environmental and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Connect existing sewerage system to the Wastewater Treatment Plant to ensure treatment of wastewater from the system.
- Manage faecal sludge properly in non-sewered areas.
- Formalize and regulate the private desludging service within the municipality.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.



# DAKNESHWORI MUNICIPALITY

Municipal Sanitation Synopsis, Study Year – 2023



Dakneshwori Temple

## DEMOGRAPHICS



Area : 69.11 km<sup>2</sup>



Household : 10,002



POPULATION : 47,739  
Male : 23,690  
Female : 24,049



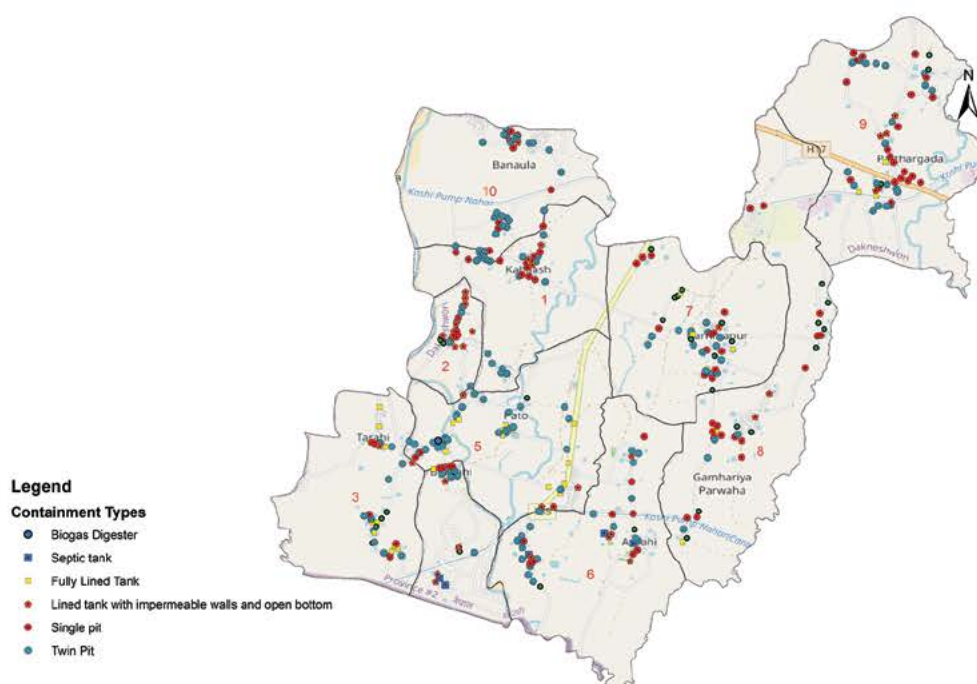
Wards : 10

Source: Census 2021

## CITY PROFILE

Dakneshwori Municipality, formed in 2016 A.D., is located in Terai region of Nepal with geographical coordinates of 26°30'0" N and 86°37'12" E and elevation of 96 meters above sea level.

### Maps locating households with different types of containment in Dakneshwori Municipality





संकलन  
(User Interface)



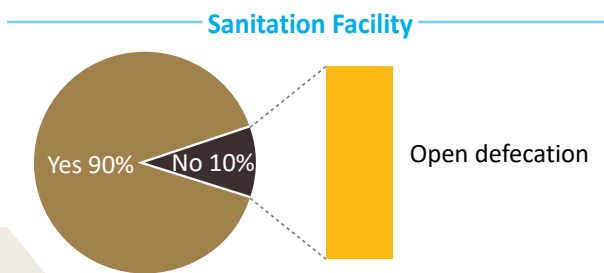
अण्डारण  
(Containment)



रिचार्जने र ढुवानी  
(Emptying & Transportation)

## USER INTERFACE FACILITY

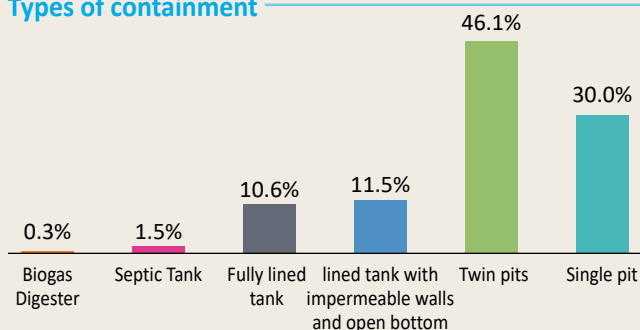
Despite the municipality being declared as ODF, survey revealed that 10% of HHs in the municipality lack access to toilet and continue to practice open defecation.



## CONTAINMENT

In the municipality, 46.1% of HHs have twin pits and 30% have single pits. While only minimal percentage, 0.3% have biogas digester and 1.5% have technically appropriate septic tanks, have safe containments. Notably, 10.6% of HHs have fully lined tanks.

### Types of containment



Twin pits installed in one of the surveyed household.

## EMPTYING AND TRANSPORTATION

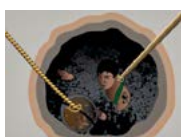
In the municipality, 36.4% of HHs have emptied their containments at least once since installation. Usually, the containments are emptied at an interval of 3 to 5 years. The private desludgers from neighboring municipalities serve in the municipality.



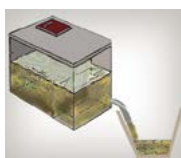
91.7% emptied mechanically by private desludging service providers.



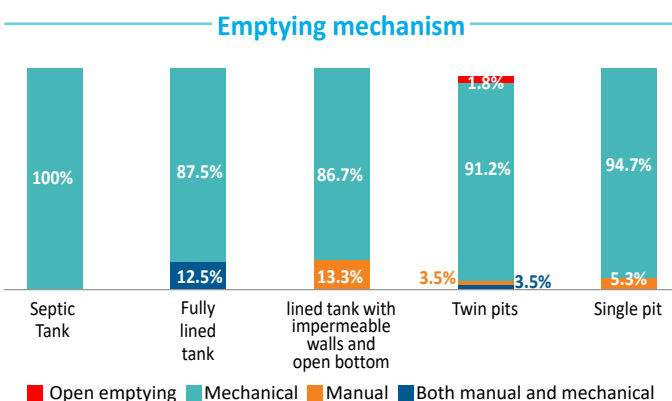
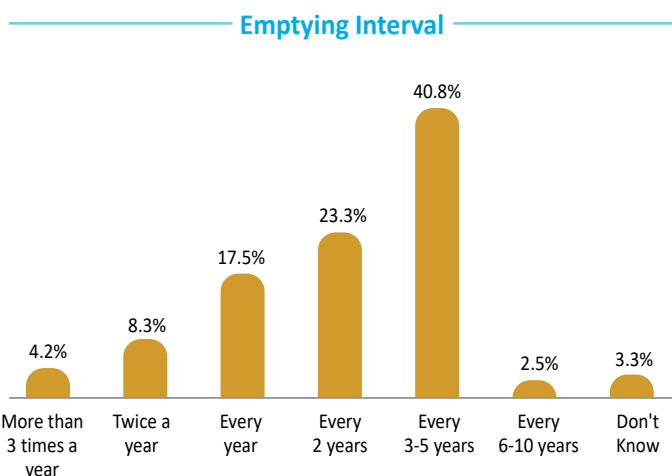
Both: 2.5%



5% emptied manually (self or traditional sanitation workers)



0.8 % practice open emptying (Disposed into open drain during rainy season)





## ESTIMATION OF FAECAL SLUDGE

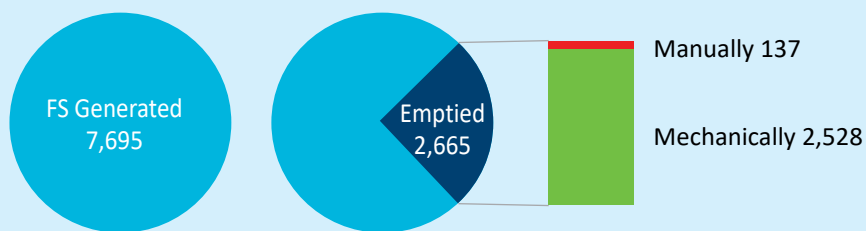
Total estimated volume of FS generation in the municipality: 7,695 m<sup>3</sup> per year which is 21.1 m<sup>3</sup> per day .

Total volume of FS emptied in the municipality: 2,665 m<sup>3</sup> per year which is 7.3 m<sup>3</sup> per day.

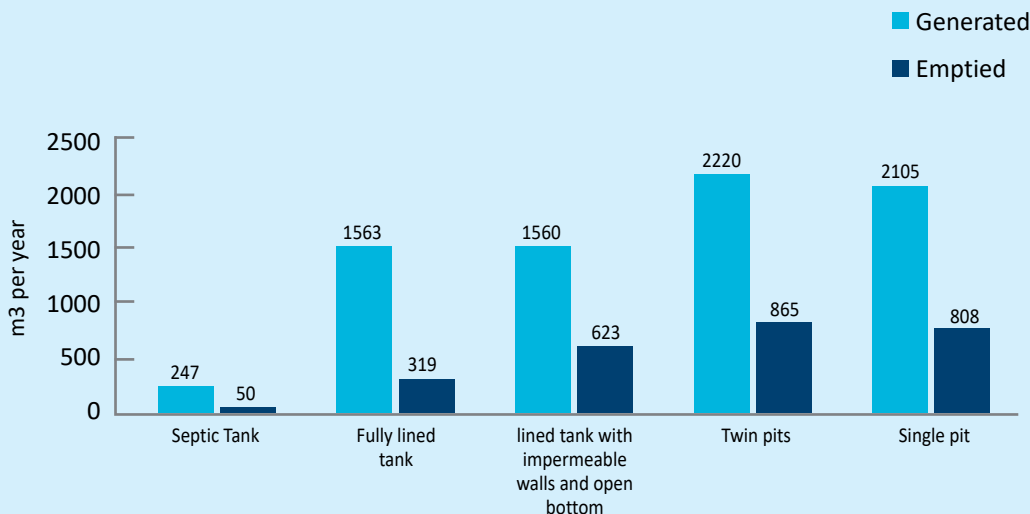
Total volume of FS emptied mechanically in the municipality: 2,528 m<sup>3</sup> per year which is 6.9 m<sup>3</sup> per day.

Total volume of FS emptied manually in the municipality: 137 m<sup>3</sup> per year which is 0.4m<sup>3</sup> per day.

### Summary of faecal sludge produced, emptied and transported in Dakneshwori municipality (Cubic Meter)



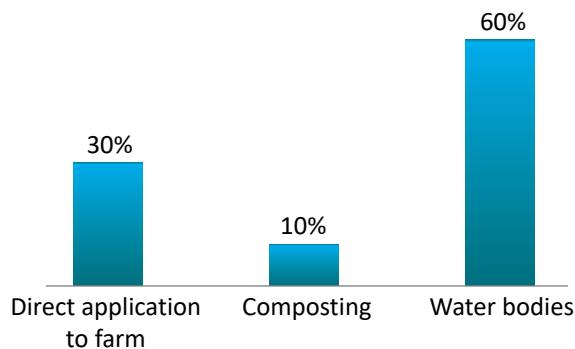
### FS Generated and Emptied



### Disposal practice after manual emptying

## SAFE DISPOSAL OR REUSE

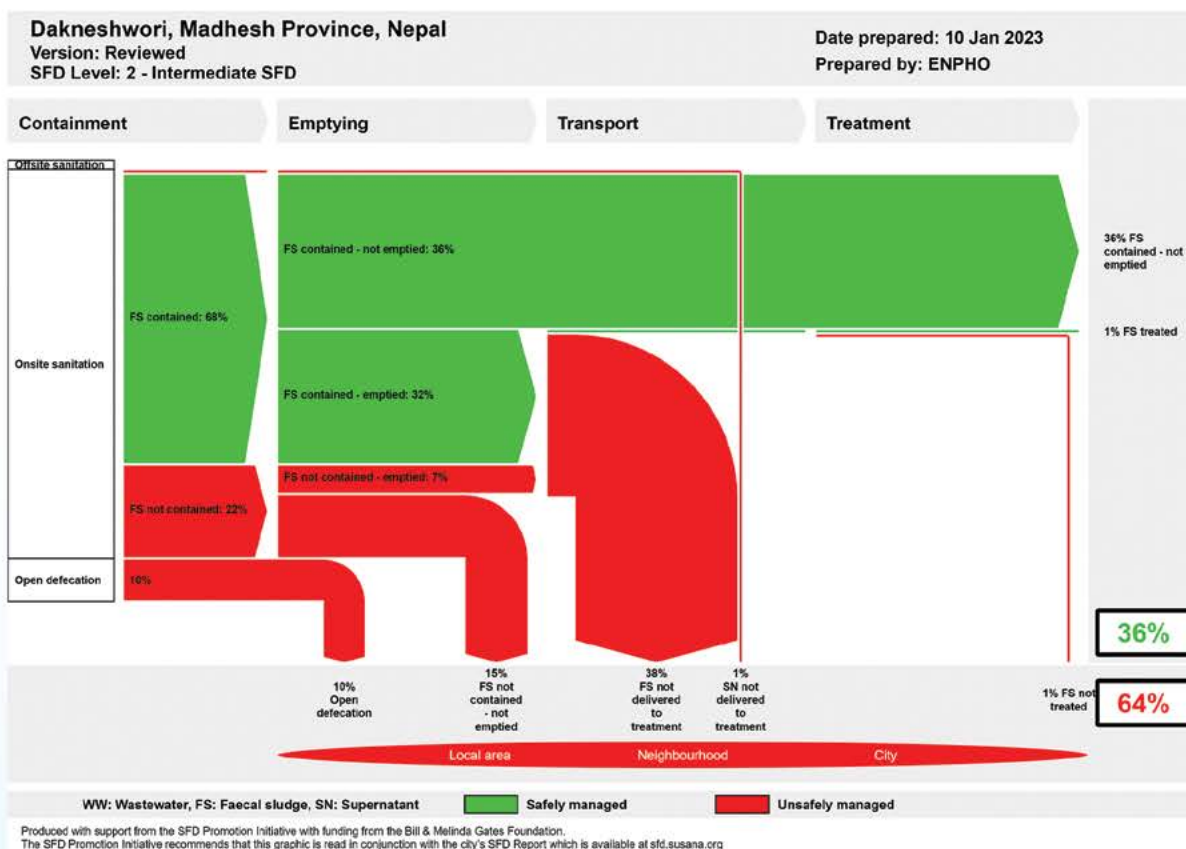
There exists no treatment facility for FS in the municipality. In general, FS emptied either mechanically or manually is used on farmlands. Meanwhile the majority of manually emptied FS is disposed of in water bodies, and a small portion is composted.



## SHIT FLOW DIAGRAM (SFD)

FS generated by 36% of the population is safely managed (Green). Initially, 68% of FS is safely contained, but this percentage decreases to 36%, which can be considered safe until emptied. The emptied FS remains safe depending upon the nature of the emptying mechanism and available treatment facilities. Out of the remaining 32% of safely contained FS which are emptied, only 1% of FS undergoes treatment and the rest are not delivered to treatment plant thus become unsafely managed. This highlights the necessity of safe emptying and treatment.

Meanwhile, FS generated by 64% of the population is unsafely managed (Red). It includes 1% SN which are not delivered to treatment plant, 38% of emptied FS (31%-FS contained, 7% FS not contained) but not delivered to treatment plant, possessing risks of pollution. Additionally, 15% of FS are neither contained nor emptied, and, and 10% of the population still practices open defecation, further exacerbating sanitation challenges and highlighting critical gaps that must be addressed to mitigate environmental and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Formulate and enforce policies and regulations mandating the use of safe sanitation technologies in new construction or renovations.
- Formalize and regulate the private desludging service within the municipality.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.

# GAUR MUNICIPALITY

Municipal Sanitation Synopsis, Study Year -2023



Purenwa Durbar Gaur

## DEMOGRAPHICS



Area : 21.53 km<sup>2</sup>



Household : 7,235



POPULATION : 39,846

Male : 20,426

Female : 19,420



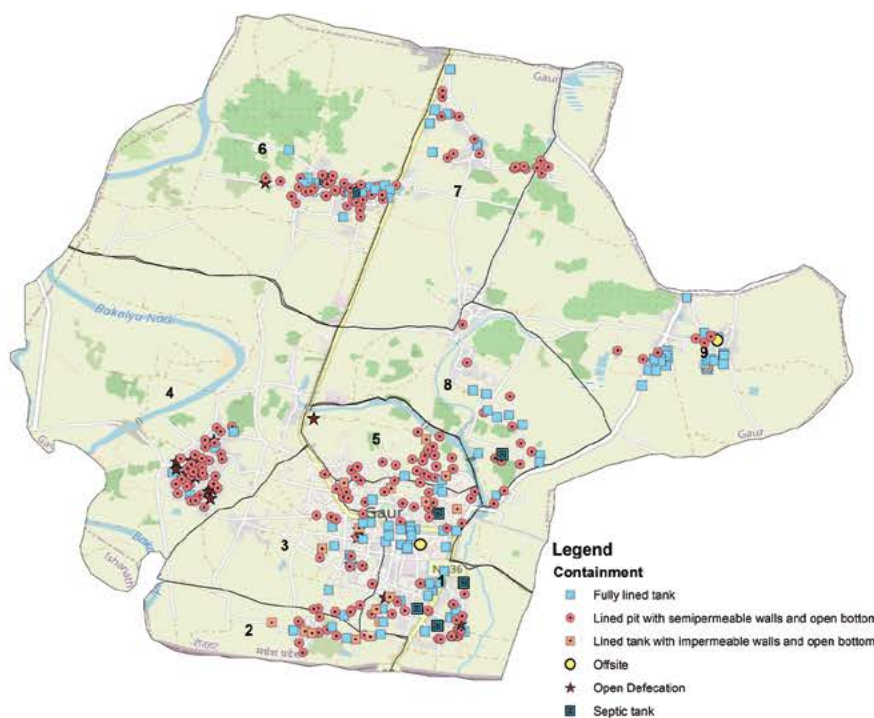
Wards : 9

Source: Census 2021

## CITY PROFILE

Gaur Municipality, established in 1992 A.D., is located in the southern part of terai region in Nepal in Rautahat district covering area of 21.53 square kilometres. Its geographic coordinates are 26°46'01" N latitude and 85° 16'01" E longitude and at an approximate elevation of 79 meters above sea level.

### Types of sanitation technologies at household level in Gaur Municipality





संकलन  
(User Interface)



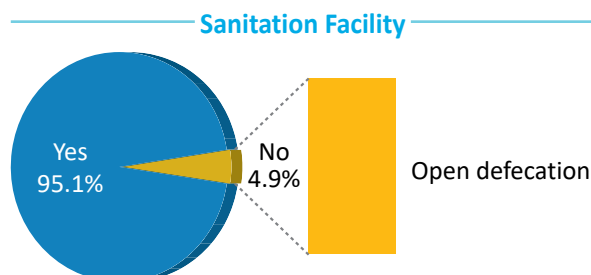
अण्डारण  
(Containment)



रिचार्जने र ढुवानी  
(Emptying & Transportation)

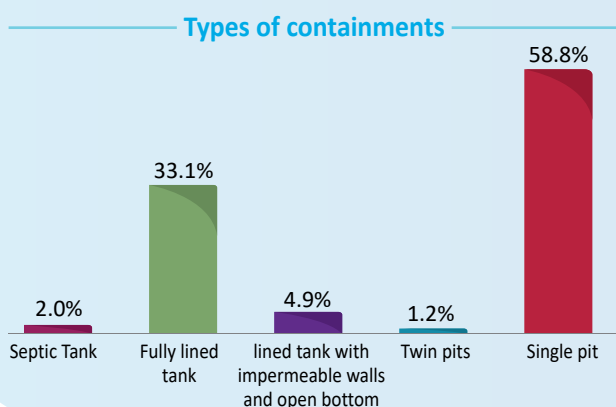
## USER INTERFACE FACILITY

The municipality was declared an ODF. However, a survey revealed that 4.9% of HHs in the municipality lack toilets and defecate in open spaces.



## CONTAINMENT

The survey identified that a small percentage of HHs have septic tanks, while the majority have constructed single pits with permeable bases. This construction possesses a risk of groundwater pollution due to leachate percolation.



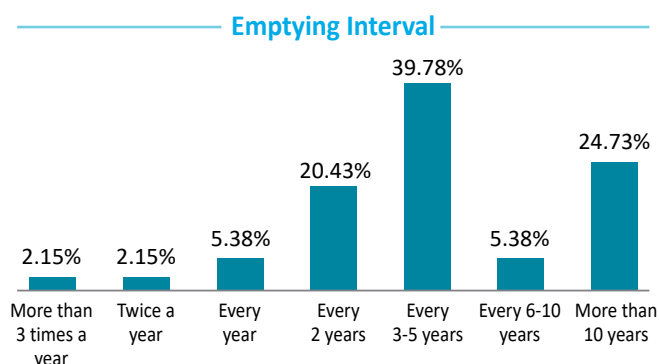
## EMPTYING AND TRANSPORTATION

The survey revealed that 26.8% of the HHs have emptied their containments at least once since installation. The containments are usually emptied at an interval of 3 to 5 years while significantly low percentage of HHs also empty containments for more than 3 times a year.

The sanitation sub-section of municipality provides emptying services while private service providers are also available in the municipality.

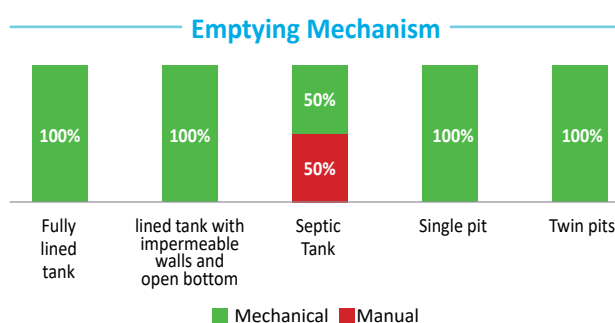
### Details of desludging service providers

Service Provider	Municipality
No. of service providers	1
No. of vehicles	1
Capacity of vehicle (Litres)	5,000
Average trips per day per vehicle	2
Average Service Charge per trip(NPR)	1,500



98% emptied mechanically by municipal or private desludging service providers from neighboring municipality.

2% emptied manually (self or traditional sanitation workers).





## ESTIMATION OF FAECAL SLUDGE

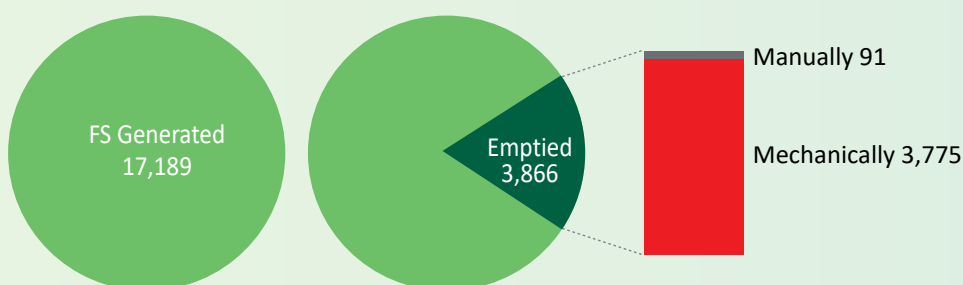
Total estimated volume of FS generation in the municipality: 17,189 m<sup>3</sup> per year which is 47.1 m<sup>3</sup> per day

Total volume of FS emptied in the municipality: 3,866 m<sup>3</sup> per year which is 10.6 m<sup>3</sup> per day.

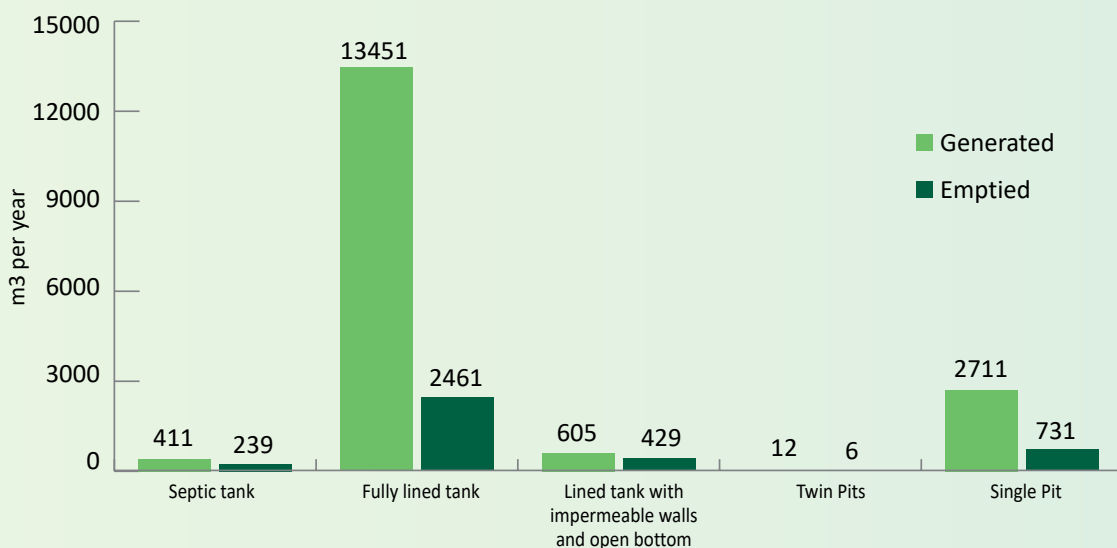
Total volume of FS emptied mechanically in the municipality: 3,775 m<sup>3</sup> per year which is 10.3 m<sup>3</sup> per day.

Total volume of FS emptied manually in the municipality: 91 m<sup>3</sup> per year which is 0.3 m<sup>3</sup> per day

### Summary of faecal sludge produced, emptied and transported in Gaur municipality (Cubic Meter)



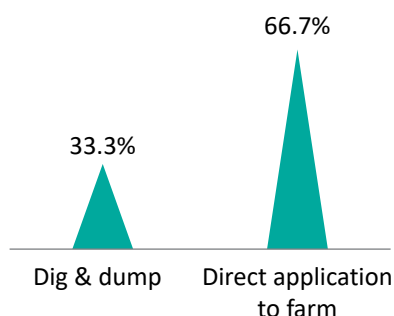
### FS Generated and Emptied



### Disposal practice after manual emptying

## SAFE DISPOSAL OR REUSE

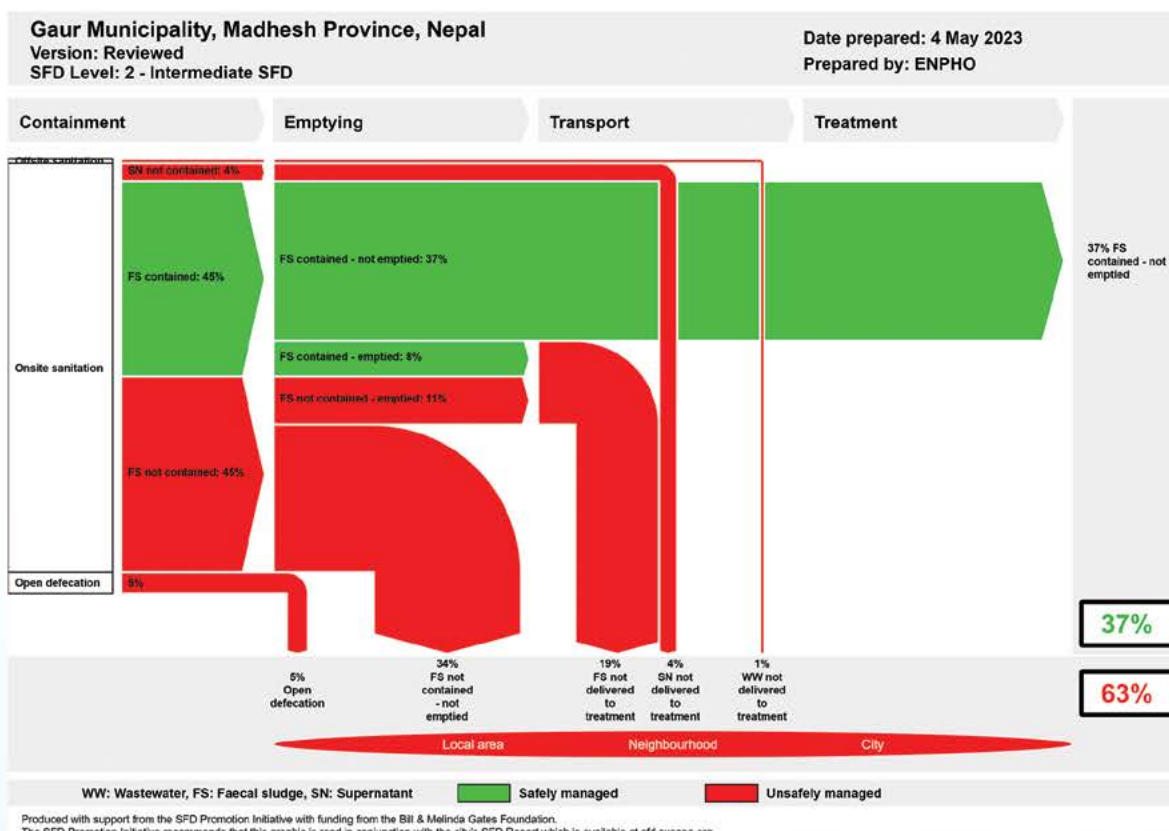
The municipality does not have a FS treatment facility. Thus, mechanically emptied FS is directly applied to farmland on demand or disposed on the bank of Bakiya River. The majority of HHs emptying manually also applies in farmland, while some are dig and dump. Moreover, the municipality is planning to construct a faecal sludge treatment plant.



## SHIT FLOW DIAGRAM (SFD)

FS generated by 37% of the population is safely managed (Green). Initially, 45% of FS is safely contained, but this percentage drops to 37% when 8% of FS contained are emptied. The emptied FS remains safe depending upon the emptying mechanism and available treatment options/facilities. Since none of the emptied FS are transported to treatment, it becomes unsafely managed.

Similarly, FS generated by 63% of the population is unsafely managed (Red). It includes 4% of SN and 1% of Wastewater (WW) which is discharged untreated into the environment, possessing risks of pollution. Additionally, 34% of FS are neither contained nor emptied, 19% of emptied FS (8% FS not contained, 11% FS contained) are not delivered to treatment plant, and 5% of the population still practices open defecation, further exacerbating sanitation challenges. Overall, this unsafely managed FS highlights the critical gaps that need addressing to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Upgrade existing unsafe containment systems to safe technologies such as septic tanks, fully lined tanks, biogas digesters or twin pits.
- Accelerate the construction of a faecal sludge treatment plant (FSTP) and ensure its proper operation and maintenance.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.



# HARION MUNICIPALITY

Municipal Sanitation Synopsis, Study Year -2023



Harion Municipality Office

## DEMOGRAPHICS



Area : 88.1 km<sup>2</sup>



Household : 10,740



POPULATION : 49,988  
Male : 24,405  
Female : 25,583



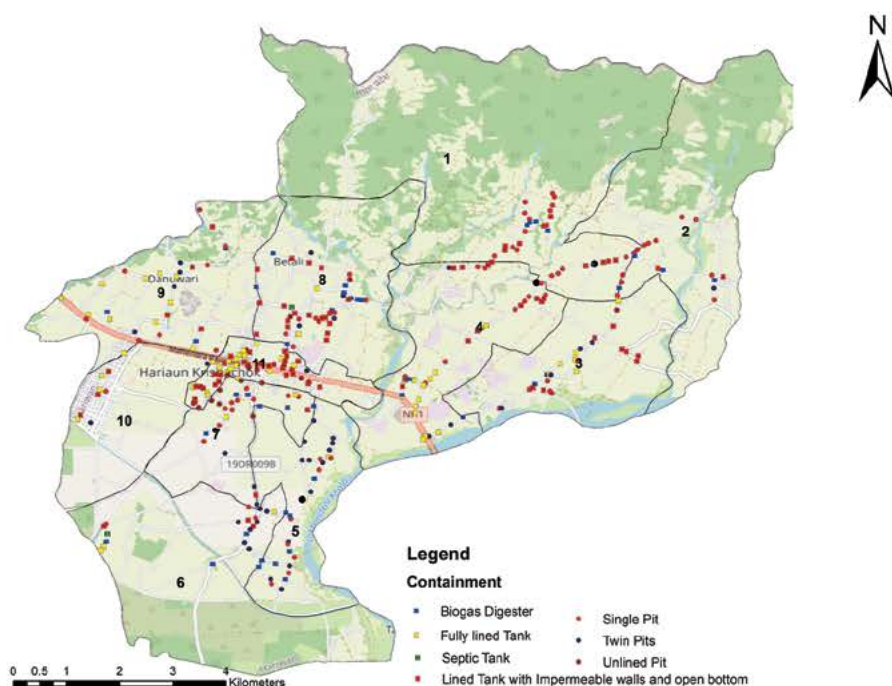
Wards : 11

Source: Census 2021

## CITY PROFILE

Harion Municipality, established in 2014 A.D., is situated in Madhesh Province of Nepal in Sarlahi District. The municipality spans from 27°21'13"N to 27°84'45"N latitude and 85°30'52"E to 85°38'48"E longitude, with an altitude ranging from 130 meters to 550 meters above sea level.

### Types of sanitation technologies at household level in Harion Municipality





संकलन  
(User Interface)



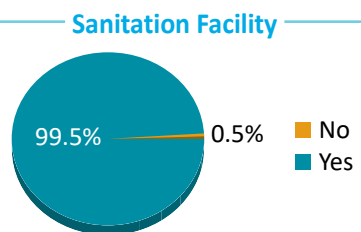
अण्डारण  
(Containment)



रिच्याउने र ढुवानी  
(Emptying & Transportation)

## USER INTERFACE FACILITY

In the municipality, 99.5% of HHs have access to basic sanitation facilities while remaining HHs practice open defecation.

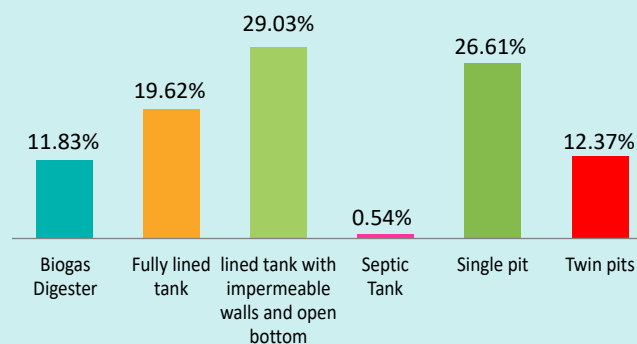


## CONTAINMENT

The survey showed that most of the HHs used unsafe containments such as lined tank with impermeable walls and open bottom (29.03%) and single pits (26.61%). These types of containments have high risk of leachate percolation leading to groundwater contamination. A significant proportion of HHs have installed safe onsite sanitation technology as septic tank (0.54%), and biogas digester (11.83%).



### Types of containments



## EMPTYING AND TRANSPORTATION

The HH survey revealed that 44.92% of HHs have emptied their containment at least once since installation. The containments are usually emptied at an interval of every 3 to 5 years.

### Details of desludging service providers

Service Provider	Private
No. of service provider	2
No. of vehicles	3
Capacity of vehicle (Litres)	5,000 -6,000
Average trips per day per vehicle	1
Average Service Charge (NPR)	Rectangular- 2,000-4,000 Circular- 300 per ring



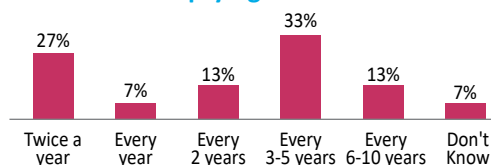
87.9% emptied mechanically by private desludging service providers.



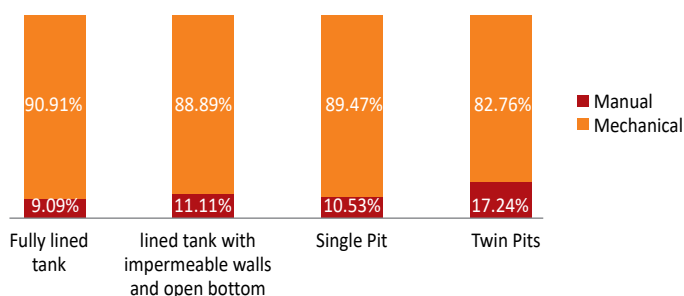
12.1% emptied manually (self or traditional sanitation workers.)

There is two private desludging service providers operating in the municipality.

### Emptying Interval



### Emptying Mechanism





प्रशोधन  
(Treatment)

पुनः प्रयोग वा सुरक्षित विमर्जन  
(Re-use or Safe Disposal)

## ESTIMATION OF FAECAL SLUDGE

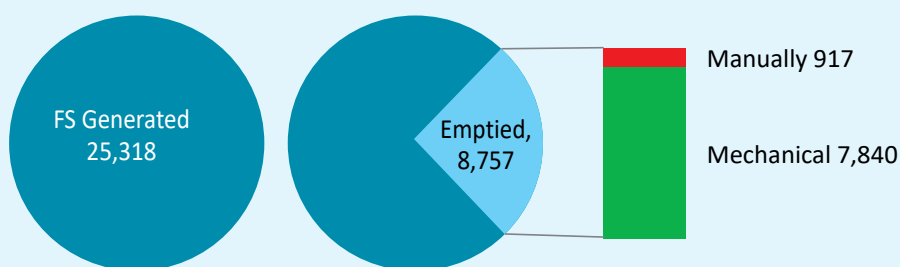
Total estimated volume of FS generated in the municipality: 25,318 m<sup>3</sup> per year which is 69.4 m<sup>3</sup> per day.

Total volume of FS emptied in the municipality: 8,757 m<sup>3</sup> per year which is 24 m<sup>3</sup> per day

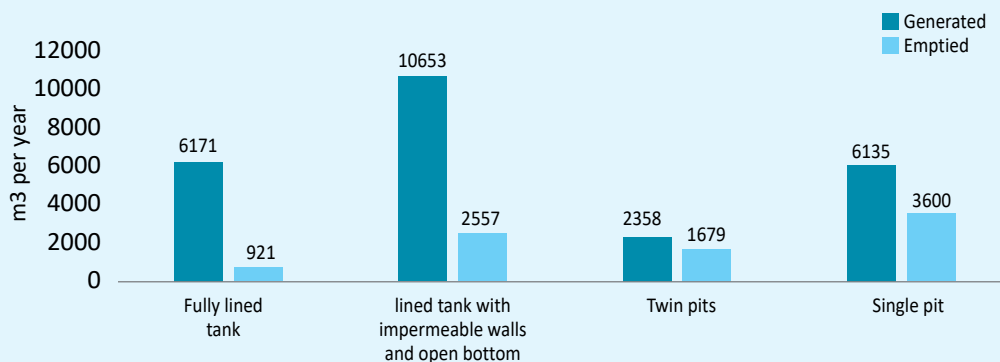
Total volume of FS emptied mechanically in the municipality: 7,840m<sup>3</sup> per year which is 21.5 m<sup>3</sup> per day

Total volume of FS emptied manually in the municipality: 917 m<sup>3</sup> per year which is 2.5 m<sup>3</sup> per day

### Summary of faecal sludge produced, emptied and transported in Harion Municipality (cubic meter)



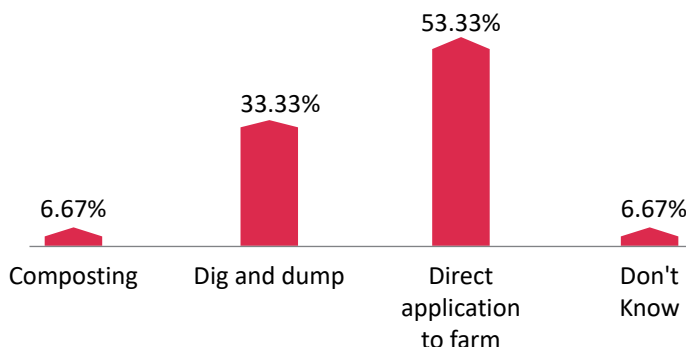
### FS Generated and Emptied



### Disposal practice after manual emptying

## SAFE DISPOSAL OR REUSE

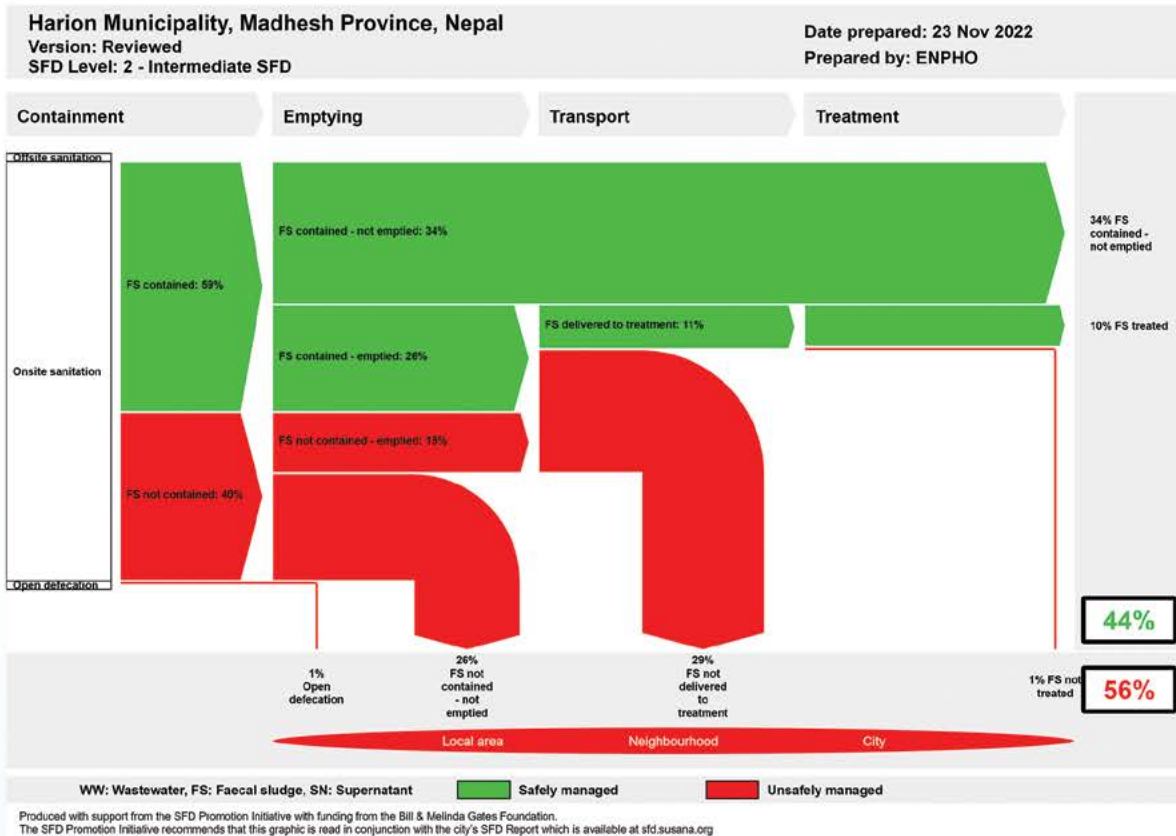
The municipality does not have a faecal sludge treatment plant. Thus, emptied FS is mostly applied in the farmlands without treatment, while some are dig and dump and composted.



## SHIT FLOW DIAGRAM (SFD)

FS generated by 44% of the population is safely managed (Green). Initially, 59% of FS is safely contained, but this proportion drops to 34% when 26% of FS contained are emptied. Thus, 34% safely contained FS which are not emptied remains safe until emptied. Of the emptied FS, 11% of FS is conveyed for treatment, which primarily comes from the population using biogas digester, where 10% of FS is treated and 1% remains untreated. This implies that safely contained FS remains safe depending on its emptying mechanism and treatment facilities.

Similarly, FS generated by 56% of the population is unsafely managed (Red). It includes 29% of FS not delivered for treatment, 26% of FS which are neither safely contained nor emptied, and 1% of the population who still practices open defecation, further exacerbating sanitation challenges to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Upgrade existing unsafe containment systems to safe technologies such as septic tanks, fully lined tanks, or biogas digesters.
- Formalize and regulate the private desludging service within the municipality.
- Establish a faecal sludge treatment plant of appropriate capacity with reuse options.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.

# JALESHWAR MUNICIPALITY

Municipal Sanitation Synopsis, Study Year -2023



Jaleshwar Temple

## DEMOGRAPHICS



Area : 44.72 km<sup>2</sup>



Household : 12,380



POPULATION : 63,802  
Male : 31,391  
Female : 32,411



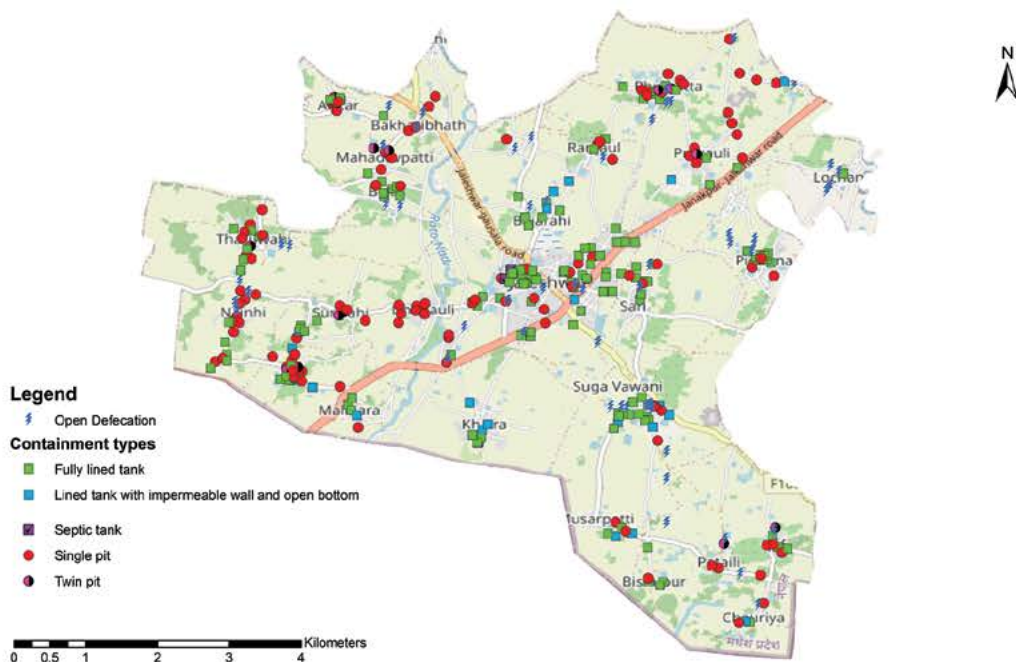
Wards : 12

Source: Census 2021

## CITY PROFILE

Jaleshwar Municipality is in Mahottari District, Madhesh Province of Nepal. It is located ranging from 26°38'22"N to 26°54'30"N latitude and 85°48'00"E to 86 00'35"E longitude. The elevation ranges between 91 meters to 160 meters above mean sea level.

### Types of sanitation technologies at household level in Jaleshwar Municipality





संकलन  
(User Interface)



अण्डारण  
(Containment)

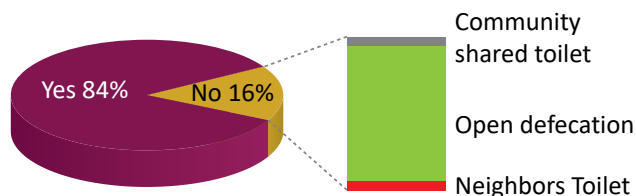


रिच्याउने र ढुवानी  
(Emptying & Transportation)

## USER INTERFACE

The municipality attained Open Defecation Free (ODF) status on September 13, 2019. However, the HH survey revealed that 16% of the HHs in the municipality do not have access to toilet and defecate in neighbor's toilet, community/shared toilet, and practice open defecation.

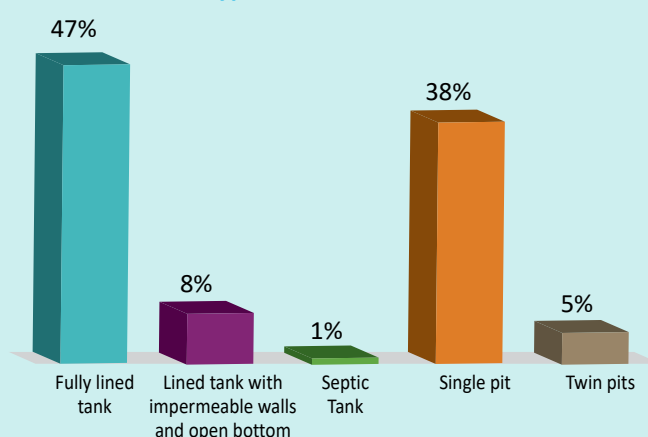
### Sanitation Facility



## CONTAINMENT

A survey revealed that fully lined tanks are the most used type of containment, followed by single pits. While smaller portions have installed technically appropriate septic tanks.

### Types of containments



## EMPTYING AND TRANSPORTATION

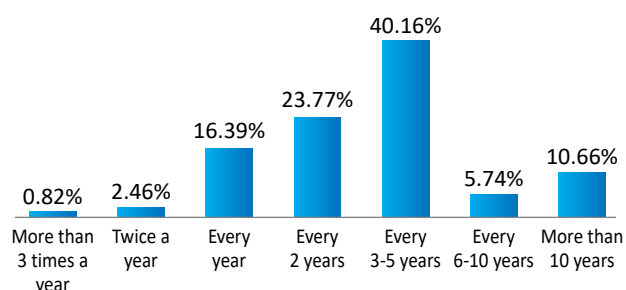
The survey showed that 39% of the HHs have emptied their containment at least once since installation. All the containments have been emptied mechanically. The containments are usually emptied at an interval of 3 to 5 years.

Private desludging service providers have been providing the emptying services. However, these service providers are operating informally, as no registration system is available in the municipality.

### Details of desludging service providers

Service Provider	Private
Number of service provider	4
Number of vehicles	6
Capacity of vehicle (Litres)	6,000 and 6,500
Average trips day per vehicle	1
Average Service charge (NPR)	Rectangular containments: 2,000-3,000 Circular pits: 300-500 per ring

### Emptying Interval



100% emptied mechanically by private desludging service providers.





प्रशोधन  
(Treatment)



पुनः प्रयोग वा सुरक्षित विमर्जन  
(Re-use or Safe Disposal)



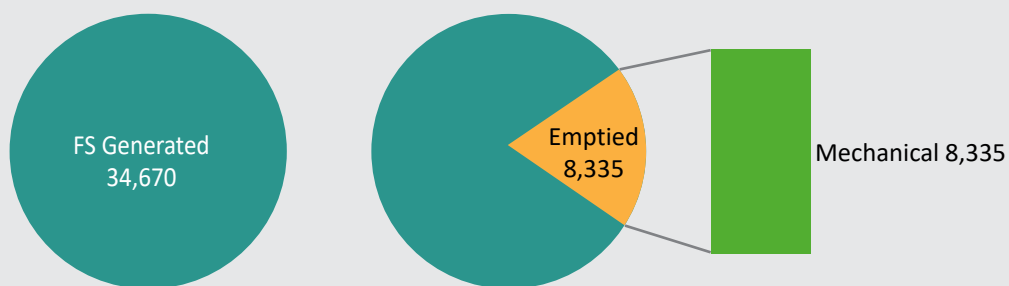
## ESTIMATION OF FAECAL SLUDGE

Total estimated volume of FS generated in the municipality: 34,670 m<sup>3</sup> per year which is 94.9 m<sup>3</sup> per day

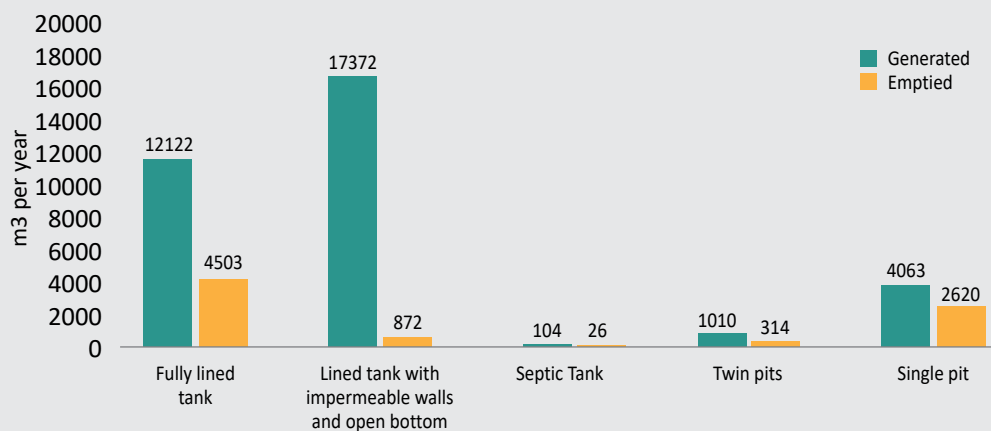
Total volume of FS emptied in the municipality: 8,335 m<sup>3</sup> per year which is 22.8 m<sup>3</sup> per day.

Total volume of FS mechanically emptied: 8,335 m<sup>3</sup> per year which is 22.8 m<sup>3</sup> per day.

### Summary of faecal sludge produced, emptied and transported in Jaleshwar Municipality (cubic meter)



### FS Generated and Emptied



## SAFE DISPOSAL OR REUSE

The municipality does not have a faecal sludge treatment plant. The mechanically emptied FS is mostly applied in farmlands directly. Occasionally, the emptied FS is disposed of into an open drain specially during rainy season.

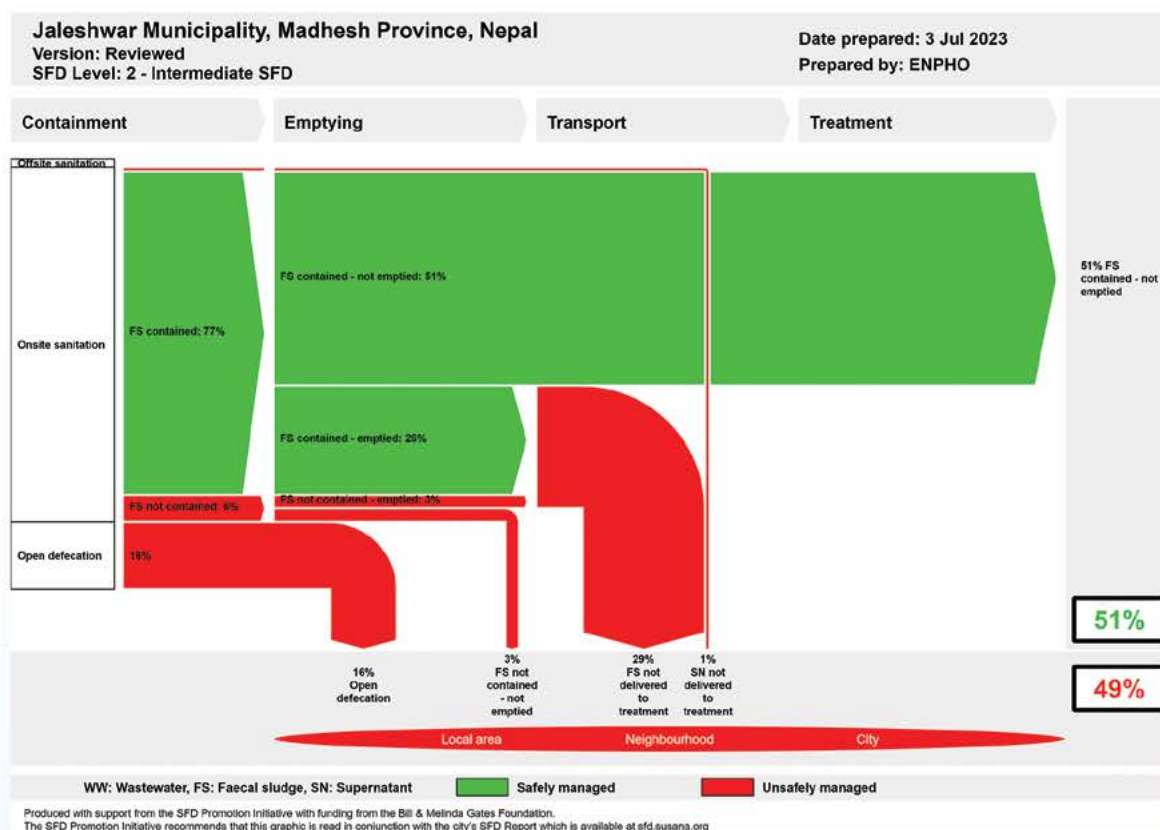


Direct application of emptied FS in farmland.

## SHIT FLOW DIAGRAM (SFD)

FS generated by 51% of the population is safely managed (Green). Initially, 77% of FS is safely contained, but this percentage drops to 51% which can be considered safe until it's not emptied. Whereas the remaining 26% of FS which is contained and emptied, possess a risk of pollution in absence of safe transportation and further treatment options. This highlights the necessity of safe disposal or treatment.

Meanwhile, FS generated by 49% of the population is unsafely managed (Red). It includes 1% of SN which are not delivered to treatment plant, 3% of FS which are neither safely contained nor emptied, 29% of the emptied (26%-FS contained, 3% FS not contained) FS but not delivered to treatment plant, and 16% of the population still practices open defecation, further exacerbating sanitation challenges. Overall, FS from 49% of the population is unsafely managed, highlighting critical gaps that must be addressed to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Continue the campaign to maintain open defecation-free status and advocate for behavioral change.
- Upgrade the existing unsafe containment systems to safe technologies such as technically appropriate septic tanks, fully lined tanks, biogas digesters or twin pits.
- Formalize and regulate the private desludging services within the municipality.
- Construct a faecal sludge treatment plant for treatment options.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.



# JANAKPURDHAM SUB-METROPOLITAN CITY

Municipal Sanitation Synopsis, Study Year -2023



Janaki Temple

## DEMOGRAPHICS



Area : 91.97 km<sup>2</sup>



Household : 40,409



POPULATION : 194,556

Male : 99,764

Female : 94,792



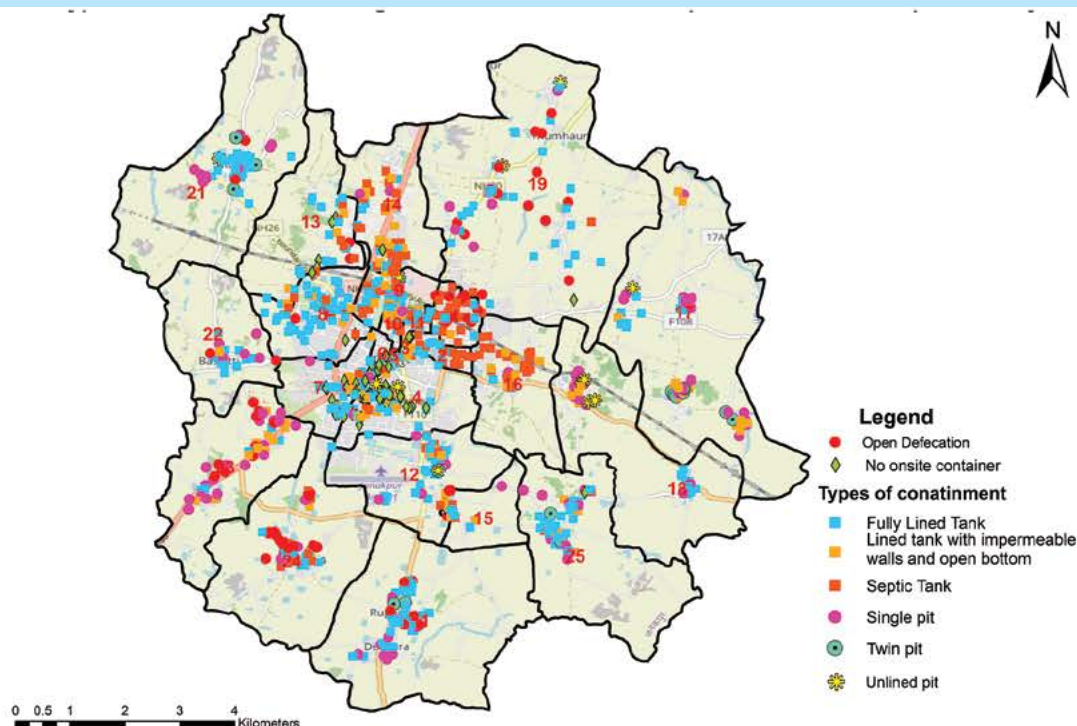
Wards : 25

Source: Census 2021

## CITY PROFILE

Janakpurdhm Sub-Metropolitan City (SMC) is a famous urban center located in Dhanusa District of Madhesh Province in the southeastern region of Nepal. It holds historical and religious significance as the birthplace of Goddess Sita. It lies at 26°43'43"N latitude, 85°55'30"E longitude and at an altitude of approximately 90 meters above sea level.

### Types of sanitation technologies at household level in Janakpurdhm Sub-Metropolitan City





संकलन  
(User Interface)



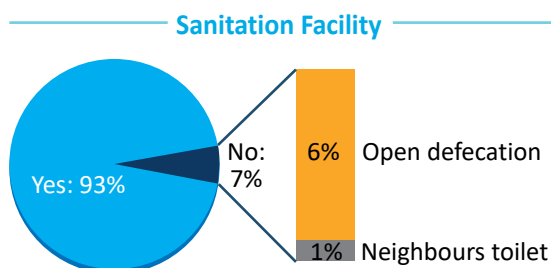
अण्डारण  
(Containment)



रिट्याउने र ढुवानी  
(Emptying & Transportation)

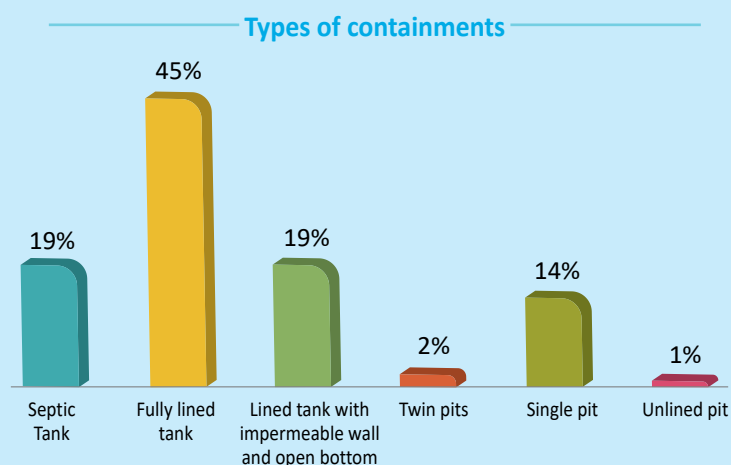
## USER INTERFACE FACILITY

In the city, 93% of HHs have basic sanitation facilities while remaining HHs use shared toilets and practice open defecation. The SMC does not have a sewer network, however 10% of HHs practice unauthorized discharge of effluents from their toilets into an open drain and water bodies.



## CONTAINMENT

The survey showed that most of the HHs use safe containments such as septic tanks (14%) and fully lined tanks (45%). Moreover, a significant percentage of HHs have single pits, unlined pits and lined tanks with open bottom possessing high risk to groundwater contamination.



## EMPTYING AND TRANSPORTATION

In the city, 33% of HHs have emptied their containments at least once after installation. The containments are usually emptied at an interval of every 3 to 5 years. Private desludging service providers are engaged for emptying and transport of faecal sludge.

### Details of desludging service providers

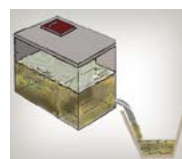
Service Provider	Private
No. of service provider	7
No. of Vehicles	17
Capacity of vehicle (Litres)	3000-6000
Average trips per day per vehicle	1
Average Charge per trip (NPR)	3,000



94% emptied mechanically by private desludging service providers.

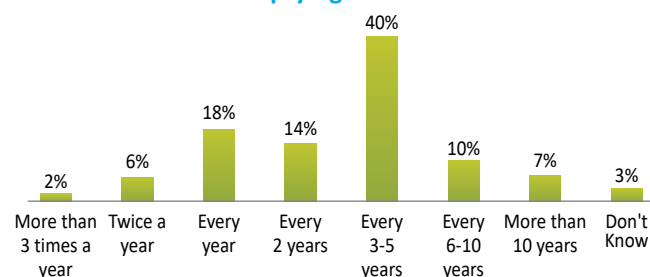


5% emptied manually: (self or traditional sanitation workers).

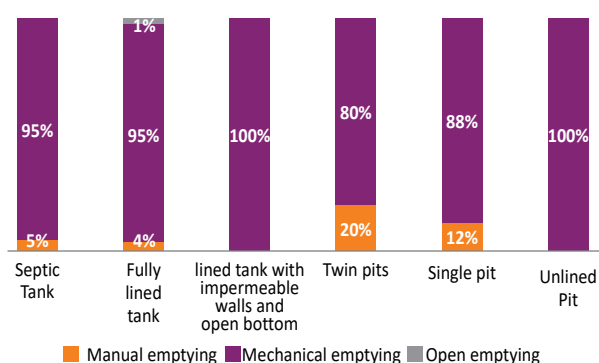


1% practice open emptying (disposed into open drain during rainy season)

### Emptying Interval



### Emptying Mechanism





प्रशोधन  
(Treatment)

पुनः प्रयोग वा सुरक्षित विमर्जन  
(Re-use or Safe Disposal)

## ESTIMATION OF FAECAL SLUDGE

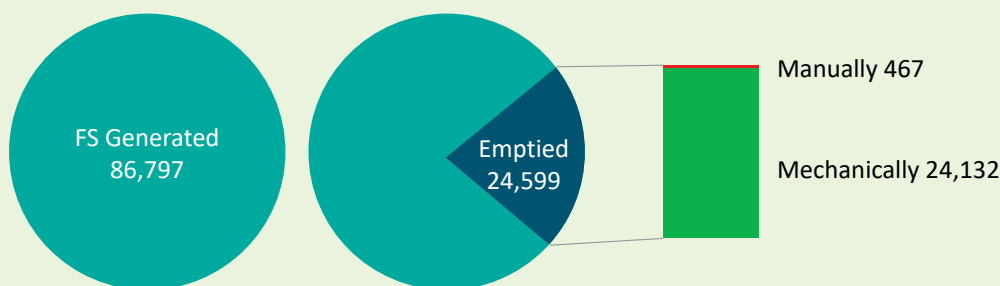
Total estimated volume of FS generated in the SMC: 86,797 m<sup>3</sup> per year which is 237.8 m<sup>3</sup> per day.

Total volume of FS emptied in the SMC: 24,599 m<sup>3</sup> per year which is 67.3 m<sup>3</sup> per day

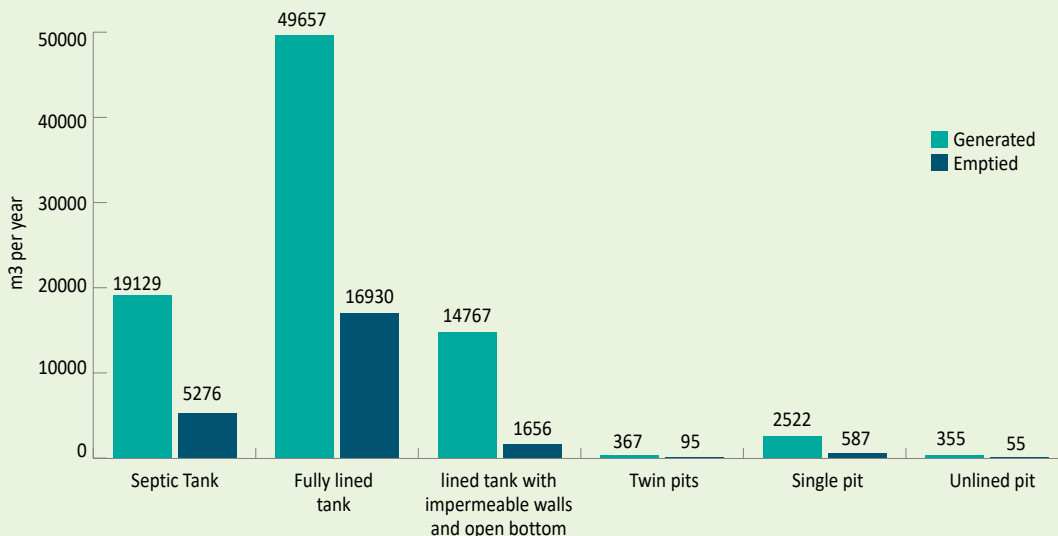
Total volume of FS emptied mechanically in the SMC: 24,132 m<sup>3</sup> per year which is 66.1 m<sup>3</sup> per day

Total volume of FS emptied manually in the SMC: 467 m<sup>3</sup> per year which is 1.2 m<sup>3</sup> per day

### Summary of faecal sludge produced, emptied and transported in Janakpurdhham SMC (cubic meter)



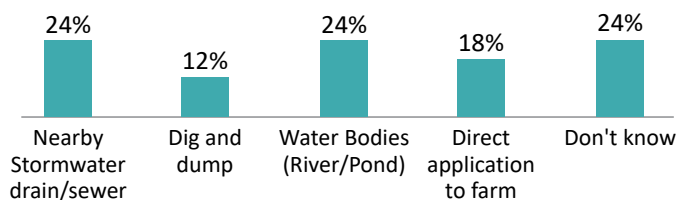
### FS Generated and Emptied



## SAFE DISPOSAL OR REUSE

Mechanically emptied FS are generally directly applied in farmlands. While significant percentage of manually emptied FS is disposed into stormwater drain and water bodies.

### Disposal after manual emptying

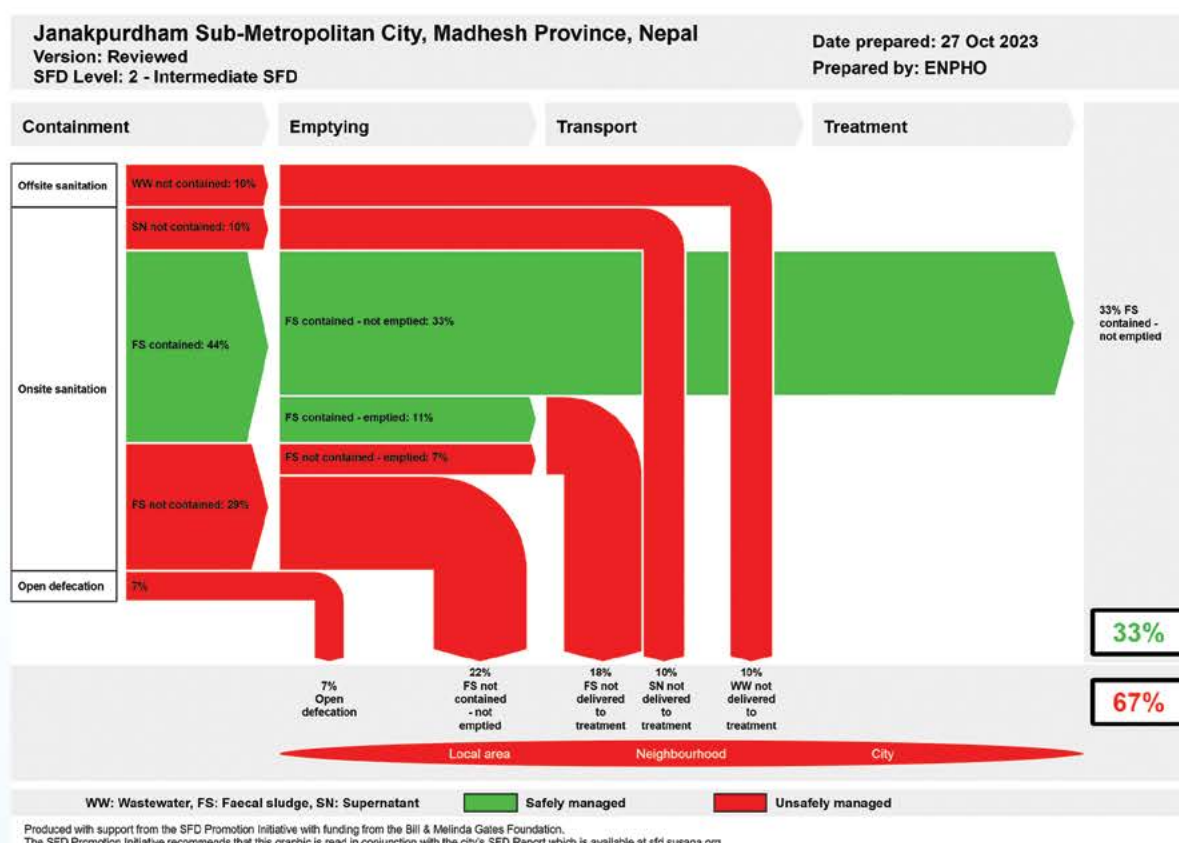


KII with private desludgers.

## SHIT FLOW DIAGRAM (SFD)

The SFD showed that 33% of the FS are safely managed (Green). Initially, 44% of FS is safely contained. However, this proportion decreases to 33% when 11% of FS contained is emptied. When safely contained FS are emptied but not transported to treatment options, they are categorized as unsafely managed. This indicates emptied FS remains safe depending on the emptying mechanism and the available treatment options/facilities. Therefore, only 33% of safely contained FS can be considered safe until they are emptied.

Furthermore, 67% of FS is unsafely managed (Red). It includes 10% of WW-not contained and 10% SN which are not delivered to treatment plant. Additionally, 22% of FS are neither safely contained nor emptied, and 18% of FS (11% safely contained, 7% not safely contained) are emptied but not delivered to treatment options. Moreover, 7% of the population still practice open defecation, exacerbating the sanitation challenges. These findings highlight the urgent need to tackle critical gaps to mitigate environmental threats and the associated public health risks arising from inadequate FS management.



## RECOMMENDATIONS

- Upgrade existing unsafe containment systems to safe technologies such as septic tanks, fully lined tanks, biogas digesters or twin pits.
- Formalize and regulate the private desludging service within the municipality to ensure proper FS emptying and disposal.
- Establish wastewater and faecal sludge treatment plant.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.

# KOLHABI MUNICIPALITY

Municipal Sanitation Synopsis, Study Year -2023



Kolhabi City

## DEMOGRAPHICS



Area : 157.40 km<sup>2</sup>



Household : 10,561



POPULATION : 51,182  
Male : 24,862  
Female : 26,320



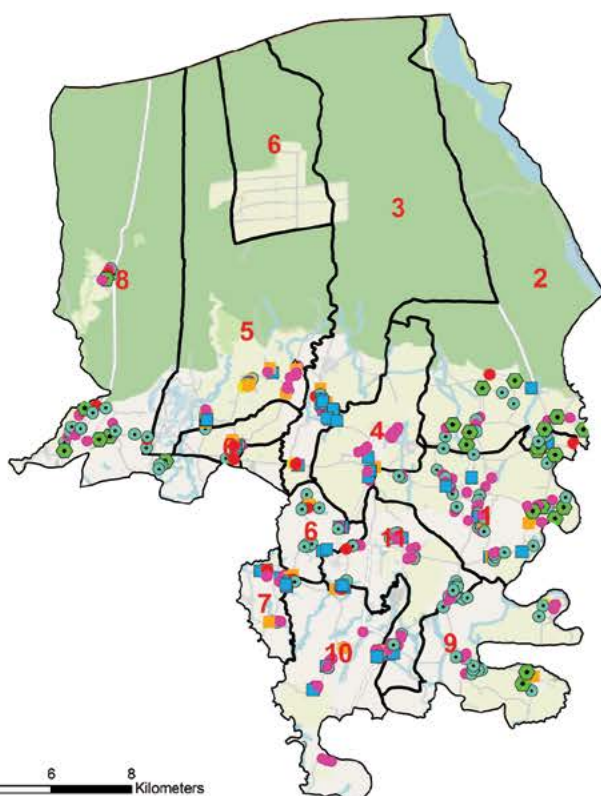
Wards : 11

Source: Census 2021

## CITY PROFILE

Kolhabi Municipality is in Bara district of Madhesh Province, Nepal. It ranges from 27°0'9"N to 27°10'47"N latitude, 85°4'26"E to 85°12'30"E longitude and at an approximate altitude of 131 meters above sea level.

### Types of sanitation technologies at household in Kolhabi Municipality



#### Legend

- Open defecation
- ◆ Offsite sanitation
- Types of containment**
- Biogas digester
- Fully lined tank
- Lined tank with impermeable walls and open bottom
- Single pit
- Twin pit
- Unlined pit

0 1 2 4 6 8 Kilometers



संकलन  
(User Interface)



अण्डारण  
(Containment)

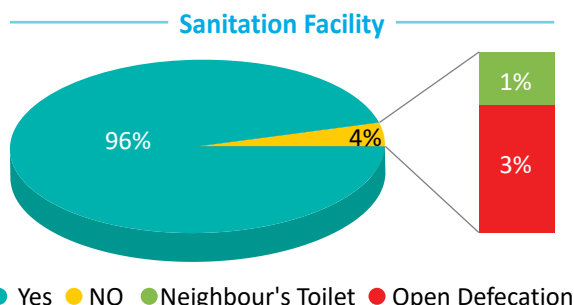


रिचार्जने र ढुवानी  
(Emptying & Transportation)

## USER INTERFACE FACILITY

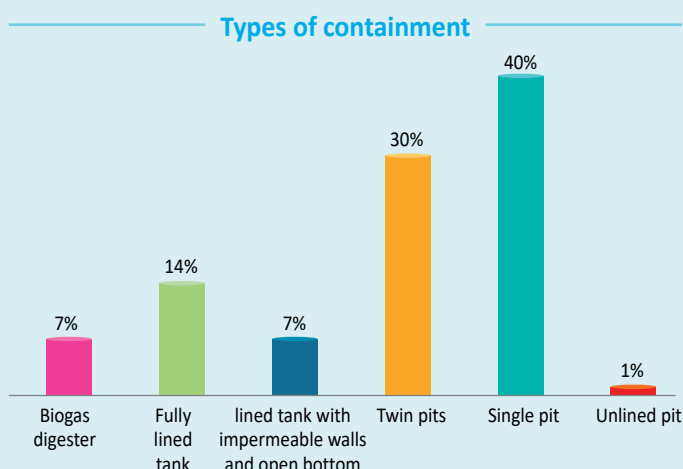
About 96% of HHs have access to basic sanitation facilities while 4% of HHs still practice open defecation. HHs without sanitation facilities opt for open defecation or use neighbor's toilet.

The municipality does not have sewer network, however 1% of HHs practice unauthorized discharge of effluents from their toilets to water bodies.



## CONTAINMENT

Most HHs in the municipality have single pits and twin pits, possessing a risk of groundwater contamination. Additionally, 7% of HHs have connected their toilets to biogas digester, which are primarily designed for managing organic waste and producing alternative energy.



## EMPTYING AND TRANSPORTATION

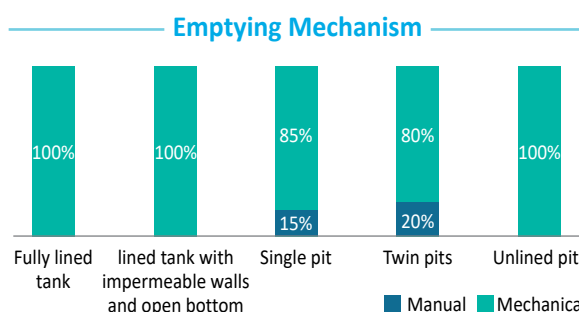
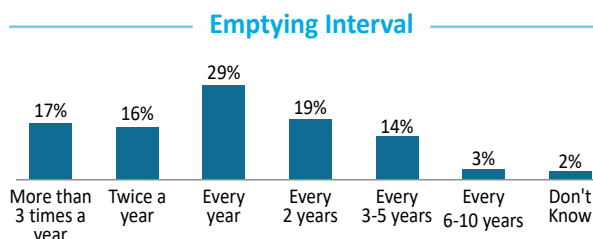
The municipality has an on-demand emptying practice and around 44% of HHs have emptied their containments. The containments are usually emptied every year.



84% emptied mechanically by municipal or private desludging service providers.



16 % emptied manually (self or traditional sanitation workers.)



### Details of desludging service providers

Service Provider	Private	Municipality
No. of service provider	1	1
No. of Vehicles	2	1
Average trips per day per vehicle	1	1
Average Charge per trip (NPR)	2,000	2,000





प्रशोधन  
(Treatment)

पुनः प्रयोग वा सुरक्षित विसर्जन  
(Re-use or Safe Disposal)

## ESTIMATION OF FAECAL SLUDGE

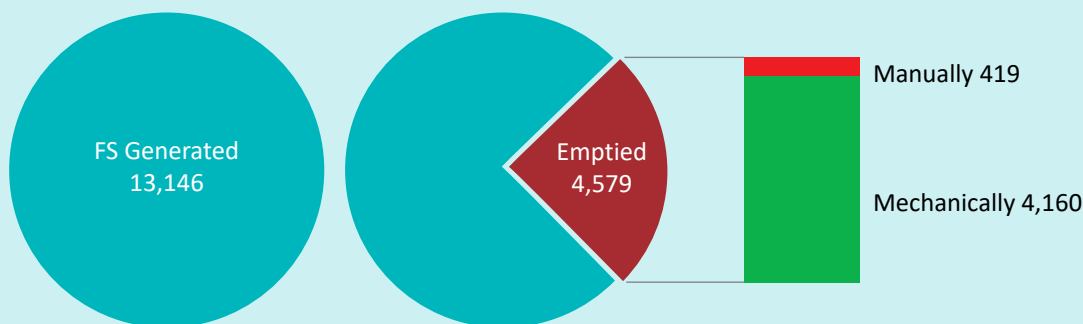
Total estimated volume of FS generated in the municipality: 13,146 m<sup>3</sup> per year which is 36.0 m<sup>3</sup> per day.

Total volume of FS emptied in the municipality: 4,579 m<sup>3</sup> per year which is 12.5 m<sup>3</sup> per day

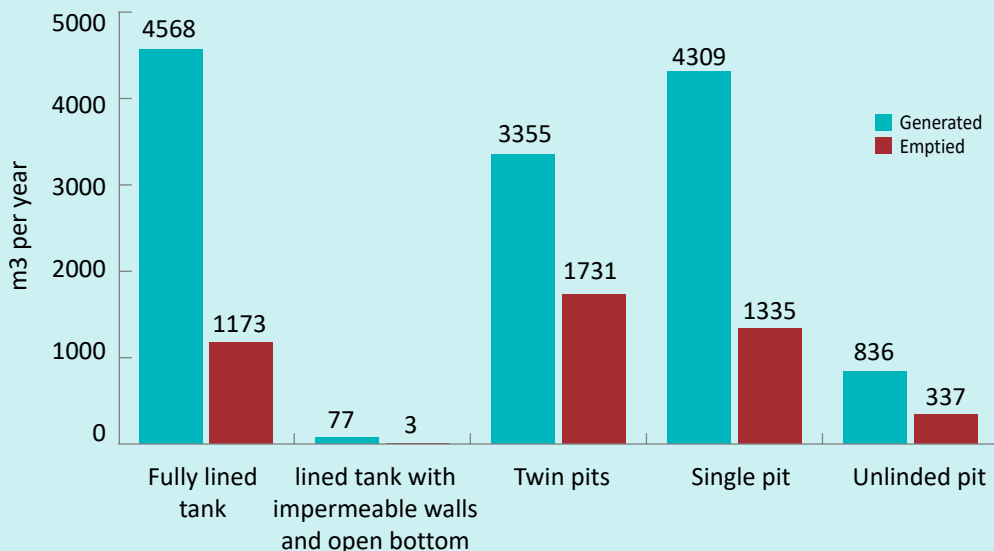
Total volume of mechanically emptied FS in the municipality: 4,160 m<sup>3</sup> per year which is 11.4 m<sup>3</sup> per day

Total volume of manually emptied FS in the municipality: 419 m<sup>3</sup> per year which is 1.1 m<sup>3</sup> per day

### Summary of faecal sludge produced, emptied and transported in Kolhabi Municipality (cubic meter)



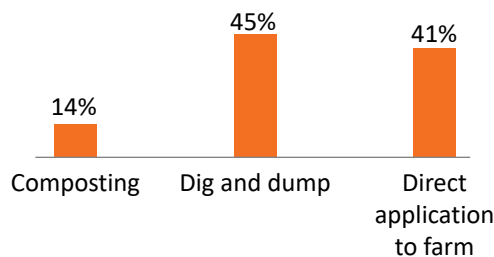
### FS Generated and Emptied



## SAFE DISPOSAL OR REUSE

Mechanically emptied FS is applied in farmlands or in a forest whereas manually emptied FS are usually applied in farmlands, dig and dumped, and composted.

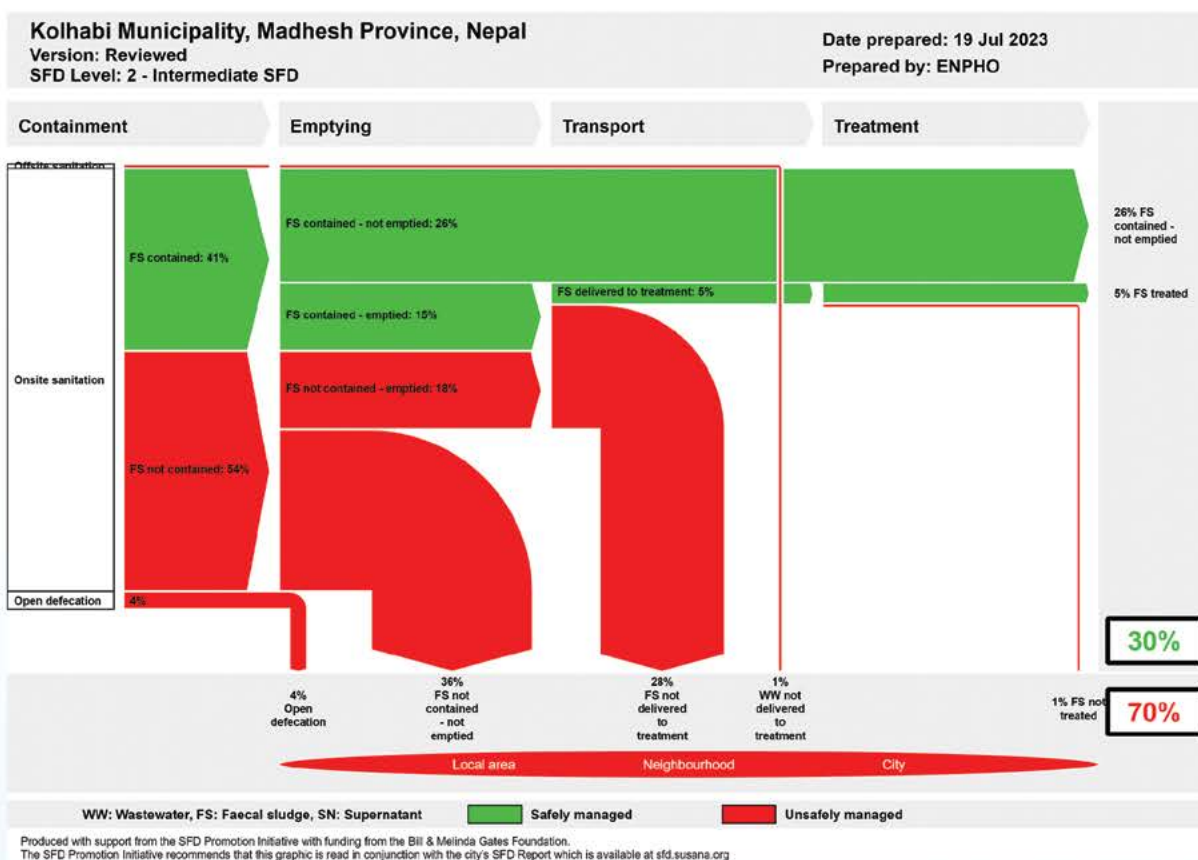
### Disposal practice after manual emptying



## SHIT FLOW DIAGRAM (SFD)

FS generated by 30% of the population is safely managed (Green). Initially, 41% of FS is safely contained, but this proportion drops to 26% which can be considered safe until it's not emptied. The remaining 15% of FS which is contained are emptied, among which 5% are treated that primarily comes from population using biogas digester.

Meanwhile, FS generated by 70% of the population is unsafely managed (Red). It includes 1% of WW not delivered to treatment, and 1% of FS not treated. The 28% of emptied FS (18% FS not contained, 10% FS contained) which are not delivered to treatment plant possess high risk of environmental pollution and public health threats. Additionally, 36% of FS are neither contained nor emptied. This highlights the necessity of safe emptying, disposal or treatment. Further, 4% of the population still practices open defecation, exacerbating sanitation challenges. Overall this percentage of unsafely managed FS, highlights the critical gaps that must be addressed to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Upgrade existing unsafe containment systems to safe technologies such as septic tanks, fully lined tanks, or biogas digesters.
- Establish an appropriate capacity of faecal sludge treatment plant with reuse options.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.



# MALANGWA MUNICIPALITY

Municipal Sanitation Synopsis, Study Year -2023



Baba Mahendranath Shiva Temple

## DEMOGRAPHICS



Area : 30.44 km<sup>2</sup>



Household : 10,033



POPULATION : 54,550

Male : 27,849

Female : 26,701



Wards : 12

Source: Census 2021

## CITY PROFILE

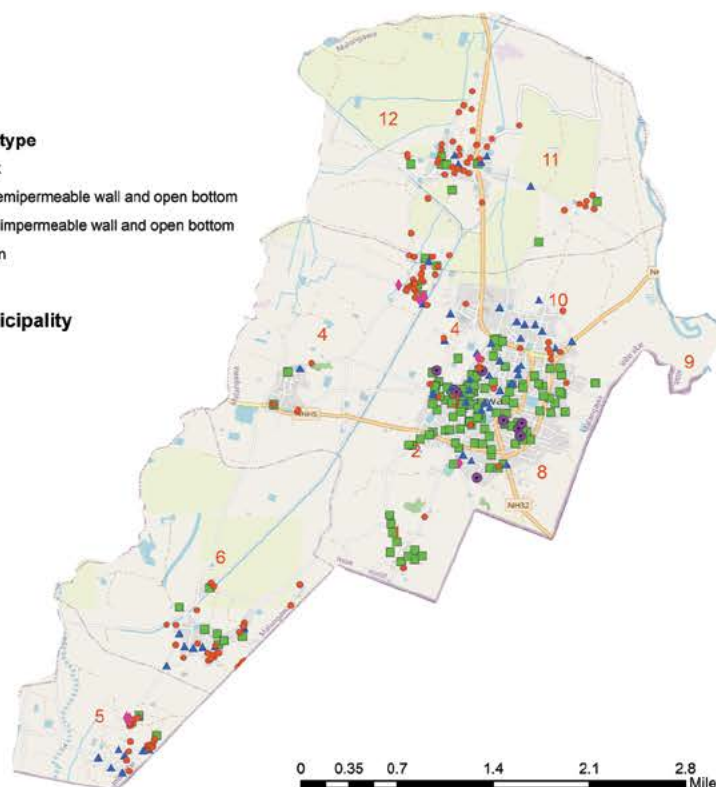
Malangwa Municipality is located in Sarlahi District, Madhesh province, Nepal. It serves as the administrative centre of Sarlahi district and is renowned for its rich agricultural landscape. It lies at 6°51'45"N latitude and 85°33'21"E longitude. The municipality shares the border with India.

### Legend

#### SFD containment type

- Fully Lined tank
- Lined pit with semipermeable wall and open bottom
- ▲ Lined tank with impermeable wall and open bottom
- ◆ Open defecation
- Septic tank

#### Malangwa Municipality





संकलन  
(User Interface)



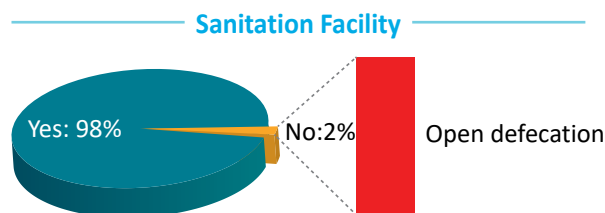
अण्डारण  
(Containment)



रिचार्जने र ढुवानी  
(Emptying & Transportation)

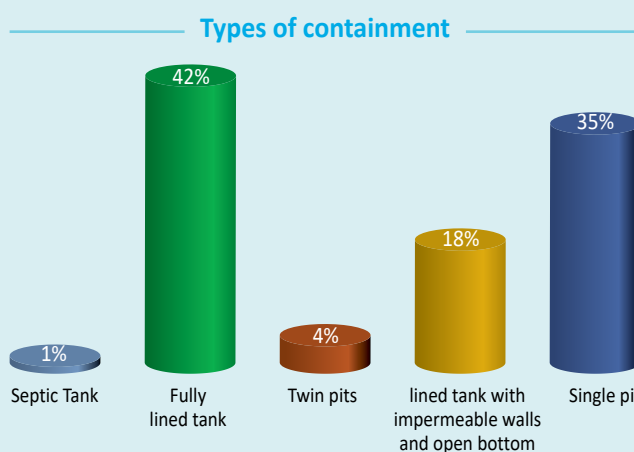
## USER INTERFACE FACILITY

Despite the municipality being declared as ODF, approximately 2% of HHs defecate openly. However, an impressive 98% of HHs have access to basic sanitation facilities.



## CONTAINMENT

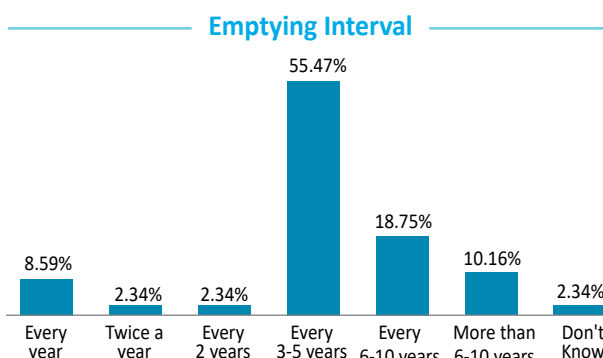
The findings showed that fully lined tanks are installed by most of the HHs, followed by single pits. The technically appropriate septic tanks are installed in few HHs. However, a significant portion of HHs opted for permeable containment (single pits, lined tanks), which leach out and possess a risk of groundwater contamination.



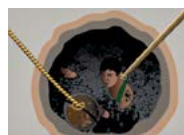
## EMPTYING AND TRANSPORTATION

The survey revealed that 35.26% of the HHs have emptied their containments at least once since installation. Usually, containments are emptied at an interval of 3 to 5 years.

Private desludging service providers are engaged in desludging service within the municipality, which operate in the area informally without registration.



97% emptied mechanically by private desludging service providers.

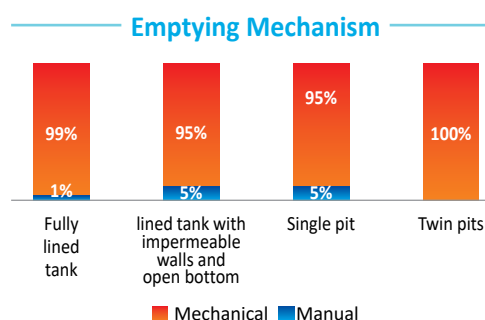


3% emptied manually (self or traditional sanitation workers)



### Details of desludging service providers

Service Provider	Private
No. of service provider	3
No. of vehicles	5
Capacity of vehicle (Litres)	5,000 – 7,500
Average trips per day per vehicle	1
Average Service Charge per trip (NPR)	Rectangular containments -2,500 per trip Circular pits -250 per ring





प्रशोधन  
(Treatment)



पुनः प्रयोग वा सुरक्षित विमर्जन  
(Re-use or Safe Disposal)

## ESTIMATION OF FAECAL SLUDGE

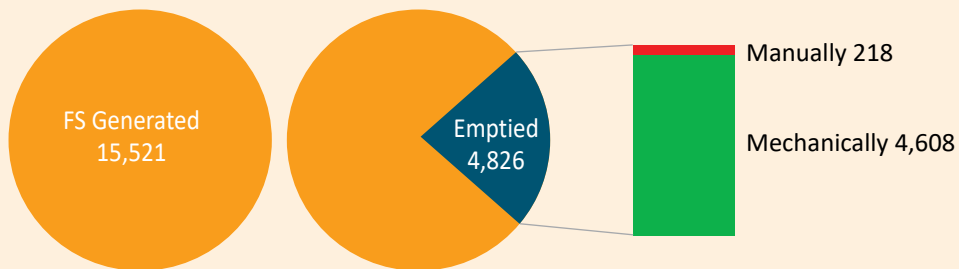
Total estimated volume of FS generated in the municipality: 15,521 m<sup>3</sup> per year which is 42.5 m<sup>3</sup> per day

Total volume of FS emptied in the municipality: 4,826 m<sup>3</sup> per year which is 13.2 m<sup>3</sup> per day.

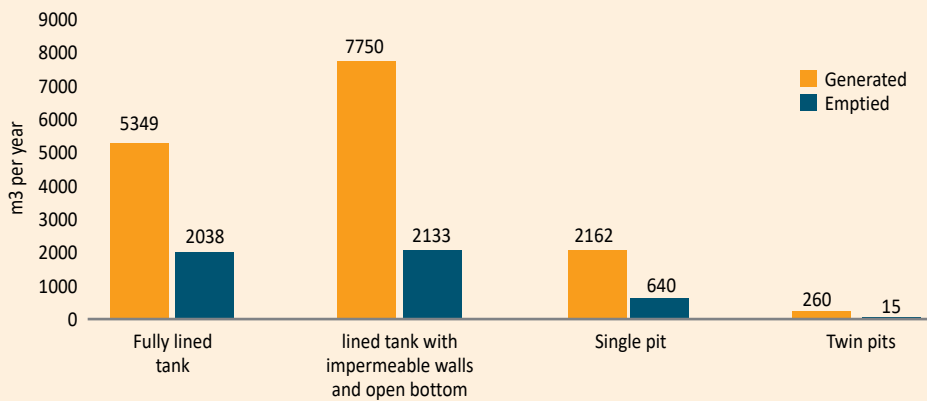
Total volume of mechanically emptied FS: 4,608 m<sup>3</sup> per year which is 12.6 m<sup>3</sup> per day.

Total volume of manually emptied FS: 218 m<sup>3</sup> per year which is 0.6 m<sup>3</sup> per day

### Summary of faecal sludge produced, emptied and transported in Malangwa Municipality (cubic meter)



### FS Generated and Emptied



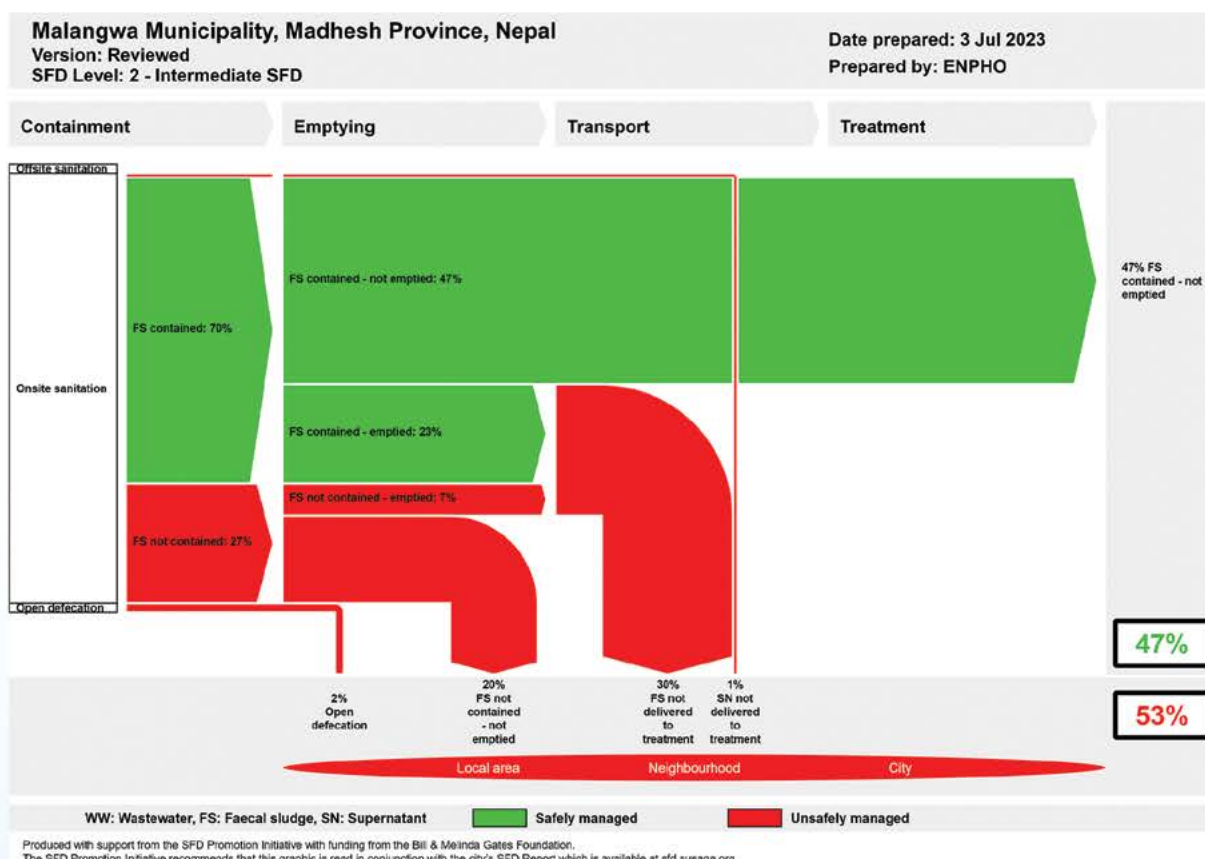
## SAFE DISPOSAL OR REUSE

The municipality lacks a faecal sludge treatment plant, leading to the disposal of mechanically emptied FS into irrigation canal, and applied in farmlands. Manually emptied FS is usually dig and dumped.

## SHIT FLOW DIAGRAM (SFD)

FS generated by 47% of the population is safely managed (Green). Initially, 70% of FS is safely contained, but this proportion drops to 47% which can be considered safe until it's not emptied. Whereas the remaining 23% of FS which is contained and emptied, are not delivered to treatment plant possess high risk to environmental pollution and public health threats. This highlights the necessity of safe emptying and its subsequent treatment.

Moreover, FS generated by 53% of the population is unsafely managed (Red). It includes 1% of SN, 20% of FS which are neither safely contained nor emptied, and 30% of emptied FS (23% -FS contained, 7%-FS not contained) but not delivered to treatment plant. Additionally, 2% of the population still practice open defecation, further exacerbates the sanitation challenges. This highlights critical gaps that needs to be addressed to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Upgrade existing unsafe containment systems to safe technologies such as septic tanks, fully lined tanks, or biogas digesters emphasizing the importance of preventing groundwater contamination.
- Formalize and regulate the private desludging services within the municipality.
- Construct a faecal sludge treatment plant.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.

# MIRCHAIYA MUNICIPALITY

Municipal Sanitation Synopsis, Study Year -2023



Mirchiya City

## DEMOGRAPHICS



Area : 91.97 km<sup>2</sup>



Household : 12,250



POPULATION : 59,425  
Male : 29,571  
Female : 29,854



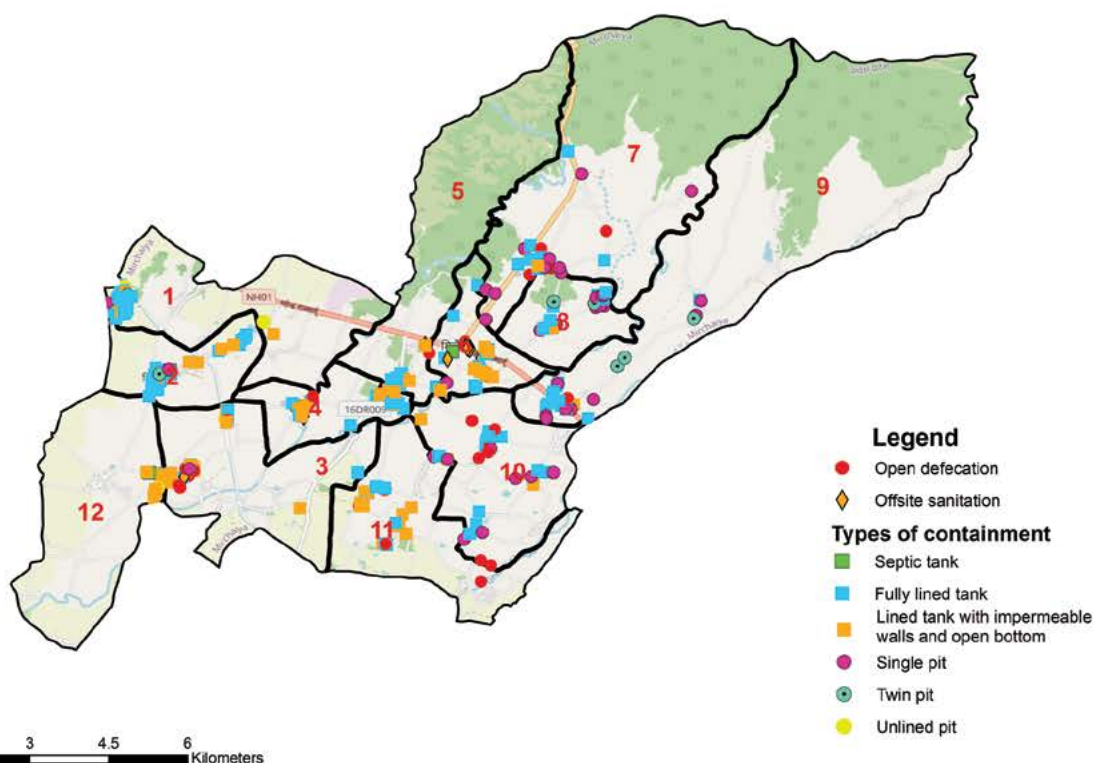
Wards : 12

Source: Census 2021

## CITY PROFILE

Mirchiya Municipality is in Siraha district of Madhesh Province, Nepal. It lies at 26°29'43"N latitude, 86°9'5"E longitude and at an altitude of 129 meters above sea level.

### Types of sanitation technologies at households in Mirchiya Municipality





संकलन  
(User Interface)



अण्डारण  
(Containment)

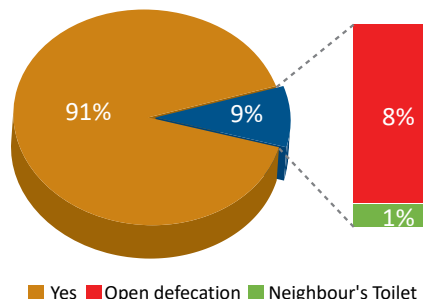


रिच्याउने र ढुवानी  
(Emptying & Transportation)

## USER INTERFACE FACILITY

In Mirchaiya Municipality, 91% of HHs have access to basic sanitation facilities. HHs without toilet opt for either neighbor's toilet or open defecation. The municipality does not have sewer network, although 4% of HHs practice unauthorized discharge of effluents from their toilets into an open drain or an open environment.

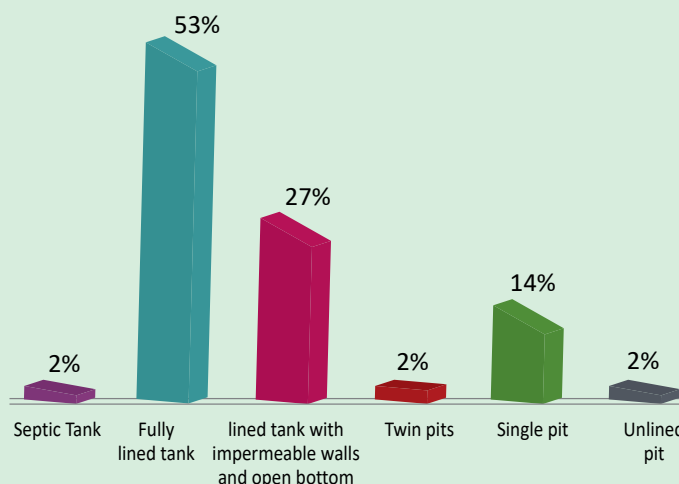
### Sanitation Facility



## CONTAINMENT

The survey revealed that the majority of HHs have fully lined tanks; considered as safe containment. However, a substantial percentage rely on single pits and lined tanks with impermeable walls and open bottom possessing a risk of groundwater contamination. Meanwhile, there is a small percentage of HH that have built technically appropriate containments such as septic tanks and twin pits.

### Types of containment



## EMPTYING AND TRANSPORTATION

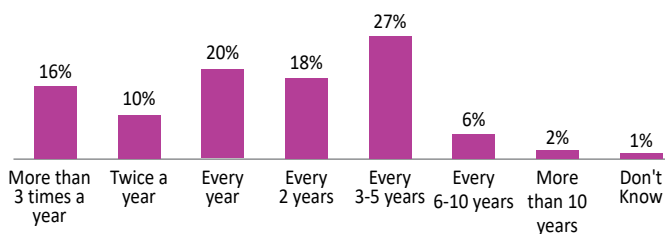
The municipality has an on-demand emptying practice and 29% of HHs have emptied their containments. The factor contributing to minimal emptying practice is inappropriately constructed containments that leads to infiltration of leachate into groundwater.

Only mechanical emptying is practiced in the municipality. The municipality itself as well as private desludger are providing desludging services.

### Details of desludging service providers

Service Provider	Municipality	Private
No. of service provider	1	4
No. of Vehicles	1	5
Average trips per day per vehicle	1	1
Average Charge per trip (NPR)	3,000	1,500

### Emptying Interval



100% emptied mechanically by municipal or private desludging service providers.



प्रशोधन  
(Treatment)



पुनः प्रयोग वा सुरक्षित विमर्जन  
(Re-use or Safe Disposal)

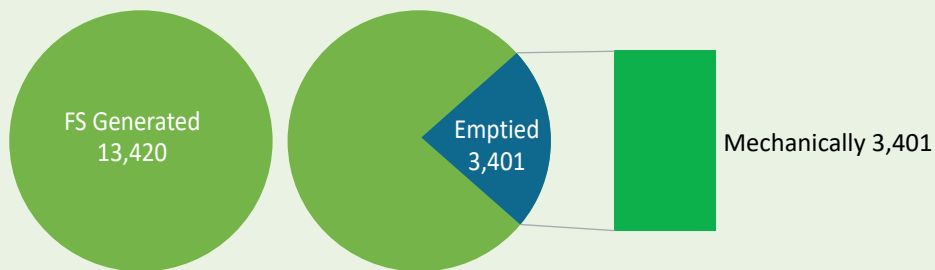
## ESTIMATION OF FAECAL SLUDGE

Total estimated volume of FS generation in the municipality: 13,420 m<sup>3</sup> per year which is 36.7 m<sup>3</sup> per day.

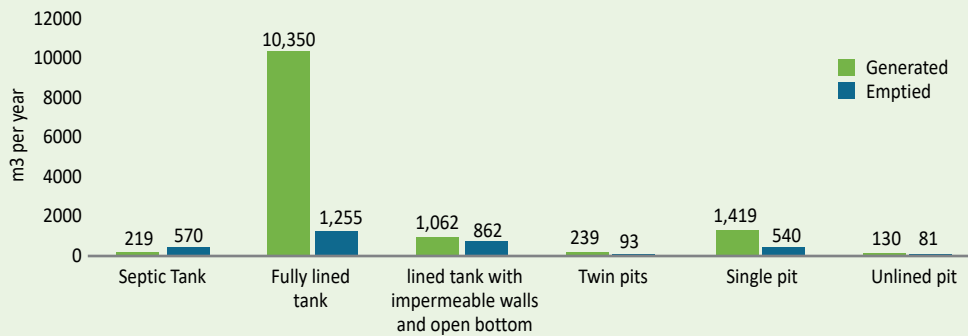
Total volume of FS emptied in the municipality: 3,401 m<sup>3</sup> per year which is 9.3 m<sup>3</sup> per day.

Total volume of mechanically emptied FS in the municipality: 3,401 m<sup>3</sup> per year which is 9.3 m<sup>3</sup> per day.

### Summary of faecal sludge produced, emptied and transported in Mirchaiya Municipality (cubic meter)



### FS Generated and Emptied



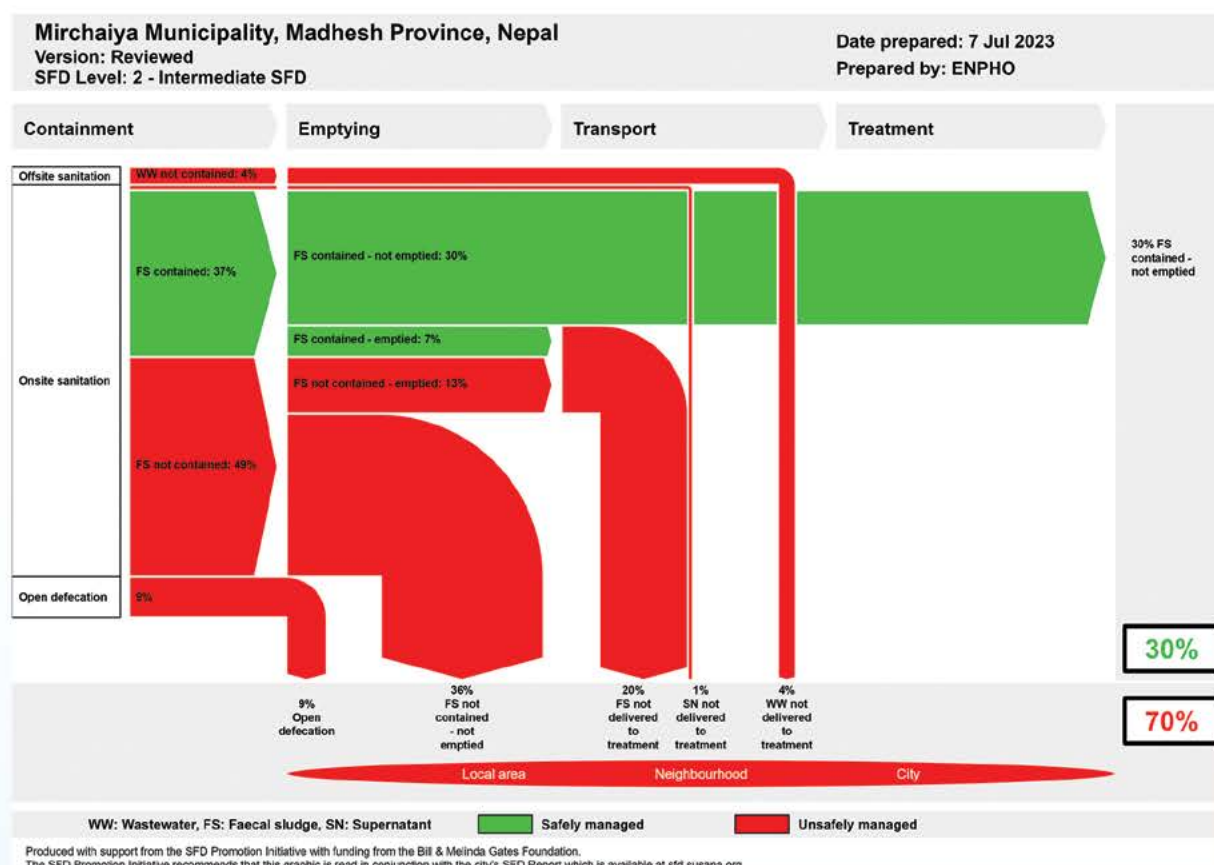
## SAFE DISPOSAL OR REUSE

The municipality has allocated a designated dumping site within a community forest solely for use by municipal desludging vehicle whereas private desludging service providers dispose the FS in the riverbanks or apply in farmlands.

## SHIT FLOW DIAGRAM (SFD)

FS generated by 30% of the population is safely managed (Green). Initially, 37% of FS is safely contained, but this proportion drops to 30% which can be considered safe until it's not emptied. Whereas the remaining 7% of FS which is contained and emptied, remains safe depending upon the emptying mechanism and available treatment options/facilities. This highlights the necessity of safe emptying and its subsequent treatment.

Furthermore, FS generated by 70% of the population is unsafely managed (Red). It includes 1% of SN which is discharged without treatment, 4% of WW discharged untreated into the environment, possessing risk of pollution. Additionally, 36% of FS are neither contained nor emptied, and 20% of emptied FS (13%-FS not contained, 7%-F not contained) are not delivered to treatment. 9% of the population still practices open defecation, further exacerbating sanitation challenges. Overall, FS from 70% of the population is unsafely managed, highlighting critical gaps that need to be addressed to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Upgrade existing unsafe containment systems to safe technologies such as septic tanks, fully lined tanks, or biogas digesters.
- Formalize and regulate the private desludging service within the municipality to ensure proper FS disposal.
- Establish faecal sludge treatment plant with reuse options.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.



# MITHILA BIHARI MUNICIPALITY

Municipal Sanitation Synopsis, Study Year -2023



Mithila Bihari Temple

## DEMOGRAPHICS



Area : 37.59 km<sup>2</sup>



Household : 7,654



POPULATION : 38,273  
Male : 18,916  
Female : 19,357



Wards : 10

Source: Census 2021

## CITY PROFILE

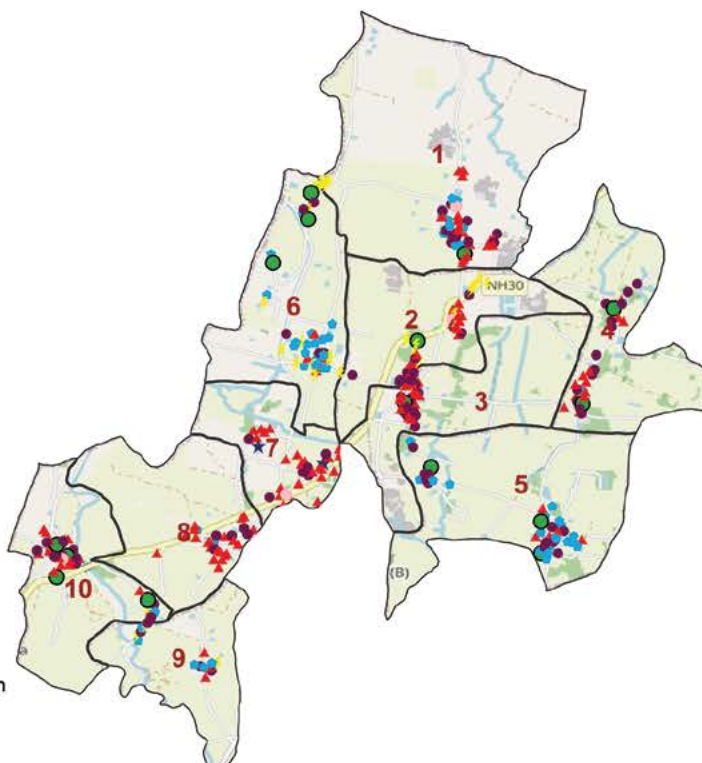
Mithila Bihari Municipality is in Dhanusha District, Madhesh Province. It was formed on March 10, 2017. It lies at 27°11'31"N latitude, 85°34'32"E longitude and at an altitude of 87 meters above sea level.

### Types of sanitation technologies at household level in Mithila Bihari Municipality

#### Legend

#### Type of containment

- ★ Fully Lined Tank
- ★ Septic Tank
- Single Pit
- Twin Pit
- ▲ Lined tank with impermeable walls and open bottom
- ⚡ Open Defecation
- Unlined Pit





संकलन  
(User Interface)



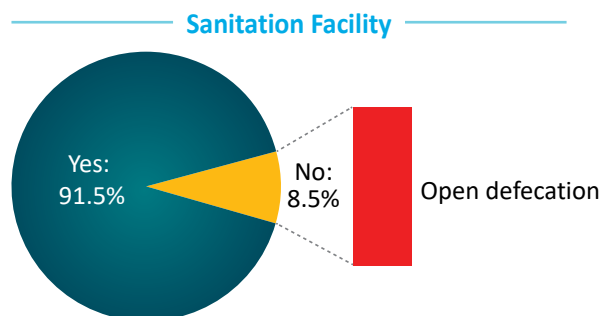
अण्डारण  
(Containment)



रिच्याउने र ढुवानी  
(Emptying & Transportation)

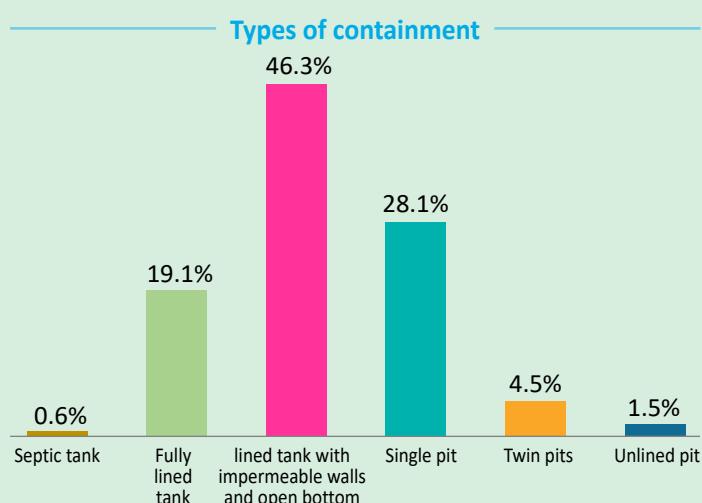
## USER INTERFACE FACILITY

The HH survey revealed that 8.5% of the HHs in the municipality do not have access to toilets and defecate in open spaces.



## CONTAINMENT

The survey revealed that the majority of HHs constructed lined tanks with impermeable walls and open bottom (46.3%), and single pits (28.1%) which possess a high risk of groundwater pollution due to permeable bases, allowing leachate percolation.



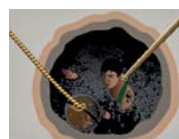
## EMPTYING AND TRANSPORTATION

The survey revealed that 21.5% of HHs have emptied their containments at least once since installation. The containments are usually emptied at an interval of every 3 to 5 years while a few containments are emptied more than 3 times a year.

The mechanical emptying facility is provided by private desludgers of Janakpurdhham Sub-Metropolitan City.

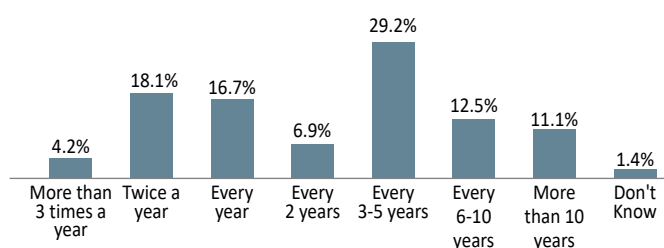


94.5% emptied mechanically by private desludging service providers

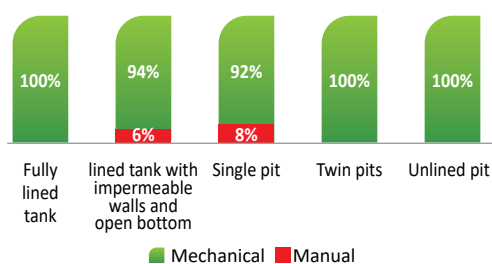


5.5% emptied manually (self or traditional sanitation workers)

### Emptying Interval



### Emptying Mechanism





प्रशोधन  
(Treatment)



पुनः प्रयोग वा सुरक्षित विसर्जन  
(Re-use or Safe Disposal)

## ESTIMATION OF FAECAL SLUDGE

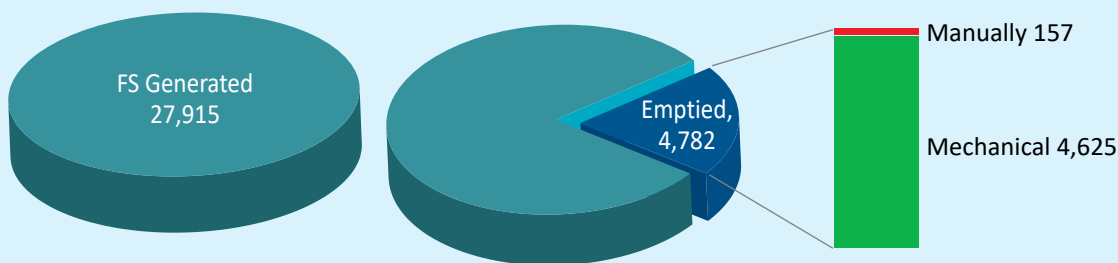
Total estimated volume of FS generation in the municipality: 27,915 m<sup>3</sup> per year which is 76.5 m<sup>3</sup> per day

Total volume of FS emptied in the municipality: 4,782 m<sup>3</sup> per year which is 13.1 m<sup>3</sup> per day.

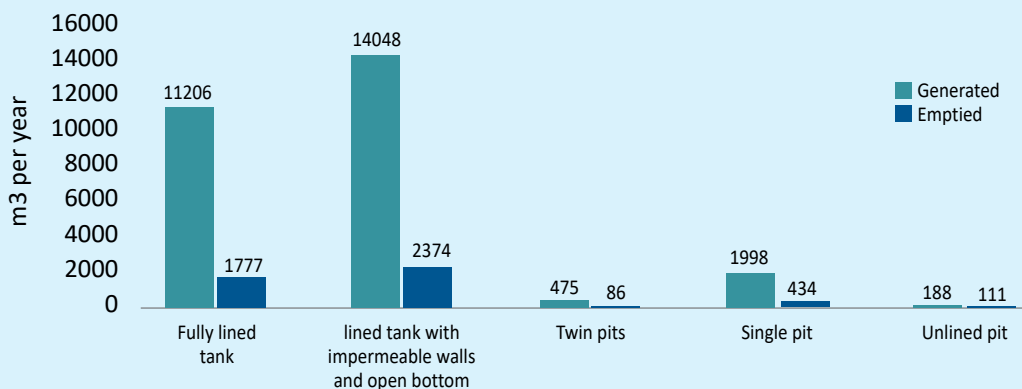
Total volume of mechanically emptied FS in the municipality: 4,625 m<sup>3</sup> per year which is 12.7 m<sup>3</sup> per day.

Total volume of manually emptied FS in the municipality : 157 m<sup>3</sup> per year which is 0.5 m<sup>3</sup> per day

### Summary of faecal sludge produced, emptied and transported in Mithila Bihari Municipality (cubic meter)



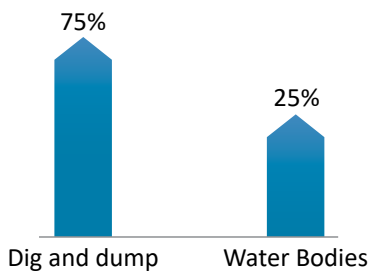
### FS Generated and Emptied



### Disposal practice after manual emptying

## SAFE DISPOSAL OR REUSE

The municipality does not have a treatment plant for treating FS. The mechanically emptied FS is applied in farmland, while manually emptied FS is disposed through dig and dump practices and left untreated into nearby water bodies.





# PARSAGADHI MUNICIPALITY

Municipal Sanitation Synopsis, Study Year-2023



Parsagadhi Municipality Office

## DEMOGRAPHICS



Area : 99.69 km<sup>2</sup>



Household : 7,632



POPULATION : 41,569  
Male : 21,011  
Female : 20,558



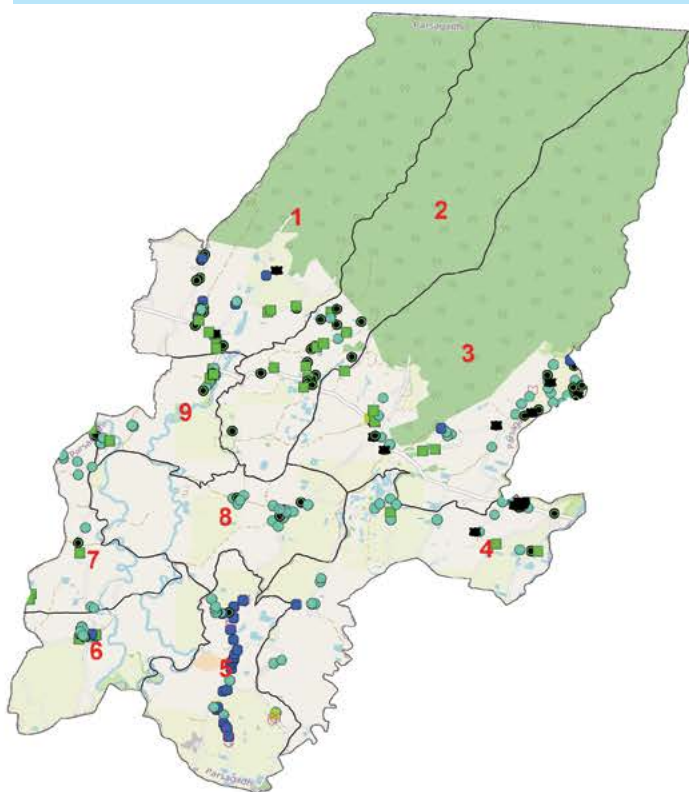
Wards : 9

Source: Census 2021

## CITY PROFILE

Parsagadhi Municipality was established in 2016 and is located in Parsa District, Madhesh Province. It lies at 27°08'46"N latitude and 84°52'38"E longitude. In the Parsa District, lower tropical zones are found below 300 meters, while upper tropical zones are located between 300 meters and 1,000 meters.

### Type of containments available in the Parsagadhi Municipality



#### Legend

#### Types of Containment

- Single Pit
- Twin Pit
- Fully Lined Tank
- Lined Tank with Impermeable walls and open bottom
- Biogas Digester
- Unlined Pit
- Septic Tank



संकलन  
(User Interface)



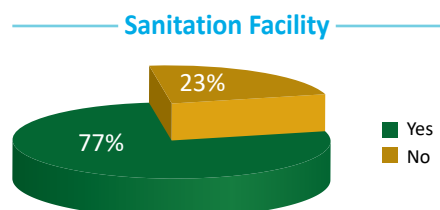
अण्डारण  
(Containment)



रिचार्जने र ढुवानी  
(Emptying & Transportation)

## USER INTERFACE FACILITY

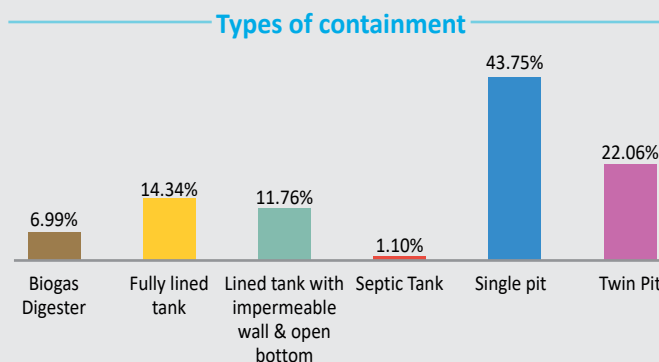
In the Municipality, 77% of HHs have access to basic sanitation facilities while the remaining HHs practice open defecation.



Toilet without superstructure which is not in use

## CONTAINMENT

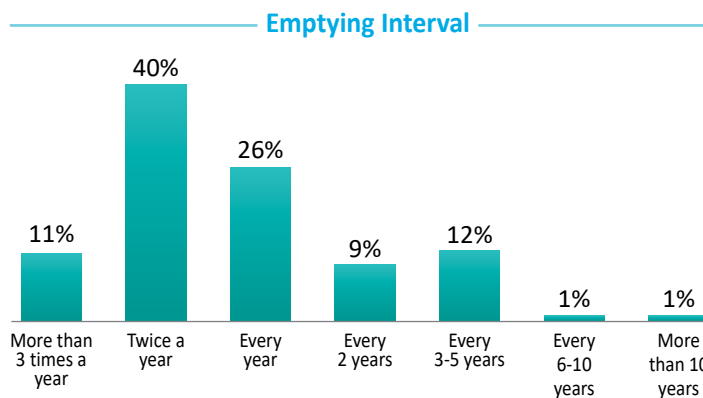
The survey showed that most of the HHs use single pits (43.75%), lined tanks with impermeable walls and open bottom (11.76%) which are considered unsafe as these types of containment have high risk of leachate percolation leading to groundwater contamination. Interestingly, there is availability of twin pits (22.06%) and biogas digester (6.99%) in significant proportion.



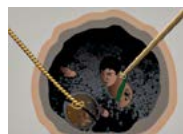
## EMPTYING AND TRANSPORTATION

The survey revealed that 53.68% of HHs have emptied their containment at least once since installation. Commonly, circular containments emptied manually. Most of the emptied containments are single pits and twin pits which are emptied twice a year.

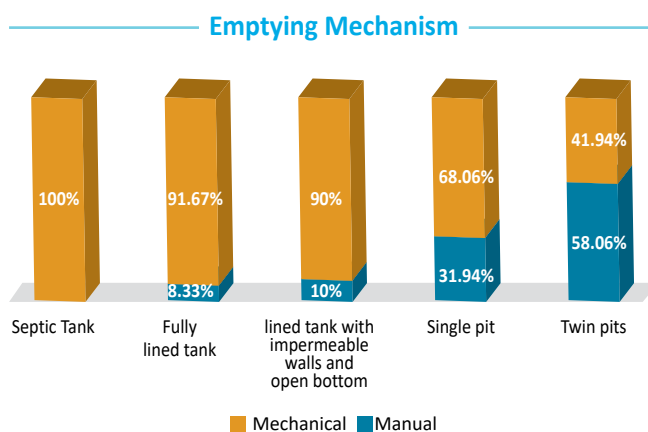
Both, private desludging service providers and traditional sanitation workers serves for emptying services in the municipality. The two private desludging service providers from neighboring municipality have their main service area in the municipality.



66.14% emptied mechanically by private desludging service providers.



33.86% emptied manually (self or traditional sanitation workers)





प्रशोधन  
(Treatment)



पुनः प्रयोग वा सुरक्षित विमर्जन  
(Re-use or Safe Disposal)



## ESTIMATION OF FAECAL SLUDGE

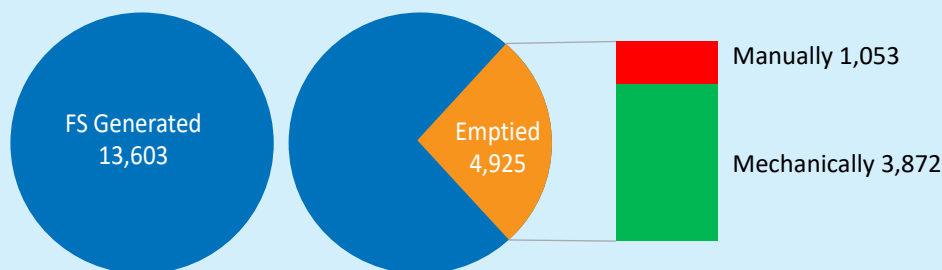
Total estimated volume of FS generation in the municipality: 13,603 m<sup>3</sup> per year which is 37.2 m<sup>3</sup> per day.

Total volume of FS emptied in the municipality: 4,925 m<sup>3</sup> per year which is 13.5 m<sup>3</sup> per day.

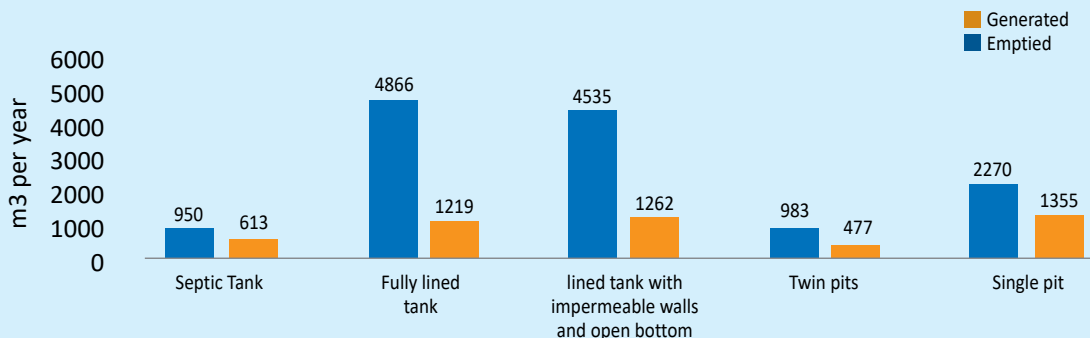
Total volume of mechanically emptied FS in the municipality: 3,872 m<sup>3</sup> per year which is 10.6 m<sup>3</sup> per day.

Total volume of manually emptied FS in the municipality: 1,053 m<sup>3</sup> per year which is 2.9 m<sup>3</sup> per day.

### Summary of faecal sludge produced, emptied and transported in Parsagadhi Municipality (cubic meter)



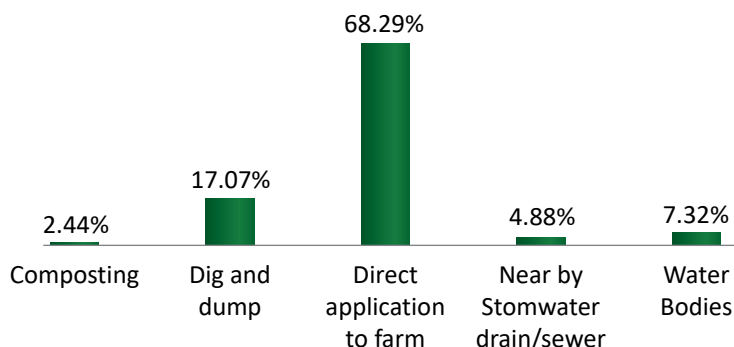
### FS Generated and Emptied



### Disposal after manual emptying

## SAFE DISPOSAL OR REUSE

As the municipality does not have faecal sludge treatment plant, the majority of manually emptied FS is applied in farmlands, and some are disposed in nearby stormwater drain, and water bodies.

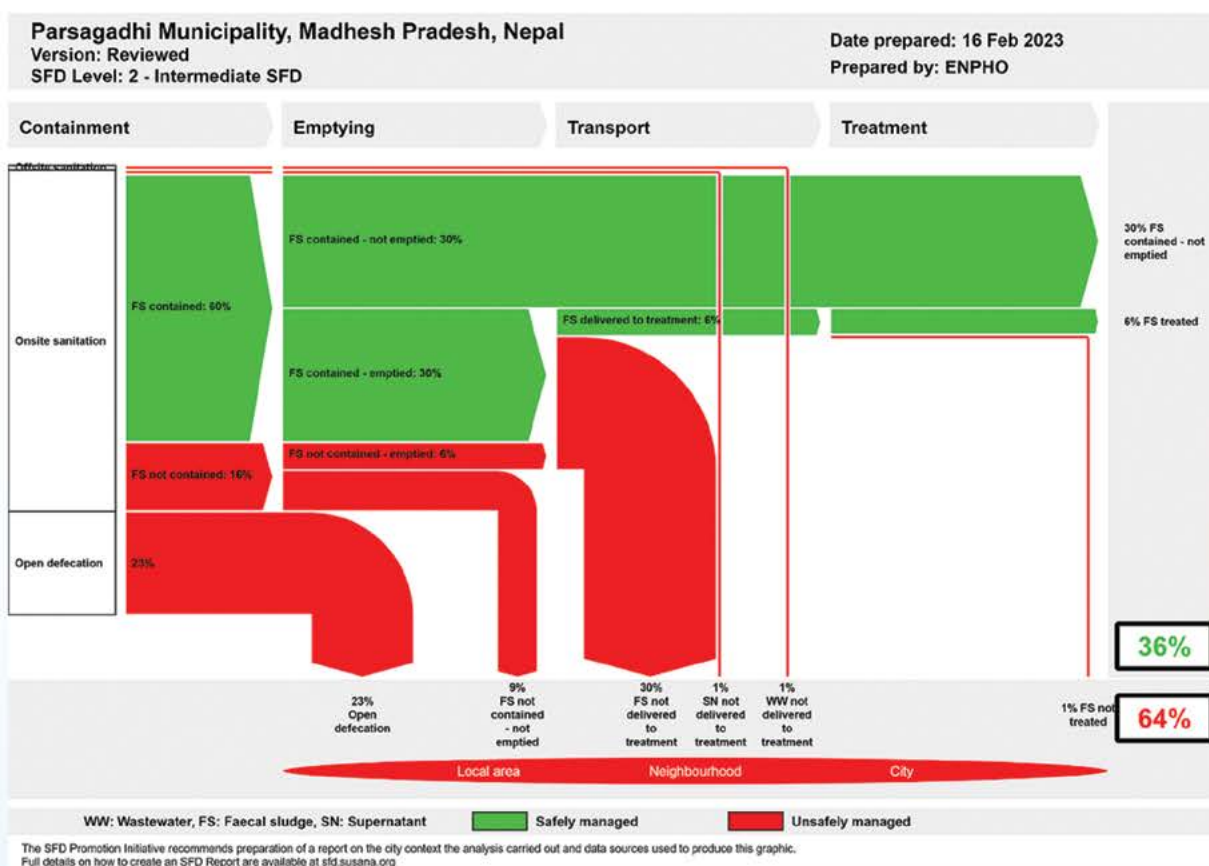


## SHIT FLOW DIAGRAM (SFD)

The SFD visually represents the status of sanitation practices across the entire sanitation value chain.

FS generated by 36% of the population is safely managed (Green). Initially, 60% of FS is safely contained, but this proportion drops to 30% which can be considered safe until it's not emptied. Whereas out of the remaining 30% of FS which is contained and emptied, 6% are transported and treated, that primarily comes from population using biogas digester. The emptied FS remains safe depending upon the nature of the emptying mechanism and available treatment options/facilities. This highlights the necessity of safe emptying and its subsequent treatment.

Similarly, FS generated by 64% of population is unsafely managed (Red). It includes 1% of SN discharged without treatment, 1% of WW discharged untreated into the environment, posing risks of pollution. Additionally, 9% of FS is neither contained nor emptied, and 30% of FS emptied (24% -FS contained, 6% FS not contained) but not delivered to treatment plant. Additionally, 23% of the population still practice open defecation, further exacerbating sanitation challenges. This unsafely managed percentage of FS highlights the critical gaps that need to be addressed to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Continue the campaign to maintain open defecation-free status and advocate for behavioral change.
- Upgrade unsafe containments to safe onsite sanitation technologies as septic tanks, biogas or twin pits.
- Establish a faecal sludge treatment plant of appropriate capacity with reuse options.
- Formalize and regulate the private desludging service within the municipality to ensure proper FS disposal.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.



# RAJBIRAJ MUNICIPALITY

Municipal Sanitation Synopsis, Study Year -2023



Rajbiraj City

## DEMOGRAPHICS



Area : 55.65 km<sup>2</sup>



Household : 14,133



POPULATION : 70,803  
Male : 36,284  
Female : 34,519



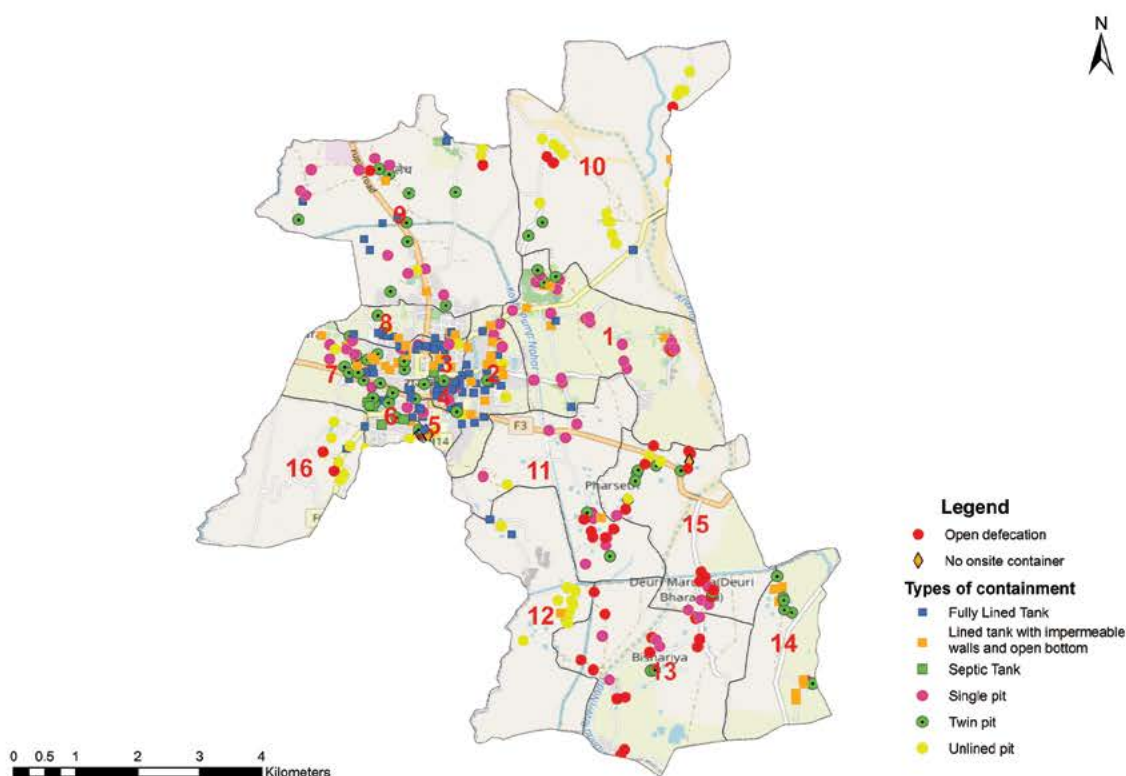
Wards : 16

Source: Census 2021

## CITY PROFILE

Rajbiraj Municipality, located at the center of Saptari district in Madhesh Province. It lies at 26°32'30"N latitude, 86°45'24" E longitude and at an altitude of 76 meters above sea level.

### Type of sanitation technologies at households in Rajbiraj Municipality





संकलन  
(User Interface)



अण्डारण  
(Containment)

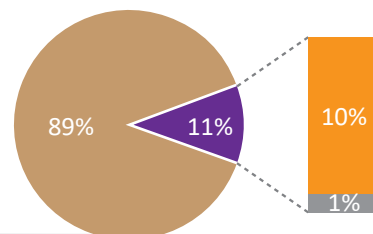


रिच्याउने र ढुवानी  
(Emptying & Transportation)

## USER INTERFACE FACILITY

In Rajbiraj Municipality, 89% of HHs have access to basic sanitation facilities while remaining HHs still practice open defecation. The municipality does not have sewer network, although 2% of HHs practice unauthorized discharge of effluents from their toilets into an open drain, water bodies and open environment.

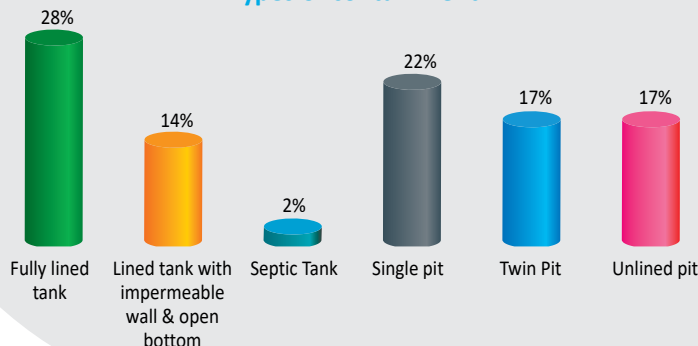
### Sanitation Facility



## CONTAINMENT

The survey revealed that 2% of HHs have septic tanks along with a considerably low percentage of safe containments, i.e. fully lined tanks (28%), preventing leachate percolation. The majority of HHs in the municipality have pits possessing risk to groundwater contamination.

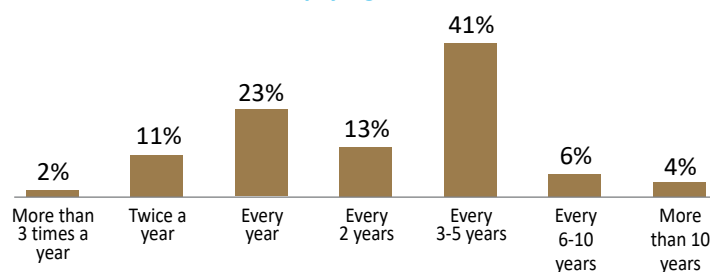
### Types of containment



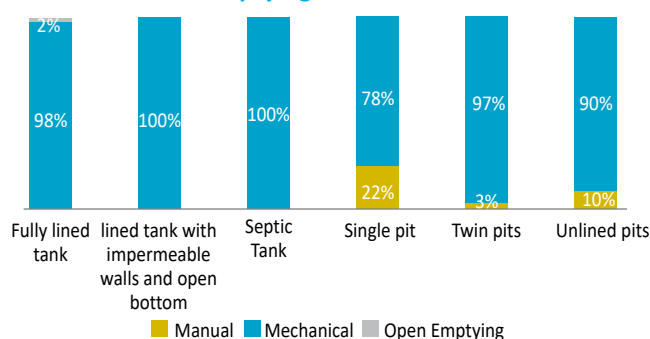
## EMPTYING AND TRANSPORTATION

The survey showed that 53% of HHs have emptied their containments at least once since installation. The containments are usually emptied at an interval of 3 to 5 years.

### Emptying Interval



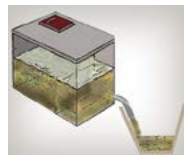
### Emptying Mechanism



92% emptied mechanically by municipal or private desludging service providers.



7% emptied manually (self or traditional sanitation workers)



1% practice open emptying (Disposed into open drain during rainy season)

### Details of desludging service providers

Service Provider	Municipality	Private
No. of service provider	1	3
No. of Vehicles	1	3
Average trips per day per vehicle	1	2
Average Charge per trip (NPR)	4,000	3,500





प्रशोधन  
(Treatment)

पुनः प्रयोग वा सुरक्षित विसर्जन  
(Re-use or Safe Disposal)

## ESTIMATION OF FAECAL SLUDGE

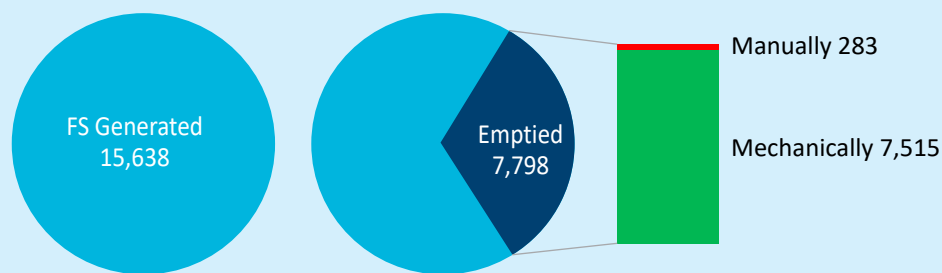
Total estimated volume of FS generation in the municipality: 15,638 m<sup>3</sup> per year which is 42.8 m<sup>3</sup> per day.

Total volume of FS emptied in the municipality: 7,798 m<sup>3</sup> per year which is 21.3 m<sup>3</sup> per day

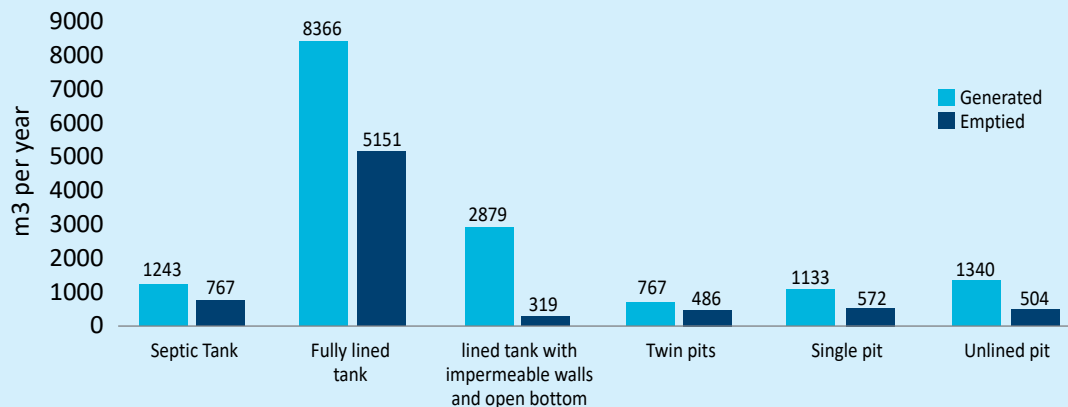
Total volume of mechanically emptied FS in the municipality: 7,515 m<sup>3</sup> per year which is 20.5 m<sup>3</sup> per day

Total volume of manually emptied FS in the municipality: 283 m<sup>3</sup> per year which is 0.8 m<sup>3</sup> per day

### Summary of faecal sludge produced, emptied and transported in Rajbiraj Municipality (cubic meter)



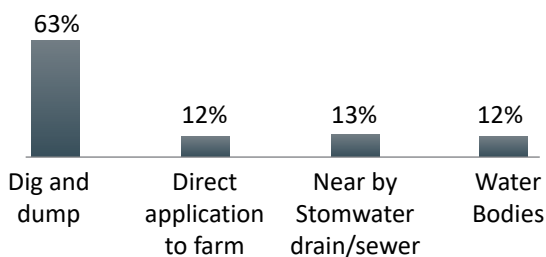
### FS Generated and Emptied



## SAFE DISPOSAL OR REUSE

Mechanically emptied FS is usually disposed of in a disposal site designated by the municipality whereas manually emptied FS are usually dig and dump, directly applied to farmlands, disposed in an open environment and in water bodies.

### Disposal practice after manual emptying

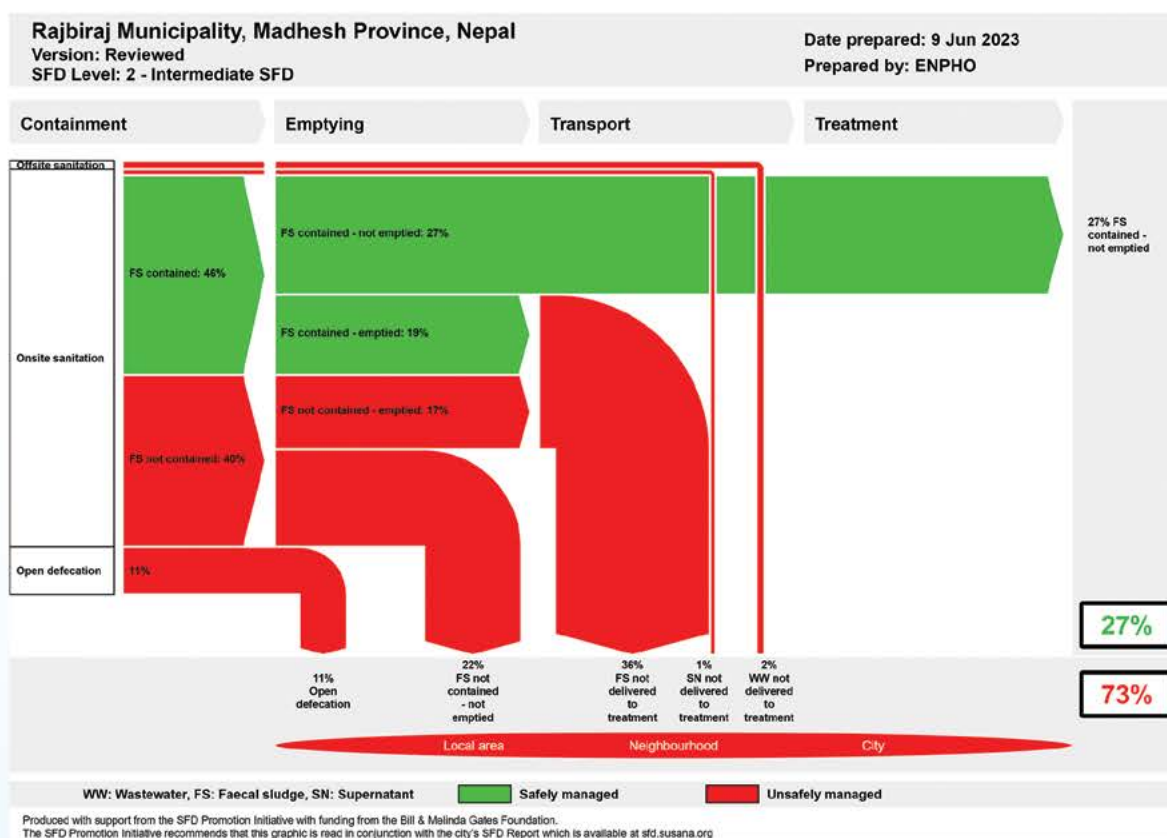


FS disposed in disposal site.

## SHIT FLOW DIAGRAM (SFD)

The SFD visually represents the status of sanitation practices in the municipality across the entire sanitation value chain. The FS generated by 27% of the population is safely managed (Green). Initially, 46% of FS is safely contained, but this proportion drops to 27%, which can be considered safe until it's not emptied. Whereas the remaining 19% of FS which is safely contained and emptied are not delivered to treatment plant, hence becomes unsafely managed. The emptied FS remains safe depending upon the nature of the emptying mechanism and available treatment options/facilities. This highlighted the necessity of safe emptying and its subsequent treatment.

Likewise, FS generated by 73% of population is unsafely managed (Red). It includes 1% of SN not treated, 2% of WW discharged untreated into the environment, possessing risks of pollution. Additionally, 36% of emptied FS (FS contained-19%, FS not contained-17%) is not delivered to treatment plant, 22% of FS neither contained nor emptied, and 11% of the population still practice open defecation, further exacerbating sanitation challenges. This unsafely managed FS highlights the critical gaps that need addressing to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Upgrade existing unsafe containment systems to safe technologies such as septic tanks, fully lined tanks, or biogas digesters.
- Formalize and regulate the private desludging service within the municipality.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.
- Establish an faecal sludge treatment plant of appropriate capacity.

# RAJPUR MUNICIPALITY

Municipal Sanitation Synopsis, Study Year -2023



## DEMOGRAPHICS



Area : 31.41 km<sup>2</sup>



Household : 8,078



POPULATION : 54,083

Male : 26,574

Female : 27,509



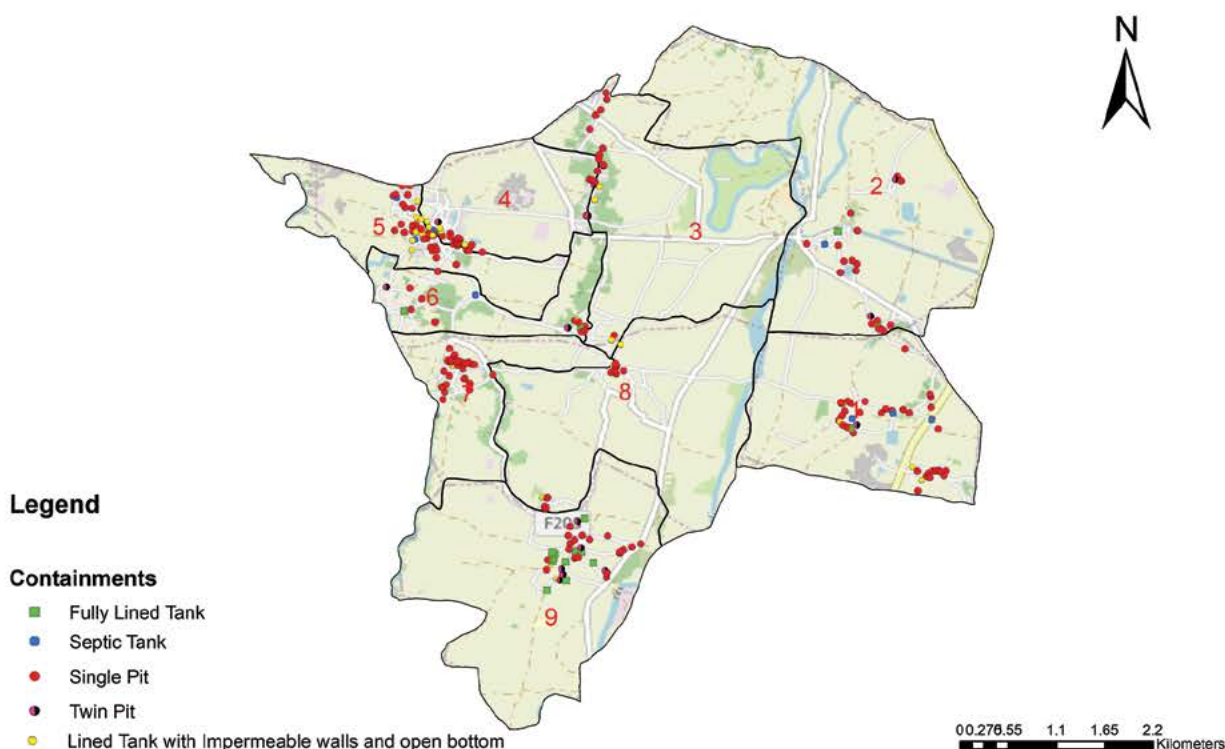
Wards : 9

Source: Census 2021

## CITY PROFILE

Rajpur Municipality was established in 2016 A.D. and is located in Rautahat District, Madhesh Province. The municipality is situated at 26°49'44"N latitude and 85°14'47"E longitude. In Rautahat District, lower tropical zones are found below 300 meters, while upper tropical zones are located between 300 meters and 1,000 meters.

### Types of sanitation technologies at household of Rajpur Municipality



#### Legend

#### Containments

- Fully Lined Tank
- Septic Tank
- Single Pit
- Twin Pit
- Lined Tank with Impermeable walls and open bottom



संकलन  
(User Interface)



अण्डारण  
(Containment)

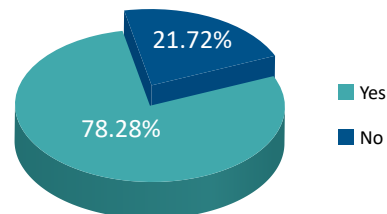


रिच्याउने र ढुवानी  
(Emptying & Transportation)

## USER INTERFACE FACILITY

In the Municipality, 78.28% of HHs have basic sanitation facilities while the remaining HHs defecate openly.

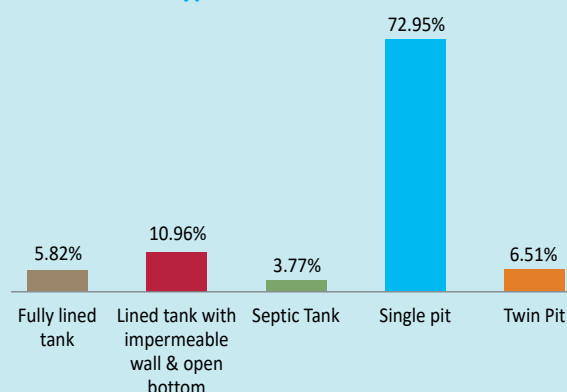
### Sanitation Facility



## CONTAINMENT

The survey showed that the majority of HHs use unsafe containments such as single pits (72.95%) and lined tanks with impermeable walls and open bottom (10.96%) as these types of containment have leachate percolation and potential groundwater contamination.

### Types of containment

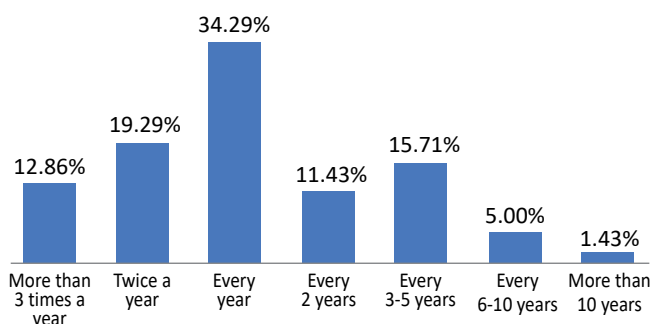


## EMPTYING AND TRANSPORTATION

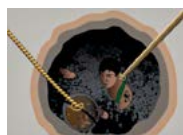
The HH survey revealed that 47.95% of HHs have emptied their containment at least once since installation. Mechanical emptying is the most common practice in the municipality. Usually, containments are emptied every year.

The two private desludging service providers from neighboring municipality are engaged in desludging activities.

### Emptying Interval

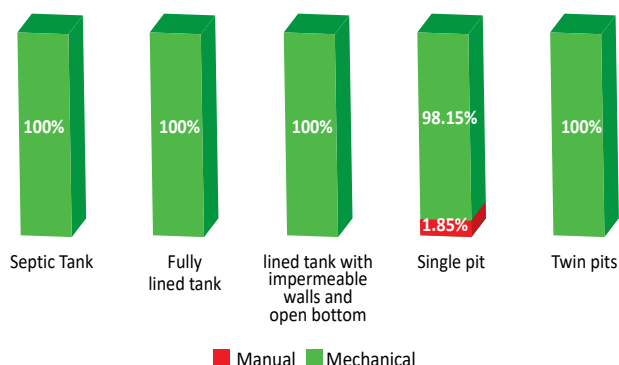


98.57% emptied mechanically by private desludging service providers.



1.43% emptied manually (self or traditional sanitation workers)

### Emptying Mechanism



### Details of desludging service providers

Service Provider	Private
No. of service provider	2
No. of Vehicles	2
Average trips per day per vehicle	2
Average Charge per trip (NPR)	3,500



प्रशोधन  
(Treatment)

पुनः प्रयोग वा सुरक्षित विमर्जन  
(Re-use or Safe Disposal)

## ESTIMATION OF FAECAL SLUDGE

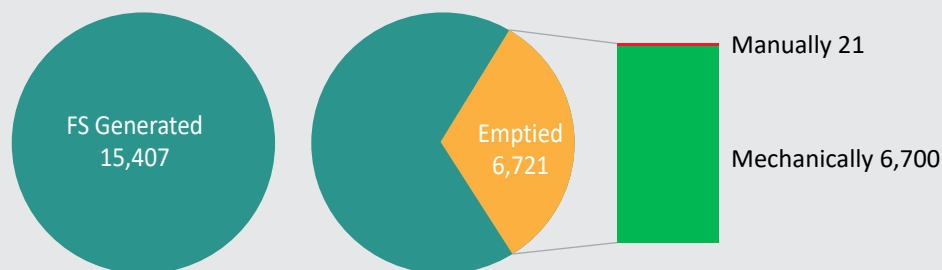
Total estimated volume of FS generation in the municipality: 15,407 m<sup>3</sup> per year which is 42.2 m<sup>3</sup> per day.

Total volume of FS emptied in the municipality: 6,721 m<sup>3</sup> per year which is 18.4 m<sup>3</sup> per day.

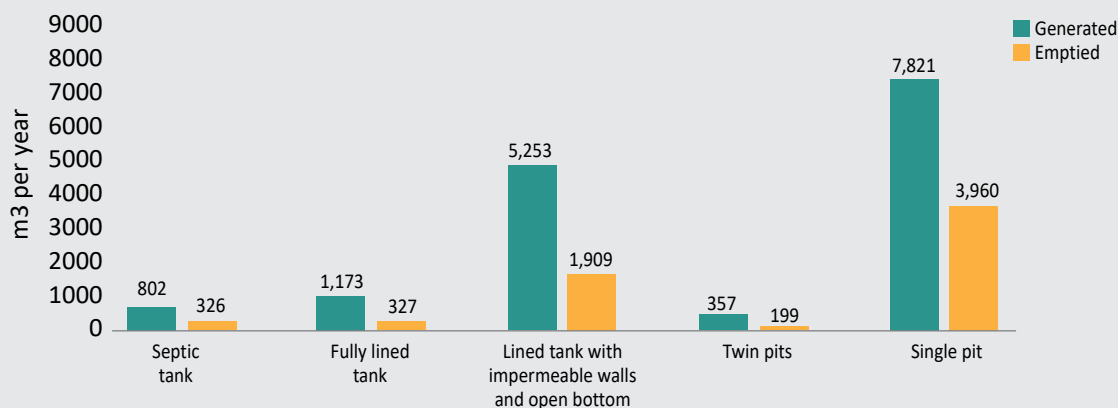
Total volume of manually emptied FS in the municipality: 21 m<sup>3</sup> per year which is 0.1 m<sup>3</sup> per day.

Total volume of mechanically emptied FS in the municipality: 6,700 m<sup>3</sup> per year which is 18.3 m<sup>3</sup> per day.

### Summary of faecal sludge produced, emptied and transported in Rajpur Municipality (cubic meter)



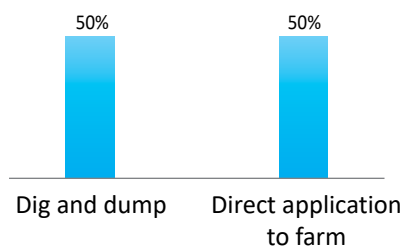
### FS Generated and Emptied



## SAFE DISPOSAL OR REUSE

Neither the municipality nor the neighbouring municipalities has a faecal sludge treatment plant. The mechanically emptied FS is applied in farmland while manually emptied FS along with application in farmlands, also dig and dump FS.

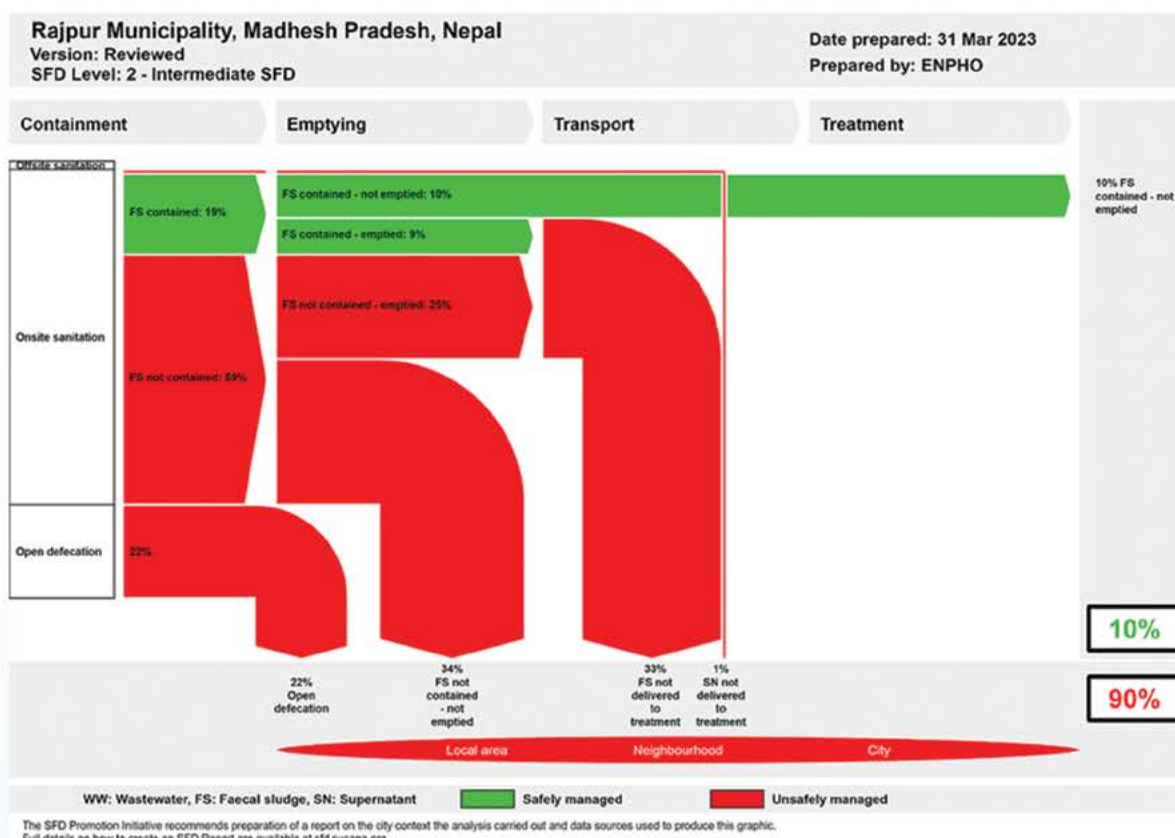
### Disposal after manual emptying



## SHIT FLOW DIAGRAM (SFD)

The SFD visually represents the status of sanitation practices across the entire sanitation value chain. FS generated by 10% of the population is safely managed (Green). Initially, 19% of FS is safely contained, but this proportion drops to 10% which can be considered safe until it's emptied. Whereas the remaining 9% of FS which is contained and emptied but are not transported properly, and with no further treatment options leads to risks of pollution. This highlights the necessity of safe emptying and its subsequent treatment.

Furthermore, FS generated by 90% of population is unsafely managed (Red). It includes 1% of SN not delivered to treatment plant, 33% of FS emptied but not delivered to treatment plant, 34% of FS neither contained nor emptied. Additionally, 22% of the population still practice open defecation, further exacerbating sanitation challenges. Overall, FS from 90% of the population is unsafely managed, highlighting critical gaps that need addressing to mitigate environmental contamination and public health risks associated with inadequate FS management practices.



## RECOMMENDATIONS

- Continue the campaign to maintain open defecation-free status and advocate for behavioral change.
- Upgrade existing unsafe containment systems to safe technologies such as septic tanks, fully lined tanks, or biogas digesters.
- Formalize and regulate the private desludging service within the municipality to ensure proper FS disposal.
- Formulate and enforce sanitation policies and regulations to ensure the safe sanitation practices in the municipality.
- Establish faecal sludge treatment plant.



# SIRAHA MUNICIPALITY

Municipal Sanitation Synopsis, Study Year - 2023



Pond at Siraha City

## DEMOGRAPHICS



Area : 94.2 km<sup>2</sup>



Household : 18,917



POPULATION : 95,410  
Male : 46,753  
Female : 48,657



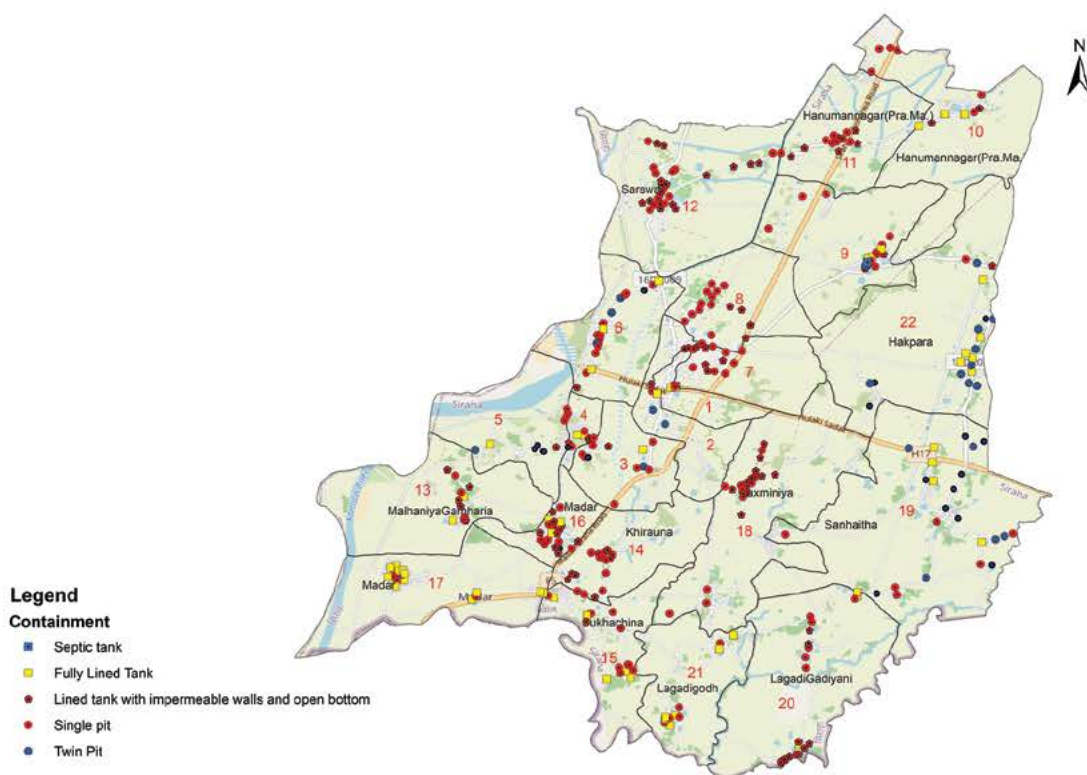
Wards : 22

Source: Census 2021

## CITY PROFILE

Siraha Municipality is located in the southern part of Siraha district which was restructured in 2016 A.D. It spans geographically between 25°35'18" N to 26° 42'53" N latitude, and 86°8'47" E to 86° 16'17" E longitude with an elevation of nearly 100 meters above sea level.

### Types of sanitation technologies at household of Siraha Municipality





संकलन  
(User Interface)



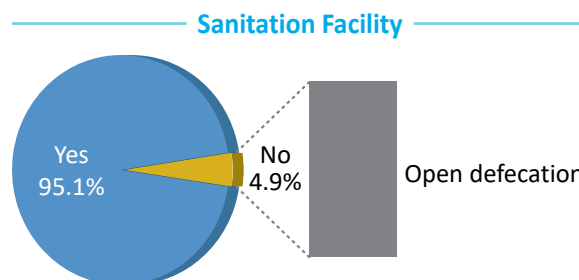
अण्डारण  
(Containment)



रिच्याउने र ढुवानी  
(Emptying & Transportation)

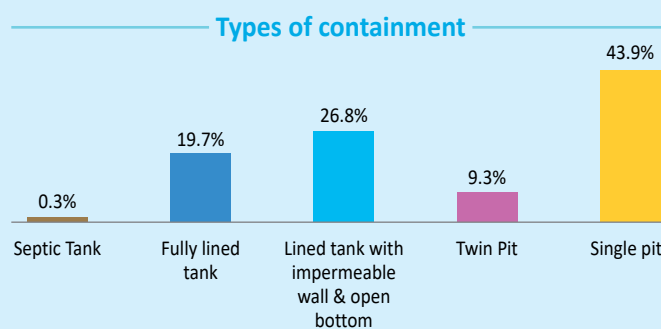
## USER INTERFACE FACILITY

The municipality was declared as an ODF on March 23, 2018. However, the HH survey revealed that 4.9% of the HHs in the municipality do not have access to basic sanitation facilities and thus defecates in an open space.



## CONTAINMENT

The survey revealed that most of the HHs constructed single pits which possess a risk of groundwater pollution due to their permeable bases, allowing leachate percolation.



## EMPTYING AND TRANSPORTATION

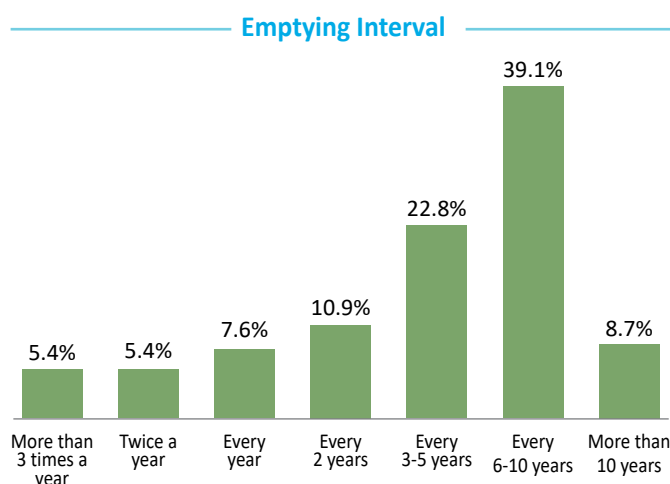
The survey revealed that 26% of the HHs have emptied their containments at least once since installation. The containments are usually emptied at an interval of 6 to 10 years.



93.5% emptied mechanically by private desludging service providers.

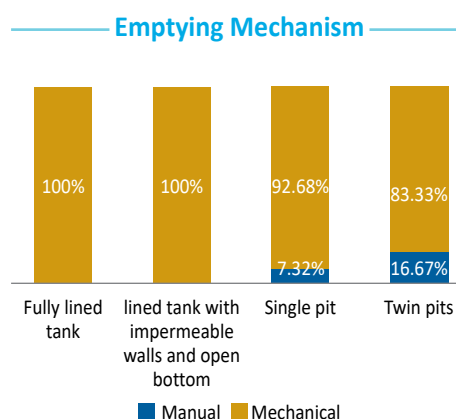


6.5% emptied manually (self or traditional sanitation workers)



### Details of desludging service providers

Service Provider	Private
No. of service provider	2
No. of vehicles	2
Capacity of vehicle (Litres)	5,000
Average trips per day per vehicle	1
Average Service Charge (NPR)	Rectangular- 2,000-2,500 per trip Circular-500 per ring





## ESTIMATION OF FAECAL SLUDGE

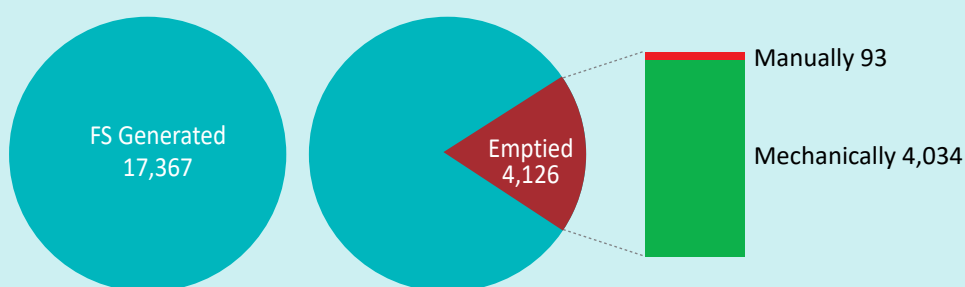
Total estimated volume of FS generation in the municipality: 17,367 m<sup>3</sup> per year which is 47.5 m<sup>3</sup> per day.

Total volume of FS emptied in the municipality: 4,126 m<sup>3</sup> per year which is 11.3 m<sup>3</sup> per day.

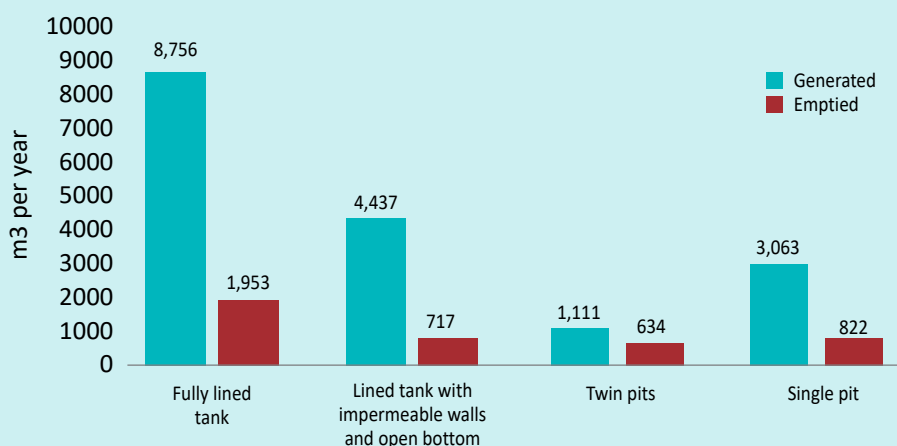
Total volume of mechanically emptied FS in the municipality: 4,034 m<sup>3</sup> per year which is 11.1 m<sup>3</sup> per day.

Total volume of manually emptied FS in the municipality: 93 m<sup>3</sup> per year which is 0.2 m<sup>3</sup> per day.

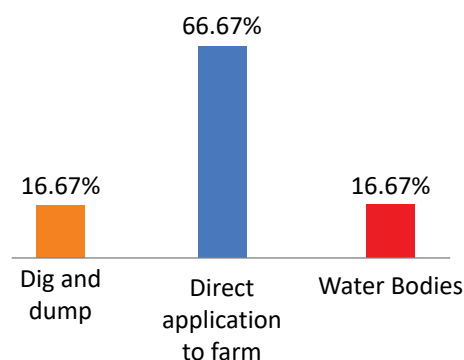
### Summary of faecal sludge produced, emptied and transported in Siraha Municipality ( cubic meter )



### FS Generated and Emptied



### Disposal practice after manual emptying



## SAFE DISPOSAL OR REUSE

The municipality doesn't have a faecal sludge treatment plant (FSTP). In the absence of the FSTP, mechanically emptied FS is directly applied in farmland, manually emptied FS are dumped into water bodies and open ground.



## ABOUT THE PROJECT:

### Municipalities Network Advocacy on Sanitation in South Asia phase II (MuNASS-II)

<b>Executing Agency</b>	United Cities and Local Governments Asia Pacific (UCLG ASPAC)
<b>Implementing Agency</b>	Municipal Association of Nepal (MuAN)
<b>Technical Partner</b>	Environment and Public Health Organization (ENPHO)
<b>Funded By</b>	Bill & Melinda Gates Foundation (BMGF)
<b>Program Duration</b>	November 2021 – December 2024

In 2017, phase I of “MuNASS program” was implemented to support the roll-out of the Institutional and Regulatory Framework (IRF) for Faecal Sludge Management in Nepal. After implementation of Phase I of the MuNASS program, a need to scale up the program was recognized. In this prospective Phase II of MuNASS program was launched to support meet SDG target 6.2. The project was initiated with the objectives to determine the sanitation status of 65 municipalities and to generate national and provincial level SFD, to enhance knowledge and skill of municipal staffs on operation of FSTP and to enhance capacity of elected officials regarding the need for FSM.

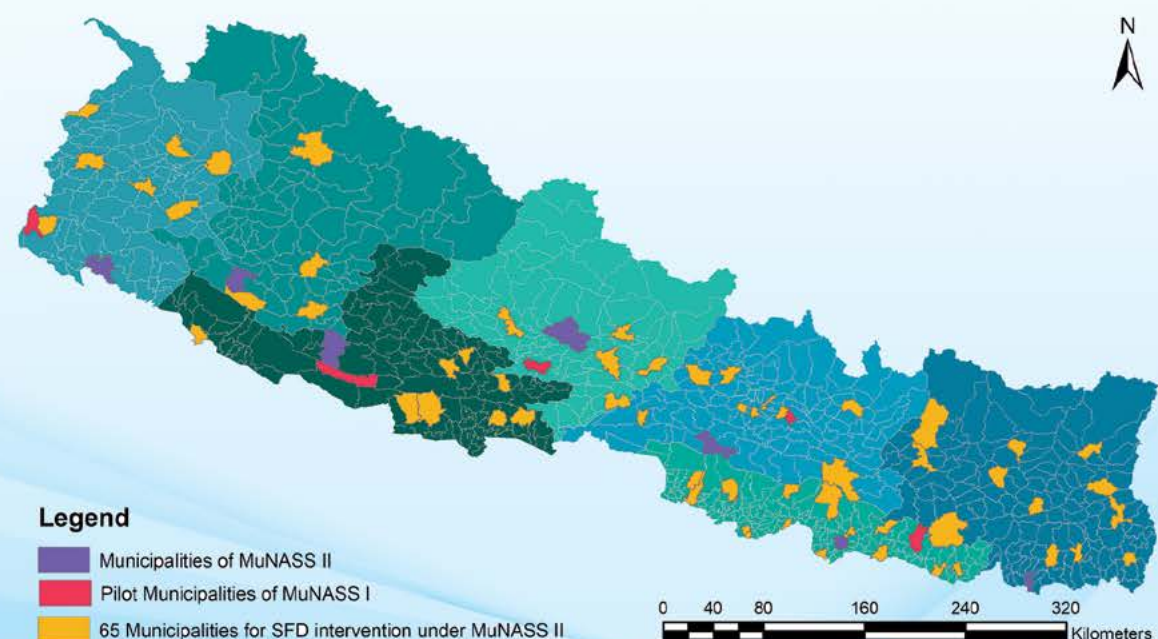
## GOAL

The goal of MuNASS Phase II is to develop and demonstrate innovation on safely managed sanitation to achieve SDG 6.2 and mainstream into regional agenda, paying special attention to the needs of women and girls and those in vulnerable situations.

## OUTCOMES/OBJECTIVES:

- Demonstrate innovation on SDG 6.2 measurement by mobilizing cities in South Asia
- Documentation of the Municipal-led investment for CWIS and FSM in South Asia is available
- SDG 6.2 are mainstreamed into the regional agenda through advocacy, knowledge exchange and joint activities among municipalities in the Asia-Pacific region.

### Program Locations of MuNASS I and MuNASS II in Nepal





## FOR FURTHER INFORMATION

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