

Leaving no one behind

Citywide Inclusive Sanitation: An Approach to Address Urban Sanitation Challenges

– Rajendra Shrestha, Program Director and Bipin Dangol, Executive Director, ENPHO

According to the world urbanization prospects report (2018) published by UN, the global urban population is 78.7% and 50.6% in developed and least developed regions respectively. The trend of urbanization is rapidly growing, particularly in developing countries. As a result, the unregulated environmental pollution including unmanaged urban sanitation systems is posing big threats to public health and well-being. Nepal is also one of the most rapidly urbanizing countries as the urban population is 62% in 2018. According to the National Urban Development Strategy 2017 published by Ministry of Urban Development, 43.5% urban population is residing in 14 municipalities having population more than hundred-thousands. This data clearly shows the rapid urbanization and urban centric population growth.

With the increasing number and size of urban cities in Nepal, informal and illegal settlements are also increasing where sanitation condition is comparatively very poor. People living in the urban poor settlement usually do not have access to better sanitation facilities and services. In general, the quality of sanitation services and inclusiveness issues are equally alarming in the context of urban Nepal.

The Sustainable Development Goal (SDG) 6.2 targets to provide better access to **adequate and equitable sanitation and hygiene for all**, by 2030 with the indicator of proportion of population using safely managed sanitation services. Safely managed sanitation is defined as the use of an improved sanitation facility which is not shared with other households and where excreta is safely disposed in-situ or excreta is transported and treated off-site. In addition, SDG 6.2 also emphasizes on equitable sanitation and hygiene for all paying special attention to the needs of women and girls and those in vulnerable situations. While the SDG 6.2 target is very ambitious, the special attention should be given to realize it.

In general, solid waste management, wastewater management and faecal sludge management are three major constituents of urban sanitation. Furthermore, neither standalone sanitation facilities nor unplanned and ineffective management of sanitation services along the sanitation value chain can ensure sustainable sanitation. Therefore, integrated planning, intervention and management of all three constituents are important for cost-effective urban sanitation improvement resulting in the overall improvement of environment and public health.

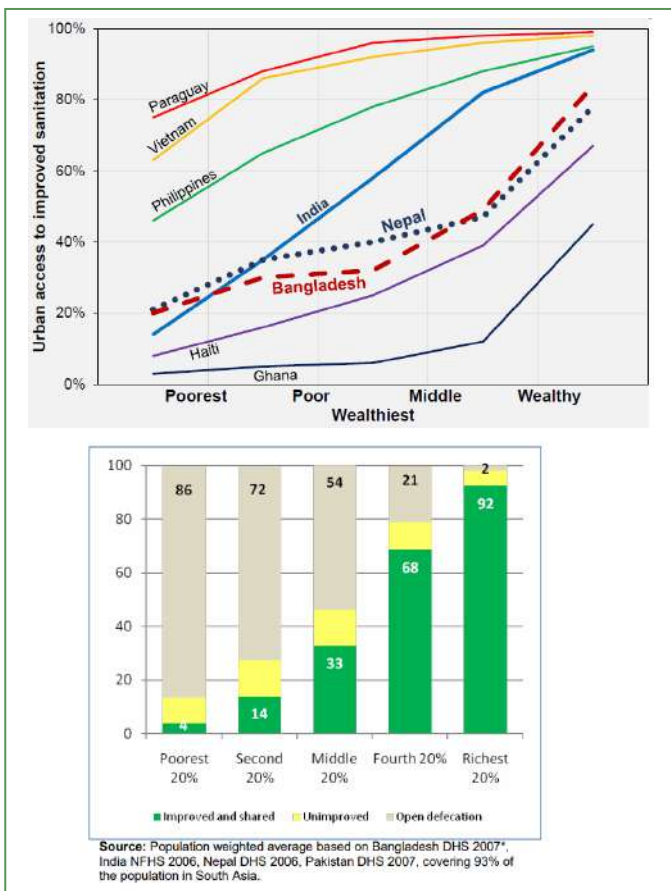


Figure: Sanitation and Inclusiveness (Source: Eawag)

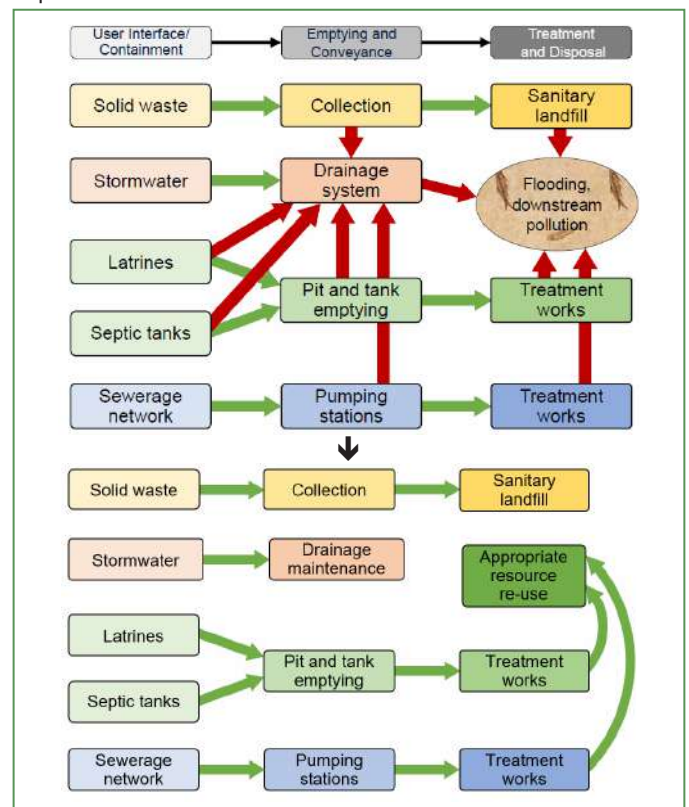


Figure: Coordination of urban sanitation services (Source: Eawag)

The urban 'f-diagram'

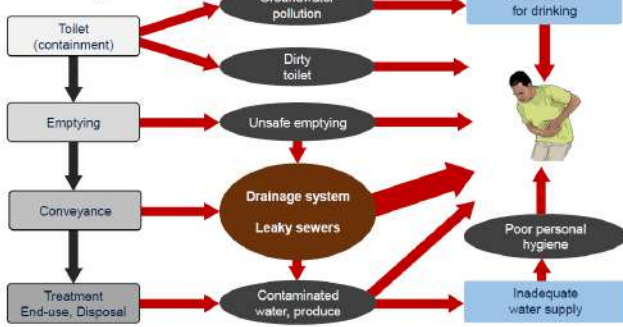


Figure : Urban sanitation and public health (Source: Eawag)

Nepal's SDG 6.2 targets to provide improved sanitation to 95% of household and to connect entire urban household (62% of national population) by sewerage system by 2030. Nevertheless, the geographical condition of cities and requirement of huge financial investment are the major barriers to achieve the targeted sewerage coverage. Besides lack of policy and regulatory framework, adequate data and information, technical human resources, awareness at various level of beneficiaries are the other factors which may create hurdle to the effort towards SDG achievement. The safely managed sanitation services can be ensured, only if the dedicated efforts are made in integrated planning along with enabling policy and regulation support and adequate financial allocation.

City-Wide Inclusive Sanitation (CWIS) is a newly developed approach which aims to support cities develop comprehensive framework on sanitation improvement that encompass long-term planning, technical innovation, institutional reforms, and financial mobilization. CWIS ensures everybody benefits from adequate sanitation service delivery outcomes; human waste is safely managed along the whole sanitation service chain; effective resource recovery and re-use are

considered; a diversity of technical solutions is embraced for adaptive, mixed and incremental approaches; and onsite and sewerage solutions are combined, in either centralized or decentralized systems, to better respond to the realities found in developing country cities.

Following are the seven key CWIS principles (source: BMGF):

- **Everyone** in an urban area, including the urban poor, benefits from equitable safe sanitation services
- **Gender and social equity** are designed into planning, management and monitoring of sanitation systems
- **Human waste is safely managed** along the sanitation service chain, starting with containment
- **Service provider operate with clear inclusive mandate**, goal, performance target and accountability
- **Authorities goal determine their service approach** and can include a range of approaches of funding, business and hardware models (sewered and non-sewered)
- **Comprehensive long-term planning** and investment systems are tied to stated goals, informed by analysis of needs and resources and foster demand for innovation
- **Political will** reinforces mandate, resource management and accountability systems through planning, capacity building and leadership

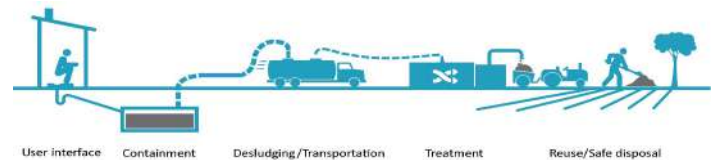


Figure: Sanitation Value Chain

The implementation of CWIS is good opportunity to address the complex urban sanitation issues in the pragmatic manner. For this, building capacity and awareness on CWIS at the local level is needed and efforts should be made to include CWIS as an integral component of City Development Plan.

Misconception and Reality Regarding Septic Tank in Nepal

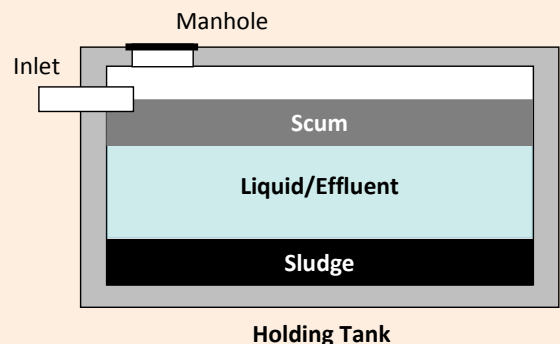
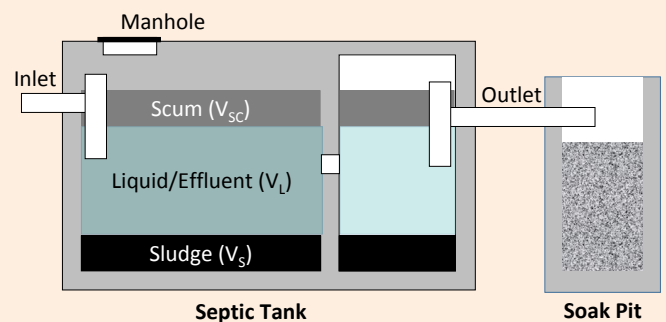
-Buddha Bajracharya, Project Coordinator, ENPHO

Have we ever thought what happens after we poop? Obviously many of us doesn't bother to know about it. Typically either it goes to sewerage network or collected in the septic tank. Today let's exert a little stress in our brain and think if we are really using so called 'Septic Tank' in our houses.

In fact, there are many misconceptions regarding septic tank. Misconception that the walls or floor of the septic tank should not be made watertight so that the tank doesn't fill up soon. This further contributes to ground water contamination as highly contaminated water infiltrates into the ground and then underground water source. Still thousands of diarrhoeal diseases occur every year due to contamination of ground water. Diarrhoeal diseases fall under top five diseases which is responsible of 5.6% of total death according to a report, 'Nepal Burden of Disease 2017'. The strong belief in general public is that holding tank itself is septic tank and there isn't any difference between them. In some of the households, septic tanks are similar to that of water tank. In many cases, holding tanks are built considering them as septic tank with open bottom. Many of the households construct holding tanks bigger than actually required thinking that bigger tanks would take longer time to be filled. And, there are even households which have built proper septic tank yet connected the outlet to the sewerage network or open drain.

Septic tank being one of the major options, there isn't any standard size or design on installing septic tank at household level. Let us first discuss on the actual meaning of septic tank. A septic tank is a rectangular tank made up of stone, brick, concrete, plastic, fiber which, collects and stores faecal sludge for primary treatment and solid separation reducing biological pollution. They have at least two chambers; one which allows for the sludge and wastewater to separate, and the second which acts as a pumping chamber. Light solid matters (scum) floats at the top while heavy solids (sludge) sink at the bottom. This leaves a clear layer of wastewater in the middle which is as called effluent. The effluent is then leached

Differences between 'Septic tank' and 'Holding tank'



out into soak pits. The size of septic tank required is determined by the number of users. A septic tank needs to desludge in every one to three years depending upon design period or the size, number of users, users' habit.

Many people consider holding tank as septic tank, yet there is a huge difference between the structure and function of two tanks. Septic tank have an outlet while holding tank do not consist of outlet point. A holding tank merely holds sludge. It has a single compartment and can hold a limited amount of sludge. The stored sewage will eventually have to be removed by a vacuum truck and sent to a municipal treatment system or safely disposed. Holding tanks need to be serviced much more frequently than the septic tanks.

As per the Nepal National Building Code (2003), in absence of the public sanitary sewerage, the sewage of the building or premises shall be done through septic tanks or stabilization ponds or any method approved by the concerned authority. Yet, we can witness the condition of Bagmati river which is the ultimate result of unmanaged sewerage system in Kathmandu.

Many people perceive construction of septic tank at household level is expensive but comparing with cost burden that arise with emptying frequency of holding tanks or pits, it is very reasonable. Some households comprise just a holding tank which is bigger than their bedrooms which requires higher investment to construct. Also, most of the households built septic tanks in most inappropriate location such as backyard of house, just below the staircase or below the rooms which makes it often difficult to desludge after it is full.

Thus, there is big attention required among concerned authorities and also it is high time that local governments act as a leading body to raise awareness among general public to clarify misconception on septic tank. Proper regulations and effective monitoring are also required to ensure houses being built are installing proper septic tanks which furthermore creates a platform to contribute towards Faecal Sludge Management and sustainable urban sanitation.

Role of Local Governments Following an Open Defecation Free Country Declaration

-Er. Mushkan Shrestha, Sanitation Advocacy Specialist, Municipal Association of Nepal

After continuous nine years effort, Nepal was declared as open defecation free (ODF) nation on 30 September, 2019. The best effort was made from every sector of nation after sanitation master plan 2011 was in place. The campaign was initiated by declaring the Kaski as the first ODF district and finally succeeded to announce the nation by declaring the Bhojpur, a last ODF district. Though the ODF campaign was slightly hindered due to damage of existing toilets during the devastating earthquake of April, 2015, the country has been announced as the first South Asian ODF country in the region. This success is supporting Nepal to lead towards the achievement of Sustainable Development Goal (SDG) 6: 'Clean Water and Sanitation', provided best guidance to declare as Total Sanitation Country in the near future.

ODF campaign was initiated and extended with the change of new political scenario and the local government authorities have played crucial role since the very beginning of the campaign. Following the ODF declaration, the role of those local authorities are more vital and scope of work has been widened which will be very significant to achieve the goal of Total Sanitation.

The new constitution issued in the country has now ranked all the municipalities and rural municipalities as the local government. To provide guidance to the local government bodies (specifically municipalities) regarding the proper implementation of FSM, the Ministry of Water Supply has recently issued 'Institutional and Regulatory Framework (IRF) for Faecal Sludge Management in Urban Cities of Nepal 2074'. Based on this framework, listed below will be the main role of the local government:



1. To develop and implement policy, regulations and guidelines on FSM : The key role of the local government bodies is to develop proper regulations and guideline on FSM and proper implementation of those regulations. Since there

is no regulation on FSM at central level itself, it will be challenging. However, it will also be matter of pride if such regulations are developed and implemented at the local level. Some of the municipalities have already initiated to develop regulations on FSM. Municipal Association of Nepal (MuAN) has been leading to support five cities to prepare FSM regulations under 'Municipalities Network Advocacy on Sanitation in South Asia-Nepal' project (March 2018 to October 2020). The regulation will contribute as a model document for other 293 municipalities to establish FSM system.

2. Inter-agency coordination between relevant stakeholders: As for other usual task, municipalities should collaborate and coordinate compulsorily with ministry, divisions, departments, related authorities, organizations and personnel to provide the services on FSM. Smooth coordination from municipal level is inevitable to ensure sustainability of any development works including the implementation of FSM. Apart from this, as a new scope of collaboration and coordination, FSM can be managed through cluster approach where neighborhood municipalities will coordinate and collaborate for common management mechanism.

3. Capacity strengthening on FSM: Following the ODF declaration of country, municipalities should focus to develop capacity on knowledge, skill, technologies and human resources on FSM to achieve the SDG target on total sanitation. Since FSM is new topic under the urban sanitation, it is essential to build and enhance capacity on the topic. Capacity strengthening activity should be well planned from the very beginning.

4. Develop and implement appropriate treatment technology, organizational structure, business plan and operational guideline for FSM: While formulating regulations on FSM according to the need and requirement of city, municipalities should focus on FSM as key urban sanitation and equally highlight its business aspect for the sustainability. This will ultimately help in proper faecal waste management and reuse of bi-products from faecal sludge treatment plant as nutrients and energy.

5. Boost up involvement of private sector and user committees: Municipalities should permit the license for private service providers to regulate FSM in city. Apart from this, municipalities should encourage Public Private Partnership (PPP) by establishing enabling environment.

6. Ensure design of septic tank and soak pit based on standardized building construction code for the construction of new private and public toilets to implement FSM.

7. Monitor and maintain FSM within city: Proper monitoring and maintenance of physical infrastructure are crucial for sustainability. For this, municipalities should ensure proper and regular monitoring and maintenance mechanism.

ENPHO's Contribution in Declaring Nepal as an Open Defecation Free Country

In Nepal, the concept of Open Defecation Free (ODF) zone started in 2004 with an introduction of Community Led Total Sanitation (CLTS) approach. The approach was adopted back then to trigger the community to achieve ODF. Thus, effective sanitation and hygiene promotion activities spread all over the country leading to raise national sanitation coverage from 27% in 2000 to 96.3% in 2018 (Ministry of Water Supply and Sanitation). Following this success, finally Government of Nepal declared Nepal as Open Defecation Free country on 30 September, 2019.



To support this campaign, ENPHO contributed in ODF declaration since 2006. It led to accelerate ODF campaigns and stimulating people to become 'Agents

of Change' in the community to live healthy and dignified life. To achieve ODF status of Nepal, ENPHO untiringly supported six municipalities and then sixty-two VDCs located in eighteen districts in the duration of 2006 to 2019, which are mentioned in the Table 1 below. In that period, altogether 79,105 units of toilet were constructed and 3,67,630 number of people were benefited from the ODF campaign.

Table 1: List of ODF declared locations supported by ENPHO (2006-2019)

Then VDCs	6 Municipalities	18 Districts
62	Kirtipur, Dhulikhel, Tikapur, Gulariya, Birendranagar and Nijgadh	Banke, Bara, Bardiya, Bhaktapur, Chitwan, Dolakha, Dhading, Kailali, Kapilvastu, Kathmandu, Kavre, Lalitpur, Nuwakot, Rasuwa, Sindhuli, Sindhupalchok, Solukhumbu and Surkhet



79,105

Number of toilet constructed



3, 67,630

People benefitted

Chasang - Sherpa's Traditional Toilet

- Alok Chandra Neupane, Regional WASH Coordinator, ENPHO

Sherpa, the resident of high mountainous region of Nepal, have been traditionally using a toilet named as *Chasang*, developed and maintained by their ancestors. The word *Chasang* is derived from two words, *Cha* and *Sang* ('*Cha*' means 'Manure' and '*Sang*' means 'to sit'). Beside the traditional belief of not to store generated 'faecal' in one particular place, *Sherpas* have been managing their human waste naturally adapting this toilet. The concept of 'Table to Toilet' have been reflecting by *Sherpa* as they treat human waste as fertilizer for agriculture and food security. Thus, in the context of sustainable development, *Chasang* of the *Sherpa* community can be considered as one of the special toilet.

The *Chasang* toilet is developed from local resources such as stones, mud, wood, *Khaars* (hay) and zinc sheet. It is featured with a room with a height of 4 to 5 feet, from ground level which is divided with another room by a layer of wooden plank. The roof is made up of *Khaar* or zinc sheet. The ground floor room is for manure storage which includes door to extract the manure, and door is kept closed until the waste turns into manure. The wooden plank of upper floor is considered as a platform to sit and defecate which are designed with central hole as in normal pan toilet.



Traditional toilet of *Sherpa* community - *Chasang* built inside the house in Solukhumbu district

In *Chasang*, water can be used for anal cleansing. Then, leaves and saw dust are kept to cover the faeces. The herbal broom are used to clean the toilet. To prepare good manure, soap or other chemical materials are not used or mixed in the collected faeces because such chemicals will destroy manure producing micro bacteria. In at least 15 to 20 days, the collected waste is managed to spread in same level with help of long wooden stick. The process is continued for one year to get manure. Then manure is extracted by farming tools and stored in safe place, in a way that the top layer is kept in bottom and lower layer is shifted as top layer. It is basically done to reduce bad smell. Finally, manure is ready to use in farmland.

Two years ago in June, 2017, ENPHO team studied a *Chasang* toilet user in *Sherpa* community located in Shermangthang-2 in Helambu Rural Municipality, Sindhupalchok district. Traditionally, open defecation is considered to be a shameful act in the community and they choose to get manure from human waste. Also due to geography, commercial fertilizers are not easily available in the region, thus they practiced to develop the manure from their own human waste. It reflects that *Sherpa* people have concept of recycling human waste to benefit from both economic and environmental aspect. Thus, *Chasang* toilets have been adapting the concept of managing faecal sludge, contributing to the sector of faecal sludge management system and techniques since traditional time.



ENPHO staff interacting with *Chasang* toilet user, Shermangthang-2, Helambu Rural Municipality, Sindhupalchok district

Knowledge, Attitude and Practice of General Public on Faecal Sludge Management in Kathmandu Valley

- Anita Bhujju, Senior RC Associate, ENPHO/Paschim Paaila

To assess the public understanding on Faecal Sludge Management (FSM), ENPHO, with the support from Paschim Paaila, conducted Knowledge, Attitude and Practice (KAP) survey on 16 and 17 November, 2019 in Kathmandu Valley. Data from 1091 random pedestrians was collected from Ratnapark, Lagankhel and Suryabinayak in Kathmandu Valley.

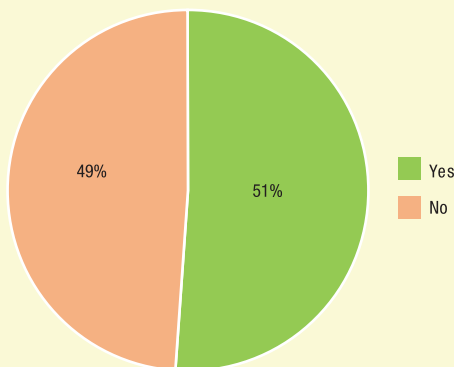
51 percent of the respondents said that they have knowledge on FSM. Amongst them, 84 percent said that they know about the impact of Faecal Sludge (FS) on health, 11 percent were unsure and 4 percent were unaware about its health impact. Likewise, amongst the respondents having knowledge on FSM, 78 percent said that FS can be treated, and 83 percent are willing to pay for treatment of FS.

Furthermore, 73 percent of the total respondents have knowledge that FS are being disposed into the river for its management.

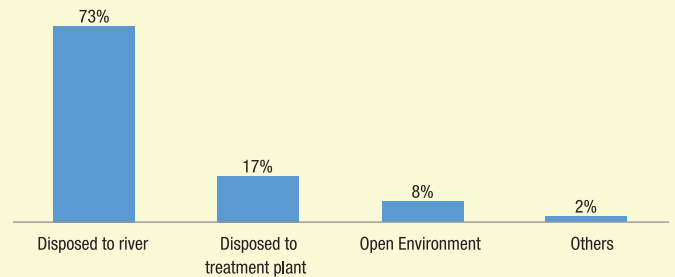
Additionally, 64 percent respondent had connection of their toilet with the sewerage line while 35 percent had the septic tanks and remaining 1 percent had other containments such as pit and biogas production system within their household. Amongst the septic tank users, only 26 percent emptied the tank annually while 11 percent users have not emptied the septic tank since its use.

While safe collection and proper treatment of faecal sludge is crucial, it is equally vital to create public awareness and capacitate local service providers to increase safe practice of faecal sludge management. This study indicates that still clear understanding on FSM including local capacity building on proper faecal sludge management, its regulation and monitoring are essential so as to support and improve existing FSM practices in the community.

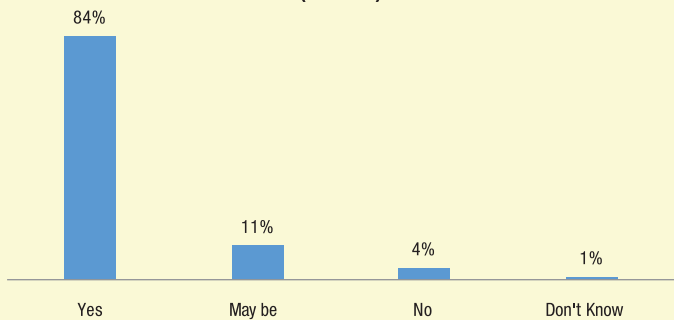
Do you know faecal sludge management ?
(n = 1091)



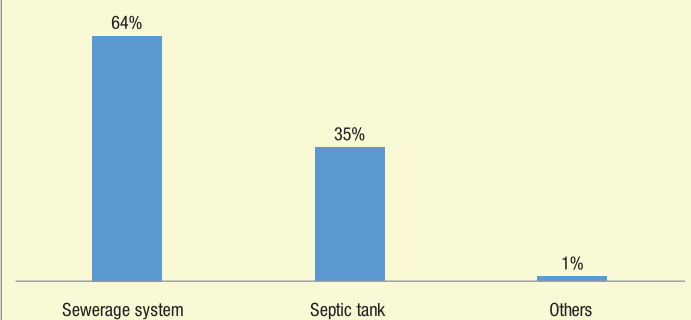
Where do you think faecal sludge is disposed?
(n=1060)



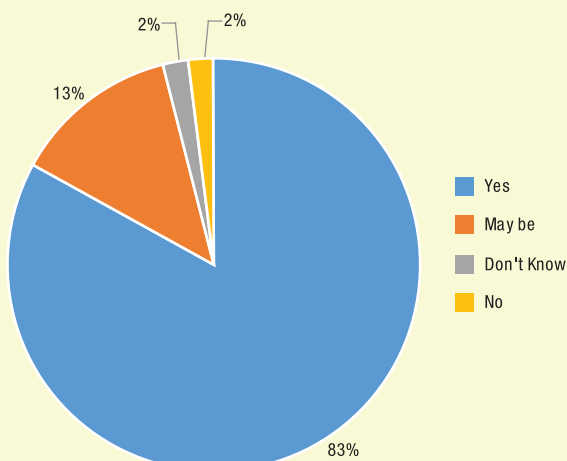
Knowledge on FS and its impact on health
(n = 555)



Where is your toilet connected to?
(n=1091)



Willingness to Pay for FS Treatment
(n = 432)



World Toilet Day Celebration 2019

Celebrating the World Toilet Day -2019, ENPHO, with support of Paschim Paaila, organized exhibition near the public toilet located in Ratnapark on 19 November, 2019 with support of Paschim Paaila. The day was marked with the international theme of "Leaving No One Behind". The exhibition was showcased to promote and sensitize general public about importance of toilet, growing issues of faecal sludge management and its effect in environment. Model of faecal sludge treatment plant including various promotional materials and publications on WASH were exhibited during the program. More than 350 general public visited the stall.

In addition, with the support of WaterAid Nepal, Kathmandu Metropolitan City, GUTHI, ENPHO, Paschim Paaila, Urban Environment Management Society, Autism Care Nepal, Tribhuvan University, Kathmandu University, and other agencies jointly organized Toilet Walk-a-thon on 19 November, 2019 from

Bhrikuti Mandap to Basantapur, Kathmandu. A mobile toilet van led the rally and the route covered 8 public toilets on its way. The rally was organized to advocate for better access of public toilet facilities and safely managed sanitation. In the closing remark, Honorable Ganesh Shah, former Minister of Environment, insisted that faecal sludge management should now come into consideration with safe and clean public toilet facilities. About 300 people comprising youths, WASH professionals and practitioners, political leaders, government officials and media personnel participated in the rally.

November 19th is celebrated as World Toilet Day as declared by UN General Assembly in 2013. It is celebrated to raise awareness and educate the general public on growing issues of access to toilet and proper management of faecal sludge. The ultimate goal of the event is to contribute on protection of environment and public health from the haphazard disposal of faecal sludge.

