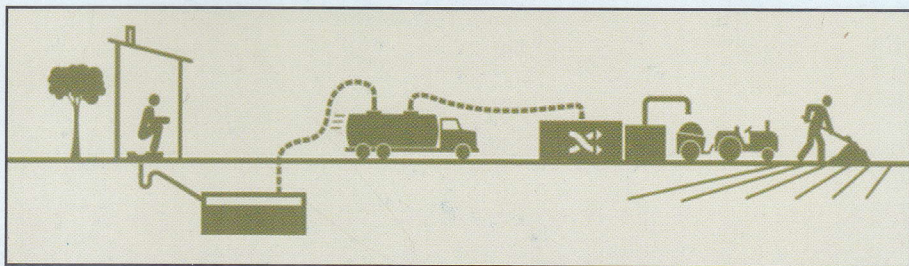


Institutional and Regulatory Framework for Faecal Sludge Management in Urban Areas of Nepal



Government of Nepal
Ministry of Water Supply and Sanitation
Kathmandu, Nepal
April 2017

Table of Contents

1	Introduction	1
1.1	Classification of Urban Areas	1
1.2	Urban Sanitation Context	2
1.3	Definition of Sanitation	3
1.4	Rationale for Faecal Sludge Management	3
2	Legislative and Policy Environment	5
3	Objective of Institutional and Regulatory Framework and Scope	10
4	Institutional Roles and Responsibilities	12
4.1	Overall Responsibility for Faecal Sludge Management	13
4.2	Specific Roles and Responsibilities	14
4.3	Design and Construction of On-site Sanitation Systems	17
4.4	Faecal Sludge Collection and Transport	19
4.5	Faecal Sludge Treatment, Disposal and End Use	20
4.6	Environmental Monitoring and Compliance	21
4.7	Awareness Raising, Capacity Building, Training and Research	21
4.8	Policy Support, Technical Assistance and Funding	22
Annex		
Annex 1	Institutional Arrangement	24
Annex 2	Site Selection Criteria for FSM Treatment Plant	25
Annex 3	Wastewater Standards	26

1.1 Classification of Urban Areas

The classification of urban areas is based on the Local Restructuring Commission, population, and National Urban Water Supply and Sanitation Policy (2009). The classification is shown in Table 1.

Table 1: Classification of Urban Areas

Urban Category	Minimum Population	Annual Revenue (Rs in Million)	Infrastructure
Metropolitan City	300,000	400	<ul style="list-style-type: none"> All infrastructure required for Sub-metropolitan city Hospital with specialized services and 500 beds Stadium Technical school Museum Bus park with terminal Selling centre for vegetables and fruits
Sub-metropolitan City	150,000	100	<ul style="list-style-type: none"> All infrastructure required for Municipality Hospital with 200 beds Stadium or playing ground and covered hall Council hall
Municipality			<ul style="list-style-type: none"> Landfill site or an alternative Open space, park and garden Hat bazar At least one health centre Fire brigade, ambulance and land
Mountain	20,000	2	
Hill	35,000	3.5	
Inner Madhes (hilly land)	35,000	3.5	
Inner Madhes (flat land)	75,000	7.5	
Terai	75,000	7.5	

- ① Mountain Mountain Area 10,000
- ② " Hilly Area 40,000
- ③ Hilly D 40,000
- ④ Inner Terai Madhes 50,000
- ⑤ Terai 75,000
- ⑥ Kathmandu Valley 100,000

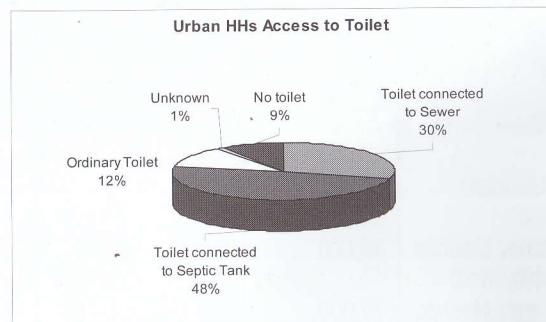
			<ul style="list-style-type: none"> for these • Operation of small, medium and large enterprises • Stadium or playing ground • Bus park with associated land • Public toilet • Community building or council hall
Definition in Urban Water Supply and Sanitation Policy (2009)			
Secondary Towns	10,000-50,000	No revenue criterion but population density of at least 10 persons per hectare and at least 50% population dependent on non-agriculture	Basic services such as grid electricity, telecommunications, high school and health
Small Towns	5,000-40,000		

1.2 Urban Sanitation Context

Nepal has come a long way in improving basic sanitation (access to toilets) in the last decade, with coverage rising to 62%¹ (urban 91%, rural 56%) compared to 24% in 2001. Following the launch of the National Hygiene and Sanitation Master Plan in 2011, Nepal has witnessed a robust momentum in the improvement of sanitation and hygiene situation with several Districts, Villages and Municipalities being declared Open-Defecation Free (ODF). As per the National

Management Information Project (2014), coverage of basic sanitation has now increased to 70% of the population.

In the small towns, the sanitation coverage highly



¹ CBS, 2011

depends on households using onsite sanitation which largely consists of pit latrines, improved toilets and septic tanks.

Nepal is rapidly urbanizing - the urban population is estimated to have increased to 40% now from 17% in 2011. As per Census 2011, 30% of urban population have toilets connected to sewer system while 48% have septic tanks (refer to chart).

As the number of Municipalities has now increased to 246 (2015) from 58, with many of the small towns also being classified as Municipalities, the percentage of households connected to septic tanks has further increased.

1.3 Meaning of Sanitation

Sanitation is the collection, transport, treatment and disposal or reuse of human excreta, domestic wastewater and solid waste, and associated hygiene. Sanitation refers to the hygienic means of promoting health through prevention of human contact with the hazards of wastes as well as the treatment and proper disposal of wastewater.

Sanitation, therefore, includes:

- Faecal sludge management;
- Wastewater management and treatment (both sewerage and decentralized systems). Wastewater also contains industrial liquid waste;
- Storm water (drainage) management; and
- Solid waste management

Hygiene refers to conditions and practices that help to maintain self and environmental health and prevent the spread of diseases. Personal hygiene refers to maintaining the body's cleanliness.

1.4 Rationale for Faecal Sludge Management

Depending upon need and technology, the following systems can be considered for the management of wastewater and faecal sludge.

- Sewerage systems with treatment
- Integrated sewerage system with treatment and Faecal Sludge Management
- Standalone Faecal Sludge Management in low dense and scattered areas

Emptying, collection, transportation, and treatment of faecal sludge in small towns are largely unregulated as households call upon the services of informal private entrepreneurs to empty their septic tanks. There is no scheduled desludging of septic tanks - pits and septic tanks are typically desludged or emptied when they begin to overflow. In the absence of effective FSM services and lack of regulatory oversight, the sludge from the septic tanks and wastewater are either dumped randomly into nearby rivers, marginal land, sewers or drains without any treatment.

Untreated faecal sludge contaminates and pollutes surface and ground water sources with severe public health and environmental consequences not only for those with inadequate sanitation but also for the whole population. Only few households are aware of the adverse hygienic impacts of human wastes beyond their toilets. Planning and management of onsite sanitation has remained a neglected component of urban sanitation and wastewater management as the focus thus far has mainly been on toilets construction and sewerage, the latter limited to a few Municipalities, viewing onsite sanitation as an informal and temporary form of sanitation delivery.

With many areas declared ODF, Faecal Sludge Management (FSM) is now increasingly becoming a priority development agenda for the national government, Local Bodies (DDCs, VDCs and Municipalities), communities and households for advancing total sanitation. Without proper FSM, improved sanitation and hygiene is unattainable and unsustainable.

There is, therefore, an urgent need to find affordable and sustainable solutions to ameliorate the potential pollution load to the waterways. Implementing a sustainable FSM solution requires strengthening of the regulatory and institutional framework, training and education, business plan development and implementation, technical and financial analysis of solutions, and sustainable service delivery, operations and maintenance.

Chapter 2 Legislative and Policy Environment

This section provides an overview of legislative, policy and guidelines related to urban water and sanitation services in the chronological order.

1 Constitution of Nepal (2015)

As per Article 56, Constitution of Nepal, the Federal Democratic Republic of Nepal shall have three main levels of governance structure: federal, provincial and local. Under the local level, there shall be Village Council, Municipal Council and District Assembly. The number of wards in a Village Council and Municipal Council shall be as provided for in a Federal law.

Access to safe water and sanitation has been included as a fundamental right in the Constitution of Nepal as follows.

Right to Clean Environment, Article 30: (1) Each person shall have the right to live in a healthy and clean environment. (2) The victim of environmental pollution and degradation shall have the right to be compensated by the pollutant as provided for by law.

Right to Health, Article 35 (4): Every citizen shall have the right of access to safe water and sanitation.

2 Unified WASH Policy and Act

As the WASH sector has undergone many policies and Acts enacted at different times, their earnest implementation and adherence have been a major challenge. Realizing this, an umbrella Water Supply and Sanitation Policy and a corresponding unified WASH policy are under preparation by the Ministry of Water Supply and Sanitation. These instruments will integrate existing WASH policies and laws into a single compressive legislative and policy framework to guide all stakeholders to move in a coordinated manner by creating an enabling environment to provide improved, inclusive and sustainable access to WASH services.

3 Water Resources Act (1992)

This is an umbrella Act that provides the legal basis for state ownership over water resources, governs national water resource management and prohibits the discharge of polluted water into the river for protecting the water sources and environment.

4 Environment Protection Act (1996) and Environment Protection Regulation (1997)

This Act makes legal provisions in order to maintain clean and healthy environment by minimizing the adverse impacts likely to be caused from environmental degradation on human beings wildlife, plants, nature and physical objects, and to project environment with proper use and management of natural resources, taking into consideration that sustainable development could be achieved from the inseparable inter-relationship between the economic development and environment protection.

The Act and Regulation require conducting Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) based on the size and nature of the project. The Act deals with prevention and control of pollution or acts detrimental to environment and prescribes list of water related projects that requires conducting EIA or IEE. Urban Water Supply and Sanitation Sector Policy (2009) is informed by this Act on the regulation of wastewater discharge into natural water bodies and protect their ambient water quality.

5 Local Self Governance Act (1999)

The Local Self Governance Act and Regulations (2000) have provided the legal basis for the devolution of authority, responsibility and resources to local bodies to lead local development process in a decentralized manner including for local level water supply and sanitation services. It sets out which natural resources are assets of local bodies and empowers local bodies to levy a tax for the use of natural resource.

Sanitation provisions made in the Local Self Governance Act are:

- **Municipality:** Article 96 (1) © (6) - To carry out or cause to be carried out sanitation programmes in the Municipality area; and

- **Village Development Committee:** Article 28 (f) - To make or cause to be made arrangements for necessary sanitation in settlement areas

6 National Building Code (2003)

The National Building Code provides guidelines, among others, for water supply and sanitation provision within buildings including collection and disposal of wastewater and storm water from houses and the standards for constructing the toilets, plumbing and other sanitation services. While the code is very relevant for larger cities, its efficacy for small and emerging towns is less clear. There are challenges around monitoring, supervision and compliance with the given standards and guidelines.

7 Water Supply Management Board Act (2006)

Urban areas covering Metropolitan city, Sub-metropolitan City and Municipalities are required to be governed by the Management Boards as per the Water Supply Management Board Act. The Act places an emphasis on the participation and local bodies and WASH institutions in water and sanitation services in the urban areas. It provides for the establishment of an autonomous and independent Water Supply Management Board to own the assets of the water supply and arrange for supply drinking water and provide sanitation service. The Act also provides for the issuance of a license to the operator (public or private sector) for the management, operation and maintenance of the system and leasing of the assets. Sanitation, however, has received little attention in the Act.

8 Urban Water Supply and Sanitation Sector Policy (2009)

Building on National Urban Policy (2007) which emphasizes for sanitation and environmental considerations in carrying out urban infrastructure development, Urban Water Supply and Sanitation Sector Policy has set strategies for sanitation implementation as well as hygiene promotion, solid waste management and protection of environment. The policy endorses the Municipality and WUSCs managed schemes and sets out strategies for institutional and household level sanitation through both onsite and off-site

solutions. This Policy also addresses the need of water supply and sanitation in urban areas with cost recovery principles and Public Private Partnership including provision of Output Based Aid (OBA) targeting ultra poor.

9 National Sanitation and Hygiene Master Plan (2011) and Total Sanitation Guidelines (2017)

The GoN issued the National Sanitation and Hygiene Master Plan (2011) to unify stakeholders' efforts, harmonize operations, and manage sustainable ODF and total sanitation campaigns through local body's leadership, multi-stakeholders' partnership and communities' ownership by adopting the guiding principles given below. Total Sanitation Guidelines (2016) is being prepared to further elaborate the provisions of the Master plan to enable realization of total sanitation outcomes at the Village, Municipality and District levels

Guiding Principles, National Sanitation and Hygiene Master Plan

- ODF should be the bottom line of all sanitation interventions.
- Ensure universal access to sanitation in the water supply and sanitation project areas.
- Communities should have informed technological choices for household toilets.
- Local bodies should lead all sanitation activities.
- VDC and Municipality should be the minimum basic unit of all sanitation program intervention.
- Locally managed financial support mechanism should be promoted.
- Mandatory provisions of sanitation in all institutions.
- Mandatory provision of toilet in new built up buildings.
- Focus should be laid on hand washing with soap and hygiene behavior promotion.

11 Solid Waste Management Act (2012)

The key objective of the Act is to maintaining clean and healthy environment by minimizing the adverse effects of solid waste on public health and the environment. Provisions are made for fine and punishment in case of non-compliance. The local bodies are responsible for construction, operation and management of

infrastructure for collection, treatment and final disposal of solid waste, including construction of transfer stations, treatment plants etc.

12 Urban Environment Management Directives (2011)

This Directives has fixed the standard for wastewater after treatment and the minimum standards of solid waste that need to be maintained before the disposal of waste. The objectives of the Directives are to help guide building healthy towns by minimizing and controlling pollution in environment and prohibiting disposal of sewage in water bodies without treatment. It encourages private sector participation in faecal sludge management as well. Enforcement in the implementation of Directives has been a major challenge due to inadequate attention and capacity constraints.

13 Government of Nepal Work Division Regulation (2013)

As per the work division regulation of Ministry of Water Supply and Sanitation, Government of Nepal, the responsibility of sanitary sewerage rests on Department of Water Supply and Sewerage.

14 Urban Development Strategy (2017)

Building on National Urban Policy (2007), the Ministry of Urban Development prepared a National Urban Development Strategy (NUPS) in 2015 to help address critical issues related to urban development sectors such as system, infrastructure, environment and economy. On urban sanitation, the focus is on sewerage systems where feasible, on-site sanitation systems, and storm water drainage along back topped road.

15 WASH National Sector Development Plan

The Ministry of Water Supply and Sanitation is an advanced stage of formulating a National WASH Sector Development Plan (SDP). By providing a shared vision and coherent strategy around national priorities, the SDP provides a strategic programming framework and plan for action to the stakeholders in the realization of safe water and sanitation services for all – everyone, everywhere and anywhere – through improved coordination, harmonization and alignment.

Chapter 3

Objectives and Scope of Institutional and Regulatory Framework

For the successful implementation of FSM service chain, an effective institutional and regulatory framework is a prerequisite. The FSM service chain involves safe collection, transportation, treatment and disposal/reuse of the faecal sludge from the on-site sanitation systems. This service chain depends on effective management system. Strategies and approaches need to be clearly defined in sanitation and water policy, including regulating and enforcing the roles and responsibilities of each stakeholder throughout the entire service chain. This comprehensive approach incorporating multiple levels of institutional aspects fosters a strong commitment by the Government that is linked to the WASH policy and guidelines, including onsite sanitation systems in the short, medium or long-term.

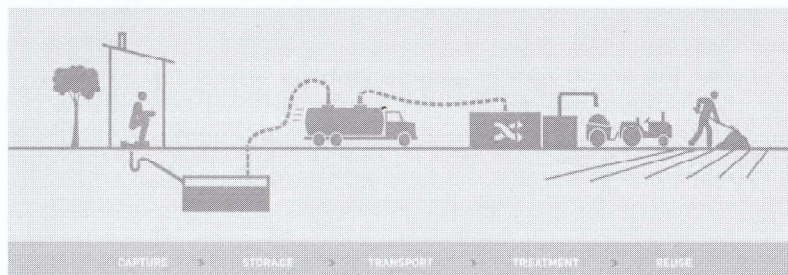
The on-site sanitation systems collect, contain and partially treat the faecal waste and wastewater. The sludge accumulated in these systems need to be periodically removed and treated before being disposed into the environment.

The purpose of this FSM framework is to facilitate effective planning, implementation, monitoring and regulation of FSM service chain i.e., collection and transportation, treatment and disposal or end use in the small towns.

The main objective is to:

- Define specific roles and responsibilities of key institutions for the effective management and regulation of FSM; and
- Provide guidance for the effective planning, implementation and monitoring of FSM services in small towns

FSM Service Chain



This framework also provides inputs to the development of operational guidelines, capacity building of key institutions responsible for effective management of faecal sludge.

Only on-site sanitation and areas served by such systems would fall under the purview of the FSM framework. If sewerage system (including treatment plants) of wastewater management is introduced at the local levels, this framework would not apply to those parts.

Chapter 4 Institutional Roles and Responsibilities

The institutional roles and responsibilities on sanitation services specified in this Framework are derived primarily on the provisions made in the New Constitution of Nepal (2015). WASH Policy and Act (draft) and SDP (Draft); Total Sanitation Guidelines (Draft); National Master Plan on Hygiene and Sanitation (2011); and Local Self-Government Act (1999) which collectively guide and regulate the roles and responsibilities of Municipalities, Village Development Committees in the provision of sanitation services.

From these legislative and policy provisions, it is apparent that the primary responsibility for planning and management of sanitation, including for faecal sludge management, lies with the Local Bodies (Municipality and Village Development Committee) for their respective areas of jurisdictions. Municipality and Village Development Committee are the lowest implementation units for sanitation as defined in the National Master Plan on Hygiene and Sanitation.

Based on the roles and responsibilities outlined in this Framework, Municipalities and Village Development Committees may formulate specific regulations/bye-laws if needed, for implementing FSM in a specified local context. Such a provision for formulation of specific by-laws has been provided for in Article 76, Local Self-Governance Act.

Table 3: Role Distribution Among Stakeholders

Stakeholders	Policy and Guidelines	Coordination	Collection & Transport	Treatment	Disposal/ end use	Regulation	Capacity Building	Monitoring
MoWSS and MoFALD	•	•				•	•	•
MoPE	•	•				•	•	•
Municipality/ VDC/Utility	•	•	•	•	•	•	•	•
WUSCs		•	•	•	•		•	•
Private Sector/ Entrepreneurs			•	•	•			
Research/ Academia	•						•	•
DPs/INGOs	•	•					•	

4.1 Overall Responsibility for Faecal Sludge Management

- (1) The Local Bodies shall be the key agency responsible for FSM services within their jurisdiction, including planning, implementation, monitoring and development and application of business model for service delivery.
- (2) The Local Bodies may:
 - Seek technical and management support from the Department of Water Supply and Sewerage, Ministry of Water Supply and Sanitation;
 - Seek local governance support from the Ministry of Local Development and Federal Affairs;
 - Engage Water and Sanitation Committee (WUSC) for the operation and management of FSM service chain until Local Bodies have institutional and management capacity; and
 - Outsource to a licensed private FSM entrepreneur for the collection, transport, treatment and end use based on Article 116 of Local Self-Governance Act.
- (3) In accordance with the provisions made in Article 111, Local Self Governance Act, the Local Bodies shall prepare town sanitation plan including the provisions of the treatment system for the implementation of FSM services.
- (4) The Local Bodies shall establish a Public Health and Environment Division (if it has not been formed already) in accordance to Municipality Structure. This Public Health and Environment Division shall oversee the activities related to planning and implementation of FSM services. Depending on need, the Division may establish a FSM Committee/Group in the effective planning, management and regulation of FSM services.
- (5) The Local Bodies shall coordinate preparation of an inclusive FSM planning and implementation through Municipality/Village WASH Coordination Committees which are established following the approval of National Master Plan on Hygiene and Sanitation. Enhanced coordination through Municipality/Village WASH Coordination Committees is instrumental to promote horizontal and vertical linkages,

communication and synergy among stakeholders, strengthened co-funding opportunities and monitoring and follow up on FSM. If the WASH Coordination Committee is yet to be established at the respective levels, the Local Bodies shall take proactive initiatives for their establishment.

The Institutional Framework for FSM is given in Annex 1.

4.2 Specific Roles and Responsibilities

The specific roles and responsibilities of key stakeholders are outlined below.

Department of Water Supply and Sewerage, Ministry of Water Supply and Sanitation

- Developing and disseminating FSM treatment plant designs, project reports, Institutional and Regulatory Framework, Operational Manual/Guidelines including Information, Education and Communication materials on FSM service chain to enable Local Bodies for the effective planning and implementation of FSM
- Organizing coordination meeting with stakeholders
- Providing capital cost for the construction of FSM treatment plant through cost sharing agreement and supervision of the same
- Providing technical assistance to Local Bodies in the effective programming, management and monitoring of FSM service chain
- Strengthening institutional and management capacity of Local Bodies, and other practitioners through agencies such as National WASH Training Centre and research and academic institutions, based on capacity gaps assessment
- Supporting Local Bodies in the institutionalization of this Framework and its enforcement by assisting in the preparation of location specific bye-laws, contract and service level agreements as appropriate
- Working with Ministry of Population and Environment on developing and disseminating faecal sludge standards, monitoring and compliance
- Ensuring FSM strategies and approaches are featured in unified WASH Policy, Act, SDP and Urban Sanitation Guidelines and amendments

- Based on lessons learnt from FSM in the small towns, refining FSM strategies for instituting improvements in WASH policy and associated sanitation guidelines

Ministry of Local Development and Federal Affairs

- Issuing policy directives to Local Bodies in the planning and implementation of FSM as an integral components of urban sanitation
- Providing Local Bodies with appropriate human resources and budget to effectively implement and monitor FSM
- Supporting Local Bodies to prepare location specific bye-laws/regulations on FSM and approval through their councils
- Networking and policy dialogue with Ministry of Water Supply and Sanitation for instituting improvement in FSM management and strategies

Ministry of Population and Environment

- Disseminating Urban Environmental Management Directives, faecal sludge and wastewater effluent standards and indicators to Local Bodies
- Providing technical support, through Department of Water Supply and Sewerage, to Local Bodies, to ensure compliance of faecal sludge, wastewater effluent and end products as per the standards defined in Urban Environment Management Directives and to thereby contribute to environment protection

Department of Agriculture, Ministry of Agriculture

- Providing guidance and support, through Department of Water Supply and Sewerage, to Local Bodies for safe use and marketing of compost/organic fertilizer produced by the faecal sludge treatment systems

Local Bodies

- Overall responsibility for FSM planning and regulation in their jurisdiction
- Providing land and access road (if required) for the FSM treatment plant. This can contribute towards certain capital cost sharing requirement from local bodies/WUSCs
- Establishing FSM Committee/Group to steer and provide oversight in the effective implementation of FSM within its jurisdiction

- Preparing, approving and disseminating FSM Treatment Plant Design, Institutional and Regulatory Framework, Business Model and Operational Manual/Guidelines
- Discharging responsibility of FSM operation and maintenance to WUSC on its behalf until Local Bodies have institutional and management capacity
- Issuing a license to private entrepreneur for faecal sludge collection, transport and disposal at the specified FSM treatment plant
- Providing adequate financial resources for operation and maintenance of FSM until operations can be sustained by WUSC from service charges collected based on FSM Business Model
- Coordination with neighboring Local Bodies for possible disposal of sludge at the treatment plant
- Linkage and coordination with local WASH committees on sanitation promotion
- Ensuring designs of septic tanks and soak away systems, both for individual and public toilets, are based on approved standards
- Monitoring effective implementation of FSM and ensuring regulation compliance and instituting improvements, as appropriate

WUSCs

- Securing land and access road with the help of Local Bodies for the FSM treatment plant
- Securing operation and maintenance fund from Local Bodies for initial years until operations can be sustained from service charge collected
- Providing inputs in business model development and application. Once Business Plan comes into operation, undertaking full responsibility of 100% FSM operation and maintenance costs while ensuring financial sustainability
- Facilitating partnerships between Local Bodies, citizens and private entrepreneur on FSM collection, transportation, treatment and disposal/end use
- Putting in place a dedicated human resource as an operator for the FSM treatment plant operation
- Based on experience of FSM operations management, seeking support required from Local Bodies and DWSS to address challenges encountered
- Supporting Local Bodies in the effective regulation and instituting improvements, as appropriate

- Enhancing market promotion of end products while considering social, economic and cultural factors
- Providing feedback on the performance of FSM service chain

Private Entrepreneur

- Partnership with Local Bodies and WUSCs in the effective operation of FSM service
- Collection and transportation of faecal sludge, management of faecal sludge treatment plant and end use based on the provisions made in the service level agreement
- Marketing and quality assurance of end product
- Customer service
- Collection and deposit of service charge as per the contract agreement
- Adhering to the clauses of the agreement

I/NGOs

- Awareness raising
- Capacity building, knowledge promotion and innovation
- Business model development
- Market promotion of end products

Development Partners

- Technical assistance to develop institutional and management capacity, systems, strategies and guidelines for FSM both at the local and national levels
- Funding for piloting and developing replicable models for scaling-up

4.3 Design and Construction of On-site Sanitation Systems and Disposal

New Construction

- (1) The provisions of National Building Code and Containment Guidelines (which will be issued as part of this Framework) shall be followed for checking designs of septic tank and soak away system. While approving design of new houses and buildings, the Local Bodies shall check the design of on-site sanitation systems (toilets, septic tank, soak away) and location to ensure easier access for desludging.
- (2) The Local Bodies may engage the private sector through outsourcing in carrying out activity (1) above.

Existing Buildings

- (3) While inspecting existing houses and building in accordance with provisions National Building Code and Containment Guideline, the Local Bodies shall check that the sanitation systems have been sited and constructed according to the approved design. In case of non-compliance, the Local Bodies shall instruct the owner to re-construct the sanitation systems following the approved design.
- (4) The Local Bodies shall serve notice to owners of premises where there are no proper onsite sanitation or sanitation systems in inappropriate locations to arrange for proper sanitation systems.
- (5) The Local Bodies may engage the private sector in carrying out inspection of existing/completed buildings for assessment of on-site sanitation systems.

Disposal of Sewage/Wastewater

- (6) The Local Bodies shall carry out inspection to ensure that domestic and industrial sewage/wastewater are not disposed off in undesignated areas or are not connected to storm water drainage or irrigation canal.
- (7) For non-compliance of (6), the Local Bodies shall levy fine for offence in line with approved rules. The Local Bodies shall ask owners of buildings/premises that are in violation, to discharge domestic sewage/wastewater into a septic tank constructed based on approved guidelines. Until faecal sludge treatment are constructed, emptied faecal sludge shall be disposed in Local Bodies designated land/area by digging pits/trenches in the ground, and covering the pits/trenches with soil after it is filled with sludge.
- (8) The Local Bodies may engage the private sector in carrying out inspection for identifying practices of sewage/wastewater disposal.
- (9) The Local Bodies shall work with the Ministry of Water Supply and Sanitation, and Ministry of Population and Environment (and their local branches) to ensure that housing estates, industries and hospitals treat their sewage/waste water within their premises before discharging into the environment.

4.4 Faecal Sludge Collection and Transport

- (1) The Local Bodies shall prepare and enforce regulation to do away with manual scavenging gradually.
- (2) The Local Bodies shall prepare standards and guidelines for safe collection and licensing for transportation vehicles with appropriate health and safety training for faecal sludge emptying and transportation. The Local Bodies shall undertake periodic inspection of transportation vehicles and provide renewal of fitness certificate.
- (3) The Local Bodies shall carry out and/or oversee the collection (emptying) and transportation, while ensuring these operations are carried out as per the approved standards in a safe and hygienic manner without adversely affecting health and safety of emptiers, the public and the environment.
- (4) The emptying service shall include "transportation of the collected faecal sludge to the designated site for treatment and disposal". The Local Bodies shall ensure that the collected faecal sludge is transported to the approved site(s) for treatment and disposal, and that the collected faecal sludge is never disposed off in unapproved sites (open space/water bodies/storm drains/sewers).
- (5) The unauthorized disposal of collected faecal sludge on unapproved sites shall be indicted for punishment based on regulation enacted by the Local Bodies.
- (6) The Local Bodies may outsource collection and transportation of faecal sludge from onsite sanitation systems to the private sector through outsourcing.
- (7) Based on Business Model approved by their respective Councils for FSM, the Local Bodies shall fix service charges for the collection and transportation of faecal sludge from on-site sanitation systems. If faecal sludge treatment systems are already functional and the collected faecal sludge is transported for treatment, the Local Bodies may consider the entire service chain (i.e., from collection to treatment) while fixing such service charges.
- (8) To ensure proper and timely emptying of septic tanks, the Local Bodies shall develop a database of households/institutions on-site sanitation systems within its jurisdiction, along with emptying frequency. Once the entire FSM service chain (i.e., from collection to

treatment/disposal) is in place, the database would be used for efficient and timely emptying of all on-site sanitation systems.

4.5 Faecal Sludge Treatment, Disposal and End-use

- (1) With assistance from WUSC, the Local Bodies shall secure land for the FSM treatment plant based on minimum conditions for site selection specified in Annex 2. The land shall officially be in the name of Local Bodies or a public land. An independent third party validation report of the FSM treatment plant shall be prepared and approved before construction of the plant.
- (2) The Local Bodies shall carry out and/or oversee faecal sludge treatment, disposal and end-use while ensuring these operations comply with standards defined in Urban Environmental Management Directives for disposal of liquid effluent, without adversely affecting public health and the environment. The waste water standards are attached in Annex 3.
- (3) FSM treatment standards shall be followed as defined in FSM operational guidelines. The Local Bodies may seek technical and management assistance of Department of Water Supply and Sewerage or relevant institutions in the design, and operation and maintenance of faecal sludge treatment systems.
- (4) The Local Bodies shall undertake periodic inspection of the FSM treatment plant efficiency, and review plant operations and maintenance reports, and institute improvement measures if necessary
- (5) In accordance with Article 116 © of Local Self-Governance Act, the Local Bodies may engage private sector or WUSC for treatment and disposal of faecal sludge, and use/marketing of end-products, through service level agreement.
- (6) Service level agreement shall clearly define roles of parties and service charges. The Local Bodies/WUSC may fix service charges for treatment of faecal sludge separately, or together with the collection and transportation charges as according to this framework.

- (7) The Local Bodies shall seek assistance of the Ministry/Department of Population and Environment in ensuring compliance of wastewater effluent and end products as per the standards defined in Urban Environment Management Directives.
- (8) The Local Bodies shall seek assistance of the Ministry/Department of Agriculture to simplify procedures for safe use and marketing of compost/organic fertilizer produced (if any) from faecal sludge treatment systems in agriculture and landscaping etc.
- (9) The Local Bodies may work with private sector/NGOs/research institutions to create awareness on the reuse potential of compost/organic fertilizer and develop markets for end products.

4.6 Environmental Monitoring and Compliance

- (1) The Department of Water Supply and Sewerage, Ministry of Water and Sanitation shall work with Ministry of Population and Environment to disseminate waste water standards to enable Local Bodies use and comply with waste water and effluent standards defined in Urban Environment Management Directives or other guidelines especially for treated sludge and end use.
- (2) The Department of Water Supply and Sewerage, Ministry of Water and Sanitation shall work with Ministry of Population and Environment to develop well-trained, environmental human resource for ensuring field compliance of Urban Environment Management Directives, safety standards with provisions of penalties for non-compliance.

4.7 Awareness Raising, Capacity Building, Training and Research

- (1) The Department of Water Supply and Sewerage, Ministry of Water Supply and Sanitation shall develop an user-friendly FSM operational guidelines. Such a guidelines will include approaches and standards for emptying, transportation, and treatment of faecal sludge; operation and maintenance (O&M) of faecal sludge treatment plant, disposal of effluent from faecal sludge treatment plant, quality control and use of

treated products/by-products, and protocol for securing license for using/marketing of compost/organic fertilizer produced at faecal sludge treatment systems. FSM Operational Guidelines coupled with training programme will enable the Local Bodies to better plan and implement FSM in their respective areas.

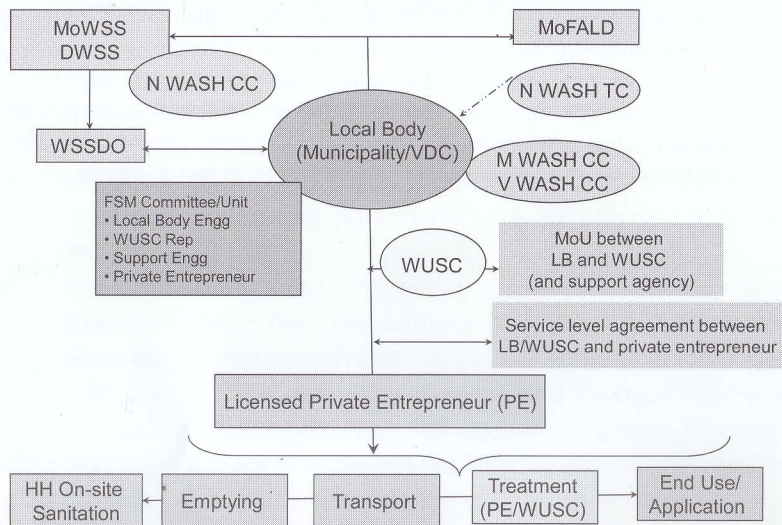
- (2) The Local Bodies shall work with WUSCs, civil society organizations, research and training institutions in sensitizing the public on FSM through use of print, electronic and social media and to facilitate partnership with stakeholders including the private sector.
- (3) Based on structured capacity gaps assessment of Local Bodies/WUSC, the Department of Water Supply and Sewerage, Ministry of Water Supply and Sanitation shall work with Ministry of Local Development and Federal Affairs to strengthen institutional and management capacity of Health and Environment Division of Local Bodies/WUSC for effective planning, delivery and monitoring of FSM services.
- (4) The Department of Water Supply and Sewerage, Ministry of Water Supply and Sanitation may engage research and training institutions (such as N WASH TC), I/NGOs, Development Partners and others to address knowledge and skills gaps, quality assurance of process and products in the FSM service chain.
- (5) The Department of Water Supply and Sewerage, Ministry of Water Supply and Sanitation shall work with Development Partners and (I)NGOs to develop guidelines for capacity building, facilitate sharing and dissemination of knowledge and innovation on FSM.

4.8 Policy Coordination, Technical Assistance and Funding

- (1) The GoN shall provide necessary assistance and guidance to Local Bodies/WUSC for securing land for construction of treatment plant.
- (2) The Ministry of Water Supply and Sanitation and Ministry of Local Development and Federal Affairs will integrate FSM as an integral component for urban sanitation planning in WASH policy, Act and SDP with appropriate plan and funding for development of FSM infrastructure in small towns.

- (3) The National WASH Coordination Committee shall provide the vertical and horizontal coordination and linkages with cross-sectoral Ministries by including in its composition the representations from the Ministry of Population and Environment, and Ministry of Agriculture to ensure environmental monitoring and compliance, and safe use and marketing of treated products/by-products respectively.
- (4) Development Partners, multilateral or bilateral, may provide technical assistance and funding support for establishing, enhancing and up scaling FSM services in small towns.

Institutional Framework



Criteria for the Selection of FSM Treatment Site

- Land allocation should be done either through land use planning as per the Land Act 2034 or through coordinated efforts among stakeholders at the local level;
- The treatment site should be established away from dense settlement areas, agricultural land, and other sensitive areas like water body, hospitals or schools to avoid potential social opposition arising from problems of foul odor or other aesthetic reasons;
- The site can be established in a community forest or woodland that is not declared as a protected area;
- The site should be at least 300m away from the nearest dwelling, 30m downstream from any drinking water source, not in a protected or religious area, and in relatively flat land with no more than 8% slope;
- Public or WUSC land with ownership certificate and without adverse social and environmental impacts for construction;
- The ideal location for establishing a faecal sludge treatment is within a solid waste management or a wastewater treatment facility where such system already exist; or that the treatment should be integrated when such system are being planned.

Annex 3

Published in Nepal Gazette
In 2058/01/17

Government of Nepal
Ministry of Population and Environment

Kathmandu
Standards
Generic Standard
Part I

Tolerance Limits for Industrial effluents to be
Discharged in to Inland Surface waters

Characterizes	Tolerance limit
Total suspended solids, mg/L, Max	30-200
Partical size of total suspended partials	Shall pass 850-micron sieve.
pH	5.5 to 9.0
Temperature	Shall not exceed 40 degree C in any section of the stream within 15 meters down-stream from the effluent outlet.
Biochemical oxygen demand (BOD) for 5 days at 20 degree C, mg/L, Max	30-100
Oils and grease, mg/L, Max	10
Phenolic compounds , mg/L, Max	1
Cynides (as CN), mg/L, Max	0.2
Sulphides (as S), mg/L, Max	2
Radioactive materials:	
a. Alpha emitters, c/ml, Max	10 ⁻⁷
b. Beta emitters, c/ml, Max	10 ⁻⁸
Insecticides	Absent
Total residual chlorine, mg/L	1
Fluorides (as F), mg/L, Max	2
Arsenic (as As), mg/L, Max	0.2
Cadmium (as Cd), mg/L, Max	2
Hexavalent chromium (as Cr), mg/L, Max	0.1
Copper (as Cu), mg/L, Max	3
Lead (as Pb), mg/L, Max	0.1
Mercury (as Hg), mg/L, Max	0.01
Nickel (as Ni), mg/L, Max	3
Selenium (as Se), mg/L, Max	0.05
Zinc (as Zn), mg/L, Max	5
Ammonical nitrogen, mg/L, Max	50
Chemical Oxygen Demand, mg/L, Max	250
Silver, mg/L, Max	0.1

Published in Nepal Gazette

In 2060/03/09

Government of Nepal
Ministry of Population and Environment

Kathmandu
Standards
Generic Standard
Part I

Tolerance Limits for industrial Effluents to be
Discharged into inland Surface Water
Generic Standard
Part II

Tolerance Limits for Industrial Effluents to be Discharge into public Servers

Characteristics	Tolerance Limit
Total Suspend solids, mg/L Max	600
pH	5.5 to 9.0
Temperature, oC, Max	45
Biochemical oxygen demand (BOD) for 5 Days at 20 degree C, mg/L, Max	400
Oils and grease, mg/L, Max	50
Phenolic compounds, mg/L, Max	10
Cynides (as CN), mg/L, Max	2
Sulphides (as S), mg/L, Max	2
Chloride (Cl), mg/L, Max	1000
Insecticides	Absent
Sulphates (SO ₄), mg/L, Max	500
Fluoride (as F), mg/L, Max	10
Arsenic (as AS), mg/L, Max	1
Cadmium (as, Cd), mg/L, Max	2
Total Chromium, mg/L, Max	2
Copper (as Cu), mg/L, Max	3
Lead (as Pb), mg/L, Max	0.1
Mercury (as Hg), mg/L, Max	0.01
Nickel (as Ni), mg/L, Max	3
Selenium (as Se), mg/L, Max	0.05
Zinc (as Zn), mg/L, Max	5
Ammonical nitrogen, mg/L, Max	50
Chemical Oxygen Demand, mg/L, Max	1000
Silver, mg/L, Max	0.1
Total Dissolved Solids, mg/L, Max	2100
Mineral Oils, mg/L, Max	10
Inhibition of nitrification test at 200 ml/l	<50%

Published in Nepal Gazette
In 2060/03/09

Government of Nepal
Ministry of Population and Environment
 Kathmandu
 Standards

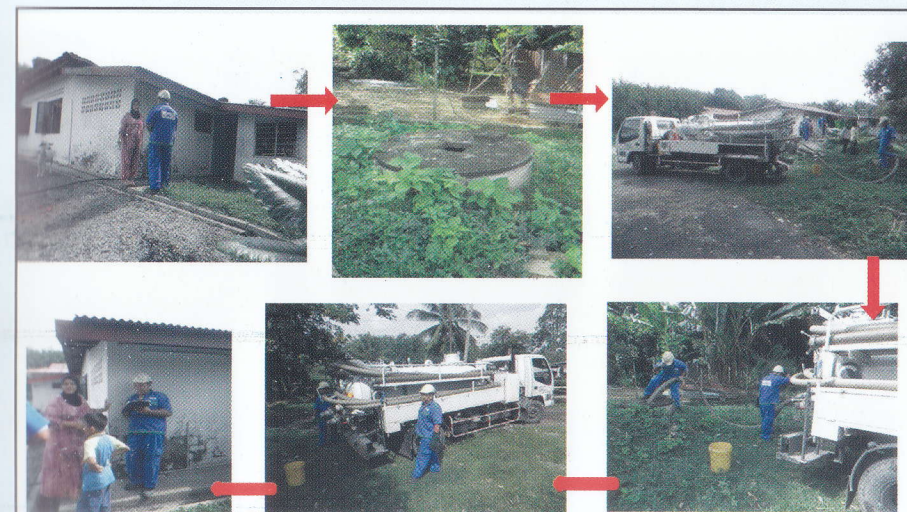
Generic Standard
 Part I

Tolerance Limits for Industrial Effluents to be
 Discharged into Inland Surface Waters

Generic Standard
 Part III

Tolerance Limits for Wastewater to be discharged into Inland Surface
 Waters from Combined Wastewater Treatment Plant

Characteristics	Tolerance Limit
Total Suspended solids, mg/L, Max	50
Particle size of total suspended particles	Shall pass 850-micron Sieve.
pH	5.5 to 9.0
Temperature	Shall not exceed 40 degree C in any section of the stream within 15 meters down-stream from the effluent outlet.
Biochemical oxygen demand(BOD) for 5 days at 20 degree C,mg/L, Max	50
Oils and grease, mg/L, Max	10
Phenolic compounds, mg/L, Max	1
Cynides (as CN), mg/L, Max	0.2
Sulphides (as S), mg/L, Max	2
Radioactive materials:	
a. Alpha emitters, c/ml, Max	10 ⁻⁷
b. Beta emitters, c/ml, Max	10 ⁻⁸
Insecticides	Absent
Total residual chlorine, mg/L	1
Fluorides (as F), mg/L, Max	2
Arsenic (as As), mg/L, Max	0.2
Cadmium (as Cd), mg/L, Max	2
Hexavalent chromium (as Cr), mg/L, Max	0.1
Copper (as Cu), mg/L, Max	3
Lead (as Pb), mg/L, Max	0.1
Mercury (as Hg), mg/L, Max	0.01
Nickel (as Ni), mg/L, Max	3
Selenium (as Se), mg/L, Max	0.05
Zinc (as Zn), mg/L, Max	5
Ammonical nitrogen, mg/L, Max	50
Chemical Oxygen Demand, mg/L, Max	250
Silver, mg/L, Max	0.1

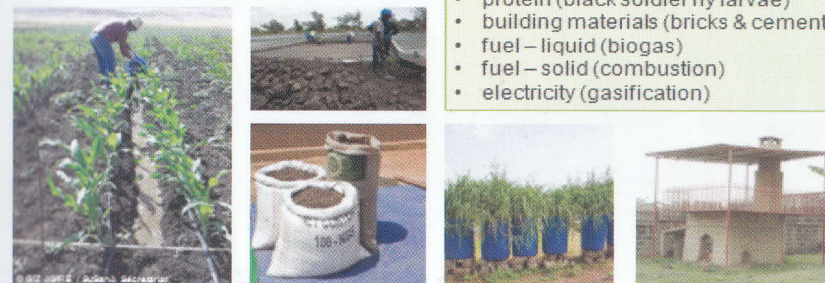


FSM - A profitable business if wisely managed

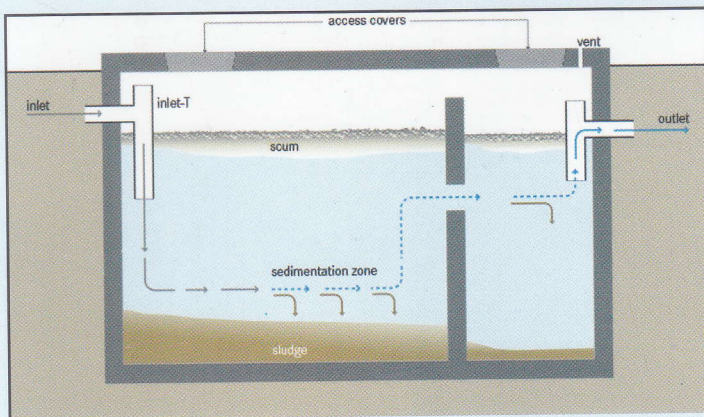
- Environmental protection
- Public health
- Resource recovery and value creation
- Business opportunities / cost recovery

FS-derived endproducts

- soil conditioner (dried sludge, compost, pellets, etc.)
- fertilizer (NPK added)
- reclaimed water
- animal fodder (planted drying beds)
- fish (aquaculture)
- protein (black soldier fly larvae)
- building materials (bricks & cement)
- fuel – liquid (biogas)
- fuel – solid (combustion)
- electricity (gasification)



Benefits of Sustainable FSM



Septic Tank



Septage Desludging vehicle



Lubu Fecal Sludge Treatment Plant