Small to Beautiful

Doing FSSM Business in India

2020

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WATER SANITATION

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AMRUT	Atal Mission for Rejuvenation and Urban Transformation
COVID-19	Corona Virus Disease of 2019
CPCB	Central Pollution Control Board
CPR	Centre for Policy Research
DIB	Development Impact Bonds
EoDB	Ease of Doing Business
FSSM	Faecal Sludge Management
FSTP	Faecal Sludge Treatment Plant
HH	Household
IDFC	Infrastructure Development Finance Company
IHHL	Individual Household Latrine
INR	Indian Rupee
IS	Indian Standard
KLD	Kilo Litres per day
MBBR	Moving Bed Biofilm Reactor
MLD	Million Litres per day
MoHUA	Ministry of Housing and Urban Affairs
MoUD	Ministry of Urban Development
NFSSM	National Faecal Sludge and Septage Management
NIMBY	Not In My Back Yard
NITI	National Institution for Transforming India
NSS	National Sample Survey
NSSO	National Sample Survey Office
ODF	Open Defecation Free
OECD	Organisation for Economic Co-operation and Development
OSS	On-Site Sanitation
PPE	Personal Protective Equipment
PPP	Public Private Partnership
SARS-Cov-2	Severe Acute Respiratory Syndrome Coronavirus 2
SBM	Swachh Bharat Mission
SDG	Sustainable Development Goal
SHG	Self Help Group
STP	Sewage Treatment Plant
SWCS	Single Window Clearance System
ULB	Urban Local Body

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AUTHORS' NOTE

With an increasing recognition of the fundamental role of the private service providers in bridging the gap between the availability and requirement of FSSM services provided by the public authorities, the launch of the NFSSM Policy in 2017 further emphasised the need to streamline the same. As a part of its research programme on urban sanitation, SCI-FI has been undertaking studies since the launch of the NFSSM Policy on the nature and scope of private participation in urban sanitation services, with an emphasis on addressing the full sanitation chain for OSS systems comprising – Access, Collection & transport, Treatment and Disposal/Reuse.

In this regard, research was carried out in two phases. In the first phase in 2017, SCI-FI undertook case studies of private septic tank operators across the four cities, specifically selected to build an evidence base around the practices of informal, small-scale enterprises, to document the deep informality and vulnerability within which these enterprises function. However, while attempting to understand the business models of these enterprises, it was observed that the current models did not attempt to estimate the regulatory cost on these enterprises and the resultant impact on their profitability.

Consequently, in the second phase of the study in 2018, the locations were selected to not only account for regulatory costs borne by the private operators, but to also encompass the complexity and fluidity which such markets might be expected to exhibit, along with innovation in the treatment and disposal part of the sanitation value chain. The locations for this phase were shortlisted to outline the profitability, policy and legal issues surrounding formal private businesses in FSSM and to further explore the risk mitigation strategies adopted by various stakeholders, including households, private entrepreneurs and local governments. The study highlighted the stark dynamism across states in private sector FSSM service delivery and a continuum across the level of interaction between the enterprises and the ULBs. It was observed that a higher degree of centralisation in FSSM service delivery has the potential to crowd-out or stifle private sector entry and restrict profitability at sub-optimal equilibrium outcomes.

Culminating the findings from the two phases, SCI-FI has designed a tool for ULBs to evaluate their 'Doing Business' score for small-scale FSSM businesses engaged in collection, conveyance and treatment of faecal sludge. It is also pertinent to note that the study was undertaken during the term of the Swachh Bharat Mission, that has achieved significant progress at the point of publication of this report. Further, the COVID-19 pandemic has significantly altered the scope of sanitation and hygiene policies in the country. Insofar, the framework for Ease of Doing Business for private sector presented here is subject to further finetuning and updating.

ABSTRACT

As India surmounts its open defecation challenge by increasing toilet penetration in both existing and new urban-like settlements, it has become imperative to provide adequate solutions for faecal sludge and septage management. Despite most of the newly built toilets being dependent on on-site sanitation systems, city governments have not yet been able to develop the requisite institutional and physical capacity to safely collect, transport and treat septage.This has resulted in an increased reliance on informal, small-scale operators to bridge the gap. To address this problem and build a roadmap towards business-friendly frameworks, cities will require careful evaluation to identify local best practices that attract private players and encourage improved service delivery, in compliance with regulatory requirements. In this policy brief, we propose a framework to evaluate a city's 'Doing Business' score for private businesses involved in collection and conveyance as well as treatment of faecal sludge. The framework is informed by seven primary indicators – access to information, ease of finance, land allotment, regulation, construction and utility permits, dispute resolution and business feasibility. It may be used by the local governments to assess their business environment and further create a service ecosystem that encourages sustained participation of small-scale entrepreneurs across the sanitation value chain.

1 SETTING THE CONTEXT

The introduction of the Swachh Bharat Mission (SBM) in 2014 marked a paradigm shift in India's drive to achieve universal sanitation coverage and eliminate open defecation within a span of five years. In the urban context, SBM-Urban not only achieved but also exceeded its target of toilet construction, with approximately 6.2 million individual toilets and 0.6 million community and public toilets built between 2014-2019. However, in the absence of centralised sewerage systems connected to the existing and the newly constructed toilets, the campaign has also entrenched India's dependence on On-Site Sanitation (OSS) systems, as about 49 per cent of urban households used toilets connected to septic tanks in 2018 (76th NSS Round, 2019).

According to a CPCB report, merely 23,277 MLD of treatment capacity had been developed in India, against the total sewage generation of 62,000 MLD (CPCB, 2015). Consequently, the report also states that partially or untreated sewage is the single major source for deterioration of surface and ground water quality, contributing about 70 per cent of pollution load to India's streams and water bodies. The extensive reliance on OSS systems, coupled with a weak sanitation infrastructure, has further encouraged practices of disposal of untreated faecal sludge and septage in water bodies, creating extreme repercussions like water contamination and disease spread.

In lieu of increasing pollution and contamination outcomes, the policy focus has gradually expanded to achieve broader goals such as ODF+ and ODF++ (MoHUA, 2020) in both urban and rural areas. While ODF+ focuses on providing access to toilets with water, ensure maintenance and hygiene, ODF++ focuses on nudging toilet usage and a functional faecal sludge and septage management ecosystem. The necessity of a dedicated Faecal Sludge and Septage Management (FSSM) policy has also been recognised by the Ministry of Urban Development, to bridge the gap between improving access to toilets and treatment of the collected faecal sludge.

Addressing this policy vacuum, the National Policy on Faecal Sludge and Septage Management (NFSSM) was launched for urban areas in 2017 to promote safely managed sanitation and guide cities around India in taking steps to engage private businesses for FSSM (MoUD, 2017). With the introduction of this policy, Urban Local Bodies (ULBs) are induced to adopt decentralised approaches towards achieving safe and sustainable FSSM practices in their jurisdiction, including the formation of contractual partnerships with the private sector to undertake FSSM activities. There have been efforts to mainstream and scale up FSSM infrastructure, which have primarily resulted in the uptake of FSTP projects across various cities. These projects received additional traction due to additional resource mobilisation from AMRUT funds as well as development partners.

While the extensive toilet construction undertaken during the SBM era, coupled with the increasing focus on the construction of treatment facilities, have strengthened the two ends of the sanitation value chain, there is a looming need to address the middle, i.e. the collection and conveyance of faecal sludge. This lack of attention is further compounded by unavailability of adequate, earmarked funding to achieve sustainable service delivery across the FSSM value chain.

Private operations in India have been observed across different segments in FSSM value chain, including (a) Construction of septic tanks and toilets (b) Retrofitting and maintenance of septic tanks (c) Desludging or collecting faecal sludge (d) Conveyance and disposal of faecal sludge, and (e) Construction and operation of faecal sludge treatment plants (FSTPs). However, as cities across India and the private sector responded to the newly launched NFSSM policy directive, the growing importance of the role of the private sector in the collection, conveyance and treatment of faecal sludge, which absorbs high operational risks under the current scenario, has come to the fore. Towards developing a deeper understanding of the same, the Centre for Policy Research (CPR) undertook a series of eight case studies in two phases to document the diversity of the current practices in privately operated FSSM businesses, especially in the collection, conveyance and the treatment segments of the FSSM value chain. (Table 1)

TABLE 1: CPR case studies across eight Indian cities

	Study Locations	FSSM Segments Studied
Phase I: 2016-17	Jaipur, Aya Nagar (Delhi), Bhubaneshwar, Dehradun	Collection and Conveyance businesses
Phase II: 2018-19	Chennai, Panaji, Ujjain and Jabalpur	• Collection and Conveyance businesses • Treatment businesses

While the first phase of the case studies focused on privately operated faecal sludge collection and conveyance businesses, the second phase entailed a broader evaluation by also considering the treatment businesses operating as Private Public Partnerships (PPPs) across the four cities. The eight case studies highlight a variety of service delivery models engaging the private sector in the faecal sludge collection, conveyance and treatment businesses, across the continuum of the scope of government interventions in private operations, and the risks endured by the sector.

It is evident that FSSM in India exists as a niche sector, with the current set of policies advocating a one-size-fits-all approach. To achieve thriving markets which foster private sector participation, mitigate their risks and realise the larger sector goals, ULBs need to recognise the role of the local private players, who often operate informally due to the absence of an enabling policy framework.

Substantiated by the case studies from eight cities, this policy brief outlines a framework for 'Ease of Doing Business' for private operators, aiming towards the creation of an enabling environment for local private entrepreneurs in the collection, conveyance and treatment businesses. This framework may be used by the local governments to evaluate their prevailing regulatory practices for such businesses and subsequently build a roadmap towards encouraging their sustainable and scalable participation.

1.1. Private Sector Participation at the Current Juncture – Observations from Eight Indian Cities

The following table demonstrates the profile of the study locations vis-à-vis the population, urban sanitation, private sector participation in the collection, conveyance and transportation businesses and the availability of dumping facility in the city (Table 2).

TABLE 2: FSSM Service Provision across eight Indian cities

City	Population (Census 2011)	% of HHs with IHHL	% of HHs with OSS	Estimated Private Sector Operators	FSSM Regulation Framework	Dumping Facility
Jaipur	30,70,000	94%	23%	35	· Minimal to no interaction of the operators with the authorities at state or ULB level · Lack of awareness among operators about FSSM regulations · Limited awareness among ULBs about number of private operators in the cities	Drains and waterways in the city or in the nearest available sewer manhole
Dehradun	5,78,000	97%	56%	30		Drain that leads to STP – where available
Bhubaneswar	8,38,000	80%	51%	30		Few specific open drains, waterways and sometimes sewer manholes
Delhi (Aya Nagar locality)	33,000	94%	88%	12		Open public land

City	Population (Census 2011)	% of HHs with IHHL	% of HHs with OSS	Estimated Private Sector Operators	FSSM Regulation Framework	Dumping Facility
Panaji	18,20,000	87%	50%	40 (licensed)	· State-level policy and FSSM guidelines in place · Licensing policy for new and incumbent cesspool operator	Decanting station at Tonca STP
Chennai	70,79,000	96%	2.5%	~250		Decanting stations at Perunguri and Nesapakkam
Ujjain	7,71,000	88%	72%	0 (4 publicly run trucks)	· No licensing policy for new operators but implicit discouragement of private operators	1 FSTP (MBBR Technology; 50 KLD capacity)
Jabalpur	12,70,000	84%	73%	1 (3 publicly run trucks)	No licensing policy for new operators; incumbent private operators have been brought under contract with municipality	3 FSTPs (Semi-fluidised bed reactor; 3 plants of 50 KLD each)

While most states remain bereft of an FSSM policy, some states have issued their own state level policies and/or guidelines for septage management for ULBs in order to ensure speedy implementation at the local level. Tamil Nadu has been a front-runner among Indian states in this respect. The Government of Tamil Nadu notified the 'Operative Guidelines for Septage Management for Urban and Rural Local Bodies' in September 2014, well in advance of the NFSSM policy of 2017, instating guidelines to ensure safe transportation and treatment of the collected faecal sludge and to adequately monitor and regulate all private operators within their jurisdiction. It is also important to note that the role of the government has been kept limited to outlining norms/standards for every stage of the FSSM value chain.

Further, in the treatment segment, a two-pronged approach was observed in the case study locations including (a) co-treatment of faecal sludge at existing STPs (in Panaji and Chennai) and (b) treatment of faecal sludge through decentralised and specialised FSTPs, which are often publicly owned and privately operated (in Ujjain and Jabalpur). Apart from the cities studied, secondary research also reveals the presence of decentralised FSTPs operating in PPP mode (especially for the operation and maintenance of government funded FSTPs) in other states like Karnataka, West Bengal, Kerala, Jammu and Kashmir, Odisha, Telangana, Andhra Pradesh, Maharashtra and Uttar Pradesh.

Our case studies showed that the FSSM sector, in particular the collection and conveyance segment, remains extremely heterogeneous and dominated by small-scale operators subjected to a gamut of risks. In the absence of designated dumping facilities and a regulatory/governance framework, informal operators of collection and conveyance businesses practiced indiscriminate open dumping of faecal sludge, creating severe environment and public health hazards. In cases where the local governments have attempted to assign a designated dumping facility, such interventions are often undertaken without prior consultation with the collection and conveyance business operators, thereby increasing the operational costs and restricting business activities to a lower-level equilibrium (Box 1).

BOX 1: Operatory roadblocks due to inefficient regulatory practices in Panaji, Goa

In Goa, state-level legislation enforced by local institutions (PHE Department) led to enforced dumping of faecal sludge at one or more STPs in each location along with a tipping fee. This strategy was chosen to reduce the environmental risks arising from rampant open dumping of faecal sludge and associated citizen complaints. However, designated dumping at a treatment facility was accompanied by an increase in the costs and travel time as the STPs chosen were at a long distance from the areas served by private operators – at 15-22 km. The consequences were ultimately passed on to end-users, with increased desludging prices to account for both increased fuel costs and the new tipping fees.

Further, as the STP in Goa experienced operational issues due to the inflow of faecal sludge and, occasionally, industrial waste, the practice of decanting at multiple Sewage Pumping Stations (SPSs) was discontinued and was limited to only one decanting station. While this strategy was effective in regulating dumping of industrial waste, it increased wait times for operators by over two hours. As a result, operators experienced a 25-50% reduction in daily trips while drivers and labourers had to increase the number of hours worked, without commensurate pay increases.

As an ad hoc response strategy to increased wait times, the faecal sludge emptying businesses have responded by investing in second-hand fuel tankers of 25 KL or more and using them as mobile septage stations – reducing their tipping fee cost, overall fuel costs and time lost from standing in queues. However, there is little data on whether such infrastructure is qualified to transport wastewater and the broader ramifications thereof. Thus, the sector seems to be confronted with the negative externalities that deter the pursuit of broader outcomes like public health, environmental cleanliness and resource recovery.

Often, municipalities lack adequate knowledge pertaining to the extent of demand of FSSM services in their area, as well as the typologies of the existing containment structures. Owing to the 'private good' nature of the OSS systems, these are seldom regulated and are consequently beset by substantial localisation, deviating along most of the characteristics specified by the IS codes (Dasgupta, Agarwal, & Mukherjee, 2019). While the governing code recommends half a year or yearly desludging of septic tanks, in keeping with the prescribed size of the tank for a given number of users, the high prevalence of tanks which are larger than the 'ideal' size results in a relatively lower emptying frequency than the frequency planned for.

While SBM-U may have succeeded at its goal of enhancing access to a toilet facility, it has missed the opportunity to monitor design specifications of OSS systems constructed along-side. Although national datasets like the Census and the NSSO include the broad typologies of the evolving sanitation systems across India, their assessment of the variety of systems (e.g. size, functionality, etc.) in a city is constrained. This knowledge vacuum not only makes it difficult for the ULBs to assess the frequency of desludging required for the containment structures and consequently plan for the FSTP capacity, but also hinders their ability to make informed decisions while developing strategies for engaging private entrepreneurs for the provision of FSSM services (Box 2).

BOX 2: Overestimation of FSTP capacity due to information asymmetry in Jabalpur and Ujjain

The cities of Ujjain and Jabaplur had to undergo the annual sanitation evaluation 'Swachh Survekshan' undertaken by the central government as a part of SBM-U. The 'sanitation' component of the evaluation accounted for 30% and 25% of the 2018 and 2019 rankings, respectively. Out of this, the presence of a treatment facility accounted for 10-15% of the sanitation component, giving municipalities a strong incentive to build a treatment facility. Therefore, a decision to not build a treatment facility would entail the risk of being scored lower on the Swachh Survekshan.

While municipalities of both Ujjain and Jabalpur have opted for Greenfield investments in FSTPs, imperfect information about OSS systems and practices in these cities has meant that the procurement process and estimation of facility capacity were based entirely on the basis of the number of households and public toilet complexes. Furthermore, in Jabalpur, although an average household desludging interval of three years served as a planning assumption, recent studies have shown intervals between desludging could be two or three times that number.

As a result of these strategies there has been an overinvestment and creation of excess treatment capacity, with these plants operating at merely 30-60% of capacity. Thus, an underestimation of demand risk and over-conservative mitigation strategies have solved the challenge of open dumping but at a higher cost than required. It also becomes evident that a strategy predicated on high investment without addressing related issues of upstream demand risk and the complex typology of OSS systems will fail to efficiently manage operation and maintenance of FSTP infrastructure as well as meet broader sanitation goals.

In addition, interactions with private operators who have been involved in constructing an FSTP and are now operating and maintaining it revealed that funds allocated for construction and O&M of FSTPs are much lower than the requirement for providing adequate services; this in turn has affected the quality of services being provided.

Moreover, reported delays in payments to the FSTP operator in Ujjain hinders the plant operations. Such irregularities constrain the operator from achieving the desired service delivery standards.

The conception of private engagement in urban sanitation is experiencing a paradigm shift. To leverage the gains from specific synergies that private partnerships can achieve, local governments need to develop a systematic understanding of gaps in their unique sanitation ecosystems. As the scale of the sanitation challenge shifts from the construction of toilets to the challenges of continuing O&M, cost recovery, and incentivising innovative technologies, local governments will have to recognise the role of local, small-scale private operators to bridge the gaps in FSSM service delivery in their area. Towards this end, it is fundamental to recognise the roadblocks that need to be addressed if the full potential of SBM is to be realised and translated into improved welfare and public health outcomes.

1.2. Creating an Enabling Policy Environment

The National Urban Sanitation Policy, launched in 2008, advocated the strengthening of private entities to streamline sanitation provision, including planning, implementation and O&M management (MoUD, 2008). It also highlighted the role of Public Private Partnerships (PPPs) could play in implementing key projects/activities identified in the city sanitation plan. Further underscoring the need to foster private sector engagement in the FSSM service provision, Section 10.2.1 of the SBM-U guidelines states that ULBs are "encouraged to invite private capital in urban infrastructure as well as to bring in private sector efficiency in the delivery of urban services and O&M" (MoHUA, 2017).

With the formulation of the NFSSM Policy in 2017, advocacy for the need for adequate FASM was expedited in the policy paradigm. The policy recognised the substantial dependence of urban India on OSS systems and the challenges Indian cities face in the form of health ailments and pollution of water and soil resources in the absence of adequate FSSM services for these systems. The policy also aimed to enable and support synergies among relevant Central Government programs such as SBM, AMRUT and the Smart Cities Mission to realise the goal of safe and sustainable sanitation for all. Acknowledging the indispensable role of the private sector in the provision of FSSM services, the policy also envisioned the formalisation of the informal small-scale private contractors through an easy and amenable PPP relationship framework, to ensure adequate financing and sustainability of FSSM projects.

The increasing number of FSSM tenders across several states (eg. Andhra Pradesh, Uttar Pradesh, Maharashtra etc.) makes it evident that the concept of leveraging of PPPs to streamline FSSM service delivery has gained widespread traction, thereby accelerating both the next generation of PPPs in FSSM as well as monitoring the existing ones. However, the initiatives thus far have primarily encouraged the larger businesses to leverage capital, and remained limited in their scope to recognise the managerial advantages of partnering with local businesses.

Further streamlining and scaling-up existing PPPs and mitigating the risks endured by them will require governments at all levels to revaluate the scale and scope of policies that govern private sector participation in FSSM. As corroborated through the case studies, the existing models of service delivery across regions are diverse and often exclusive to specific contexts. Thus, national policies that recommend standardised solutions – whether for technology, funding or organisational management – will have limited scope to embrace these contexts and be as useful to local stakeholders.

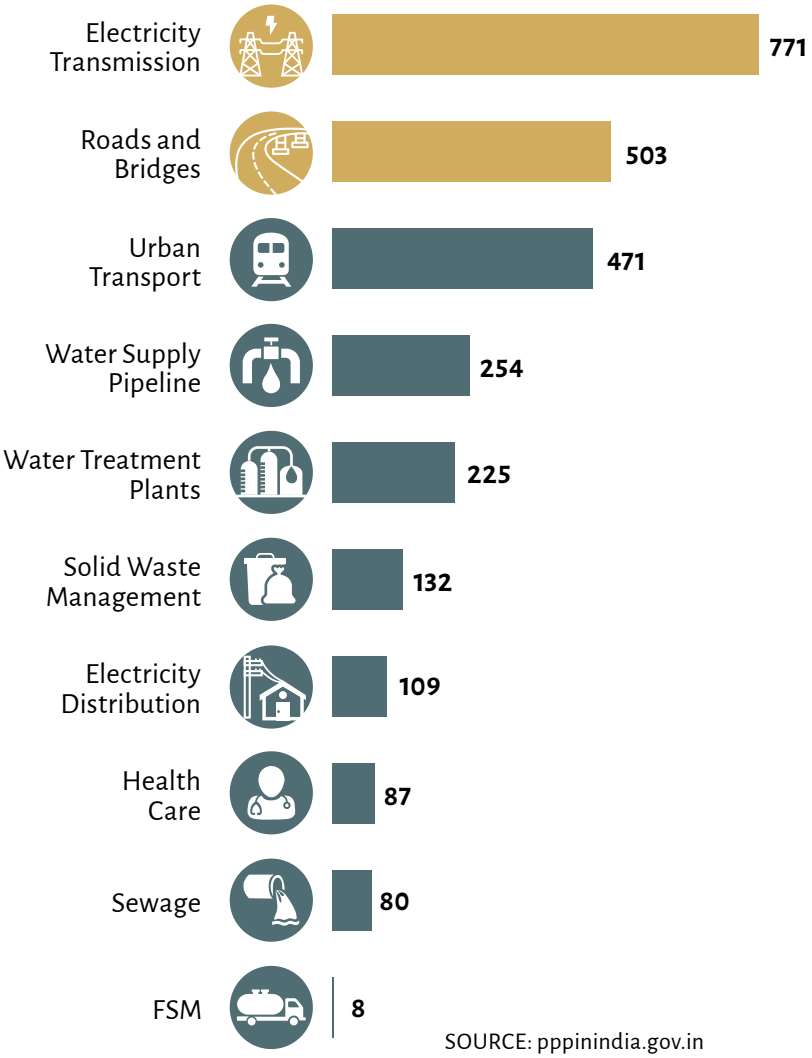
Developing a full-fledged sanitation economy offers a rare opportunity to achieve three goals: creating local economic opportunity which minimises risks, building high-tech urban infrastructure, and improving public health outcomes. However, without concerted action at both the state and city level, ULBs risk overlooking this opportunity. Consequently, an enabling environment for entrepreneurs will require localised policies and programmes, identifying and answering specific requirements of cities and states, as determined by the ULBs, local stakeholders and state governments. In this context, designing a 'Doing Business' framework for private businesses engaged in collection, conveyance and transportation of faecal sludge is a step towards streamlining the service delivery modalities in the sector.

1.3. The Role of "Small" Businesses in FSSM Service Provision

The size of FSSM businesses is found to be much smaller than the typical infrastructure projects (turnkey projects or greenfield investments). A comparison of the capital and operational cost requirement in FSSM projects and other projects indicates the significantly smaller size of the businesses involved in FSSM (Figure 1). This may be attributed to the relatively low start-up and operational capital and the reliance on technologies that are not unique to sanitation and thus easy to adopt (e.g. water tankers repurposed as septage tankers).

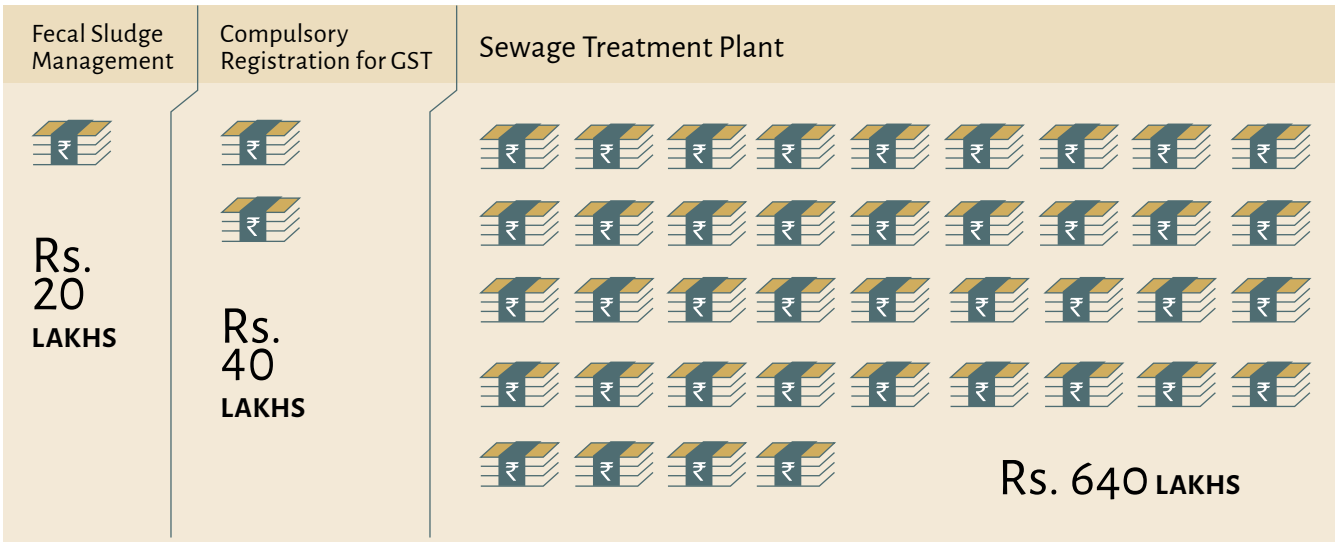
For instance, a relatively small operation, such as a sewage treatment plant for a city with a population of 200,000 will also have operating costs of approximately INR 64 million per annum. Compared to this, the operating costs of an FSSM operation are likely to be less than INR 2 million.

FIGURE 1: Sectoral comparison of capital cost requirements



SOURCE: pppinindia.gov.in

Figure 2 – Comparison of operating costs of FSTP



SOURCE: AUTHORS

In the case study locations, interactions with the private operators indicated the amount of investment required in collection, conveyance and treatment businesses (Table 3).

TABLE 3: Investment Requirement for FSSM Businesses across eight Indian Cities

City	Collection and Conveyance	Treatment
Aya Nagar	INR 0.84 million	Open dumping practiced by private players
Dehradun	INR 1.43 million	
Jaipur	INR 1.50 million	
Bhubaneshwar	INR 1.20 million	
Panaji (Goa)	INR 1.0 to 2.0 million	INR 0.14 million (decanting station)
Chennai	INR 1.8 to 2.4 million	INR 20 million (STP)
Jabalpur	INR 1.85 million	INR 4.15 million (FSTP)
Ujjain	INR 2.00 million	INR 5.00 million (FSTP)

Various national policies have attempted to mobilise private capital on a large scale, aiming to build formal PPPs in FSSM, similar to those in airports, roads or transportation, in the form of both 'bundled contracts' (linked to the construction of treatment facilities) or standalone contracts. These contracts are usually undertaken in an aggregate manner across several cities or city-clusters to achieve economies of scale as well as to benefit from the ease of handling lesser number of contracts.

However, the scale of the private sector participation in FSSM businesses makes it evident that mobilising resources at a scale similar to larger infrastructure projects may be unfeasible in this sector. Further, in most cases residents contact the local operators owing to ease of accessibility. For instance, a study from Udaipur, Rajasthan reveals that while the tariffs for desludging services provided by private operators are approximately four times in comparison to services provided by the public operators, residents often opt for the former due to better reliability and a lesser time lag between placing the desludging request and receiving the services.

Additionally, the small-scale operators involved in the provisioning of FSSM services are typically not highly educated. Interactions with service providers for faecal sludge collection and conveyance in Aya Nagar revealed that approximately 56 per cent of the operators had attained only primary education, and 11 per cent received no education. This level of education indicates the limited capacity of these operators to participate in complex contractual agreements or respond to tender notices/regulations, thus disempowering small-scale operators from active participation in the FSSM businesses.

The limited financial requirement of the sector creates a feasible environment for small-scale operators, thus accentuating the need for encouraging these entrepreneurs to undertake FSSM operations and address the existing market inefficiencies. However, despite modest requirements, these operators typically struggle to access formal financial credit and turn primarily to informal sources of credit with steep interest rates, as observed in almost all the cities studied. Therefore, as the market for FSTPs and associated collection/conveyance services serves as an attractive avenue for small and local entrepreneurs, their participation must be expedited through financial support. In the current scenario, as the states/cities aim to attract private businesses through aggregating and tendering, the scale of these interventions deters investments from the incumbent small-scale entrepreneurs, due to inexperience of ULBs to manage the latter.

Box 3: Profile of an FSTP Operator

The operator of an FSTP near Bengaluru has migrated from a village and has attained education till the 4th grade. Prior to his employment as an FSTP operator, he was employed on a farm for a few years, earing approximately INR 60,000 per year. After moving to the city, he started working as a construction worker at the FSTP construction site, where he was permanently employed when the plant when was commissioned. Over time, he learnt all aspects of operating the plant and was designated as in-charge of the plant, also maintaining its basic records.

The FSTP operator earns INR 15,000 a month and resides on the FSTP site with his wife. He takes pride in executing the responsibilities delegated to him and has derived confidence from attaining the skills required to operate the FSTP.

Although he acknowledges that the income levels deem his job unfit for the long-term, especially owning to his plans for expanding his family, he also has an option of taking up additional responsibilities in the FSTP with his wife, thereby increasing his prospective income.

2 THE 'DOING BUSINESSES' FRAMEWORK FOR FSSM IN INDIA

Governments in many economies adopt or maintain regulations that often end up burdening entrepreneurs and limit their ability to freely operate a private business. The Doing Business report of the World Bank (The World Bank, 2020) recognises that in such a scenario, entrepreneurs may resort to informal activity, away from the oversight of regulators and tax collectors, or seek opportunities elsewhere, or join the ranks of the unemployed. The Doing Business tool devised by the World Bank is used by the governments around the world to design sound regulatory policies, by exposing the potential challenges within various economies and identifying good practices and lessons learned. Thus, the World Bank's Doing Business tool analyses regulations that encourage efficiency and entrepreneurial activities.

Adopting the underlying principles of the Doing Business tool, this policy brief proposes a 'Doing Business' framework for small-scale FSSM businesses engaged in collection, conveyance and treatment of faecal sludge. As observed from the case studies, FSSM service delivery in India is dominated by small sized businesses who endure high operational and financial risks. Further, that cities of different types require widely varying models of private sector intervention. Therefore, in some cases, financial capital may indeed be the primary gap, while in other rapidly growing cities, new technological or financial interventions for collection, conveyance and treatment may be necessary. Moreover, while some cities can benefit from leveraging existing infrastructure like Sewage Treatment Plants (STPs), newer cities must build new models of infrastructure and businesses across the FSSM service chain. However, these local variations have remained primarily disregarded. In addition to this, current regulatory and governance regimes are not conducive to a self-sustaining business environment and prohibit activities that foster innovation.

The proposed 'Doing Business' framework for small-scale FSSM businesses engaged in collection, conveyance and treatment of faecal sludge aims to facilitate a set of context-specific regulatory practices that improve efficiency, mitigate the sector risks while helping identify high-quality service delivery. Further, it endeavors to assist the ULBs in identifying specific impediments towards achieving a safe and sustainable business environment for small-scale FSSM businesses, and encourage greater participation from such businesses.

2.1. Approach and Methodology

2.1.1. Identifying the Indicators

This section evaluates specific indicators that are vital to sanitation service delivery to outline a Doing Business Framework for small-scale businesses, similar to the methodology adopted in the Doing Business 2020 report, which compares various economies across specific indicators defined by The World Bank. These indicators have been outlined in an attempt to delineate the different stages of the collection and conveyance segment and the treatment segment of FSSM service delivery, to enable the identification of specific touchpoints that may require redressal by the ULB to achieve a streamlined value chain. The successful creation of an enabling environment will entail a revaluation of these indicators across the sanitation value chain, which are inherent to FSSM business activities. The indicators are:

2.1.2. Defining the stages of measuring the performance of the indicators

This framework enables ULBs in India to assess FSSM businesses for the indicators outlined above across the two critical stages –

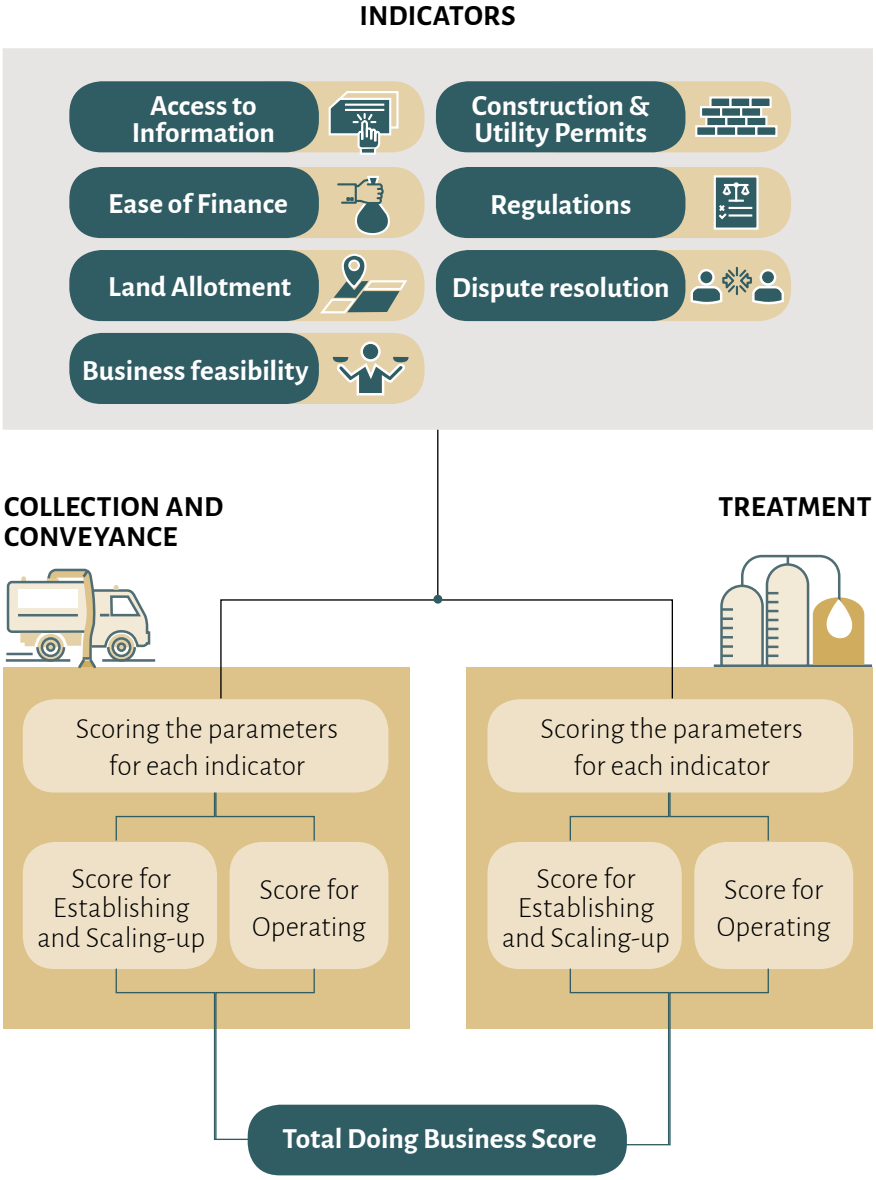
1. **Establishing and scaling-up the business, and**
2. **Operating the business**

Establishing and scaling the business beyond the regional boundaries in the FSSM sector requires an entrepreneur to have access to market information, finance, training, among other requirements. The second stage, operating the business, is also integral in this Framework as business operations constantly require up-to-date information, working capital, labour, and are required to ensure compliance with the prevailing regulations.

2.1.3. Scoring the indicators across the two stages

The scores for each indicator outlined in this framework are based on an evaluation of the best practices in the FSSM sector, evidenced by the case studies, following the methodology adopted in Doing Business 2020 report by the World Bank. After allotting scores between 1-10 for each variable within the indicators (as detailed below), these scores can then be aggregated to obtain the average score across the two stages – establishing & scaling-up and operating a business for each city. These steps will be followed separately for the collection and conveyance businesses and the treatment businesses.

It is to be noted that the scoring criterion for each indicator, as elucidated in the following section of this framework, is indicative. The template provides a basis and the institutions using this framework do have the flexibility to customise the variables of scoring according to their purpose. Thus, the proposed framework ensures flexibility in adoption and implementation across various city sizes in India. While the primary seven indicators must remain the same as they are crucial to ensure efficiency in any business environment, the sub-indicators and their scoring criterion may be suitably altered as per local contexts.



STEP 1- Scoring the variables

Each of the seven indicators is divided into sub-indicators. These sub-indicators are evaluated through a set of parameters (indicative questions). Each question is answered by selecting a defined benchmark score (on a scale of 0-10), for both the stages – establishing & scaling-up and operating. These parameters and their respective benchmark scores have been specified under Section 2.2.

Sub-Indicator	Parameter	Benchmark Score	Score	
			Establishing and Scaling	Operating
	Question	Select the relevant option and score on a scale of 0-10	X1	Y1

In the above table, based on the selection of the relevant option under the benchmarks, X1 and Y1 represent the scores given to a parameter in the Establishing & Scaling-Up and Operating Stages respectively.

STEP 2- Normalising the Total Scores

Summation of the parameter scores under each business stage is done to arrive at a total score. The maximum score for each stage is different as it depends on the number of parameters assessed for each stage, which may be different as different parameter may be relevant to the two stages. Hence, the total scores are then normalised to 100 to maintain the uniformity for comparison.

In the above table, EC represents normalised score for the sum obtained under 'Establishing and Scaling-up' stage, while OC represents normalised score for the sum obtained under 'Operating' stage.

Indicator	Parameter	Stage-wise Score	
		Establishing and Scaling	Operating
Indicator-1	Parameter 1	X1	Y1
	Parameter 2	X2	Y2
Indicator-n	Parameter n	Xn	Yn
Total Score		Σ Xi	Σ Yi
Maximum Score		M	N
Normalized Score (out of 100)		EC= (ΣXi /M)*100	OC= (ΣYi /N)*100

STEP 3- Obtaining an Overall Doing Business Score

Steps 1 and 2 are undertaken separately for the 'Collection and Conveyance' and the 'Treatment' segments of the value chain. Then, the normalised scores for each business segment are compiled in the following table, thus giving an overall glimpse of the business environment – demarcated by the stage of the business and the segment of the value chain. Now, each of the 'Columns' and the 'Rows' can be summed up to obtain 'Stage specific' and 'Business specific' scores respectively. They can further be added to get overall 'Doing Business' score of FSSM in the city. Annexure 1 gives an example of using this tool to evaluate the Doing Business score of a city.

		Stage		Business Specific Scores
		Establishing and Scaling	Operating	
Business Segment	Collection and Conveyance	EC	OC	EC+ OC
	Treatment	ET	OT	ET+ OT
	Stage Specific Scores	EC+ ET	OC+ OT	EC+ET+OC+OT (Doing Business Score)

2.2. Defining the Indicators for Measuring the 'Doing Business' Score

2.2.1. Access to Information

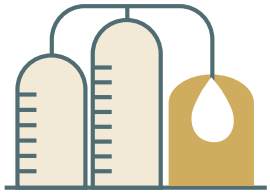
Access of information remains a crucial hurdle to doing FSSM business in India. Without adequate information about market sizing and demand, businesses in the sanitation space are unable to estimate investment requirements and business potential adequately. This is especially profound in the case of small-scale entrepreneurs, who lack the ability to access and use formal sources of data to maximise efficiency. While Census data provides city and ward-level data for on-site sanitation systems that require periodic desludging, this data needs a higher degree of granularity to inform investment decisions. Access to such information provides advantages for determining the feasibility of establishing both collection & conveyance and treatment of faecal sludge businesses. Further, the possibility of scaling of such businesses hinges on accessing information about innovative or low-cost technologies to improve competitive position.

While collection and conveyance businesses at present require only 'vehicular' clearances, emerging regulatory models may also require workforce safety and environmental clearances, which might entail an entirely separate set of clearances from different authorities. For instance, A 2017 NITI Aayog report points out that both access to, and awareness of, single-window clearance systems (SWCS) is very low, especially among small and medium enterprise (NITI Aayog & IDFC Institute, 2017). As regulatory regimes in Indian cities remain fragmented and difficult to interpret for new enterprises, the lack of an SWCS poses a significant disincentive to establish a new business. Similarly, treatment businesses require environmental clearances, both upfront and periodic, workforce safety regulations, and compliance with safety standards for any reuse. The ease of availability of this information through an online system is a crucial aspect in reducing the opportunity cost of a private entrepreneur. Accordingly, improving the ease of access to information forms a crucial aspect in mitigating risk for the private entrepreneur.

a) Collection and conveyance

Guidance	Does the ULB have training courses for entrepreneurs interested in collection and conveyance business?		Establishing & Scaling
		Yes = 10	
		No = 0	

b) Treatment



Formalising the documents	Record keeping of quality and quantity of input/output done or not?		Operating
		Records available both online and offline = 10	
		Records available only offline = 8	
		Records not available = 0	
Guidance	Does the ULB have training courses for entrepreneurs interested in treatment business?		Establishing & Scaling
		Yes = 10	
		No = 0	

2.2.2. Ease of Finance

At present, access to finance remains a constraint for both formal and informal sanitation businesses. In the informal credit markets, which are available to small-scale private operators, exorbitant costs of capital often deter their participation in business activities. Growing the pool of available credit as well as developing new financial instructments that manage and mitigate associated risks has proved challenging, consequently limiting entry to either self-funded or donor-funded enterprises. A favorable business environment would include easy access to finance, appropriate risk-allocation financing instruments and continued financial information or training.

India already has a well-established vehicle financing market, serviced by a mix of private and public sector banks. However, the current volatility of the sanitation sector with unpredictable demand and uncertainty about sewerage makes it difficult for entrepreneurs to meet the required conditions for vehicular loans. Moreover, given the size of most private businesses involved in FSSM, who often lack collateral options, it is critical to ensure trouble-free access to finance.

The EoDB Framework attempts to encourage the use of innovative financial instruments and drive investments in the FSSM market, which favor small entrepreneurs. Instruments like Blended Financing and WASH Development Impact

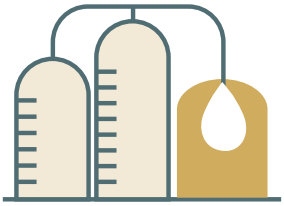
Bonds (DIB) can be explored to bring funds into FSSM sector. Blended finance is defined by the OECD as "the strategic use of development finance for the mobilisation of additional finance towards sustainable development in developing countries". It can act as an instrument to provide a bridge from reliance on concessional financing towards more self-sustaining financing approaches and help deepen the market (OECD, 2019). DIBs act as upcoming instruments to attract social impact investors to the sanitation sector. A DIB can be explored for FSSM to facilitate a new technology or business model linked to specific outcomes. Social Finance, in partnership with USAID, is developing a WASH Development Impact Bonds (DIB), in Rwanda and Senegal, to improve safe collection and conveyance of faecal sludge (Mehta, 2019).

Further, businesses can leverage the competencies of SHGs through financial instruments like mutual benefit trusts or blended financing, to strengthen the financing systems required to deliver FSSM services. Given the small scale of most sanitation enterprises and financiers and their relatively small needs for external financing, portfolio approaches to financing a variety of such enterprises may serve as a means to mobilise commercial investment in the future.

a) Collection and conveyance

Finance Support	Does the entrepreneur receive any kind of support from ULBs/ Banks/Private sector?		Establishing & Scaling
		Yes = 10	
		No=0	
	Is there any formal investor's facilitation team for enabling better access of finance in collection and conveyance business?		Establishing & Scaling
		Yes = 10	
		No = 0	

b) Treatment



Finance Support	Is there any formal investor's facilitation team for enabling better access of finance in treatment business?		Establishing & Scaling
		Yes = 10	
		No = 0	

2.2.3. Land Allotment

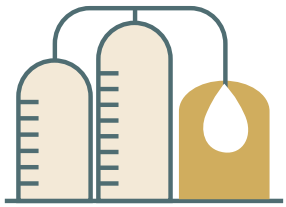
As small businesses are the expected participants in the sector, adequate land allotment for setting up new treatment facilities or for truck parking facilities is a crucial aspect for achieving efficiency in business activities.

Across the FSSM value chain, while land allocation is a well-known constraint for treatment businesses, less attention has been paid to how it can ease business operations for collection and conveyance businesses. CPR case studies have shown that collection and conveyance businesses often park on unused land plots outside the city, consequently increasing the distance travelled and costs incurred. While granting dedicated parking space for FSSM trucks may be unfeasible in growing urban areas, city governments can provide clarity and mixed-use parking lots at a flexible price for these enterprises. Further, the opposition of Resident Welfare Associations to allotting parking facilities for cesspool vehicles in/around their residential area creates another hindrance in identifying a dedicated parking facility for these vehicles. Reducing the time taken for such allotment would also enhance the ease of doing business for small-scale entrepreneurs in these cities.

a) Collection and conveyance

Space availability	What is the average time taken for land allotment by the municipality for parking purposes?		Operating
		Allotted immediately after the contract period starts = 10	
		Allotted within one-fourth time of duration of the contract = 7	
		Allotted within half the time of duration of the contract = 5	
		Allotted after half the time of duration of the contract/No provision for allotment = 0	

b) Treatment



Environmental Clearance	Does the ULB provide environmental clearance support?		Establishing & Scaling
		Yes = 10	
		No = 0	
Time Factor	What is the average time taken for land allotment for the treatment facility?	Allotted immediately after the contract period starts = 10	Establishing & Scaling
		Allotted within one-fourth time of duration of the contract = 7	
		Allotted within half the time of duration of the contract = 5	
		Allotted after half the time of duration of the contract/No provision for allotment = 0	

2.2.4. Regulation

Enforcement of regulation is an attempt to guide private behaviour in the desired direction and increase accountability, creating an environment that is favourable to all the stakeholders of the service being provided. In India, regulations are enforced generally through contracts. The scope of this document is to bring enforcement of available regulations into the business environment so that there is a level playing ground for all private players. Regulation can be mapped under three broad categories: Environmental Regulation, Labour Regulation and Economic Regulation.

2.2.4.1. Environment Regulation:

As per the aforementioned statistics on the availability of a designated dumping facility for the collected sludge, many markets are characterised by a lack thereof in the present scenario. In other cases, the dumping facilities are located far outside the operating region of collection and conveyance businesses, increasing their operational costs and driving down profitability. In order to facilitate business activities and prevent the environmental and public health hazard resulting from indiscriminate open dumping, it is vital to strategically set up treatment facilities at distances that do not hamper business profitability.

In many cases, markets of private operators exist outside the purview of the ULB; there is no compliance with regulations mandating a license to operate a collection and conveyance business or a fitness certificate for the truck while undertaking desludging operations. Non-compliance often results in ad-hoc halts in business operations and solicitation of bribes from operators by the ULB officials, thus creating a high-risk environment for small operators. It is also important to note that introducing mandatory licensing should merely be acknowledged as a method to ensure compliance with the ULB guidelines on FSSM, outlining the norms and standards of service delivery, which do not inhibit business activities and competitiveness.

Further, the process of document submission for compliance with regulations lacks a single window clearance support. Such a facility would allow for online payments, tracking the status of applications, downloading certificates, and elimination of a physical touch point for document submission.

2.2.4.2. Labour Regulation:

Across all the case study locations, there was minimal compliance with regulations mandating the use of personal protective equipment (PPE). Entrepreneurs and labourers indicated that this was primarily due to a perceived increase in the operational and maintenance costs arising from the use of such equipment and low probability of regulatory penalties. Further, labour hired by the entrepreneur is primarily employed on a daily wage basis, and as a result, there is no labour registration. Enabling labour registration through an uncomplicated process will enable unaccounted informal labourers to access public/employment benefits. Ensuring adherence to PPE regulations by the ULBs will improve labour safety as well as reduce the chances of an unforeseen halt in operations.

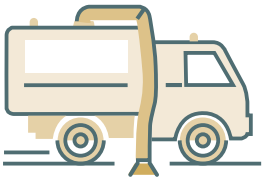
2.2.4.3. Economic Regulation:

Economic regulations are often imposed to bring private operators under the purview of the ULB. They can range from levying a price ceiling on business operations or imposition of excessive taxes. Such interventions of the ULB curb price determination by market forces or compels the private operators to increase their prices exorbitantly, which are outside the gamut of affordability for many of their customers. Therefore, economic regulations by the ULB often end up crowding out the market of private operators.

In some cases, ULBs enter into contracts with private entrepreneurs which are complex, and entail the demand for FSSM services be sourced through the ULBs. In such a scenario, private operators are often requested to undertake desludging trips that do not generate upfront revenue (drains, sewers, government offices, etc.), and are paid by the ULB after delivering the service. In such cases, the payments made by the ULB to the private entrepreneurs are often delayed, which impact the day-to-day operators of a collection and conveyance business.

Service delivery efficiency is improved when there is a direct link between customers and service providers, especially in the case of small-scale entrepreneurs, and must not be eliminated by any form of ULB intervention. Further, small-scale entrepreneurs rely on timely payments to meet working capital requirements. To sustain these businesses, ULBs must recognise that economic regulations can be detrimental to business operations.

a) Collection and conveyance



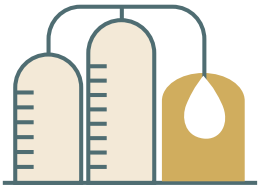
Space availability	What is the average time taken for land allotment by the municipality for parking purposes?		Operating
		Allotted immediately after the contract period starts = 10	
		Allotted within one-fourth time of duration of the contract = 7	
		Allotted within half the time of duration of the contract = 5	
		Allotted after half the time of duration of the contract/No provision for allotment = 0	

Environmental Regulation	Is there any mandated timeline for vehicle registration and clarification of queries?		Establishing and scaling-up
		Yes = 10	
		No = 0	
	Is there a single-window point of contact for document clearance support?	Yes = 10	
		No = 0	
	Is improper sludge disposal penalised?		Operating
		Yes = 10	
		No = 0	

Labour Regulations	Is there online single window clearance system for labour registration without submitting physical copies of the same?		Establishing and scaling-up
		Yes = 10	
		No = 0	
	Have the employees undergone any training for the tasks involved?		Operating
		Yes = 10	
		No = 0	
	Are there checks in place for health and safety standards?		Operating
		Yes = 10	
		No = 0	

Economic Regulation	Is the process of fee payment streamlined?		Operating
		No = 10	
		Yes = 0	
	Is the service price determined by market forces or the ULB?	Market forces = 10	
		ULB = 0	
	Are there time plying time constraints for the desludging trucks?	Yes = 0	
		No = 10	
	Is there a provision for multiple city operational license?	Yes = 10	
		No = 0	

b) Treatment



Environmental Regulation	Is there any mandated timeline for vehicle registration and clarification of queries?		Establishing and scaling-up
		Yes = 10	
		No = 0	
	Does the municipality penalise households to empty septic tanks before they overflow?		Operating
		Yes = 10	
		No = 0	

Labour Regulations	Is there online single window clearance system for labour registration without submitting physical copies of the same?		Establishing and scaling-up
		Yes = 10	
		No = 0	
	Have the employees undergone any training for operating the treatment plant?		Operating
		Yes = 10	
		No = 0	
	Are there checks in place for health and safety standards?		Operating
		Yes = 10	
		No = 0	

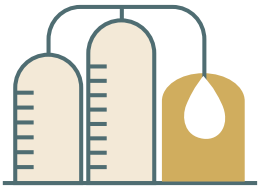
Economic Regulation	Are there any policies and regulations restrict business activities or operation timings?		Operating
		No = 10	
		Yes = 0	

2.2.5. Construction and Utility Permits

Construction and Utility Permits are relevant for businesses engaged in treatment of faecal sludge. While utilities for treatment facilities have usually been provided for free by the government, a formal agreement made in a timely manner would facilitate business operations and provide clarity to entrepreneurs. Delayed construction permits increase enterprise costs and disincentivise new businesses. There is a need to evaluate the ease of applying, approving, and monitoring the status of construction permits for these businesses.

It has been observed that when a certain level of relationship and trust is established between the service provider/contractor and the ULB, there is an increase in performance of both the parties, which results in timely completion of the project thereby mitigating the risk of cost overrun. Hence, a system with increased transparency is desirable to encourage relationship building and timely payment of the bills.

a) Treatment



Online Verification	How many permits are generated online?		Establishing & Scaling-up
		All permits = 10	
		More than 75% of the permits = 8	
		More than 50% of the permits = 6	
		More than 25% of the permits = 4	
		No permits = 0	
	How many documents can be verified online?		Establishing & Scaling-up
		All documents = 10	
		More than 75% of the documents = 8	
		More than 50% of the documents = 6	
		More than 25% of the documents = 4	
		No documents = 0	

2.2.6. Dispute Resolution

Disputes between various stakeholders across the FSSM value chain are frequent, and affect business operations by increasing opportunity costs in most cases, especially for small-scale businesses. This is further aggravated by a judicial system over-burdened with backlogs, increasing the time to seek recourse from courts. Not In My Backyard (NIMBY) is the most common dispute arising from setting up of a treatment plant, apart from day-to-day disputes.

Reforms introduced via a set of operatory guidelines issued by the ULB could potentially reduce the chances of disputes resulting from improper practices across the value chain. Such guidelines for private entrepreneurs could potentially outline standards for safe and sustainable practices in terms of environmental and labour regulations.

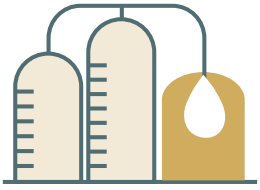
Creation of an e-filing platform for complaints can reduce the opportunity costs and would enable timely dispute resolution. Simplified contract structures that are comprehensible by small-scale entrepreneurs, who often possess low levels of education, would be more pragmatic for these entrepreneurs, providing them with a lucid understanding of their terms and conditions. Furthermore, private entrepreneurs operating a treatment plant can also consider integration with desludging businesses, thus reducing the possibility of petty disputes between the truck operators and treatment plant operator.

Adequate dispute resolution mechanisms are essential for business operations and must be promptly deployed to create an enabling business environment. The absence thereof could potentially crowd-out small-scale entrepreneurs by hampering business profitability.

a) Collection and conveyance

Guidelines	Are there guidelines provided by the ULB which the operator has to comply with? (eg. MoU)		Operating
		MoU of Guidelines signed between private operator and ULB = 10	
		Guidelines issued by the ULB without a legal obligation of compliance = 5	
		No guidelines issued by the ULB = 0	

a) Treatment



Guidelines	Are there guidelines for dispute resolution between the stakeholders?		Operating
		MoU of Guidelines signed between private operator and ULB = 10	
		Guidelines issued by the ULB without a legal obligation of compliance = 5	
		No guidelines issued by the ULB = 0	

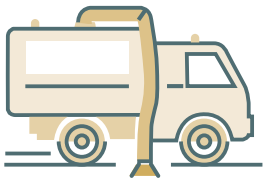
2.2.7. Business Feasibility

In a market driven business environment, the frequency of desludging requests placed by the customers and the tipping fees (wherever present) ultimately determine the profitability of the collection, conveyance and treatment businesses. As per a CPR study, on an average, bulk customers comprise approximately 92 per cent of the market share, and are the primary drivers of FSSM businesses (Mukherjee et al., 2019). This increases the reliance of businesses on bulk customers, enabling businesses to ensure a steady stream of revenues.

The market must be organised in a way that ensures a steady stream of revenue for small businesses across the value chain. It is necessary to generate awareness among customers for timely desludging and regular quality checks, which will further improve the feasibility of the business.

Small-scale entrepreneurs in informal markets usually have better service delivery in comparison to public provision of FSSM services due to a reduced time lag in service provision; however, they face a high degree of risks in operations. For efficient functioning of small business and creation of an enabling environment, these businesses must define adequate risk mitigation strategies.

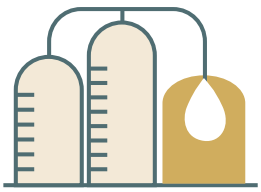
a) Collection and conveyance



Competitive Landscape			Operating
	What is the average time gap to serve the customer's request?	Same Day = 10	
		Within 2 Days = 8	
		Within 5 days = 6	
		Within 1 week = 4	
		Within 10 days = 2	
		More than 10 days = 0	

Organising the Market	Are there rules in place concerning timely desludging to ensure a steady stream of revenue?		Operating
		Yes = 10	
		No = 0	

a) Treatment



Incentives	Does the business model incentivise partnership with farmers?		Operating
		Yes = 10	
		No = 0	

3 RISKS MITIGATED AND OPPORTUNITIES UNLOCKED

By exhibiting a methodology for evaluating a ULB for various indicators across FSSM service delivery, a Doing Business Framework could potentially unlock additional improvements in the sector by identifying the prevailing market gaps. It promotes a meticulous approach to the varying local sanitation ecosystem through precise and area-specific interventions, instead of the existing one-size-fits-all approach. This also enables the municipality to empower FSSM entrepreneurs to successfully mitigate the risks that pose a hindrance to the operations and the potential scaling-up of business activities.

These risks span economic, financial, legal, political and social domains across the FSSM value chain and expose the business to complications like usury, ad-hoc halts in operations, time and cost overruns, lack of accountability, among others. Table 4 maps the risks faced by various stakeholders in the collection, conveyance and treatment segments of the FSSM value chain:

TABLE 4: Details of risks being faced by households and businesses INVOLVED in collection, conveyance and treatment businesses

Demand Side Risk/ Households	· High lifetime costs for regular desludging leading to OSS systems that are larger than the recommended standard sizes · Environment and public health hazards due to ill-designed and poorly maintained OSS systems · Lax enforcement of existing government regulations related to design of OSS systems and their maintenance
Supply-side Risk for Private Suppliers of Collection and Transportation Business	· Demand volatility risks o Lack of information on size and design of containment structures o Ambiguity around sewerage plans in the city · Regulatory risks o Introduction of new regulatory initiatives without consultation with cesspool operators o Absence of communication vis-à-vis regulations on pricing, tipping fee, environment etc
Supply-side Risk for Public Suppliers of Collection and Transportation Services	· Lack of information about the demand of FSSM services and type of containment structures · Non-revenue generating trips
Risks Faced by Suppliers of Treatment Services	· Obligation to comply with annual sanitation evaluation rankings (Swachh Survekshan) scoring by the central government, in absence of adequate market information · Inadequate funds made available for construction and O&M of treatment facilities

It is evident that the businesses, especially those operating privately, absorb a plethora of risks across the value chain. Often, high regulatory costs push them to operate outside the legal ambit, thereby creating unsafe public health and environmental outcomes. The proposed Doing Business framework is designed to mitigate the risks identified, by addressing specific parameters across the collection, conveyance and treatment segments of the value chain. The following table highlights the current scenario in the selected segments, the corrective interventions through the seven proposed metrics, to ultimately indicate an idyllic, risk-free scenario (Table 5).

TABLE 5: Risks Mitigated Through Different Indicators

Indicator	Current Scenario	Interventions triggered in the case of a lower Doing Business Score	Risks Mitigated: Creation of a conducive business environment
Access to Information	Access to information through: · ULB service Provider · Friends/family in the business · Manual sanitation workers/ other entrepreneurs · Tenders/newspaper Advertisements	· Single window offline/ online information platform established · Open Training/course in FSSM for entrepreneurs · Maintaining records for typology of OSS initiated	· Reduction in Opportunity Cost · Availability of Authentic Information
Ease of Finance	Access of finance through: · Informal money lenders · Friends/family · Own savings	· Access to institutional finance enabled · Financial awareness generated	· Lower interest rates · Availability of better financing instruments
Land Allotment	· No designated parking spaces · Objections raised by residents if truck cleaning done at the parking lot · Difficulty in locating land for treatment facility	· Designated land provided by the municipality to park trucks/for treatment plants · Environmental clearance support provided	· Reducing time and cost overruns
Environmental Regulation	· Unclear environmental regulation · Lack of awareness · Indiscriminate dumping	· Mandated timeline outlined for vehicle registration and queries resolution · Single window for document clearance support implemented · Improper sludge disposal penalised	· Eliminating penalties from open dumping · Reducing environment/ public health hazards
Labour Regulation	· Unsafe practices (including disuse of PPE) · No training of helpers · Informal employment of the engaged labour	· PPE provided · Adequate training for various tasks provided · Online labour registration without submitting physical copies of the same facilitated · Employee records maintained	· Facilitating labour Safety · Long-term retaining of labour reducing attrition

Indicator	Current Scenario	Interventions triggered in the case of a lower Doing Business Score	Risks Mitigated: Creation of a conducive business environment
Economic Regulation	· Price ceilings implemented by the ULBs · Demand sourced through ULBs · Restrictions in truck operating timings	· Market determined pricing · Eliminating intermediate sourcing of demand though the ULBs · Provision of multiple city operational license · Cross-subsidising mechanism for the poor enabled	· Market determined prices will ensure long-term business viability · Incentivise more private players to enter the FSSM market
Dispute Resolution	· No MoU signed · Chances of detention · High rent-seeking practices	· Operating guidelines by ULB issued · Licensing of businesses ensured · Accountability of private sector enhanced	· Controlling time and cost overruns · Preventing ad hoc halts in operations
Business Feasibility	· Lack of information available about prevailing service time lags · Non-enforcement of timely desludging requirement · Inefficient use of end product	· Rules concerning timely desludging enforced · Partnership with farmers and water intensive industries for reuse of end products incentivised	· Promoting efficiency in service delivery · Sustaining business profitability · Facilitating resource recovery

4 WAY FORWARD

The SBM era has dramatically increased the toilet coverage in India. While most of the newly built toilets under the SBM are dependent on On-Site Sanitation (OSS) systems, Indian cities have not been able to develop the requisite institutional capacity to provide FSSM services to such newly constructed as well as the existing toilets. Consequently, the focus is gradually deviating from toilet construction towards ODF+ and ODF++ outcomes to ensure 'usability' of the constructed toilets.

Going forward, adequate attention to FSSM must be recognised as a prerequisite towards achieving safe and sustainable sanitation. Towards this end, streamlining the FSSM value chain by ensuring timely services of OSS systems at affordable costs is vital, which would also capture the full value of the investments made between 2014-2019.

Further, there is also scope for pre-emptive focus on the quality of household-level FSSM infrastructure. In the present scenario the knowledge vacuum in terms of the typologies of the available OSS systems in a city deters the ULBs from planning for their treatment capacity and forming informed partnerships with the private sector. Therefore, creating a database by comprehensively evaluating the number of users in their jurisdiction, the estimated size of the OSS systems, the sludge accumulation rate and the wastewater flow rate could enable the ULB to conceive a more systematic and informed model, in partnership with local private FSSM businesses for the collection, conveyance and treatment of faecal sludge.

While forming partnerships with the private sector, local governments must also recognise the small-scale of the private operators typically engaged in FSSM activities. Therefore, the policies must promote the replacement of complex financial models by more feasible strategies that facilitate the creation of a social impact ecosystem which supports such businesses, especially at a nascent stage. Towards this end, the policies could enable an assignment of credit guarantees with banks or an incorporation of such businesses under the priority lending sector. Further, to enhance service delivery efficiency, a direct link between customers and service providers is crucial and must not be eliminated through any form of ULB intervention. Thus, it is crucial to design policies that are cognisant of the nuances of these businesses and the profiles of the entrepreneurs of the same, which safeguard them from exploitative practices and empower them to actively participate in FSSM service delivery.

The year 2020 has also been marked by the COVID-19 pandemic, which has claimed approximately a million lives globally. Numerous national and international studies have also proven traces of the SARS-CoV-2 genome in wastewater (Arora, et al., 2020) (Medema, Heijnen, Elsinga, Italiaander, & Brouwer, 2020). This not only highlights the extreme working conditions for the majority of the sanitation workers, but also emphasises the need for providing functional and adequate protective equipment to all sanitation workers. Further, given the importance of social distancing, appropriate sanitation and hand-hygiene to curb the spread of the virus, the role of FSSM businesses attains greater significance and indispensability. As these businesses perform the fundamental task of managing the faecal waste of the country, sole reliance on ULB provision of these services is unfeasible, and must be facilitated by the private sector. The resultant vulnerability among the entrepreneurs and the employees in the sector must also be addressed by an adequate supply of PPE and ensuring proper use of the same.

The current scale of the prevalence of OSS systems in India indicates that FSSM services cannot be unilaterally provided by the local governments. In this milieu, small-scale and local businesses involved in FSSM form a substantial part of the sanitation value chain and will emerge as the pillars of sustaining India's ODF status. It is imminent to develop an environment that enables these businesses to flourish by increasing the capital gains incurred to the private sector, which will further support the government in its pursuit to provide adequate sanitation services to all.

This Doing Business tool is targeted at facilitating local governments to redress the prevailing knowledge gaps, assess the existing business environment, and create recommendations for future action. It can be adopted by the ULBs to measure their Doing Business score, and subsequently undertake interventions that facilitate a conduce business environment for the private sector in FSSM. It will also address the possibility of envisaging new waste-futures where different enterprises develop competing technologies to extract resources from waste and reuse potential is enhanced by adequate regulation. This will necessitate moving away from the over-regulated, capital-intensive models of waste management and reuse that are currently in vogue.

ANNEXURE 1 — Example of Evaluating the 'Doing Business' score for a City

Assuming that a ULB of City 'A' wants to evaluate the 'Doing Business' score for private businesses in FSSM sector engaged in its jurisdiction. The following example illustrates the scoring and evaluation criterion for the ULB using the Doing Business tool as described in this study.

I. Scoring for Collection and Conveyance Businesses

a) Access to Information

Guidance	Does the ULB have training courses for entrepreneurs interested in collection and conveyance business?		Establishing & Scaling
		Yes = 10	10
		No = 0	

b) Ease of Finance

Finance Support	Does the entrepreneur receive any kind of support from ULBs/Banks/Private sector?		Establishing & Scaling
		Yes = 10	10
		No=0	
	Is there any formal investor's facilitation team for enabling better access of finance in collection and conveyance business?		Establishing & Scaling
		Yes = 10	0
		No = 0	

c) Land Allotment

Space availability	What is the average time taken for land allotment by the municipality for parking purposes?		Operating
		Allotted immediately after the contract period starts = 10	7
		Allotted within one-fourth time of duration of the contract = 7	
		Allotted within half the time of duration of the contract = 5	
		Allotted after half the time of duration of the contract/No provision for allotment = 0	

ANNEXURE 1 –

d) Regulation

Environmental Regulation	Is there any mandated timeline for vehicle registration and clarification of queries?		Establishing and scaling-up
		Yes = 10	10
		No = 0	
	Is there a single-window point of contact for document clearance support?	Yes = 10	0
		No = 0	
	Is improper sludge disposal penalised?		Operating
		Yes = 10	10
		No = 0	

Labour Regulations	Is there online single window clearance system for labour registration without submitting physical copies of the same?		Establishing and scaling-up
		Yes = 10	0
		No = 0	
	Have the employees undergone any training for the tasks involved?		Operating
		Yes = 10	10
		No = 0	
	Are there checks in place for health and safety standards?		Operating
		Yes = 10	0
		No = 0	

Economic Regulation	Is the process of fee payment streamlined?		Operating
		No = 10	10
		Yes = 0	
	Is the service price determined by market forces or the ULB?	Market forces = 10	10
		ULB = 0	
	Are there plying time constraints for the desludging trucks?	Yes = 0	0
		No = 10	
	Is there a provision for multiple city operational license?	Yes = 10	0
		No = 0	

ANNEXURE 1 –

e) Dispute resolution

Guidelines	Are there guidelines provided by the ULB which the operator has to comply with? (eg. MoU)		Operating
		MoU of Guidelines signed between private operator and ULB = 10	10
		Guidelines issued by the ULB without a legal obligation of compliance = 5	
		No guidelines issued by the ULB = 0	

f) Business feasibility

Competitive Landscape			Operating
	What is the average time gap to serve the customer's request?	Same Day = 10	8
		Within 2 Days = 8	
		Within 5 days = 6	
		Within 1 week = 4	
		Within 10 days = 2	
		More than 10 days = 0	

Organising the Market	Are there rules in place concerning timely desludging to ensure a steady stream of revenue?		Operating
		Yes = 10	0
		No = 0	

Overall Score for City A in the Collection and Conveyance Segment

Indicator	Sub-indicator	Parameters (questions)	Stage-specific Score	
			Establishing and Scaling-up	Operating
Access to information	Guidance	Does the ULB have training courses for entrepreneurs interested in collection and conveyance business?	10	
Ease of Finance	Finance Support	Does the entrepreneur receive any kind of support from ULBs/Banks/Private sector?	10	
		Is there any formal investor's facilitation team for enabling better access of finance in collection and conveyance business?	0	

ANNEXURE 1 –

Land Allotment	Space Availability	What is the average time taken for land allotment by the municipality for parking purposes?		7
Regulations	Environmental Regulation	Is there any mandated timeline for vehicle registration and clarification of queries?	10	
		Is there a single-window point of contact for document clearance support?	0	
		Is improper sludge disposal penalised?		10
	Labour Regulations	Is there online single window clearance system for labour registration without submitting physical copies of the same?	0	
		Have the employees undergone any training for the tasks involved?		10
		Are there checks in place for health and safety standards?		0
	Economic Regulations	Is the process of fee payment streamlined?		10
		Is the service price determined by market forces or the ULB?		10
		Are there plying time constraints for the desludging trucks?		0
		Is there a provision for multiple city operational license?		0
Dispute Resolution	Guidelines	Are there guidelines provided by the ULB which the operator has to comply with? (eg. MoU)		10
Business Feasibility	Competitive Landscape	What is the average time gap to serve the customer's request?		8
	Organising the Market	Are there rules in place concerning timely desludging to ensure a steady stream of revenue?		0
TOTAL SCORE			30	65
MAXIMUM SCORE			60	110
NORMALISED SCORE (out of 100)			50	59.09

ANNEXURE 1 –

II. Scoring for Treatment Businesses

a) Access to Information

Formalising the documents	Record keeping of quality and quantity of input/output done or not?		Operating
		Records available both online and offline = 10	8
		Records available only offline = 8	
		Records not available = 0	
Guidance	Does the ULB have training courses for entrepreneurs interested in treatment business?		Establishing & Scaling
		Yes = 10	10
		No = 0	

b) Ease of Finance

Finance Support	Is there any formal investor's facilitation team for enabling better access of finance in treatment business?		Establishing & Scaling
		Yes = 10	0
		No=0	

c) Land Allotment

Environmental Clearance	Does the ULB provide environmental clearance support?		Establishing & Scaling
		Yes = 10	0
		No = 0	
Time Factor	What is the average time taken for land allotment for the treatment facility?		Establishing & Scaling
		Allotted immediately after the contract period starts = 10	10
		Allotted within one-fourth time of duration of the contract = 7	
		Allotted within half the time of duration of the contract = 5	
		Allotted after half the time of duration of the contract/No provision for allotment = 0	

ANNEXURE 1 –

d) Regulation

Environmental Regulation	Is there any mandated timeline for vehicle registration and clarification of queries?		Establishing and scaling-up
		Yes = 10	0
		No = 0	
	Does the municipality penalise households to empty septic tanks before they overflow?		Operating
		Yes = 10	0
		No = 0	

Labour Regulations	Is there online single window clearance system for labour registration without submitting physical copies of the same?		Establishing and scaling-up
		Yes = 10	0
		No = 0	
	Have the employees undergone any training for operating the treatment plant?		Operating
		Yes = 10	10
		No = 0	
	Are there checks in place for health and safety standards?		Operating
		Yes = 10	10
		No = 0	

Economic Regulation	Are there any policies and regulations that restrict business activities or operation timings?		Operating
		Yes = 10	10
		No = 0	

e) Construction and Utility Permits

Online Verification	How many permits are generated online?		Establishing & Scaling-up
		All permits = 10	0
		More than 75% of the permits = 8	
		More than 50% of the permits = 6	
		More than 25% of the permits = 4	
		No permits = 0	

ANNEXURE 1 –

Online Verification	How many documents can be verified online?		Establishing & Scaling-up
		All documents = 10	0
		More than 75% of the documents = 8	
		More than 50% of the documents = 6	
		More than 25% of the documents = 4	
		No documents = 0	

e) Dispute resolution

Guidelines	Are there guidelines for dispute resolution between the stakeholders?		Operating
		MoU of Guidelines signed between private operator and ULB = 10	5
		Guidelines issued by the ULB without a legal obligation of compliance = 5	
		No guidelines issued by the ULB = 0	

f) Business feasibility

Incentives			Operating
	Does the business model incentivise partnership with farmers?	Yes = 10	0
		No = 0	

Overall Score for City A for the Treatment Business

Indicator	Sub-indicator	Parameters (questions)	Stage-specific Score	
			Establishing and Scaling-up	Operating
Access to information	Guidance	Does the ULB have training courses for entrepreneurs interested in collection and conveyance business?	10	
	Formalising the Documents	Record keeping of quality and quantity of input/output done or not?		8
Ease of Finance	Finance Support	Is there any formal investor's facilitation team for enabling better access of finance in treatment business?	0	

ANNEXURE 1 –

Land Allotment	Environmental Clearance	Does the ULB provide environmental clearance support?		0
	Time Factor	What is the average time taken for land allotment for the treatment facility?		10
Regulations	Environmental Regulation	Is there any mandated timeline for vehicle registration and clarification of queries?	0	
		Does the municipality penalise households to empty septic tanks before they overflow?		
	Labour Regulations	Is there online single window clearance system for labour registration without submitting physical copies of the same?	0	
		Have the employees undergone any training for operating the treatment plant?		10
		Are there checks in place for health and safety standards?		10
	Economic Regulations	Are there any policies and regulations that restrict business activities or operation timings?		10
Construction and Utility Permits	Online Verification	How many permits are generated online?	0	
		How many documents can be verified online?	0	
Dispute Resolution	Guidelines	Are there guidelines for dispute resolution between the stakeholders?		5
Business Feasibility	Incentives	Does the business model incentivise partnership with farmers?		0
TOTAL SCORE			10	53
MAXIMUM SCORE			60	90
NORMALISED SCORE (out of 100)			16.7	58.8

Total Doing Business Score for City A

		Stage		Business Specific Scores
		Establishing and Scaling	Operating	
Business Segment	Collection and Conveyance	50	59.09	109.09/200
	Treatment	16.7	58.8	75.47/200
	Stage Specific Scores	56.7/200	117.9/200	184.59/400

Doing Business Score of City A: **184.59/400**

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