

PRIVATE SECTOR ASSESSMENT FOR DESLUDGING SERVICES IN MAHARASHTRA

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CWAS CENTER
FOR WATER
AND SANITATION

CRDF CEPT RESEARCH
AND DEVELOPMENT
FOUNDATION

**CEPT
UNIVERSITY**



Acknowledgement

Center for Water and Sanitation (CWAS) has been supporting the Swachh Maharashtra Mission for Urban Areas (SMMUA) in developing strategies, building capacity of ULBs and supporting implementation, since 2015. It also supports cities in Maharashtra on city-wide sanitation planning and implementation of ODF and FSSM plans.

Maharashtra has achieved Open Defecation Free (ODF) status across urban areas by implementing a host of state and centrally sponsored programs (primarily under the aegis of The *Swachh Bharat* Mission). However, over 47% of the urban population (i.e. ~29 million) depends on On-site Sanitation Systems (OSS), balance population is covered through sewerage and community-level facilities. OSS systems require timely and regular desludging to ensure efficient operations of septic tanks. Desludging process requires use of specialized emptying vehicles capable of collection, transporting and disposing septage. Currently, desludging services are provided by a mix of public (through Urban Local Bodies) and private sector operators, with private sector playing a dominant role especially in smaller cities and towns. Considering the significant role played by the private sector in delivery of desludging services, the study focuses on understanding existing private sector landscape of desludging operators in urban areas of Maharashtra, evaluating existing business models, capabilities and financial performance of private operators and evaluating willingness of private desludging operators to participate in scheduled desludging process. The study also focuses on identifying approach to scaling-up scheduled desludging with private sector participation.

The slide deck was prepared by Arete advisors for Center for Water and Sanitation (CWAS), CRDF, CEPT University. A comprehensive field-research plan was prepared to understand the private sector landscape through conversations with operators and other stakeholders in the business. Semi structured interviews were conducted to help understand operating environment for existing private sector operators, various business models adopted by players and their capability to increase scale of operation or involvement in desludging .

We hope the findings and suggestions will help to address this important aspect as we plan to move towards ODF++ and Water+ and help achieve safely managed sanitation services in accordance with SDG 6.2.

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Executive Directors, CWAS



Abbreviations

Abbreviation	Explanation
CPHEEO	Central Public Health and Environmental Engineering Organisation
EMI	Equated Monthly Installment
FSTP	Faecal Sludge Treatment Plant
HH	Household
Min.	Minimum
NBFC	Non-Banking Financial Company
NP	Nagar Panchayat
OSS	On-site Sanitation System
Popn	Population
SHG	Self Help Group
STP	Sewage Treatment Plant
ULB	Urban Local Body

Project study

Need for study

- CEPT University, through the Center for water and sanitation (CWAS) has been supporting the Government of Maharashtra in implementing its Swachh Maharashtra Mission in Urban Areas through a 'strategic support unit' - helping the state in its sanitation policy, capacity building and project monitoring
- CWAS has also supported in developing a scheduled desludging plan for the cities of Wai, Sinnar, Kolhapur and Satara in Maharashtra
- Government of Maharashtra aims to scale up scheduled desludging of septic tanks to other cities and explore the role of private sector for the same.

The study

- This study have been conducted during COVID lockdown period (from April - December in 2020) to understand private sector participation in onsite sanitation for large and small-medium towns in Maharashtra. Focus areas for the study include:
 - Understanding business practices of private desludging operators, including their financial performance
 - Identify interest of the private sector service providers to participate in scheduled desludging
 - Recommendations to strengthen private sector participation in desludging business.



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2 Existing Private Sector Landscape

3 Existing Performance Of Private Operators

4 Recommendations: Scaling-up In Urban
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Executive Summary (1/2)

NEED FOR STUDY

- **Desludging need is large - ~47% of urban population (i.e. 29 million people) in Maharashtra depend on On-site sanitation systems (OSS)**
 - Dependence on OSS increases with decline in city-size – Municipal corporations (32%), Class A cities (79%) and Other smaller towns (90%+)
 - Large cities (Municipal Corporations) contribute to a potential of ~14.5 million OSS households, equivalent to combined potential offered by small and medium cities (Class A – 2.7 million, Class B – 4.8 million, Class C – 4.4 million and NPs – 2.3 million)
- **OSS households are currently served by a mix of public and private service providers**
 - ~47% of all cities are serviced by ULBs, ~35% have private service operators, ~11% have both public and private service operators and ~7% are not serviced at all
 - The presence of private service operators is greater in small and medium towns

- **Study team conducted in-depth interviews (on call) with private service providers during COVID lockdown period (from April - December in 2020) to understand their existing business model and performance**
- **Key attributes of existing private sector model include:**
 - On-demand services are provided by the private sector with word-of-mouth and personal contacts as key drivers for business
 - Private sector market is highly fragmented, dominated by small players (i.e. ownership of one truck)
 - Bulk (~80%) of the players operate outside the purview of any corporate taxation, only a mere ~20% are registered as proprietors
 - Private operators have better accessibility (i.e. number of trucks in a city) than the public sector, however merely ~38% of operators are licensed
 - Private sector is operating with relatively new fleet of vehicles vs ULB, especially in small and medium towns
 - Human resources use is cross-functional – owner may double up as a supervisor or driver and driver as a helper depending on scale of operations

Executive Summary (2/2)

EXISTING PERFORMANCE OF PRIVATE OPERATORS

- **Utilization levels (i.e. number of trips per truck per month) of private service providers vary across ULB classes** driven by lack of periodicity in availing desludging services, business development efficacy of private service providers and ability to build relationships with bulk customers (i.e. industrial units)
- **Scale of operators (i.e. turnover) increases with city size; while EBITDA varies from ~37-63%**
- **Salaries (16-36% of revenue) and fuel (16-23% of revenue) are key cost drivers**
- **~50% of operators have debt service obligations** – for such operators debt servicing accounts for an additional expense of ~5-28% of revenue

OUTCOME OF EXISTING MODEL

- **Customers pay a premium of c. 1.3-2.5x of ULB pricing** when sourcing services from the private sector driven by customer behavior, better private operator accessibility and lack of regulatory oversight (especially on pricing)
- **Merely ~20% of private service providers dispose septage in treatment plants**, reasons include lax enforcement or unavailability of FSTP in serviceable distance

RECOMMENDATIONS – SCALING-UP IN URBAN MAHARASHTRA

- **Private service operators are keen to participate in scheduled desludging. However, there is a need to pull multiple levers for successful implementation of scheduled desludging under private sector participation.**
- **The government will need to take cognizance of existing scenario while transitioning towards a scheduled desludging model. It will include Minimum criteria for bidders, capacity building of private service providers, support from Urban Local Government and proper monitoring and control regulations.**



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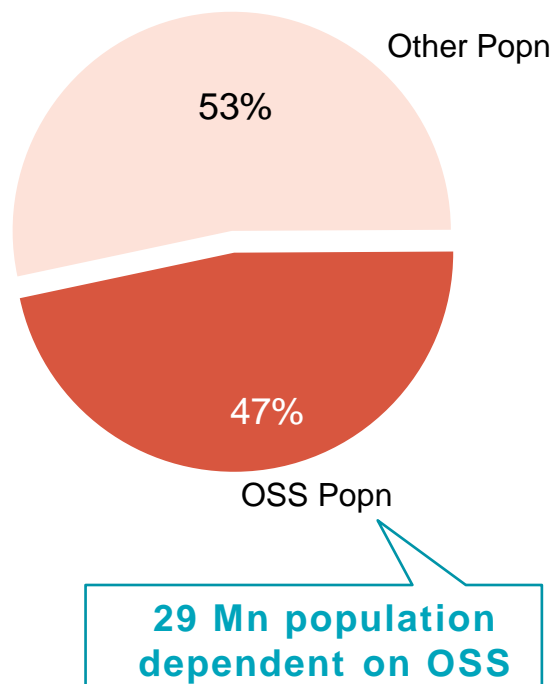
3 Existing Performance Of Private Operators

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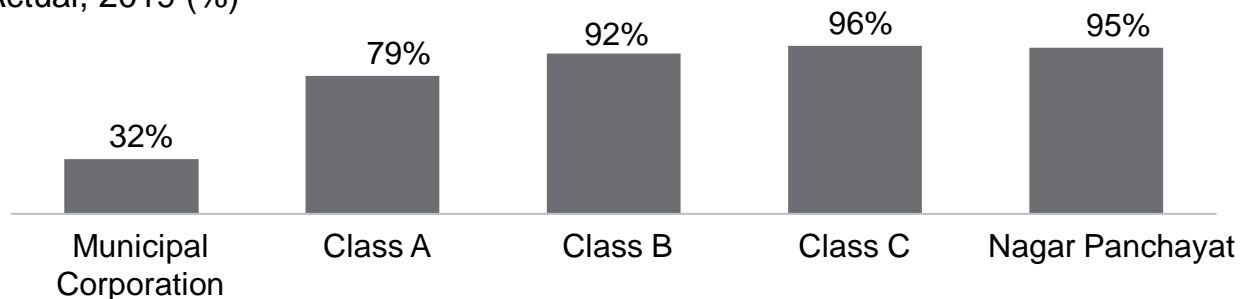
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47% of urban population (i.e. 29 mn people) in Maharashtra depend on On-site sanitation systems (OSS), dependence increases with decline in city-size

Share of popⁿ dependent on OSS in Maharashtra Actual, 2019 (%)¹

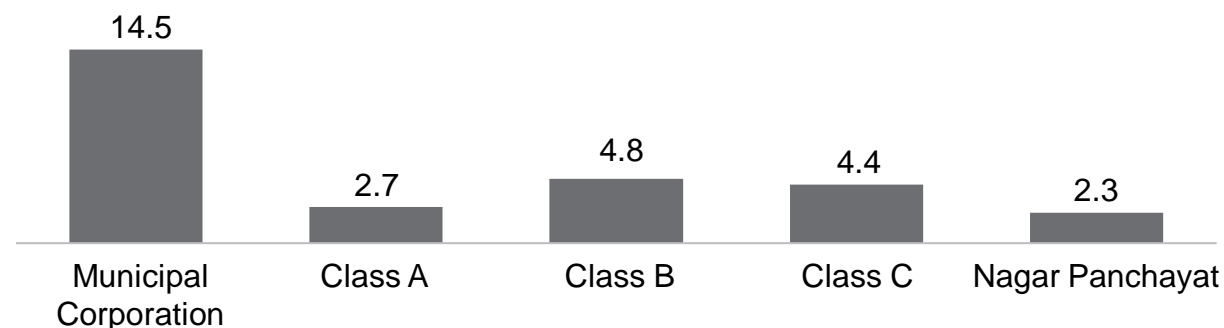


Average dependence on OSS in Maharashtra by city class Actual, 2019 (%)¹



Population dependent on OSS in Maharashtra by city class

Actual (million), 2019 (%)¹

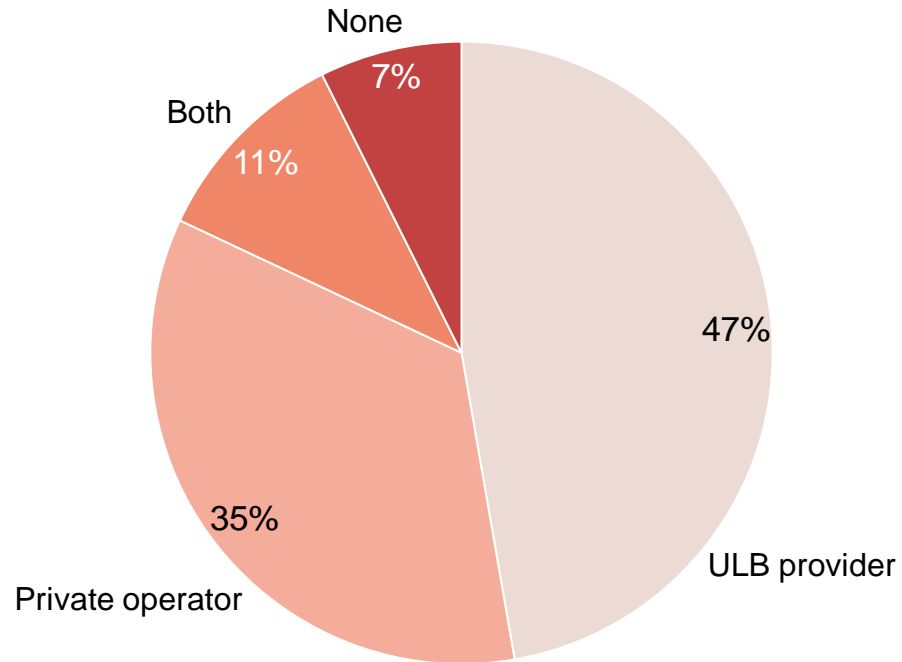


Large & small/medium towns offer a larger customer-base for desludging services

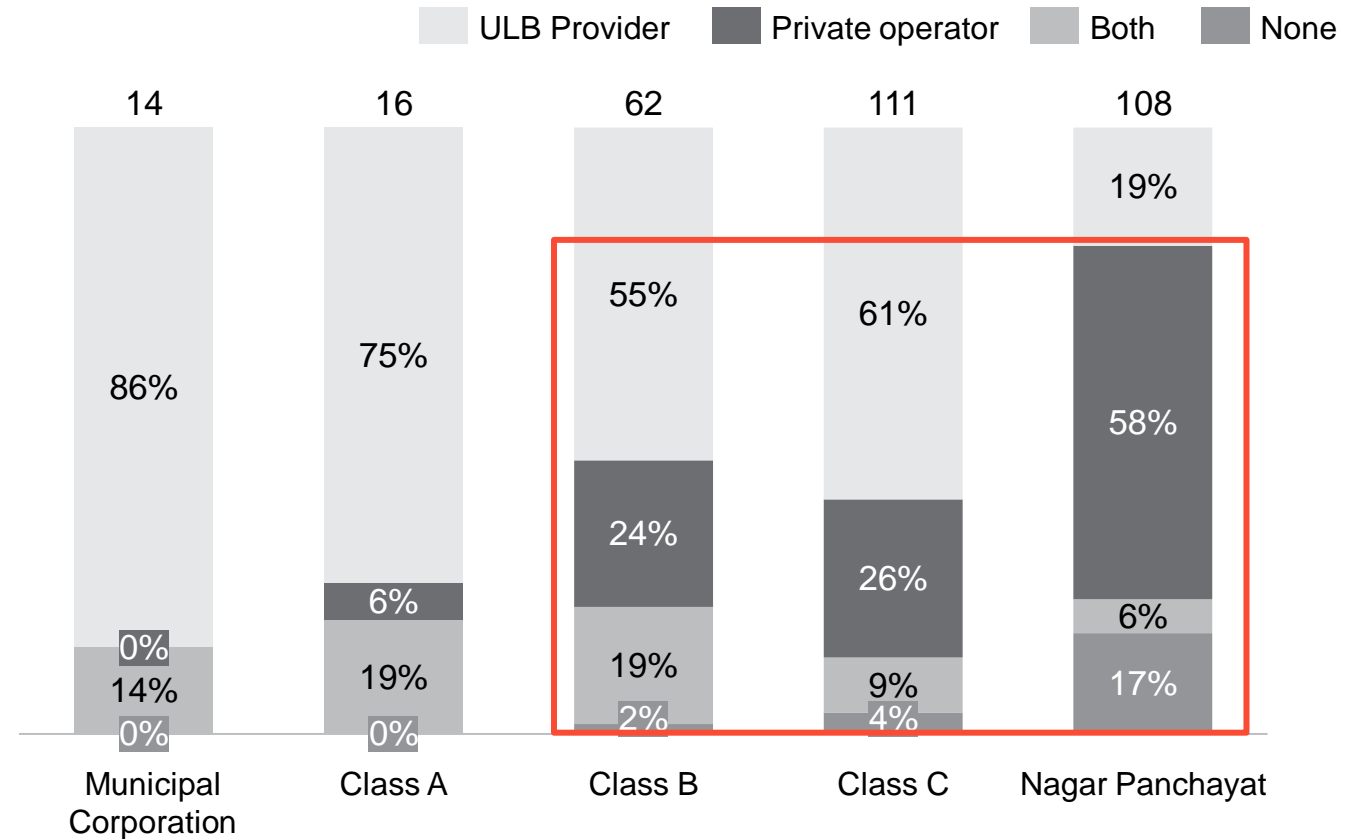
Note: 1- Based on analysis of data shared of 403 towns in Maharashtra
Source: Analysis of PAS data

OSS HHs are currently served by a mix of public and private service providers, higher private sector presence observed in smaller towns

Share of cities (%) by type of operator presence
N = 311



City class wise - share by type of operator presence (%)
N = 311



Private sector presence prima facie indicates that desludging is an attractive market from a business standpoint

Source: Analysis of past PAS data



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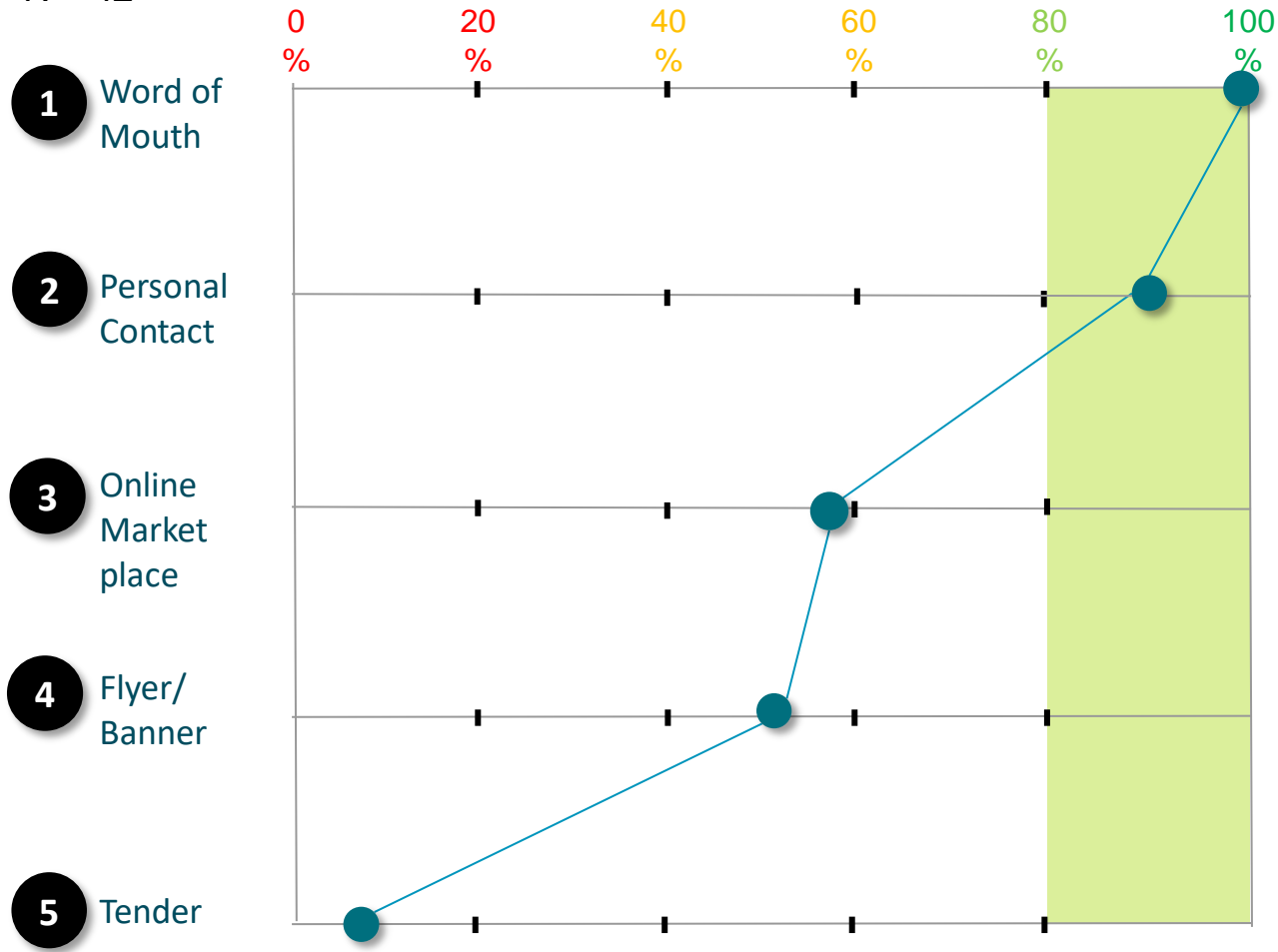
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On-demand services are provided by the private service providers with word-of-mouth and personal contacts as key drivers for business

5-different channels for sourcing business

N = 42



Source: Analysis of data gathered from field research

Experienced Operators have been able to capitalize on the first mover advantage

Operators with healthy revenues include those who generate repeat leads through personal contacts for **bulk orders from industries and small business**

Operators have listed on online platforms Justdial, sulekha, etc. **Operators in larger cities** have seen increased lead conversions from these platforms

New entrants have used offline marketing avenues such as distributing flyers (Newspaper inserts) and installing banners, **during festive occasion**

Operators have been able to able to win a **contract from the ULB** for cleaning of community toilets etc.

Operator quotes

“Customers in the city are increasingly relying on online listing platforms to reach out to operators, we get 5-6 enquiries everyday from Justdial. With increased competition it is very important to get new customers and online platform are able to meet expectations well”

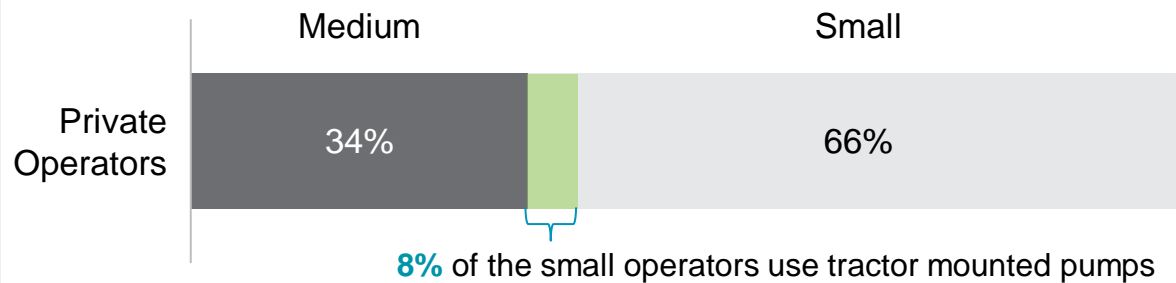
Operator in Pune

“Listed my company on Sulekha and Justdial about 6 months back, I was able to generate more leads with far less cost, but as I operate significant number trips in the rural villages its also important for me to ensure that my leads through personal contacts also come”

Operator in Aurangabad

Private sector market is highly fragmented dominated by small players, Bulk (~80%) of the players generally operate outside the purview of corporate / company taxation

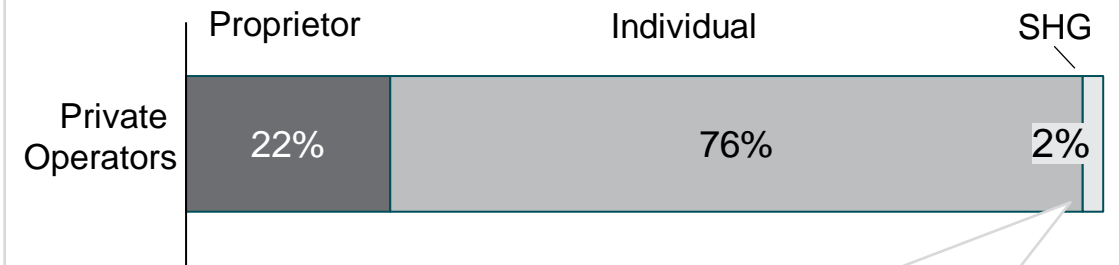
Market segmentation by size of fleet¹ by private service providers (%)
N=62



1 – Based on number of trucks owned

Medium operator: Ownership of 2-5 trucks, Small operator: Ownership of 1 truck

Market segmentation by characteristic of business entity (%)
N=45²



Kundalwadi (Class C city),
Aurangabad division

- **Sector is dominated by early stage players**
 - **60%** of interviewed respondents are new to this business with operations between 0-5 years,
 - **30%** have been in the business for 6-10 years and **10%** for >10 years (*defined as seasoned operators*)
- **Presence of seasoned operators (>10 years of experience) indicates potential to scale-up**
 - **80%** of seasoned operators have been able to scale up to a medium-scale operator

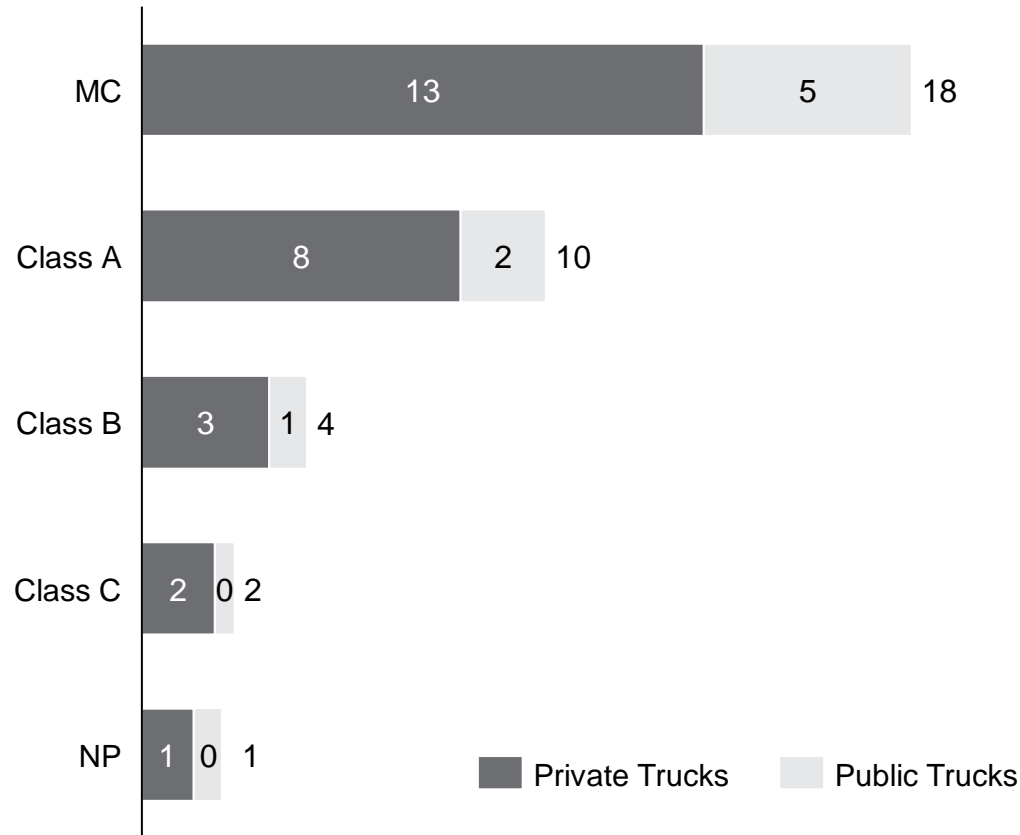
Note: 2- Valid respondents from the total 62 interviewed for this question

Source: Analysis of data gathered from field research

Private service providers have better accessibility (i.e. number of trucks in a city) than public sector, however merely ~38% of operators are licensed

Estimated – average number of trucks in each city class¹

N = 62



- Private service providers growth driven by demand and low entry barriers
 - 38% (21 of 55² valid respondents) of operators are licensed
 - Despite low cost of licensing at ~ INR 200-250 per month
- Only a few cities have indicated presence of licensed operators:

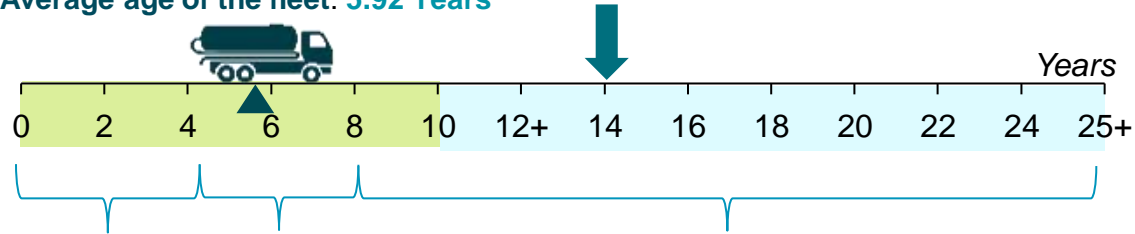
CITY CLASS	TOTAL CITIES COVERED	CITIES HAVING LICENSED PRIVATE OPERATORS	
M. Corp	6	3	Aurangabad, Dhule, Pune
Class A	2	1	Panvel
Class B	13	5	Dahanu, Palghar, Manmad, Butibori, Shahada
Class C	13	6	Rajgurunagar, Gangapur, Igatpuri, Wanadongari, Brahmapuri, Murum,
NP	14	2	Waduj, Dindori
Total	48	17	

Note: 1- Avg. # of trucks based on operator estimates of desludging trucks in profiled cities of Maharashtra ; 2- 7 out of 62 total respondents did not respond to the question
Source: Analysis of data gathered from field research

Private sector is operating with relatively new fleet of vehicles vs ULBs, especially in small & medium towns

Average age¹ of vehicle for private service providers – Overall

Average age of the fleet: **5.92 Years**

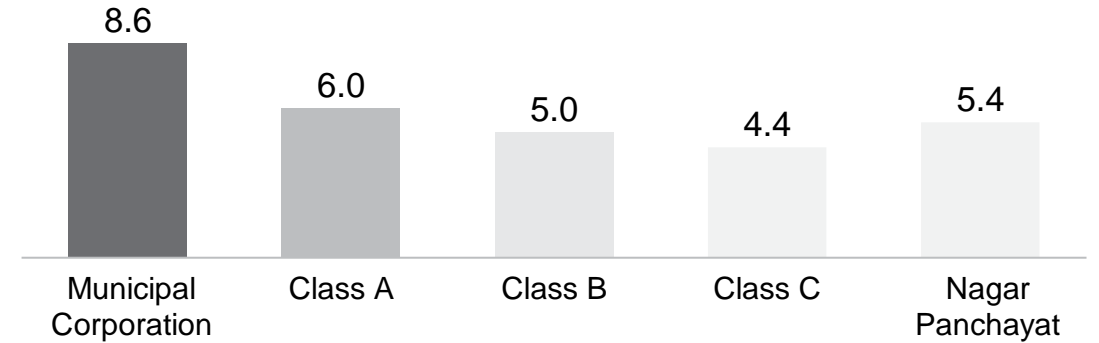


31% of the trucks were less than **4 Years old**

41% of the fleet was aged b/w **4-8 Years**

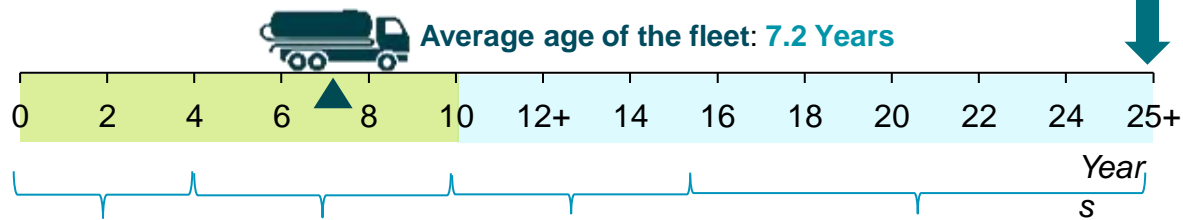
Only about **27%** of the fleet was aged above **8+ Years**

Average age of vehicle for private service providers – City class wise (number of years)



Average age of vehicle for ULBs – Overall

Average age of the fleet: **7.2 Years**



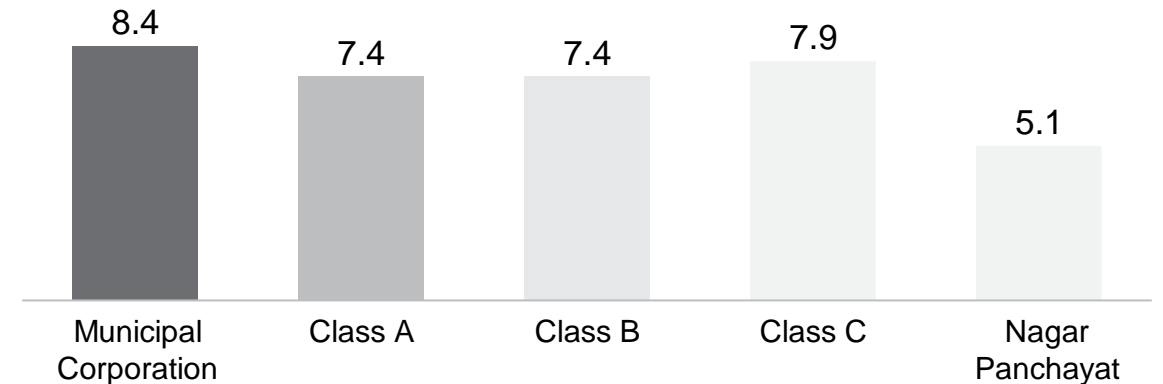
30% of the trucks were less than **4 Years old**

54% of the fleet was aged b/w **4-10 Years**

About **12%** of the fleet was aged b/w **10-15 Years**

About **4%** of the fleet was aged above **15+ Years**

Average age of vehicle for ULBs – City class wise (number of years)



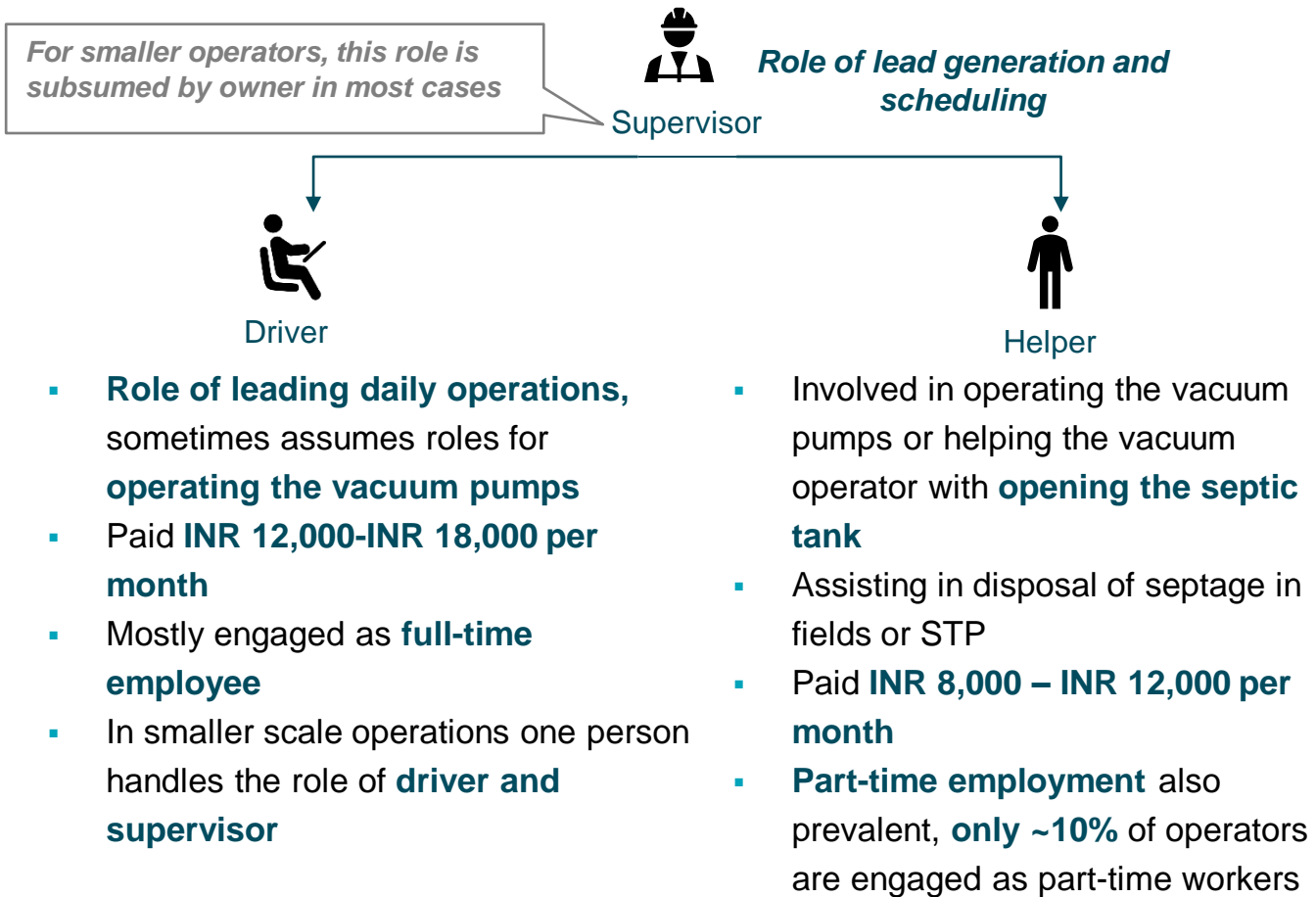
Note: 1- Average age of fleet considered for medium/large operators
Source: Analysis of data gathered from field research; PAS data on ULBs

Recommended lifetime

↓ Max age of the truck in the fleet

Human resource use is cross-functional - owner may double up as a supervisor or driver and driver as a helper depending on scale of operations

Typical organization structure consists of a supervisor, driver and helper (1-2 helpers per truck)



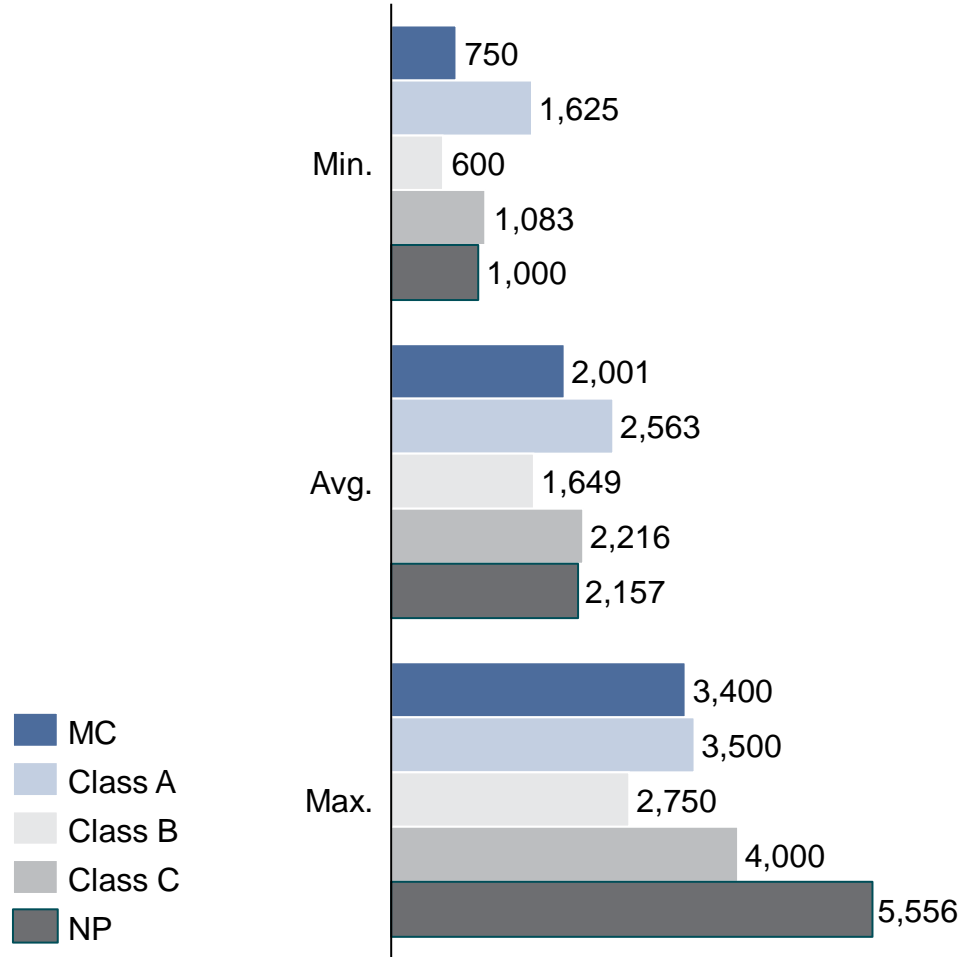
Observed higher staffing ratios in Municipal corporations vs other city classes

Type of city	Staffing ratio	Comment
Municipal Corporations	1:3 (One driver and 2 Helper)	Operators in MCs due to lower retention and difficulty in replacement (shortage of labor)
Class A, Class B, Class C and Nagar Panchayat	1:2 (one driver and one helper)	Operators in smaller cities due to ease of sourcing labor and higher job retention

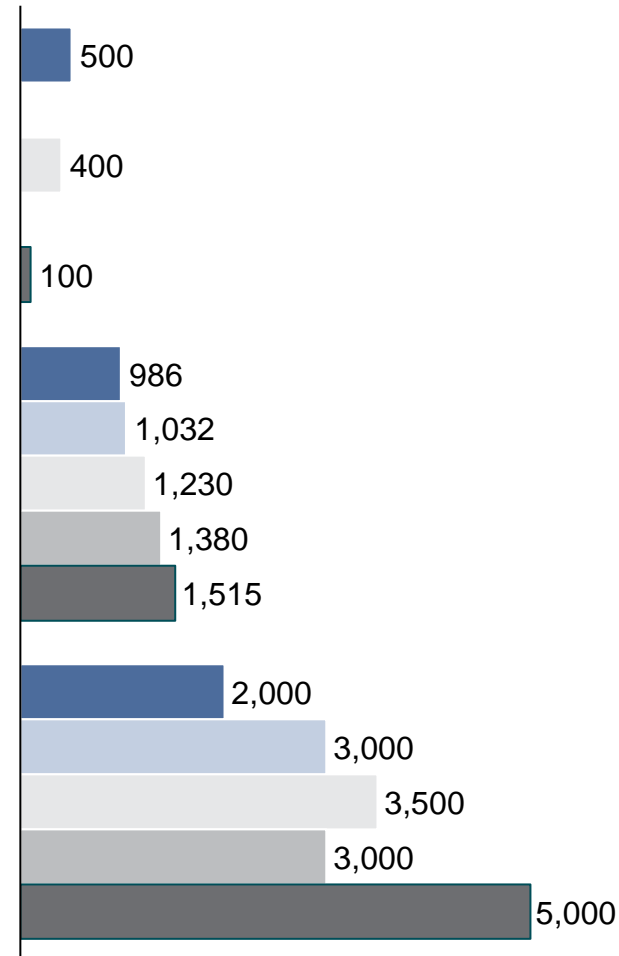
Note:
 Source: Analysis of data gathered from field research

Customers pay a premium of ~1.3-2.5x of ULB pricing when sourcing services from the private service providers

Average pricing per trip by private service operators (INR)
N = 62



Average pricing per trip by ULB (INR)



Factors impacting behaviour

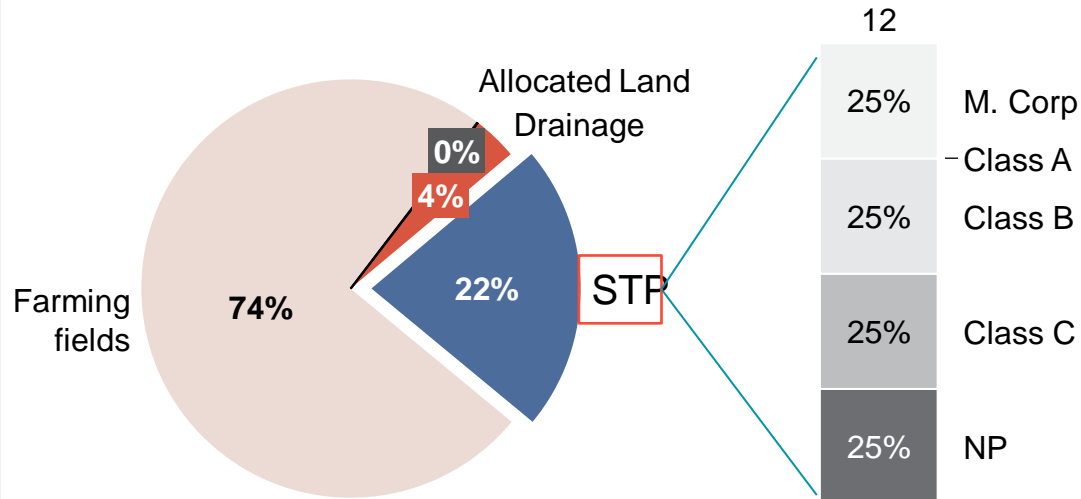
- **Customer behaviour** – Immediate need-based service needs, requiring quick response
- **Better private operator accessibility** – Number of private sector trucks available across each city class are more than ULB trucks (*refer slide 19 of this deck*)
- **Lack of regulatory oversight** – Related to regulating price for desludging services in the market

Source: Analysis of data gathered from field research and PAS data

Merely ~20% of private service providers dispose septage in treatment plants, reasons include lax enforcement or unavailability of FSTP in serviceable distance

Disposal points for private service desludging providers

N = 57



QUOTE FROM OPERATOR

“We only use STP when we have work near it and when its not a bulk order, in Mumbai for a society we need 50-60 trips (with 3.5KL tanks) so we dump the waste in near by drainage”

Operator in Panvel

- Illegal dumping is also observed in cities – operators in six of eleven such cities (50%+) reported dumping of faecal sludge on farm lands

Cities with FSTP	Class	Disposal
Dindori	Nagar Panchayat	STP
Shahada	Class B	STP
Igatpuri	Class C	STP
Dhule	M. Corp	STP
Dindori	Nagar Panchayat	STP
Chimur	Class C	Field
Bhor	Class B	Field
Brahmapuri	Class C	Field
Manmad	Class B	Field
Madha	Nagar Panchayat	Field
Khopoli	Class B	Field

- One operator also reported income by selling of the untreated sewage to farmers as fertilizers (*Income value not reported*)

Note: Allocated land – Cities where disposal sites are located by the ULB (e.g.: Ambarnath, Pune); Drainage includes dumping into sewerage lines



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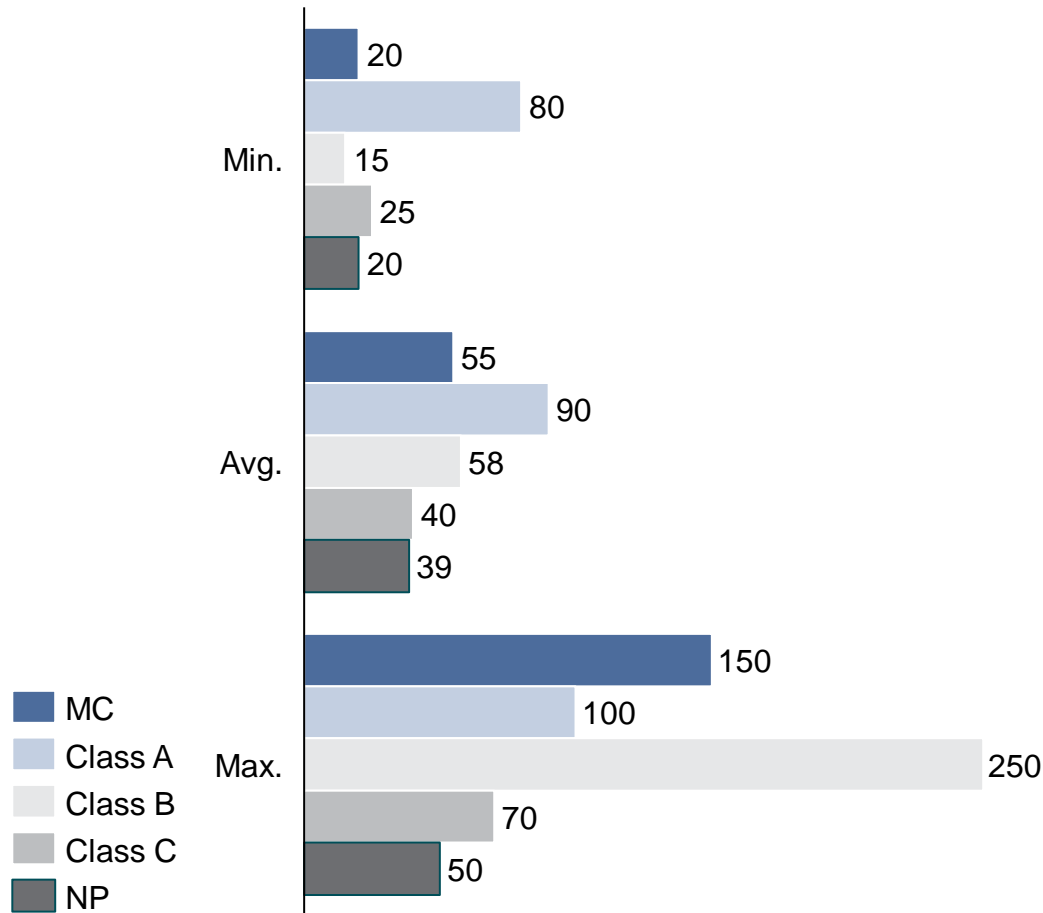
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Utilization levels (i.e. number of trips per truck per month) of private service providers vary across ULB classes

Utilization – Number of trips per truck per month

N = 62



Note: 1 – Desludging services are provided to emptying the domestic septage collected in the industrial unit
Source: Analysis of data gathered from field research

Factors impacting utilisation

- **Lack of periodicity in availing desludging services**
 - HHs avail services on a need-basis
 - Lack of regulations and / or enforcement on periodicity (e.g.: CPHEEO advisory on desludging to be carried out once every 2-3 years is not enforced and/or followed)
- **Business development efficacy of private providers**
 - Word of mouth and personal contacts drive business for private players, thus utilization is directly dependent on operator's ability to create awareness about their presence
- **Ability to build relationships with bulk customers (e.g.: industrial units¹)**
 - ~50% players service bulk customers (at least one bulk customer per month)
 - Providers serving bulk customers indicate ~30% better utilisation vs other operators – operators serving bulk customers undertake 55 trips vs other operators undertaking 43 trips per month

Scale of operators (i.e. turnover) increases with city size; while EBITDA varies from ~37-63% Salaries (16-36% of revenue) and fuel (16-23% of revenue) are key cost drivers

ESTIMATED EXISTING FINANCIALS FOR THE PRIVATE SERVICE PROVIDERS (AVERAGE ACROSS RESPONDENTS), CITY-CLASS WISE (all respondents)

Unit: INR per month

	M. CORP		CLASS A		CLASS B		CLASS C		NP	
REVENUE										
Emptying charge	3,36,000		4,80,000		1,50,000		1,01,000		99,000	
OPERATIONS COSTS										
Fuel costs	59,000	23%	72,000	16%	31,000	22%	16,000	18%	22,000	21%
Salaries	1,01,000	36%	66,000	16%	34,000	26%	27,000	29%	25,000	30%
Maintenance	8,000	4%	16,000	3%	3,000	4%	2,000	3%	2,000	3%
Others ¹	3,000	1%	12,000	3%	4,000	3%	1,000	1%	1,000	1%
Total	1,71,000	63%	1,66,000	37%	72,000	54%	46,000	51%	50,000	55%
EBITDA	1,65,000	37%	3,15,000	63%	79,000	46%	54,000	49%	48,000	45%

Scale of operators vary within city classes

- Minimum scale of turnover (INR /month): M. Corp (30,000), Class A (260,000), Class B (15,000), Class C (32,500) and NP (40,000)
- Maximum scale of turnover (INR /month): M. Corp (800,000), Class A (700,000), Class B (750,000), Class C (240,000) and NP (500,000)


Most operators are able to achieve EBITDA margins of c. 30-50%

Note: 1 – Includes Insurance, disposal fee, fitness certification costs, rent, marketing, PPE costs, etc. Percentages simple average across operators; Financials constructed based on operator interviews. Source: Analysis of data gathered from field research



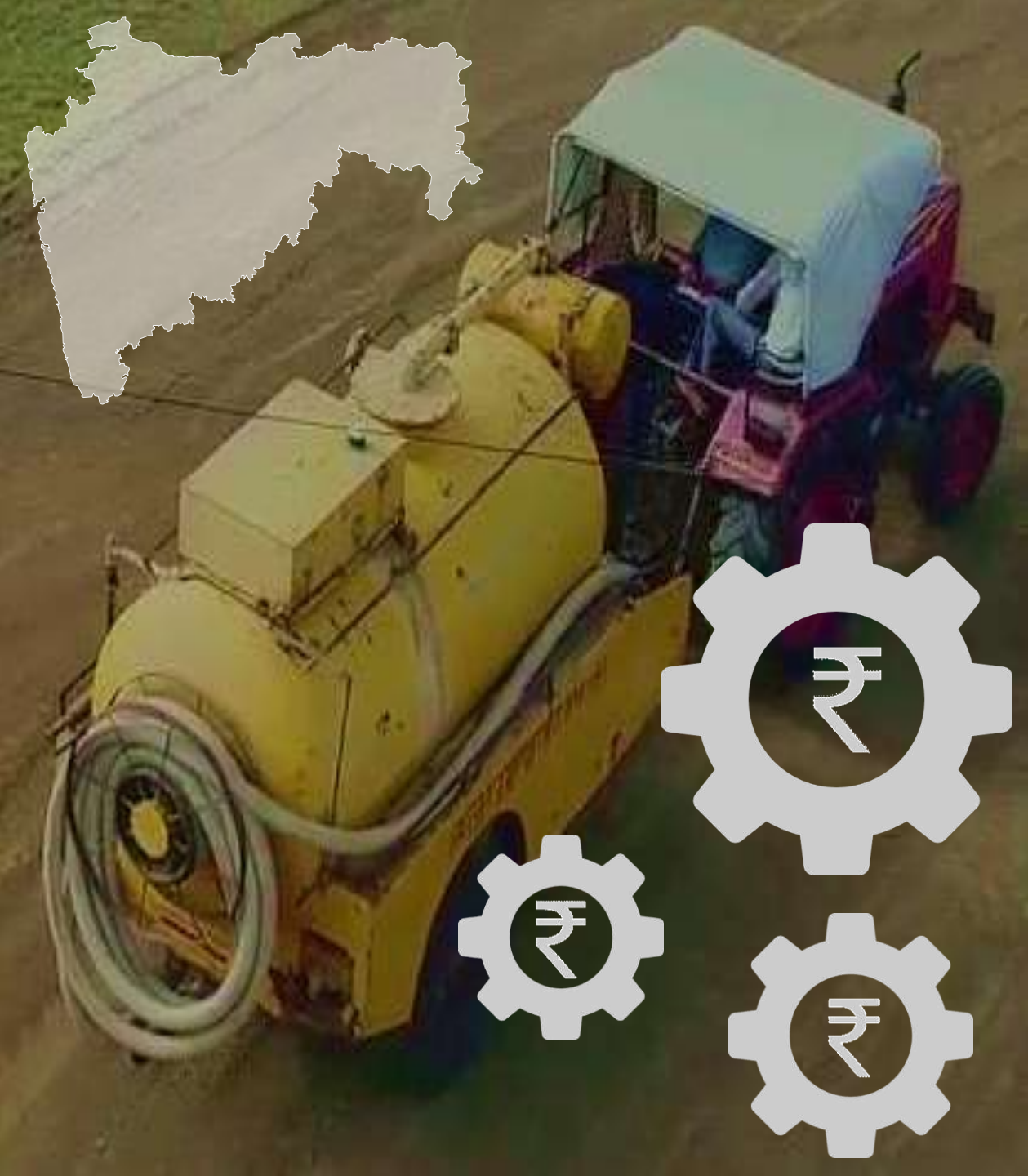
~50% of operators have debt service obligations – for such operators debt servicing accounts for an additional expense of ~5-28% of revenue

ESTIMATED EXISTING FINANCIALS FOR THE PRIVATE SERVICE PROVIDERS (AVERAGE ACROSS RESPONDENTS), CITY-CLASS WISE (respondents with debt)

Unit: INR per month	M. CORP		CLASS A		CLASS B		CLASS C		NP	
SHARE OF OPERATORS WITH DEBT SERVICING	13%		100%		47%		54%		64%	
REVENUE										
Emptying charge	8,00,000		4,80,000		1,15,000		93,000		1,12,000	
OPERATIONS COSTS										
Fuel costs	90,000	11%	72,000	16%	24,000	20%	15,000	15%	27,000	22%
Salaries	1,04,000	13%	66,000	16%	26,000	24%	27,000	24%	26,000	28%
Maintenance + Others	22,000	3%	28,000	6%	5,000	5%	5,000	5%	5,000	4%
Finance 	38,000	5%	42,000	10%	25,000	23%	21,000	22%	23,000	28%
Total	2,54,000	32%	2,08,000	47%	80,000	72%	68,000	66%	81,000	82%
EBDT	5,46,000 68%		2,73,000 53%		35,000 28%		33,000 34%		32,000 18%	

- Debt payments reduce operator margins by ~5-25%
- NBFCs are preferred for availing loans which are serviced with no collaterals and at interest rates of 15-18% per annum

Note: 1 – Includes Insurance, disposal fee, fitness certification costs, rent, marketing, PPE costs, etc. Percentages simple average across operators; Financials constructed based on operator interviews. Source: Analysis of data gathered from field research



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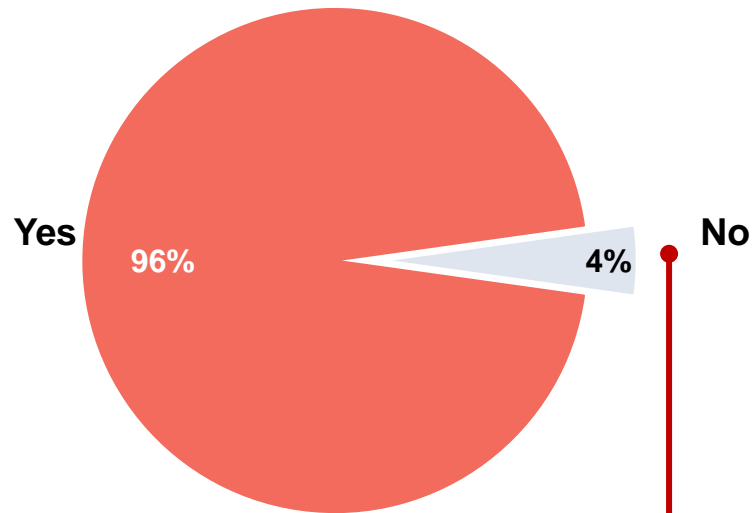
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Private service providers are keen to participate in scheduled desludging

Willingness to participate in scheduled desludging model
(% of private operators, N=45)



Sole operator opposing scheduled desludging, sources high volumes from bulk customers; Fears loss of bulk orders if operator participates in scheduled desludging

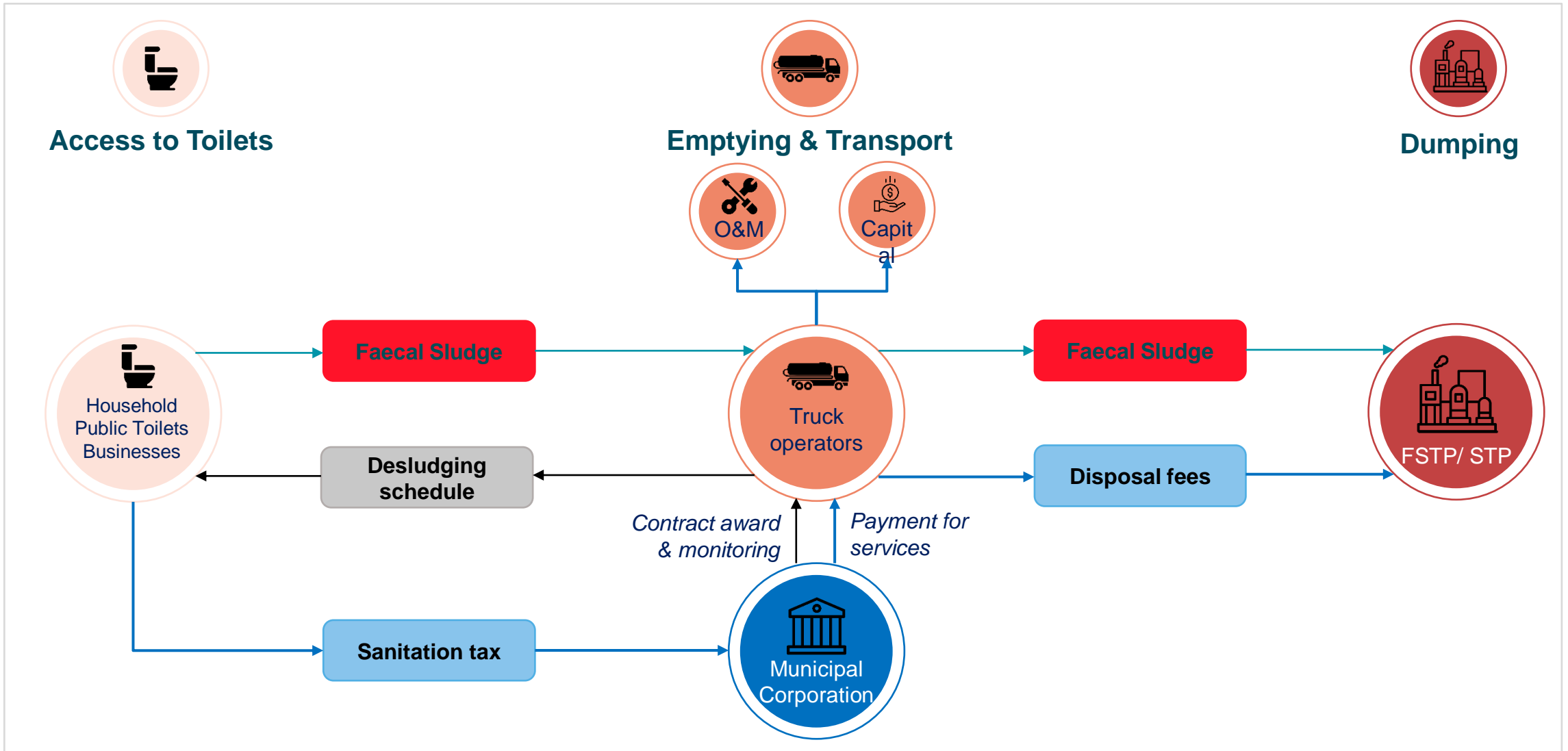
Subject to addressing few key concerns

- **Investment in accessible treatment facilities / disposal sites**
- **Delineation of roles & responsibilities with ULB**
 - Key areas include marketing activities, preparation of desludging plan, customer interfacing
- **Formalising tender process**
 - Need for minimum technical standards for Vacuum trucks in tendering process to avoid entry by low-cost retro-fitted alternative (thus, excluding c.5% of private operators that operate using tractors¹)
 - Contracts should have scope for participation by existing players
 - Need for long-term contracts to ensure guaranteed source of income
- **Holiday / maintenance day provision to allow for repair works**

Note: 1- Insights from interviewed operators

Source: Analysis on data gathered from field research

Overall construct of the proposed scheduled desludging model



There is a need to pull multiple levers for successful implementation of scheduled desludging under private service providers participation

Intervention	Details
Marketing / awareness	<ul style="list-style-type: none">▪ Promotional campaigns to make OSS households aware about the service▪ Maintaining continuity in campaigns
Creation of enabling environment	<ul style="list-style-type: none">▪ Managing competition – delineating service areas for each operator, arresting movement of illegal private operators▪ Investments in treatment facilities / disposal points▪ Payment security for private operator – annuity-based pay-outs, inflation adjustments periodically▪ Long-term duration contracts to ensure a minimum return of investment for the private sector
Capacity building	<ul style="list-style-type: none">▪ Training in areas including running the business, resource planning / deployment, operations & maintenance, etc. have been facilitated by the Government
Safety	<ul style="list-style-type: none">▪ Clear directions on safety protocols to be followed – equipment specification, SOPs of work and safety gear & equipment▪ Compliance to Labor laws
Monitoring & control	<ul style="list-style-type: none">▪ Prerequisites with respect to financial capacity, experience, technical knowhow, etc. at the time of bidding▪ Monitoring mechanism to validate number of trips executed (e.g.: via GPS-fitted vehicles)▪ Prohibition of work outside contract scope

Source: Analysis of data gathered from desk research and PAS data

The government will need to take cognizance of existing scenario while transitioning towards a scheduled desludging model (1/2)

Criteria	On-ground scenario	Implications
Minimum criteria for bidders	<ul style="list-style-type: none">▪ Lack of formal contractual agreements<ul style="list-style-type: none">▪ Only c.5% respondents have some experience with ULBs▪ ~35% respondents were undertaking atleast 25% of trips from bulk (industrial) customers▪ Few operators are registered as business entities<ul style="list-style-type: none">▪ ~20% of operators registered as a business entity (proprietorship)▪ ~67% of the proprietors have experience of more than 10 years	<ul style="list-style-type: none">▪ Limits consideration set to mostly players who have been in the business for long (~ 10 years) and can furnish experience and financial details▪ Small-size players (single vehicle owners) may only have limited information:<ul style="list-style-type: none">▪ Vehicle being used – its age and fitness and▪ Number and quality of workers / staff employed
Work approach	<ul style="list-style-type: none">▪ Existing operations are offered on a demand-based model with little / no oversight on compliance of operations	<ul style="list-style-type: none">▪ Capacity building is key for players in areas including planning of emptying services, use of safety gear, compliance to staff / worker welfare, vehicle fitness and maintenance standards, etc.▪ Guidelines also need to be part of the contract▪ Pre-bid interactions to appraise about such guidelines to ensure prospective players have clarity about costs associated to meet guidelines

Source: Analysis on data gathered from field research

The government will need to take cognizance of existing scenario while transitioning towards a scheduled desludging model (2/2)

Criteria	On-ground scenario	Implications
ULB support	<ul style="list-style-type: none">▪ Financial performance of private players vary<ul style="list-style-type: none">- Distances covered to service customers (long leads with low pricing negatively impact margins)- Price charged to customers▪ Need-based service availed by customers currently▪ Word-of-mouth and personal contacts drive business for private players	<ul style="list-style-type: none">▪ Revenue per trip is driven by lead distance expected to be covered. This will require the ULB to:<ul style="list-style-type: none">▪ Delineate service area (i.e. lead distance to be served)▪ Delineate disposal points (i.e. FSTPs)▪ Scheduled desludging is a major shift from demand-based services provided currently. ULB needs to create awareness and benefits of the new initiative<ul style="list-style-type: none">▪ Only ~13% of respondents were aware about the Wai / Sinner desludging initiative
Monitoring & Control	<ul style="list-style-type: none">▪ Private players may be inclined to continue providing services to few of their existing customers owing to:<ul style="list-style-type: none">▪ Past relationships▪ Bulk customers driving significant revenue	<ul style="list-style-type: none">▪ Private players declare vehicles exclusively deployed as part of the scheduling contract▪ Vehicles are GPS-Fitted▪ Verification of trips – tallying septage collected and disposed at treatment plants per day, random field testing by reaching out to customers for feedback, self declaration by customers on number of times services were availed in a year at the time of depositing property tax.

THANK YOU

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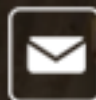
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About us

The Center for Water and Sanitation (CWAS) is a part of CEPT Research and Development Foundation (CRDF) at CEPT University. CWAS undertakes action-research, implementation support, capacity building and advocacy in the field of urban water and sanitation. Acting as a thought catalyst and facilitator, CWAS works closely with all levels of governments - national, state and local to support them in delivering water and sanitation services in an efficient, effective and equitable manner.



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Executive Summary

1 Need of the study

2 Existing Private Sector Landscape

3 Existing Performance Of Private Operators

4 Recommendations: Scaling-up In Urban Maharashtra

Annexure

Annexure 1 - List of private operators: In-depth conversations

Operator	City
Safety Tank clean	Nagpur
Narishima Jagannath	Nagpur
Sandeep Sharma	Nagpur
Ashish Jaiswal	Nagpur
Pradeep Sare	Aurangabad
KK Patel	Aurangabad
Sanjay Deshpande	Aurangabad
Samva	Pune
Satish Ladkat	Pune
Ugale	Nashik
Suresh Mhatre	Navi Mumbai
Vikas	Thane
Pravin	Navi Mumbai
Sushant	Thane
Vilas	Nagpur
Mahendra Patil	Nashik
Yogesh Tile	Nashik
Manish Suryakant Rathi Mob (Swachh Sanitation)	Wadi
Babu Dasaswar (Yelayya Datalwar)	Chimur
Mr. Giradkar,	Umred
Rohan Enterprises (Datta Bhambade)	Rajgurunagar
Sachin savant-	Lonavala
Jagnadam Ramesh	Multiple Cities
Vaishnavi services	Kundalwadi
Sanjay Bot	Gangapur
Dilip Chaudhari-	Shahada
Rajendra Gaikwad-	Shahada
Rajesh Palji Maru	Igatpuri

Operator	City
Yadav	Bhagur
Raju	Talasari
Ram Tantolit	Murbad
Vinod Patil	Wada
Nitin Jagtap	Bhor
Vaibhav	Malshiras
Prapti Enviro Services	Butibori
Nagesh Jagannath	Devri
Anand Bandhankar	Karad
Badlavi Guru -	Himayatnagar
Shankar Naga Jagannath -	Wanadongari
Charan Singh	Motala
Jagnath	Brahmapuri
Dhondiba Bijale	Murum
Samyak. R. Lodha-	Manmad
Kadam Enterprises	Waduj
Lalbeg Suction Services	Palus
Vishal Garade	Mahadula
Atul Dhikkar	Palghar
Someshwar construction	Jalkot
Sunil Walmiki -	Madha
Yashwanth	Panvel
Deepak	Dhule
Sankesh Kumbare	Chandur
Dilip Chaudhari-	Shahada
Kumbhare	Yavatmal
Hanif Enterprises	Khopoli

Operator	City
Shree Ganesh Transport Service,	Dahanu
Anif Jalgaonkar	Malgoan
Thakur	Aundha
Yashashri-	Jejuri
High Vision Enterprises - Mohan	Mhaswad
	Dindori

Source: Areté Research and PAS data

Annexure 2 - List of private operators registered as Proprietorships

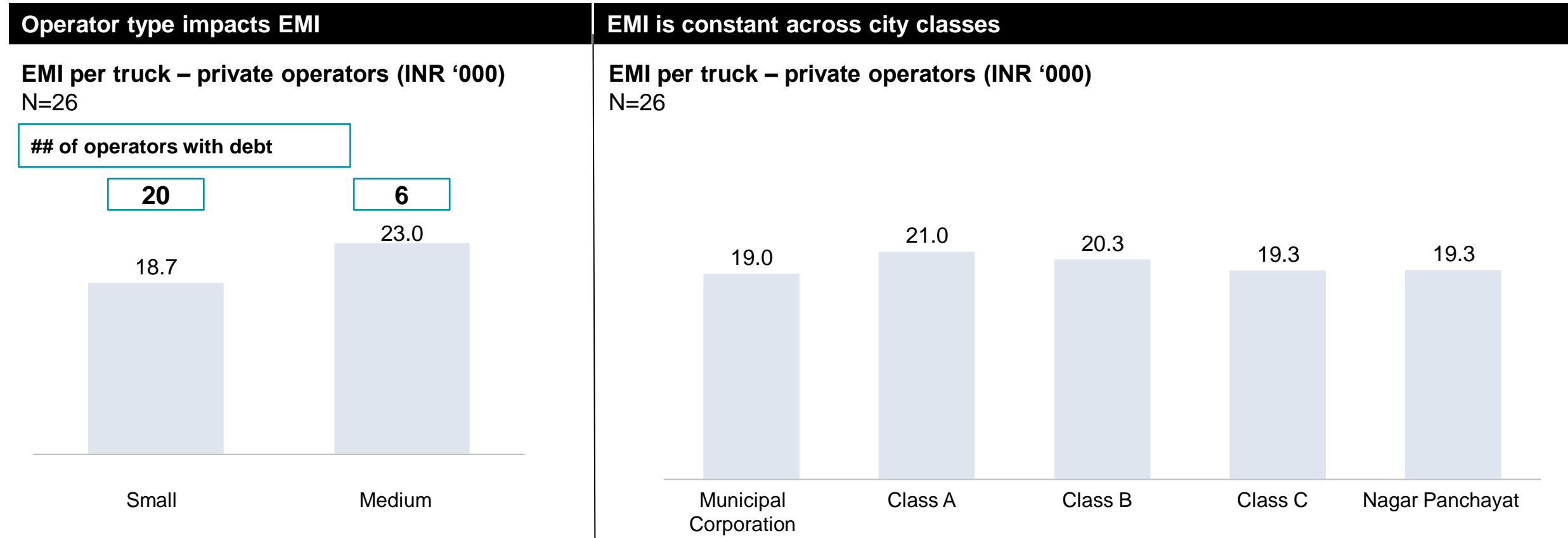
10 respondents are registered as proprietorships

Operators working as proprietorships

Operator (Name of firm)	City
Swachh Sanitation	Wadi
Rohan Enterprises	Rajgurunagar
Prapti Enviro Services	Butibori
Charan Enterprises	Motala
Ganesh Services	Wanadongari
Atharva enterprises	Bhor
SS cleaning services	Devri
Shree Ganesh Transport Service	Palghar
Yashwant Transport Domestic and Industrial Cleaning service	Panvel
MS Hygiene Care	Dhule

Source: Areté Research

Annexure 3 - While more smaller operators have debt servicing payments, EMI for these operators is lower than medium operators



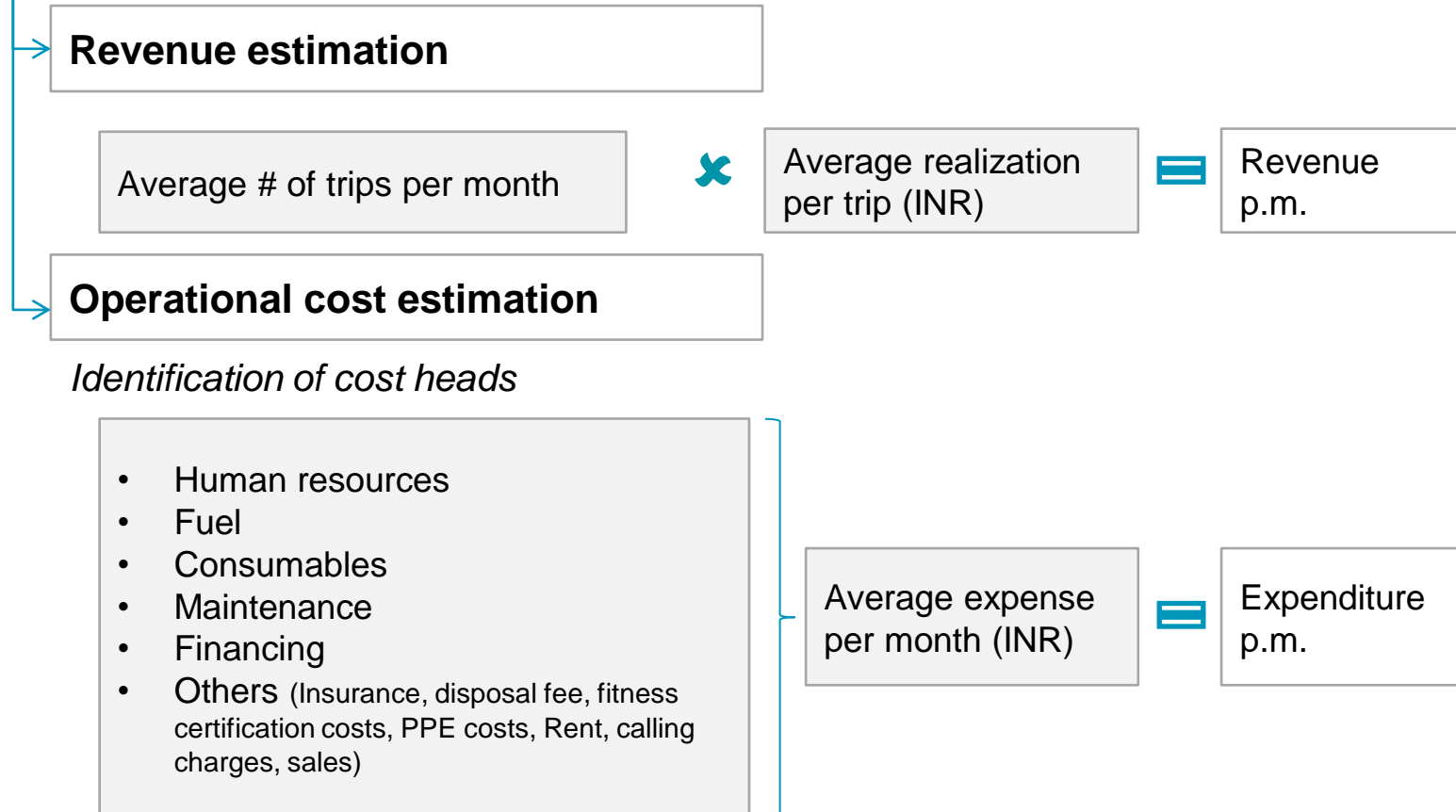
Majority of service operators have taken loan from NBFCs – these loans are serviced with no collaterals; Interest rates are b/w 15-18% p.a

Source: Analysis of data gathered from field research

Annexure 4 - Financial performance of Private sector

Methodology

Casting private operator P&L (Small & medium operators)



Output

EBDT Estimation

Earnings before depreciation & taxes

**Revenue – Operational costs
(including financing costs)**

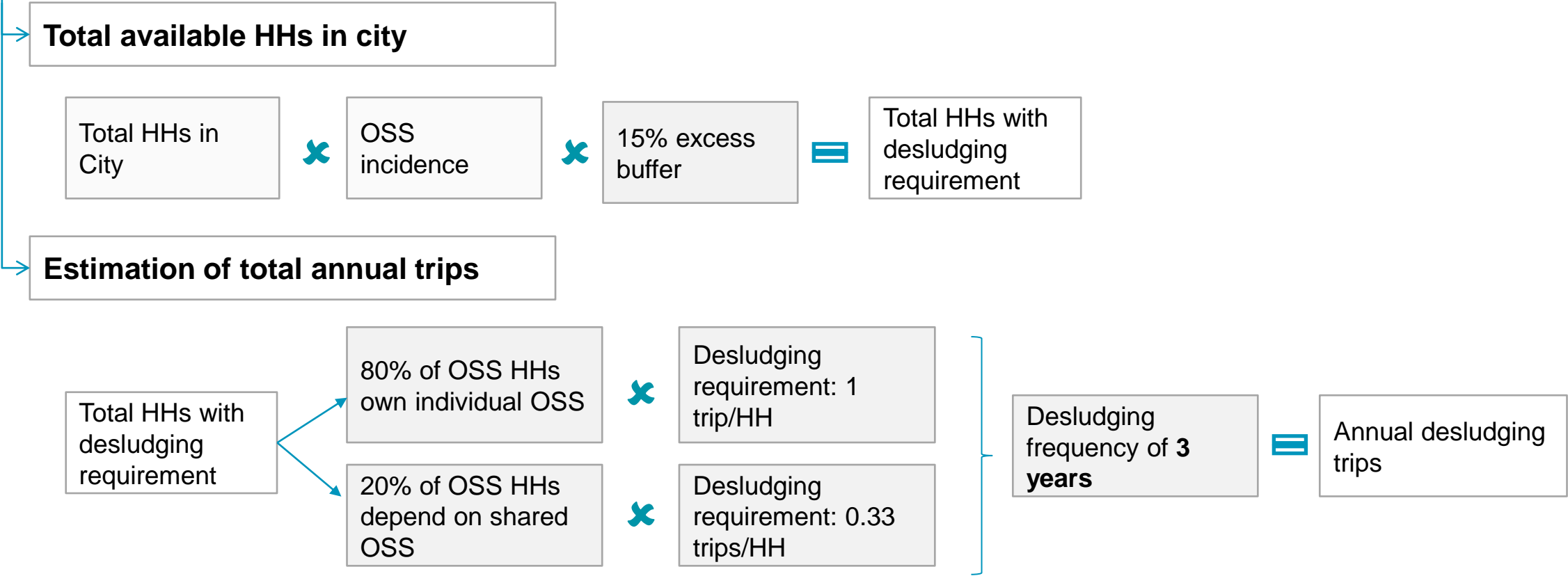
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Inputs from private operators

Annexure 5 - Estimation annual desludging trip demand for city

Methodology

Desludging demand for city



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Assumptions

PAS 18-19