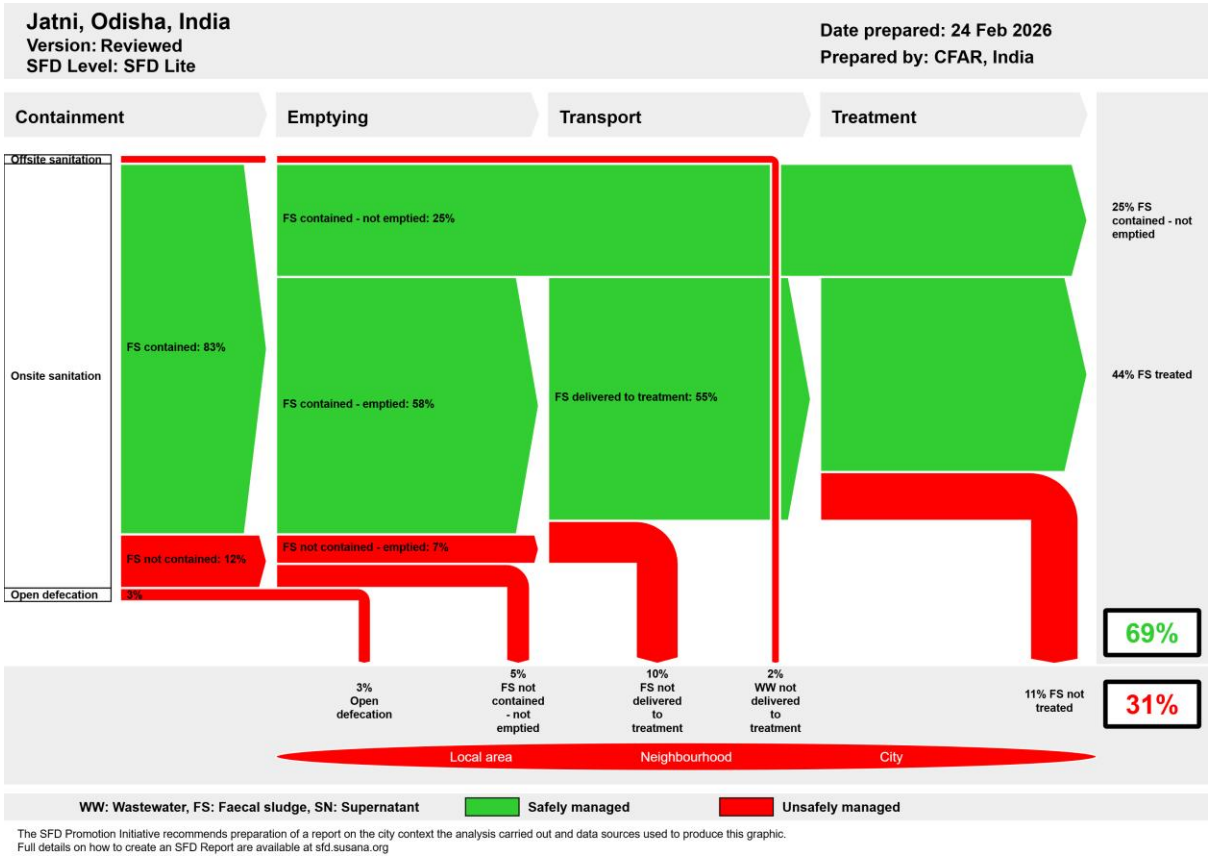
SFD Lite Report

Jatni
India

This SFD Lite Report was prepared by
Centre for Advocacy and Research (CFAR)

Date of production/ last update: 24/02/2026

1 The SFD Graphic



SFD graphic for Jatni.

2 SFD Lite information

Produced by:

- Centre for Advocacy and Research (CFAR), New Delhi
- This report is compiled as part of the project entitled "*Bridging the Urban Sanitation Gap in the Small Towns in India: Khordha & Jatni in Odisha and Chaksu & Dausa in Rajasthan,"* funded by the Viega Foundation, Germany. We would like to express our sincere gratitude to Ms. Aakriti Goenka, Executive Officer and Mr. Chinmay Kumar Sahoo, Sanitation Expert, Jatni Municipality; Er. Mayadhara Behera, Manager WATCO; Er. Biswajit Samantaray, Junior Engineer, WATCO; Ms Priyanka Mohanty, Technical Resource Person, Jatni FSTP, for providing the required information, secondary data and their cooperation during KIIs. We are also thankful to household residents, CT/PT caretakers, local mason and private desludging operators for their cooperation and valuable inputs.
- Our appreciation extends to the field team members Ms. Uttama Digal, Ms. Baijayantimala Rout, Ms. Mana Begum, Ms. Mariya Das for their efforts in conducting household surveys, KIIs and field visits. Special thanks to Ms. Akhila Sivadas for her guidance in shaping the study and Viega Foundation team for technical support.

- We also acknowledge the support of the Centre for Science and Environment (CSE) team, especially Mr. Harsh Yadava, Mr. Sarim, Dr. Sumita Singhal, and Mr. Subrata Chakraborty, for their continuous guidance throughout the process.

Collaborating Partner: Jatni Municipality, Odisha

Date of Production: 24.02.2026

3 General city information

Jatni is located approximately 22 km southwest of Bhubaneswar, the state capital of Odisha. The town serves as a major railway logistics and transport hub, which significantly influences its socio-economic development and spatial growth and has established it as an important workforce centre. Over time, Jatni has transitioned into a peri-urban satellite settlement with linkages to Bhubaneswar's metropolitan expansion. Emergence of different educational institutions, industrial set-ups, railway services, and residential development remains the principal driver of its ongoing urban growth.

Geographically, Jatni is positioned at 20°10′ N latitude and 85°42′ E longitude, situated on generally flat terrain with minor elevation variations, averaging 50 to 60 metres above sea level. The climate is humid subtropical to tropical monsoon, with temperatures ranging from 12°C in winter to 43°C in summer, and an annual rainfall of 1,400-1,500 mm[1].

The town is spread over 17.01 sq. kms and governed by Jatni Municipality, covering 23 municipal wards[2]. Five wards (Ward no. 1, 2, 16, 17, 18) come under Railway land and are administered by the Railway Board. According to the Census 2011, Jatni had 55,655 inhabitants, with 11,891 households[3]. The current population is estimated to be higher due to rapid in-migration linked to industrial corridors, educational institutions, railway employment, and residential expansion. As per the ULB official, the current estimated population of the town is approximately 63,700, and the floating population is 2,796 (KII-1, 2025)[4]. However, 63,920 is estimated based on the 2011 census and the previous annual growth rate and has been taken into consideration for preparing this SFD. Table 1 shows the population growth of Jatni Municipality and its outgrowth. As per the Swachh Survekshan city report card 2024-2025, the town ranks 14th in the state and 124th in the national ranking (medium cities category- 50,000-3L population)[5].

Table 1 Population Growth of Jatni Municipality and Out Growth.

Census Year	Population	Growth Rate (%)
1991	50,116	20
2001	53,251	6.3
2011	63,697	9.9
2025*	63,920*	14.85

[1] District Survey Report, 2020
[2] Reference: Municipality website http://www.jatnimunicipality.in/Default.aspx
[3] District Census Handbook, 2011 (Jatni town only)
[4] This figure is mentioned by Mr. Chinmay Kumar Sahoo (Sanitation Expert, Jatni Municipality)
[5] Obtained from the Swachh Survekshan city report card

* Estimated current population figure for Jatni town.
Source: Census 2011

4 Service outcomes

4.1 SFD matrix

Table 2 shows the SFD matrix for Jatni.

Table 2: SFD matrix for Jatni.

Jatni, Odisha, India, 24 Feb 2026. SFD Level: SFD Lite
Population: 63920
Proportion of tanks: septic tanks: 100%, fully lined tanks: 100%, lined, open bottom tanks: 100%

Containment						
System type	Population	WW transport	WW treatment	FS emptying	FS transport	FS treatment
	Pop	W4c	W5c	F3	F4	F5
System label and description	Proportion of population using this type of system (p)	Proportion of wastewater in open sewer or storm drain system, which is delivered to treatment plants	Proportion of wastewater delivered to treatment plants, which is treated	Proportion of this type of system from which faecal sludge is emptied	Proportion of faecal sludge emptied, which is delivered to treatment plants	Proportion of faecal sludge delivered to treatment plants, which is treated
T1A1C6 Toilet discharges directly to open drain or storm sewer	2.0	0.0	0.0			
T1A2C5 Septic tank connected to soak pit	15.0			80.0	85.0	80.0
T1A3C5 Fully lined tank (sealed) connected to a soak pit	33.0			80.0	85.0	80.0
T1A4C10 Lined tank with impermeable walls and open bottom, no outlet or overflow	35.0			55.0	85.0	80.0
T1B11 C7 TO C9 Open defecation	3.0					
T2A4C10 Lined tank with impermeable walls and open bottom, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	12.0			55.0	85.0	80.0

4.1.1 Offsite Sanitation

Jatni town has no sewerage network (KII-2; KII-5, 2025)[6]. Wastewater is entirely unmanaged, with both wastewater and stormwater conveyed through open drains and natural drainage channels. Untreated wastewater is discharged at multiple locations, including the Kudiary Canal, the Shandhapur Canal, railway drains in Ward No. 15, and finally into the Daya River, low-lying open areas, and agricultural land (KII-1, 2025)[7]. During the rainfall and especially in the monsoon season, open drains frequently overflow, causing waterlogging at different locations, including Sitaram Chhak, Hatabazar, Raja Bazar, and other low-lying areas.

Figure 1: Wastewater discharges through open drains to the Kudiary and Shandapur Canal. (Source: Baijayantimala and Uttama, CFAR. 2025).

During the field survey, it was observed that in some households, toilet outlets are directly connected to open drains. Therefore, the T1A1C6 system was considered as 2% of the total population of the town while generating the SFD graphics[8]. The current off-site sanitation scenario in Jatni, therefore, remains characterised by unsafe conveyance and untreated disposal, posing significant environmental and public health concerns.

Municipal piped water supply and borewells are the primary sources of water in Jatni town. Water is sourced primarily from the Munduli dam under the WATCO mega project. The town is served by four water storage tanks- Zone 1 (Kudiary: 1,350 KL), Zone 2 (DM Office: 1,225 KL), Zone 3 (near Centurion University: 750 KL), and Zone 4 (Bachhara Hill Top: 2,250 KL), along with sump storage (KII-3, 2025)[9].

Household survey findings show that around 60% of households rely exclusively on municipal water supply, while 35% depend on borewells, hand pumps, and similar sources. The remaining households use wells or a water tanker provided by the railway board. Jagannathpur area (ward no. 13) is not covered by the piped water network and is fully dependent on borewell water[10].

[6] As per KII with Er. Mayadhara Behera (WATCO manager) and Mrs. Priyanka Mohanty (Manager, FSTP Jatni)
[7] As per KII with Mr. Chinmay Kumar Sahoo (Sanitation Expert, Jatni Municipality)
[8] As per KII with Mr. Chinmay Kumar Sahoo (Sanitation Expert), Er. Mayadhara Behera (WATCO manager), Er. Biswajit Samantaray (Junior Engineer, WATCO), Jatni town never had any sewer network; the figure mentioned in the census were not in reality. Hence, T1A1C6 is considered based on the household survey and triangulated with various KIIs.
[9] As per KII with Er. Biswajit Samantaray (Junior Engineer, WATCO)
[10] Same as above

Figure 2: Household toilets are connected to an open drain, Ward Nos. 22 & 13 (Source: Baijayantimala and Mana, CFAR. 2025).

4.2. On-Site Sanitation

Containment:

The sanitation landscape in Jatni showcase 95% reliance on the on-site sanitation systems. Containment infrastructure is characterised by diverse and non-uniform practices, with septic tanks, fully lined tanks, and ring tank latrines forming the dominant typologies. 48% of the total OSS dependent population relies on the fully lined tanks (33%), septic tanks (15%), where the tank outlet is connected to soak pits. The average size of these containments is 5.33 cubic metres. Moreover, 47% population has lined tanks with semi-permeable walls, open bottoms and no outlet.

Septic tanks and fully lined tanks are generally rectangular or square, with dimensions averaging 6-8 feet in length, 4-6 feet in width, and 8-10 feet (up to 12 feet) in depth. Ring-shaped lined tanks are typically constructed using prefabricated concrete rings, stacked and sealed with cemented joints. These pits commonly range between 3-4 feet in diameter and 3-8 feet in depth**,** with an average of 6-8 rings used depending on household needs. Such structures are commonly seen in Hatabazar, Lococolony. Gahiratala, along the low-lying areas and slums. These localities are occupied mostly by low-income, migrant families and by those who reside on the govt. land (KII-4, 2025)[11].

Figure 3: Lined ring tanks and fully lined tank (FLT) structures at Jatni (Source: Bipin and Baijayantimala, CFAR. 2025)

The type of system adopted by households is closely linked to economic capacity, family size and spatial constraints, rather than adherence to technical standards. The town does not follow any formalised or enforceable standards

[11] As per KII with Mr. Kulamani Sahoo (Local Mason)

for containment design, sizing, or construction, leading to considerable variation in system performance[12].

To address toilet access gaps, 1314 Individual Household Latrines (IHHLs) have been constructed with government subsidy under the Swachh Bharat Mission (SBM) in the Jatni Town[13].

Public Toilets and Community Toilets

Jatni town has 2 public toilets (PTs) (both are functional), 18 community toilets (CTs) (10 functional) and 6 aspirational toilets, located across the wards within the municipality area[14]. All these public facilities are connected to septic tanks and lined tanks, with varying size of containment. On average, the length ranges between 10 to 12 feet, the width between 6 to 8 feet, and the depth between 8 to 10 feet. Desludging frequency varies depending on the footfalls, which typically range from once or twice a year to once in two or three years, and some are not emptied yet. Approximately 1200 people use these toilet facilities daily[15]. All the CTs and PTs are currently operated and maintained by Majdor, a self-help group (SHG).

Water for flushing and cleaning is primarily supplied by WATCO through the municipal piped network, supplemented in some locations by borewells. Each toilet block stores water in overhead tanks positioned on the building. In both types of facilities, wastewater flows directly into the adjoining open drains.

Figure 4: Community Toilet at Ward no. 1 2, Jatni (Source: Mana, CFAR. 2025).

During field visits, several issues related to infrastructure and management were observed and reported by the toilet caretakers. Parts of the toilet structures were damaged, and hygiene conditions were below acceptable standards. None of the assessed facilities had proper handwashing stations, and interruptions in water supply were frequently reported. Female staff and users also lacked dedicated sanitary spaces, which further affected the usability and comfort of the facilities (KII-7, 2025)[16]. Waterlogging emerged as a significant concern during the rainy season. Due to insufficient surface drainage around many toilet premises, rainwater collects and, in some cases, enters the toilet blocks (KII-6, 2025)[17]. This leads to toilet pans becoming unusable during monsoon periods. Additionally, leakages from damaged water

[12] The guidelines mentioned by CPHEED (2018) are not followed in the field.
[13] IHHL figures were obtained from the Municipality
[14] Obtained from municipality and field survey
[15] Obtained from the field survey and interviews with the toilet caretakers
[16] Based on the Field observation and KII with Mr. Kalam Uddin Khan & Mr. Purna Nayak (Supervisor & Care taker, CTs)
[17] As per the interview with Mr. Baikuntha Natha Bhanjo Das (PT caretaker)

pipelines were observed, resulting in further disruption to the water supply and creating operational challenges.

Apart from these CTs and PTs, Jatni Municipality has one mobile toilet (Two-seater, male and female each) used during festivals and any public/religious gathering within the town (KII-1, 2025)[18].

Though the town has been declared as open defecation free (ODF), the practice of open defecation was observed during the household survey in various localities such as Balichhak Mundia Sahi, Ballichhak Sahi, Goddadharam Sagar Sahi, located at ward nos. 6, 7, 12. This is mostly because of the lack of accessibility to individual toilets and predominantly due to behavioural issues to avoid the fast filling of the containment. Hence, based on the field visit and the IHHL delivery gaps, it was considered that 3% of the total population is still practising open defecation in the town.

Figure 5: Open defecation lands at Ballichhak Mundia Sahi and Ballichak Sahi.
(Source: Mana, Mariya, CFAR. 2026).

Emptying and Transportation

Desludging services in Jatni are provided by a mix of government-owned and private cesspool vehicles that operate across the municipality and nearby rural areas. The Urban Local Body (ULB) maintains four functional vehicles with capacities of 500 litres (two vehicles), 1,000 litres, and 3,000 litres each (KII-1, 2025) [19] . In addition, four registered private operators (Bhalusundaray Agency, Lulu Martha Agency, Sanjaya Biswal Agency and Sairam Agency) collectively run six vehicles, with capacities 4,000 litres (four vehicles), 5,000 litres (one vehicle) and 6,000 litres (one vehicle) (KII-8, 2025)[20]. Together, these ten vehicles form the primary fleet serving households and institutions in and around the town.

[18] As per the interview with Mr. Chinmay Kumar Sahoo (Sanitation Expert)
[19] Same as above
[20] As per the interview with Mr. Kailash Barik (Private Desludging Operator)

Figure 6: Containments are being emptied by the cesspool operators (Source: Uttama, CFAR. 2025).

Households typically place a desludging request in the municipality office, or use the toll-free number (14420) for the government. vehicle, and sometimes they directly book private service providers (KII-1, 2025)[21].

FSTP only allows registered vehicles for unloading sludge, maintains a register and also reports to the Sujog Portal (KII-5, 2025)[22]. A semi-mechanised method is used for desludging, usually carried out by a team of three workers equipped with protective gear such as gloves, boots, and masks. For govt. vehicle a uniform charge of INR. 500, INR. 700 and INR. 1200 (for vehicles with the above-mentioned capacity respectively) per trip is taken for desludging services, regardless of the distance within the municipality boundary. The charges for the private operators vary depending on their interest, but usually they take INR. 1500 for every trip. Under normal conditions, on average, a 3000 litres vehicle completes the emptying process within 15 to 20 minutes. When tanks contain older, dried, or heavily solidified sludge, the process takes longer. In such cases, operators add water mixed with kerosene and bleaching powder to break down the sludge before pumping (KII-4 & 8, 2025)[23].

Desludging frequency varies depending on the type of containment and season. Ring wells generally require emptying more frequently during the monsoon months, often filling within 4 to 6 months or sometimes a year. Septic tanks, by contrast, usually require desludging every 2 to 3 years or even longer. Access remains an operational challenge in several densely built neighbourhoods, such as Kudiary and Bachhara Patna, where narrow lanes restrict vehicle movement (KII-8, 2025)[24]. To overcome this, operators use suction pipes that extend up to 300 feet. Some private operators offer extended pipe lengths of 350 to 500 feet, although an additional charge is applied when these extended pipes are required to reach distant containment systems. After emptying, the faecal sludge is transported to the Faecal Sludge Treatment Plant (FSTP), the official disposal and treatment site for Jatni.

Treatment and Disposal

Jatni Municipality operates a faecal sludge treatment plant (FSTP) with a treatment capacity of 20 KLD, located at Sandhapur in Ward No. 9. The plant has been functioning since 2021 and is presently operated by Sai Krupa SHG. It follows an anaerobic, natural treatment process designed for sludge management[25].

[21] As per the interview with Mr. Chinmay Kumar Sahoo (Sanitation Expert)
[22] As per the interview with Mrs. Priyanka Mohanty (Manager, FSTP Jatni)
[23] As per the interview with Mr. Kulamani Sahoo (Local Mason) and Mr. Kailash Barik (Private Desludging Operator)
[24] As per the interview with Mr. Kailash Barik (Private Desludging Operator)
[25] As per the interview with Mrs. Priyanka Mohanty (Manager, FSTP Jatni)

Every day, around 5 to 6 cesspool vehicles discharge faecal sludge at the plant. Although the facility mainly handles sludge generated within the municipal limits, it also receives loads from nearly 20 neighbouring panchayats. The FSTP permits disposal only from licensed desludging operators, ensuring that entry and disposal remain fully regulated. Operational challenges arise on certain days when 6 to 7 desludging vehicles with capacities ranging from 4,000 to 6,000 litres arrive at the plant. Given the plant's limited capacity of 20 KLD, such peak loads result in delays, increased waiting time for vehicles, and strain on treatment processes. The plant management also highlighted the need for additional human resources to ensure optimal operation and maintenance.

Considering current and future demand, an upgraded facility with a treatment capacity of around 50 KLD would better support efficient and uninterrupted operations [26] . Private operators mentioned that while they comply with formal disposal practices inside the town, challenges arise when desludging far-off panchayat areas. In such situations, sludge is sometimes released in open lands, abandoned mining patches, or nearby agricultural fields[27].

Figure 7: a. Sludge unloading at FSTP, b. Processed Sludge over Drying bed, c. Bio-solid stored after treatment at FSTP Jatni (Source: Baijantimala, CFAR. 2025).

In these rural areas, local farmers occasionally use the sludge as a soil nutrient, reflecting informal reuse occurring outside the formal system. Inside the FSTP premises, treated sludge is stored in a designated zone since it has not yet been scientifically tested. Treated effluent is

reused for irrigating non-food plantation areas within the campus. The municipality has also initiated a co-composting pilot where compost from the Micro Composting Centre (MCC) is blended with FSTP sludge. This initiative has already been demonstrated during international exposure visits, including delegations from Italy.

4.3. SFD graphic

Figure 8 shows the SFD graphic for Jatni.

[26] As per the interview with Mrs. Priyanka Mohanty (Manager, FSTP Jatni)
[27] As per the interview with Mr. Kailash Barik (Private Desludging Operator)

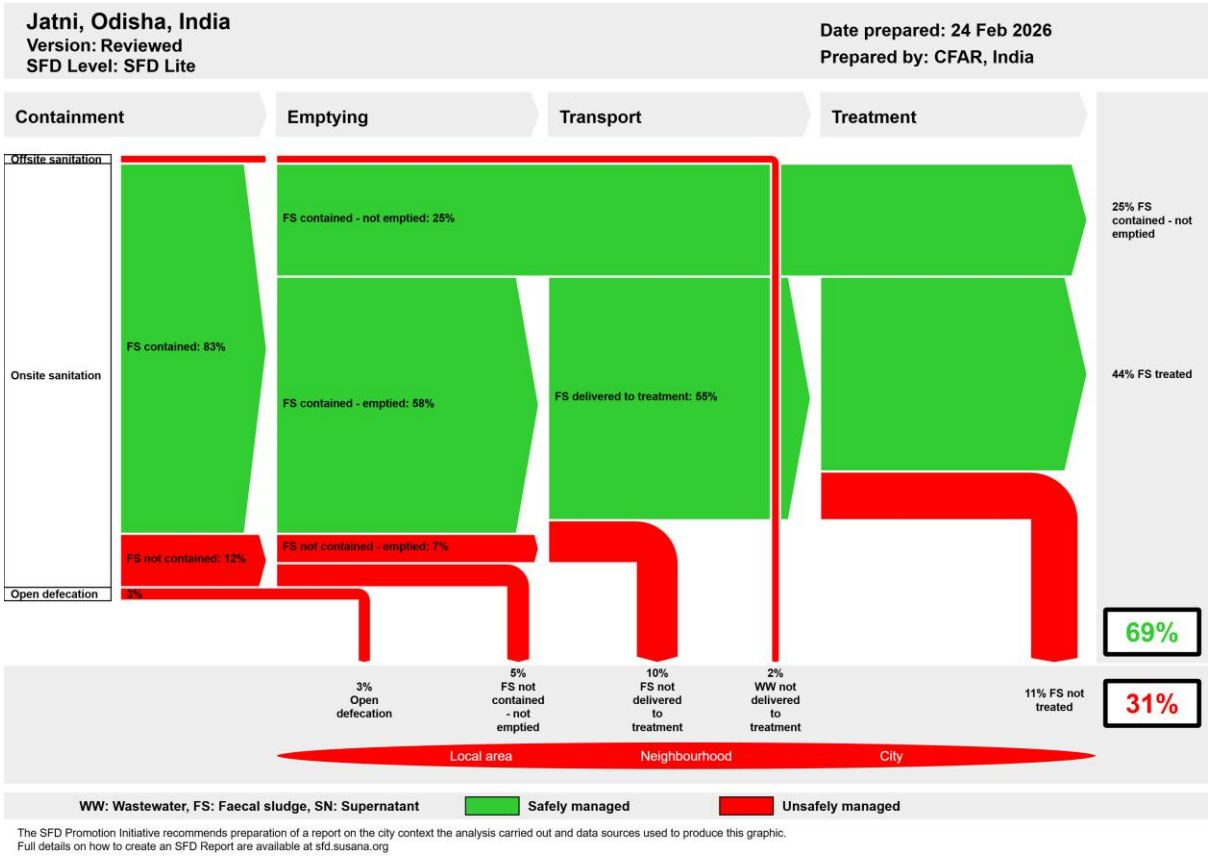


Figure 8: SFD graphic for Jatni.

The outcome of the SFD graphic shows that 69% of the excreta flow is classified as 'Safely Managed' while 31% of all excreta flow is classified as 'Unsafely Managed' (see SFD graphic). The unsafely managed excreta originates from Faecal Sludge (FS) not delivered to the treatment plant (19%), Supernatant (SN) not delivered to the treatment plant (2%), Wastewater (WW) not delivered to treatment (2%), FS not contained-not emptied (6%), FS not treated (11%) and Open defecation (3%). The safely managed excreta originate from FS that is contained and not emptied (25%), and FS treated (44%). However, the safely managed FS generated by this 25% of the population is temporary since FS from onsite sanitation systems will require emptying services in the short and medium term as they fill up.

5 Data and assumptions

- Secondary data is taken from the census of 2011, which was used as a reference for the detailed analysis, and IHHL figures are collected from the Municipality
- Primary data is obtained from the key interviews with different stakeholders, site visits and Household surveys
- Current population is estimated based on the 2011 census population figure (55,655 for Jatni municipality only) and the available previous decadal growth rate, combined for Jatni town and its outgrowth (9.9%). It was assumed 0.99% annual growth for the last 15 years after the census 2011, contributing a total 14.85% growth since 2011.
- The proportion of FS in septic tanks, fully lined tanks, and lined, open bottom tanks are considered 100%, 100%, and 100% respectively as per the guidance given in the Frequently Asked Questions (FAQs) in the Sustainable Sanitation Alliance (SuSanA) website.
- Faecal sludge generation by a person per year is considered to be 120 litres.
- Proportion of OSS emptied is considered to be 80% for septic tanks and fully lined tanks (as calculated using the septage generation method), and two-thirds of the calculated value is considered for lined tanks with semi-permeable walls and open bottom, as observed in the survey.
- The proportion of faecal sludge transported to the treatment plant is assumed 85% based on the instances of practising illegal dumping by desludgers and emptied by the vehicles coming from different areas.
- The proportion of treated faecal sludge after transporting to the treatment plant is assumed 80% based on the site observation of the treatment plant and the quality of treated water colour, KII with the plant staff.
- Based on the field survey, it is assumed the 25% of the total population dependent on the lined tanks with open bottoms have a higher risk of groundwater contamination due to their location in low-lying areas and close to the water bodies.

6 List of Data Sources

Reports and Literature

- District Census Handbook 2011 for Jatni (Available at https://censusindia.gov.in-/nada/index.php/catalog/950)
- Households by availability of type of latrine facility, Odisha-2011 (Available at https://census-india.gov.in/nada/index.php/catalog/8668)
- Swachh Survekshan Report (Available at https://ss2023.sbmurban.org/#/scorecard)
- Odisha Urban Sanitation Policy, 2017
- District Survey Report (DSR) 2020 (Available at https://khordha.odisha.gov.in/sites/-default/files/2023-06/2021021290.pdf)
- Standard Operating Procedure (SOP) for Cleaning of Sewers and Septic Tanks. 2018 CPHEEO, MoHUA (Available at https://sbmurban.org/toilet-2.0)

Key Informant Interviews

- KII-1, 2025; Interview with Mr. Chinmay Kumar Sahoo (Sanitation Expert, Jatni Municipality)
- KII-2, 2025; Interview with Er. Mayadhara Behera (Manager, WATCO)
- KII-3, 2025; Interview with Er. Biswajit Samantaray (Junior Engineer, WATCO)
- KII-4, 2025; Interview with Mr. Kulamani Sahoo (Local Mason)
- KII-5, 2025; Interview with Smt. Priyanka Mohanty (Manager, FSTP Jatni)
- KII-6, 2025; Interview with Mr. Baikuntha Natha Bhanjo Das (PT Caretaker)
- KII-7, 2025; Interview with Mr. Kalam Uddin Khan & Purna Nayak (Supervisor & Care taker, CTs)
- KII-8, 2025; Interview with Mr. Kailash Barik (Private Desludging Operator)

Field Work

- Field survey of Public and Community Toilets (2 PT/CTs)
- Visit to FSTP plant
- Visit to Water Discharge locations
- Visit 100 households with randomly selected low, medium and high-income families across the town.
- Visit to the railway colony
- Visit to open waste dumping areas.

Jatni, India, 2026

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This SFD Lite Report is available from:

www.sfd.susana.org

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