BASELINE STUDY REPORT

Bridging the Urban Sanitation Gap in Small Towns in India

A City-Wide Inclusive Sanitation (CWIS) Assessment Across Four Small Towns in Rajasthan and Odisha

Chaksu · Dausa (Rajasthan) | Jatni · Khordha (Odisha)

Centre for Advocacy and Research

Supported by viega foundation

Suggested citation:

Centre for Advocacy and Research (CFAR). (2026). Bridging the Urban Sanitation Gap in Small Towns in India: A City-Wide Inclusive Sanitation (CWIS) Baseline Assessment. New Delhi: CFAR.

Study coverage:

Chaksu and Dausa (Rajasthan); Jatni and Khordha (Odisha), India

Photo credits:

Cover photographs © CFAR / Field teams, 2025. Left to right: Community meeting, Chaksu, Rajasthan; CMC formation meeting, Jatni, Odisha; Desludging facilitation, Dausa, Rajasthan.

Published by:

Centre for Advocacy and Research (CFAR)

New Delhi, India

www.cfar.org.in

First published 2026 · Printed in India

ACKNOWLEDGEMENT

This baseline assessment report is the outcome of a sustained, collective effort spanning two states, four towns, and the contributions of hundreds of individuals, including researchers, community members, municipal officials, civil society partners, and institutional supporters, without whom this work would not have been possible. We place on record our deep and sincere gratitude to each one of them.

At the heart of this report lies the dedicated and painstaking work of the CFAR field teams in Odisha and Rajasthan. These researchers and field investigators worked with exceptional rigour, sensitivity, and commitment, navigating unfamiliar localities, building trust with communities, and conducting household surveys, Focus Group Discussions (FGDs), and Key Informant Interviews (KIIs) under demanding field conditions. The quality of the primary data assembled in this report, including its depth, its texture, and its fidelity to ground realities, is a direct reflection of their professionalism and their genuine investment in the communities they engaged with. We are profoundly grateful to each team member for their intellectual honesty, their diligence in documentation, and the care they brought to every interaction in the field. Other than the project team, from **CFAR Jaipur team**, Ms. Saira, Ms. Sarita Sharma, Ms. Ratan Kumari Chaturvedi, and Ms. Sajana Bai Lodha provided voluntary support for household data collection, assisting the Chaksu and Dausa teams, while Mr. Jogal Nayak from the **CFAR Bhubaneswar team** supported in reviewing the household questionnaire.

Our deepest gratitude is owed to the 400 households across the four towns in Khordha and Jatni in Odisha, and in Chaksu and Dausa in Rajasthan, who graciously opened their homes, thoughts and their lives to our field teams. Their candid and detailed responses to the semi-structured household survey, covering everything from their daily life, sanitation infrastructure and hygiene practices to climate vulnerability and willingness to pay, form the empirical backbone of this assessment.

We are equally grateful to over 440 men, women, and community members who participated in the semi-structured 35 Focus Group Discussions conducted across the four towns. These conversations, held with women's groups, men's groups, sanitation workers, persons with disabilities, Community Management Committee members, and other community segments, were conducted in local languages and provided a rich, textured understanding of lived sanitation experiences that no semi-structured questionnaire alone could have captured. The honesty, patience, and generosity of every participant who shared their time and experiences are deeply valued and will continue to inform the project's actions going forward.

We wish to express our sincere appreciation to the 18 Key Informants across the four towns who contributed their knowledge, perspectives, and professional experience to this research. These included SBM Nodal Officers, Sanitation Inspectors and Supervisors, Sanitation Experts, elected Ward Councillors and Vice-Chairpersons, community leaders and CMC members, FSTP operators, and desludging service providers. Their nuanced accounts of institutional dynamics, service delivery challenges, governance processes, and community engagement mechanisms enriched this report in ways that are difficult to overstate. Their willingness to engage candidly with complex and often sensitive questions reflects both their trust in the research process and their genuine commitment to improving sanitation outcomes in their towns.

This project would not have been possible without the consistent support and cooperation of the four Urban Local Bodies at its centre. The **Municipalities of Khordha and Jatni** in Odisha, and the **Municipalities of Chaksu and Dausa** in Rajasthan, extended unstinting cooperation throughout the data collection process, facilitating access to administrative records, enabling meetings with key officials, and creating an enabling environment for community engagement. The openness with which these municipal bodies engaged with the research team reflects a genuine commitment to evidence-based governance and a recognition that rigorous baseline documentation is essential to improving sanitation service delivery for all residents, particularly the most underserved. We are grateful to the elected representatives, administrative heads, and municipal staff of all four towns for their partnership, patience, and sustained support.

The design of the household baseline survey questionnaire benefited enormously from the careful and critical review provided by experts from three esteemed organisations: **Dasra**, the **WASH Institute**, and the **SIGMA Foundation, Kolkata**. Their substantive inputs on question framing, sequencing, coverage of CWIS dimensions, technical precision, and adaptability to field conditions significantly strengthened the tool and enhanced the quality of data ultimately collected. We are grateful for the time, expertise, and intellectual generosity that each of these institutions brought to the review process.

This project has been made possible through the generous funding, strategic vision, and technical stewardship of the **Viega Foundation,** Germany. The Foundation's commitment to inclusive, climate-resilient sanitation for underserved urban communities and its recognition that robust evidence is indispensable to meaningful programme design have shaped the very orientation of this baseline exercise. We are especially grateful to **Ms. Stefanie Licht** of the Viega Foundation team for her consistent and thoughtful technical guidance throughout the design and implementation of this research. Her generous feedback at critical junctures has helped sharpen the analytical framework and ensure that the research remains tightly aligned with the project's broader goals.

A word of profound acknowledgement is owed to **Ms. Akhila Sivadas**, whose influence on this project and on the team that carried it out has been transformative. Ms. Sivadas has guided the team in understanding small towns in India, highlighting governance, demographics, and service delivery realities, and explaining complex policy dynamics affecting sanitation in under-resourced municipalities. Her insights into Urban Local Bodies, public service politics, and vulnerabilities of marginalized communities have shaped this report's perspective. She has also played a vital role in capacity building, nurturing researchers and practitioners committed to equity and inclusion. Her encouragement and critical engagement have been key to this work.

The Centre for Advocacy and Research (CFAR) acknowledges that the findings, interpretations, and conclusions expressed in this report are those of the research team only and do not necessarily represent the views of the Viega Foundation, CFAR, or any other individual or institution acknowledged herein. All errors and omissions remain with the research team.

Authors: Dr. Rajib Das, and Mr. Bulton Roy

Project and Research Team

State Team: Mr. Samir Ranjan Dash (Odisha), and Mr. Ravikirankumar Bokam (Rajasthan)

Chaksu Team: Ms. Madhu Chauhan, Ms. Renu Bairwa, Ms. Sajna Bai, Ms. Mamta Gurjar

Dausa Team: Mr. Rajat Bhardwaj, Ms. Neelam, Ms. Asha Devi Bairwa, Ms. Suman Bairwa

Jatni Team: Mr. Bipin Bihari Sethi, Ms. Uttama Digal, Ms. Baijayantimala Rout, Ms. Mariya Das, Ms. Mana Begum

Khordha Team: Ms. Labanyarekha Rout, Ms. Soumyashree Paikaray, Ms. Chinmayee Sahoo, Ms. Sunita Pradhan

Designed by: Ms. Girija Kumari Sahu

TABLE OF CONTENTS

List of Tables

List of Figures

Part I — Background of the Study

Part II — Comparative Analysis Across Towns

List of Abbreviations

ALF	Area Level Federation
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BOV	Battery Operated Vehicle
CFAR	Centre for Advocacy and Research
CMC	Community Management Committee
CWIS	Citywide Inclusive Sanitation
DLB	Directorate of Local Bodies
DPR	Detailed Project Report
FGD	Focus Group Discussion
FS	Faecal Sludge
FSM	Faecal Sludge Management
FSSM	Faecal Sludge and Septage Management
FSTP	Faecal Sludge Treatment Plant
GEDSI	Gender Equality, Disability, and Social Inclusion
HH	Household
IEC	Information, Education, and Communication
IHHL	Individual Household Latrine
IVRS	Interactive Voice Response System
KII	Key Informant Interview
KLD	Kilolitres per Day
LCV	Light Commercial Vehicle
MCC	Micro Compost Centre / Materials Composting Centre
MHM	Menstrual Hygiene Management
MIS	Management Information System
MoU	Memorandum of Understanding
MRF	Material Recovery Facility
O&M	Operations and Maintenance
OBC	Other Backward Class
OD	Open Defecation
ODF	Open Defecation Free
PHED	Public Health Engineering Department

PMAY	Pradhan Mantri Awas Yojana
PPE	Personal Protective Equipment
PwD	Persons with Disabilities
QR	Quick Response (code)
RO	Reverse Osmosis
SBM	Swachh Bharat Mission
SC	Scheduled Caste
SDA	Slum Dwellers Association
SFD	Shit Flow Diagram (Excreta Flow Diagram)
SHG	Self-Help Group
SOP	Standard Operating Procedure
ST	Scheduled Tribe
STP	Sewage Treatment Plant
ULB	Urban Local Body
WASH	Water, Sanitation and Hygiene
WATCO	Water Corporation of Odisha
WSC	Ward Sanitation Committee
WTP	Willingness to Pay

Executive Summary

This report presents the findings of a comprehensive baseline assessment conducted across four small towns in India: Chaksu and Dausa in Rajasthan, and Jatni and Khordha in Odisha, as part of the City-Wide Inclusive Sanitation (CWIS) Action-Based Research initiative. The study was designed, conducted, and analysed entirely by the Centre for Advocacy and Research (CFAR), with technical support from the Viega Foundation, Germany. The baseline was conducted between January and February 2026, covering 400 households through semi-structured surveys, approximately 35 Focus Group Discussions (FGDs) engaging over 440 community participants, and 18 Key Informant Interviews (KIIs) with municipal officials, elected representatives, community leaders, and sanitation workers across the four towns.

Key Findings Across Four Towns

The baseline reveals a consistent pattern across all four towns: sanitation infrastructure exists but is fundamentally compromised at every stage of the value chain, from containment through emptying, transport, treatment, and disposal. The degree of failure varies, but the structural nature of the crisis is shared.

Positive deviance is documented and actionable. The proportion of households with fully lined containment and desludging within the last five years ranges from 6% (Dausa) to 37% (Jatni); Khordha at 19%, Chaksu at 9%. These households prove that improvement is possible within the current environment

Excreta management remains unsafe at scale. The Shit Flow Diagram (SFD) analyses reveal that safe excreta management ranges from as low as 28% in Chaksu to 75% in Jatni, with Dausa at 55% and Khordha at 68%. In Chaksu, 72% of all excreta is unsafely managed, driven by 55% reliance on unlined single pits, zero adoption of twin-pit systems, and a 4-5 foot water table that turns every open-bottom pit into a conduit for groundwater contamination. Even for better-performing Jatni, 25% of excreta remains unsafely managed, with the FSTP operating at capacity limits.

Containment infrastructure is the foundational failure. Across the Rajasthan towns, unlined or semi-permeable pits dominate, 55% in Chaksu and 62% in Dausa. Proper septic tanks are virtually absent; twin-pit systems, the technology promoted by SBM for non-sewered areas, have zero adoption in Chaksu and negligible adoption elsewhere. In Khordha, 61% of containment systems have never been desludged, while in Chaksu the figure is 54%. The economics are stark: a proper septic tank costs over ₹50,000, while an unlined pit can be built for ₹5,000-10,000. For families earning ₹5,000-15,000 per month, the feasible option is the only cheapestone.

Desludging services are unregulated and disconnected from treatment. Private operators handle 97% of desludging in Chaksu and dominate across all four towns. They charge arbitrary rates (₹500–3,000 per trip), dump illegally in open drains and on agricultural lands(an estimated 60-75% of septage never reaches FSTPs in Chaksu), and operate without service records, price regulation, or GPS tracking. In Jatni, municipal cesspool vehicles were found non-functional for 2-4 months during the survey period. FSTP capacity utilisation is alarmingly low, just 26% in Dausa and 32% in Chaksu, representing the single largest missed opportunity in the sanitation chain.

Water scarcity amplifies every sanitation problem. In Chaksu, piped water supply is available for only 10-15 minutes per day, forcing households into a dual financial burden of PHED fees plus private tanker costs, consuming 10-15% of household income. Summer water scarcity affects 81–83% of households in both Rajasthan towns. Across all four towns, inadequate water undermines toilet use, hygiene practices, and sanitation outcomes.

Open defecation persists despite SBM certification. Across all four towns, 3-7% of the population continues to practice open defecation, driven by a combination of absent toilet infrastructure (particularly in peri-urban wards), behavioural reluctance to fill containment systems quickly, and lack of water to support the toilet use. In Chaksu, peri-urban *dhanis* (hamlets) absorbed into municipal limits in 2019 remain functionally rural.

Critical Service Gaps Across the Sanitation Value Chain

Community willingness is high but institutionally stranded. Between 63–87% of households accept responsibility for wastewater management. Willingness to pay for improved services is demonstrated in Chaksu (78%), Khordha (58%), and Jatni (54%). This latent civic asset is unutilised because no formal community governance platforms exist in any town.

Drainage infrastructure is absent or dysfunctional. Open drains serve 77% of Chaksu, 42% of Jatni settlements lack any drainage, and 45% of Khordha households are without drainage. In the monsoon, these open drains become carriers of sewage, solid waste, and contaminated water, creating a public health crisis that recurs annually. Untreated wastewater discharges into rivers (Daya River in Jatni, Chandel River in Chaksu) and open grounds across all four towns.

Solid waste management is irregular and incomplete. While door-to-door waste collection covers most areas, significant gaps remain. In Jatni, 17% of households are completely unserved, and only 25% practice waste segregation. Furthermore, collection in the peripheral wards of all surveyed towns is highly irregular or entirely nonexistent.

Health burden is severe and directly linked to sanitation failures. Diarrhoeal disease prevalence reaches 73.7% in Chaksu. Dengue, malaria, and waterborne fevers are

reported across all four towns, with household medical expenditure adding to the financial burden of coping with infrastructure deficits. The contamination pathway from unlined pits to groundwater to drinking water sources is well-established but unaddressed.

Governance and Capacity Gaps

Community participation is near-zero despite high willingness. Across all four towns, 77-88% of households have never been involved in sanitation planning or governance. Yet community willingness to engage is remarkably high, 87% in Chaksu accept responsibility for sanitation, and 58% in Khordha are willing to pay more for improved wastewater management. The gap between willingness and participation represents the central governance failure.

Government responsiveness is critically low. Between 83–88% of households across the four towns rate government as rarely or never responsive to sanitation concerns. The trust deficit is compounded by the near-complete absence of transparency, 67% in Chaksu see no transparency in municipal functioning. Ward councillors describe being sidelined from decision-making; communities describe submitting applications that receive no response.

Institutional capacity is structurally inadequate. Khordha has 16 government sanitation workers for 22 wards (reduced from 22 through attrition with no replacement). Jatni faces similar staffing constraints. Municipal staff shortages, non-functional vehicles, absent SOPs, and siloed governance structures between water, sanitation, drainage, and health departments characterise all four towns.

Sanitation workers face intersecting violations of rights and dignity. Across all four towns, sanitation workers, both formal and informal, report zero PPE provision, caste-based untouchability in daily work, irregular wages (with a 4.5x wage differential between employment categories in Khordha), no health coverage, and exclusion from governance platforms. Manual scavenging persists despite legal prohibition.

Priority Recommendations for CWIS Implementation

Containment upgrading at scale: A phased programme to transition households from open-bottom pits to sealed tanks or twin-pit systems, with technical support, mason training, and linked subsidy mechanisms. Priority for high-water-table zones and communities near water bodies.

Desludging regulation and FSTP linkage: Mandatory registration and GPS tracking of all private operators; fixed transparent pricing; scheduled desludging programmes linked to containment type; and public awareness campaigns about municipal services and FSTP.

Ward-level community institutions: Formation of Community Management Committees (CMCs) with mandated roles for women, PwD representatives, and sanitation workers. Monthly meetings with transparent information-sharing on budgets, service standards, and complaint status.

Sanitation worker welfare: Immediate PPE provision; regularisation of wages; clearing pending PF contributions; Garima card activation; and elimination of manual scavenging through universal mechanical access.

Climate-resilient sanitation: Pre-monsoon drain rehabilitation; elevated containment in flood-prone areas; emergency sanitation SOPs; and separation of stormwater from domestic drainage.

Data and accountability systems: Household desludging databases; CWIS monitoring dashboards accessible to communities; IVRS-enabled feedback systems; and integration of health data into sanitation planning

Part I: Background of the Study

1 Introduction

1.1 Background and Rationale

India's urban sanitation challenge is increasingly being recognised not merely as an infrastructure deficit but as a systemic failure spanning containment, collection, conveyance, treatment, and reuse. While the Swachh Bharat Mission- Urban (SBM-U) has achieved significant progress in constructing individual household latrines and declaring cities Open Defecation Free (ODF)[1], the question of what happens to excreta after it enters a containment system and whether it is safely managed through the entire sanitation value chain remains inadequately addressed, particularly in small and medium towns.

India's 4,041 statutory towns with populations below one lakh account for nearly 30% of the country's urban population[2] but receive a disproportionately small share of sanitation investment, technical capacity, and policy attention. These towns typically lack sewerage networks, depend on on-site sanitation systems of varying quality, are governed by under-resourced Urban Local Bodies (ULBs), and face rapid, unplanned peri-urban expansion that outstrips service delivery capacity. The result is a sanitation landscape where toilet construction has advanced considerably, but safe excreta management from containment through emptying, transport, treatment, and disposal/reuse remains fragmented, informal, and largely unsafe.

The City-Wide Inclusive Sanitation (CWIS) framework, promoted globally by the Bill & Melinda Gates Foundation, the World Bank, and other international agencies, and increasingly adopted in Indian policy discourse, offers a paradigm shift. Rather than focusing narrowly on toilet construction, CWIS examines the entire sanitation service chain, centres equity and inclusion (particularly for women, persons with disabilities, sanitation workers, and marginalised communities), and emphasises governance, institutional capacity, and financial sustainability as prerequisites for sustained sanitation outcomes.

It is against this backdrop that the Centre for Advocacy and Research (CFAR) initiated the present action-based research programme *"Bridging the Urban Sanitation Gap in Small Towns in India"* in four small towns across two states- Chaksu and Dausa in Rajasthan,

[1] As per the Ministry of Housing and Urban Affairs, under the Swachh Bharat Mission-Urban (SBM-U), over 63.07 lakh Individual Household Latrines (IHHLs) have been constructed, exceeding the mission target. Further, all 4,715 urban local bodies (ULBs) have been declared Open Defecation Free (ODF), of which 4,355 cities have been third-party certified, with 3,547 cities achieving ODF+ and 1,191 cities achieving ODF++ status. https://sbmurban.org/

[2] Census of India, 2011

and Jatni and Khordha in Odisha. The choice of towns reflects deliberate diversity in geography, governance capacity, sanitation outcomes, and socio-economic conditions, enabling cross-town comparison and context-specific intervention design.

India's urban sanitation landscape is fractured by a paradox of visible progress and invisible failure. Open defecation free (ODF) status has been declared across thousands of urban local bodies (ULBs), yet the Shit Flow Diagram (SFD) reports reveal that in most small towns, the majority of waste never safely reaches any treatment. Toilets have been built, but the chain connecting them to safe disposal is broken at nearly every stage: containment leaks, emptying is unregulated, transport bypasses treatment, and faecal sludge treatment plants (FSTPs) operate at a fraction of its capacity.

This study takes a different starting point: it documents not only what is broken but also what is already working. Within every town, within every socio-economic group, there are households already demonstrating better practice. These instances of positive deviance constitute the most important entry point for scalable change.

1.2 Project Overview

The *"Bridging the Urban Sanitation Gap in Small Towns in India"* initiative is an action-based research programme implemented by the Centre for Advocacy and Research (CFAR), New Delhi, with financial support from the Viega Foundation, Germany. The programme is anchored in the CWIS framework and seeks to move beyond the construction-centric model of sanitation improvement towards a comprehensive understanding of sanitation service delivery across the entire value chain.

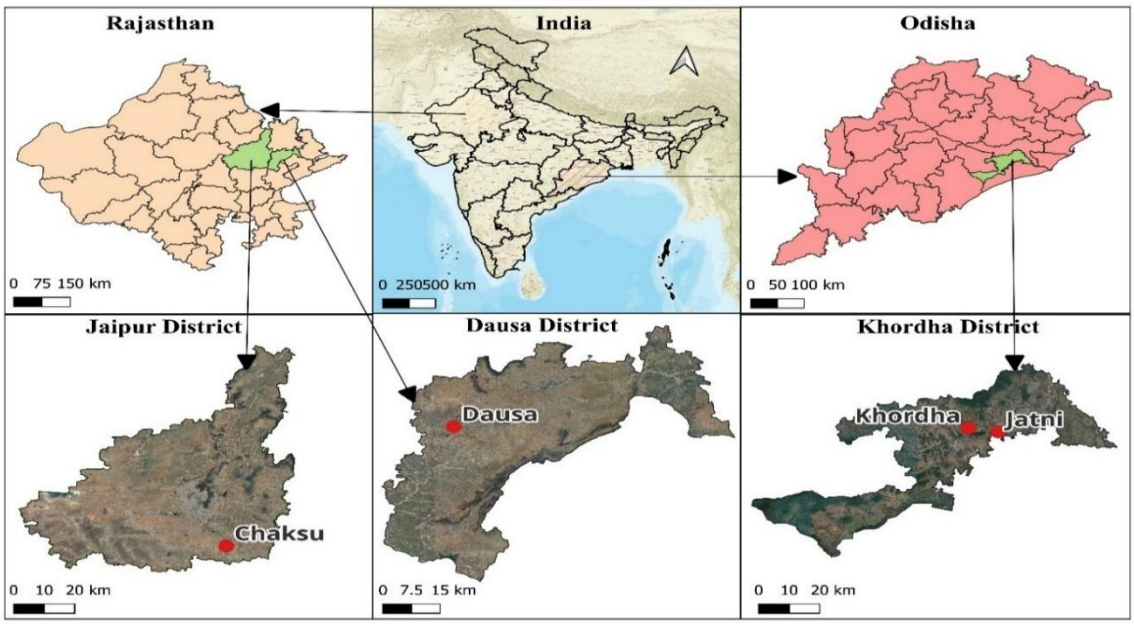


Figure 1: Location map of the project towns

Source: Prepared by Authors

The programme operates in four small towns:

- **Chaksu** (Rajasthan): A satellite town of Jaipur with an estimated population of 44,526 governed by Chaksu Nagar Palika across 35 wards[3]. The town underwent a significant administrative expansion in 2019, nearly tripling its geographic area from 13.3 to 30 sq. km without commensurate resource increase.
- **Dausa** (Rajasthan): A district headquarters in eastern Rajasthan with an estimated population of 1,26,349, governed by Dausa Nagar Parishad across 55 wards[4]. Classified as a Class-II city, Dausa serves as an important regional service centre along National Highway 21.
- **Jatni** (Odisha): A peri-urban satellite of Bhubaneswar with an estimated population of 63,920, governed by Jatni Municipality[5] across 23 wards (including 5 railway wards). Jatni functions as a major railway logistics hub on the East Coast Railway.
- **Khordha** (Odisha): The district headquarters of Khordha district, with an estimated population of 58,911, is governed by Khordha Municipality[6] across 22 wards. Khordha carries historical significance as the last stronghold of the Odisha Kingdom and functions as a regional administrative centre.

The programme is structured around three phases: (i) comprehensive baseline assessment to establish the current state of sanitation service delivery, governance, and community systems; (ii) co-designed CWIS interventions with municipal authorities, community institutions, and service providers; and (iii) monitoring, learning, and documentation to build evidence for scalable models of small-town sanitation improvement.

The present report constitutes the output of Phase I, the baseline assessment across all four towns.

1.3 Objectives of the Baseline Study

The baseline assessment was designed to serve multiple objectives within the broader CWIS programme:

[3] Estimated population (2025) is as per 'State sewage and waste water policy 2025' by Department of Local Self Government, Government of Rajasthan. Available at environment.rajasthan.gov.in
[4] Estimated population (2025) is as per 'State sewage and waste water policy 2025' by Department of Local Self Government, Government of Rajasthan
[5] Estimated population (2025) is based on the previous decadal growth rate, taken from District Census Handbook 2011, Khordha. Available at https://censusindia.gov.in-/nada/index.php/catalog/950)

[6] Same as above

Primary objectives:

1. To establish a comprehensive, evidence-based picture of sanitation service delivery across the entire value chain from containment through emptying, transport, treatment, and disposal/reuse in each of the four towns.
2. To assess the governance, institutional capacity, and accountability mechanisms that shape sanitation outcomes, including ULB capacity, inter-departmental coordination, elected representative engagement, and community participation.
3. To document the differential impacts of sanitation deficits on women, persons with disabilities, the elderly, sanitation workers, SC/ST communities, and other marginalised groups through a GEDSI (Gender Equality, Disability, and Social Inclusion) lens.
4. To quantify community awareness, willingness to pay, and existing coping mechanisms, providing a demand-side baseline against which the impact of CWIS interventions can be measured.
5. To identify actionable entry points for CWIS intervention in each town, grounded in both quantitative evidence and qualitative community realities.
6. Identify instances of positive deviance, households demonstrating best practice, as peer-learning anchors.

Cross-cutting objectives:

7. To assess climate vulnerability and its interaction with sanitation service delivery, documenting how extreme weather events (flooding, drought, cyclones, heatwaves) disrupt sanitation access and amplify existing vulnerabilities.
8. To produce SFD analyses for each town, providing a quantified, town-wide picture of excreta flow that can serve as both a diagnostic tool and an advocacy instrument.
9. To generate comparative evidence across four towns in two states, enabling identification of shared structural challenges and context-specific variations that can inform DPRs, community engagement strategies, policy advocacy, state-level and national-level policy recommendations.

1.4 Scope and Coverage

The baseline assessment covers the following scope across the four towns between January-February 2026:

Parameter	Chaksu	Dausa	Jatni	Khordha	Total
State	Rajasthan	Rajasthan	Odisha	Odisha	2 states

Estimated Population (2025)	44,526	1,26,349	63,920	58,911	2,93,706
No. of Wards	35	55	23 (18+5 railway)	22	135
Municipal Area (sq. km)	30	44	17.01	25.84	117
Household Survey (N)	100	100	100	100	400
FGDs Conducted	7	8	10	10	35
FGD Participants (approx.)	90	120	110	120	440
KIIs Conducted	5	5	4	4	18
SFD Report	Yes	Yes	Yes	Yes	4
Female Respondents (%)	78%	66%	69%	55%	67%

Table 1: Coverage of Baseline Assessment, 2026

Source: Baseline Survey, 2026 and SFD, 2026

The surveys were deliberately weighted towards women respondents (67% female overall), reflecting the GEDSI lens underpinning the research design and acknowledging women's central role in household sanitation management.

The Swachh Survekshan rankings (2024-2025)[7] of the four towns provides an external benchmark for sanitation performance:

Town	Category	State Rank	National Rank
Chaksu	Small (20,000–50,000)	59th in Rajasthan	757th nationally
Dausa	Medium (50,000–3 lakh)	72nd in Rajasthan	482nd nationally
Jatni	Medium (50,000–3 lakh)	14th in Odisha	124th nationally
Khordha	Small (20,000–50,000)	69th in Odisha	725th nationally

These rankings confirm the broad spectrum of performance across the four towns and validate the study's premise that small-town sanitation requires differentiated, context-specific approaches.

[7] Swachh Survekshan Survey, conducted annually by the Ministry of Housing and Urban Affairs under the Swachh Bharat Mission-Urban, provides city-level report cards that assess urban sanitation performance across service delivery, certification status, and citizen feedback. Available at https://ss2024.sbmurban.org-/#/home

2. Methodology

2.1 Study Design

The baseline assessment employs a mixed-methods research design, systematically triangulating quantitative household survey data with qualitative evidence from Focus Group Discussions (FGDs), institutional perspectives from Key Informant Interviews (KIIs), and independently verified sanitation flow data from SFD analyses. A deliberate search for within-group variation ensures the analysis identifies specific factors, awareness, ownership, peer influence, and institutional support that distinguish households demonstrating better practice from those that do not. This multi-source approach ensures that statistical patterns are grounded in lived realities, that community voices constitute primary evidence of service delivery outcomes, and that institutional analysis identifies actionable entry points for CWIS intervention.

The research design is anchored in two foundational principles:

Triangulation: Every quantitative finding is cross-referenced with qualitative evidence from at least one additional source. Where the household survey reveals a statistic (e.g., "54% have never desludged" in Chaksu), FGD voices explain the underlying reasons (unaffordability, inaccessibility, lack of awareness), KII perspectives illuminate the institutional constraints (insufficient vehicles, political interference, weak enforcement), and finally, what technical analysis (SFD) reveals. This ensures that numbers are not treated as self-explanatory but are interpreted through the lens of community experience and institutional context.

GEDSI lens: The Gender Equality, Disability, and Social Inclusion lens is not treated as a separate analytical category but is woven throughout, examining how gender, age, disability, caste, and poverty intersect to produce differentiated experiences of the same infrastructure deficit. The deliberate oversampling of women respondents (67% female across the four towns) reflects this commitment, as does the inclusion of dedicated FGDs with women's groups, sanitation workers, persons with disabilities, and marginalised communities.

The research was designed, conducted, and analysed entirely by the CFAR field teams across the two states.

2.2 Tools Used

Household Baseline Survey

A semi-structured questionnaire was administered to 100 households in each of the four towns (N=400 total) using Kobo Toolbox for data collection, aligned with the CWIS assessment framework. The survey instrument captured data across eight domains:

1. Household demographics and economics (income, expenditure, house type, location)
2. Water supply and access (source, duration, quality, cost, seasonal availability)
3. Sanitation and toilet infrastructure (type, condition, containment, discharge)
4. Hygiene practices and health outcomes (handwashing, menstrual hygiene, disease burden)
5. Drainage and solid waste management (type, condition, collection, disposal)
6. Climate vulnerability (hazard exposure, impact on services, coping mechanisms)
7. Community participation and governance perceptions (engagement, responsiveness, trust)
8. Willingness to pay for improved services

The sample in each town was purposively drawn from settlements identified as underserved or vulnerable, covering low-lying areas, highway/railway-adjacent communities, peri-urban expansions, and settlements with significant SC/ST or minority populations, followed by quota sampling.

Key Informant Interviews (KIIs)

A total of 18 KIIs were conducted across the four towns, targeting individuals who occupy critical positions in the sanitation governance landscape:

- **ULB officials:** SBM Nodal Officers, Sanitation Inspectors/Supervisors, and Sanitation Experts who manage day-to-day service delivery and programme implementation.
- **Elected representatives:** Ward Councillors and Vice Chairmen who navigate the intersection of community demands and institutional constraints.
- **Community leaders:** CMC members and settlement-level leaders who serve as intermediaries between communities and municipal systems.
- **FSTP operators and desludging service providers:** Those who operate the treatment infrastructure and manage the critical emptying-transport-treatment chain.

KIIs followed semi-structured interview guides tailored to each informant category, focusing on service delivery realities, governance processes, budget constraints, inter-departmental coordination, and community engagement mechanisms.

Focus Group Discussions (FGDs)

35 FGDs were conducted across the four towns, engaging approximately 410 community participants. The FGD design ensured representation across multiple axes of identity and vulnerability:

- **Women's groups:** Dedicated discussions with women from underserved settlements, capturing their specific experiences with water access, toilet safety, menstrual hygiene, and the disproportionate burden of coping with infrastructure deficits.
- **Men's groups:** Discussions with male community members, including elderly, daily-wage labourers, and persons with disabilities.
- **Mixed groups:** Cross-gender discussions in specific wards, designed to surface issues that emerge from collective deliberation.
- **Community Management Committee (CMC) groups:** Where CMCs existed, discussions focused on their functioning, challenges, and potential as platforms for CWIS engagement.
- **Sanitation worker groups:** Separate FGDs with both government and private/informal sanitation workers, covering working conditions, occupational safety, wages, caste-based discrimination, and the experience of performing stigmatised labour.

All FGDs were conducted in local languages (Hindi in Rajasthan; Odia in Odisha) by trained CFAR field staff. Participants included women, SHG members, persons with disabilities, elderly, adolescents, widows, transgender persons, daily-wage labourers, domestic workers, and other community segments.

2.3 Sampling Framework

The sampling strategy combines purposive settlement selection with systematic household coverage within selected settlements. Multi-stage purposive sampling to select wards and settlements, followed by quota sampling to select households, supplemented by four town-level SFD analyses and ULB institutional assessments. The approach was designed to capture the sanitation realities of the most underserved populations rather than to produce a statistically representative town-wide sample.

Settlement selection: In each town, settlements were identified through a combination of ULB records, ward-level reconnaissance, and consultations with community leaders and municipal staff. Selection prioritised settlements that were: (a) located in vulnerable

geographies (low-lying, flood-prone, highway/railway-adjacent, peri-urban); (b) characterised by significant concentrations of SC/ST, OBC, minority, or other marginalised communities; (c) identified by municipal officials or community informants as underserved in terms of water, sanitation, or drainage services; and (d) representative of the diverse settlement typologies present in each town (mohallas, dhanis, slums, peri-urban expansions, railway settlements).

Household selection within settlements: Within selected settlements, households were covered through systematic transect walks, ensuring spatial coverage across the settlement rather than clustering near entry points. We have employed quota sampling, selecting 100 households from each town for the household survey.

FGD participant selection: FGD groups were constituted through community mobilisation by CFAR field staff, with deliberate inclusion of diverse segments: persons with disabilities, elderly, adolescents, sanitation workers (both formal and informal), widows, and members of different caste and religious communities.

The study applied the **SFD (Shit Flow Diagram) tool** across all four towns to map excreta flows through the full sanitation value chain, from containment through emptying, transport, treatment, and final disposal. Developed by the SFD Promotion Initiative, the SFD Lite is a rapid-assessment version of the full SFD tool, suited to contexts where comprehensive secondary data is limited. For each town, SFD estimates were constructed using a combination of field observations, household survey data on containment type and desludging behaviour, ULB records, and KII testimony from municipal officials and FSTP operators. The output SFD diagram, which estimates the proportion of excreta safely versus unsafely managed at each node, provided a systems-level picture that household survey data alone cannot capture. Where the survey tells us how many households have unlined pits, the SFD translates that into what proportion of the town's total excreta is reaching the environment unsafely. This made it possible to compare towns on a common analytical frame and to identify where in the value chain each town's specific failures and investment priorities are concentrated.

2.4 Limitations of the Study

The baseline assessment has several limitations that should be considered when interpreting findings:

Sample size and representativeness: The household survey of 100 households in each town, while sufficient for identifying major patterns and trends, does not constitute a statistically representative sample of the entire town population. The purposive focus on underserved settlements means that findings likely overrepresent the severity of sanitation challenges compared to the town-wide average. This is by design; the study

aims to understand and address the worst-served populations, but readers should note that town-wide statistics may differ.

Seasonal timing: The baseline was conducted between January and February 2026, outside the monsoon season. While respondents were asked about monsoon impacts retrospectively, direct observation of monsoon-season sanitation conditions was not possible. This is particularly relevant for towns like Jatni and Khordha, where cyclonic flooding has historically devastated sanitation infrastructure.

Institutional access: KII access was limited to officials and representatives who were available and willing to participate. In some towns, senior municipal officials or key department heads were unavailable, which may result in gaps in the institutional analysis.

Ward-level granularity: While FGDs provided rich ward-level and settlement-level data, the household survey sample of 100 per town does not allow for statistically robust ward-level analysis. Ward-level findings are therefore primarily drawn from qualitative evidence and should be treated as indicative rather than definitive.

Comparative limitations: The four towns differ significantly in population size (from 58,911 in Khordha to 126,349 in Dausa), administrative structure (22 to 55 wards), and governance context (two different state policy environments). Cross-town comparisons are therefore made with appropriate caveats about contextual differences.

Despite these limitations, the triangulated mixed-methods design provides a robust and multi-layered evidence base. The combination of household-level quantitative data, community-level qualitative evidence, institutional perspectives, and independently produced SFD analyses ensures that findings are grounded in both numbers and lived realities.

3. Context of Small Town Sanitation Systems

3.1 Urbanisation Trends and Service Deficits

India is urbanising rapidly, yet the nature of this urbanisation remains fundamentally different from the large-city growth that dominates policy attention. According to the Census 2011, India had 7,935 towns, of which 4,041 were statutory towns governed by elected urban local bodies. Of these, nearly 3,900 had populations below one lakh. These small and medium towns, often classified as Census Towns, Nagar Palikas, or Nagar Parishads, collectively house approximately 100 million people, representing roughly 26% of India's total urban population as of 2011. Projections from the National Commission on Urbanisation and the McKinsey Global Institute suggest that this

segment will continue to grow rapidly, absorbing a significant share of the rural-to-urban transition in the decades ahead.

The urbanisation trajectory in small towns is qualitatively distinct from metropolitan growth. Rather than following planned master-plan development, small towns typically grow through the gradual absorption of peripheral villages into municipal limits through administrative reclassification, transport corridor-driven densification, and institutional proximity (government offices, markets, railways, educational institutions). This "administrative urbanisation", where formerly rural settlements are declared urban by decree rather than through organic transformation, is particularly relevant for the four towns in this study. Chaksu expanded from 25 to 35 wards in 2019, nearly tripling its geographic area without corresponding increases in staff, budget, or infrastructure. Dausa's administrative expansion to 55 wards created a similar mismatch between jurisdictional coverage and service delivery capacity. According to NITI Aayog's Report on Urban Planning Capacity (2021), over 70 per cent of small and medium towns lack Master Plans, resulting in unregulated settlement patterns and insufficient infrastructure planning[8].

The consequences for sanitation are profound. A 2021 analysis by the Centre for Policy Research (CPR) found that small towns across India shared a common set of infrastructure deficits. The finding reveals that urban sanitation systems are dominated by on-site solutions, with 64.87% of households dependent on septic tanks, 10.65% on improved pit latrines, 1.46% on unimproved pits, and only 6.92% connected to piped sewer systems, alongside 3.10% using other systems[9]. Absence of sewerage networks, reliance on on-site sanitation systems of varying and often substandard quality, limited or no faecal sludge management (FSM) infrastructure, irregular and incomplete solid waste management, and drainage systems that are absent, open, or non-functional. The 12th Five-Year Plan document had noted that only about 160 out of approximately 8,000 towns in India had any form of sewerage system, and the vast majority of those were in Class-I cities. A CPCB assessment (2022) highlights stark disparities in wastewater treatment capacity: while Class I cities face substantial treatment gaps, Class II towns experience an acute deficit, with nearly 95% of sewage remaining untreated, underscoring the systemic neglect of smaller urban centres[10].

The NITI Aayog's Composite Water Management Index (2019) highlighted that nearly 600 million Indians face high to extreme water stress, with small towns particularly

---

[8] 'Reforms in Urban Planning Capcity in India Report', NITI Aayog https://www.niti.gov.in/sites/default/files-/2021-09/UrbanPlanningCapacity-in-India-16092021.pdf

[9] CPR Report, 'Implementing Decentralized Solutions for Sanitation in Small Towns' 2020 https://cprindia-.org/wp-content/uploads/2022/09/Project-Nirmal_Implementing-Decentralized-Solutions-for- Sanitation-In-Small-Towns.pdf

[10] CPCB, 2022. Status of Sewage Treatment in India. https://cpcb.nic.in/status-of-stps/

vulnerable due to dependence on single water sources (often groundwater), limited storage capacity, and governance weaknesses[11]. Water scarcity and sanitation failure are not separate challenges; they are mutually reinforcing. When water supply is limited to minutes per day, as documented in Chaksu (10-15 minutes) and several wards of the other study towns, toilet use declines, hygiene practices deteriorate, and the entire sanitation value chain is compromised.

FSTP (Faecal Sludge Treatment Plant) coverage, while expanding under SBM-U 2.0 and AMRUT, remains inadequate. As of 2024, the Ministry of Housing and Urban Affairs reported that over 1,200 FSTPs had been sanctioned or were operational across India[12]. However, a 2023 review by the Centre for Science and Environment found that many FSTPs operated well below capacity, were poorly maintained, or had limited linkages with the desludging market that should feed them. This finding is directly corroborated by the present baseline: FSTP capacity utilisation in Dausa is just 26%, in Chaksu 32%, underscoring the gap between infrastructure existence and functional service delivery[13]. AMRUT 2.0 extends to all ULBs, but implementation capacity in small towns remains the binding constraint.

3.2 Policy Landscape

India's policy framework for urban sanitation has evolved significantly over the past two decades, yet its translation into ground-level outcomes in small towns remains inconsistent. The 2022 CAG Report on Urban Local Bodies confirms the governance context: devolution of municipal functions remains severely incomplete, ward committees have not been constituted in most ULBs, and development plans are systematically absent, the institutional root of the sanitation crisis documented in this baseline. The key policy instruments shaping the sanitation landscape in the four study towns include:

Swachh Bharat Mission- Urban (SBM-U) and SBM-U 2.0: Launched in 2014, SBM-U focused primarily on ODF (Open Defecation Free) achievement through individual household latrine (IHHL) construction and behaviour change communication. By 2019, all urban areas in India were declared ODF, a historically significant milestone. However, as this baseline documents, ODF certification and ground reality diverge significantly in small towns. 3-7% of the population continues to practice open defecation across the four study towns, and the quality of toilet construction and containment systems varies dramatically.

SBM-U 2.0 (launched 2021, extended to 2025-26) shifted focus to ODF+ and ODF++ outcomes, encompassing complete liquid waste management, wastewater treatment,

[11] https://www.nitiforstates.gov.in/policy-viewer?id=RNTNAE000249
[12] https://sbmurban.org/
[13] Based on the KII with the FSTP in charge of Chaksu and Dausa

and faecal sludge management. The mission introduced Faecal Sludge and Septage Management (FSSM) guidelines, mandating FSTPs and scheduled desludging protocols. However, implementation in small towns has lagged behind larger cities due to limited municipal capacity, budget constraints, and competing governance priorities. In the four study towns, FSSM remains largely unimplemented, desludging is demand-driven rather than scheduled, private operators dominate without regulation, and the connection between containment, emptying, and treatment remains broken.

AMRUT and AMRUT 2.0: The Atal Mission for Rejuvenation and Urban Transformation (AMRUT), launched in 2015, targeted 500 cities with investments in water supply, sewerage, drainage, and urban transport. AMRUT 2.0 (launched 2021) expanded the scope to all statutory towns and introduced a focus on achieving universal water supply coverage. However, AMRUT's allocation methodology has historically favoured larger cities, and small towns have received proportionally less investment per capita. In the study towns, AMRUT convergence opportunities exist but are underutilized, pipeline extensions are physically laid but not connected (as in Dausa's Isarda Dam pipeline), and treatment capacity investments are not linked with demand-side interventions.

National FSSM Policy and Advisory (2017, updated 2021): The Ministry of Housing and Urban Affairs issued the National Policy on Faecal Sludge and Septage Management in 2017, providing a framework for state-level adoption. The policy recommends mandatory scheduled desludging, regulation of private emptying operators, FSTP construction and operation standards, and reuse of treated sludge. Several states, including Odisha and Rajasthan, have issued corresponding state-level advisories or notifications. Odisha's Urban Sanitation Policy (2017) and its FSSM operational guidelines represent a relatively advanced policy framework, yet as the Jatni and Khordha baselines demonstrate, policy existence and ground implementation remain disconnected.

City-Wide Inclusive Sanitation (CWIS): The CWIS framework, which anchors the present research, represents a paradigm shift from infrastructure-focused sanitation programming to service-delivery-focused, equity-centred, and systems-oriented approaches. Developed through collaborative work by the Bill & Melinda Gates Foundation, the World Bank, Emory University, and other partners, CWIS is defined by five core principles: (i) everyone in the city benefits from safe sanitation; (ii) human waste is safely managed along the entire sanitation service chain; (iii) enabling environments are in place for sanitation service delivery; (iv) a range of sanitation solutions is available, including both networked and non-networked systems; and (v) services are funded and sustained. In India, CWIS has been piloted in select cities and is increasingly referenced in national policy discussions, but systematic implementation in small towns remains nascent.

15th Finance Commission Grants: The 15th Finance Commission tied a portion of urban grants to sanitation outcomes, including ODF+ achievement and solid waste processing. These grants are channelled through State Finance Commissions to ULBs and represent a potentially significant funding source for small-town sanitation. However, the conditionalities often require capacities (documentation, reporting, compliance verification) that small-town ULBs struggle to meet, creating a paradox where the towns most in need of funds are least equipped to access them.

Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013 (amended 2020): This legislation prohibits manual scavenging and mandates mechanical alternatives for sewer and septic tank cleaning. Despite the legal framework, manual scavenging persists in all four study towns, documented directly in FGDs with sanitation workers in Jatni and Khordha, and implied by the absence of mechanical alternatives in narrow-lane settlements across Chaksu and Dausa.

3.3 Characteristics of Small Towns

The four towns in this study exemplify the structural characteristics that define India's small-town sanitation challenge. These characteristics are not incidental but fundamental; they determine why sanitation outcomes in small towns require fundamentally different approaches from those designed for metropolitan centres.

Infrastructure deficits are the norm, not the exception. None of the four study towns has a sewerage network. All depend entirely on on-site sanitation systems, primarily single pits and tanks of varying construction quality. FSTPs exist in all four towns but operate below capacity, are disconnected from the desludging market, and face sustainability challenges. Drainage infrastructure is incomplete, predominantly open, and not designed to separate stormwater from domestic wastewater. Water supply is intermittent, with duration ranging from limited hours to as little as 10-15 minutes per day.

Governance structures are formal but under-resourced. All four towns have elected municipal bodies, ward councillors, designated sanitation officials, and formal planning processes. However, these structures operate under severe resource constraints: Khordha has 16 sanitation workers for 22 wards, Chaksu has 190 workers, but with 5 of 10 garbage trucks non-functional and zero cesspool vehicles of its own. The gap between administrative jurisdiction and operational capacity is particularly acute in recently expanded towns (Chaksu, Dausa), where wards added through boundary expansion receive administrative classification without corresponding service provision.

The informal sector dominates sanitation service delivery. In all four towns, private desludging operators handle the majority of emptying services, often the only interface between households and the sanitation system. These operators are largely

unregistered, unregulated, and disconnected from FSTPs. They charge variable and often unaffordable rates, have no incentive to discharge at treatment facilities (which may be distant or charge tipping fees), and operate without service records or accountability mechanisms. The formal municipal system has, in practice, ceded the most critical link in the sanitation chain to an informal market it does not monitor, regulate, or support.

Peri-urban zones are governance blind spots. The absorption of rural peripheries into municipal limits, through boundary expansion, administrative reclassification, or metropolitan spillover, creates zones that are urban in classification but rural in infrastructure and service delivery. Ward 26 in Chaksu, where residents walk 2.5 km for water and describe living "*100 years behind the rest of the town*," exemplifies this phenomenon. Railway wards in Jatni, governed by the Railway Board rather than the municipality, create jurisdictional ambiguities that leave residents without a clear governance interface for sanitation. These peri-urban zones are typically home to the most marginalised populations, especially migrant workers, landless communities, SC/ST settlements, who are simultaneously most in need of services and least connected to governance systems.

Land tenure insecurity undermines sanitation investment. Across the study towns, most dramatically in Khordha, where an estimated 40-60% of underserved households lack formal land titles. Insecurity of tenure functions as a "meta-barrier" that prevents households from constructing permanent toilets, accessing housing and sanitation schemes, investing in containment upgrades, or even being recognised as civic stakeholders deserving of services. National programmes (SBM-U, AMRUT, PMAY) typically require proof of land ownership as an eligibility criterion, systematically excluding the most vulnerable from the very programmes designed to serve them.

Climate vulnerability intersects directly with sanitation outcomes. All four towns experience significant climate hazards: monsoon flooding in Chaksu and Dausa, cyclonic events in Jatni and Khordha (Cyclone Fani in 2019 severely affected Jatni), and summer heatwaves and water scarcity across all towns. These climate events do not merely disrupt sanitation services; they destroy them. Flooding causes pit overflow, contaminates water sources, makes drains dysfunctional, blocks waste collection routes, forces reversion to open defecation, and creates acute public health crises. Yet none of the four towns has an institutional mechanism for monsoon or climate-emergency sanitation preparedness.

The human dimension (caste, gender, and dignity) is inseparable from the technical dimension. Sanitation work in India remains enmeshed in caste-based occupation, with workers facing social stigma, untouchability in daily interactions, wage exploitation, and health hazards. Women bear the disproportionate burden of water collection, toilet management, and the health consequences of poor sanitation. Persons with disabilities

and the elderly face physical access barriers that render technically "available" infrastructure practically unusable. Any sanitation intervention that addresses infrastructure without simultaneously addressing these human dimensions will fail to achieve equitable outcomes.

Part II: Comparative Analysis Across Towns

1. Demographic Overview

The four towns represent distinct demographic and socio-economic contexts within the small-town category. The household survey captured 400 respondents (100 per town), with a deliberate oversampling of women (67% overall) to reflect the GEDSI lens. The mean age of respondents ranges from 45.6 years in Chaksu to 50.2 years in Khordha, with the overall female mean age at 45 years and male at 52.6 years, reflecting women's greater availability and willingness to engage with sanitation surveys.

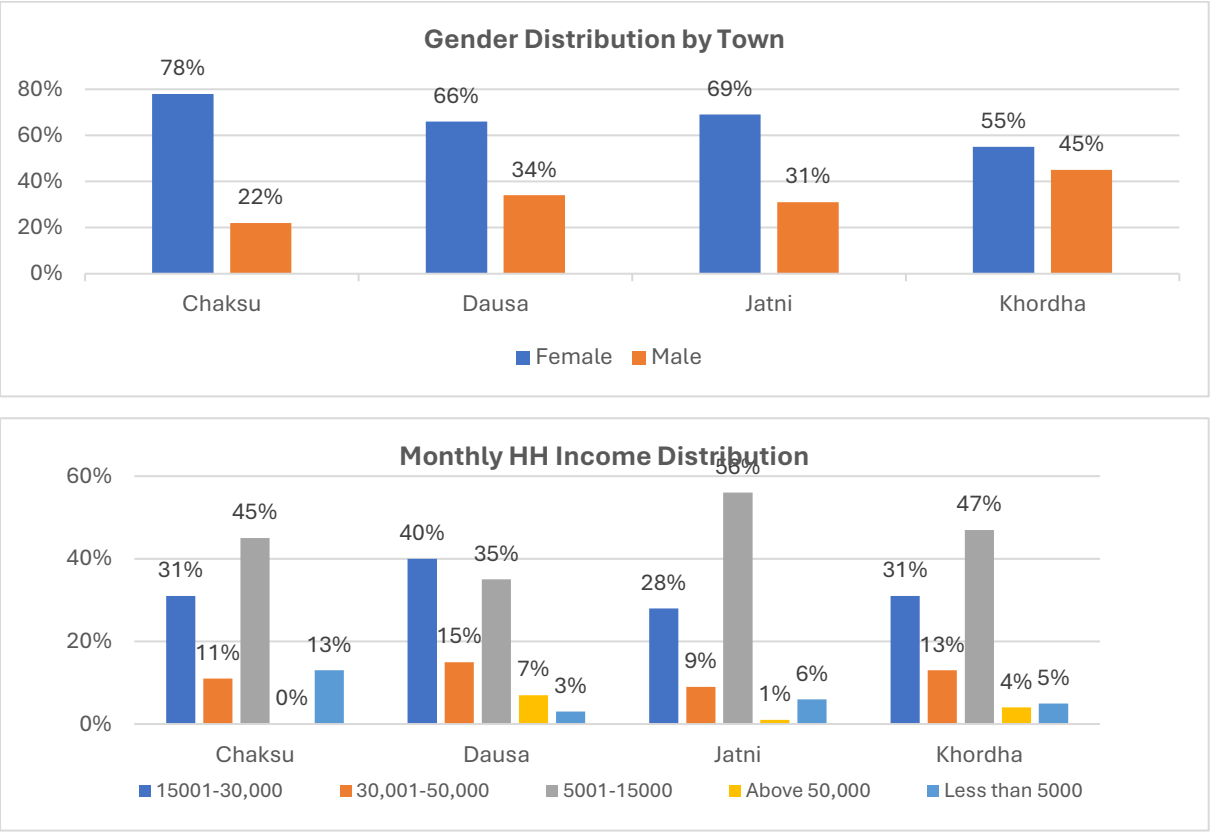


Figure 2: Demographic Distribution — Gender, Social Category, and Income Across Towns

Source: Baseline Survey, 2026

The social category distribution reveals important structural differences. Rajasthan towns show higher OBC representation (Chaksu and Dausa), while Odisha towns have significant General and SC/ST populations. This distribution directly influences sanitation access patterns, as the analysis in section 8 demonstrates.

2. Socio-Economic Profile

Income distribution is strikingly concentrated in the lower brackets: 60% of all surveyed households earn between ₹5,001 and ₹15,000 per month, with another 10% earning less than ₹5,000. Only 1% earn above ₹50,000. Monthly household expenditure follows a

similar pattern, with 60% spending ₹5,001-15,000. This economic profile is foundational for understanding sanitation outcomes: when families earn ₹5,000-15,000, the choice between an unlined pit (₹5,000-10,000) and a proper septic tank (₹50,000+) is not a choice at all.

Housing tenure shapes sanitation investment: the majority are owner-occupiers, but significant tenant populations exist in Dausa and Jatni. Tenants have systematically lower incentives for containment upgrades and desludging compliance, as the analysis confirms.

3. Vulnerability Profile

Disability prevalence stands at 9.75% across the survey (physical disability 6%, visual 2%, mental 1.25%, hearing 0.5%), significantly higher than census averages for urban India. Settlement locations reveal concentrated vulnerability: 47% of Chaksu respondents live in low-lying areas prone to flooding, 22% of Dausa respondents are on hilly terrain, and 19% of both Jatni and Khordha respondents live along highway/railway corridors, each location type creating distinct sanitation access challenges.

These structural characteristics of small towns, such as infrastructure scarcity, governance under-capacity, informal market dominance, peri-urban exclusion, tenure insecurity, climate vulnerability, and deeply entrenched social hierarchies, form the backdrop against which the town-specific findings presented in Parts I through IV of this report must be read. The CWIS intervention in these four towns must work within and against these structural realities, addressing not just the technical gaps in the sanitation chain but the governance, equity, and systemic failures that produce and reproduce them.

4. Water Access and Reliability

4.1 Sources, Sufficiency, and Seasonal Variability

Water access is the foundational determinant of sanitation outcomes. The survey reveals a stark state-level divide: 81% of Khordha households report water availability throughout the year, compared to just 16% in Chaksu, 15% in Dausa, and 14% in Jatni. Summer water scarcity affects 81-83% of households in the Rajasthan towns and 83% in Jatni, fundamentally undermining toilet use, hygiene, and sanitation maintenance during the hottest months.

Water treatment practices reveal a concerning pattern: while 72% of Chaksu households report treating water, 90.3% of those use cloth filtering, a method with negligible pathogen removal efficacy. In contrast, Khordha shows 56.4% RO/UV adoption among those who treat water, reflecting greater awareness and affordability. The mean monthly expenditure on water varies dramatically: ₹1,214 in Dausa, ₹566 in Chaksu, ₹280 in Jatni, and ₹133 in Khordha, with only 10% of households reporting zero expenditure.

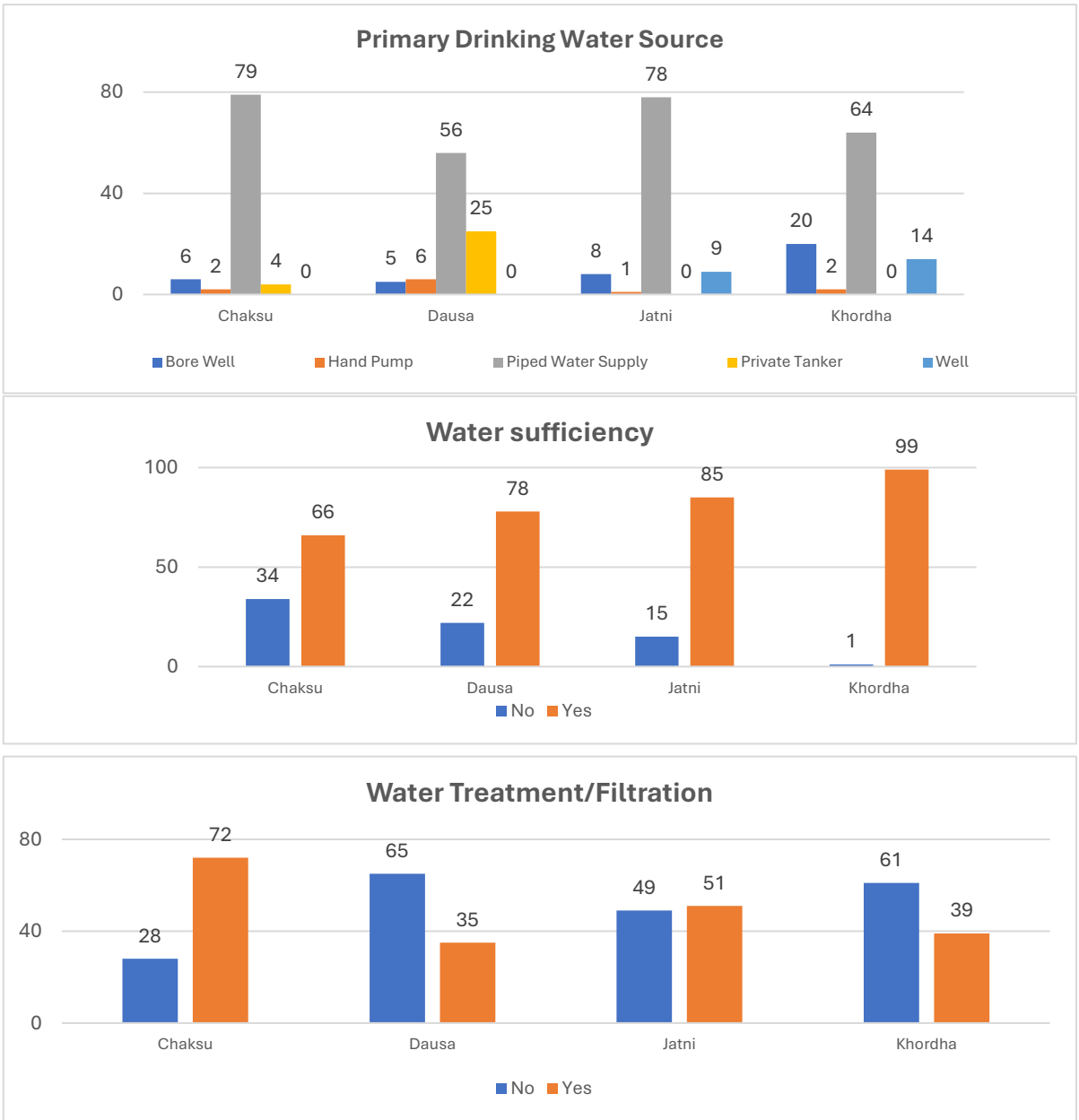


Figure 3: Water Access — Primary Source, Sufficiency, and Treatment Practices

Source: Baseline Survey, 2026

> *"Every day during the rainy season, we wake up and pray to God that no one dies, no one delivers, no one falls ill, and no relative comes to our house."* **— Kamli Bairwa, Ward 26, Chaksu**

4.2 Water Quality Perceptions

Dissatisfaction with water quality on colour is highest in Chaksu (35%) and Dausa (30%), while odour/taste dissatisfaction peaks at 47% in Chaksu. Khordha shows the highest satisfaction rates, though 53% report neutral satisfaction on colour, suggesting resigned acceptance rather than genuine quality. The Rajasthan-Odisha divide in water quality experience reflects different source quality, infrastructure age, and treatment capacity.

4.3 Climate-Water-Sanitation Nexus

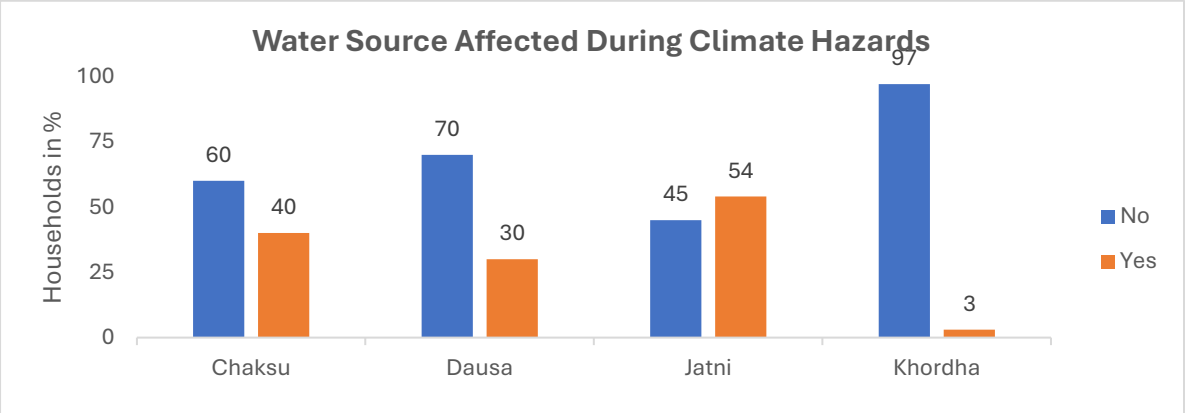


Figure 4: Water Source Affected During Climate Hazards by Town

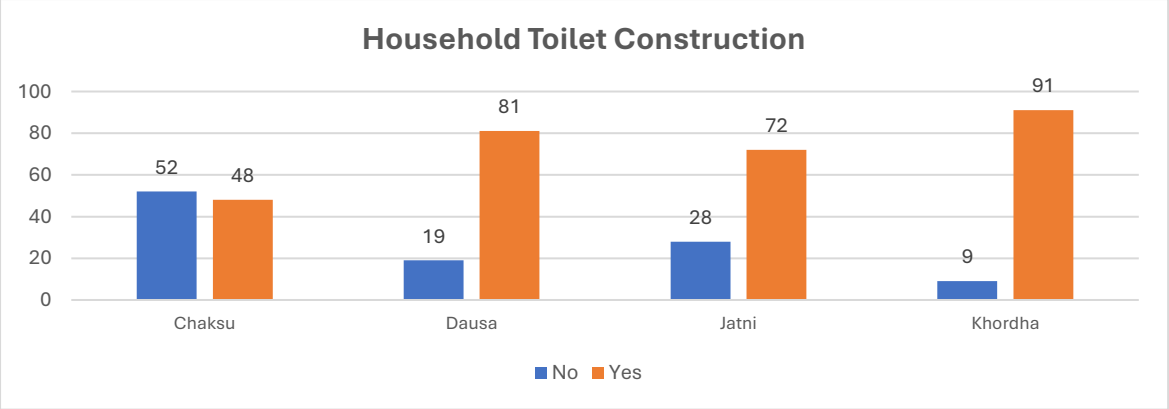
Source: Baseline Survey, 2026

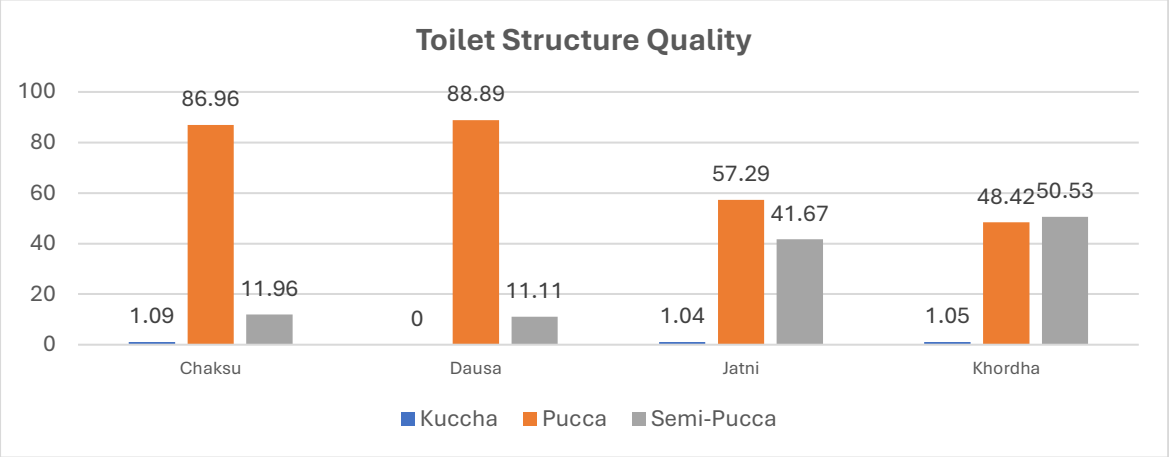
Climate hazards directly disrupt water access across all four towns, though the nature of vulnerability differs. In the Rajasthan towns, summer heat and drought create acute water scarcity. In the Odisha towns, cyclonic events and monsoon flooding contaminate water sources. The analysis (Chapter 8) demonstrates that households experiencing water scarcity are significantly more likely to report WASH-related diseases, establishing the water-health causal pathway.

5. Sanitation Access and Infrastructure

5.1 Toilet Construction and Functionality

Household toilet construction varies dramatically: 91% in Khordha, 81% in Dausa, 72% in Jatni, and only 48% in Chaksu. Chaksu's low figure reflects the absorption of rural *dhanis* into municipal limits in 2019, where communities remain functionally rural. The 27% national gap between toilet coverage and the ODF target underscores the unfinished agenda of SBM-U.





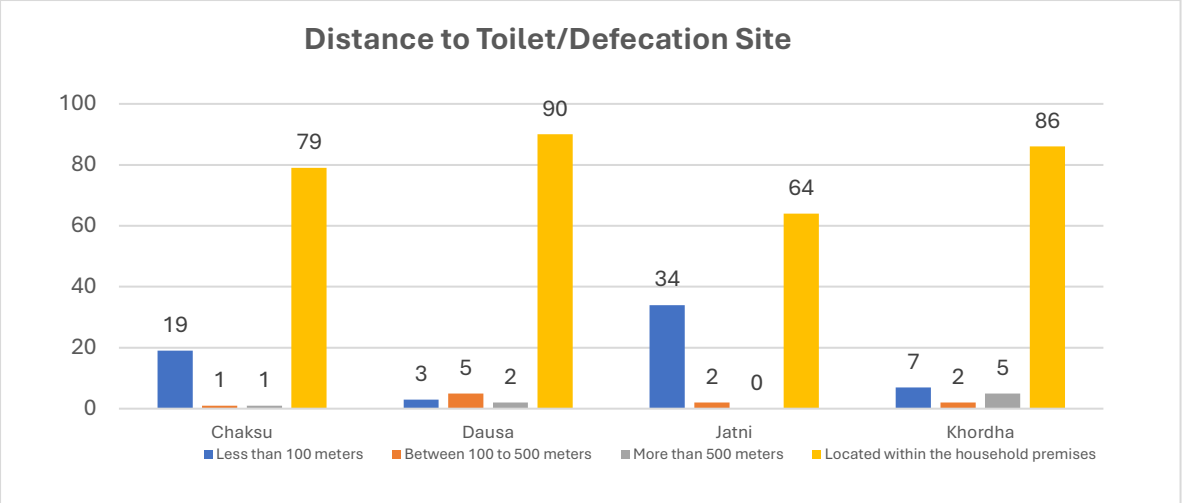


Figure 5: Sanitation Access — Toilet Construction, Structure Quality, and Distance

Source: Baseline Survey, 2026

Among those with toilets, functionality is near-universal (98-100%), but structural quality reveals deeper problems. Pucca structures range from 87% in Chaksu to just 48% in Khordha, where semi-pucca structures (50.5%) dominate. This reflects Khordha's land tenure crisis: an estimated 40-60% of underserved households lack formal land titles, making permanent construction a legal and financial risk. The toilet damage rate is consistent at 14-22% across towns.

5.2 Gender Dimensions of Toilet Access

While household toilet use data show marginal differences between men's and women's facility types at the aggregate level, the qualitative evidence reveals profound gendered dimensions. Women bear the primary responsibility for water collection, toilet cleaning, and managing children's sanitation needs. FGDs across all four towns consistently described women's vulnerability to harassment, inadequate lighting, and lack of privacy at community/public toilets, barriers that quantitative data alone cannot capture.

Women consistently report that safety and privacy are primary drivers of toilet use. In the Chaksu and Dausa FGDs, women reported deliberately limiting water intake to reduce toilet use frequency, particularly in the evening. This self-rationing has direct health consequences, such as urinary tract infections, dehydration, and compromised menstrual hygiene, which are invisible in coverage statistics.

The gender-disaggregated data on toilet facility type reveal that while household toilet use is broadly similar between men and women, open defecation and community toilet reliance show gendered patterns. In Chaksu, where toilet coverage is lowest (48%), both men and women are forced into community facilities or open defecation, but women face additional risks: fear of harassment (5%), inadequate lighting (1%), and absence of separate facilities (13%). FGD participants across wards consistently reported that women avoid using community toilets after dark, reverting to open defecation or suppressing urination, with documented health consequences including urinary tract infections and kidney problems.

> *"We cannot go to the community toilet at night. There are no lights, and men loiter there. So we hold it in, or we go before sunrise when it is still dark yet safer because others are also going."* — **Women's FGD, Ward 24, Chaksu**

> *"My son built the toilet after SBM. But the platform is too high and I cannot manage alone. At night I wake up and I think: I cannot go. So, I wait. By morning I am in pain. No one thought about my age when they built it."* — **Elderly woman, Ward 16, Khordha**

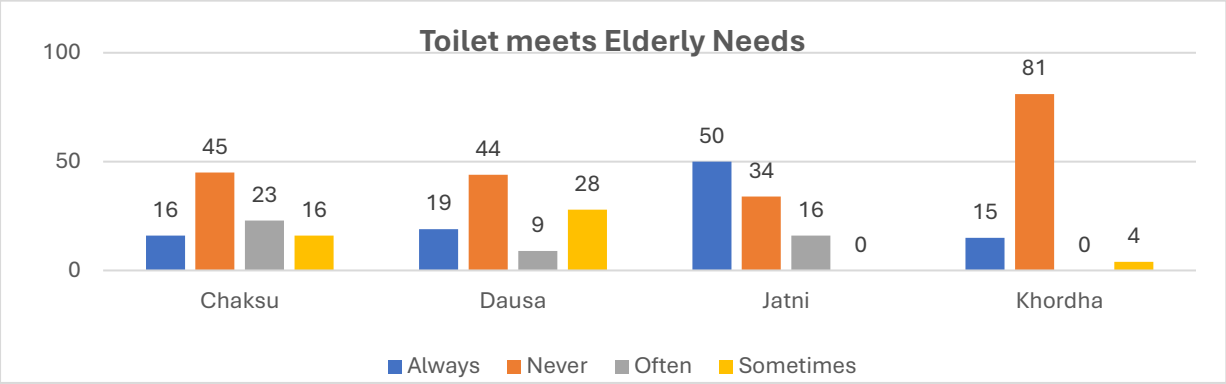
In Jatni, FGDs with women's groups from railway wards described a compounding vulnerability: railway-adjacent settlements face jurisdictional ambiguity (Railway Board vs. Municipality), meaning neither authority takes responsibility for toilet maintenance, lighting, or safety. Women in these wards described walking 200-400 metres to community toilets through unlit paths alongside active railway tracks. The 10% reporting "lack of privacy" in Jatni understates the lived experience described in qualitative evidence.

5.3 Accessibility for Vulnerable Groups

Barrier	Chaksu	Dausa	Jatni	Khordha
Toilet not accessible for PwD	86%	39%	69%	42%
Toilet not elderly-friendly	75%	19%	49%	13%
Inadequate lighting at night	1%	8%	9%	9%
Unsafe or slippery paths	9%	11%	10%	1%
Lack of separate facilities	13%	9%	8%	0%
Fear of harassment/safety	5%	10%	0%	0%
Poor cleanliness/bad smell	1%	11%	13%	0%
Lack of water near toilet	13%	11%	9%	1%
No barriers reported	4%	39%	22%	42%

Table 2: Barriers to Toilet Access for Vulnerable Groups (Source: Baseline Survey, 2026)

The PwD inaccessibility crisis is most acute in Chaksu (86%) and Jatni (69%), where the combination of semi-pucca structures, absence of handrails, high thresholds, and no ramps renders toilets physically unusable for persons with mobility limitations. In Khordha, the 42% figure masks deeper exclusion: 81% of respondents say toilets "never" meet elderly needs, the highest among all four towns.



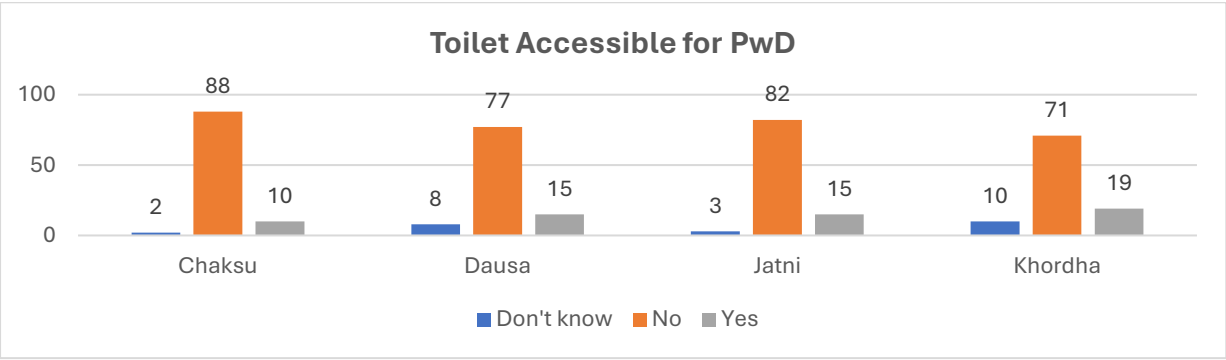


Figure 6: Toilet Accessibility for Elderly and Persons with Disabilities

Source: Baseline Survey, 2026

The elderly accessibility data reveals a critical distinction between towns. In Jatni, 50% report toilets "always" meet elderly needs, the highest among the four towns, likely reflecting the septic tank adoption (52%) that allows more substantial toilet construction. In contrast, Khordha's 81% "never meets elderly needs" is the starkest exclusion figure in the dataset, correlating with the 50.5% semi-pucca structures that typically lack the grab bars, adequate width, and non-slip flooring that elderly users would require.

The qualitative evidence deepens this picture. FGDs with elderly participants in Dausa described a daily negotiation between physical need and infrastructure reality: "We need someone to hold us while we use the toilet, but the space is so small that another person cannot stand inside." In Chaksu, where 75% report toilets are not elderly-friendly, the connection to open defecation persistence is direct: elderly persons who cannot use household toilets contribute to the residual OD rates despite SBM certification.

5.4 Safety Perceptions Across Towns

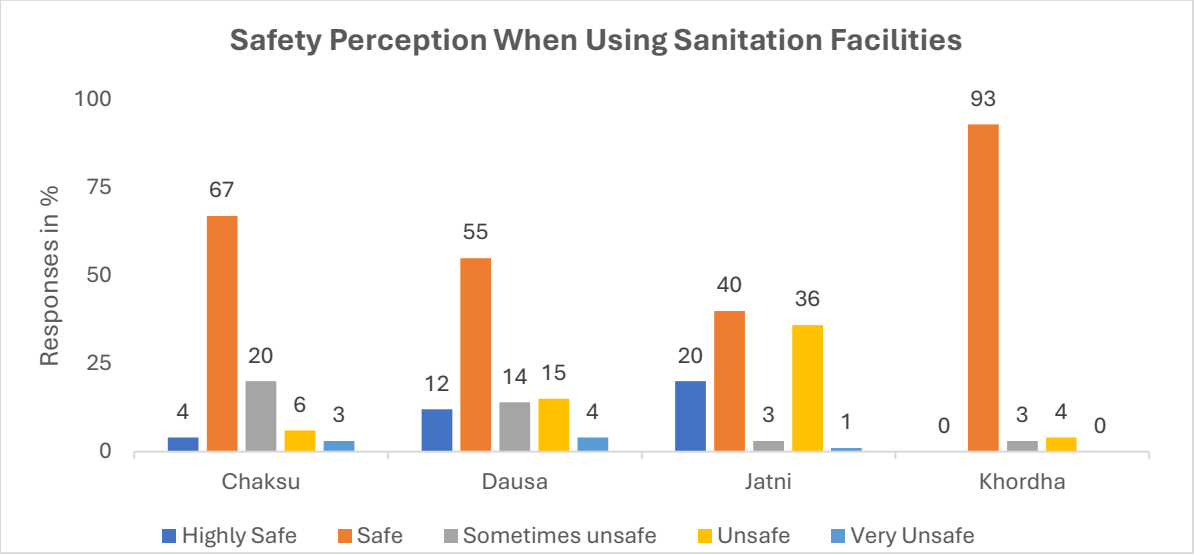


Figure 7: Safety Perception When Using Sanitation Facilities

Source: Baseline Survey, 2026

Safety perceptions when using household toilets and other sanitation facilities vary significantly across towns, reflecting both infrastructure quality and broader community security. The data shows that a majority across towns feel broadly safe in daytime use of household toilets, but safety concerns escalate for community/public facilities, nighttime use, and during monsoon seasons when flooding renders toilets non-functional and forces alternative arrangements.

6. Sanitation Value Chain Assessment

6.1 Containment Systems

Containment is the foundational failure of the sanitation chain across all four towns. The dominance of unsafe containment, including unlined single pits, open-bottom tanks, and no-containment systems means that the majority of excreta never enter a safe management pathway.

Containment Type	Chaksu	Dausa	Jatni	Khordha
Unlined Single Pit	55.4%	62.2%	14.6%	2.1%
Lined Single Pit	37.0%	15.6%	25.0%	42.7%
Lined/Sealed Tanks	3.3%	1.1%	2.1%	53.1%
Septic Tank with Soak Pit	0%	1.1%	26.0%	1.0%
Septic Tank without Soak Pit	0%	0%	26.0%	0%
Twin Pit	0%	0%	2.1%	0%
No Containment	3.3%	20.0%	3.1%	0%

Table 1: Containment System Distribution (% of households with toilets)

Source: Baseline Survey, 2026

The Rajasthan-Odisha divide is pronounced. Chaksu and Dausa are dominated by unlined pits (55% and 62% respectively), which function as conduits for groundwater contamination rather than genuine containment. Dausa additionally has 20% of households with no containment at all, toilet pipes discharging directly into open drains. In contrast, Khordha shows 53% lined/sealed tanks and 43% lined pits, reflecting a higher infrastructure baseline. Jatni presents the most diverse containment profile, with significant septic tank adoption (52% combined).

> *"In mohallas such as Nagori Mohalla, Nala Mohalla, Shekhan Mohalla, and Deshwali Mohalla, toilet waste is released directly into open drains, creating bad smells, spreading disease, and polluting the environment."* — **SBM Nodal Officer, Dausa**

a. Containment Dimensions and Chamber Design

The physical dimensions of containment systems reveal further concerns. Average pit/tank depth ranges from 7.6 feet in Jatni to 14.7 feet in Chaksu; breadth from 2.4 feet (Chaksu) to 6.2 feet (Khordha); and length from 2.2 feet (Dausa) to 7.6 feet (Khordha). A

critical finding: 76% of households across all towns report single-chamber containment systems. Single-chamber pits/tanks lack the sedimentation and biological treatment capacity of dual-chamber designs, meaning that even "lined" systems may not achieve adequate treatment.

Dimension	Chaksu	Dausa	Jatni	Khordha	Overall
Avg Depth (ft)	14.7	9.0	7.6	9.1	10.1
Avg Breadth (ft)	2.4	3.9	5.0	6.2	4.4
Avg Length (ft)	2.5	2.2	4.5	7.6	4.1

Table 2: Average Containment System Dimensions by Town

Source: Baseline Survey, 2026

b. Flush Systems and Water Use

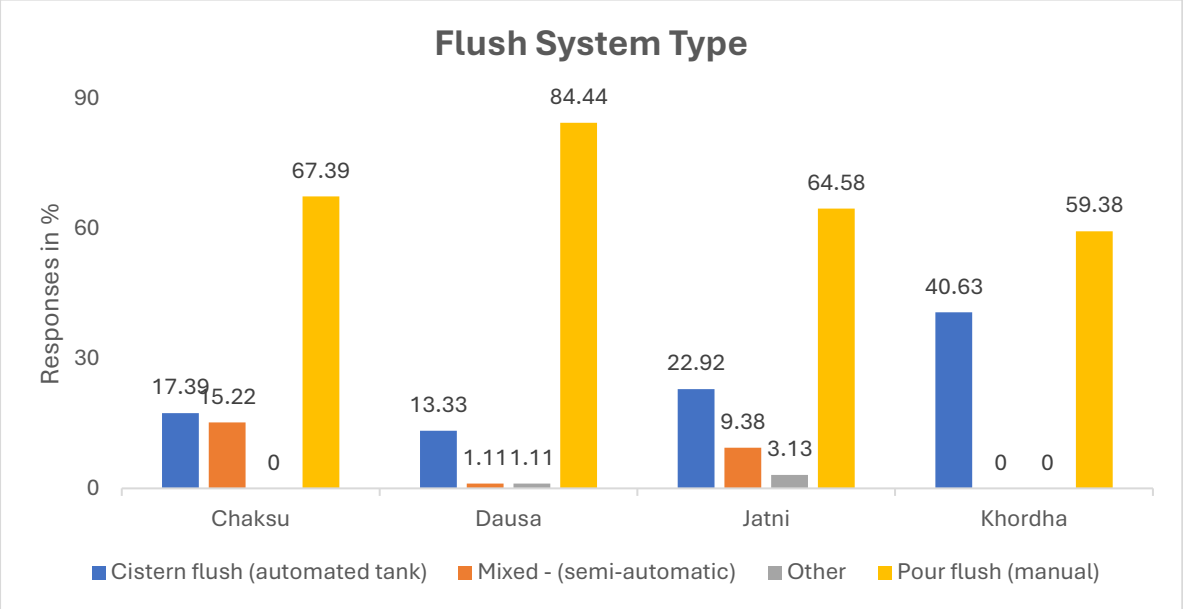


Figure 8: Flush System Type by Town

Source: Baseline Survey, 2026

Pour-flush (manual) systems dominate across all towns (59-84%), with Dausa showing the highest reliance at 84%. Cistern flush (automated) adoption varies from 13% in Dausa to 41% in Khordha, correlating with income levels and water availability. The prevalence of manual flush systems has implications for water consumption patterns and hygiene compliance: pour-flush requires active effort and water availability at each use, creating a barrier during water-scarce periods and for elderly or disabled users.

6.2 Emptying (Desludging)

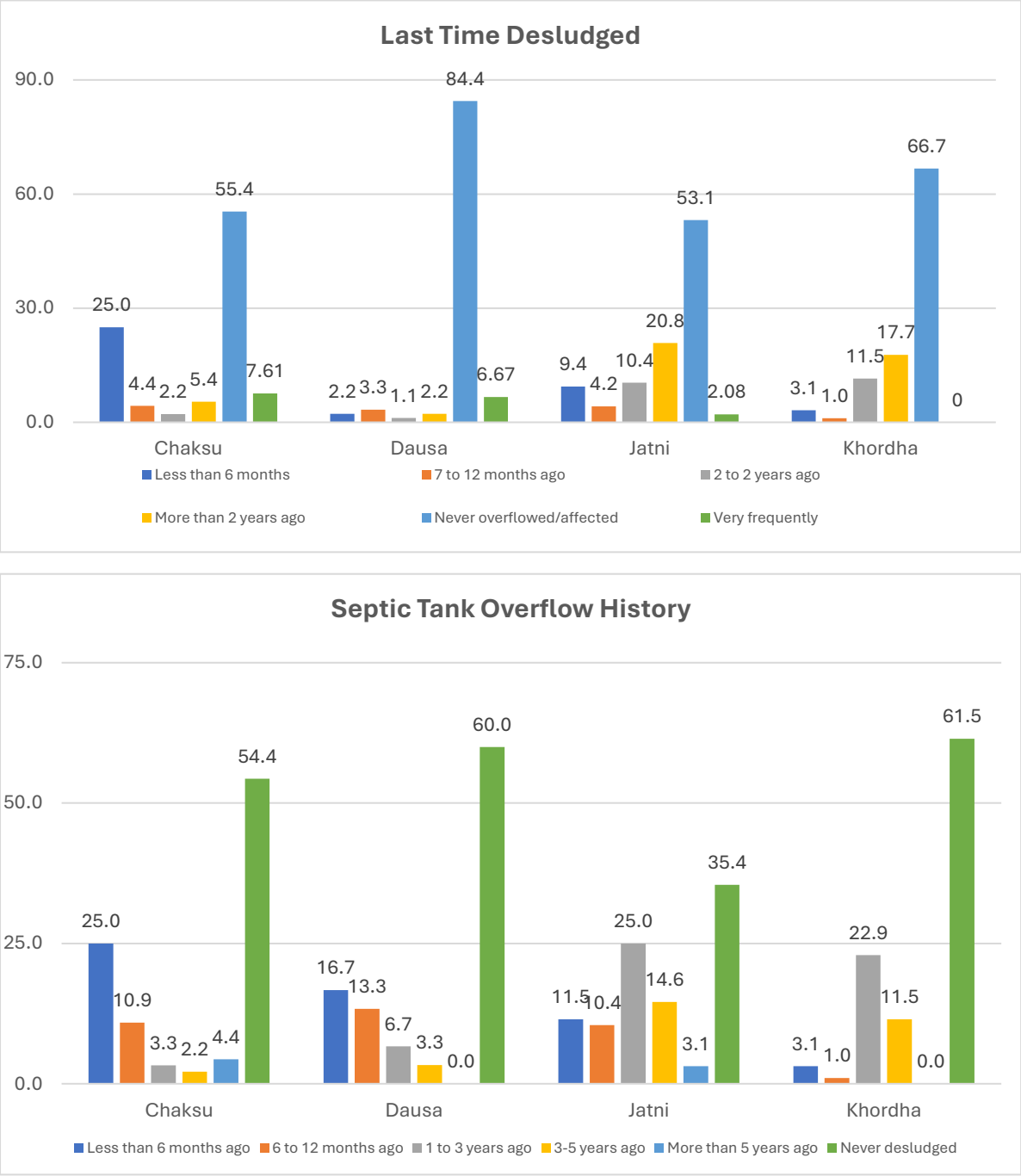


Figure 9: Desludging Practices and Overflow History

Source: Baseline Survey, 2026

The desludging picture is uniformly alarming. Never desludged rates range from 34% in Jatni to 61% in Khordha, with Chaksu at 54% and Dausa at 60%. The paradox of Khordha, the highest toilet coverage (91%) but also the highest never-desludged rate (61%) reveals that infrastructure without service chain completion creates a false sense of progress. Among those who have desludged, 86% rely on private operators across towns, operating without service records, GPS tracking, price regulation, or FSTP compliance.

The economics explain the neglect: desludging costs ₹800-3,000 per trip, representing 5-25% of monthly income for the lowest income quartile. For households earning less than ₹5,000/month, desludging is simply unaffordable. The analysis confirms a statistically significant relationship between income and desludging behaviour.

6.3 SFD Summary: The Full Picture

The SFD analyses provide the definitive assessment: Chaksu safely manages only 28% of excreta (72% enters the environment untreated); Dausa 55%; Khordha 68%; and Jatni leads at 75%, but still leaves one-quarter unsafely managed. FSTP utilisation is alarmingly low, 26% in Dausa (8 KLD of 31 KLD design capacity) and 32% in Chaksu because private operators bypass treatment facilities entirely.

6.4 Transport, Treatment, and Disposal

Across all four towns, the transport-treatment-disposal chain is broken. Private desludging operators dump illegally (an estimated 60–75% of septage never reaches FSTPs in Chaksu). Untreated wastewater discharges into rivers: the Chandel River and Dund River in Chaksu, the Surya River in Dausa, and the Daya River in Jatni. No town has a functional wastewater treatment system beyond the FSTP, and FSTP capacity is grossly underutilised.

6.5 Positive Deviance: Proof That Change Is Possible

Within the overall picture of containment failure, a critical finding emerges: a small but significant proportion of households in each town already demonstrate best practice, including fully lined containment combined with desludging within the last five years. This is the most actionable positive finding in the baseline.

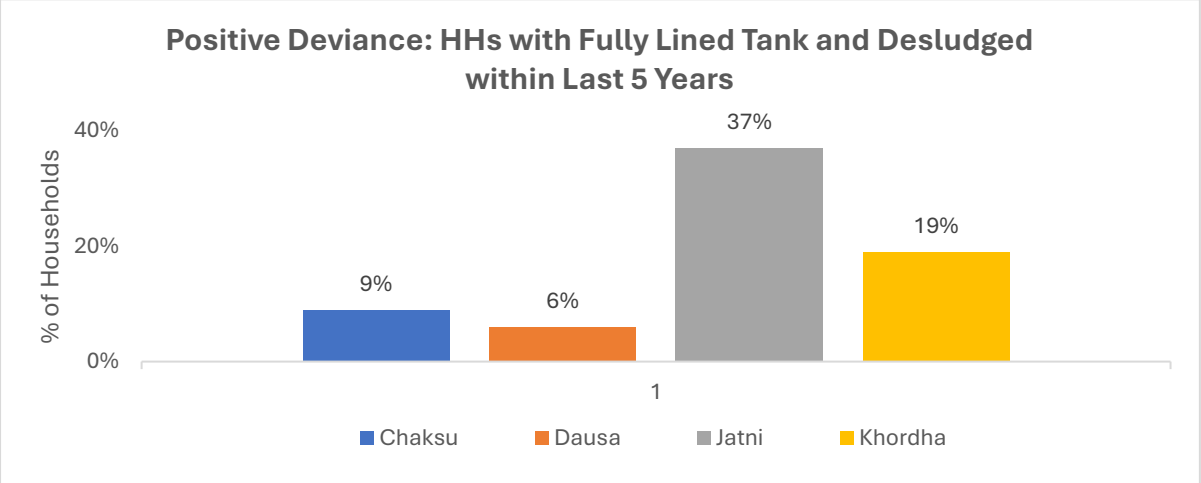


Figure 10: Best-Practice Households (Fully Lined Containment + Desludged within 5 Years)

Source: Baseline Survey, 2026

SIGNAL OF CHANGE: Best-practice households represent 37% of the households surveyed in Jatni, 19% in Khordha, 9% in Chaksu, and 6% in Dausa. In Jatni, more than one in three households is already operating within a safe containment pathway. Even in Dausa, the most challenged context, 6 in 100 households demonstrate that change is achievable under current conditions. These are not anomalies; they are proof points, and they are the project's primary peer-learning entry point.

> *"We upgraded the tank last year. My neighbour saw it and asked who did the work. Now he is doing the same. If the project helps us understand what is good, we can tell others. We do not need officials to come every time, we can speak to each other."* **— Homeowner, Jatni Ward 8, FGD, 2026**

7. Drainage, Solid Waste, Hygiene, and Health

7.1 Drainage Infrastructure

Drainage infrastructure is absent or dysfunctional across the study towns. Pucca drainage coverage ranges from 71% in Dausa to just 28% in Khordha, with 46% of Khordha categorised as 'Others' (primarily open drains or no drains). Kuccha drainage persists in 9% of Chaksu and Dausa. Waterlogging affects 42% of Jatni (the highest), 28% in Chaksu, 27% in Dausa, and 22% in Khordha.

Jatni presents the drainage paradox: it has both the highest closed-drain proportion (31%) and the highest waterlogging rate (42%). This reveals that infrastructure quality, not just coverage, determines flooding outcomes. Closed drains exist but are inadequately sized or blocked. The investment priority is better-engineered drainage, not simply more drainage. This is a DPR-level finding for Jatni's AMRUT 2.0 submission.

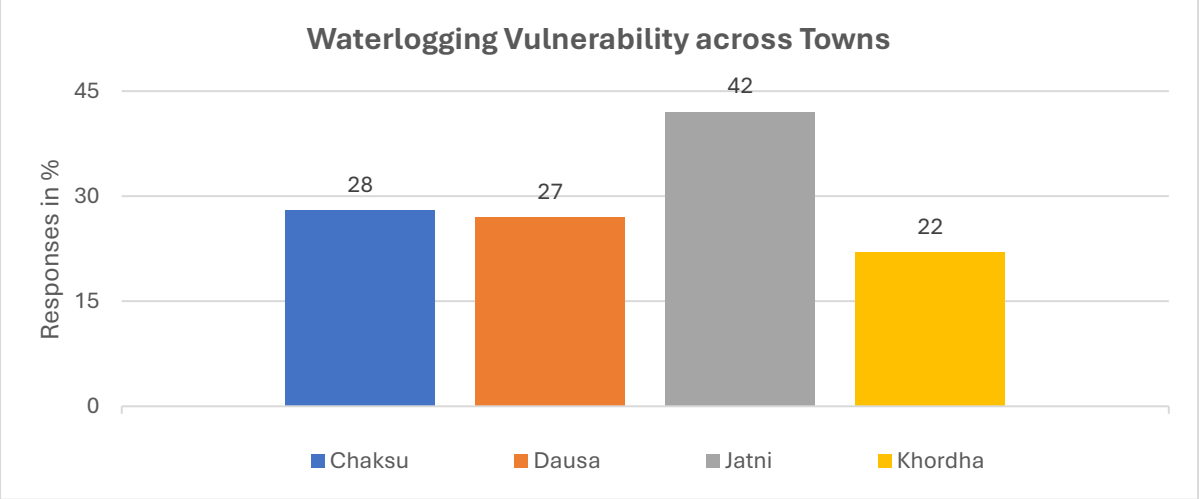


Figure 11: Waterlogging Vulnerability | Source: Baseline Survey, 2026

When asked whether their locality's drainage is prepared for extreme weather, 61–69% across towns said "No". Post-disaster drainage improvement is virtually absent: across towns, 86% report no improvements after natural disasters.

7.2 Solid Waste Management

Indicator	Chaksu	Dausa	Jatni	Khordha
Segregate Always	14%	23%	64%	71%
No Segregation	47%	56%	16%	17%
Dumping Centre Nearby	31%	44%	65%	19%
No Dumping Centre	66%	56%	29%	71%

Table 3: Solid Waste Management Indicators

Source: Baseline Survey, 2026

The Odisha towns significantly outperform Rajasthan on waste segregation: 64-71% always segregate in Jatni/Khordha vs. 14-23% in Chaksu/Dausa. However, the absence of dumping centres near 66-71% of respondents in Chaksu and Khordha means that segregated waste has no compliant destination, undermining the behavioural gains.

7.3 Hygiene Practices and Health Outcomes

Soap/sanitizer availability at handwashing stations is highest in Khordha (99% always available) and lowest in Chaksu (65%). Disease incidence in the past 12 months is alarmingly high across all towns: 95-99% of households report at least one disease episode, with mosquito-borne fever (dengue/malaria/chikungunya) as the dominant disease (71-88%), followed by diarrhoea (3-74% with Chaksu as the outlier at 74%).

The disease-type profile reveals important town-specific patterns. Chaksu presents the most severe waterborne disease burden: diarrhoea affects 73.7% of households (compared to just 3.1% in Khordha), correlating directly with the town's 55% unlined pit dominance and 4–5 foot water table. Skin infections follow the same gradient: 15.2% in Chaksu, 17.9% in Dausa, 8% in Jatni, and 0% in Khordha, tracking the containment quality gradient. Worm infection prevalence (9.1% in Chaksu vs. 1.1% in Dausa) is an indicator of soil-transmitted helminth risk from leaching containment.

Mosquito-borne fever, by contrast, affects all towns at high rates (71-88%), reflecting the universal drainage failure: open drains filled with stagnant water create breeding grounds regardless of containment quality. This finding has intervention implications: while containment upgrading will reduce waterborne disease, mosquito-borne disease requires simultaneous drainage improvement.

a. Health Expenditure Burden

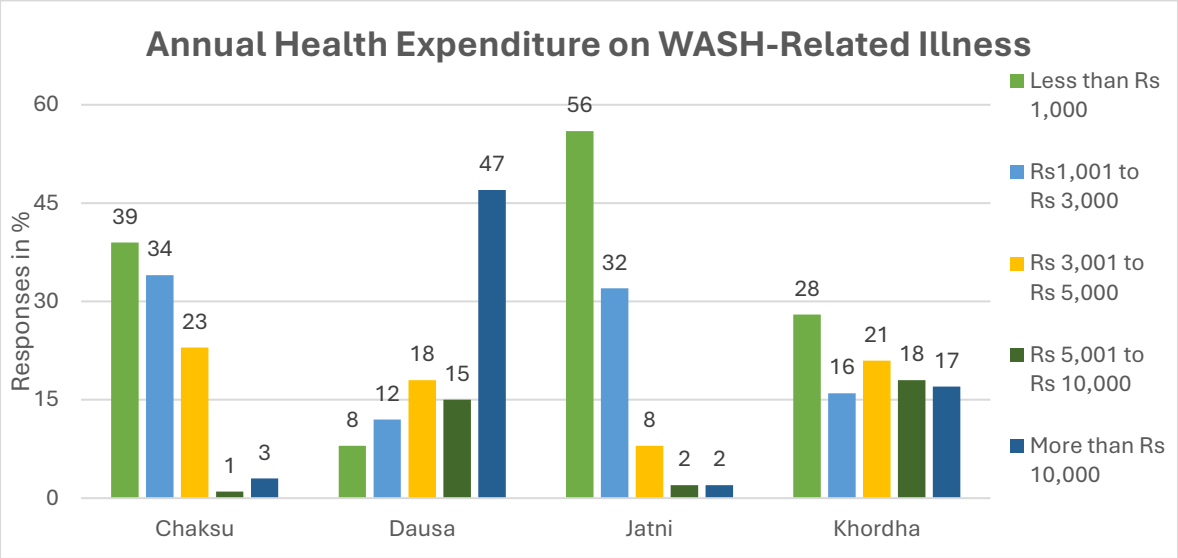


Figure 12: Annual Health Expenditure on WASH-Related Illness by Town

Source: Baseline Survey, 2026

The disease-expenditure burden compounds poverty: 47% of Dausa households spend more than ₹10,000/year on treatment for WASH-related illnesses, while 56% of Jatni households spend less than ₹1,000, reflecting either lower disease severity or, more likely, inability to afford treatment. In Chaksu, despite the highest diarrhoea prevalence, 39% spend less than ₹1,000, suggesting that many households either cannot access healthcare or resort to home remedies rather than formal treatment. The health expenditure data represents the "hidden cost" of sanitation failure: an investment in containment upgrading and drainage improvement would yield direct savings in household health expenditure.

b. Disease-Caste Intersection

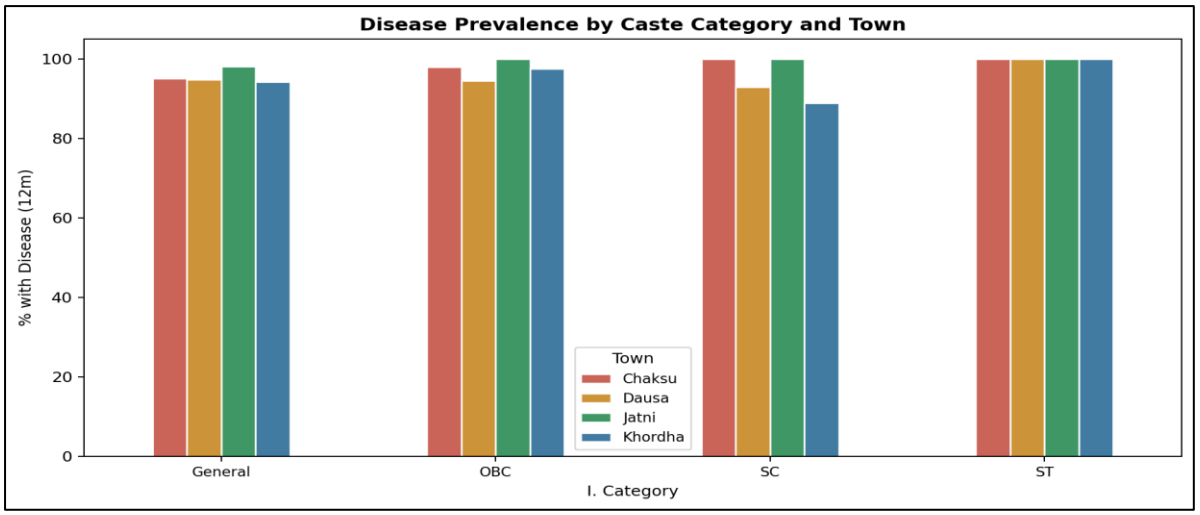


Figure 13: Disease Prevalence by Caste Category and Town | Source: Baseline Survey, 2026

The analysis of caste, city, and disease prevalence reveals that while overall disease rates are high across all categories, SC/ST and OBC communities in the Rajasthan towns show marginally higher vulnerability. This is not surprising given the correlation between caste, income, settlement location (low-lying, canal-adjacent), and containment quality. The near-universal disease burden (95-99%) across all towns and categories indicates systemic environmental contamination rather than individual-level risk factors, confirming the need for town-wide infrastructure interventions rather than targeted behavioural programmes alone.

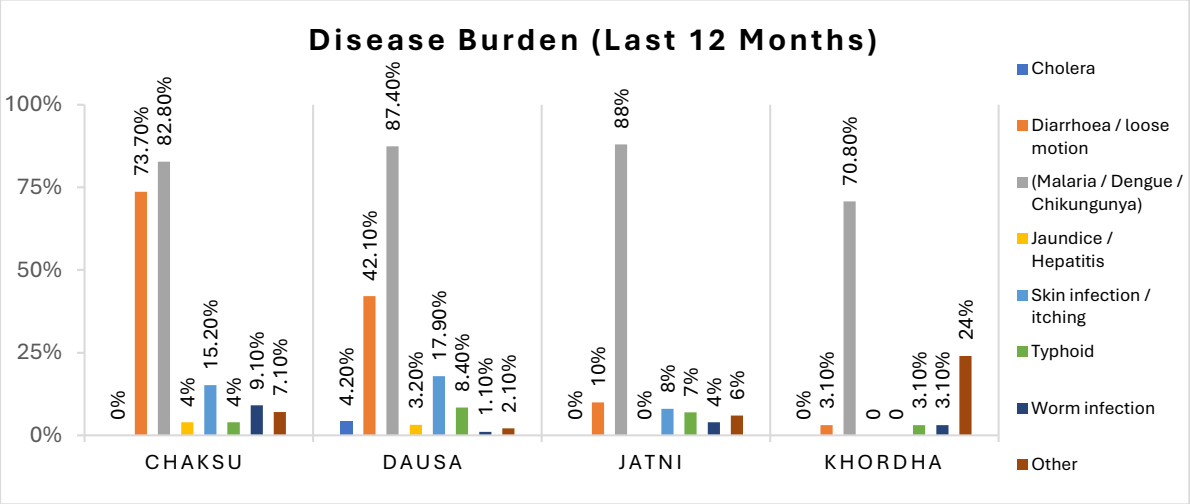


Figure 14: Disease Burden (Last 12 Months) | Source: Baseline Survey, 2026

Soap availability is high in Odisha towns (Khordha 99%, Jatni 88%) but the disease rate remains near-universal, confirming that hygiene behaviour alone cannot overcome unsafe containment and drainage.

7.4 Menstrual Hygiene Management

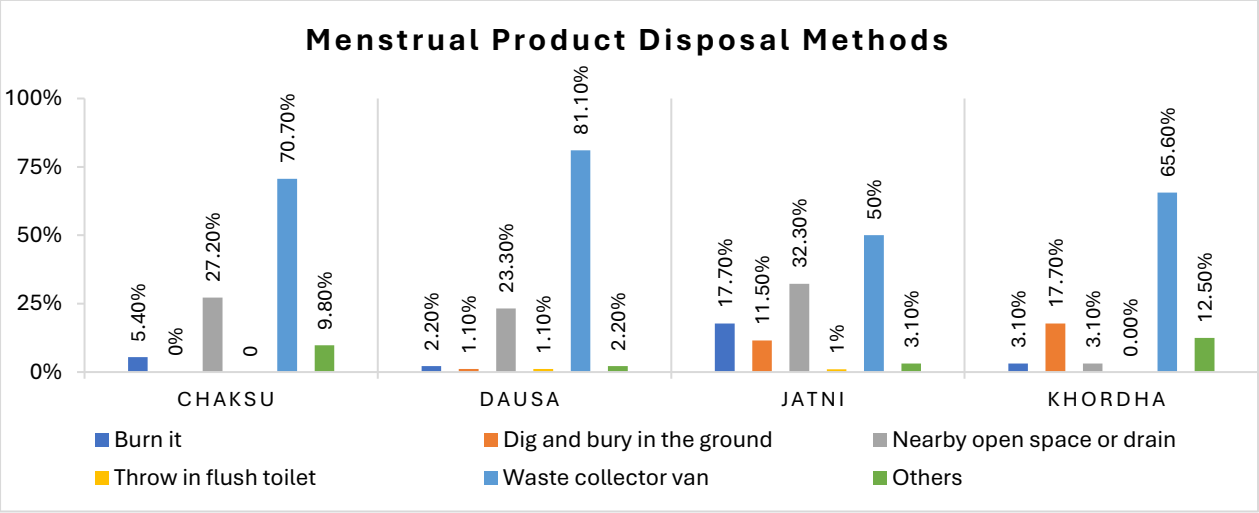


Figure 15: Menstrual Product Disposal Methods by Town

Source: Baseline Survey, 2026

Menstrual product disposal reveals significant environmental and health risks. Disposal via open space or drain ranges from 27% in Chaksu to 32% in Jatni, with waste collector vans as the primary disposal route (50-81%). Dig-and-bury practices are highest in Khordha (18%) and Jatni (12%). The absence of dedicated menstrual waste disposal infrastructure across all towns places an additional burden on women and creates public health risks.

The Rajasthan towns show higher reliance on waste collector vans for menstrual product disposal (71-81%), while the Odisha towns display more varied disposal patterns. Jatni's 32% disposal into open spaces/drains is the highest among the four towns and correlates with the 42% of settlements lacking any drainage. Disposed menstrual products accumulate in waterlogged areas during the monsoon, creating visible public health hazards. FGD participants from women's groups in Jatni specifically raised menstrual waste management as an unaddressed need, requesting dedicated disposal bins at community toilets and awareness campaigns targeting both men and women.

> *"Nobody talks about this. The municipality collects garbage but there is no separate arrangement for these items. We wrap them and throw them in the drain because there is no other option. During monsoon, they float everywhere."* **— Women's FGD participant, Jatni**

7.5 Facility Maintenance and Sanitation Campaign Effectiveness

Maintenance of sanitation facilities shows dramatic variation: 94% of Khordha respondents describe facilities as "Always clean and well maintained" compared to just 13% in Chaksu, where 68% describe them as "Frequently cleaned" and 8% as "Infrequently cleaned." This maintenance gap directly affects use: poorly maintained facilities drive users toward open defecation or alternative arrangements, particularly women, elderly, and PwD.

Sanitation campaign effectiveness perceptions are low across all towns but show an interesting pattern: Khordha, which has the best infrastructure outcomes, also shows the weakest perception of campaign effectiveness, suggesting that infrastructure investment, rather than awareness campaigns, drives outcomes. The qualitative evidence supports this: communities consistently prioritised infrastructure (drainage, containment, water supply) over awareness programmes in their recommendations for improvement.

8. Service Inequities

This chapter moves beyond descriptive statistics to examine the structural determinants of sanitation outcomes. Using the 400-household dataset, analyses reveal how income, caste, tenure status, and geographic location interact to produce differential sanitation

experiences. These analyses are critical for designing targeted CWIS interventions that address root causes rather than symptoms.

8.1 Income as a Determinant of Sanitation Access

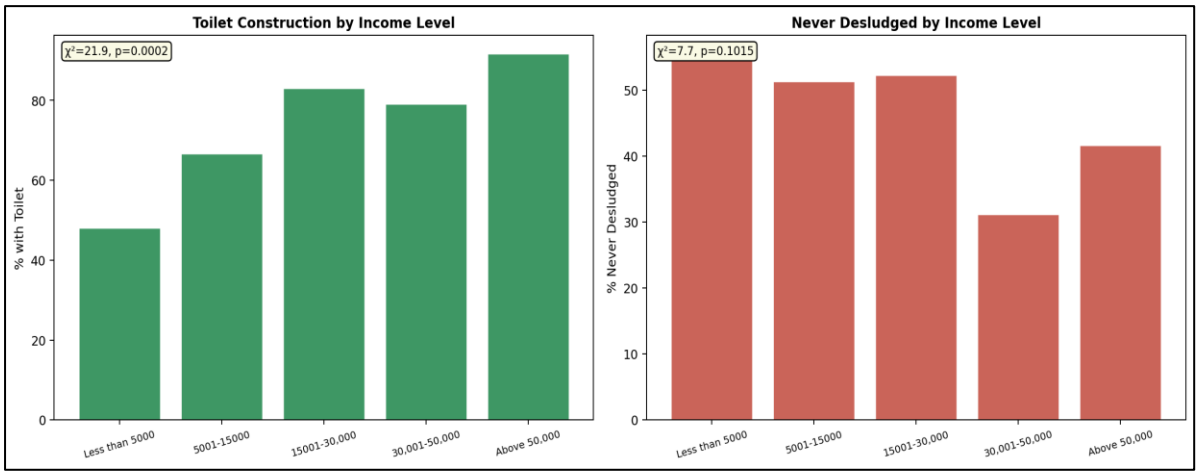


Figure 16: Income – Toilet Construction and Desludging

Source: Baseline Survey, 2026

The relationship between household income and toilet construction is statistically significant. Households earning less than ₹5,000/month show the lowest toilet construction rates, while those earning above ₹30,000 approach universal coverage. The chi-square test confirms this is not due to chance.

The income-desludging relationship tells a complementary story: the "never desludged" rate is highest among the lowest income groups and declines with income. This reflects both the direct cost barrier (₹800-3,000 per trip) and the indirect consequence of unlined pits that "never fill" due to continuous leaching, a cheaper but environmentally destructive containment approach adopted by necessity by the poorest households.

8.2 Containment Type and Disease Outcomes

The containment-disease nexus reveals that households without any containment system or with unlined pits show higher disease prevalence than those with lined tanks or septic systems. While overall disease rates are extremely high across all containment types (reflecting the multiple pathways of disease transmission in these towns), the gradient confirms the environmental health logic: unsafe containment contaminates groundwater, which then enters the drinking water supply chain.

8.3 Waterlogging, Climate, and Sanitation Cascade

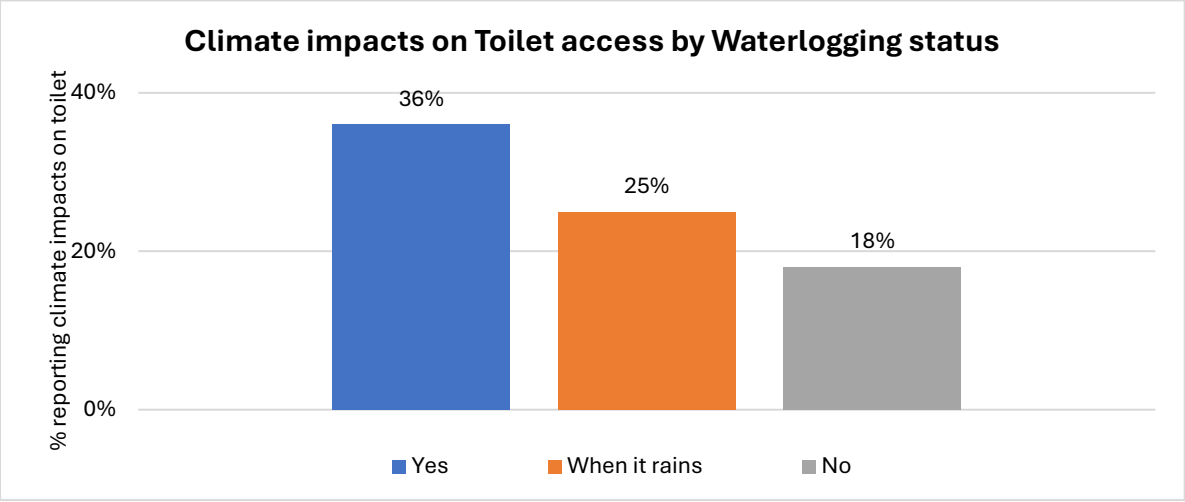


Figure 17: Climate Impact on Toilet Access by Waterlogging Status

Source: Baseline Survey, 2026

The analysis of waterlogging status and climate impact on toilet access demonstrates the expected gradient: households in waterlogging-prone areas are significantly more likely to report climate-related disruption of toilet access. This confirms the cascading failure mechanism: waterlogging → pit overflow → toilet non-functionality → reversion to open defecation → disease spike. The damage-to-toilet-infrastructure pathway is most acute in Jatni (45%) and Khordha (50% of affected households).

8.4 Caste, City, and Toilet Construction

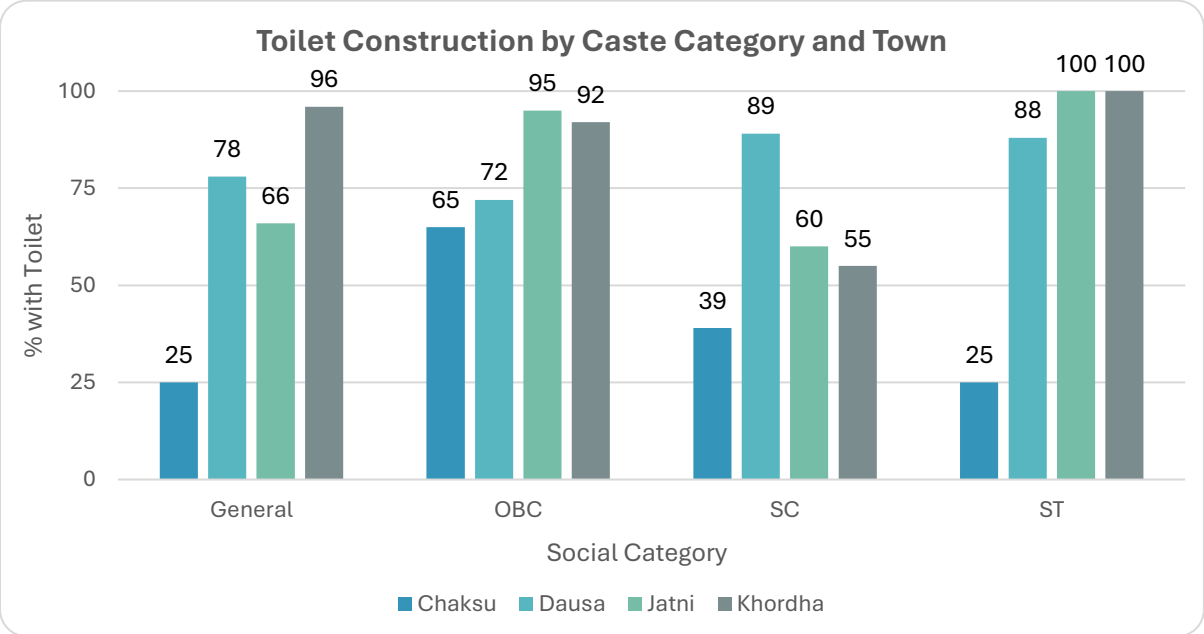


Figure 18: Toilet Construction by Social Category and Town

Source: Baseline Survey, 2026

The analysis of caste category, city, and toilet construction reveals important patterns that a simple one-way analysis alone would miss. SC/ST households show consistently lower toilet construction rates across all towns, but the magnitude varies dramatically: the gap is largest in Chaksu (reflecting peri-urban dhani populations with virtually no infrastructure) and smallest in Khordha (where high overall coverage lifts all categories). OBC households show town-dependent patterns, with performance tracking the overall town average rather than showing consistent caste-based disadvantage.

This finding has direct intervention implications: CWIS programmes in Chaksu and Dausa must prioritise SC/ST settlements for toilet construction, while in Khordha, the priority shifts to containment upgrading and desludging access for these communities.

8.5 Tenure Status, City, and Desludging: The Renter Penalty

Tenure status interacts with city context to produce differential desludging outcomes. Renters consistently show higher "never desludged" rates than owner-occupiers across all towns, confirming the tenure-sanitation investment nexus. The renter penalty is most acute in Khordha, where the land tenure crisis creates a large population of de facto informal occupiers who lack the legal standing to invest in sanitation infrastructure or demand services from the municipality.

> *"We live in fear every day. If we build a pucca toilet, the government may demolish it because we have no land papers. So we use temporary structures that cannot be maintained."* **— FGD participant, Khordha**

8.6 Water Sufficiency and Disease: The Health Cost

Households reporting insufficient water supply show elevated disease rates compared to those with sufficient water, establishing the water-health pathway. The mechanism operates through multiple channels: insufficient water reduces handwashing compliance, undermines toilet flushing, concentrates contaminants in limited water supplies, and forces reliance on untreated backup sources.

9. Community Systems, Governance, and Accountability

Before turning to the quantitative measures of participation, responsiveness, and willingness to pay, it is useful to listen to how communities themselves frame the conversation. The word cloud below distils the most-used terms across key informant interviews (KIIs) and focus group discussions (FGDs) with community leaders, residents, and mixed groups in all four towns, sized by frequency of mention. The vocabulary that

surfaces maps directly onto the service gaps documented in this report, and offers a qualitative anchor for the quantitative patterns that follow.

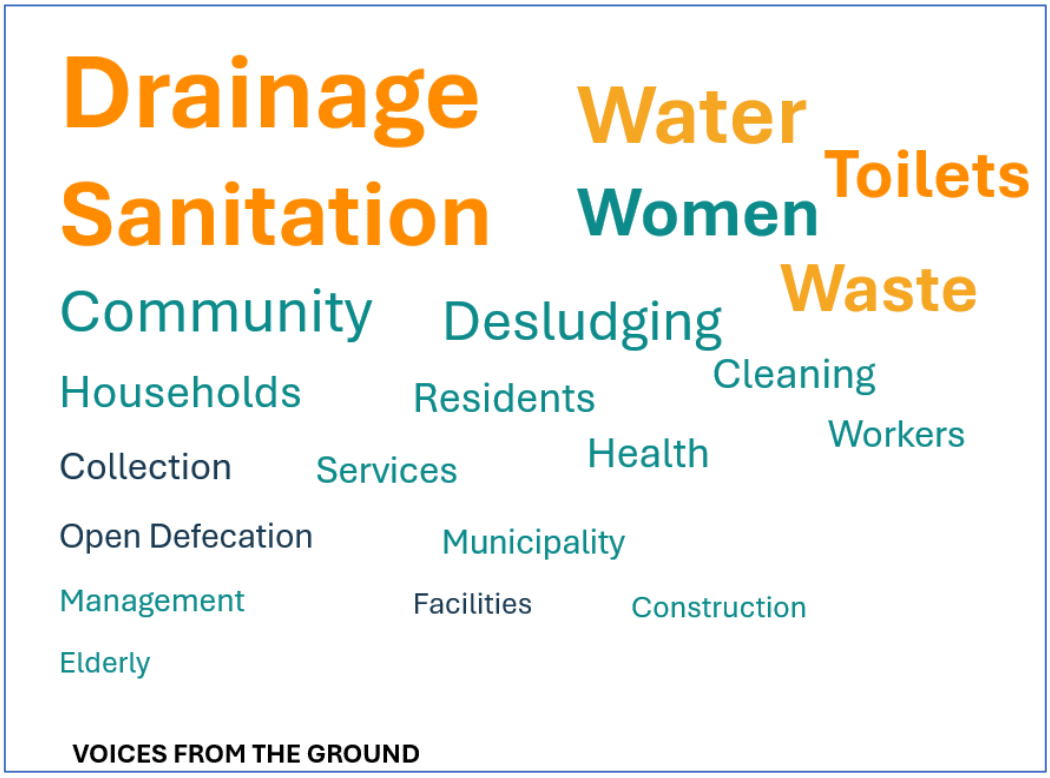


Figure 19: What Communities Talk About - most-used words across KIIs and FGDs (all four towns), sized by frequency. Source: CFAR Baseline Qualitative Fieldwork, 2026

Four signals stand out. First, sanitation and drainage dominate the discourse, waterlogging, blockages, and open drains surface as universal concerns and carry the highest combined mentions. Second, desludging emerges as the critical operational gap: residents describe irregular, largely manual services that pose persistent public-health risks and leave containment systems effectively unmanaged downstream of the household. Third, women's voices shape the framing of water access and toilet use, most prominently in Dausa, while in Jatni community leaders carry that narrative on their behalf, a reminder that gendered service experiences are visible in the language people use, not only in disaggregated indicators. Fourth, despite formal toilet coverage, residents continue to flag open defecation, pit overflow, and poor toilet upkeep, pointing to a value-chain and maintenance problem that construction-led campaigns alone cannot resolve.

These themes, including willingness to act paired with weak institutional platforms, persistent service-delivery gaps, and gendered burdens, set up the quantitative findings on community participation, government responsiveness, and willingness to pay that follow.

9.1 Community Participation: The Willingness-Action Gap

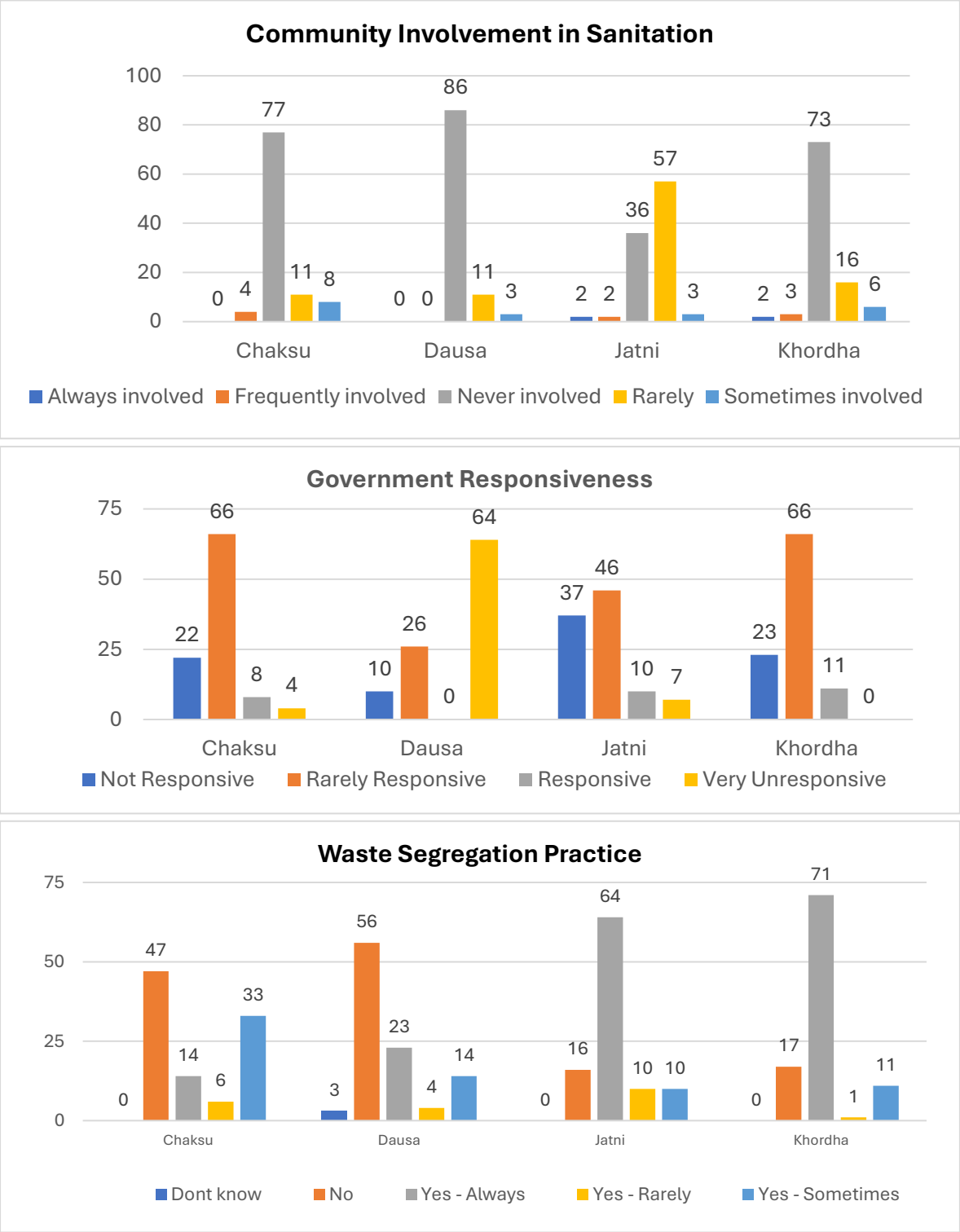
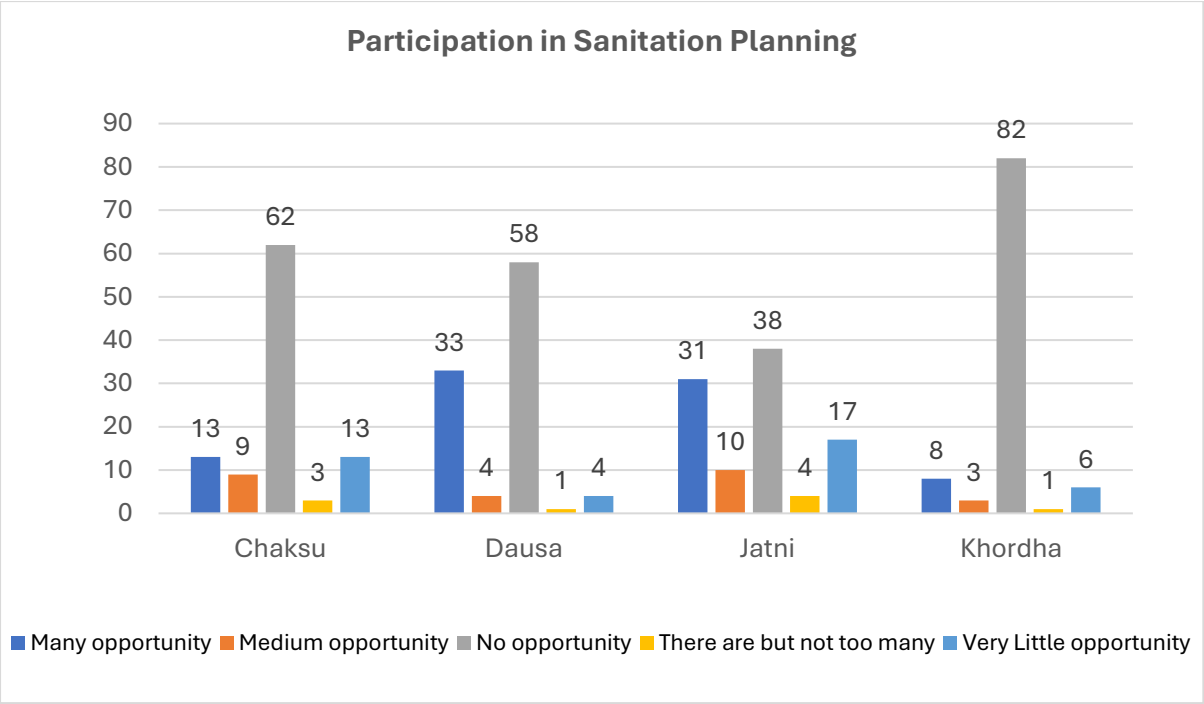


Figure 20: Community Involvement, Government Responsiveness, and Waste Segregation
Source: Baseline Survey, 2026

The governance picture reveals a paradox: communities are willing to engage but have no platforms or mechanisms for participation. "Never involved" rates range from 36% in Jatni (the best) to 86% in Dausa (the worst), with Chaksu at 77% and Khordha at 73%. Yet

when asked about responsibility for wastewater management, 63-87% agree they have responsibility, suggesting readiness for co-governance models if institutional platforms are created.

9.2 Government Responsiveness and Transparency



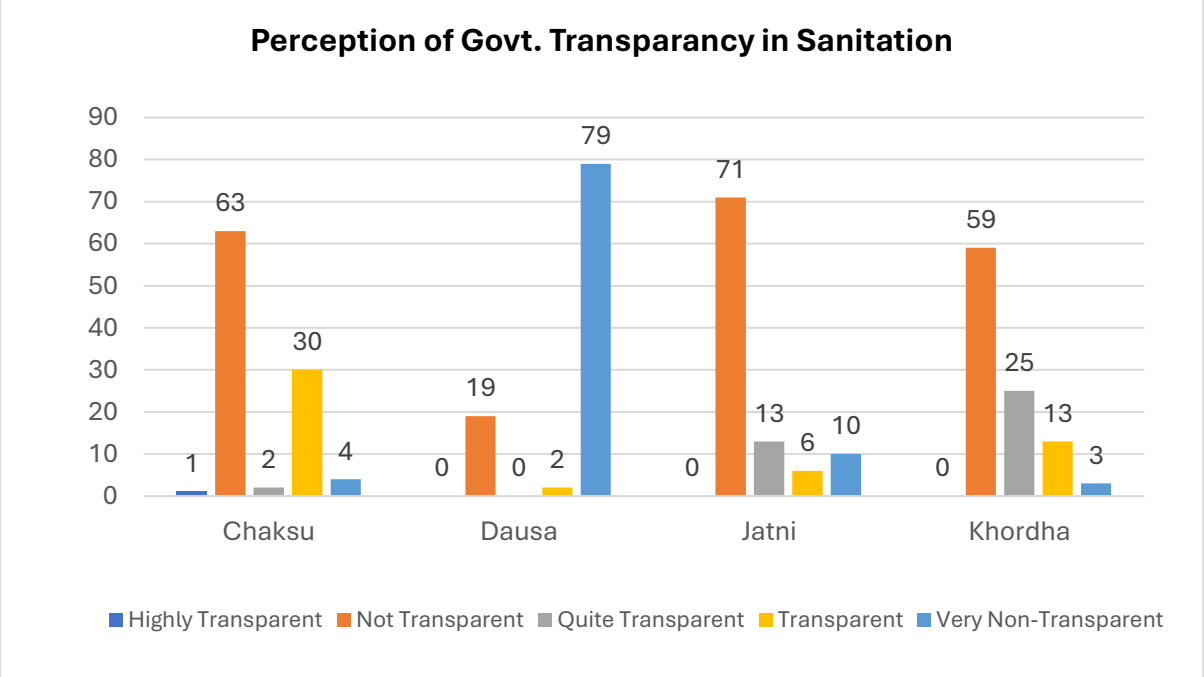


Figure 21: Participation in Decision-Making and Government Transparency Perceptions\Source: Baseline Survey, 2026

The government responsiveness deficit is acute: across all four towns, the combined "Not Responsive" and "Very Unresponsive" rate ranges from 26% in Chaksu to 74% in

Dausa. Transparency perceptions are equally concerning: 79% in Dausa perceive the government as "Very Non-Transparent," while 63% in Chaksu and 71% in Jatni rate it as "Not Transparent." Only Khordha shows a somewhat better profile, with 25% rating it "Quite Transparent", still leaving 59% perceiving non-transparency.

The qualitative evidence contextualises these numbers: FGDs across all towns describe submitting applications that receive no response, ward councillors who are sidelined from decision-making, and a fundamental disconnect between municipal planning processes and community realities.

9.3 Willingness to Pay and Financial Sustainability

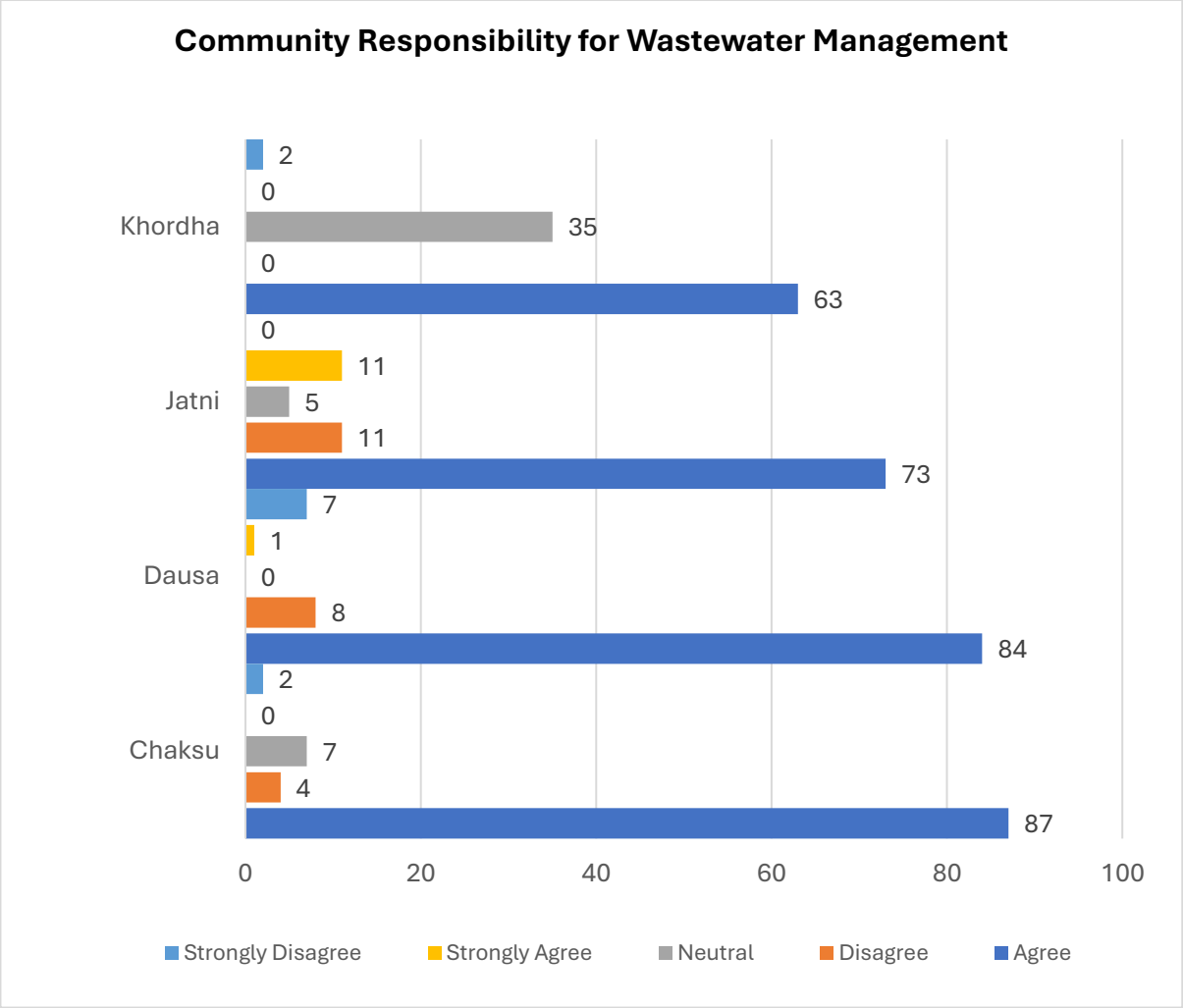
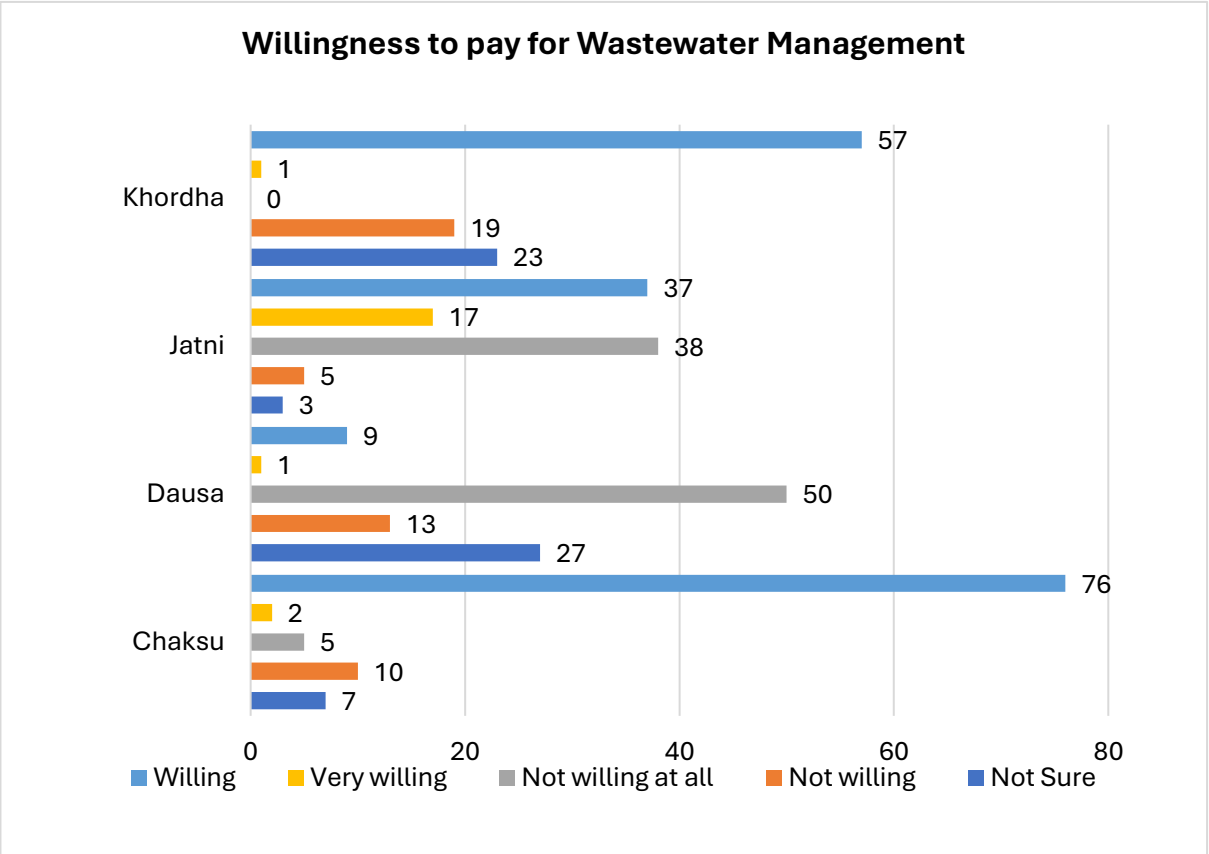


Figure 22: Community Responsibility for Wastewater Management and Willingness to Pay
Source: Baseline Survey, 2026



Willingness to pay for wastewater management is a critical indicator of financial sustainability for CWIS. The data shows that while the majority agree they have responsibility (63–87%), willingness to incur additional costs is more nuanced and varies significantly across towns. This gap between responsibility acceptance and payment willingness defines the design space for tariff structures: services must be priced to reflect demonstrated willingness while subsidising the poorest households who cannot afford market rates.

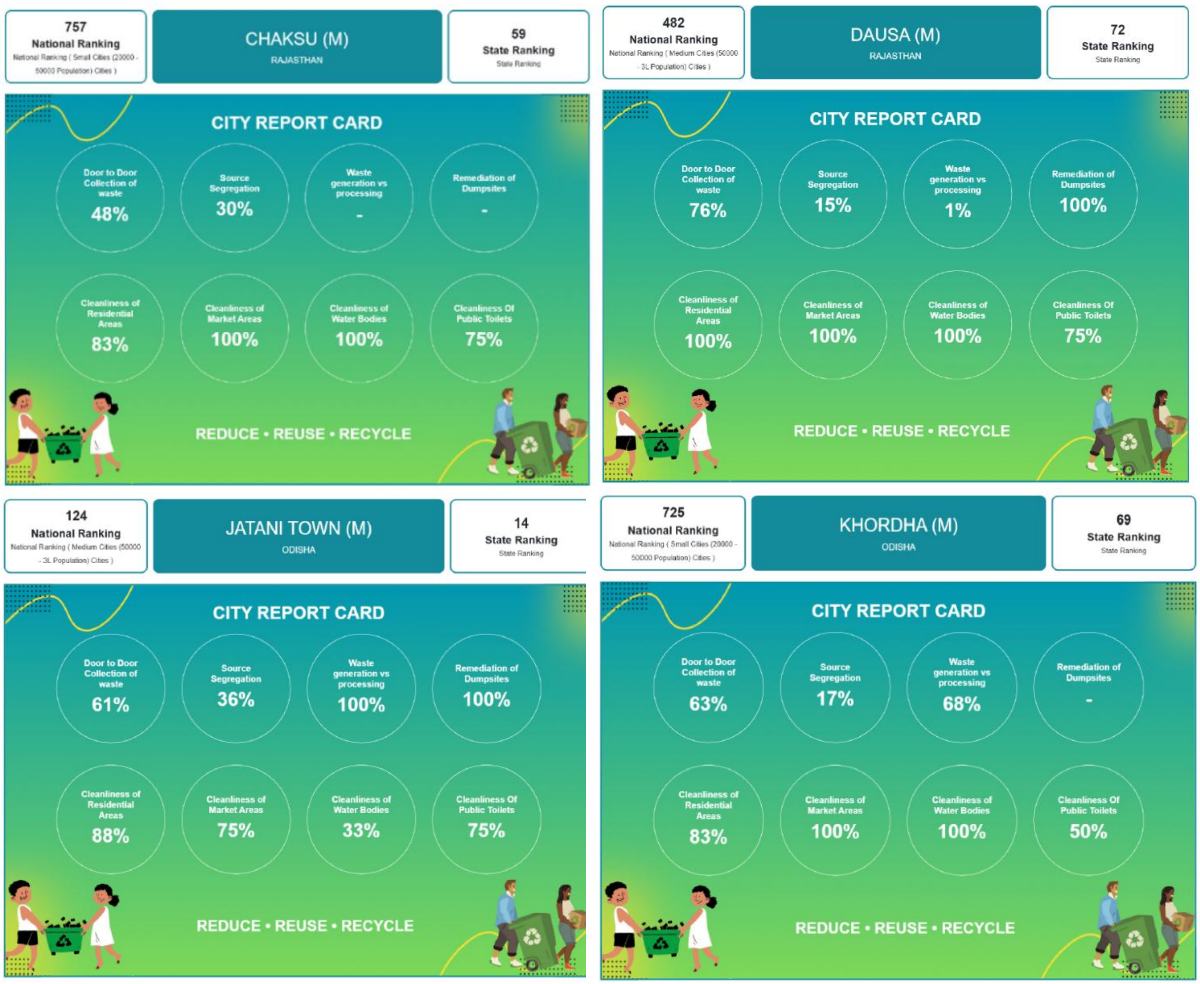
9.4 Sanitation Initiatives and Government Outreach

Government encouragement for desludging is virtually absent: 69–83% have “never” heard the government encourage vacuum truck use. Sanitation-related initiatives or programmes are heard “never” by 54-76% of respondents. This communication vacuum explains why desludging awareness is low, FSTP utilisation is poor, and households continue to rely on informal coping mechanisms rather than formal service channels.

9.5 Swachh Survekshan Performance Context

Town	Category	State Rank	National Rank
Chaksu	Small (20K–50K)	59th in Rajasthan	757th nationally
Dausa	Medium (50K–3 lakh)	72nd in Rajasthan	482nd nationally
Jatni	Medium (50K–3 lakh)	14th in Odisha	124th nationally
Khordha	Small (20K–50K)	69th in Odisha	725th nationally

Table 4: Swachh Survekshan 2024-2025 Rankings of Study Towns. (Source: SBM-Urban Portal. Available at https://ss2024.sbmurban.org-/#/home)



Box. 1: Swachh Survekshan City Report Card, 2024-2025.

Source: *SBM-Urban Portal. Available at https://ss2024.sbmurban.org-/#/home*

The Swachh Survekshan rankings provide an external benchmark. Jatni's relatively strong national rank (124th) correlates with its higher SFD performance (75% safely managed) and better waste segregation (64%). Chaksu's poor ranking (757th) mirrors the baseline findings: the lowest toilet coverage, the highest prevalence of unlined pits, and

the weakest governance indicators. Importantly, these rankings validate the study's town selection as representative of the range of small-town sanitation performance.

The gap between rankings and ground reality, however, is instructive. Khordha's 91% toilet coverage should place it in a stronger position. Yet, its 725th ranking reflects the fact that infrastructure presence without service chain completion (61% never desludged, no drainage in 46% of surveyed areas) does not translate into sanitation performance. This confirms the CWIS framework's emphasis on the full value chain rather than just access metrics.

10. Climate Vulnerability and Sanitation Resilience

Climate vulnerability intersects directly with sanitation outcomes across all four towns. The nature of vulnerability differs by geography, drought and heatwaves in Rajasthan, cyclonic events and monsoon flooding in Odisha; but the cascading failure mechanism is shared: climate events destroy sanitation infrastructure, contaminate water sources, force reversion to open defecation, and create acute public health crises.

25% of households overall report climate impacts on toilet access (33% in Chaksu, 28% in Dausa, 31% in Jatni, but only 9% in Khordha). Among affected households, the dominant impacts include damage to toilet infrastructure (35-50%), contamination of water sources (11-26%), reduced availability of clean water (7-39%), and increased travel distance to usable toilets (10-24%).

Crucially, none of the four towns has an institutional mechanism for monsoon or climate-emergency sanitation preparedness. When asked whether drainage systems are prepared for extreme weather, 61-69% said "No." The institutional gap between climate reality and governance response represents one of the most urgent entry points for CWIS intervention.

10.1 Climate Impact Pathways by Town

Impact Pathway	Chaksu	Dausa	Jatni	Khordha
Damage to toilet infrastructure	12%	36%	45%	50%
Contamination of water sources	12%	11%	26%	0%
Increased travel to usable toilet	24%	14%	10%	0%
Reduced clean water availability	39%	7%	13%	0%
Drainage not prepared for extremes	69%	65%	45%	68%
Drainage severely impacted	35%	29%	47%	8%
Post-calamity improvements made	Low	5%	Low	Low

Table 5: Climate Impact Pathways on Sanitation by Town (% of affected HHs)

Source: Baseline Survey, 2026

Chaksu's vulnerability centres on water scarcity: 39% of climate-affected households report reduced clean water, driven by the monsoon-summer cycle where Rajasthan's arid climate produces both flood and drought within the same year. Jatni's profile reflects cyclonic vulnerability (Cyclone Fani 2019 devastated the town): 45% report toilet infrastructure damage, and 47% report drains severely impacted. Khordha shows the lowest overall climate impact (9% affected) but the highest infrastructure damage among those affected (50%), suggesting concentrated but severe vulnerability.

> *"During monsoon, our pits overflow, and the water mixes with everything. The children play in that water. We have no choice but to defecate in the open until the water recedes. This happens every year, and nobody from the municipality comes to help."* **— Mixed FGD, Ward 55, Dausa**

10.2 Occupational Vulnerability: Sanitation Workers

Sanitation workers represent a uniquely vulnerable population that sits at the intersection of caste, class, and occupational hazard. Across all four towns, the baseline documents consistent patterns of systemic neglect:

Indicator	Finding Across Towns
PPE Provision	Zero provision reported in all four towns; workers use bare hands
Health Insurance	No coverage for informal workers; limited for formal municipal staff
Wage Structure	4.5x differential between categories in Khordha (₹5,000 vs ₹22,000)
Manual Scavenging	Persists despite legal prohibition under MS Act 2013
Caste-Based Discrimination	Untouchability in daily interactions; separate utensils, entry restrictions
Climate Exposure	No monsoon protocols; workers wade through contaminated floodwater
Governance Voice	Zero representation in municipal sanitation planning

Table 6: Sanitation Worker Conditions Across Four Towns

Source: Baseline Survey, 2026

The Khordha FGD with sanitation workers produced particularly stark testimony: a 4.5x wage differential exists between temporary daily workers (₹5,000/month) and permanent municipal employees (₹22,000/month) performing identical tasks. Workers described being forced to clean drains during the monsoon without boots or gloves, developing chronic skin conditions and respiratory infections. In Chaksu, the FGD with sanitation workers documented that several workers had not been paid for months, yet continued to work *"because there is no other work available for people of our caste."*

11. CWIS Baseline Performance Assessment

This chapter synthesises the baseline findings against the five core CWIS dimensions, presenting a comparative assessment across all four towns using a standardised indicator framework.

The matrix below reveals the structural patterns: no town performs well across all dimensions, but each has distinct strengths and vulnerabilities. Khordha leads on toilet coverage and soap availability but has the worst desludging record. Jatni shows the highest waterlogging vulnerability but the best community involvement. Chaksu has the highest climate impact on toilets and the lowest toilet coverage. Dausa combines poor governance responsiveness with high disease burden and weak waste management.

CWIS Indicator	Chaksu	Dausa	Jatni	Khordha
Safely Managed Excreta	28%	55%	75%	68%
Toilet Coverage (HH Survey)	90%	86%	96%	95%
Unlined Pits Dominant	55%	62%	15%	2%
Never Desludged	54%	60%	35%	61%
FSTP Utilisation	32%	26%	Near capacity	Near capacity
Water Available Year-round	19%	15%	16%	81%
Soap Always Available	65%	93%	88%	99%
Disease in Last 12 Months	98%	95%	99%	95%
Waste Segregation (Always)	14%	23%	64%	71%
Community Never Involved	77%	86%	36%	73%
Govt Not/Very Unresponsive	26%	74%	44%	23%
Climate Impact on Toilet	33%	28%	31%	9%
Waterlogging Prone	28%	27%	42%	22%
Accept Wastewater Responsibility	87%	84%	73%	63%

Table 7: Comprehensive CWIS Baseline Indicators

Source: Baseline Survey, 2026

12. Capacity Needs and Systemic Gaps

12.1 ULB Capacity Gaps

Institutional capacity is structurally inadequate across all four towns. Khordha has just 16 government sanitation workers for 22 wards (reduced from 22 through attrition with no replacement). Municipal staff shortages, non-functional vehicles, absent SOPs, and siloed governance between water, sanitation, drainage, and health departments

characterise all towns. Budget preparation exists but implementation is weak, as one KII respondent in Dausa noted, "everything remains on paper."

12.2 Frontline Worker Gaps

Sanitation workers across all four towns report zero PPE provision, caste-based untouchability in daily work, irregular wages (with a 4.5x wage differential between employment categories in Khordha), no health insurance coverage, and exclusion from governance platforms. Manual scavenging persists despite the legal prohibition under the Manual Scavenging Act 2013. The informal desludging sector, which handles 86-97% of all emptying, operates entirely without training, equipment standards, or safety protocols.

12.3 Community Institutional Gaps

Existing community structures (SHGs, ward committees, CMCs) are either nascent or non-functional for sanitation governance. However, the FGD evidence across all four towns reveals strong demand for ward-level committees with regular meetings, transparent information sharing, and representation of women, youth, PwD, and marginalised communities. This articulated demand represents clear community readiness for the CWIS governance model.

12.4 Digital and Data System Gaps

No town has a functional sanitation MIS, desludging tracking system, or digital grievance redressal mechanism. SFD data is produced through project-supported exercises rather than routine municipal monitoring. The absence of data systems means that service delivery failures are invisible to governance structures, FSTP compliance cannot be monitored, and performance accountability is impossible.

13. Key Findings and Systemic Bottlenecks

13.1 Similarities Across Towns

The Sanitation Value Chain Fails at Every Stage: All four towns share a broken sanitation chain, unsafe containment dominates, desludging is irregular and unregulated, transport bypasses treatment, FSTPs are underutilised, and untreated effluent enters water bodies. The degree varies, but the structural failure is universal.

Disease Burden is Universally High: 95-99% of households report disease episodes in the past 12 months across all four towns, driven by the convergence of unsafe containment, contaminated water, inadequate drainage, and poor solid waste management.

Governance is Disconnected from Communities: The willingness-action gap, high community readiness (63–87% accept responsibility) but near-zero participation (67-88% never involved), is consistent across all towns and represents the central governance failure.

Climate Vulnerability is Unaddressed: No town has institutional mechanisms for climate-emergency sanitation preparedness, despite 25% of households reporting climate impacts on toilet access and 57-83% experiencing seasonal water scarcity.

Sanitation Workers Face Systemic Violations: Zero PPE, caste-based discrimination, irregular wages, no health coverage, and exclusion from governance, consistent across all four towns.

13.2 Differences Between Towns

Dimension	Rajasthan (Chaksu/Dausa)	Odisha (Jatni/Khordha)
Containment	Unlined pits dominate (55–62%)	Lined tanks/septic tanks more common
Toilet Coverage	Lower (86–90%)	Higher (95–96%)
Water Scarcity	Severe summer scarcity (81–83%)	Better year-round (Khordha 81%)
Water Treatment	Cloth filtering dominant (90%)	RO/UV more common (56% Khordha)
Waste Segregation	Very low (14–23%)	High (64–71%)
Community Involvement	Lower (14–23% ever involved)	Higher in Jatni (64%)
Climate Hazard Type	Drought, heatwave, monsoon flood	Cyclone, monsoon, flooding
Desludging Awareness	Low, private sector dominant	Low, but municipal services present
Land Tenure	Less acute	Acute in Khordha (40–60% informal)

Table 8: Key Differences Between Rajasthan and Odisha Towns

Source: Baseline Survey, 2026

13.3 Cross-Cutting Structural Bottlenecks

The Land-Sanitation Nexus: Land tenure insecurity (most acute in Khordha at 40–60%) functions as a "meta-barrier" that prevents toilet construction, blocks scheme eligibility, discourages investment in containment, and excludes the most vulnerable from national programmes.

The Informal Sector Trap: Private desludging operators handle 86–97% of emptying services but operate without regulation, FSTP compliance, or accountability. The formal municipal system has ceded the most critical link in the sanitation chain to an unmonitored market.

The Peri-Urban Governance Blindspot: Absorption of rural peripheries into municipal limits creates zones that are urban in classification but rural in infrastructure. These areas, home to the most marginalised, are simultaneously most in need of services and least connected to governance systems.

14. Recommendations and Way Forward

The following recommendations are grounded in field evidence and micro-level variations documented in this baseline. Each is structured for direct translation into DPR inputs, community engagement plans, and state-level policy advocacy, with a quantified basis, an actionable pathway, a responsible stakeholder, and indicative cost logic.

14.1 Immediate Actions (0-1 Year)

R1. Containment Upgrade Programme

Basis: 55% (Chaksu) and 62% (Dausa) unlined pit dominance; 6% and 9% positive deviance rates demonstrating upgrade is feasible. Action: Ward-level containment mapping using baseline data. Engage positive deviance households (9% Chaksu, 6% Dausa) as peer demonstrators. Municipal subsidy: Rs. 18,000–35,000 per household for conversion from unlined pit to sealed tank with 500 HH/town target in Year 1. Eligibility extended to renters with community verification certificates. Finance linkage: SBM-U 2.0 ODF++ component; AMRUT 2.0 septage DPR. Responsible: ULB and CFAR.

R2. Ward Sanitation Committees: Institutionalising Willingness

Basis: 63–87% responsibility acceptance; near-zero formal participation; Jatni SHG model as proof of concept. Action: Constitute WSCs in all wards across four towns. Each WSC: minimum 5 elected members (2 women, 1 SC/ST, 1 PwD/PwD-family); defined role in monthly sanitation monitoring; quarterly review with ULB executive; grievance register linked to ULB complaint system. Facilitated by CFAR; formalised through ULB resolution. No capital cost, operational budget estimate: Rs. 5,000/ward/year. Timeline: Quarter 1, Year 1.

R3. Desludging Regulation and FSTP Activation

Basis: 35–61% never-desludged; FSTPs at 26–32% utilisation (Rajasthan) and near-capacity without adequate coverage (Jatni). Action: Register all private operators; mandate GPS-tracked trips with digital records; tipping-fee subsidies (Rs. 500–1,000/trip) from SBM-U 2.0 FSTP utilisation grants; scheduled desludging pilots in 2 wards/town. FSTP expansion DPR for Jatni (~20 KLD to ~50 KLD, estimated Rs. 4.5 crore). FSTP site identification for Khordha in AMRUT 2.0 planning (estimated Rs. 6 crore). Responsible: ULB and State FSSM Cell.

R4. Sanitation Worker Rights

Basis: Near-zero PPE; caste discrimination documented across all four towns; no health insurance. Action: PPE kits (gloves, gumboots, masks, high-visibility jackets) to all formal and informal workers, estimated Rs. 2,500/kit, 20–25 workers/town. Enrol municipal sanitation workers in PM Jan Arogya Yojana. Initiate NAMASTE scheme. Constitute Sanitation Worker Welfare Committee with monthly ULB engagement. Responsible: ULB and District Administration. No new budget required, use existing municipal sanitation budget lines.

14.2 Medium-Term Actions (1-3 Years)

R5. Finance-Linked DPR Development

Basis: WTP data (78% Chaksu, 58% Khordha, 54% Jatni); health expenditure (Rs. 1,001–5,000/HH/year in most income groups); documented infrastructure gaps. Action: Town-level CWIS DPRs structured as AMRUT 2.0 submissions. Indicative components: containment upgrades (Chaksu Rs. 9 crore, Dausa Rs. 7 crore for 500 HH targets); FSTP expansion Jatni Rs. 4.5 crore; FSTP construction Khordha Rs. 6 crore; drainage master planning Rs. 2–3 crore/town. WTP survey data as tariff design evidence; health-cost savings as cost-benefit justification. Responsible: CFAR, ULB Engineering, and State AMRUT Mission.

R6. Land Tenure Resolution Pilots

Basis: 40–60% informal settlements in Khordha; renter exclusion from IHHL scheme. Action: Pilot community occupancy certification in 2 Khordha wards, enabling renter access to IHHL subsidies with community verification rather than legal title. Engage State Urban Development and Revenue Departments. Simultaneously, design portable containment upgrade products (pre-fabricated sealed tanks) for renters that do not require permanent property modification.

R7. Digital Sanitation MIS

Action: GPS-tracked desludging log across four towns (mobile app for operators, dashboard for ULB). QR-coded household sanitation status tracking is updated by WSC

monitors quarterly. FSTP intake data linked to real-time dashboard for ward councillors and monitoring teams. Estimated cost: Rs. 2–3 lakh/town for app and server (shareable across towns). Responsible: CFAR (technology) and ULB (data stewardship).

14.3 Long-Term Systems Strengthening (3+ Years)

R8. Full Value Chain Integration: Achieve end-to-end safe management. Town targets: Chaksu/Dausa from 28–55% to 70% safely managed; Jatni/Khordha from 68–75% to 90% safely managed by 2030.

R9. Community Co-Governance Model: Institutionalise ward-level committees as permanent governance fixtures with budget oversight, service monitoring, and grievance resolution authority under municipal bylaws.

R10. Scalable Replication: Document implementation models for replication in Balugam, Banpur, and Pipili (Odisha); Bagru and Chomu (Rajasthan), with CFAR as the knowledge dissemination partner.

14.4 Implementation Priority Matrix

This matrix synthesises the priority of intervention across the four towns. It is not a standalone analytical tool, it is a synthesis that converts the baseline survey findings (Sections 1–13) and the recommendations R1 through R10 (Sections 14.1–14.3) into an action-prioritisation grid for each of the four towns.

Grading is based on (i) the severity of the baseline gap, (ii) the speed at which the gap is worsening or compounding, and (iii) the dependence of other interventions on this one. CRITICAL indicates a foundational gap requiring immediate action without which downstream interventions will fail. HIGH indicates a significant gap that must be addressed in Year 1–2. MODERATE indicates a gap that exists but where partial systems are functional and can be deepened progressively.

Priority Area	Chaksu	Dausa	Jatni	Khordha
Toilet Construction	MODERATE	MODERATE	MODERATE	MODERATE
Containment Upgrade	CRITICAL	CRITICAL	HIGH	MODERATE
Desludging Regulation	CRITICAL	CRITICAL	HIGH	CRITICAL
FSTP Activation	CRITICAL	CRITICAL	MODERATE	HIGH
Drainage Improvement	HIGH	CRITICAL	CRITICAL	HIGH

Land Tenure Resolution	MODERATE	MODERATE	MODERATE	CRITICAL
Community Platforms	CRITICAL	CRITICAL	HIGH	CRITICAL
Climate Preparedness	HIGH	HIGH	CRITICAL	HIGH
Worker Safety/Dignity	CRITICAL	CRITICAL	CRITICAL	CRITICAL

Table 9: Implementation Priority Matrix

Source: Baseline Survey, 2026

15. Conclusion

This baseline assessment documents a sanitation system that is structurally compromised at every level of the value chain. The crisis is not one of absent infrastructure but of infrastructure that fails to perform: unlined pits that contaminate rather than contain, desludging services that bypass treatment, drains that carry sewage rather than stormwater, and treatment facilities that operate at a fraction of capacity.

The baseline is not static, and it is not devoid of progress. In all four towns, the households are already demonstrating best practice. In Khordha, 19% have invested in containment quality, which has already delivered climate resilience dividends. Within every income group, in every town, there are households doing things differently, and communities willing, even eager, to do more if given the institutional means. **Positive deviance** is documented and actionable. The proportion of households with fully lined containment and desludging within the last five years ranges from 6% (Dausa) to 37% (Jatni); Khordha at 19%, Chaksu at 9%. These households prove that change is possible within the current community and economic conditions.

The gap between community willingness (63–87% accepting responsibility for wastewater management) and community participation (64–86% never involved in governance) is the most important finding in this report. It is not a gap that requires more awareness campaigns. It is a governance architecture gap: communities are ready for CWIS, but no ward sanitation committees exist, no budget lines support community monitoring, and no grievance channels connect household experience to municipal planning.

The CWIS intervention must work simultaneously across three registers: technical (containment upgrading, desludging regulation, FSTP activation, drainage improvement); governance (community platforms, transparency mechanisms, digital monitoring, accountability systems); and equity (GEDSI integration, land tenure

resolution, worker dignity, climate resilience). Addressing any one register without the others will reproduce the underperformance documented in this baseline.

The four towns of Chaksu, Dausa, Jatni, and Khordha represent a microcosm of India's small-town sanitation challenge. Their similarities reveal the structural nature of the crisis; their differences illuminate context-specific pathways to solutions. The positive deviance data is this baseline's most actionable finding: change is already happening, in small but measurable ways, within existing conditions. The task of this project is to amplify these signals into systems, converting peer learning into scaled uptake, community willingness into formal governance platforms, and health expenditure data into DPR financial logic. The target: every household, regardless of caste, income, land status, disability, or gender, with access to safe, dignified, and sustainable sanitation.