

Final Evaluation Report

Strengthening Climate-Resilient WASH Services in Informal Settlements of Jaipur and Bhubaneswar

Date: 11th February 2025

The Project “Building Climate-resilient WASH for Climate Impacted Vulnerable Populations” is supported by the Australian Government through Water for Women and implemented by Centre for Advocacy and Research in Bhubaneswar and Jaipur, India

Boiler Plate

Water for Women is supporting improved health, gender equality and well-being in Asian and Pacific communities through climate-resilient and socially inclusive water, sanitation and hygiene (WASH) projects and research.

Water for Women is the Australian Government’s flagship WASH international development program and is being delivered in 16 Asia Pacific countries, investing AUD159.9 million over seven years from 2018 to 2024.

Water for Women is partnering with civil society organisations to deliver 20 WASH projects across South Asia, South East Asia, and the Pacific. Fifteen of these projects have pivoted for the last two years of the Fund to focus on identifying and responding to climate risks to strengthen community climate resilience through WASH. Five projects were completed in 2022. So far, we have supported more than 3.4 million people, including the most marginalised within these communities.

Research is also an important element of Water for Women. Water for Women is partnering with research organisations to undertake a total of 20 research projects over the course of the Fund, which address knowledge and evidence gaps for inclusive WASH service provision and strengthened climate resilience. We aim to raise the bar for gender and socially inclusive research, analysis, design, and program delivery in WASH, and in doing so, to inform practice globally.

Fourteen Innovation and Impact grants have also provided a targeted opportunity for partners to further contribute to Fund outcomes.

Australia’s new International Development Policy reiterates the Australian Government’s commitment to advancing the Sustainable Development Goals (SDGs) through regional partnerships that support locally led climate solutions and address the barriers holding back progress. Embedding the perspectives of First Nations Australians and advancing gender equality and disability equity are core policy priorities that Water for Women supports through research and civil society partnerships in the Indo-Pacific.

Water for Women directly supports the advancement of four key SDGs in the Indo-Pacific for good health and well-being, gender equality, clean water and sanitation, and reduced inequalities. As a cross-cutting goal, SDG 6 – Clean water and sanitation for all, contributes to progress on all other SDGs.

Gender equality, disability and social inclusion (GEDSI) are central to Water for Women. Actively involving all people within communities (women, men, marginalised groups, people with disabilities) ensures more equitable and inclusive processes, which lead to more effective and sustainable WASH outcomes.

Extension Phase

Water for Women supports improved health, gender equality and well-being in Asian and Pacific communities through climate-resilient and socially inclusive water, sanitation and hygiene (WASH) projects and research. It is the Australian Government’s flagship WASH program, investing AUD159.9 million over seven years. Water for Women is partnering with civil society organisations, research organisations and local partners to deliver 40 projects in 16 countries from 2018 to 2024. Knowledge and learning are central to Water for Women, positioning the Fund as an important contributor to global knowledge development and sharing in climate resilient, inclusive WASH. Water for Women’s Learning Agenda promotes collaborative learning, knowledge development and sharing to support long-term transformative change to WASH policy and practice globally.

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Table of Contents

List Of Abbreviations	4
Executive Summary	6
1. Introduction	14
1.1 Background and Context.....	14
1.2 About the Programme	15
1.3 Objectives of the Evaluation.....	16
1.4 Methodology.....	17
2. Key Findings	21
2.1 Relevance	22
2.2 Effectiveness	28
2.3 Efficiency	35
2.4 Sustainability	39
2.5 Impact.....	42
2.6 Equity	47
3. Learnings and Way Forward	53
3.1 Learnings.....	53
3.2 Recommendations	56
3.3 Way Forward	61
4. Annexures.....	62
Annexure I: Ward and Settlements Covered in the Survey	62
Annexure II: Sample Size Calculation	63
Annexure III: Visual Documentation of Pilot Testing	64
Annexure IV: Visual Documentation of Field Activities.....	65
Annexure V: List of CFAR Programme Documents Reviewed.....	67
Annexure VI: Other Secondary Documents Reviewed.....	67
Annexure VII: List of Stakeholders Interviewed	68
Annexure VIII: Tables	70
Annexure IX: List of Field Researchers/Team Members	79

List Of Abbreviations

AEGR	Annual Exponential Growth Rate
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AWC	Anganwadi Centre
AWW	Anganwadi Workers
BMC	Bhubaneswar Municipal Corporation
CAPI	Computer Assisted Personal Interviewing
CDPO	Child Development Project Officer
CFAR	Centre for Advocacy and Research
CMC	Community Management Committees
CNA	Capacity Needs Assessment
CSO	Civil Society Organisations
DFT	Drink from Tap
FGDs	Focus Group Discussions
FSTP	Faecal Sludge Treatment Plant
GESI	Gender, Equality and Social Inclusion
GEDSI	Gender Equality, Disability, and Social Inclusion
GIS	Geographic Information System
IPCC	Intergovernmental Panel on Climate Change
IPE	IPE Global Limited
IMD	India Meteorological Department
IVRS	Interactive Voice Response System
IWRM	Integrated Water Resource Management
JC	Janch Committee
JDA	Jaipur Development Authority
JMP	Joint Monitoring Programme
JJM	Jal Jeevan Mission
JMC	Jaipur Municipal Corporation
KIIs	Key Informant Interview
KPIs	Key Performance Indicators
KIQs	Key Inquiry Questions
MAS	Mahila Aarogya Samiti
MC	Mothers Committee
MEL	Monitoring, Evaluation, and Learning
MHM	Menstrual Hygiene Management
MIS	Management Information System
MSF	Multi-Stakeholder Forum
NGO	Non-Governmental Organisation
NMSH	National Mission for Sustainable Habitat
NUSP	National Urban Sanitation Policy
ODF	Open Defecation Free
PHED	Public Health Engineering Department
PPS	Probability Proportional to Size

PwDs	Persons with Disabilities
PWS	Piped Water Supply
SBM	Swachh Bharat Mission
SCs	Scheduled Castes
SCADA	Supervisory Control and Data Acquisition
SDA	Slum Dweller Association
SDC	Slum Development Committee
SDGs	Sustainable Development Goals
SEVI	Socio-Economic Vulnerability Index
SHG	Self-Help Group
SSC	Sanitation Sub Committees
STs	Scheduled Tribes
SWF	Single Window Forum
WASH	Water, Sanitation and Hygiene
Water ATM	Water Automated Teller Machine

Executive Summary

Introduction

Background and Context: Water, Sanitation, and Hygiene (WASH) are critical for public health and sustainable development. Climate change poses significant threats to WASH systems, particularly in vulnerable regions facing extreme weather events like floods, droughts, and cyclones. Strengthening climate resilience in WASH infrastructure is crucial to maintaining reliable services and protecting communities from climate-related disruptions.

The IPCC highlights how climate change exacerbates extreme weather, directly impacting water security and threatening SDG 6 that aims to ensure universal access to safe and affordable water and sanitation for all. In response, the WASH sector is focusing on climate-resilient infrastructure to ensure sustainability and reduce inequalities. Approaches like Integrated Water Resource Management (IWRM) help improve water quality, efficiency, and ecosystem restoration, while interlinkages with SDG 5 (Gender Equality), SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities), and SDG 13 (Climate Action) emphasize the need for holistic solutions.

India has made progress in WASH through national initiatives like the Swachh Bharat Mission (SBM), Jal Jeevan Mission, and AMRUT, improving sanitation and expanding access to potable water. However, informal settlements still face major challenges due to inadequate infrastructure, lack of property rights, gaps in governance, and climate-induced risks. Marginalized groups, including women, children, persons with disabilities, and the elderly, are disproportionately affected.

About the Programme: CFAR launched the WASH Programme in Jaipur and Bhubaneswar to promote inclusive, gender-responsive, and climate-resilient WASH services, aligning with national and state-led initiatives like SBM and JJM. The programme focused on localizing policies, improving governance at the ward level, and ensuring accessibility for vulnerable groups, including transgender persons, single women, adolescent girls, the elderly, and persons with disabilities.

The Phase I (2018-202) of the programme was geared to provide universal WASH access in urban slums while raising awareness about climate change and its implication on WASH infrastructure. By the end of the phase CFAR recognised that providing infrastructure and raising awareness alone would not guarantee sustainability unless these services were also climate resilient, paving way for deeper integration of climate aspects into WASH services.

The Phase 2 (2023–2024) focused on exploring and implementing climate-resilient WASH solutions that would ensure that WASH infrastructure and services could withstand extreme climate conditions. The programme prioritized contamination prevention, system reliability, and community-led adaptation strategies, with a strong focus on marginalized populations, including SCs and STs.

Objectives of the Evaluation: The purpose of the present evaluation was to assess the impact of CFAR's WASH Programme (Phase 1 & 2) in Jaipur and Bhubaneswar to determine CFAR's effectiveness in strengthening WASH governance, resilience and inclusivity in informal settlements. The evaluation focussed on five key areas, namely, Universal access to WASH; Climate resilient WASH practices; Gender equality and social inclusion; WASH governance and community engagement; and capacity building.

Methodology: The evaluation employs a Concurrent Triangulation Mixed Methods Research Design, integrating both quantitative and qualitative approaches. The study is structured around CFAR's MEL Plan and the REESI+E criteria (Relevance, Effectiveness, Efficiency, Sustainability, Impact, and Equity) to systematically assess programme outcomes.

The methodological components of the evaluation include

- **Desk and Literature Review** of key documents such as baseline reports, MIS data from Phase 1 and 2 and other reports including risk and vulnerability assessments, WASH governance reviews and GESI studies shared by the CFAR team
- **Tool Development for quantitative and qualitative data collection.** Quantitative tool aimed at capturing data on all aspects of WASH to measure infrastructure availability and behavioural aspects of WASH practices. Qualitative tools including KIIs and FGDs were designed to delve deeper into lived experiences and perceptions of different stakeholders examining adaptive practices, identifying barriers to service delivery and unique needs of marginalised groups.
- **Pre-testing of tools** was conducted with small groups, refining clarity, cultural sensitivity, and question flow.
- **Sampling design** for quantitative household survey was employed on 39 intervention wards in both the cities that led to selection of 13 wards in Bhubaneswar and 17 wards in Jaipur. The three key criteria that were used for selection of wards included vulnerability ranking, fragile areas, and number of settlements in each ward. The selection of slums

was undertaken through purposive consultation with CFAR team. In each selected ward 30-40 households were purposively chosen to ensure inclusion of households in fragile areas, transgender, elderly members, PwDs, and households with other vulnerable characteristics.

- **Sample size** collected data from 1107 households for quantitative survey and 28 KIIs and 31 FGDs for qualitative data collection.
- **Enumerator training** was conducted through a two-day on-line training programme which in addition to the Household Survey Tool also included essential aspects for ethical considerations, techniques for engaging with communities and strategies to ensure accuracy in data collection.
- **Data collection** was conducted from 5 to 18th December 2024 in Jaipur and Bhubaneswar. The process included Household Surveys, KIIs and FGDs simultaneously.
- **Limitations of evaluation design** were on account of inconsistent indicators across cities in Phase I of the baseline study, absence of control sample, staff attrition and recall bias, and temporal disparity in programme implementation across the two cities.
- **Limitation in implementation** included paucity of time, differences in institutional governance of the two cities, non-availability of stakeholders during the time of data collection; limitation of group interviews as a tool for data collection; capacity of enumerators and their exposure to all components of WASH.

Key Findings

Relevance

CFAR's programme addresses the gaps in WSH infrastructure and services fostering community participation, building capacity among both communities and local governments, and promoting climate-resilient WASH services. Given the increasing threats of climate change, such as droughts and floods, CFAR's approach ensures sustainable and equitable access to WASH services. By strengthening governance and ensuring the voices of vulnerable communities are heard, CFAR contributes to more inclusive and effective service delivery.

Scope of WASH services: Baseline studies highlighted gaps in WASH infrastructure, including access to clean water, sanitation, and waste management, especially in informal urban settlements. The programme addressed additional issues like drainage and wastewater treatment while aligning with national urban infrastructure benchmarks.

CFAR tackled hygiene practice gaps, service provider accountability, and community awareness, focusing on menstrual hygiene management and infrastructure accessibility for marginalized groups. By developing socio-economic and climate vulnerability indices and adapting the UNICEF-GWP framework, CFAR mapped climate risks and projected extreme weather impacts on WASH infrastructure. Its inclusive and climate-adaptive approach ensured sustainable and equitable WASH services in these cities making CFAR highly relevant in addressing WASH challenges in Jaipur and Bhubaneswar.

Design of Institutional Framework for Delivery of WASH services: CFAR redefined the traditional rights-based approach by integrating communities as active institutions within the formal system, rather than positioning them solely as right holders demanding services from duty bearers. This shift developed the capacities of the communities to work with, and amongst themselves, to deliver WASH services and benefits to all the members of the community. At the same time the approach developed the capacity of the government to work with the community through their institutions.

To facilitate this, CFAR established a structured hierarchy of community institutions: Community Management Committees at the settlement level, Single Window Forums at the ward level, and Multistakeholder Forums at the project level. These institutions engaged with government bodies, including Municipal Corporations and Urban Development Departments, as well as civil society and private actors, ensuring sustained dialogue and intervention in WASH services.

The evaluation highlights this framework as highly effective in informal settlements, as it fosters shared accountability between communities and government agencies.

Adoption of CFAR models in National and Subnational WASH Policies: Evaluation found the CFAR programme to be highly relevant with the NUSP not only in terms of its thrust and goal but also in terms of its implementation structure and processes. The programme also has a high level of alignment with programmes of central government, and it has strengthened the integration of community-led sanitation governance in to state programmes.

Findings from the field show that the CFAR programme demonstrates a strong alignment with the government's urban development agenda by integrating climate-resilient WASH infrastructure and enabling inclusive practices in informal settlements of Bhubaneswar and Jaipur.

CFAR programme design and components were mapped to global SDG commitments that have been ratified by the Government of India. Evaluation assesses CFAR to be well aligned to international commitments and is thus highly relevant for the sector and its achievements contribute towards achievement of SDG targets related to water and sanitation, inclusive and sustainable cities, gender equality, reducing inequality and initiating climate action.

Integration of Climate-resilient WASH practices in local governance: CFAR has played a key role by establishing community-led governance mechanisms such as Community Management Committees (CMC), Single Window Forums (SWF), and Multi-Stakeholder Forums (MSF), strengthening participatory decision-making and service delivery. By co-creating WASH solutions with local governments, CFAR has enhanced resilience, especially in informal settlements vulnerable to climate risks. However, challenges persist in scaling up these practices across all urban areas.

Effectiveness

Access to WASH infrastructure: The WASH infrastructure covered by the project include the following:

- **Water:** PWS is the primary source for 97.9% of households. Other sources like tankers, government and/or private, similar proportion of households report them as sources for drinking water and water ATMs are used by only 1.1% of the households.
- **Toilets:** Open defecation is lower in Jaipur than Bhubaneswar, where 7% of men and 3.1% of women still practice it. Household toilet access is higher in Jaipur (90%) than Bhubaneswar (70%), though over 90% of residents in both cities have a toilet within 100m of their homes.
- **Handwashing:** Handwashing stations are present in 64.3% of Jaipur households and 50.1% in Bhubaneswar. Innovative interventions like Happy Taps in Bhubaneswar has promoted hand hygiene in Anganwadi Centres.
- **MHM:** Access to menstrual products was found to be 96.8% in Jaipur and 93.2% in Bhubaneswar. The practice of washing hand after change of menstrual product was universal in Jaipur and slightly lower in Bhubaneswar (93.2%).
- **Drainage:** Only 10% households indicated that they do not have access to any drain. Of the households that have access to drains, the majority (72.6%) had access to closed drains.
- **Solid Waste Management:** 61.4% of respondents were aware of campaigns on waste collection and disposal. Municipal collection services are used by 92.3% in Bhubaneswar and 56.5% in Jaipur.

Usage and Utilisation of WASH services: The extent of usage and utilisation of WASH services were assessed as given below:

- **Water:** 50% households in Bhubaneswar have 24x7 water supply whereas in Jaipur 87.5% households report receiving water once a day. 90.3% of households found water to be sufficient in Jaipur as compared to 66.7% in Bhubaneswar. Overall, more than 8 out of 10 households were satisfied with the quantity of water received by them.
- **Toilets:** 73.1% of respondents reported water being available at the primary toilet facility. 36.5% of households across both cities have never de-sludge their toilets raising concerns about maintenance and awareness of appropriate sanitation practices. Of the households that have de-sludge their toilets 67.6% households used government desludging services.
- **MHM:** 50% of respondents received training on MHM. 92.1% respondents in Jaipur and 90.4% of respondents in Bhubaneswar, use sanitary pads as their primary menstrual product.
- **Handwashing:** Of the households that have dedicated handwashing facility at their household premise water was always available in 98.3% of households and soap is available in 97.3% of households.
- **Drainage:** 39.2% households responded that they reside in waterlogged prone areas. Amongst these 43.8% experience waterlogging during any part of the year whereas the remaining 56.4% find that waterlogging occurs only during rainy season. Only 6.5% of households found that it takes more than one day for water logging to clear from their neighbourhood.
- **Solid Waste Management:** 78.7% of households indicated that they segregate waste, though the proportion of these households differ significantly between Jaipur (60.2%) and Bhubaneswar (97.6%). 83% of households report daily collection of solid waste collection. Majority of households (86.7%) dispose of wet waste through municipal waste collection services.

Quality and satisfaction from WASH infrastructure and services: The assessment of quality by the user of WSH services in the project areas was indicated by the respondent s as follows:

- **Water:** Across all water quality parameters, respondents in Bhubaneswar report higher satisfaction levels compared to Jaipur.
- **Handwashing:** Near-universal compliance is observed (above 97%) for essential handwashing practices among households, particularly for washing hands before and after meals and after defecation. However, practices like washing hands before feeding a child show disparities with Jaipur higher than Bhubaneswar. Similarly, handwashing after attending to domestic animals is relatively low.
- **Solid Waste Management:** 85.4% and 84.1% of households in Jaipur and Bhubaneswar, respectively, found local waste management services adequate.

Access and usage during climate hazard: With respect to access and usage of WASH services during climate hazard was collected from the respondents. The responses are as follows:

- **Water:** During climate hazard 96.9% households rely on piped water supply to access water for drinking and domestic purposes. Bhubaneswar impacted by floods, heat waves and cyclones has a higher proportion of household's that report disruption in access to water during and post-hazard. In case of Jaipur households were impacted during heatwave and a much lesser percentage during flood and storms respectively.
- **Toilets:** 75.6% of respondents reporting damage to toilet infrastructure during climate hazards. This issue is more pronounced in Bhubaneswar, where 85.6% reported damage, compared to 43.3% in Jaipur. Increased distance to find a toilet was another major impact, experienced by 38.6% of the respondents. Contamination of water source (66.1%) and reduced availability of clean water (37.8%) were other impacts that were reported by households.
- **Handwashing:** Following natural disasters, 77.5% of respondents reported easy access to handwashing facilities, with a higher proportion in Jaipur (88.9%) compared to Bhubaneswar (71.8%).
- **Drainage:** 57.3% of respondents believe their settlement's drainage system is prepared to handle extreme climatic hazards. This perception is significantly higher in Bhubaneswar (74.9%) compared to Jaipur (40.1%).

Efficiency

Water: Project scores high on the efficiency parameters related to supply of safe and potable water within household premises. However considerable work needs to be done for assuring reliability of the water supply as the proportion of households receiving 24x7 water supply are less than 50%.

Toilets: Project has demonstrated a high degree of efficiency in construction of household toilets and their usage by men and women. This is even though only 18.8% of households report receiving subsidy for an average amount of Rs 7301 for toilet construction in Jaipur and Bhubaneswar both.

In case of desludging the project has reached moderate success, with households paying an average amount of Rs 517 for desludging and it needs to enhance the regularity of desludging of toilets as it may affect the sustainability of the toilet infrastructure and usage in the long run.

Hygiene: CFAR programme fares high in performance related to MHM. Awareness and training on MHM have been provided with technical inputs from UNFPA. CFAR on its part was on training of men on MHM and the establishment of Pad Bank.

More than half of households have handwashing station at their house and amongst those more than 92% use soap and water, indicating that once the handwashing station is established the households will ensure its functionality and will use soap and water for washing hands.

Drainage: 9 out of 10 households indicated that their neighbourhood is covered by drainage system which in 90% of the cases is pucca. The quality of the drainage system is indicated in the fact that waterlogging is cleared within one day as reported by more than 93% of the households. An area that requires attention for the project is to develop responsibility amongst households and community volunteers in managing the drainage system.

Solid waste management: More than three-fourths of households practice segregating solid and wet waste at the household levels, and 9 out of 10 households report that the waste is collected from the household directly. Project had recognised the difficulties faced by households where the members must leave early for work and households with persons with disability. In such cases the waste collection is undertaken from their doorsteps. To enable waste collectors to identify houses with persons with disabilities, appropriate signage is used to mark such houses.

Sustainability

Infrastructure and Services: PWS and toilets, built at household level, willingness to pay for desludging of toilets, adoption of regular handwashing and proper MHM, and active involvement of community in liquid and solid waste disposal indicate high likelihood of sustainability of WASH infrastructure and services. Factors that may impact the sustainability include: *one*, the project has not focussed on barrier free accessibility of PWS; *two*, instead of promoting universal design project promoted separate design of toilet for PwD/climate resilience that entails the need for households to make additional expenditures for modification which may not be the priority for the households; *three*, community may not be willing to crowd fund cost of conducting water quality tests as the water supply agency is also mandated to conduct these tests; and *fourth*, discussions and initiatives on water recycling and conservation measures have not been undertaken within the project.

Benefits: Community has recognised the convenience and comfort that WASH services bring along with them which will ensure their continued utilisation. The community has not yet connected the dots and realised the implication and health, livelihood opportunities, dignity and well-being that also result from continued use of WASH services.

Institutions: Multiple community institutions facilitated by the project have played critical role in mobilising households, spreading awareness and education on WASH related issues, and have taken decisions in designing, planning, implementation and monitoring of WASH infrastructure and services. SDA as a community institution has been recognised that has allowed its sub-units to link with the formal systems for mutual collaboration. The process could be expanded to develop SDA as the umbrella with network of all community institutions in informal settlements.

Climate resilience: CFAR programme has worked to develop climate proof infrastructure mostly against threat of floods cyclones; on developing pool of resource persons who access and understand the implications of weather forecasting; and linkage of the community to disaster preparedness plans of the local government. The components that have not been given sufficient focus for the development of climate resilience on WASH include lack of focus on heat as extreme climate event, and on the development of community based and controlled loss and damage fund.

Impact

Enhancing access to water: Project interventions have significantly improved access to safe and reliable water sources in both the cities through improvements in coverage of PWS along with improvement in community's perception of safe water. Climate resilient participatory WASH programming, encouraging low-cost innovations in water storage and filtration plants, and public-private partnership models are demonstrated successes under the project. Gaps were identified in integrating local interventions with broader governmental frameworks that has affected the sustainability and scalability of the experience and learning from the project.

Improving Sanitation Facilities: Notable impact has been on improved access to toilets and enhanced resilience during climate hazards. Availability of community toilets during climate hazards have grown significantly. Improved drainage systems have been found to have reduced exposure to open drains. Waste management initiatives have led to widespread adoption of segregation practices in both cities covered by the project. CFAR's collaboration with BMC established decentralised waste processing units, which have eliminated the need for traditional dump yards, further facilitating waste segregation at the source.

Innovative practices adopted by the project included Saniwall as a solution for community-based monitoring. Management of FSTP by marginalised groups; regular testing and compliance with state pollution control guidelines ensures that the FST. Additionally, adoption of gender-sensitive approach across project activities, training to build disaster preparedness within the communities, and facilitating installation of sanitary napkin disposal machine and hygiene education programme in schools have added in improving sanitation facilities.

Promoting hygiene practices: The behavioural change communication campaigns has transformed handwashing practices in target communities. In schools and Anganwadis installing handwashing stations have made significant impact on improved hygiene practices among children in informal settlements.

GEDSI: The programme's GEDSI framework fostered inclusivity. Marginalised groups, including women, PwDs, and trans-persons, were actively engaged through tailored initiatives such as the establishment of Single Window Forums and Community Management Committees. Vulnerable households, including those headed by single women and containing PwDs, were prioritized for WASH services.

Equity

CFAR's WASH interventions prioritise equity and inclusivity by integrating marginalized groups—Persons with Disabilities (PwDs), transgender individuals, women, and adolescent girls—into institutions, decision-making processes, and infrastructure planning. The interventions focus on three key dimensions: inclusive design, institutional collaboration, and participatory decision-making.

Inclusive Design: Water accessibility interventions, such as water ATMs, rainwater harvesting systems, and piped water connections, have significantly improved access for marginalized groups. However, challenges remain distinct in both cities—Jaipur faces physical (90.9%) and social (40.9%) barriers, while Bhubaneswar's primary challenge (98.1%) is environmental, such as flooding and contamination. Partnerships with SAKHA and Mamta HIMC have played a crucial role in addressing these disparities. As a result, 95.8% of respondents in Jaipur and 99.1% in Bhubaneswar reported no barriers to water access, indicating substantial progress in equitable distribution.

For persons with disabilities (PwDs), CFAR has advocated for accessible sanitation infrastructure, including ramps, handrails, wider layouts for wheelchair users, and audio/visual guidance tools. It has been pointed out that that most facilities only cater to physical disabilities, overlooking intellectual and sensory impairments. Limited awareness among municipal authorities and cumbersome disability certification processes further hindered accessibility improvements.

For transgender individuals, CFAR has introduced gender-neutral toilets, significantly reducing open defecation. Transgender advocates emphasised how CFAR's municipal engagement helped ensure safe, private, and inclusive sanitation spaces. In Bhubaneswar, CFAR collaborated with SAKHA to implement signage campaigns, repurposing existing public toilets rather than constructing new facilities.

CFAR's Menstrual Hygiene Management (MHM) interventions have strengthened gender-sensitive sanitation infrastructure by integrating sanitary pad disposal units and private changing spaces. With 91.2% of respondents across Jaipur and Bhubaneswar using sanitary pads and 94.9% confirming easy access to menstrual products, significant improvements have been achieved.

Inclusive Institutions: CFAR's by establishing Single Window Forums (SWFs) enabled direct engagement of PwDs, transgender individuals, and slum residents with decision-makers, influencing policies on sanitation infrastructure, water access, and climate resilience. Strategic partnerships with Mamta HIMC, SAKHA, and the Disha Foundation facilitated collaborative solutions, ensuring WASH interventions integrated gender sensitivity, disability inclusion, and climate adaptation.

Multi-stakeholder consultations and participatory forums allowed slum residents to address water scarcity, sanitation issues, and waste management in underserved areas. These engagements brought together municipal authorities, engineers, and community leaders, leading to piped water connections for excluded communities allowing factoring in of climate vulnerabilities, such as waterlogging and drainage failures.

Inclusive Decision-Making Processes: CFAR has ensured marginalized voices are central to WASH governance, strengthening participatory decision-making mechanisms. SWFs provided structured platforms for communities to highlight their challenges directly to municipal authorities, ensuring their unique needs—such as transgender sanitation barriers and water shortages in slums—were formally addressed.

Beyond sanitation, CFAR integrated community input into climate resilience strategies by creating spaces and opportunities for them to actively participate in discussions on how climate hazards like flooding and drought disproportionately affect marginalized groups. These engagements led to targeted interventions, such as improved drainage systems and enhanced water supply measures. However, challenges remain—the maintenance of inclusive toilets, slow policy implementation, and persistent societal stigma continue to hinder progress, requiring sustained advocacy, investment, and long-term engagement.

Learnings and Way Forward

Learnings

Good practices and effective strategies that were identified by the evaluation as main learning from the programme interventions include the following.

GEDSI: The project strategies demonstrated innovation, inclusivity and sustainability in project implementation include adoption of GEDSI that allowed it to move beyond the conventional definitions of social marginalisation. By integrating the needs of transgender individuals and persons with disabilities, the project addressed multiple layers of vulnerability through an intersectional lens. The approach has facilitated community leadership and volunteerism in monitoring and maintaining inclusive WASH services.

Saniclimiwall: Saniclimiwall is a climate-adaptive tool that integrates real-time climate alerts, enhances accountability and provides ward-level service status updates. The platform strengthened governance by actively engaging municipal authorities, elected representatives and slum dwellers' associations, making it a scalable model for climate-resilient urban service delivery.

Micro-Planning: CFAR's micro-planning methodology played a critical role in identifying gaps in WASH infrastructure and service delivery in Jaipur and Bhubaneswar. The process involved baseline studies, mapping of service gaps and co-developing improvement plans with communities. The incorporation of tools like Saniclimiwall further facilitated transparent and data-driven service improvements, aligning with global benchmarks such as the JMP ladder.

Community-Led Climate Resilience: CFAR's climate resilience approach to WASH interventions focused on climate-proofing WASH infrastructure. Engagement with disaster management agencies further enabled community volunteers in understanding early warning response, emergency preparedness, and post-disaster recovery efforts.

Multi-Stakeholder Forums: Given the multi-agency nature of urban WASH governance, CFAR established Multi-Stakeholder Forums (MSFs) as collaborative spaces for different agencies, including municipal authorities, water supply agencies, solid waste management units, disaster response teams and local civil society groups. These forums facilitated joint action planning, improved service delivery, and unlocked additional support for livelihood programs, disability certification, and municipal schemes for marginalised groups. The presence of elected representatives strengthened community engagement with policymakers and programme implementers, ensuring sustainable governance mechanisms beyond the programme's timeline.

Recommendations

With respect to WASH infrastructure and services the evaluation recommends enhancing inclusive and accessible sanitation infrastructure by intensifying disability-friendly features and promotion of universal design and gender-neutral of toilets. Within the sanitation and hygiene, it is recommended to strengthen social behavioural change through effective communication by addressing gaps in sustainable behaviour change processes and by expanding MHM outside schools.

The existing mechanisms that need to be further strengthened include processes related to climate resilience and disaster preparedness by piloting adaptive solutions like rainwater harvesting systems and flood-resistant sanitation facilities; knowledge management and learning platforms by enhancing participatory monitoring and learning frameworks; and institutionalising GEDSI mechanisms at all levels in planning, implementation and monitoring of works and services. At the macro level CFAR is recommended to promote more of collaborative partnerships with corporations to address complex issues in water management and public health.

New dimensions that are recommended as additionalities to the existing programme, include integrating WASH with nutrition and health; and in providing training to workers at FSTP plant for handling hazardous material including developing sustainable business models for converting treated sludge into organic manure.

Way Forward

Way forward suggests future trajectory for CFAR, as an organisation, to take forward its experiences and learning from the programme. With experiences in implementation of WASH in informal settlements CFAR holds significant value as knowledge resources for other agencies involved in urban WASH service delivery. Evaluation recommends that CFAR systematically documents the experiences of communities, users and multiple agencies, synthesise these experiences into knowledge products, and pro-actively disseminate them to interested and intervening agencies.

CFAR is recommend preparing a roadmap for WASH in urban informal settlements that will serve as the guiding tool for agencies to develop/change their policies, strategies and programmes related to WASH. The roadmap will make suggestions based on good practices that were found to be effective and useful for the process. The primary audience for the road map will be policy makers and officials involved in designing WASH programmes.

CFAR is well placed to develop and establish itself as a capacity building agency in climate resilient WASH in urban informal settlements. To evolve as a capacity building agency CFAR needs must develop training modules and SoPs that will form the basis for its capacity development inputs. Additionally, as an organisation CFAR will need to enhance its own capacities to provide coaching and mentoring support to other agencies on a regular basis.

CFAR can bring its experience for scaling up, implying increasing the size and scope of WASH by integrating it with health, nutrition and livelihoods along with adaptive social and climate resilience will provide the growth trajectory for the present project.

1. Introduction

1.1 Background and Context

Water, Sanitation and Hygiene (WASH) are fundamental to public health, well-being and sustainable development. Recognising this, **SDG 6 aims to ensure universal access to safe and affordable water and sanitation for all**. However, achieving this goal becomes increasingly challenging in the face of global issues like climate change which poses significant threats to the stability of WASH systems.

SDG 6 emphasises on equitable and resilient WASH systems that can adapt to climate-related disruptions. This is particularly crucial in regions vulnerable to extreme weather events where climate-induced challenges such as droughts, floods, cyclones and sea-level rise threaten the stability of essential services. Strengthening climate resilience in WASH systems safeguards access to clean water, ensures reliable sanitation services and protects vulnerable communities from adverse climate impacts.

Climate-resilient WASH systems are increasingly recognised as a key strategy for climate adaptation. Integrating climate resilience into water management, sanitation infrastructure and hygiene services help communities cope with the rising frequency and intensity of climate-related events such as droughts, floods and extreme heat.

Importance of Climate Resilience in achieving SDG 6

The 2021 report from the Intergovernmental Panel on Climate Change (IPCC) highlights how human-driven climate change is intensifying extreme weather events globally, including heatwaves, heavy rains, droughts and tropical cyclones. The 2022 IPCC adaptation report further emphasises that these climate extremes directly threaten water security, undermining progress toward SDG 6 targets.

In response, the WASH sector has increasingly focused on building adaptive capacity through climate-resilient infrastructure and practices. These efforts are essential for protecting communities from unpredictable and extreme climate conditions, ensuring that WASH services remain reliable and effective despite environmental challenges. **Climate-resilient WASH systems aim to: (1) construct durable and sustainable infrastructure and (2) reduce inequality in service provision to empower communities against climate risks.** Strengthening climate-resilient WASH systems is especially important for upholding the human right to safe water as climate hazards disproportionately impact marginalised populations.

Achieving SDG 6 therefore requires integrating WASH with other sectors through approaches like Integrated Water Resource Management (IWRM) which promotes sustainable and resilient water access and management.

Beyond the targets on drinking water (6.1) and sanitation (6.2), SDG 6 also includes goals to **improve water quality (6.3), increase water-use efficiency (6.4), implement IWRM (6.5) and restore water-related ecosystems (6.6)**. Climate change affects all of these targets, which, in turn, influence the resilience of drinking water and sanitation services.

In light of this, the interlinkages between SDG 6 (Clean Water & Sanitation), SDG 5 (Gender Equality), SDG 10 (Reduced Inequalities), and SDG 11 (Sustainable Cities) with SDG 13 (Climate Action) are critical, as climate change disrupts the water cycle, directly affecting water availability, quality, and equitable access. Achieving SDG 6 depends on addressing these interconnected goals, yet WASH remains under recognised as a key climate adaptation strategy, despite its vital role in disaster response and risk reduction. Strengthening resilient WASH services is essential for enabling communities to recover from climate-related shocks, protect livelihoods and build long-term resilience.

India's Progress and Challenges in the WASH Sector

India has made significant strides in WASH through its national missions such as 'WASH 1.0' (2014–19) under the Swachh Bharat Mission (SBM) which prioritised universal access to basic sanitation. This mission achieved remarkable progress, with the construction of over 100 million toilets and the declaration of over 600,000 villages as open defecation-free. 'WASH 2.0' (2019–24) shifted focus to water security, with the Jal Jeevan Mission making substantial progress in expanding access to potable water, promising to provide piped water to all rural households by 2024. The Atal Mission for Rejuvenation and Urban Transformation (AMRUT) further strengthened urban WASH infrastructure, specifically targeting cities with populations over 100,000.

WASH Challenges in Informal Settlements

Despite these achievements, significant challenges remain, particularly in **informal settlements/slum areas** where **systemic issues** hinder the delivery of safe and inclusive WASH services. Many residents in slums lack proprietary rights, limiting their access to permanent infrastructure such as household toilets and water pipelines. These areas are further burdened by inadequate infrastructure and gaps in governance, exacerbating inequalities in access to essential WASH services.

Climate change has intensified extreme weather events, including floods, droughts, cyclones and hailstorms which disrupt WASH infrastructure and services. These disruptions lead to water shortages, contamination of water sources and damage to sanitation facilities, undermining public health and community resilience.

India's informal settlements, in particular, face compounded risks from climate variability. **The complexity of infrastructural development** in these areas makes it difficult to implement climate-resilient WASH solutions, further widening the gap in access to safe water and sanitation services. Moreover, **marginalised groups—including women, transgender persons, persons with disabilities, adolescent girls, children and the elderly** are disproportionately affected due to their vulnerability and limited access to adaptive resources.¹

Strengthening climate resilience within SDG 6 is crucial for safeguarding WASH systems and ensuring their continued functioning amid climate-related disruptions. By integrating community-driven approaches, sustainable water management practices, and resilient, adaptive infrastructure, particularly in informal settlements—WASH systems can better withstand climatic shocks while addressing the needs of marginalised populations.

Efforts aligned with **SDG 6.1 (safe and affordable drinking water), SDG 6.2 (equitable sanitation and hygiene), and SDG 6.3 (improved water quality)** emphasise on **adopting JMP standards** for basic and safely managed WASH services, alongside **climate-resilient practices guided by the Rio Markers framework**. Incorporating GEDSI principles into WASH interventions, further aligns with **SDG 6.b** by enabling inclusive community participation and promoting sustainable, climate-resilient WASH systems. Additionally, these efforts contribute to **SDG 13** by enhancing adaptive capacity and resilience to climate-related impacts, ensuring that WASH services address both equity and environmental sustainability.

1.2 About the Programme

In light of the above challenges, **CFAR launched the WASH Programme in Jaipur and Bhubaneswar from 2018 to 2024, aiming to advance inclusive, gender-responsive, and climate-resilient WASH services** by aligning it with national initiatives such as the SBM, JJM and state led programmes. This approach focused on localising national WASH policies and integrating sub-national programmes and improving governance at the ward level to ensure accessibility and equity in WASH services.

The programme places particular emphasis on vulnerable groups including **transgender persons, single women, adolescent girls, elderly** and **persons with disabilities**, aiming to make WASH services universally inclusive and responsive to the unique needs of these populations.

CFAR's approach extended to prioritise community empowerment and resilience. By redefining the traditional rights-based paradigm, the programme encourages communities to actively participate in co-creating and managing WASH solutions. This collaborative framework positions communities not just as beneficiaries but as equal stakeholders, working alongside government systems to address systemic barriers and enhance service delivery.

Phase 1 (2018-2022)

During the first phase, **CFAR focused on achieving universal access to WASH services in urban slum settlements of Jaipur and Bhubaneswar** with a parallel focus on raising awareness about climate change and its implications for WASH infrastructure. The initiative prioritised equitable access to basic and safe WASH infrastructure, ensuring that these services addressed the needs of all marginalised groups without exception. This phase laid a strong foundation by tackling long-standing disparities and empowering communities to demand and manage WASH services effectively. However, by the end of Phase 1, CFAR recognised that providing infrastructure and raising awareness alone would not guarantee sustainability unless these services were also climate resilient. This realisation marked a turning point, paving the way for a deeper integration of climate aspects into WASH services in Phase 2.

¹ <https://washmatters.wateraid.org/sites/g/files/jkxooof256/files/program-guidance-for-climate-resilient-water-sanitation-and-hygiene.pdf>

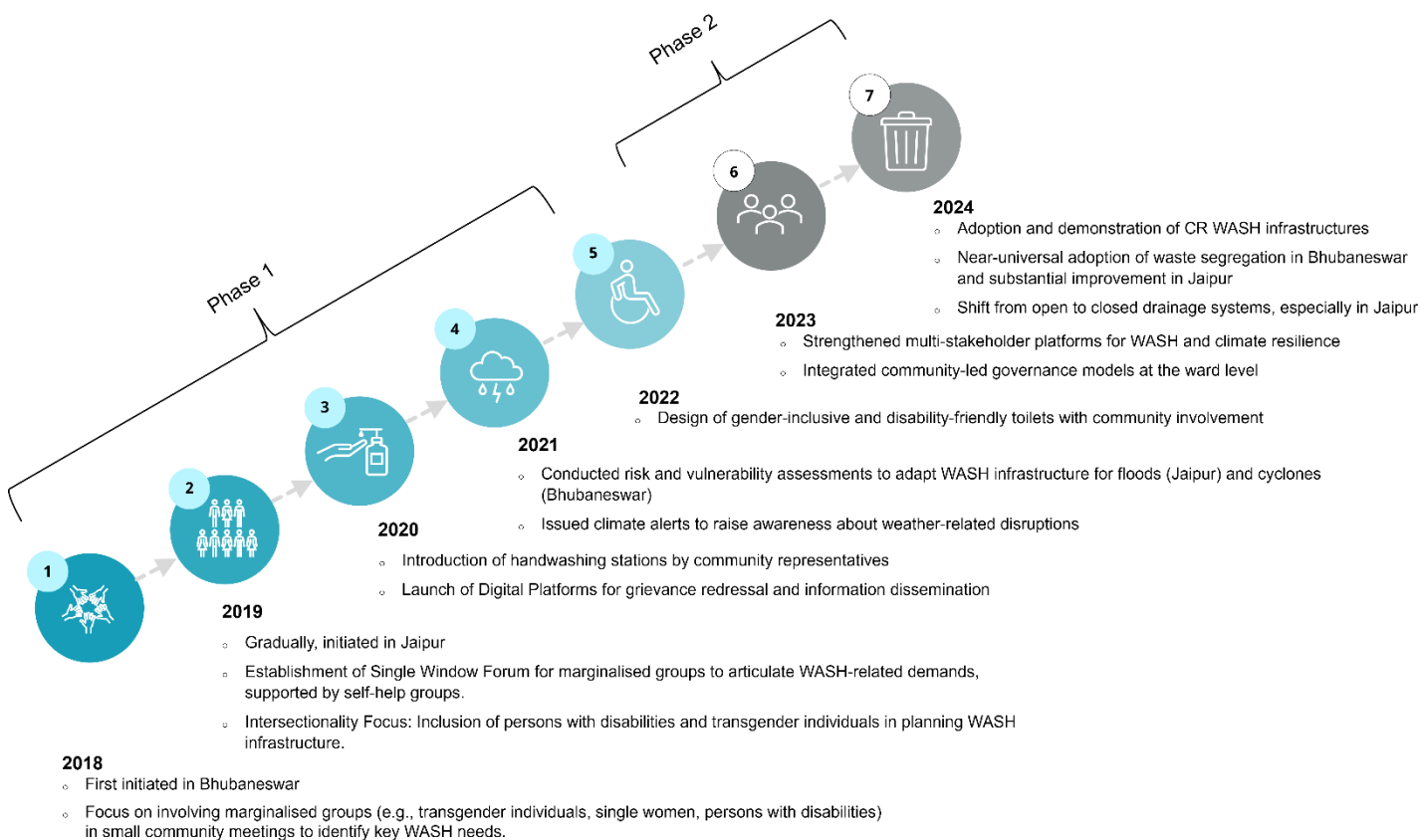
Phase 2 (2023-2024)

Building on the foundation laid in Phase 1, **the second phase of the programme fully embraced climate change as its intervention, focusing on developing safe, sustainable, and climate-resilient WASH practices.** Recognising the growing challenges posed by climate change, the Phase 2 specifically addressed climatic risks to WASH infrastructure and services in slum settlements.

This phase emphasised climate resilience, contamination prevention, and system reliability, ensuring that WASH services could withstand and adapt to extreme climatic conditions. The initiative adopted a people-centric and inclusive strategy, navigating the complexities of climate change while addressing the unique vulnerabilities of marginalised communities. Particular focus was given to women, girls, the elderly, and persons from diverse gender identities, PwDs and other marginalised groups, including Scheduled Castes (SCs) and Scheduled Tribes (STs), ensuring that their needs were at the forefront of planning and implementation.

Timeline of Programme Interventions (2018-2024)

Figure 1-Timeline of Programme Interventions



1.3 Objectives of the Evaluation

The evaluation aims to assess the overall impact of CFAR's intervention from both Phase 1 and Phase 2 of its WASH programme. It focuses on understanding CFAR's role **in universalising access to WASH services, raising awareness of climate-resilient WASH practices, promoting Gender Equality, Disability and Social Inclusion (GEDSI), capacity building and strengthening WASH governance and capacity in informal settlements of Bhubaneswar and Jaipur.**

<p>1. Universal access to WASH Services</p>	<p>Assess the programme's effectiveness in enhancing access to safe, inclusive, and climate-resilient WASH services, particularly for vulnerable and marginalised groups. This includes measuring increase in the number of individuals with access to basic water, sanitation, and hygiene services, and assessing improvements in infrastructure quality.</p>
<p>2. Climate-Resilient WASH Practices</p>	<p>Evaluate the extent to which the programme has raised awareness and adoption of climate-resilient WASH practices. This includes assessing community-level preparedness and the ability of WASH</p>

	infrastructure and services to withstand climate hazards such as floods and droughts, particularly in vulnerable settlements.
3. Gender Equality and Social Inclusion (GEDSI) Contributions to WASH services	Determine how effectively the programme has promoted GEDSI principles in the implementation of WASH services. This involves examining the roles and participation of women, adolescent girls, persons with disabilities, and other marginalised groups in WASH governance, leadership, and decision-making processes, as well as the programme's impact on reducing social and gender-based disparities in service access.
4. WASH Governance and Community Engagement	Assess the impact of the programme on strengthening WASH governance at the ward and community levels, including the effectiveness of WASH committees, policies, and institutional frameworks. Additionally, evaluate the level of community engagement and participation in decision-making especially among vulnerable groups.
5. Capacity Building	Assess the programme's effectiveness in strengthening the system's capacity to deliver inclusive WASH services. This involves evaluating the role of NGOs, CSOs and government bodies in facilitating knowledge sharing and capacity building for creating sustained improvements in service delivery for marginalised communities.

1.4 Methodology

The evaluation employs a **Concurrent Triangulation Mixed Methods Research Design**² to assess CFAR's WASH intervention in informal settlements of Jaipur and Bhubaneswar. This approach integrates quantitative and qualitative methods conducted simultaneously to capture comprehensive insights into the programme's impact.

The evaluation is guided by CFAR's MEL Plan which frames the analysis through **Key Inquiry Questions (KIQs) mapped to the REESI+E criteria—Relevance, Effectiveness, Efficiency, Sustainability, Impact and Equity**. This structured framework ensures that the evaluation systematically addresses critical dimensions of the intervention, enabling a thorough assessment of the programme.

1.4.1 Desk and Literature Review

A **comprehensive desk review** was done to get a foundational understanding of CFAR's WASH intervention. It involved an in-depth examination of key documents such as **baseline reports, MIS data from Phase 1 and 2 and other reports including risk and vulnerability assessments, WASH governance reviews and GESI studies shared by the CFAR team**. This review provided a comprehensive understanding of the project's evolution, its alignment with national and local WASH policies and the roles of various stakeholders serving as a critical input for evaluating the programme's impact and effectiveness.

In the **literature review**, an in-depth analysis was conducted to highlight the importance of SDG 6, which focuses on ensuring universal access to safe and sustainable water and sanitation. The review explored global initiatives and practices in climate-resilient WASH systems, emphasising their role in supporting climate adaptation and addressing challenges like droughts, floods, and rising temperatures. It examined the need for community-level resilience, showcasing examples of how local efforts and community-driven approaches can enhance the sustainability of WASH services in the face of climate change. The review also delved into the barriers and progress in achieving equitable WASH access in South Asia, with a particular focus on marginalised populations. Through case studies, including innovative strategies from India, it provided insights into addressing climate-related vulnerabilities in WASH systems.

1.4.2 Tool Development

The quantitative tool for the evaluation was developed with distinct sections tailored to assess various dimensions of WASH services and their climate resilience. It covered critical sections aimed at capturing comprehensive data on Water, Sanitation, Hygiene, Drainage Systems, Solid Waste Management. Each section was tailored to measure both infrastructure availability and behavioral aspects of WASH practices including awareness on climate resilience. Additionally, the tool incorporated questions to evaluate the inclusivity of services, particularly for marginalised groups such as women, transgender persons and persons with disabilities.

Qualitative tools including **KIIs and FGDs** tools were designed to delve deeper into the lived experiences and perceptions of various stakeholders. It was designed to explore a wide range of themes, including governance and institutional support,

²<https://pmc.ncbi.nlm.nih.gov/articles/PMC3235529/#:~:text=The%20three%20concurrent%20mixed%20methods,provide%20support%20for%20various%20perspectives.>

community participation in decision-making, inclusivity in WASH services, and challenges faced during climate events. Additionally, it examined adaptive practices for enhancing resilience, barriers to service delivery in informal settlements and the unique needs of marginalised groups. By incorporating these diverse perspectives, the evaluation seeks to provide a multidimensional analysis of the intervention's effectiveness.

1.4.3 Pretesting of the Tool

The quantitative tool underwent a pretesting phase to ensure its clarity, relevance, and reliability for the respondents. This phase involved piloting the tool with a small sample from the target population (including transgenders) to identify potential challenges such as ambiguous questions or difficulties in understanding the language or format. Feedback gathered during pretesting was carefully analysed to refine the tool, ensuring it was culturally and contextually appropriate for the diverse populations involved. Adjustments were made to correct the flow of questions, eliminate redundancies and address any gaps in capturing critical data. Visual documentation of the pilot testing can be found in [Annexure III](#).

1.4.4 Sampling Design for Quantitative Household Survey

A **cross-sectional survey design** was adopted, considering that the beneficiary population includes migrants and experiences varying levels of attrition across both cities. Following list down the selection criteria for wards to ensure diverse representation of beneficiaries.

The selection criteria of wards:

Of the **39 intervention wards in both cities**, which include both direct and indirect beneficiary households, **13 wards in Bhubaneswar and 17 wards in Jaipur were selected**. The selection of wards were based on three key criteria:

- 1. Vulnerability Ranking:** Wards are ranked based on a Risk Index, which measures hazards, vulnerability, and exposure. To ensure adequate representation of more vulnerable wards, the sample was stratified into low, medium, and high vulnerability categories. Proportional representation was maintained across these categories with a greater focus on more vulnerable areas (lower-ranked wards).
- 2. Fragile Areas:** Two wards were selected from fragile areas such as tribal pockets of the city to include the most at-risk and marginalised populations in the sample. These wards were identified through purposive selection based on their unique characteristics and risk profiles.
- 3. Number of Settlements:** Wards with a higher number of settlements were selected using Probability Proportional to Size (PPS) sampling, ensuring that wards with more settlements have a higher likelihood of being included in the sample.

The selection criteria of the slum settlements:

For the selection of slum settlements, **1-3 settlements** from each ward were **selected purposively in consultation with CFAR team**. In cases where a ward has only one settlement, adjustments were made by increasing coverage in other wards with a higher number of settlements. This approach ensured the inclusion of:

- 1. Slum Settlements with Higher Numbers of Households:** Settlements with a larger concentration of households were prioritised to ensure that areas with significant populations are adequately represented in the sample.
- 2. Slum Settlements at the Margins:** In addition to larger settlements, settlements located at the margins, such as those in fragile or vulnerable conditions were also included. These areas often characterised by higher levels of deprivation and limited access to essential services were selected to capture a comprehensive understanding of vulnerability across different contexts.

The selection criteria of households:

1. Allocate households to the selected wards using PPS to ensure proportional representation.
2. Within each ward, purposively select 2-3 settlements based on the criteria (higher number of households, vulnerable or fragile areas).
3. In each selected ward, **30-40 households** were purposively chosen for the sample. This approach ensured the inclusion of households in fragile areas, as well as those with transgender persons, elderly members, persons with disabilities (PwDs), and other vulnerable characteristics, thereby providing diverse and representative perspectives for the evaluation.

List of Wards and Settlements covered in Household Survey is mentioned in [Annexure I](#).

This selection approach ensures that the household sample was both statistically robust and inclusive of the vulnerable and high-risk groups being targeted.

1.4.5 Sample Size of Households covered in each city

The calculation of the final sample size proposed during the inception phase is presented in [Annexure II](#). However, during data collection, additional data was gathered to ensure comprehensive coverage and representation, resulting in a larger sample size. The distribution of the sample size collected is detailed below:

Table 1- Sample Size

Quantitative Sample Size			
City	Jaipur	Bhubaneswar	Total
Sample Size	561	546	1,107

Qualitative Sample Size			
City	Jaipur	Bhubaneswar	Total
KIIs	15	13	28
FGDs	15	16	31

1.4.6 Training of Enumerators

A **comprehensive two-day online training programme** for enumerators and supervisors was conducted to ensure effective administration of the tools used in the evaluation. The sessions included detailed guidelines on conducting **Focus Group Discussions**. The training covered essential aspects such as ethical considerations, techniques for engaging with communities and strategies to ensure accuracy in data collection.

Additionally, the training covered the **Household survey tool**, which focused on capturing quantitative data through sections such as respondent profiles, water accessibility and adequacy, sanitation infrastructure, hygiene practices, drainage systems, and solid waste management.

The training also incorporated interactive sessions and Q&A discussions to address any challenges that enumerators might face in the field, ensuring preparedness for unforeseen scenarios.

1.4.7 Data Collection

Data collection for the evaluation was conducted from **5th December to 18th December 2024** in Jaipur and Bhubaneswar, employing a mixed methods approach to ensure a comprehensive understanding of the intervention. The process involved **Household Surveys, Key Informant Interviews (KIIs), and Focus Group Discussions (FGDs)** with both quantitative and qualitative data collected simultaneously. Stakeholders for KIIs and FGDs were identified by the CFAR team to capture diverse perspectives and insights about the programme. The entire CFAR team was actively involved in these discussions to capture in-depth perspectives of the programme, ensuring a holistic and nuanced understanding of its impact.

Experienced IPE Global researchers conducted interviews with high-level stakeholders to ensure depth and accuracy in capturing critical information. Participatory tools, such as chart papers were utilised during community engagement activities to encourage active participation and co-create insights. A detailed list of the parties and name of team members/researchers involved is provided in [Annexure IX](#).

Despite logistical challenges, such as the complexity of the WASH intervention and the need for replacement and retraining of some enumerators in Jaipur, the data collection team, with vital support from IPE Global and CFAR, successfully navigated these issues to gather high-quality data. This rigorous data collection process was instrumental in laying the foundation for robust analysis and evaluation. Visual documentation of the field activities from Jaipur and Bhubaneswar is attached in [Annexure IV](#).

1.4.8 Limitations

Limitations of Evaluation Design:

Inconsistent Indicators across cities in the Phase 1 Baseline Study	A key limitation of the evaluation design was that while indicators for Jaipur and Bhubaneswar were broadly similar in the Phase 1 baseline study, they were not entirely identical. This subtle variation made cross-city comparisons during the endline assessment more challenging.
Absence of Control Sample	The evaluation did not include a control sample, making it challenging to compare the outcomes of CFAR's intervention (treatment group) with non-intervention areas (control group). This limits the

	ability to establish causality and determine the extent to which the observed changes can be attributed solely to the intervention.
Staff Attrition and Recall Biases	As a seven-year-long programme, CFAR encountered staff attrition over the course of its implementation. This turnover led to challenges in maintaining institutional memory which in turn contributed to recall biases during evaluation processes.
Temporal Disparity in Programme Intervention Roll-out in Jaipur and Bhubaneswar	The temporal disparity in the intervention roll-out between Jaipur and Bhubaneswar posed a limitation to the evaluation design. While the intervention began in Bhubaneswar in 2018, it was initiated a year later, in 2019, in Jaipur. This staggered implementation made it challenging to establish a uniform framework for comparison between two cities.

Limitations of Implementation:

Paucity of Time	The limited time available for data collection posed significant challenges in ensuring the depth and comprehensiveness of the evaluation process. Certain aspects of the study such as capturing nuanced programme impacts and stakeholder perspectives required more time to be fully explored. This time constraint may have limited the evaluation's ability to delve deeper into specific themes and provide a more detailed understanding of the intervention's outcomes.
Institutional and Governance differences in two cities	Differences in institutional frameworks and governance structures between Jaipur and Bhubaneswar created challenges in standardising data collection processes. These differences influenced how the intervention was implemented and perceived across the two cities.
Unavailability of a few Stakeholders	Despite efforts to engage a diverse range of stakeholders, scheduling challenges and their unavailability hindered the inclusion of all key stakeholders during the evaluation. This limitation may have led to an incomplete representation of perspectives, potentially constraining the breadth of insights into the intervention's broader impact.
Limitation of Group Interviews	Group interviews, conducted in some locations, resulted in biases and confusion for enumerators in capturing individual responses accurately.
Training of Enumerators	The cross-cutting nature of the WASH intervention, coupled with its complexities posed challenges for enumerators during training. The intricate subject matter and limited time available for training followed by mock interviews and field testing further compounded these hurdles, making it difficult for enumerators to fully grasp the depth of the intervention.
Enumerator Replacement and Retraining	In Jaipur, some enumerators were found to be unsuitable for the evaluation's requirements and had to be replaced. This necessitated additional training sessions to ensure the new enumerators were adequately prepared. The replacement and retraining process introduced logistical complexities and delayed the data collection timeline, requiring significant effort to bring the team up to speed.

2. Key Findings

This chapter presents key findings of CFAR’s interventions in strengthening climate-resilient WASH services in informal settlements of Jaipur and Bhubaneswar, structured around the REESI+E criteria—Relevance, Effectiveness, Efficiency, Sustainability, Impact, and Equity. This framework provides a comprehensive approach to evaluate the programme’s performance.

The chapter begins by examining how the programme aligns with the broader context of urban development, climate resilience, and WASH priorities, ensuring its relevance to the targeted communities and policy objectives. It then evaluates the programme’s effectiveness in achieving its intended outcomes, particularly in enhancing access to WASH services for marginalised groups. Next, the chapter explores the efficiency of implementation processes, focusing on resource utilisation and the collaboration between stakeholders. The analysis of sustainability emphasises the programme’s ability to ensure long-term impact through resilient infrastructure and adaptive community practices. The impact of the interventions is assessed in terms of measurable benefits to the community, while the criterion of equity highlights the inclusiveness of marginalised groups, particularly transgenders and PwDs, in accessing WASH services and participating in decision-making.

Figure 2- REESI+E Framework

R - Relevance

To what extent were the intended outcomes of the programme strategically aligned with India’s sub national and national WASH policies and global commitments?

E - Effectiveness

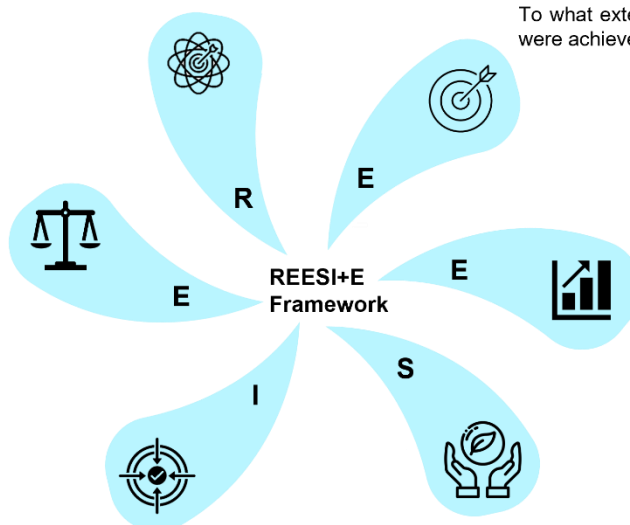
To what extent the intended outcomes were achieved?

E - Equity

To what extent are the programme’s interventions being made available to and accessed by marginalised groups?

E - Efficiency

How well has the programme optimised resource utilisation to achieve its outcomes including assessment of performance indicator?



I - Impact

To what extent has the programme achieved measurable benefits against key performance indicators?

S- Sustainability

To what extent will the net benefits of the programme intervention continue, or are likely to continue?

2.1 Relevance

CFAR programme has played a crucial role in integrating climate-resilient WASH practices into local governance structures in India. This section examines the programme's relevance by responding to key questions on policy integration, adoption of models, technological innovations and inclusivity in WASH governance.

Urban informal settlements in cities like Jaipur and Bhubaneswar are home to marginalised and vulnerable communities, including People with Disabilities (PwD), transgender individuals, and other disadvantaged groups. These communities face significant barriers in accessing basic services such as WASH, exacerbated by climate change impacts. The challenges are compounded by the lack of voice and decision-making power in local governance structures.

In the informal settlements, WASH services are often underdeveloped, with irregular water supply, open defecation practices, and limited access to hygiene facilities. For example, in Jaipur, over 50% of informal settlements are not connected to proper sewage networks, leading to sanitation-related health risks (Urban Health Resource Centre, 2020). The lack of infrastructure is compounded by overcrowding and inadequate public services, contributing to heightened vulnerability among marginalised groups.

For PwD, many WASH facilities are not designed to accommodate their specific needs—such as wheelchair accessibility or the availability of gender-neutral toilets for transgender people. Transgender individuals often experience discrimination and exclusion in public facilities, leaving them without safe, dignified access to WASH services. Moreover, the absence of inclusive decision-making processes means that their concerns are rarely represented in local governance or service delivery.

Also marginalised communities in informal settlements often lack the skills and resources necessary to advocate for their rights effectively. Community leaders may not have the knowledge of legal frameworks, policy tools, or technical information required to demand improvements in WASH services. Additionally, the lack of education and training on governance issues often leads to low levels of participation in local decision-making processes. As a result, these communities lack a meaningful voice in the planning and delivery of essential services, including WASH which have been observed in our discussions and therefore CFAR programme was relevant which attempted to create platform and bring the needs of the marginalised groups.

Despite various national and state-level government initiatives aimed at improving access to WASH services—such as the Swachh Bharat Mission (SBM) and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT)—these programmes often fail to adequately address the needs of marginalized communities in urban informal settlements. A report by the Ministry of Housing and Urban Affairs (2020) and also came out in our discussions in both the cities, that while access to sanitation and drinking water has improved in urban areas, the most marginalised populations, including PwD, transgender individuals and other disadvantaged groups, continue to be excluded from the benefits of these programmes.

The Government programs despite best intentions often do not prioritize marginalised groups and the planning of WASH infrastructure does not take into account the specific needs of PwD and transgender individuals. The informal settlements do not come under the formal planning processes and in many instances marginalised communities are often excluded from local governance and planning processes, limiting their ability to voice their needs and influence service delivery. The design and implementation of most government services often overlook the specific needs of PwD, transgender individuals, and other vulnerable groups. In many cases, these populations are invisible in policy discussions and their unique needs are not adequately addressed in the planning of WASH services. Also, uneven distribution of resources and political power in urban areas means that informal settlements frequently do not receive the same level of attention as more affluent areas. Structural issues like poor coordination between local authorities, lack of community involvement in decision-making and inadequate data on marginalised populations further exacerbate the exclusion.

Therefore, the programme like CFAR is important in the context of Bhubaneswar and Jaipur as it attempts to address the service gaps and ensure voice and ownership of the marginalised communities in the decision-making process.

CFAR's aimed at building the capacity of both communities and local governments to improve WASH governance and ensuring that these services are both inclusive and climate-resilient for the marginalised communities which we observed and understand from the communities are really useful and needed. Moreover, the programme emphasises the importance of climate resilience which is relevant given the increasing unpredictability of weather patterns and their impact on water and sanitation systems. CFAR's focus on community engagement and governance structures ensures that services are not only accessible but also equitable and ensuring that no one is left behind.

Climate resilience in WASH services is particularly important in the context with rising incidence of droughts, cyclones and floods which severely affects the residents of informal settlements. CFAR's approach of targeted capacity building and

ensuring local governments and communities to work together was relevant and important to ensure sustainable access to water and sanitation services even in the face of extreme weather events.

The CFAR programme's emphasis on capacity building, climate resilience, and inclusive governance provides a relevant and effective solution. By ensuring the active participation of marginalised communities in the decision-making process, CFAR improves access to essential services of vulnerable groups and builds their ownership and voice.

2.1.1 Scope of WASH Services

The CFAR programme has demonstrated critical relevance in the context of Jaipur and Bhubaneswar through its comprehensive assessment and intervention in Water, Sanitation, and Hygiene (WASH) services. Baseline studies conducted in 2019 (to identify gaps in WASH accessibility) and 2023 (to identify gaps in climate resilient WASH services), highlighted significant gaps in WASH infrastructure, including access to clean drinking and household water, sanitation facilities, and waste management systems, which might have been missed in government processes. Over time, the programme identified and addressed additional challenges related to drainage and wastewater treatment, particularly in urban informal settlements, which was really needed at those settlements. The programme's alignment with national urban infrastructure benchmarks underscores its relevance in ensuring sustainable and equitable WASH services.

The project documented persistent gaps in hygiene practices, accountability of service providers and community awareness of sanitation standards. By addressing cultural taboos surrounding MHM and facilitating household access to schemes for infrastructure installation and maintenance, CFAR bridge the gap between duty bearers and marginalised social groups underscore the program's role in promoting inclusive governance.

By developing Socio-Economic Vulnerability Index (SEVI) and WASH-SEVI indices alongside conducting a climate risk and vulnerability assessment across all hazards—adapted from the UNICEF-GWP framework, the programme effectively mapped and ranked climate vulnerabilities across settlements, offering projections on how extreme weather events may impact sanitation and WASH infrastructure. This inclusive and climate-adaptive approach makes CFAR [highly relevant](#) in addressing WASH challenges in Jaipur and Bhubaneswar.

2.1.2 Design of Institutional Framework for Delivery of WASH Services

CFAR shifted the binary paradigm of rights-based approach that is dominated by right holders on one side and duty bearers on the other. Former are mobilised and capacitated to raise their demands and the latter are sensitised to respond and fulfill their moral obligations of delivering benefits and services. Moving away from this binary perspective, CFAR extended the definition of **system** to include community and their agency (as institution) in addition to the formal system defined by government. Implications of paradigm shift led CFAR to develop the community and their institutions in their ability to **work with, and amongst themselves**, to deliver WASH services and benefits to all the members of the community and to develop the capacity and mechanisms of the government to **work with** (as different from *work for*) the community through their institutions.

CFAR programme developed a hierarchy of community institutions that were placed at the settlement level (**Community Management Committee**), at ward level (**Single Window Forum**) and at the project level (**Multistakeholder Forum**). The community institutions were trained and handheld to forge partnerships with government departments to facilitate continued dialogues on delivery of WASH services and their improvements. Representatives from Municipal Corporations, Departments of Housing and Urban Development, WATCO/Public Health Engineering, Slum Dweller Association (SDA) in Bhubaneswar and Slum Development Committee (SDC) in Jaipur actively engaged with members of community institutions regularly to take stock of, and to plan for WASH related interventions. Community Institutions also engaged with other civil society organisations and private actors seeking to intervene in the WASH space within the settlements.

Evaluation finds the framework of community institutions [highly relevant](#) for delivering WASH services in informal settlements on account of the partnership between the community and government where community is as much accountable for WASH services as are government agencies. Secondly, creating spaces for dialogue between government and community, especially with vulnerable groups, creates opportunities for taking their input in design and delivery of appropriate infrastructure.

2.1.3 Adoption of CFAR Models in National and Subnational WASH Policies

CFAR's intervention has influenced the adoption of key learnings into national and subnational WASH policies. The programme's alignment with national initiatives such as the Swachh Bharat Mission (SBM), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), and the National Urban Sanitation Policy (NUSP) has facilitated policy uptake. Ensuing paragraphs map the CFAR project in reference to the National Urban sanitation Policy and the programmes for urban development in the country.

National Urban Sanitation Policy (NUSP): NUSP defines sanitation as safe management of human excreta and recognises that integral solutions need to take in to account other elements of environmental sanitation, namely, solid waste management, generation of industrial and other hazardous waste, drainage and the management of drinking water supply. The policy recognises institutional and systemic constraints and articulate the goal of the *policy to transform urban India in to community driven, totally sanitised, healthy and liveable cities and towns.*

The Annexure to the Policy recommends the framework for preparation of City Sanitation Plan. The evaluation mapped the steps stated in the city sanitation plan with the components of the project to assess the alignment of the project to NUSP.

Framework of City Sanitation Plan	Context and Components of CFAR project	Alignment with NUSP
Institutional roles and responsibilities	<ul style="list-style-type: none"> • Constitution and capacity development of community institutions that focus on WASH within informal settlements, e.g. MSF • Community institutions trained on government schemes, processes for linkages, and their roles and responsibility in accessing schemes for the settlement • Members of community institutions trained, and have become, the first point of contact for the members of informal settlements 	HIGH
Awareness generation	<ul style="list-style-type: none"> • Making community aware of their rights and responsibilities related to WASH through individual and community awareness generating events • Targeted awareness building with adolescent girls on MHM. Making men aware on the MHM needs of women and their role in fulfilling these needs • Awareness on linkage of WASH with health, livelihoods, well-being and dignity 	HIGH
City wide approach	<ul style="list-style-type: none"> • Coverage of all the households of the selected informal settlements in both the cities • Inclusion of WASH at institutional level within settlements 	HIGH
Technology choices	<ul style="list-style-type: none"> • Technology for water, sanitation, solid and wet waste disposal, drainage and safe disposal of waste implemented in the project • Participation of vulnerable groups, transgender and persons with disability in designing and installing technology that is most suited and appropriate for them 	HIGH
Reaching the un-served and the poor	<ul style="list-style-type: none"> • Defining and identifying the vulnerable groups, namely, the Transgender, Persons with Disability and Women, religious minorities, and marginalised social groups (SC and ST households within the settlements) • Vulnerable groups represented in community institutions and are part of the decision-making process 	HIGH
Generating demand	<ul style="list-style-type: none"> • Increased awareness and ease of access to government schemes has increased generation and placement of demand for WASH infrastructure and services by the community and individual households 	HIGH
Sustained improvement	<ul style="list-style-type: none"> • Practices that make WASH usage services transparent, like Saniclimiwall, representation of different and vulnerable groups in community institutions and their active participation in decision-making sustains continuity of benefits and services of the households in the settlements • Active linkages with duty bearers, and CSOs ensured flow of information and access to schemes and programmes on an ongoing basis with the community 	HIGH

CFAR programme thus has **high relevance** with the NUSP not only in terms of its thrust and goal but also in terms of its implementation structure and processes.

Programmes for Urban Development: Evaluation mapped CFAR project against the aim and objectives of programmes of central government for urban development along with their thrust areas and components for each of these programmes. The assessment of alignment of CFAR programme with the government’s programmes is given in the following table.

Programme	CFAR design and project components	CFAR’s Alignment
Swachh Bharat Mission (SBM)	<ul style="list-style-type: none"> • In its first phase SBM aimed at making urban India open defecation free and targeted to achieve 100% scientific management of municipal solid waste in urban areas of the country. CFAR project targets access to toilets to all the households in slums. 	HIGH

Programme	CFAR design and project components	CFAR's Alignment
	<ul style="list-style-type: none"> Second phase of SBM aims to achieve <i>Garbage Free</i> status for all cities by 2026. CFAR project covers dry and wet waste management from households by setting mechanisms for door-to-door collection of segregated waste, solid waste management, and awareness raising. 	
SMART Cities	<ul style="list-style-type: none"> SMART city programme aims to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens and sustainable 'smart' solutions. Core infrastructure includes water supply, electricity supply, sanitation, solid waste management, good governance, citizen participation, sustainable environment, safety and security, participation of women, children and the elderly, and health and education. Bhubaneswar and Jaipur were selected for SMART cities in the first round in 2016. Bhubaneswar opted for retrofitting and redevelopment of 985 acres around the railway station. Jaipur city sought to leverage its heritage tourism through innovative and inclusive solutions enhancing the quality of life of its citizens. The project covered 600 acres of walled city for renewal, revitalisation and adaptive reuse to create Smart Heritage and Tourism Precinct. CFAR project addresses the issue of core infrastructure in informal settlements in both the cities. The project is closely aligned with the sub-projects that have been developed for the SMART city in Bhubaneswar. Since Jaipur has opted for heritage tourism as its focus, CFAR project does not have a direct bearing on the JSCL plans. 	HIGH
AMRUT (Atal Mission for Rejuvenation and Urban Transport)	<ul style="list-style-type: none"> AMRUT focuses on development of basic infrastructure and with thrust for potable water supply for every household in the city, improvement in coverage and treatment capacities of sewerage and septage management, and storm water drainage amongst other aspects of city development like green spaces, parks, non-motorised urban transport etc. Both Bhubaneswar and Jaipur are part of AMRUT programme. CFAR alignment with AMRUT is in terms of the scheme's objectives and its thrust areas, specifically related to water supply, sewage and septage management and storm water drainage. 	HIGH
National Mission for Sustainable Habitat (NMSH 2.0)	<ul style="list-style-type: none"> NMSH defines sustainable habitat as an approach that offers adequate shelter with basic services, infrastructure, livelihood opportunities along with environmental and socio-economic safety including equality, inclusiveness and disaster resilience. Water Management and Waste Management are among the five thematic areas for intervention identified under NMSH. CFAR has specifically focussed on development of climate resilient WASH infrastructure in informal settlements of both the cities. The infrastructure has been co-created in design and implementation with community members and fall within the ambit of sustainable habitat. 	HIGH

CFAR programme has [high level of alignment](#) with programmes of central government that are the major component for urban development in the country.

At the subnational level, CFAR has strengthened the integration of community-led sanitation governance into state programs. In Odisha, the collaboration with WATCO under the 'Drink from Tap' initiative has improved water security, while in Rajasthan, CFAR's engagement with Public Health Engineering Department (PHED) has influenced the implementation of Jal Jeevan Mission. The recognition of community institutions as key stakeholders in service delivery underscores the success of CFAR's participatory governance model.

CFAR programme is highly relevant to the urban policy and programmatic context of the country in present times, a factor that enables the project to link and engage with government stakeholders at the city level.

Findings from the field show that the CFAR programme demonstrates a strong alignment with the government's urban development agenda by integrating climate-resilient WASH infrastructure and enabling inclusive practices in informal settlements of Bhubaneswar and Jaipur. The Bhubaneswar Municipal Corporation (BMC) and WATCO have highlighted CFAR's instrumental role in supporting government schemes like SBM and AMRUT. Under SBM, CFAR has actively contributed to the elimination of open defecation through the construction of community and household toilets and the facilitation of segregated waste collection systems. The Additional Commissioner of BMC emphasised CFAR's efforts in

training marginalised groups, such as transgender individuals, and including them in waste management roles, making the project not only impactful but also inclusive. In collaboration with WATCO, CFAR has strengthened water service delivery by supporting the "Drink from Tap" initiative under AMRUT. This includes ensuring uninterrupted water supply with the deployment of generators and real-time water quality monitoring systems such as the Lab on Wheel initiative. The programme's proactive engagement in climate resilience is further evident in its co-creation of sustainable WASH infrastructure with community members, aligned with the principles of sustainable habitats.

Additionally, as highlighted by State Project Officer, UNFPA, CFAR has played a crucial role in advancing gender-sensitive approaches in WASH interventions. Programmes like Jaga Mission, Mukta Yojana (development WASH related infrastructure), AMRUT (pipe water) and Basudha yojana (sewage system) have provided essential frameworks for infrastructural improvements, including piped water supply and sanitation facilities which CFAR has utilised to focus on vulnerable populations.

In Jaipur, Ward Parshad, underscored CFAR's commitment to enhancing WASH systems under ambitious programmes such as the Swachh Bharat Mission Phase 2 and the Jal Jeevan Mission. A UNICEF State Head emphasised the organisation's comprehensive support to the Public Health Engineering Department (PHED) for water and associated departments for sanitation. UNICEF provides end-to-end technical and operational assistance including annual planning, quality assurance, and review mechanisms, ensuring effective implementation of operational guidelines. Furthermore, UNICEF contributes to monitoring progress across financial, physical, and process-based metrics, ensuring that interventions maintain their intended impact and sustainability.

Ward Parshad in Jaipur responded that, *"Yes, these programmes have been beneficial. For instance, under the Swachh Bharat Mission, toilets were constructed for women who previously didn't have access. AMRUT helped connect some areas to the Bisalpur pipeline, providing water to colonies that lacked it".*

CFAR programme design and components were mapped to global SDG commitments that have been ratified by the Government of India. The mapping is presented and the alignment of CFAR programme are presented in the table below:

SDG	SDG Targets	CFAR project design and components	Alignment
SDG 6 Clean Water and Sanitation	<ul style="list-style-type: none"> Universal and equitable access to safe and affordable drinking water, sanitation and hygiene for all. End open defecation. Pay special attention to the needs of women and girls and those in vulnerable situations (6.1 and 6.2) Improve water quality (6.3) Support and strengthen participation of local communities in improving water and sanitation management (6B) 	<ul style="list-style-type: none"> CFAR project covers all households to access potable water and sanitation and hygiene services. The project has identified women, girls, persons with disability, transgender, child and elderly as persons in vulnerable situations and are specifically targeted by the project. Ending open defecation is one of the stated targets of the project. Regular monitoring of water quality and instituting measures for improving water quality at household and community level Framework of community institutions at the settlement, ward and project level has been created to enable participation of local communities in management of water and sanitation. 	HIGH
SDG 5 Gender Equality	<ul style="list-style-type: none"> End all forms of discrimination against women and girls (5.1) Ensure full and effective participation of women and equal opportunities for leadership at all levels of decision making in political, economic and public life (5.5) 	<ul style="list-style-type: none"> Women and their immediate and strategic needs have been specifically targeted by the project. MHM services and taboos associated with it have been addressed by the project. Women are represented in all the community institutions and have been trained and hand held to take up leadership positions and participate in decision-making processes. 	HIGH
SDG 10 Reducing Inequalities	<ul style="list-style-type: none"> Empower and promote social, economic and political inclusion of all irrespective of age, sex, disability, race, ethnicity, origin, religion or other economic status 	<ul style="list-style-type: none"> CFAR project have identified vulnerable groups and the inter-sectionalities amongst them to highlight vulnerabilities related to accessing and use of WASH services. Members from vulnerable groups are represented tin Community Management 	HIGH

SDG	SDG Targets	CFAR project design and components	Alignment
		Committees and are part of cadre trained for specific purposes, e.g. Jal Saathis.	
SDG 11 Sustainable cities and communities	<ul style="list-style-type: none"> • Ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums (11.1) • Increase number of cities and human settlements adapting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement holistic disaster risk management at all levels (11.B) 	<ul style="list-style-type: none"> • Project works for 100% coverage of WASH infrastructure and services in its design and implementation. • Partnership between community institutions and development authorities have developed linkages beyond WASH into other aspects of their well-being, e.g. access to improved shelter • Mapping climate hazard for each settlement and developing plans for adaptation and resilience based on specific vulnerabilities have been developed by the project. 	HIGH
SDG 13 Climate Action	<ul style="list-style-type: none"> • Strengthen resilience and adaptive capacity to climate related hazards and natural disasters (13.1) • Improve education, awareness and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning (13.3) 	<ul style="list-style-type: none"> • Using composite index for developing WASH-SeVI and developing adaptive and resilient WASH structures and management systems for settlements by the project. • Early warning systems have been set up to inform communities of risk of natural hazards along with the disaster preparedness systems in communities. 	HIGH

CFAR programme is significantly aligned to the SDG goals and targets that relate to water and sanitation, inclusive and sustainable cities, gender equality, reducing inequality and initiating climate action. Evaluation assesses CFAR to be well aligned to international commitments and is thus **highly relevant** for the sector and its achievements contribute towards achievement of SDG targets and its experiences will provide pathways for replication for other cities in similar contexts.

2.1.4 Integration of Climate-Resilient WASH Practices in Local Governance

Local governance systems in India, particularly in cities like Bhubaneswar and Jaipur, have made strides in integrating climate-resilient WASH practices through municipal policies and infrastructure projects. CFAR has contributed significantly by facilitating community-led governance mechanisms such as Community Management Committees (CMC), Single Window Forums (SWF), and Multi-Stakeholder Forums (MSF). These institutional frameworks have strengthened participatory decision-making and improved service delivery. The programme’s emphasis on co-creating WASH solutions with local governments has led to enhanced resilience, particularly in informal settlements where climate vulnerability is high.

However, challenges persist in scaling up these practices across all urban areas. While Bhubaneswar Municipal Corporation (BMC) and Jaipur Municipal Corporation (JMC) have incorporated WASH resilience into their planning, the adoption of standardised climate-adaptive policies across all urban local bodies remains uneven. The lack of dedicated funding for climate-resilient WASH initiatives and limited technical capacities at the municipal level pose additional barriers.

2.2 Effectiveness

Evaluation has assessed CFAR's programme's effectiveness at four levels: in the ability of the households in informal settlements to access WASH infrastructure; usage and utilisation of WASH services; perception about the quality and satisfaction from WASH and access and usage of WASH infrastructure and services during and post-climatic hazards. The findings of the evaluation on these aspects are given in the following paragraphs.

2.2.1 Access to WASH Infrastructure

Water: Piped water supply through household taps is the most common water source available in informal settlements for 97.9% of households overall in both cities with similar high usage in Jaipur (97.3%) and Bhubaneswar (98.5%). In contrast, availability of sub-surface is significantly more prevalent in Bhubaneswar, where 27.5% of households rely on wells, compared to just 1.1% in Jaipur. With respect to ground water, though bore wells have similar usage patterns in both cities, with around 17% reliance, but hand pumps have a higher availability in Bhubaneswar (21.8%) and is almost absent in Jaipur (0.2%). Government tankers are more frequently made available in Bhubaneswar (6.2%) than Jaipur (2.3%), while private tankers and water ATMs are utilised sparingly in both cities. (Refer [Table 3](#))

For water sources 96.9% households use piped water supply with similar proportions in Jaipur and Bhubaneswar. Bore wells are the second most used source in both the cities, though in case of wells a higher proportion of households in Bhubaneswar rely on drawing water from wells and handpumps for drinking water than in Jaipur where these sources are rarely used. Other sources like tankers, government and/or private, similar proportion of households report them as sources for drinking water and water ATMs are used by only 1.1% of the households. (Refer [Table 4](#))

Insights shared by a sanitation committee member in Jaipur emphasised the challenges faced in informal settlements despite improvements over the years. She recalled how, 30 years ago, the roads were unpaved, and the water supply was inadequate with water available for just an hour each evening. The reliance on motors further reduced water pressure, exacerbating the issue. Although the water supply has improved significantly, some settlements still face issues during supply interruptions, with residents depending on alternative sources such as wells and tankers.

Toilets: Open defecation has been reported for men and women in both the cities. In Jaipur a lower proportion of households for men and women go for open defecation as compared to Bhubaneswar where men in 7% and women in 3.1% households practice open defecation. (Refer [Table 36](#))

Accessibility to toilets with is high In Jaipur with toilets in 9 out of 10 households located within their household premises as compared to 7 out of 10 in Bhubaneswar. However, in both the cities more than 90% of the households can access a toilet within less than 100 m from their house. Less than 1% of households have to cover a distance of more than 500 m to access toilet facilities in these cities. (Refer- [Table 26](#))

Majority (66.8%) of toilets in Jaipur are connected to a sewer system compared to only 14.1% in Bhubaneswar. At Bhubaneswar there is a higher reliance on underground pits (53.5%) and septic tanks (30.7%) as compared to 23.6% and 8.1% respectively at Jaipur. It is only a small proportion of households in both cities that report using open drains, with 1.0% in Jaipur and 1.1% in Bhubaneswar. (Refer- [Table 40](#))

The Bhubaneswar Municipal Corporation (BMC) has taken substantial measures by supporting the construction of household toilets and building community and public toilets to curb open defecation. These efforts are further strengthened through regular ward meetings involving key officials, such as the Corporator, Ward Officer, and Sanitary Inspector, to address community concerns. For instance, these meetings ensure the provision of individual toilets for households that lack them, helping to bridge the sanitation gap.

In Jaipur, a sanitation committee member highlighted significant improvements in access to sanitation. She confirmed that households in her area now have access to toilets, marking a major step forward in addressing sanitation challenges. This reflects the broader efforts in the city to ensure that informal settlements are equipped with adequate sanitation facilities.

Handwashing Station: Behavioral factors and presence of handwashing infrastructure have been identified as critical determinants in ensuring handwashing practice at household level. Evaluation collected data on the presence on handwashing station within the household and found that 64.3% households in Jaipur and 50.1% in Bhubaneswar have handwashing facility within their household premises. (Refer [Table 44](#))

The Child Development Project Officer in Bhubaneswar highlighted that the introduction of Happy Taps by CFAR in seven Anganwadi Centers (AWCs) has been a significant step toward promoting hand hygiene while conserving water. This

innovative intervention has played a crucial role in enabling behavioural change by encouraging regular handwashing practices and emphasising the importance of maintaining handwashing infrastructural facilities.

Menstrual Hygiene Management: Menstrual products are widely available in both Jaipur and Bhubaneswar with 96.8% of respondents in Jaipur and 93.2% in Bhubaneswar confirming easy access. A very small percentage (5.1%) responded in the negative with respect to availability of menstrual products in both cities. (Refer [Table 48](#))

Insights from the State Project Officer at UNFPA, highlighted the significant role of gender-sensitive WASH initiatives in MHM. She emphasised CFAR's collaboration with local authorities to introduce MHM-friendly infrastructure in schools and communities, **including sanitary pad disposal mechanisms and distribution of MHM kits**. These efforts have not only normalised menstruation but also addressed stigma.

96.3% of respondents reported that soap and water were always available for washing hands after changing menstrual products. Access was universal in Jaipur (100.0%) and slightly lower in Bhubaneswar (93.2%), where 4.1% of respondents reported only occasional availability, and 2.7% reported no access. The satisfaction with the quantity of water available for managing menstrual hygiene was high, with 95.6% of respondents indicating adequacy with similar proportion of respondents expressing their satisfaction across the two cities. (Refer [Table 56](#))

These results align with qualitative findings which highlight CFAR's educational initiatives to promote better hygiene practices. Sessions conducted with students and teachers emphasised critical handwashing times, such as before changing menstrual products, a practice previously overlooked. Hygiene education also included avoiding soap for cleaning private areas and proper handwashing techniques.

Primary method of menstrual product disposal across both cities is available through a waste collector van with 100% of respondents in Jaipur and Bhubaneswar reporting on its availability. However, there were alternative methods of disposal that were also reported that included burning, burying, throwing in open drain, and disposal in a toilet. The percentage of respondents reporting for burning, burying and flushing in toilet is low (less than 3%), the proportion of disposing in nearby drain or open space is higher (16.1%). (Refer [Table 55](#))

In Jaipur, an adolescent girl shared valuable insights into efforts made to improve menstrual product disposal practices within her school. She explained that a structured system has been implemented to manage sanitary pads, where girls dispose of them in a designated basket. This basket is cleaned weekly by two caretakers, who bury the pads in a deep pit with soil and dry leaves to ensure proper decomposition and prevent environmental pollution. This initiative, she noted, has been effective in addressing earlier practices where pads were discarded randomly, often leading to environmental harm and risks to animals. Additionally, she mentioned the presence of a red-coloured incinerator machine installed for sanitary pad disposal. Although the machine has been demonstrated by the school staff, it has yet to be widely used, as most students currently rely on the basket system. She appreciated these efforts and highlighted the significant improvements they have brought in promoting hygienic and environmentally responsible practices.

Drainage: Amongst the 1107 households surveyed during evaluation, only 10% indicated that they do not have access to any drain. The proportion was similar across the two cities with 9.3% households in Bhubaneswar and 10.3% households in Jaipur responding that they do not have access to any form of drainage. Of the households that have access to drains, the majority (72.6%) had access to closed drains, with proportion of such households being higher in Bhubaneswar (82.28%) than in Jaipur (62.7%) The remaining households had access to open drains. (Refer [Table 58](#))

With significant presence of closed drains in informal settlements, 91.4% households responded that their drains were pucca and 6.2% were semi-pucca drains. Less than 2% of drains were reported to be kuccha drains, which indicates the emphasis on building quality infrastructure in the two cities. (Refer [Table 59](#))

Despite the widespread presence of closed drains, findings from the field, as shared by the Child Development Project in Bhubaneswar, highlighted the need for improvement in drainage systems, particularly in low-lying slum areas prone to water accumulation. Poor drainage in these areas contributes to stagnant water which becomes a breeding ground for mosquitoes and other health hazards. The officer emphasised that proper drainage upgrades and regular maintenance by local authorities, BMC are critical to addressing these challenges.

The officer also suggested that structured weekly cleaning plans for water sources and drainage peripheries, implemented by BMC could minimise the risk of waterborne diseases and reinforce positive hygiene behaviors. Collaborating with community groups or volunteers for clean-up drives was identified as an effective way to enable teamwork and empowerment among residents. Establishing Community Watch groups to monitor water sources and drainage conditions, and report issues to authorities was also proposed as a sustainable solution to ensure better upkeep and community

involvement. These initiatives, coupled with infrastructural improvements can significantly enhance drainage systems in Bhubaneswar and Jaipur.

Solid Waste Management: 61.4% of respondents were aware of campaigns on waste collection and disposal. The proportion of such households was higher at Bhubaneswar (70.9%) than at Jaipur (40.9%). In terms of awareness of the solid waste management services provided by local authorities, the proportion of households was markedly different in Jaipur and Bhubaneswar. In Bhubaneswar 78.6% households were aware of the solid waste management services as compared to 35.3% households in Jaipur. (Refer [Table 73](#))

74.2% of households rely on municipal collection services, with 92.3% in Bhubaneswar and 56.5% in Jaipur. Self-disposal by 23.7% of households, is significantly higher in Jaipur (41.2%) compared to Bhubaneswar (5.7%). A very small proportion (1.3%) of households reported having no disposal method. (Refer [Table 71](#))

A Sanitation Committee Member in Jaipur highlighted that while garbage management has become more organised with municipal trucks collecting segregated waste three times a day, persistent gaps remain in certain settlements. These gaps emphasise the urgent need for equitable access to solid waste management services, particularly in underserved areas. The committee member stressed that ensuring regular and consistent waste collection across all neighbourhoods is vital for improving sanitation and hygiene outcomes. Community-driven observations also pointed to the importance of sustained efforts and proactive engagement to bridge these gaps and enhance WASH outcomes across the city.

2.2.2 Usage and Utilisation of WASH services

Water: 31 cities in India were identified to be exposed to serious risk of water security, with Jaipur topping this list³. This has a direct impact on the frequency of water release of piped water supply in Jaipur, where 87.5% of households reported receiving water only once a day. In contrast, in Bhubaneswar, 50% of households reported having 24x7 water supply. Considering all surveyed households, 28.1% receive water continuously. Furthermore, in Bhubaneswar, only two households reported receiving water once a day, while 34.2% and 15.5% of households receive water at least twice and thrice a day, respectively. (Refer [Table 5](#))

Addition to the frequency of water release, duration and sufficiency of water also impact water utilization at the household level. In Bhubaneswar even though half the households reported a water supply of 24x7, 69.1% households responded that they receive water for more than 2 hours daily. Only 2.3% of households received water for less than 30 minutes. The situation of Jaipur was markedly different than Bhubaneswar, where more than half the households received water for a duration of 30 to 60 minutes. Another 27.6% of the households received water for between 60 to 120 minutes. (Refer [Table 6](#))

Despite lower frequency and shorter duration of water released in piped water, 90.3% of households found water to be sufficient as compared to 66.7% in Bhubaneswar. Overall, more than 8 out of 10 households were satisfied with the quantity of water received by them. (Refer [Table 7](#))

A water shortage was experienced by 11.3% of households surveyed, of which 82% are in Jaipur. Of the households experiencing water shortage most of them (63.9%) experienced it seasonally and 14.8% daily.

CFAR's collaboration with WATCO in Bhubaneswar has been instrumental. Through innovative measures such as the "Drink from Tap" (DFT) initiative, which ensures 24x7 water supply via advanced automation systems like Supervisory Control and Data Acquisition (SCADA), contamination risks have been reduced, and equitable distribution has been achieved. Initiatives such as the "Lab on Wheel" mobile laboratory further enhance water quality monitoring, providing real-time testing in underserved areas. Additionally, CFAR has worked closely with the BMC to extend groundwater access via tube wells to uncertified areas, ensuring inclusivity for marginalised groups.

Toilets: Availability of water and desludging of toilets are two of the critical determinants that impact usage of toilets by members of the households. 73.1% of respondents reported water being available at the primary toilet facility used by them and a considerable proportion (26.9%) indicated that users need to carry water to the toilet, highlighting room for improvement in ensuring water accessibility. There are no differences in proportion across the two cities covered during the survey. (Refer [Table 27](#))

36.5% of households across both cities have never desludged their toilets raising concerns about maintenance and awareness of appropriate sanitation practices. 46.1% households at Jaipur and 27.8% at Bhubaneswar reported never

³ Water Risk Filter Report 2020, Worldwide Fund for Nature

desludging their toilets. Recent desludging (within the last six months) was reported by 37.2% of households in Bhubaneswar and 35.3% in Jaipur, indicating proactive desludging practices in both cities. (Refer [Table 28](#))

67.6% households used government desludging services with a higher proportion in Jaipur (74.7%) than Bhubaneswar (61.1%). Private companies play a larger role in Bhubaneswar (27.6%) compared to Jaipur (5.5%), reflecting better private-sector integration in Bhubaneswar. Individual sanitation workers cater to 19.8% of households in Jaipur and 11.3% in Bhubaneswar, highlighting the role of informal service providers. (Refer [Table 29](#))

Menstrual Hygiene Management: 50% of respondents received training on MHM, though there is a significant gap between Jaipur and Bhubaneswar. In Jaipur, 61.9% of respondents reported receiving information or training in the past year, compared to only 39.7% in Bhubaneswar. Despite half of respondents receiving training in MHM 92.1% respondents in Jaipur and 90.4% of respondents in Bhubaneswar, use sanitary pads as their primary menstrual product. A smaller proportion still rely on cloth (4.8% in Jaipur and 4.1% in Bhubaneswar). (Refer [Table 49](#))

Field insights emphasise the importance of awareness and training initiatives on MHM. An Assistant Teacher at Laxmi Sagar Government High School highlighted the significance of demonstration sessions focusing on personal hygiene and MHM. These sessions organised with support from CFAR have been pivotal in empowering students by providing critical education on MHM practices. Students have gained the knowledge to make informed decisions about their hygiene, significantly contributing to their well-being and health education.

Handwashing: Of the households that have dedicated handwashing facility at their household premise water was always available in 98.3% of households (100% in case of Jaipur) and soap is available in 97.3% of households. Efforts to promote good hygiene practices have also been strengthened at the Anganwadi Centers, with significant improvements attributed to awareness raised during the COVID-19 pandemic. Most households now practice proper hygiene, such as keeping handwashing liquid in toilets, though daily wage workers face challenges in maintaining consistency. Regular home visits and demonstrations play a crucial role in reinforcing these practices. Additionally, household-level WASH practices are monitored through preschool children, ensuring that awareness and hygiene behaviors are sustained and passed on within families. (Refer [Table 51](#))

Drainage: 39.2% households responded that they reside in waterlogged prone areas. Amongst these 43.8% experience waterlogging during any part of the year whereas the remaining 56.4% find that waterlogging occurs only during rainy season. However, only 6.5% of households found that it takes more than one day for water logging to clear from their neighbourhood. For the remaining 93.5% of households water is cleared within a few hours or within the same day which is an indicating of the appropriateness of design and implementation of the drainage system in informal settlements. Between the two cities while Jaipur has faster logging clearance overall, Bhubaneswar has consistent response to moderate delays. (Refer [Table 40](#))

Majority of respondents reported that local municipal authorities are primarily responsible for managing drainage systems, with 63.1% overall involvement. The contribution is similar in both Jaipur (62.4%) and Bhubaneswar (63.9%). Households and community members too have been involved in managing the drainage systems. In Bhubaneswar 44.3% and 7% and at Jaipur 41.5% and 2.7% household members and community volunteers respectively were involved managing the drainage system. (Refer [Table 62](#))

A representative from the SSC highlighted their proactive measures to address challenges related to water drainage and desludging issues. They explained that awareness programmes are regularly conducted by the committee to educate the community about these matters. Additionally, CFAR is contacted whenever water drainage issues arise, such as when someone digs for water drainage, ensuring timely intervention and support. The SSC assured that they collaborate closely with CFAR to take necessary actions and resolve these concerns effectively, reinforcing their commitment to improving sanitation outcomes in the area.

These proportions are a direct indication of the impact of community mobilisation and training of community volunteers in developing their capacities and accountability in maintaining drainage systems of their settlements. The involvement of private contractors is minimal, with only 1.5% overall participation, higher in Jaipur (2.7%) than Bhubaneswar (0.4%). Similarly, the role of NGOs or community-based organisations is limited, reported by only 1.3% of respondents, with slightly more involvement in Jaipur (2.0%) compared to Bhubaneswar (0.5%). (Refer [Table 62](#))

Solid Waste Management: 78.7% of households indicated that they segregate waste, though the proportion of these households differ significantly between Jaipur (60.2%) and Bhubaneswar (97.6%). It is only in case of 0.4% households that did not know of dry and wet waste segregation at all. (Refer [Table 69](#))

The higher percentage of households practicing waste segregation in Bhubaneswar compared to Jaipur can be attributed to several initiatives and systematic efforts implemented by the Bhubaneswar Municipal Corporation (BMC). Over the past few years, BMC has shifted from a centralised to a decentralised waste management system, ensuring more effective collection and processing of segregated waste. Dedicated vehicles are deployed to collect solid and liquid waste separately from households, markets, and other areas, which simplifies the processing at decentralised plants. BMC has also prioritised community engagement and awareness programmes, supported by government instructions under SBM 2.0, to encourage waste segregation at the household level.

83% of households report daily collection of solid waste collection. Proportion of affirmation of daily solid waste collection had a higher percentage in Bhubaneswar (89.7%) compared to Jaipur (76.5%). Weekly collection amongst households was higher in proportion at Jaipur 7.5%. However notably there were 9.0% of households that reported that no waste collection services were covering their households. BMC has ensured inclusivity by providing specialised services, such as door-to-door collection for physically challenged households and smaller, affordable vehicles for sludge collection in slum areas, contributing to better responses and higher satisfaction levels in Bhubaneswar compared to Jaipur. (Refer [Table 70](#))

Majority of households (86.7%) dispose of wet waste through municipal waste collection services, with 98% in Bhubaneswar and 75.8% in Jaipur. A small proportion of households, compost wet waste at home (1.4%) or dispose of it in general trash (1.1%). Wet waste is used as animal feed in 5.1% of households overall, with Jaipur reporting higher usage (7.1%) compared to Bhubaneswar (3.1%). Burning or incineration of wet waste is rare (3.4%) but more common in Bhubaneswar (6.4%) than Jaipur (0.5%). Disposal in nearby open areas or vacant land is practiced by 10.7% of households with 19.1% of households in Jaipur higher than 2% of households at Bhubaneswar. (Refer [Table 72](#))

Despite these efforts, solid and liquid waste management remains a significant challenge, as some households continue to dump waste on the roadside despite awareness campaigns.

An Anganwadi worker (AWW) provided further insight, noting that daily wage labourers in the community face specific challenges in proper waste disposal due to their early work schedules. Garbage collection vehicles often arrive after they leave for work, leading to roadside dumping or reliance on children to dispose of waste. Previously, leaving garbage in front of homes caused disturbances due to street dogs scattering the trash. While some community members are gradually adopting better practices, others have requested the provision of dustbins and adjustments to waste collection timings to accommodate their needs. The AWW emphasised that sustained community engagement, stricter enforcement of waste management practices and providing necessary resources like dustbins will be critical to resolving these challenges effectively.

2.2.3 Quality and Satisfaction from WASH Infrastructure and Services

Water: Survey sought information on the level of satisfaction of households on water quality parameters related to colour, odour, hardness and iron. Across all water quality parameters, respondents in Bhubaneswar report higher satisfaction levels compared to Jaipur. Satisfaction with the colour of water is notably higher in Bhubaneswar, where 52.5% are very satisfied, compared to only 5.5% in Jaipur, with an overall satisfaction rate of 29.4% for both the cities. Similarly, satisfaction with odour is higher in Bhubaneswar (44.6%) than Jaipur (4.4%), with an overall satisfaction rate of 24.8%. For iron content, only 1.7% in Jaipur are very satisfied, compared to 26.2% in Bhubaneswar. Similar, satisfaction with respect to hardness shows a disparity, with 26.2% in Bhubaneswar very satisfied, compared to 2.5% in Jaipur. While Bhubaneswar shows higher satisfaction in terms of very satisfied responses, households in Jaipur reports higher proportion of responses in neutral, dissatisfied, and don't know, indicating greater uncertainty or dissatisfaction with water quality in the city. (Refer [Table 8](#), [Table 9](#), [Table 10](#), [Table 11](#))

These findings align with insights shared by a ward parshad in Jaipur, who highlighted historical issues with water quality causing significant health challenges in colonies like Ganesh Puri. Although access to water and quality has improved through joint efforts, the ward parshad emphasised the need for facilities like RO plants in areas with poor water quality and increased awareness campaigns about hygiene and access to clean drinking water.

Quality Manager at Spectrum in Bhubaneswar mentioned that the collaboration between WATCO and CFAR exemplifies a proactive approach to community engagement and problem-solving regarding water quality issues. By leveraging CFAR's expertise in advocacy and community mobilisation, WATCO has not only improved its understanding of local challenges but also enhanced its capacity to provide safe drinking water. The role of Jala Sathi workers is particularly noteworthy as they serve as the crucial link between the community and Spectrum. Their training in conducting preliminary water tests equips them to identify potential issues at an early stage, allowing for prompt intervention by Spectrum.

Additionally, the community training sessions facilitated by CFAR are instrumental in building local capacity. By educating community members about safe drinking water practices and basic water testing methods, these initiatives not only raise

awareness but also create a more informed community capable of advocating for their own needs. Overall, this partnership highlights the importance of collaboration between organisations and community members to achieve sustainable solutions.

Handwashing: Data on awareness of when handwashing should be practiced was collected from surveyed households. Data indicates high awareness of essential handwashing practices among households, particularly for washing hands before and after meals and after defecation, where near-universal compliance is observed (above 97%). However, practices like washing hands before feeding a child show disparities with Jaipur (82.2%) higher than Bhubaneswar (50.5%). Similarly, handwashing after attending to domestic animals is relatively low with only 43.7% in Jaipur and 15.0% in Bhubaneswar. The average handwashing frequency has been assessed at 6.38 times a day for Jaipur and 5.68 times per day for Bhubaneswar, and an overall average of 5.91 times/day. (Refer [Table 54](#))

Insights provided by the Child Development Project Officer in Bhubaneswar highlighted the ongoing efforts to promote WASH practices through partnerships with CFAR. These partnerships have enabled initiatives such as orienting Anganwadi Workers to disseminate best practices and promoting handwashing habits among preschool children. Regular demonstrations on proper handwashing techniques are conducted monthly for children, adolescent girls, and mothers during programmes such as Poshana Week, International Handwashing Day and Urban Health and Nutrition Day.

An Anganwadi Worker from the Fire Station Slum emphasised the critical role of these demonstrations in reinforcing handwashing practices. She noted that handwashing liquids are provided for children to encourage consistent behaviour. Furthermore, CFAR's collaboration with the center, supported by two Mahila Arogya Samities, has been instrumental in promoting community-wide handwashing practices, ensuring that awareness extends beyond the individual to the larger community.

Majority of respondents use water and soap for handwashing, with 96.3% in Jaipur and 91.2% in Bhubaneswar, resulting in an overall usage rate of 92.9%. These proportions are indicative of good quality of handwashing practice that is followed by households in both the cities. A small proportion use only water (1.7%) or soil and soap (0.5%). (Refer [Table 56](#))

Solid Waste Management: 85.4% and 84.1% of households in Jaipur and Bhubaneswar, respectively, found local waste management services adequate and the remaining 15% found these services have room for further improvement. Despite satisfaction on the adequacy of services, there were complaints from households on non-collection of household waste, which were more frequent in Jaipur (38.9%) than in Bhubaneswar (21.2%). Lower complaint rate is indicative of better performing waste collection services in Bhubaneswar. (Refer [Table 67](#))

2.2.4 Access and Usage during Climate Hazards

Water: Bhubaneswar has been impacted by floods, heat waves and cyclones and hence a higher proportion of household's report disrupted access to water during and post-hazard. 32.3% of households had poor access to water during and 28.4% after the cyclone at Bhubaneswar. Similar proportion of households was 20.9% and 20% during floods and heatwaves. In case of Jaipur 17.2% households were impacted during heatwave and a much lesser percentage of 10.6% and 7.2% during flood and storms respectively.

During climate hazard 96.9% households rely on piped water supply to access water for drinking and domestic purposes. Bore well (10.7%), Tankers, government and private, (4.8%), and wells (3.5%) and handpumps (3.7%) are the other sources from which the households seek water for domestic purposes. Between the two cities, larger proportion of households in Bhubaneswar draw from handpumps and dug wells, whereas in Jaipur the proportion of households taking water from bore wells is higher.

Efforts have been made to ensure resilience and continuity in water supply systems, especially in Bhubaneswar. Each pump house is equipped with diesel generators, enabling uninterrupted service even during power outages. These pump houses also act as control hubs for the "Drink from Tap" system, managed by WATCO, which oversees 24x7 water supply operations. **These systems are designed and monitored to deliver reliable and seamless water services, even under adverse climatic conditions.** Insights from stakeholders indicate that these adaptive measures have played a significant role in maintaining consistent water access, validating their effectiveness in Bhubaneswar.

Toilets: Impact of climatic disruptions have impact adverse impact of toilet infrastructure and in the ability of the households to access toilets. 75.6% of respondents reporting damage to toilet infrastructure during climate hazards. This issue is more pronounced in Bhubaneswar, where 85.6% reported damage, compared to 43.3% in Jaipur. Increased distance to find a toilet was another major impact, experienced by 38.6% of the respondents. Contamination of water source (66.1%) and reduced availability of clean water (37.8%) were other impacts that were reported by households.

During climate hazards, open defecation is resorted to by 23.6% of respondents, with higher rates in Bhubaneswar (25.8%) compared to Jaipur (16.7%). During these times, community toilets are used by 33.9% of the households and public toilets by 43.3% of respondents. (Refer [Table 42](#))

The adoption of climate-resilient toilet designs to improve access during climate-related disruptions were demonstrated in both Jaipur and Bhubaneswar where 6.6% and 6.4% of respondents respectively were covered with these design features. (Refer [Table 38](#)).

Elevated toilet foundations are the commonly adopted design feature with an adoption rate of 61.5% amongst the household's reporting adoption of climate-resilient toilet features. With Bhubaneswar receiving intense and long spells of rains, elevated top or cover of septic tanks to avoid rainwater inflow has been commonly adopted in Bhubaneswar compared to Jaipur. Other design features adopted include safe sealing of the base of septic tanks (by 63.9% in Bhubaneswar, none in Jaipur); stronger roofs to resist cyclonic winds (by 52.8% only in Bhubaneswar); and sealed drainage systems to prevent leakage by 35.4% of households. (Refer [Table 39](#))

Handwashing: Following natural disasters, 77.5% of respondents reported easy access to handwashing facilities, with a higher proportion in Jaipur (88.9%) compared to Bhubaneswar (71.8%). Limited access was reported by 15.5% of households and no access to handwashing facilities by 7.4% of households. (Refer [Table 46](#))

Drainage: 57.3% of respondents believe their settlement's drainage system is prepared to handle extreme climatic hazards. This perception is significantly higher in Bhubaneswar (74.9%) compared to Jaipur (40.1%). 14.7% of respondents expressed their inability to express whether their drainage is prepared or not to handle extreme climatic events. (Refer [Table 63](#))

43% of respondents report that their drainage system did not experience any impact during climatic hazards, though 35.1% indicated temporary impacts, like short-duration waterlogging. Severe impacts, such as blocked or clogged drains affected 10.9% of households. Post-calamity structural improvements to drainage systems were reported by 43.7% of respondents. (Refer [Table 64](#))

2.3 Efficiency

Efficiency has been mapped against performance indicators related to coverage of WASH infrastructure and services and leveraging of resources. The data related to these indicators is given below.

Coverage: An indicator of efficiency of the CFAR project is its coverage of households on some of the critical indicators of performance. These indicators and the coverage of households against each of them is given in the following paragraphs.

2.3.1 Water

Provision of safe, potable and reliable Piped Water Supply (PWS) in households have been a major driver of performance for the project. The corresponding coverage of households has been as follows:

Indicator	Coverage (% HH)	Performance
PWS within the household premises	96.9	High
PWS as primary source of drinking water	92.7	High
PWS as primary source for domestic purpose	80.7	High
24 x7 water supply	39.3	Low
Sufficiency of water supplied through PWS	86.3	High
Safety of water from PWS	91.2	High
Water treatment Test as Good	88.1	High

Project scores high on the efficiency parameters related to supply of safe and potable water within household premises. Considerable work needs to be done for assuring reliability of the water supply as the proportion of households receiving 24x7 water supply are less than 50%. In most cases the water from piped water is provided by the local municipal authorities, it is important for the project to engage intensively with these authorities to work towards ensuring a regular and perpetual water supply in informal settlements.

It may be noted that 24x7 water supply not only enhances convenience and comfort of the households it also reduces outside contamination levels as the pipes are full and pressurised whereas in case of intermittent water supply the reservoirs are underutilised, there are frequent wear and tear in valves, enables metering and reducing in non-revenue water supplies. The journey of ensuring 24x7 PWS has been a long and intensive engagement amongst the community members and with the service providers ([see box below: Journey of change: I, We, Us](#)).

A key initiative introduced by WATCO is the deployment of Jala Sathi workers, with one worker assigned for every 300-400 consumers. These workers, trained in water quality, conservation, and proper water usage, play an important role in raising community awareness and supporting effective water management. The introduction of household-level water meters has replaced the previous flat fee system, enabling accurate measurement of water usage and billing. Jala Sathi workers are responsible for meter reading and bill collection, with performance-based incentives encouraging diligent service delivery. This approach has improved water management practices, encouraged responsible water usage among consumers, and strengthened the overall system for better service delivery.

State Governments are often willing to allocate funds to scale up such efforts. For example, in rural Rajasthan, numerous RO systems were installed based on pilot projects, demonstrating the scalability and replicability of these initiatives when backed by effective results and community engagement.

Journey of change: I, We, Us

Initial phases there was limited awareness of WASH related rights amongst the community members with a high degree of dependence on external actors. Absence of ownership often led to neglect and misuse of infrastructure. Vulnerability was neither defined nor identified in any manner. During this period individuals prioritised their own needs over collective action. There were regular fights over water and rules were made, and broken, on how much water a family can collect at one time. In addition to the supply there were issues with quality.

Project set about building awareness and engagement within the community at multiple levels across diverse social groups. Understanding of rights and responsibilities were built on WASH services and they were given confidence to articulate these within group meetings and in meetings with stakeholders. With constitution of Community Management Committees and Single

Window Forum this process gained momentum. Individuals and community started recognising their collective power to influence and demand WASH services.

Bridging gap between the community and the governmental institutions created spaces for shaping design and delivery of WASH services. Collaborations took place between government officials and community members and Multi-stakeholder Forums led the way for creating context-specific solutions. Trust was built and accountabilities were shared and priorities were identified tapping into local knowledge to design appropriate solutions.

Laxmipriya from Bhubaneswar stated that *“initially, the BMC provided only a street standpost with water for 1–2 hours a day. However, we noticed other settlements had 24/7 water. We met BMC officials repeatedly. Pipelines were installed, but water was not available because 515 households lacked connections. After further efforts, all homes finally received piped drinking water. Currently, we do not face any water-related issues.”*

2.3.2 Toilets

Programme’s performance in case of toilets has been with respect to availability of toilets within household premises; toilet usage by men and women; and desludging of toilets. Corresponding value of these indicators assessed by the evaluation is given below:

Indicator	Coverage (% HH)	Performance
Toilet located within households	79.7	
Men usage of toilets	88.8	
Women usage of toilets	89.7	
Toilet de-sludge	63.5	
Access toilet during climate hazard	76.4	

As far as construction of household toilets and their usage by men and women are concerned the project has a demonstrated high degree of efficiency. This is despite the fact that only 18.8% of households report receiving subsidy for an **average amount of Rs 7301 for toilet construction** in Jaipur and Bhubaneswar both.

BMC has leveraged diverse financial resources to support sanitation and infrastructure improvements. These include the 15th Finance Commission grants, equal share funds with the state government and specific allocations under schemes like SBM 2.0 (Swachh Bharat Mission). Additionally, BMC utilises its own revenue sources, such as holding taxes and other levies, to fund public utilities and infrastructure projects. Under SBM 2.0, BMC has also supported construction of household toilet, community and public toilets to stop open defecation in the city. This multi-source financing approach has enabled effective resource mobilisation, ensuring sustained investment in sanitation infrastructure and other public services.

In Jaipur, public toilet construction has further optimised resources by adopting a demand-driven approach, targeting areas like Narasimha Baba Colony in Jaipur, where household toilets are unavailable. This strategic planning ensures efficient use of resources while addressing gaps in sanitation access for underserved communities.

Regular desludging is critical to prevent overflow and to maintain proper sanitation. Desludging contributes to preventing possible environmental contamination and spread of diseases. In this aspect, the project has reached moderate success, with households paying **an average amount of Rs 517 for desludging** in Jaipur and Bhubaneswar and it needs to enhance the regularity of desludging of toilets as it may affect the sustainability of the toilet infrastructure and usage in the long run (see box on **IVRS: Placing demand to service providers**). To address financial challenges, the Bhubaneswar Municipal Corporation (BMC) has implemented an efficient approach by providing desludging services to groups of 3-4 households simultaneously, significantly reducing the financial burden on individual families. Through this system, households were able to access desludging services within a range of Rs. 100 to Rs. 200, making it more affordable and accessible.

IVRS: Placing WASH Demands to Service Providers:

Bhubaneswar Municipal Corporation has adopted GIS-enabled desludging systems where in households can request desludging services via QR codes or through an Interactive Voice Response System (IVRS). These requests are fed into a centralised database that assigns the nearest cesspool vehicles equipped with GPS tracking. This system optimises routes, reduces response times and ensures efficient resource utilisation.

CFAR mobilised people from different social groups training them in use of IVRS systems. Once trained they were handheld to record their requirement through the IVRS. Gradually as community saw their demands being responded to, and met, they gained in confidence and have started placing demand for WASH services to the corporation. Amongst these the demand for desludging has been placed frequently that has led to rise in desludging frequency in the settlements.

2.3.3 Hygiene

Handwashing: Handwashing is a top hygiene priority and is included in SDG 6 indicator 6.2. The WHO Joint Monitoring Programme for Water Supply, Sanitation and Hygiene defines handwashing facilities with soap and water at home as basic handwashing facility. Taking this into account evaluation assessed the performance of the project against the following two indicators.

Menstrual Hygiene Management: Access to safe and affordable sanitary materials to manage menstruation has multiple impact on sexual and reproductive health, and privacy and dignity, of women and adolescent girls. Neglecting to wash hands after changing menstrual products poses risk of spreading infections. Consequently, evaluation assessed performance of accessibility to menstrual products and the practice of washing hands after changing these products.

Indicator	Coverage (% adolescent girls)	Performance
Availability of MH products	94.9	
Access to water and soap after changing MH product	96.3	

The programme fares high in performance related to MHM in the settlements. Awareness and training on MHM have been an important aspect of the intervention by the project especially amongst adolescent girls that were contacted through schools and Anganwadi centres. UNFPA was the technical agency that supported the project in development of relevant awareness and training material on MHM. On part of CFAR a critical and strategic aspect was training of men on MHM and the establishment of Pad Bank ([see box: Pad Bank: Safe and Inclusive Space](#)).

Seeds for male involvement in MHM were sown in July 2020 ward level meeting in Ward 67 in Jaipur that was aiming to bring resolutions in the areas of water, sanitation and hygiene. The discussion centred on making WASH gender inclusive which can only happen when men support women in household duties and understand their WASH needs. This led to constitution of Male Forums that strived to reach out to other male members of the settlement and advocated for their increased involvement in ensuring gender inclusive WASH.

As the work of MHM started in August the groundwork was already laid out and made MHM everyone's business. Men took proactive role in addressing myths and taboos associated with menstruation which created spaces where women and girls could openly talk about MHM. Men from settlements emerged to champion and advocate for the needs of women and girls within the community and to engage with department.

Pad Bank: Safe and Inclusive Space

Programme had conducted training for adolescent girls, women, sanitary workers and frontline workers on menstrual health. Workshops and campaigns like **Menstrual Hygiene Management is everyone's business** were conducted by the project. Collaborations with SHGs led to creation of pad manufacturing unit that were producing fully organic sanitary pads that are fully incinerable for easy disposal. Pads were distributed locally, and the surplus stock was used to create Pad Bank. In Bhubaneswar adolescent girls formed Adolescent Forum to pool voluntary membership fee to purchase affordable organic sanitary pads. For those unable to afford, pads were provided free.

Transmen had felt embarrassed to ask for pads at shops for fear of harassment. Pad banks allowed them to access these products without such fear and embarrassment and they too soon became regular users of pads from the Pad Banks.

Pad Bank have developed as a trusted source offering private, accessible, inclusive and affordable solution to menstrual hygiene.

Indicator	Coverage (% HH)	Performance
Handwashing station at households	54	
Use of soap and water for handwashing	92.9	

Though more than half of households have handwashing station at their house but amongst those more than 92% use soap and water, indicating that once the handwashing station is established the households will ensure its functionality and will use soap and water for washing hands. Studies have indicated easy access to handwashing station has the potential to prevent 30% of diarrhoea-related sickness and 20% of respiratory infections. Covid has further underlined the need for handwashing as the means for preventing spread of disease in general and protection of vulnerable persons in particular.

Given the importance of easy access to handwashing station, the project should gear its efforts towards increasing its coverage of establishing handwashing stations in households.

2.3.4 Drainage

Drainage removes excess rainwater and wastewater preventing flooding thereby protecting infrastructure and promoting public health. A good drainage system is vital for safe and habitable living environment in human settlements. Evaluation assessed the performance of the project with respect to drainage on counts of coverage, type of drainage and its quality through the following indicators.

Indicator	Coverage (% HH)	Performance
Drainage in the neighbourhood	90.2	
Pucca drainage	91.4	
Responsibility drainage management by Community/HH	48.7	
Clearing of waterlogging within one day	93.5	

9 out of 10 households indicated that their neighbourhood is covered by drainage system which in 90% of the cases is pucca. The quality of the drainage system is indicated in the fact that waterlogging is cleared within one day as reported by more than 93% of the households. An area that requires attention for the project is to develop responsibility amongst households and community volunteers in managing the drainage system. The accountability of community towards maintenance of drainage system will be critical in ensuring the sustainability of the infrastructure and its quality.

For example, in an incident narrated by the municipal office in Bhubaneswar underlined the importance of community participation where households had linked their toilets directly to drainage which was creating a potential public health hazard and would have led to complete failure of the drainage system. Further, community involvement contributes to enhancing community readiness for disaster responses. Initiatives like Safa Apps provide opportunity to community and individual households to identify and report instances where the clearing and cleaning system of drainage are not following the maintenance schedule.

2.3.5 Solid Waste Management

Solid waste management directly impacts public health and environment quality of human settlements. Poor waste management breeds pathogens that spread diseases, contaminate water sources, and contributes to air pollution. Goal 11 of SDG monitors waste management through its target 11.6. Evaluation assessed the performance of the project in terms of the households that resort to segregating waste and the mechanism for collecting waste from settlements.

Indicator	Coverage (% HH)	Performance
Households segregating waste	78.7	
Waste collected from households	91	

More than three-fourths of households practice segregating solid and wet waste at the household levels, and 9 out of 10 households report that the waste is collected from the household directly. Project had recognised the difficulties faced by households where the members must leave early for work and households with persons with disability. In such cases the waste collection is undertaken from their doorsteps. To enable waste collectors to identify houses with persons with disabilities, the lanes of households are marked and so are their houses.

Resources, both financial and non-financial, play a critical role in addressing these challenges. For instance, earlier in Jaipur, the absence of small garbage collection vehicles for narrow lanes hindered waste collection. However, small vehicles have since been arranged, ensuring better waste management in these areas. Bridging gaps between community needs and government resources remains essential, with departments like PHED managing water supply and municipal authorities managing waste collection. The role of organisations and local workers is pivotal in connecting these dots and ensuring that services are delivered efficiently.

2.4 Sustainability

This section assesses the sustainability of processes and structures that have been developed during the implementation of the project. Scope of sustainability, in the context of the CFAR programme, includes whether the WASH infrastructure and services will continue to provide service beyond the project period; will the households continue to enjoy the benefits of WASH services; can the community institution and decision-making processes will be able to function with the same level of intensity as they have been during the project period; and does the climate resilience built in infrastructure and amongst the community members will withstand climatic vulnerabilities.

2.4.1 Infrastructure and Services

Piped Water Supply (PWS) and Toilets: Piped water supply and toilets are the two WASH infrastructure that are built at household levels. Involvement of community institutions and members of the community have ensured that the design and implementation of these infrastructure is of quality and is likely to provide these services for a considerable period. There are instances where households have made investments in these infrastructure within their households, e.g. making them disabled friendly, climate resilient, that is indicative of increased acceptance of the infrastructure and the service it provides to the households.

There are following aspects that need to be considered from the point of view of sustainability of infrastructure related to water and toilets within the household's premises:

- The narrative of making toilets barrier free for persons with disability has dominated the project missing out on making piped water supplies barrier free. The Department of Drinking Water and Sanitation has prepared Harmonised Guidelines and Space Standards for Barrier Free Built Environment for Persons with Disabilities and Elderly Persons in 2021 that lay down specifications for making piped water supply accessible for persons with disability. It seems that the CFAR has not taken the aspect of barrier free accessibility of piped water supply as part of their WASH programme.
- It seems that programme has promoted two types of toilets: toilets for persons with disability and toilets for others. Good practice is to have universal designs which promotes accessibility for everyone, reduces costs for modifying toilets, and overcome segregation. Similarly, is the case of making climate resilient toilets. The universal design of toilets should be climate resilient. It is probably for these reasons that the proportion of toilets that have been modified for climate resilience are less as they entail additional expenditure for the households which may not be the priority now.
- Saniclimiwall monitors the quality of water against the standard benchmark laid down for drinking water. This has the dual advantage of informing and educating the community on safety of water and also undertake periodic checks on the quality of water supplied to the households. Water testing is done by trained members of the community, though the water supply agency is also mandated to conduct these tests. Evaluation finds that there is some level of duplication, and it is possible that beyond the project period community may not be willing to crowd fund the cost of conducting water quality tests, hence there will be increased need for and reliance on water testing reports of the water supply agency.
- Adoption of desludging has taken roots within the community. Households are willingly paying for desludging which is indicative that these will continue beyond the project period. Further linking FSTP management with transgender groups has enhanced the ownership of the community and has been well accepted by the formal system.
- Discussions on water and water supply, has overlooked the need for conservative use of water. Households identify multiple sources of water and there has been minimal discussion on how to utilise water and adoption of water recycling and water conservation measures at the household level. This factor will assume importance as the population of the informal settlements increase and there is increased, demand for, and hence increased pressure, on existing sources of water. These factors are likely to have adverse impact on the ability of existing infrastructure to provide water sustainable to the households in the settlements. There is need to factor in the element of growth while planning for water and sanitation services within the settlements.

Handwashing and MHM: Handwashing and proper MHM have been found by the evaluation have been well ingrained as part of the behaviour change among the community members and amongst adolescent girls and women respectively. COVID and the need for regular handwashing have complemented the concerted efforts of the project and the changed behaviour have been reported by all the social groups.

MHM and use of menstrual products too gained traction during Covid lockdown when the non-availability of sanitary pads made it not just the issue for women but also drew men into the discussion. This has the dual advantage of breaking of myths and taboos associated with menstruation and made them involved in the larger discussion of men's role in enabling women to access WASH services.

Drainage and Waste Management: Construction of drainage line and setting up of functional system for solid waste management system have been notable achievements of the programme. Evaluation found communities aware of and appreciative of, the drainage and waste disposal system as it has visibly improved cleanliness of their settlement and have thus contributed towards improved environmental hygiene.

An important factor for sustainability of liquid and solid waste disposal system is active involvement of the community and individual households for their maintenance and appropriate usage. At present the community accountability is ensured through Saniclimiwall that identifies deviant and non-compliant households and names them to ensure smooth function of waste disposal systems. Enforcement is, thus, through public pressure. For sustainability it is critical that compliance is part of behaviour change, not only for the adults but also for the children and young population of the settlements. This will make safe and segregated waste disposal as a matter of habit and not matter of (en)forced compliance for the community.

2.4.2 Benefits

Consumption of WASH services are an end in themselves. They are also critical determinants for health, well-being, livelihoods and dignity. Focus primarily on supply of quality services will lead to establishment of WASH infrastructure and ensure services. Preparing the demand for WASH from the larger perspective of dignity, livelihoods and health are critical for the sustainability in demand and utilisation of WASH services.

Evaluation assesses that presently the community has become recipient of WASH services in terms of the convenience and comfort that they bring along with them. They have not yet connected the dots and realised its implication on their health, livelihood opportunities, dignity and well-being. Programme can identify and develop cases from and amongst the community members for dissemination amongst themselves to draw inferences between WASH and other aspects of their life and livelihoods. Once this realisation sets in within the community will continuously demand quality services which will create pressure on the suppliers to meet up with their expectations which will setting in cycle of sustainability of benefit for the residents of informal settlements.

2.4.3 Institutions

CFAR programme has led to multiple community institutions at the settlement, zonal and project level, namely, Community Management Committee (CMC), Single Window Forum (SWF) and Multi Stakeholder Forum. Additionally, there have been other community groups/institutions that have also been associated with the project e.g. Self-Help Groups, Male Forum, Adolescent Girls Group, Pad Bank and so on. All the groups have been facilitated in their formation, composition and functioning. These groups have played critical role in mobilising households, spreading awareness and education on WASH related issues, and have taken decisions related to designing, planning, implementation and monitoring of WASH infrastructure and services. From the point of view of sustainability, the critical question is whether these groups will continue to function beyond the project period (implying when the facilitation support of CFAR is withdrawn).

Experience indicates that the programme facilitated community institutions are sustainable when they are recognised as part of the formal mainstream governance agencies. In which the institution is part of the governance system, and its composition and constitution is formalised along with its functioning. In this scenario the functional domain of the community institutions(s) is defined by the formal system and over a period is co-opted as, and becomes, community unit of the formal governance system. It loses its spirit of voluntarism, representation and ability to engage with government on multiple, and many a times on contentious issues.

Sanitation Sub-Committee (SSC) led by women in Bhubaneswar has been functioning as the technical arm of Slum Dwellers Association (SDA) which has been recognised by the Bhubaneswar Municipal Corporation. Till August 2024, 13 MoUs have been signed between SSC and SDA on various aspects related to sanitation in informal settlements. This exemplifies the manner in which the community institution (SDA) has been recognised by the formal governing system which have further percolated to its technical units that focus on specific aspects of WASH.

The process could be expanded to develop SDA as the umbrella with a network of all the community institutions. SDA will thus have a larger outreach and a broader scope of working and it can constitute specific and localised community groups as its technical arm. SDA being a mainstreamed body can thus provide leadership to community institutions and facilitate their linkages with local service providers in planning and implementation of works and services. The layering of community institutions with formal governance mechanism will provide depth in highlighting localised issues and solutions creating a win-win situation for the municipal body and the community.

Present evaluation finds that the community institutions that have been developed as part of the project are highly relevant and with training and handholding have functioned effectively. However, there is need to make these institutions inter-linking their stakes through networked or federated institutional structures which has been mainstreamed and is part of the formal governance system.

The evaluation recognises that a trained and experienced pool of resource has been created within the community which we believe will continue to work for and with the community even in the absence of a representative community institution.

2.4.4 Climate Resilience

Climate resilience of WASH infrastructure and services is dependent on: climate proof infrastructure; robust early warning system; disaster preparedness; and access to loss and damage funds/resources. Amongst these the CFAR programme has worked to develop climate proof infrastructure mostly against threat of floods cyclones, developing poor of resource persons who access and understand the implications of weather forecasting, and linkage of the community to disaster preparedness plans of the local government.

Evaluation found that there are two elements that have not been given sufficient focus for the development of climate resilience on WASH, namely, focus on heat as extreme climate event and for the development of community based and controlled loss and damage fund.

Increased temperature has been recognised as climate hazard, but heat stress that may impact WASH infrastructure/service has not been assessed. For example, heat stress increases the demand for water not only for drinking purposes but also for cooling of homes. During such times the water supply is highly stressed that may lead to realignment in equitable distribution of water. With both Jaipur and Bhubaneswar are geographically located where the temperatures in summer are increasing and create heat stress for people, CFAR programme is well placed to have dwelled deeper in exploring implications of heat stress on WASH infrastructure.

With increased expenditure of households on water and toilets, and loss or damage due to climatic event implies immediate need for funds. Often there is loss of livelihood during such times, and the households are stressed to arrange for funds to restore water and sanitation infrastructure. In such cases availability and access to loss and damage funds will strengthen resilience of communities imparting them the opportunity to immediately bounce back and bounce back better. The use of this fund can also be extended to cater for restoration of community WASH infrastructure like drainage and liquid waste disposal and for rehabilitating solid waste disposal structures and systems.

2.5 Impact

The programme implemented by the CFAR has achieved significant milestones in transforming the WASH landscape of informal urban settlements. Grounded in principles of inclusivity, community empowerment, and sustainability, the programme has directly impacted the lives of marginalised groups, addressing disparities in access to water, sanitation, and hygiene services. The impact framework adopted in this section takes into account not just measurable improvements but also the qualitative enrichment of lives-. **HOW** the programme has contributed to a holistic transformation by addressing systemic barriers, fostering inclusivity, and enabling sustained behavioral and infrastructural changes?

2.5.1 Enhancing Access to Water

The interventions significantly improved access to safe and reliable water sources in both cities. Building on a comprehensive framework, the monitoring process incorporated considerations of Rio markers to ensure cross-cutting benefits, including climate-resilient WASH services and GEDSI integration. The framework emphasised critical areas such as water conservation, hazard risk assessment, and innovative pilot projects.

- **Policy Alignment and Training:** Guided by Rio markers such as 14010 (Water sector policy and administrative management) and 14081 (Education and training in water supply and sanitation), the programme addressed policy gaps while building local capacity.
- **Water Supply Improvements:** Jaipur achieved a remarkable increase in households with PWS access, from 62.1% at baseline to 96.4% at endline, while Bhubaneswar improved from 31% to 97.4%. These efforts facilitated pipeline connections, household taps, and alternative water sources, benefiting over 50% of the population.
- **Climate Resilience:** The programme piloted water storage and filtration systems in two wards, integrating lessons into participatory planning models and guidelines for climate-resilient WASH programming.
- **Low-Cost Innovations:** Initiatives like low-cost water storage and filtration plants in four wards enhanced access and resilience.
- **Pilot Projects and Partnerships:** Successes in water conservation, rainwater harvesting, and public-private partnerships provided valuable insights for scaling similar adaptations. Partnership with key stakeholders such as the PHED was clearly communicated by a wide array of stakeholders such as the Sup. Engineer of PHED in Jaipur.

Engineer of PHED in Jaipur- *“Consistent efforts have been made by CFAR to ensure water access in underserved areas in partnership with PHED. We focus on innovative solutions like PVC tanks in remote wards and use mobile water tankers in crisis situations, ensuring no community is left out.” These efforts underscore the role of adaptive mechanisms in overcoming distribution challenges.*

Insights from Local Leadership: According to a Ward Parishad in Jaipur, CFAR’s interventions have been transformative in improving water access for underserved communities. *“In Ganeshpuri Basti, where water scarcity was a long-standing issue, CFAR’s team and local leadership facilitated connections to the Bisalpur pipeline, ensuring clean water access for over 2,500 people. Their efforts bridged the gap between residents and government officials, creating a collaborative environment for sustainable solutions.” Such collaboration highlights the importance of grassroots partnerships in addressing systemic challenges.*

- **Perception of Water Safety:** As mentioned, the programme's interventions significantly improved access to safe and reliable water sources in both cities. Community perception of PWS as safe for drinking purposes improved drastically. In Jaipur, the perception rose from 15% to 90.9%, while Bhubaneswar maintained high safety perception rates, moving marginally from 91.1% to 91.6%.

While the increases are laudable, the MEL framework does not clearly define what constitutes "safe water". The indicator "access to safe water" does not define safety standards, and the efficacy of pilot projects is not supported by clear documentation of outcomes and replication potential.

According to UNICEF’s State Lead in Jaipur, CFAR’s focus on leveraging community ownership and integrating decentralised water management solutions has been impactful. *“CFAR has successfully engaged local stakeholders and demonstrated scalable models for climate-resilient water supply systems. However, challenges persist in ensuring consistent engagement with urban governance bodies such as the Jaipur Development Authority and in building technical expertise for more advanced climate adaptation measures.”*

This underscores the need for stronger alignment with government systems and sustained capacity-building efforts.

A UN Women specialist *appreciated the gender-sensitive approach embedded in CFAR's water interventions.*

We also note that **What stands out in CFAR's approach** is their emphasis on community dialogue and ensuring women's voices are not only heard but acted upon in planning and implementing water solutions. However, the systemic challenge lies in **achieving equal participation of men and boys in these dialogues**, which is essential for breaking gendered barriers around WASH." **We also note that** while the programme demonstrated notable achievements, gaps were identified in **integrating local interventions with broader governmental frameworks**. Challenges remain in addressing barriers to sustainability and scalability, including less than optimal engagement with urban development authorities (Jaipur-JDA, for example) and the need for targeted gender-sensitive strategies. Also, while interventions such as the Happy Taps at AWCs demonstrated a significant improvement in hygiene practices, recycling water for activities like kitchen gardening, and contributing to both hygiene and environmental benefits, however, these interventions have not extended into broader sanitation-nutrition integration, as reflected by one CDPO in Jaipur.

2.5.2 Improving Sanitation Facilities

The programme's focus on sanitation led to better access to toilets and enhanced resilience during climate hazards.

Household Toilets: Access to household toilets in Jaipur improved by 7.3%, reaching 92% of households. In Bhubaneswar, a 19.3% increase brought access rates to 89%.

Community Toilets during Climate Hazards: Availability of community toilets during climate hazards grew significantly. Jaipur and Bhubaneswar recorded increases of 22.7% and 34.1%, respectively, highlighting improved resilience to extreme weather. During the field work, all the stakeholders **unequivocally acknowledged** the significant role of CFAR in the programme. Few went a step ahead to **openly appreciate the contribution**. These achievements reflect CFAR's successful engagement with local governance to prioritise underserved areas, and marginalised communities.

According to the Additional Commissioner of BMC, CFAR played a crucial role in making sanitation- especially desludging services affordable and accessible to low-income households by pooling resources and organising combined services for slum communities. *"CFAR's support has been instrumental in ensuring services reach underserved areas. Through community mobilisation and training initiatives, they have also strengthened local participation and awareness," he stated. He also appreciated CFAR's involvement in flood preparedness, ensuring water tankers and resources are ready during emergencies".*

2.5.2.1 Innovative Practices:

Improving Awareness: The programme introduced solutions such as the Saniwall, capturing ward-level information to address service gaps, as mentioned by the Ward Parishad in Jaipur. *"The Saniwall has been a game-changer, providing a platform for residents to voice their sanitation concerns and access timely support".*

Faecal Sludge Treatment: The management of FSTPs by marginalised groups, particularly transgender communities, demonstrates inclusivity and empowerment. Meghan Sahoo, manager of an FSTP, noted, *"Our journey with CFAR has transformed us into an Entrepreneur SHG managing end-to-end sanitation services, ensuring dignity and care for marginalised populations."* It was also shared that regular testing and compliance with state pollution control guidelines ensures that the Faecal Sludge Treatment is environmentally sustainable.

GEDSI Integration: The gender specialist from UN Women highlighted CFAR's gender-sensitive approach in sanitation. *"CFAR has ensured women's involvement in planning and decision-making, which is crucial for addressing cultural barriers to sanitation use," she noted.*

Disaster Preparedness: During the stakeholder consultations, OSDMA officials appreciated the collaborative efforts of CFAR. *"Sanitation facilities were integrated into disaster management protocols, with designated cyclone shelters equipped with functional toilets and accessible infrastructure for vulnerable groups"*

School-Level Interventions: In schools, CFAR has facilitated the installation of sanitary napkin disposal machines and hygiene education programmes, directly improving menstrual hygiene management for adolescent girls. The Head Mistress of HM Girls High School (Bhubaneswar) noted, *"CFAR's efforts in promoting menstrual hygiene and handwashing awareness have fostered a healthier environment for students, despite challenges in maintaining consistent resources. We also witnessed found evidence of sustainable MHM practices in Jaipur- An 11th-grade student at a Jaipur high school shared, "We now have baskets to collect sanitary napkins, and caretakers bury them in pits weekly with soil and dry leaves. This has prevented environmental pollution and harm to animals."* She also appreciated CFAR's efforts in *introducing incinerators for menstrual waste disposal, though usage remains limited.*

We conclude that the programme achieved significant progress in enhancing sanitation facilities, with measurable improvements in toilet access, community engagement, and inclusivity. The introduction of faecal sludge treatment plants managed by marginalised groups, school-level interventions for menstrual hygiene, and disaster-ready sanitation facilities highlight innovative and impactful solutions. While the programme demonstrated notable achievements in improving access to sanitation, certain gaps were identified. The indicators for sanitation are specific and realistic, but lack clarity on usability, maintenance, and cultural acceptability. For instance, while toilet access increased, there is limited evidence on their sustained use and cleanliness. The programme indicators miss out the opportunity to capture broader impacts such as nutrition and public health improvements and environmental outcomes. CFAR's limited engagement in sanitation-nutrition integration remains a gap, particularly in urban Anganwadi centers. Additionally, ensuring consistent maintenance, long-term usability, and broader alignment with public health, nutrition, and environmental objectives remains a challenge. In this context, the UNICEF representative from Jaipur emphasised the importance of integrating community engagement in sanitation efforts. "CFAR's participatory approach has empowered communities to take ownership of sanitation infrastructure, yet there is scope to align these efforts more closely with state-level policies".

2.5.3 Promoting Hygiene Practices

Handwashing Practices: The behavioural change communication campaigns transformed hygiene practices in the target communities. For example, in **Handwashing with Soap**, Jaipur experienced a 20.3% increase in households practicing handwashing with soap, reaching 96.3% by endline. Bhubaneswar saw a 6.4% increase, achieving a 91.2% adoption rate. Besides, there was a significant decline in the practice of **handwashing with water alone**—Jaipur reduced this by 21.9%, and Bhubaneswar by 11.4%.

School-Level Hygiene Interventions: In Jaipur schools, initiatives like installing handwashing stations and Happy Taps fostered improved hygiene practices among students. An 11th-grade student shared, *"We now wash our hands with soap before eating meals, and the caretakers ensure the taps are cleaned daily."* Such efforts contributed to cultivating long-term hygiene habit.

Community Hygiene Education: Jala Sathi workers in Bhubaneswar organised door-to-door awareness campaigns, promoting handwashing and household hygiene practices. These community-driven efforts empowered residents to adopt simple yet effective measures for disease prevention.

Anganwadi Hygiene Practices: At Anganwadi centres, the integration of Happy Taps encouraged younger children to learn proper handwashing techniques. According to the CDPO, *"These practices not only reduce disease transmission but also instil foundational hygiene habits in children at a critical age."*

We conclude that the programme successfully promoted hygiene practices, particularly through community-level and school-based interventions. However, sustained behaviour change remains a challenge. Practices like handwashing with soap, while improved, still require continuous reinforcement to prevent relapse into old habits. Challenges in scaling up impactful innovations such as Happy Taps and underutilisation of local champions like Jala Sathi workers indicate the need for deeper community integration and follow-through mechanisms to ensure long-term adoption. We also note that despite achievements, the programme falls short in tracking long-term adherence and linking hygiene improvements to health outcomes to ensure relevance to the overall ToC. As mentioned in the preceding sections, the programme's focus on menstrual hygiene resulted in notable improvements. For example, the usage of sanitary pads increased by 11.1% in Jaipur and 4.4% in Bhubaneswar, reaching 92.1% and 90.4%, respectively, at endline. These improvements were driven by targeted interventions such as pad banks and sensitisation workshops. However, CFAR has not designed KPIs that capture or measure affordability, cultural stigma and supply chain efficiency to enhance alignment with programme objectives.

2.5.4 Enhancing Drainage Systems

Infrastructure investments have improved drainage systems, reducing exposure to open drains and enhancing health outcomes. For example, Jaipur **reduced open drains** from 61.8% to 26.9%, while Bhubaneswar achieved a reduction from 31.2% to 7.9%. Likewise, the prevalence of **closed drains increased** by 33.1% in Jaipur and 14% in Bhubaneswar, reflecting substantial progress in urban sanitation infrastructure. During the data collection phase, we noted that in Bhubaneswar, the partnership of BMC and CFAR led to regular ward-level meetings where gaps in drainage services were identified and addressed. Similarly, Jaipur's initiatives in slums like Narsingh Baba Colony involved advocacy for improved sanitation despite legal challenges related to forest land, demonstrating the program's adaptability in tackling systemic barriers. We found evidence of community-driven advocacy through initiatives like the Saniclimiwall ensured better reporting and tracking of drainage issues, particularly in low-lying slum areas, significantly reducing waterlogging and health hazards.

The evaluation team found several examples of collaborative partnerships and community level interventions, some of which have been mentioned below:

- In Jaipur's Jawahar Nagar, the integration of sewer and water lines addressed long-standing issues of waterlogging and improper drainage. In Ward 19, Jaipur, community members collaborated with CFAR to resolve a long-standing issue of water overflow in public spaces. Regular desilting of drains was initiated after persistent lobbying by local women's groups
- Bhubaneswar's Ward 43 implemented community-led monitoring through sanitation committees to ensure regular cleaning and maintenance of closed drains. In Ward 50, Bhubaneswar, effective drainage systems, supported by Basudha Yojana, prevent waterlogging even during cyclones, demonstrating climate resilience. SSC Ward 49, Bhubaneswar: Residents coordinated with BMC to desilt drains and remove blockages, particularly during monsoon seasons
- Pump Deployment During Cyclones: BMC utilised high-capacity pumps and other machinery to manage waterlogging in low-lying slum areas.
- Weekly CMC Meetings in Jaipur: CMC members identified drainage issues and facilitated timely repairs. For instance, clogged drains in Meena Basti were cleared through persistent advocacy.
- Rainwater Filtration Initiative: In Jaipur's CMC-led meetings, community members proposed RO systems to filter rainwater, addressing fluoride contamination.
- Slum Infrastructure Improvements: CFAR facilitated the construction of culverts in informal settlements of Jaipur, minimising risks during monsoon flooding.
- CBO-Led Infrastructure Upgrades in Rajasthan: Communities built rainwater harvesting systems and resolved tank overflow issues, benefitting slum households prone to flooding. Mahavir Nagar, Bhubaneswar (Ward 20): Community Management Committees (CMCs) advocated for slab coverings on open drains, preventing waste disposal and ensuring smooth water flow.
- Rasulgarh, Bhubaneswar: Sanitation workers proactively cleaned drains and industrial areas, addressing issues of waste accumulation during natural disasters. In Salia Sahi, Bhubaneswar-Multi-stakeholder forums promoted participatory planning for drainage infrastructure, particularly in low-lying areas vulnerable to waterlogging.
- In Budha Nagar, residents collaborated with the SSC to complete stalled drainage projects. By working with CFAR and municipal officials, they ensured that drainage channels were connected to main lines, alleviating chronic flooding.

While the indicators showcase substantial progress, a lack of comprehensive KPIs to assess environmental and health impacts, such as reduction in waterlogging or vector-borne diseases, limits the scope of the evaluation. Furthermore, inconsistencies in maintenance practices across wards suggest uneven implementation.

2.5.5 Advancing Waste Segregation

Innovative **waste management initiatives** led to widespread adoption of segregation practices in both cities. In Household Waste Segregation, Jaipur recorded an increase from 1.4% to 60.2% of households practicing waste segregation, and Bhubaneswar increased from 19% to 97.6%, demonstrating the success of awareness campaigns. During the data collection, it was shared that Bhubaneswar has introduced door-to-door waste collection tailored for vulnerable groups, including elderly and disabled residents, to ensure inclusivity. Further, CFAR's collaboration with BMC established decentralised waste processing units, which have eliminated the need for traditional dump yards, further facilitating waste segregation at the source. In Rasulgarh, Bhubaneswar, female sanitary workers visited households to educate residents about waste segregation, increasing compliance from 40% to nearly 85%. Their efforts were supported by regular training sessions conducted by CFAR. The "Saniclimiwall" initiative in Bhubaneswar empowered community members to track waste management practices, encouraging segregated disposal and enhancing accountability. In Jaipur, workshops conducted by CFAR and municipal corporations focused on educating marginalised groups, including transgender individuals, about proper waste segregation and disposal. Some of these innovative practices witnessed by the evaluation team is mentioned in this section.

- **Decentralised Waste Management in Bhubaneswar:** BMC eliminated dump yards, setting up micro-composting centers (MCCs) and material recovery facilities for efficient waste processing.
- **Waste Collection for Marginalised Groups:** Bhubaneswar introduced special vehicles for persons with disabilities (PWDs), ensuring inclusive waste collection.
- **Community-Led Awareness in Jaipur:** Advocacy efforts targeted transient populations in slums, ensuring their participation in waste segregation practices.
- **Safa App Implementation:** Residents in Bhubaneswar can schedule waste pickup and desludging through a digital platform, streamlining services.
- **Gender-Inclusive Waste Management:** Transgender individuals in Bhubaneswar were trained to manage waste collection and processing facilities, fostering economic and social inclusion

- **Nukkad Natak Advocacy:** Street performances by SHG members in Jaipur educated residents about the environmental hazards of mixed waste disposal. In Jaipur's Shastri Nagar, women SHGs partnered with CFAR to educate residents on segregation practices through street performances. Waste collection improved by 40% within three months.
- **MRFs in Bhubaneswar:** Material Recovery Facilities efficiently managed household waste, reducing dependence on centralized landfill sites.
- **Swachh Sathis** facilitated daily waste collection and segregation, particularly in hostels and apartment complexes where compliance was initially low
- **Jay Jagannath SHG, Bhubaneswar:** Women's SHGs produced eco-friendly phenyl and soaps from waste materials, simultaneously promoting hygiene and waste reduction
- **Salia Sahi, Bhubaneswar:** CMC members leveraged barcoded waste bins to track and enhance waste collection efficiency, reducing overflow issues
- **Sanitary Pad Disposal Programs:** Pad banks and awareness campaigns in slums encouraged the safe disposal of menstrual waste, reducing environmental hazards
- **Cyclone Response Initiatives:** Post-cyclone cleanups involved local groups and SSCs in removing fallen debris and garbage, ensuring waste was not dumped into drains

Notwithstanding such achievement, there is room for improvement. For example, we could not find sufficient evidence as to how segregation is sustained and supported by infrastructure, such as KPIs on recycling rates or the impact of waste segregation on landfill usage. The absence of recycling facilities and irregular monitoring limits the impact of these initiatives. High segregation rates highlight the success of community-driven initiatives, but recycling and landfill reduction remain under-monitored. Variations in waste processing infrastructure across wards indicate a need for more equitable resource distribution. While segregation rates are high, the absence of data on recycling and landfill reduction limits long-term sustainability insights. Variability in infrastructure across wards and insufficient resources for scaling decentralised systems remain as critical challenges.

2.5.6 Gender Equality, Disability, and Social Inclusion (GEDSI) Impact

The programme's GEDSI framework fostered inclusivity. Marginalised groups, including women, PwDs, and Trans-persons, were actively engaged through tailored initiatives such as the establishment of Single Window Forums and Community Management Committees. **Vulnerable households**, including those headed by single women and containing PwDs, were prioritized for WASH services. The internal team of CFAR collected some data and case stories from Ward Nos. 5, 38, 42, 43 and 49 to track the impact of GEDSI focused interventions in the localities of Bhubaneswar. Some of the reports are data driven, some others driven by the urge to listen to stories of change, especially from the mouths of the deprived people, mostly women. Wherever data is used, the source was the recordings on the Saniclimiwall. For instance, in Bhubaneswar's Ward 43, 619 elderly households and 113 single-woman households benefited from improved services. However, due to lack of standardisation in the data collection format, treatment varied across wards as a result of which there are issues in data compatibility. Notwithstanding this challenge, From all the Wards, there are stories of inclusion which speak volumes on the inclusiveness achieved through the interventions under the project. For example, *a transgender woman in Bhubaneswar recounted how joining the TG SHG allowed her to secure her first job managing sanitation services. With CFAR's support, she became an advocate for GEDSI-focused interventions in her community.* The text box below underscores how the programme has not only empowered marginalised communities but ensured their active participation.

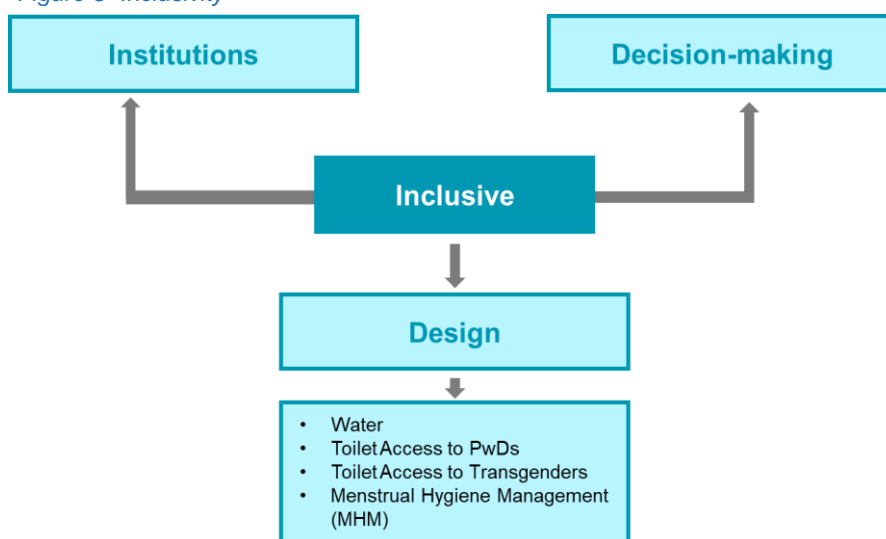
- **Transgender SHG in Bhubaneswar:** Members of the TG Sweekruthi SHG managed waste collection and sanitation services, gaining financial stability and societal respect.
- **PWD-Friendly Toilets in Mahavir Nagar:** The SSC coordinated with municipal bodies to build accessible toilets for persons with disabilities, addressing a critical gap in sanitation
- **Adolescent Health Awareness:** Life skills education programs in Bhubaneswar trained adolescent girls in menstrual hygiene management, reaching over 1,000 participants across wards
- **Multi-Stakeholder Forum (MSF) Contributions:** The MSF in Bhubaneswar addressed GEDSI issues by involving diverse groups in sanitation planning, creating inclusive policies for slum residents
- **Cyclone Relief for Vulnerable Groups:** During cyclone emergencies, SSCs prioritized the safety of elderly and disabled individuals, arranging transport and shelter facilities

While the GEDSI initiatives have demonstrated tangible outcomes, challenges remain in scaling these practices and institutionalising inclusivity. Limited representation in decision-making and a lack of systematic monitoring are the key barriers.

2.6 Equity

CFAR’s WASH interventions emphasise inclusiveness, focusing on integrating institutions, decision-making processes, and infrastructure design to address the diverse needs of marginalised groups, including PwDs, transgender individuals, women, and adolescent girls. As depicted in figure 2, inclusivity forms the foundation for both institutional collaboration and equitable decision-making, supported by inclusive design elements. This approach prioritises water accessibility, toilet access for PwDs and transgender individuals, and menstrual hygiene management (MHM). The following section unpacks these dimensions, offering detailed insights and findings into CFAR’s efforts to **promote equity and inclusivity within WASH interventions**.

Figure 3- Inclusivity



2.6.1 Inclusive Design

Water: CFAR’s interventions in WASH highlight that equitable access to water is a foundational aspect of inclusive design, especially for marginalised groups such as elderly, women, transgender individuals and PwDs. Secondary documents, including the GEDSI Process Documentation⁴ and Best Practices on Climate-Resilient Urban WASH⁵ identify systemic inequities in urban slums, where communities often face unreliable or unsafe water sources. CFAR’s advocacy for innovative solutions such as **water ATMs, rainwater harvesting systems and piped water connections** reflects its commitment to addressing these disparities and enabling equitable outcomes. The Capacity Needs Assessment (CNA) Report⁶ underscores the importance of integrating water accessibility with **broader WASH and climate resilience goals**. It highlights collaborative efforts such as groundwater recharge projects and infrastructure maintenance plans as critical strategies for addressing systemic challenges in water access.

Primary data from the endline evaluation reflects the effectiveness of these interventions. Most respondents across Jaipur (95.8%) and Bhubaneswar (99.1%) reported no barriers in accessing water. This reflects that CFAR’s efforts have made significant progress in ensuring equitable water distribution in underserved communities. (Refer [Table 17](#))

Further analysis of the nature of challenges reveals distinct patterns in Jaipur and Bhubaneswar. Jaipur predominantly reported physical challenges (90.9%) related to infrastructure gaps and social challenges (40.9%) tied to inequities and discrimination. In contrast, Bhubaneswar’s challenges were overwhelmingly environmental (98.1%). (Refer [Table 18](#))

In Bhubaneswar, CFAR’s partnership with SAKHA, a transgender-led community-based organisation, demonstrates its commitment to addressing water scarcity through inclusive design and collaboration. A SAKHA member, herself a transgender advocate, highlighted the challenges faced by marginalised groups in slum areas during environmental crises such as floods.

She mentioned, “CFAR worked with us to implement rainwater harvesting systems and improve drainage infrastructure, ensuring safe and reliable water access during floods.”

Additionally, the installation of water ATMs provided a dependable source of clean drinking water, directly benefiting slum residents who previously relied on unsafe and unreliable sources. These interventions exemplify how CFAR’s approach combines technical solutions with a focus on equity, ensuring that water systems cater to the unique needs of vulnerable groups, including transgender individuals. The partnership with SAKHA highlights the intersectional barriers faced by communities, where gender identity, socio-economic status, and environmental risks converge to exacerbate exclusion. By

⁴ GEDSI Process Documentation shared by CFAR

⁵ Best Practices on Climate Resilient Urban WASH in Bhubaneswar and Jaipur

⁶ Capacity Need Assessment for Climate-Resilient WASH Services in the Urban Slums

addressing these complexities, CFAR not only improved access to water but also created pathways for inclusion and empowerment for marginalised groups in Bhubaneswar.

In Jaipur, CFAR's initiatives targeted infrastructure gaps and systemic inequities in water access. Collaborations with organisations like Mamta HMC enabled multi-stakeholder consultations which resulted in piped water connections for excluded colonies. These interventions significantly reduced the burden on women and children, who often travelled long distances to fetch water.

A Mamta representative noted, "CFAR's ability to bring together municipal authorities, engineers, and community leaders ensured sustainable solutions to long-standing water issues in areas like Jawahar Nagar."

A representative from UNFPA highlighted the importance of integrating gender-sensitive approaches into water-related projects, ensuring that women and girls benefit equally from interventions.

"CFAR's focus on equity in water access is critical in addressing both immediate needs and long-term sustainability," UNFPA representative responded.

CFAR's work in both cities demonstrate a strong focus on **integrating water access with climate resilience**. In Bhubaneswar, environmental challenges such as waterlogging and contamination were addressed through community engagement and infrastructure improvements.

SAKHA leader remarked, "The rainwater harvesting systems introduced by CFAR have helped protect our water sources during floods, ensuring clean water access year-round"

Despite significant progress, challenges remain in ensuring equitable water access. In Jaipur, physical infrastructure gaps and social challenges, such as caste-based discrimination, continue to hinder water equity.

A Mamta representative emphasised, "Even with new systems in place, societal attitudes prevent equitable access to water for all"

In Bhubaneswar, environmental challenges, such as frequent waterlogging, require ongoing maintenance and community involvement to sustain improvements.

SAKHA leader noted, "While CFAR's interventions have made a difference, maintaining these systems in the face of climate challenges is a constant struggle"

CFAR's work in promoting water equity as part of inclusive design highlights its commitment to addressing systemic challenges and ensuring sustainable solutions. By integrating climate resilience, enabling community engagement and advocating for equity in water access, CFAR has created models for inclusive WASH interventions. However, the persistence of infrastructure gaps, environmental challenges and social inequities underscores the need for sustained efforts and investment to build on these achievements.

Toilet Access to PwDs: Reports on CNA, GEDSI impact, and micro-planning, highlight the programme's overriding objectives. Extant literature provides us with ample evidence of the importance of Wheelchair, ramps, handrails as accessibility infrastructure for PwDs. The CNA report further substantiates the same, drawing on the local experiences of project beneficiaries. It emphasised the importance of introducing ramps, handrails, and spacious layouts for wheelchair access, alongside symbolic and audio instructions for better usability.

For instance, a PwD from Jaipur shared how the lack of toilet facilities in her community forced her to travel 100-200 meters to use a toilet, a daily struggle made even more challenging by her disability. However, with CFAR's intervention, including the construction of community toilets, her access to sanitation facilities has significantly improved. She noted that these developments have made a tangible difference in her quality of life, yet challenges persist in ensuring equitable access for all. Despite the progress, barriers such as limited inclusive design features and accessibility for those with intellectual or sensory impairments remain, highlighting the need for continued efforts to address the specific needs of all PwDs in the community.

The primary data collected from Jaipur and Bhubaneswar also reveals this barrier. For instance, the adoption of disabled-friendly toilets and accessibility features remains significantly limited (Jaipur 1.1% and Bhubaneswar 3.5%) across both cities. Efforts to create disabled-friendly toilets have met with limited success. (Refer [Table 33](#))

Similarly, the installation of ramps and slants to improve accessibility for PwDs and pregnant women has been slow. Jaipur reported higher progress in this area, with 17.2% of institutions including ramps/slants compared to 5.6% in Bhubaneswar. Yet, the overall adoption rate remains low at 10.8%, reflecting the need for more comprehensive planning and resources. (Refer [Table 34](#))

Disha Foundation, a long-established partner institution of CFAR in Jaipur dedicated to supporting children with multiple disabilities, provides crucial supportive interventions to address the most pressing emotive, cognitive and physical needs of the PwDs into the accessibility challenges within community WASH facilities. Representatives from the foundation acknowledged CFAR's efforts in advocating for disabled-friendly toilets, **but they highlighted the limited reach of these interventions in practice.**

"While we have disabled-friendly facilities within our organisation, the number of such toilets in communities is very limited," shared one of the representatives of Disha Foundation.

They emphasised that many toilets constructed in community spaces cater to a narrow spectrum of disabilities, often neglecting the needs of individuals with intellectual or sensory impairments. This reflects a broader systemic issue where **"disabled-friendly" is narrowly defined**, focusing primarily on physical disabilities **without considering the broader range of needs identified under the 22 recognised categories of disabilities.**

Another critical gap identified by the Disha Foundation lies in the lack of guiding tools within these facilities. While physical accessibility features like ramps and handrails are essential, additional elements such as audio instructions and visual symbols are crucial for making these spaces truly inclusive. **Although these suggestions have been discussed in meetings with CFAR, their implementation remains inconsistent across Jaipur.**

"Just constructing a toilet is not enough; there must be repeated instructions, symbols, and even audio guides to ensure these facilities are usable by everyone," the representative of Disha Foundation added.

The foundation also stressed that awareness among municipalities and communities is a major barrier. Municipal authorities often underestimate the need for such facilities due to assumptions about the prevalence of disabilities in a given area. Community spaces often fail to allocate sufficient room for accessible designs, limiting the installation of ramps or spacious layouts necessary for wheelchair access. This lack of understanding exacerbates the gap between intent and execution.

Systemic challenges also hinder progress. According to the Disha Foundation, the process of obtaining disability certifications often a prerequisite for accessing government aid is cumbersome and discouraging for families. This affects the identification and prioritisation of individuals in need of inclusive WASH services.

"The process for disability certification is complex and inaccessible, creating additional hurdles for families who are already struggling to meet their children's basic needs," the foundation responded.

Despite these challenges, the foundation recognised CFAR's efforts to include disability-focused interventions in its broader WASH initiatives. CFAR's collaboration with organisations like the Disha Foundation has led to awareness campaigns and pilot installations of accessible facilities. However, the limited adoption rates highlighted by primary data suggest that more needs to be done to scale these efforts and address systemic barriers.

Toilet Access to Transgenders: Secondary documents highlight CFAR's targeted efforts to ensure that toilets and sanitation systems cater to the specific needs of transgender individuals, who often face stigma and exclusion in using gendered facilities.

Best Practices on Climate-Resilient Urban WASH and the GEDSI Process Documentation highlight CFAR's efforts to introduce **gender-neutral toilets across urban spaces.** These facilities were designed to meet the diverse needs of transgender individuals, addressing both practical challenges and societal stigma. For instance, inclusive toilets with designated signage provided safe and private spaces while promoting broader acceptance within the community. Transgender individuals face significant barriers in accessing traditional male or female toilets.

A transgender advocate from State Rainbow LGBTQIA+ Society in Jaipur, explained, "The issue isn't with intersex individuals or transwomen as much as it is with transmen. Many are undergoing hormone therapy or surgeries but may still have menstrual needs. Male restrooms don't accommodate this, and they often face rejection in female restrooms."

Similarly, another transgender leader from Naibhor Organisation, shared her experience of waiting in long queues for poorly maintained public toilets in slum areas: “Before CFAR’s intervention, transgender individuals were excluded from sanitation planning entirely. We often resorted to open defecation because the available options were unsafe or inaccessible,” she said.

Primary data collected during the endline evaluation reflects the effectiveness of CFAR’s interventions in improving toilet access for transgender individuals. The data demonstrates significant progress in reducing open defecation among the transgender community, with near eradication in Jaipur (0%) and a very low incidence in Bhubaneswar (0.9%). Household toilets were the most used facilities in Jaipur (98.3%), indicating greater access to private sanitation in this city. In contrast, Bhubaneswar had a higher reliance on community toilets (17.1%) and public toilets (1.8%), reflecting the critical role of communal facilities in urban slums. (Refer [Table 35](#))

CFAR’s approach to addressing transgender sanitation needs extended beyond infrastructure to active advocacy and community engagement. A transgender advocate from State Rainbow LGBTQIA+ Society in Jaipur credited CFAR with enabling meaningful dialogue with municipal authorities in Jaipur. Chairman of Third Gender Welfare Trust mentioned that CFAR has made significant strides in overcoming these barriers, providing essential water and sanitation services, including end-to-end sanitation value chain management. Their targeted efforts have not only improved practical access to toilets but also increased dignity and care for transgender individuals.

“With CFAR’s support, we were able to articulate why gender-neutral toilets are essential. These facilities don’t just address practical needs—they symbolise our inclusion and recognition in society,” she explained

In Bhubaneswar, CFAR collaborated with SAKHA to launch signage campaigns that transformed existing public toilets into inclusive spaces.

“The signage campaign was a simple yet powerful idea. It showed that inclusion doesn’t always require new construction—it can begin by repurposing existing infrastructure,” SAKHA transgender leader shared.

CFAR’s interventions in Bhubaneswar and Jaipur represent a significant step toward inclusive sanitation systems for transgender individuals. By introducing gender-neutral toilets, advocating for inclusive policies, and enabling community engagement, CFAR has addressed critical barriers to toilet access for transgenders. These initiatives demonstrate the transformative potential of participatory planning and advocacy in creating equitable and dignified solutions for marginalised communities.

Menstrual Hygiene Management (MHM): CFAR’s interventions in Menstrual Hygiene Management (MHM) focus on inclusivity and equity, addressing the needs of women, adolescent girls, transgender individuals, and persons with disabilities (PwDs). Secondary documents highlight CFAR’s emphasis on integrating MHM-friendly infrastructure into WASH systems, such as gender-sensitive toilets with sanitary pad disposal units and private changing spaces. These facilities ensure privacy and dignity while promoting accessibility for marginalised groups. CFAR has also introduced sustainable solutions, such as biodegradable sanitary pads and efficient waste disposal mechanisms, aligning MHM practices with environmental goals.

Primary data from the field reveals that these efforts have significantly improved awareness and access to menstrual hygiene resources. The widespread adoption of sanitary pads, reported by 91.2% of respondents across Jaipur and Bhubaneswar, underscores the progress achieved through CFAR’s interventions. (Refer [Table 47](#))

The availability of menstrual products is high, with 94.9% of respondents across both cities confirming accessibility. While Jaipur reports slightly better access (96.8%) compared to Bhubaneswar (93.2%), the data demonstrates a robust foundation of resource availability established by CFAR’s interventions. (Refer [Table 48](#))

The data also reveals gaps in MHM training, with only 50% of respondents reporting access to education on menstrual hygiene. Jaipur shows higher training rates (61.9%) compared to Bhubaneswar (39.7%). These findings emphasise the importance of expanding educational programmes to bridge these gaps and ensure equitable access to knowledge. (Refer [Table 49](#))

The quantitative findings also align with the qualitative insights, showcasing how CFAR’s interventions have positively impacted MHM practices while highlighting persistent challenges. In Bhubaneswar, **CFAR’s collaboration with the Government Girls High School** included installing sanitary napkin disposal machines and conducting hygiene awareness sessions.

A student shared, “CFAR’s involvement helped us understand the importance of proper menstrual hygiene. The disposal system has made a huge difference in how we manage our periods.”

For transgender individuals, SAKHA highlighted the inclusivity of CFAR’s approach, noting that gender-neutral toilets equipped with MHM facilities addressed unique challenges.

A transgender representative explained, “For transgender individuals undergoing hormonal therapy, menstruation can be a sensitive issue. CFAR’s work offered dignity and comfort by creating safe WASH spaces.”

In Jaipur, Mamta HIMC helped integrate MHM into schools and slum communities. Training programmes under the Swachh Bharat Mission addressed the lack of openness around menstruation. PwDs in Jaipur also benefited from CFAR’s inclusive approach.

Transgender leader from Naibhor Organisation, stated, “Before CFAR’s intervention, girls in our community were hesitant to discuss menstruation. Now, with training and resources, there’s greater awareness and openness.”

Mamta highlighted that “differently abled girls were often overlooked in MHM planning. CFAR ensured their needs were addressed through accessible WASH facilities and tailored training programmes.”

2.6.2 Inclusive Institutions

CFAR’s work in WASH and climate resilience has focused on building inclusive institutions that address systemic challenges while promoting equity for marginalised groups.

The GEDSI Impact Documentation and Best Practices on Climate-Resilient Urban WASH in Bhubaneswar and Jaipur emphasise CFAR’s role in enabling institutional inclusivity through multi-stakeholder forums, participatory planning, and collaboration with government and community-based organisations (CBOs). CFAR established Single Window Forums (SWFs) as platforms to integrate diverse voices into WASH governance, ensuring representation for marginalised groups like transgender individuals and PwDs. These forums enabled communities to directly engage with municipal authorities, influencing policy and resource allocation decisions. The CNA report highlights how CFAR facilitated partnerships with organisations like the Disha Foundation and Mamta Organisation, addressing the intersection of WASH and broader societal challenges such as climate resilience and menstrual hygiene management. This collaborative approach allowed for targeted interventions in areas such as slum rehabilitation, public toilet maintenance and climate-adaptive infrastructure.

In Jaipur and Bhubaneswar, transgender respondents **shared that CFAR’s guidance was critical in initiating dialogues with municipal authorities**, leading to the installation of gender-neutral toilets and inclusive signage in public spaces. This resulted in the creation of gender-neutral toilets equipped with facilities like sanitary pad disposal units, addressing the unique requirements of transgender individuals.

One member remarked, “Through CFAR, we found a platform to articulate our community’s needs and ensure these were reflected in municipal policies. This changed how authorities approached sanitation for marginalised groups”

A transgender leader from State Rainbow LGBTQIA+ Society highlighted CFAR’s role in bridging the gap between the transgender community and local authorities: “CFAR empowered us to demand our rights. They helped us advocate for inclusive toilets and made municipal leaders recognise our dignity and safety needs.”

In addition to infrastructure, CFAR facilitated collaboration between municipal authorities, CBOs, and community leaders to address water and sanitation challenges in slums. In Jawahar Nagar, a densely populated slum in Jaipur, CFAR supported Mamta Organisation in organising multi-stakeholder consultations. These forums brought together local engineers, municipal corporations, and community representatives to address issues such as water scarcity, poor sanitation, and waste management.

A Mamta representative noted, “By involving all stakeholders, CFAR ensured that solutions were holistic and inclusive, covering everyone from slum residents to transgender individuals”.

CFAR’s inclusive institutional approach also extended to addressing systemic issues in climate resilience. In Bhubaneswar, participatory forums allowed slum residents to voice concerns about waterlogging and drainage during heavy rainfall. This

input led to the development of rainwater harvesting systems and water ATMs, mitigating the impact of climate-related challenges on vulnerable populations.

One community leader shared, “The forums set up by CFAR gave us the confidence to speak directly to authorities about our problems. Without this, our voices would never have been heard”.

2.6.3 Inclusive Decision-Making Processes

CFAR’s interventions in WASH and climate resilience have centered around inclusive decision-making processes that elevate the voices of marginalised groups. Secondary documents highlight the structural frameworks established by CFAR to integrate these groups into governance and planning. It emphasises CFAR’s commitment to empowering marginalised communities through participatory platforms. Initiatives like the SWFs provided a structured mechanism for communities to communicate their needs directly to municipal authorities. This approach ensured that the unique challenges faced by transgender individuals, such as inaccessible sanitation facilities and water shortages in slums were brought to the forefront of decision-making processes.

In Bhubaneswar, CFAR’s collaboration with SAKHA demonstrated the power of inclusive governance. SAKHA leader shared how they worked with CFAR to engage municipal departments in discussions about inclusive sanitation.

The SAKHA representative noted, “With CFAR’s guidance, we were able to show the government why inclusive toilets were essential for our dignity and safety. Their support gave us a voice in decision-making spaces.”

The participatory approach extended beyond sanitation to broader WASH and climate resilience planning. In Bhubaneswar, community representatives participated in feedback sessions on the impact of climate events, such as waterlogging and drought on marginalised groups.

SAKHA transgender leader remarked, “Through CFAR’s support, we were able to highlight how climate challenges disproportionately affect our community and push for practical solutions that address these inequalities”

Despite these achievements, challenges remain. Maintenance of inclusive toilets and slow policy implementation continue to hinder progress in both cities. In slum areas, the transgender community still struggles with societal stigma and the unsafe conditions of public toilets.

CFAR’s work has not only amplified the voices of marginalised communities but also enabled collaboration between these groups and government agencies. By creating participatory platforms and facilitating meaningful dialogue, CFAR has laid the foundation for inclusive decision-making processes in WASH and climate resilience.

3. Learnings and Way Forward

3.1 Learnings

Evaluation team sought to identify the processes and strategies that were adopted by CFAR that made significant impact on the project design and implementation, were innovative in their content and approach, and that took forward the agenda of inclusion and climate resilience in WASH. Based on the discussions with multiple stakeholders and in the assessment of the evaluation team the following strategies and approaches were identified to have made significant difference in enhancing stakeholder engagement in the project and in deepening the coverage and impact of WASH services in the communities.

3.1.1 Inclusive framework going beyond binaries

Microplanning exercises and intensive community engagement enabled CFAR to increase the scope of inclusion beyond the existing narrow definition of social marginalization of households and communities. In the context of gender, CFAR consciously moved beyond the popular binary of male and female genders and gave special emphasis to transgenders. Transgenders face distinctive exclusion as their very existence is often not recognised by the dominant gender types. The project recognises the specific WASH needs of transgender and mainstreamed them as part of their design and implementation strategy.

Inclusion of the differently abled in the project framework transitioned the project from the GESI (Gender Equality and Social Inclusion) to GEDSI (Gender Equality, Disability and Social Inclusion) frameworks. As social binaries were challenged the project adopted the framework of intersectionality and defined vulnerabilities within this approach. For example, the recognition that when a person with disability is a woman and belongs to marginalised social group, she has multiple vulnerabilities, and the project's engagement with such persons need to be much more intense in terms of training and handholding and at multiple levels.

CFAR demonstrated the granularity of inclusion through the framework of GEDSI and intersectionality in community-centric projects that are primarily aimed to ensure delivery of WASH services in poor settlements. Triggering volunteerism from and amongst the community members to take responsibilities for motivating and mobilising other households and groups and to take specific tasks, e.g. monitoring waste management has been made possible through the adoption of inclusivity as functional aspect of the project. Accessible sanitation, climate resilient toilets, door-step access of piped water and waste collection, inclusion of MHM as one of the key project components, and use of IVRS for placing demand and reaching out to service providers have become possible through the inclusive framework adopted by CFAR in all aspects of project design and implementation.

3.1.2 Saniclimiwall: a community owned space for learning and action

What started as Saniwall was later transformed into Saniclimiwall to reflect climatic changes within its scope and ambit. Saniclimiwall is a community-driven platform designed to track and monitor WASH services, ensuring that they remain functional and adaptive in the face of climate variability. By integrating climate considerations, the Saniclimiwall enhances the resilience of WASH systems, empowering communities to better prepare for and respond to climate-related challenges such as heatwaves, cyclones, and floods.

Key features of the Saniclimiwall include a real-time climate alert system, which provides up-to-date weather forecasts and alerts, enabling preventive action against potential disruptions. It also acts as a public dashboard, systematically displaying ward-level service status, which helps define roles for community members and service providers alike. Data is updated weekly by the Sanitation Sub-Committee (SSC) and reviewed monthly by multiple stakeholders, including elected representatives, the Ward Core Committee, and the Multi-Stakeholder Forum (MSF).

As a tool Saniclimiwall has been effectively integrated into governance mechanisms, with active engagement from the Community, Slum Dweller Association (SDA), SSC, Ward Core Committee, and MSF. For instance, two ward review meetings were held on August 20, 2023, and January 31, 2024, in Bhubaneswar during which data collected under Saniclimiwall was analyzed to inform decisions on WASH services, climate disruptions, and waste management.

By facilitating community monitoring, and involvement of community members and institutional actors, the Saniclimiwall strengthens accountability and transparency in WASH service delivery. It paves way for a forward-thinking, climate-informed model that aligns with global standards (JMP and Rio Markers) and equips communities with the tools and knowledge to adapt to and mitigate the impacts of climate variability.

3.1.3 Micro-Planning a tool for mobilising and planning

Microplanning implemented by CFAR represents a significant initiative in advancing inclusive and climate-resilient WASH services in slum settlements of Jaipur and Bhubaneswar. Designed as a system-strengthening initiative, the methodology actively engages communities and aligns stakeholders to collaboratively address gaps in WASH infrastructure and governance. By incorporating participatory governance mechanisms of Community Management Committees (CMCs) and Single Window Forums (SWFs), CFAR facilitated the decentralisation of planning and decision-making processes, ensuring the inclusion of marginalised groups such as women, transgender persons, and persons with disabilities.

Key steps in the microplanning process included conducting baseline studies, mapping service gaps, and developing targeted improvement plans that are then coupled with advocacy campaigns, training of community leaders, and the strengthening of institutional coordination. Use of innovative tools like the Saniclimiwall further enhanced the ability to monitor WASH service delivery and climate resilience, offering actionable insights for continuous improvement.

CFAR's microplanning initiatives align with global standards like the JMP ladder, ensuring that interventions are measurable and sustainable. The process has strengthened participatory governance, with regular reviews and consultations among stakeholders, including municipal authorities, frontline workers, and community representatives. Layered with the CFAR's strategy of strengthening community voices through multi-sectoral platforms, empowering community leaders to bridge gaps with duty bearers, and aligning project timelines with policy developments at the national and state levels showcases the effectiveness of this methodology.

3.1.4 Community led Climate Resilience

Creating community spaces for developing a community led climate resilience model for WASH in informal settlements has been a major achievement for CFAR that did not have any previous experience of climate resilient processes and systems. Working in different geographies, impacted differently by climatic change, has been a challenge for the project. What made it possible for CFAR as an organisation to take this agenda forward is belief in people's ability to develop and implement solutions to problems/challenges faced by them.

As an approach, CFAR, used research as the tool for taking deep dives for themselves and for the community. Baseline and micro planning exercises brought forth and highlighted lived-in experiences of communities resulting from climatic hazards. Sharing and analysing information in community institutions, e.g. Community Management Committees and Multi Stakeholder Forums, led to identification of the vulnerabilities and the different types of activities that need to be taken under the project.

Scope of resilience within the project was defined as climate proofing of the WASH infrastructure. The community as users of WASH were involved that led to designs that could withstand the impacts arising from climatic events. Government support enabled the project to finalise the designs, seek funds, and their implementation in the informal settlements. For example, construction of elevated house design, renovation of drainage, and proactive measures to test water quality during disasters and rainy season for early identification of contamination risks were result of these interactions. Saniclimiwall is regularly monitoring the ability of the infrastructure to withstand climate hazard that also serves as the platform for community monitoring and learning for climate resilience.

Linking community volunteers with disaster management agencies has provided the opportunity to the community to have trained resources amongst themselves who will be available and accessible during disasters (as and when they happen) and for post-disaster recoveries. The volunteers have also been trained to access and understand early warning weather advisories to prepare the community for the impending disasters.

3.1.5 Multiple Stakeholder Forum as a tool for Convergent Action

WASH in urban areas and specifically in informal settlements involve multiple agencies that include the municipal authorities, water supply agency, public health departments, solid and liquid waste processing/disposal units, urban development authority, Slum Dweller Association, Department of Women and Child, Health and Education for institutional WASH, Disaster Management Agencies, and elected Councillors committees at Corporation, Zone and Ward level with responsibility of WASH. Additionally there are other civil society organisations that are working with persons with disability, transgender, women rights, dalit rights, livelihood promotion group like the SHGs an urban livelihood mission, climate activists and climate action agencies. To work with these agencies CFAR had two choices: one, that it takes upon the responsibility of coordinating with these agencies which would start by brining all agencies on the same page and then developing joint action plans; and second, to develop multi stakeholder forums as spaces that are jointly owned and managed by the stakeholders themselves. CFAR opted for the second option as it believed that convergent action and synergies between stakeholders can happen only when these agencies meet and share on a regular basis.

Multi Stakeholder Forum were created in both the cities that not only created opportunity for preparing joint action plan on WASH but also led to action in other fields, e.g. making of disability certificate, livelihood opportunities for SHGs, linkage of

households with other schemes and programmes of municipal authorities and departments. Presence of elected representatives at these forums also allowed direct interaction of the community with policy makers and programme implementers. The skill from the project was primarily to facilitate and ensure that MSF meets regularly and follows up on the action plan prepared and agreed in the forum.

Evaluation finds the constitution and functioning of the Multistakeholder Forum as one of the strategic moves under the project that was able to leverage multiple resources from multiple agencies and initiate convergent action.

3.2 Recommendations

As the seven-year programme of CFAR reaches its destination, the following recommendations draw from key lessons learned and aim to guide the design of future initiatives. These recommendations are tailored to CFAR's role as an advocacy and research organization, which depends significantly on donor funding and active stakeholder collaboration to address challenges in the WASH conundrum/ecosystem.

The recommendations have been crafted with the following guiding principles:

Action-Oriented: Practical and evidence-based, drawing from both primary and secondary data collected during the evaluation.

Forward-Looking: Designed with the potential for implementation in a new geography, potentially targeting cities in Rajasthan and Odisha that face similar challenges of large urban slum populations and critical urban WASH issues.

Scalability: Wherever evidence of a successful pilot intervention or proof of concept was identified, we have highlighted its potential for replication and recommended scale-up in future initiatives.

Resource-Conscious: Acknowledging the constraints of time and budget available to CFAR, recommendations prioritise efficiency and feasibility.

Institutional Learning: The recommendations also draw on the extensive body of knowledge and experience of IPE Global team members who worked on this project, incorporating insights into what works in similar settings and contexts

Contextual Limitations: Our insights are based on a three-month evaluation of a seven-year program. While the findings are robust, we acknowledge that our perspective may not fully capture all aspects of the programme.

Please note that each recommendation in the ensuing section has been also tagged to **three key categories – WIN** to provide a structured roadmap for future action:

1. **Work (Continue):** Build on the proven successes of the current programme to sustain ongoing interventions that have demonstrated significant Value and impact.
2. **Intensify (Accelerate):** Scale up pilots or innovative practices that have shown promise and are ready for replication in new or existing geographies.
3. **Nurture (Innovate):** Experiment with new approaches and tackle areas not previously addressed under the programme to address emerging challenges and advance the program's goals.

The following recommendations are presented below, structured under the **WIN framework** to provide a clear roadmap for future action.

Recommendation 1: Enhance Inclusive and Accessible Sanitation Infrastructure

- **Disability-Friendly Features (Intensify):** Construct and retrofit toilets with inclusive features such as ramps, handrails, spacious layouts, and guiding tools (e.g., audio and visual instructions). Scale awareness campaigns on the importance of accessible sanitation and improve adoption rates through stakeholder consultations and capacity-building. **Adopt Universal Design Principles:** Disability experts emphasised the importance of adopting universal design principles for WASH infrastructure. This includes features like ramps, tactile paving, audio instructions, and guiding symbols for persons with various disabilities. They also emphasised on making toilet design for PwD households mandatory when receiving government schemes like Individual Household Latrines (IHL) under the Swachh Bharat Mission (SBM) and Pradhan Mantri Awas Yojana.
- **Community-Specific Interventions (Work):** Ensure appropriate site selection for community toilets, avoiding areas prone to waterlogging. This recommendation, supported by feedback from Anganwadi workers in Bhubaneswar, highlights the need for usable, sustainable infrastructure. Lessons from Bhubaneswar (Community Toilets for PwDs) suggest that poor site selection (e.g., waterlogged areas) significantly reduces the usability of toilets for persons with disabilities. Future infrastructure may integrate community consultation and needs assessment to ensure accessible and practical placement.
- **Gender-Neutral Toilets (Nurture):** Expand the installation of gender-neutral toilets to meet the needs of transgender individuals, addressing specific sanitation needs for transpersons-especially men and ensuring safety for all genders. Consultations with transgender communities should address specific requirements like privacy, menstrual hygiene, and safety.

- **Policy Alignment (Intensify):** Integrate gender identity into sanitation policymaking to promote equitable and inclusive practices.

Recommendation 2: Strengthen Social Behavioral Change through effective Communication

- **Capacity Building in SBC (Nurture):** Address gaps in sustainable behaviour change by hiring an in-house SBC expert or partnering with specialised agencies. This will enhance CFAR's capacity to drive long-term adoption of WASH practices. Stakeholders, including IMD and Mamta Org, highlighted the importance of specialised SBC experts to promote sustained behavioral change. Community-level awareness campaigns could be complemented with expert-designed IEC materials and audio-visual aids tailored for marginalised groups
- **Targeted Messaging (Nurture):** Develop tailored BCC strategies for diverse groups, including PWDs, transgender individuals, and marginalised women, to ensure inclusivity in hygiene and sanitation campaigns.
- **Frequent Sensitization Campaigns (Intensify):** Deploy experts to organise monthly sensitisation meetings and reinforce hygiene practices, as recommended by CDPOs in Bhubaneswar. Initiatives like observing Handwashing Day monthly can amplify awareness.

Recommendation 3: Expand Focus On Menstrual Hygiene Management

- **Public MHM Facilities (Intensify):** Extend the menstrual/ deep burial pit initiative to public areas, ensuring accessibility for women, transmen, and others outside schools. CFAR's initiative to create menstrual burial pits in schools is a commendable step toward improving menstrual waste management and fostering sustainable practices. However, it is important to note that these facilities may not be accessible to women and transmen outside schools. It is recommended to extend this initiative by establishing menstrual burial pits in public areas, ensuring broader accessibility for all individuals who require such facilities.
- **Economic Empowerment (Work-Intensify):** Train women and transgender individuals should be trained to produce and sell low-cost biodegradable sanitary napkins, integrating income-generating activities into WASH programs. This approach, endorsed by UNFPA, fosters economic independence while addressing MHM challenges. Likewise, develop training programmes for women to produce biodegradable sanitary napkins, generating income and reducing environmental impact
- **MHM Education (Work-Intensify):** Strengthen education programs, particularly for adolescent girls and transgender individuals, to address knowledge gaps and promote sustained hygienic practices.

Recommendation 4: Enhance Faecal Sludge Treatment Plant (FSTP) Support

- **Well-Being of FSTP Workers (Nurture):** Provide targeted mental and physical health support through specialised training programs for workers handling hazardous materials. The Chairman of the Third Gender Welfare Trust recommended prioritising the mental and physical well-being of FSTP workers through targeted training programmes. It was emphasised that workers dealing with hazardous materials require additional support to manage the physical and emotional demands of their job effectively.
- **Circular Economy Models (Work-Intensify-Nurture):** Develop sustainable business models for converting treated sludge into organic manure. Collaborate with private sector partners to promote environmentally friendly solutions and establish revenue streams. **Expand Services-** by developing a sustainable business model for converting treated sludge into organic manure. CFAR can collaborate on this to enable the creation of environmentally friendly solutions that promote the reuse of organic manure, contribute to a circular economy and ensure long-term sustainability

Recommendation 5: Promote Collaborative Partnerships

- **Strategic Alliances (Work-Nurture):** Build on CFAR's existing collaborations with organizations like DISHA, NHM, and UN Women. Develop new partnerships with corporations (e.g., TATA, L&T, Piramal Health) and NGOs to address complex challenges in water management and public health.
- **Policy Advocacy (Work):** Collaborate with state-level authorities like WATCO/PHED and development authorities to align interventions with broader policy frameworks. Integrate GEDSI principles into state and municipal planning processes.

- **Long-Term Commitments (Work):** Advocate for multi-year funding commitments to sustain program outcomes and enable deeper community engagement.

Recommendation 6: Prioritise Holistic Integration of WASH with Nutrition and Health

- **Health Collaboration (Intensify):** CFAR's partnership with health departments, like NHM, has facilitated the distribution of menstrual hygiene kits and promoted safe practices. Strengthening these collaborations will ensure that WASH efforts align with broader health objectives
- **WASH-Nutrition Linkages (Work-Intensify):** Build on existing Anganwadi programs to ensure that hygiene practices, such as handwashing with soap, safe drinking water, and proper waste disposal, are systematically embedded into daily operations. CDPO Narender highlighted how Anganwadi centres in Jaipur integrated hygiene practices with nutrition programmes. Such models should be replicated to enhance the program's cross-sectoral impact. CFAR may incorporate WASH messages into nutrition and health counselling sessions for pregnant and lactating women, leveraging platforms like Urban and Village Health and Nutrition Days.
- **Strengthen Collaboration with Health and Nutrition Departments (Work-Intensify):** Partner with the Women and Child Development Department and National Health Mission to co-design integrated WASH-Nutrition- Health interventions that address systemic gaps in urban areas. Include culturally appropriate messaging on the importance of clean water, hygienic food preparation, and sanitation for preventing malnutrition
- **Deploy community-based frontline workers (Intensify-Nurture),** such as Anganwadi workers and ASHAs, to provide consistent messaging on WASH and nutrition linkages, and WASH and health linkages. Janch Committee (JC), Mothers Committee (MC) and Mahila Arogya Samiti (MAS) members orientation can be a strategic move to leverage their influence and capacity. By orienting these committees, they can effectively assist AWWs and ASHAs in developing positive health seeking behaviour.
- **Develop Monitoring Indicators for WASH-Nutrition Outcomes (Nurture):** Incorporate KPIs that explicitly measure the impact of WASH interventions on nutrition outcomes, such as reductions in diarrhoea incidence and improvements in child growth and weight. Utilise tools like community scorecards to engage beneficiaries in tracking the effectiveness of integrated WASH-Nutrition efforts.

Recommendation 7: Strengthen Knowledge Management (KM)

- **Knowledge Consolidation (Nurture):** Appoint a Knowledge Management Officer, as recommended by UNFPA, to document and disseminate best practices across CFAR projects. This ensures institutional memory and informs future programme designs.
- **Learning Platforms (Intensify):** Develop digital repositories and host learning forums to share insights with stakeholders, enhancing CFAR's role as a thought leader in WASH and GEDSI. UN Women and UNFPA recommended organising regular workshops and forums to document and disseminate learnings across cities.

Recommendation 8: Improve Community Engagement and Local Ownership for Sustainability

- **Capacity Building for Local Committees (Intensify):** The creation of Community Watch Groups and SSCs has proven effective in maintaining water and sanitation systems. These efforts should be scaled with additional training and financial support to ensure long-term ownership
- **Community Watch Groups (Intensify):** Establish groups to monitor water sources, drainage conditions, and sanitation infrastructure. Active involvement in identifying and reporting issues strengthens accountability and ownership.
- **Grassroots Leadership Development (Work):** Train community leaders to lead WASH initiatives, ensuring sustainability and empowering local stakeholders.
- **Inclusive Decision-Making (Work- Intensify):** Ensure active participation of marginalised groups, including PwDs and transgender individuals, in planning and monitoring processes.

- **Decentralised Solutions (Intensify):** Expanding decentralised waste management systems, like micro-composting centers in Bhubaneswar, can improve sustainability. Collaborating with local SHGs, like the Jay Jagannath SHG, to produce hygiene products from recycled materials aligns with circular economy goals

Recommendation 9: Strengthen Climate Resilience and Disaster Preparedness

- **Climate-Resilient Infrastructure (Nurture):** Pilot adaptive solutions like rainwater harvesting systems and flood-resistant sanitation facilities. Integrate these learnings into broader WASH guidelines. IMD officials recommended enhancing climate-resilient infrastructure, such as installing RO-integrated taps and rainwater harvesting systems in vulnerable wards. Lessons from Jaipur show the need for designing sustainable water supply systems for slum areas prone to extreme weather.
- **Disaster Management Training (Nurture):** Build community capacity for disaster preparedness, ensuring readiness for cyclones, floods, and other hazards. Focus on water supply, waste management, and hygiene maintenance during emergencies. Ongoing efforts in Bhubaneswar (e.g., cyclone-ready drainage systems) underscore the importance of integrating disaster risk management into WASH planning. This includes early warning systems and capacity-building initiatives for marginalised communities.
- **Sustainability Indicators (Nurture):** Develop KPIs to monitor the long-term impact of climate resilience interventions, enabling data-driven policy advocacy.

Recommendation 10: A Hybrid Model for Sustainable Impact

- CFAR's current partnership-driven model hinges on collaboration and efficiency, enabling the organisation to address multi-dimensional WASH challenges effectively. However, building internal capacity in critical areas such as SBC, climate-resilient WASH, and disaster management is equally important to ensure sustainability, institutional learning, and innovation. A hybrid model—balancing external collaborations with internal capacity-building—would position CFAR stronger to continue its transformative impact in urban WASH and GEDSI beyond the program lifecycle. This approach would go a long way to accelerate CFAR's ability to scale interventions, maintain programme fidelity and adapt to evolving challenges, ensuring long-term relevance and resilience.

Recommendation 11: Enhancing Monitoring, Evaluation, and Learning (MEL) Frameworks

- **Participatory MEL (Intensify):** Involve communities in data collection and feedback to ensure monitoring systems are inclusive and responsive. Establish Community Watch Groups to monitor water sources and drainage conditions, ensuring timely identification and reporting of issues to municipal authorities. These groups can enable better community involvement and ownership, while their active participation, combined with infrastructural improvements can significantly enhance the upkeep and efficiency of drainage systems in Bhubaneswar and Jaipur. Programmes like "Parshad Aapke Dwar" in Jaipur demonstrate the power of participatory governance in driving sanitation improvements. Extending such initiatives across all wards can institutionalise community-led sanitation monitoring.
- **Develop robust KPIs (Nurture):** Develop and integrate KPIs that measure recycling rates, landfill reduction, sanitation-nutrition integration, and climate resilience to provide comprehensive impact assessments. Scale up sanitation by integrating it with health, nutrition, livelihoods and adaptive social and climate resilience to strengthen sustainability and provide a strategic growth trajectory for future interventions.
- **Technology Integration and Solutions (Intensify):** Expand tools like the Saniwall to include real-time data dashboards for tracking long-term behavioral changes and infrastructure sustainability. **IoT-based Smart Water Meters:** Enabling real-time tracking of water consumption and leakages to optimise resource allocation.

Recommendation 12: Expanding GEDSI Interventions

- **Inclusion in Decision-Making (Intensify):** Institutionalise mechanisms for marginalised groups, including women, PWDs, and LGBTQIA individuals, to participate in urban planning and resource allocation.
- **Gender Transformative Approaches (Intensify):** Balance engagement by actively involving men and boys in gender dialogues to dismantle cultural barriers.
- **Tailored Solutions for Vulnerable Groups (Intensify):** Expand accessibility features in infrastructure, such as PWD-friendly toilets and disaster shelters

Recommendation 13: Sustainability and Long-Term Impact

- **Capacity-Building for Communities (Intensify):** Establish community leadership programs to build local champions who can sustain initiatives post-programme.
- **Private Sector Engagement (Nurture):** Develop partnerships with private entities for funding, innovation, and scaling interventions like waste-to-energy projects.

3.3 Way Forward

Recommendations in the previous section relate more to the specific project activities and are aimed to further strengthen CFAR's Climate Resilient WASH programme within the project areas. Way forward dwells to suggest future trajectory for CFAR, as an organisation, to take forward its experiences and learning from the programme.

3.3.1 CFAR to provide Knowledge and Thought Leadership in WASH sector

CFAR programme has generated significant experiences related to implementation of WASH in informal settlements. These experiences pertain to communities as users and consumers of WASH services, duty bearers engaging with stakeholders and the community, and CFAR's role as an implementing organization. Each of these experiences holds significant value as knowledge resources for other agencies involved in urban WASH service delivery.

As a way forward evaluation recommends that CFAR systematically documents the experiences of communities, users and multiple agencies, synthesise these experiences into knowledge products, and pro-actively disseminate them to interested and intervening agencies. At the sectoral level these products will prevent other agencies into reinventing the wheel and will prompt them to take the WASH agenda further and farther.

It will be pertinent to draw attention to the changing context of documenting and disseminating knowledge products. It will be worthwhile to develop such products using multiple mediums (written, audio and visual) and media (paper, digital, audio-visual) to have a wide outreach and impact.

3.3.2 CFAR to prepare roadmap for WASH in urban informal settlements

Urgency of ensuring WASH in urban informal settlements has gained ground with Swachh Bharat Mission (Urban) and the realities of climatic changes impacting ability of households to continually use WASH services is fast gaining ground. The need of the intervening agencies is for a roadmap of how to implement WASH in urban informal settlements. The road map will be essentially based on concepts of inclusive and Climate Resilient WASH services.

Evaluation uses the term roadmap consciously to distinguish it from an SoP. Roadmap will serve as the guiding tool for agencies to develop/change their policies, strategies and programmes related to WASH. Based on the experience of implementation roadmap will make suggestions based on good practices that were found to be effective and useful for the process. The primary audience for the road map will be policy makers and officials involved in designing WASH programmes.

3.3.3 CFAR to evolve as Capacity Building Agency in WASH

CFAR is well placed to develop and establish itself as a capacity building agency in climate resilient WASH in urban informal settlements. To evolve as a capacity building agency CFAR needs must develop training modules and SoPs that will form the basis for its capacity development inputs. Additionally, as an organisation CFAR will need to enhance its own capacities to provide coaching and mentoring support to other agencies on a regular basis.

CFAR can draw upon experienced resource persons from the community, from the vulnerable groups of transgender and persons with disability develop them as trainers and use their services as resource persons for training and capacity building. The SoPs developed for implementation should have spaces for contextualising the processes, identify vulnerabilities and design WASH structures accordingly.

3.3.4 CFAR to Replicate and Scale up Climate Resilient WASH interventions

CFAR programme has developed certain elements that can be replicated within the same city and in other urban areas. For example, decentralised waste management committees, faecal sludge treatment plant (FSTPs), and Happy Taps and etc. It will be pertinent for CFAR to identify these components from within its project area develop them as franchise products and replicate them within other informal settlements in Jaipur and Bhubaneshwar and in other cities.

Scaling up, implying increasing the size and scope of WASH by integrating it with health, nutrition and livelihoods along with adaptive social and climate resilience will provide the growth trajectory for the present project. Growing realisation of integrating WASH with other sub sectors has been expressed by development and grant making agencies. However, there are not workable or demonstrated models of these concepts, an area where CFAR can bring its experience to operationalise these concepts as part of its inclusive and collaborative way of working.

4. Annexures

Annexure I: Ward and Settlements Covered in the Survey

Table 2- Ward and Settlements Covered in the Survey

Jaipur		Bhubaneswar	
Ward No.	Settlements	Ward No.	Settlements
11	Indira Colony	5	Domuhi Sahi
	Bhomiya Basti		Patadevi Sahi
8	Getor		Samei Gadia Durga Basti
113	Jhalana Lalkhan	11	Dhirukudi Sahi
	Valmiki Colony	16	Mayfair Nagar
Bairwa Basti	Birsha Nagar		
147	Bhojpura		Trinatha Nagar
27	Kishanbagh Basti	18	Kimbhiria Munda Sahi
17	Tata Nagar	20	Mangala Nagar
23	Bandha Basti		Reedy Sahi
32	Sundar Nagar	22	Pandakudia
35	Soot Mill		Sampoorn Sahi
93	Meena Basti		Shakti Vihar
5	Sri Ram Ka Tila		30
19	Nayak Basti	37	Mangala Sahi
80	Seeta Ram Nagar	38	Masani Sahi
55	Painter Colony		Munda Sahi
54	Baba Ramdev Nagar	42	Michi Sahi
	Shakti Colony		Banafula Basti
84	Parvat Colony	43	Laxmisagar Upara Sahi
	Transport Nagar		Laxmisagar Majhi Sahi
16	Chandmari Bhat	46	Radha Krushna Kaa
		49	Aiginia Bhoi Sahi
			Tobana School Basti
			Sitaram Basti

Annexure II: Sample Size Calculation

The sample was proportionately distributed across the two cities at ward level. The selection of this size considered HH beneficiary population in these two cities basis the MIS sheet that is maintained by CFAR, a confidence level of 95% and a margin of error of 5%. The formula used for the sample size calculation is:

$$n = \frac{Z^2 \times p \times (1-p)}{E^2}$$

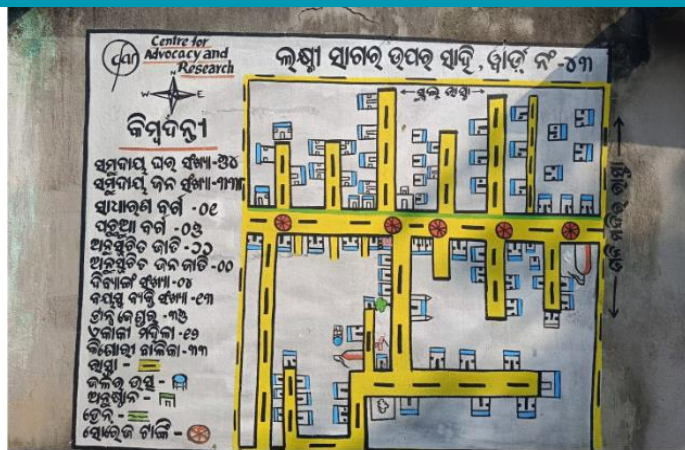
where:

- Z is the Z-score corresponding to the desired confidence level.
- p is the estimated proportion of the population.
- E is the margin of error.

Using Z=1.96 and p=0.5, we determined the sample size. This sample size was applied a FPC (finite population correction to account for the finite population of ~12,000 HHs in each city. Further, the sample size is then adjusted for the design effect (which accounts for the clustering of households in the sampling process). Finally, the sample size is adjusted to account for an expected response rate of 90%.

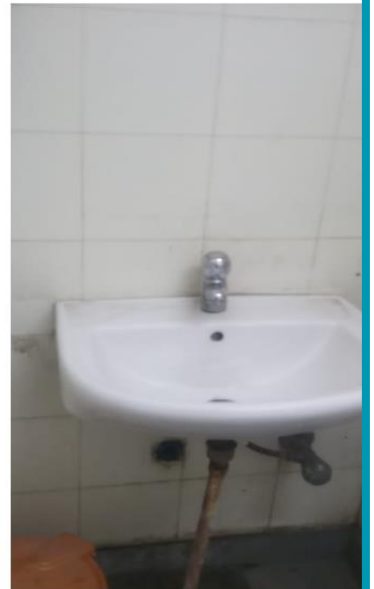
Parameters of Sampling of Households	Jaipur	Bhubaneswar
Confidence level	95%	95%
Margin of Error	5	5
Population Size of HHs	~12000	~12000
Estimated proportion	50%	50%
Design Effect	1.2	1.2
Response Rate (%)	90	90
Simple Random Sample	372	372
Sample Adjusted for Design Effect (=1.2)	447	447
Final Sample Size of HHs (after adjusting for response rate)	496	496

Annexure III: Visual Documentation of Pilot Testing



Annexure IV: Visual Documentation of Field Activities

Bhubaneswar



Jaipur



- विद्यालय _____ शौचालय का नाम _____
1. क्या आपके विद्यालय में लड़के/लड़कियों के लिये
 2. शौचालय उपयोग करने वाले लड़के/लड़कियों के
 3. आपके विद्यालय में कुल कितने बाँश रूम हैं ?
 4. क्या आपने शौचालय के स्थान पर झाड़ी/दीवार का उ
 5. क्या शिक्षक समान शौचालयों का उपयोग करते हैं ?
 6. क्या आपके विद्यालय में शौचालय नियमित रूप से
 7. क्या शौचालयों में पानी की व्यवस्था है ?
 8. क्या शौचालयों में प्राकृतिक सूर्य का प्रकाश आता है ?
 9. क्या आपके स्कूल में बाँश सुविधाएँ हैं WASH सेवाओं के
 10. शौचालय की सफाई कौन करता है ?
 11. क्या शौचालय के पास हाथ धोने की सुविधा उपलब्ध
 12. क्या आपके विद्यालय का शौचालय दिव्यांग बच्चों के

Annexure V: List of CFAR Programme Documents Reviewed

Baseline Report- Centre for Advocacy and Research (CFAR), Jaipur, Rajasthan, India, 2019-20
Baseline Report- CFAR & RTI, India, Bhubaneswar, August 2019
Micro-Planning for safer and more inclusive WASH in slum settlements of Bhubaneswar and Jaipur, India
Capacity Need Assessment for Climate Resilient WASH Services in the Urban Slums- Jaipur and Bhubaneswar
Identifying Challenges to Climate-Resilient WASH Governance at the Ward Level in the city of Bhubaneswar and Jaipur, India
Risk and Vulnerability Assessment: Key Findings on the potential impact of climate change on the on-going WASH inclusion programme in informal settlements- Bhubaneswar and Jaipur
Best Practices on Climate Resilient Urban WASH in Bhubaneswar and Jaipur- Sigma
GEDSI Impact in Institutions- January 2023 to July 2024
GEDSI Process Documents in Bhubaneswar
SOT-Bhubaneswar
SOT- Jaipur

Annexure VI: Other Secondary Documents Reviewed

Integrated Climate Resilience in WASH Services: A Comprehensive Analysis of Mitigation and Adaptation Strategies within Government Flagship Programmes- A case of coastal region of Odisha
UNICEF and Global Water Partnership Technical Brief- WASH Climate Resilient Development: Monitoring and evaluation for climate resilient WASH
IRC- Climate Resilient WASH: working across SDG 6
UNICEF- Wash Climate Resilience: A Compendium of Case Studies
WaterAid-Climate Change and resilient WASH in South Asia: Policy Brief
Building Community Resilience through Water, Sanitation, and Hygiene Programmes during Post-Disaster Recovery: (PDF) Building Community Resilience through Water, Sanitation, and Hygiene Programmes during Post-Disaster Recovery

Annexure VII: List of Stakeholders Interviewed

Jaipur:

Programme Beneficiaries Surveyed

Elderly

Adolescent Girls

Single Women

Person with Disabilities (PwDs)

Transgenders

KIIs

Rohitas Kumar, Public Health Manager – Ward 17

Taramani, Ward 23, Member, Sanitation Committee at HCF

Narender, Child Development and Protection Officer - 1

Rushabh Hemani, State Head, UNICEF

Trisha Pareek, UNFPA

Dr. Mukta Arora, UN WOMEN

Ashok Jangid, Additional Director, Social Justice Empowerment Department

Dr. Radhe Shyam Sharma, Director, Indian Meteorological Department

Bhavani Singh Shekhawat – Superintendent Engineer, PHED

Omprakash Mishra – Assistant Engineer, PHED

11th Grade Adolescent Girl

Pushpa Mai- Naibhor

Noor Shekhawat-State Rainbow – Sexual and Gender Minorities

Praveer Goyal, MAMTA HIMC

Dr. Bharti Khunteta, DISHA Foundation

FGDs

ASHA, ANM, Mahila Arogya Samitis, Anganwadi L.S Workers

Single Window Forum Members

Community Management Communities

Slum Development Committee Members, WASH Committees (Water Committee, Sanitation Sub-Committee), Sexual and Gender Minorities

Sanitary Workers

Disability Persons Organization members (PwD)

Self Help Groups (SHGs)

Hand wash with soap club members

Pad Bank Members

Bhubaneswar:

Programme Beneficiaries Surveyed

Elderly

Adolescent Girls

Single Women

Person with Disabilities (PwD)

Transgenders

KIIs

Suwendu Kumar Sahoo, Additional Commissioner, BMC

Mr. Sanjay Kumar Pradhan ward officer, ward 50, BMC

Mr. Ramesh Chandra Setha Assistance manager, WATCO

Mrs. Meghan Sahoo, Chairman, Third Gender welfare Trust

Meera Parida, Founder, SAKHA

Dr. Chayanika Mishra, State Project Officer, UNFPA

Mrs. Minati Rani Panda, Child Development Project Officer, Urban -1 Bhubaneswar

Mrs. Kabita Swain, Anganwadi worker, Fire Station Slum, ward 50

Ms. Arunadhathi Samantaray, Head Mistress I/c, Govt Girls High School

Mr. Nigam Sahoo; Public Health Manager, Kalpana, UPHC, Ward 42

Mr. Madhusudan Ratha, Quality Manager, Spectrum

Mr. Kalpana Mohanty, Asst. Teacher, Laxmi Sagar Govt. Highschool, Ward 43

Mr. Sachidananda Pati, City Coordinator, Odisha Disaster Management Authority (OSDMA)

FGDs

Multi-Stakeholder Forum (MSF) and Civil Society Organisations (CSOs):

Water Aid, Third Gender welfare Trust, SAKHA, UNFPA, Odisha Raising Foundation, Focus Odisha Foundation, CORE, Spectrum WQT Pvt, Feedback foundation

Community Management Committee- Single Window Forum Members and School Management Committee

Slum Dwellers Association and Sanitation Sub Committee

SHGs- Transgender SHG -1 and Women SHG-2

Frontline Workers- ASHA, ANGANWADI, Mahila Arogya Samiti etc members

Annexure VIII: Tables

Water

Table 3- Water Source Availability

Water Source Availability	Jaipur (n = 527)	Bhubaneswar (n = 545)	Total (n = 1072)
Piped Water Supply/ Household Water Tap	513 (97.3%)	537 (98.5%)	1050 (97.9%)
Well	6 (1.1%)	150 (27.5%)	156 (14.6%)
Bore Well	93 (17.6%)	93 (17.1%)	186 (17.4%)
From Neighbour	22 (4.2%)	11 (2.0%)	33 (3.1%)
Hand Pump	1 (0.2%)	119 (21.8%)	120 (11.2%)
Private Tanker	20 (3.8%)	18 (3.3%)	38 (3.5%)
Water ATM	11 (2.1%)	3 (0.6%)	14 (1.3%)
Government Tanker	12 (2.3%)	34 (6.2%)	46 (4.3%)
Bottled Water	7 (1.3%)	1 (0.2%)	8 (0.7%)
Others	5 (0.9%)	0	5 (0.5%)

Table 4- Sources of Water used by Households for Drinking Water

Water Source	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Piped Water Supply/ Household Tap	508 (96.4%)	531 (97.4%)	1039 (96.7%)
Well	3 (0.6%)	35 (6.4%)	38 (3.5%)
Bore Well	60 (11.4%)	55 (10.1%)	115 (10.7%)
From Neighbour	19 (3.6%)	5 (0.9%)	24 (2.2%)
Hand Pump	0	40 (7.3%)	40 (3.7%)
Private Tanker	13 (2.5%)	13 (2.4%)	26 (2.4%)
Water ATM	10 (1.9%)	2 (0.4%)	12 (1.1%)
Government Tanker	10 (1.9%)	16 (2.9%)	26 (2.4%)
Bottled Water	5 (0.9%)	0	5 (0.5%)
Others	0	0	0

Table 5- Frequency of Water Release from Pipes

Frequency	Jaipur (n=471)	Bhubaneswar (n=524)	Total (n=995)
Once	412 (87.5%)	2 (0.4%)	414 (41.6%)
Twice	37 (7.9%)	179 (34.2%)	216 (21.7%)
Thrice	4 (0.8%)	81 (15.5%)	85 (8.5%)
Perpetually	18 (3.8%)	262 (50%)	280 (28.1%)

Table 6- Duration of Water Release

Duration	Jaipur (n=453)	Bhubaneswar (n=262)	Total (n=715)
Less than 30 minutes	62 (13.7%)	6 (2.3%)	68 (9.5%)
30-60 minutes	237 (52.3%)	32 (12.2%)	269 (37.6%)
60-120 minutes	125 (27.6%)	43 (16.4%)	168 (23.5%)
More than 120 minutes	29 (6.4%)	181 (69.1%)	210 (29.4%)

Table 7- Sufficiency of Water Supplied/Collected

Response	Jaipur (n=206)	Bhubaneswar (n=42)	Total (n=248)
Yes	186 (90.3%)	28 (66.7%)	214 (86.3%)
No	20 (9.7%)	14 (33.3%)	34 (13.7%)

Table 8- Satisfaction with Water Quality- Colour

Satisfaction Level- Colour	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Very Satisfied	29 (5.5%)	286 (52.5%)	315 (29.4%)
Satisfied	405 (76.9%)	217 (39.8%)	622 (58%)
Neutral	41 (7.8%)	33 (6.1%)	74 (6.9%)
Dissatisfied	21 (4%)	9 (1.7%)	30 (2.8%)
Very Dissatisfied	11 (2.1%)	0	11 (1.0%)
Don't Know	20 (3.8%)	0	20 (1.9%)

Table 9- Satisfaction with Water Quality- Odour

Satisfaction Level- Odour	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Very Satisfied	23 (4.4%)	243 (44.6%)	266 (24.8%)
Satisfied	335 (63.6%)	240 (44.0%)	575 (53.6%)
Neutral	55 (10.4%)	43 (7.9%)	98 (9.1%)
Dissatisfied	60 (11.4%)	18 (3.3%)	78 (7.3%)
Very Dissatisfied	20 (3.8%)	1 (0.2%)	21 (2%)
Don't Know	34 (6.5%)	0	34 (3.2%)

Table 10- Satisfaction with Water Quality- Iron

Satisfaction Level- Iron	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Very Satisfied	9 (1.7%)	143 (26.2%)	152 (14.2%)
Satisfied	315 (59.8%)	272 (49.9%)	587 (54.8%)
Neutral	42 (8%)	9 (1.7%)	51 (4.8%)
Dissatisfied	35 (6.6%)	54 (9.9%)	89 (8.3%)
Very Dissatisfied	18 (3.4%)	2 (0.4%)	20 (1.9%)
Don't Know	108 (20.5%)	65 (11.9%)	173 (16.1%)

Table 11- Satisfaction with Water Quality- Hardness

Satisfaction Level- Hardness	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Very Satisfied	13 (2.5%)	143 (26.2%)	156 (14.6%)
Satisfied	326 (61.9%)	270 (49.5%)	596 (55.6%)
Neutral	38 (7.2%)	9 (1.7%)	47 (4.4%)
Dissatisfied	37 (7%)	54 (9.9%)	91 (8.5%)
Very Dissatisfied	22 (4.2%)	6 (1.1%)	28 (2.6%)
Don't Know	91 (17.3%)	63 (11.6%)	154 (14.4%)

Table 12- Perceived Safety of Water Sources in the Settlement

Water Source	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Well Water	83 (15.7%)	181 (33.2%)	264 (24.6%)
Groundwater	237 (45%)	210 (38.5%)	447 (41.7%)
Bore Well Water	348 (66%)	227 (41.7%)	575 (53.6%)
Water from Neighbour	423 (80.3%)	302 (55.4%)	725 (67.6%)
Piped Water Supply	479 (90.9%)	499 (91.6%)	978 (91.2%)
Private Tanker Water	330 (62.6%)	138 (25.3%)	468 (43.7%)
Government Tanker Water	244 (46.3%)	278 (51%)	522 (48.7%)
Water ATM	80 (15.2%)	116 (21.3%)	196 (18.3%)

Table 13- Result of Water Treatment Test

Result	Jaipur (n=120)	Bhubaneswar (n=240)	Total (n=360)
Good	94 (78.3%)	223 (92.9%)	317 (88.1%)
Average	23 (19.2%)	17 (7.1%)	40 (11.1%)
Poor	3 (2.5%)	0	3 (0.8%)

Table 14- Payment for Access to Water from the Primary Source

Response	Jaipur (n=56)	Bhubaneswar (n=21)	Total (n=77)
Yes	23 (41.1%)	8 (38.1%)	31 (40.3%)
No	33 (58.9%)	13 (61.9%)	46 (59.7%)

Table 15- Basis of Payment

Basis of Payment	Jaipur (n=23)	Bhubaneswar (n=8)	Total (n=31)
Lumpsum	16 (69.6%)	6 (75%)	22 (71%)
Metered	7 (30.4%)	2 (25%)	9 (29%)

Table 16- Amount Paid for Water Access

City	Mean Amount Paid (₹)
Jaipur	206.52

Bhubaneswar	151.50
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Table 17- Barriers and Challenges in Accessing Water

Barriers and Challenges	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Yes	22 (4.2%)	5 (0.9%)	27 (2.5%)
No	505 (95.8%)	540 (99.1%)	1045 (97.5%)

Table 18- Challenges in Accessing Water

Challenges	Jaipur (n=22)	Bhubaneswar (n=54)	Total (n=76)
Physical Challenges	20 (90.9%)	0	20 (26.3%)
Social Challenges	9 (40.9%)	1 (1.9%)	10 (13.2%)
Environmental Challenges	7 (31.8%)	53 (98.1%)	60 (78.9%)

Table 19- Primary Source of Drinking Water

Primary Source of Drinking Water	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Piped Water Supply/ Household Water Tap	470 (89.2%)	524 (96.1%)	994 (92.7%)
Well	0	1 (0.2%)	1 (0.1%)
Bore Well	13 (2.5%)	13 (2.4%)	26 (2.4%)
From Neighbour	14 (2.7%)	3 (0.6%)	17 (1.6%)
Private Tanker	2 (0.4%)	0	2 (0.2%)
Water ATM	4 (0.8%)	0	4 (0.4%)
Government Tanker	5 (0.9%)	0	5 (0.5%)
Bottled Water	1 (0.2%)	0	1 (0.1%)
Others	18 (3.4%)	4 (0.7%)	22 (2.1%)

Table 20- 24x7 Water Supply Availability by City

24x7 Water Supply Availability	Jaipur (n=470)	Bhubaneswar (n=524)	Total (n=994)
Yes	100 (21.3%)	291 (55.5%)	391 (39.3%)
No	370 (78.7%)	233 (44.5%)	603 (60.7%)

Table 21- Main Source of Water for Domestic Use

Main Source of Water for Domestic Use	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Piped Water Supply/ Household Water Tap	410 (77.8%)	455 (83.5%)	865 (80.7%)
Well	0	19 (3.5%)	19 (1.8%)
Bore Well	41 (7.8%)	33 (6.1%)	74 (6.9%)
From Neighbour	25 (4.7%)	6 (1.1%)	31 (2.9%)
Hand Pump	1 (0.2%)	8 (1.5%)	9 (0.8%)
Private Tanker	22 (4.2%)	9 (1.7%)	31 (2.9%)
Water ATM	1 (0.2%)	0	1 (0.1%)
Government Tanker	15 (2.8%)	13 (2.4%)	28 (2.6%)
Bottled Water	7 (1.3%)	0	7 (0.7%)
Others (Specify)	5 (0.9%)	2 (0.4%)	7 (0.7%)

Table 22- Water Availability during and after Climate Hazards

Climate Hazard	City	During the Hazard	Post Hazard
Flood	Jaipur (n=527)	56 (10.6%)	49 (9.3%)
	Bhubaneswar (n=545)	114 (20.9%)	106 (19.4%)
Cyclone	Jaipur (n=527)	38 (7.2%)	30 (5.7%)
	Bhubaneswar (n=545)	181 (33.2%)	155 (28.4%)
Heatwave	Jaipur (n=527)	92 (17.5%)	25 (4.7%)
	Bhubaneswar (n=545)	109 (20%)	97 (17.8%)

Table 23- Perception of Safe Water

Perception of Safe Water	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
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Safe	455 (86.3%)	457 (83.9%)	912 (85.1%)
Unsafe	72 (13.7%)	88 (16.1%)	160 (14.9%)

Table 24- Awareness of Water Filtration/Chemical Processes

Awareness of Filtration/Chemical Processes	Jaipur (n=527)	Bhubaneswar (n=545)	Total (n=1072)
Yes	120 (22.8%)	240 (44.0%)	360 (33.6%)
No	407 (77.2%)	305 (56.0%)	712 (66.4%)

Table 25- Water Treatment Methods

Water Treatment Method	Jaipur (n=120)	Bhubaneswar (n=240)	Total (n=360)
Aqua Guard / RO	21 (17.5%)	29 (12.1%)	50 (13.9%)
Chlorination	0	13 (5.4%)	13 (3.6%)
Boiling	59 (49.2%)	172 (71.7%)	231 (64.2%)
Water Filter	12 (10.0%)	23 (9.6%)	35 (9.7%)
Alum	1 (0.8%)	6 (2.5%)	7 (1.9%)
Filtering Water Through Cloth	91 (75.8%)	150 (62.5%)	241 (66.9%)
Others	1 (0.8%)	5 (2.1%)	6 (1.7%)

Sanitation

Table 26- Distance of Primary Toilet Facility from Household

Distance	Jaipur (n=440)	Bhubaneswar (n=545)	Total (n=985)
Located within household premises	405 (92%)	380 (69.7%)	785 (79.7%)
Less than 100 meters	20 (4.5%)	146 (26.8%)	166 (16.9%)
Between 100–500 meters	11 (2.5%)	18 (3.3%)	29 (2.9%)
More than 500 meters	4 (0.9%)	1 (0.2%)	5 (0.5%)

Table 27- Water Source for Primary Toilet Facility

Water Source	Jaipur (n=440)	Bhubaneswar (n=545)	Total (n=985)
Water is available at the toilet facility	323 (73.4%)	397 (72.8%)	720 (73.1%)
Water is carried by the user to the facility	117 (26.6%)	148 (27.2%)	265 (26.9%)

Table 28- Frequency of Desludging Toilets

Frequency of Desludging Toilets	Jaipur (n=419)	Bhubaneswar (n=460)	Total (n=879)
Less than 6 months ago	148 (35.3%)	171 (37.2%)	319 (36.3%)
6–12 months ago	34 (8.1%)	51 (11.1%)	85 (9.7%)
1–2 years ago	23 (5.5%)	51 (11.1%)	74 (8.4%)
More than 2 years ago	21 (5%)	59 (12.8%)	80 (9.1%)
Never desludged	193 (46.1%)	128 (27.8%)	321 (36.5%)

Table 29- Service Providers for Desludging

Service Provider	Jaipur (n=419)	Bhubaneswar (n=460)	Total (n=879)
Government	313 (74.7%)	281 (61.1%)	594 (67.6%)
Private Company	23 (5.5%)	127 (27.6%)	150 (17.1%)
Individual Sanitation Worker	83 (19.8%)	52 (11.3%)	135 (15.4%)

Table 30- Amount Paid for Desludging

City	Mean Desludging Cost (₹)
Jaipur	386.87
Bhubaneswar	636.96

Table 31- Access to Government Subsidies for Toilet Construction

Subsidy Status	Jaipur (n=431)	Bhubaneswar (n=538)	Total (n=969)
Subsidy Not Received	417 (96.8%)	370 (68.8%)	787 (81.2%)
Subsidy Received	14 (3.2%)	168 (31.2%)	182 (18.8%)

Table 32- Subsidy Amount Received

City	Mean Subsidy Amount (₹)
Jaipur	5,928.57

Bhubaneswar	7,415.87
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Table 33- Adoption of Disabled-Friendly Toilet Design Changes for PwDs

Response	Jaipur (n=440)	Bhubaneswar (n=545)	Total (n=985)
Yes	5 (1.1%)	19 (3.5%)	24 (2.4%)
No	435 (98.9%)	526 (96.5%)	961 (97.6%)

Table 34- Installation of Ramps/Slants for Easy Access by PwDs/Pregnant Women

Response	Jaipur (n=29)	Bhubaneswar (n=36)	Total (n=65)
Yes	5 (17.2%)	2 (5.6%)	7 (10.8%)
No	24 (82.8%)	34 (94.4%)	58 (89.2%)

Table 35- Primary Toilet Facility used by Transgenders

Toilet Facility Type used by Transgenders	Jaipur (n=60)	Bhubaneswar (n=111)	Total (n=171)
Open Defecation	0	1 (0.9%)	1 (0.6%)
Community Toilet	1 (1.7%)	19 (17.1%)	20 (11.7%)
Household Toilet	59 (98.3%)	89 (80.2%)	148 (86.7%)
Public Toilet	0	2 (1.8%)	2 (1.2%)

Table 36- Toilet Facility Used by Men in Household

Toilet Facility used by Men	Jaipur (n=440)	Bhubaneswar (n=545)	Total (n=985)
Open Defecation	9 (2.0%)	38 (7.0%)	47 (4.8%)
Community Toilet	9 (2.0%)	77 (14.1%)	86 (8.7%)
Household Toilet	418 (95%)	447 (82%)	865 (87.8%)
Public Toilet	5 (1.1%)	9 (1.7%)	14 (1.4%)
Shared Toilet (with Neighbours)	2 (0.5%)	6 (1.1%)	8 (0.8%)
Others	0	17 (3.1%)	17 (1.7%)

Table 37- Toilet Facility Used by Women in Household

Toilet Facility used by Women	Jaipur (n=440)	Bhubaneswar (n=545)	Total (n=985)
Open Defecation	9 (2.0%)	17 (3.1%)	26 (2.6%)
Community Toilet	7 (1.6%)	72 (13.2%)	79 (8.0%)
Household Toilet	420 (95.5%)	468 (85.9%)	888 (90.2%)
Public Toilet	4 (0.9%)	9 (1.7%)	13 (1.3%)
Shared Toilet (with Neighbours)	1 (0.2%)	5 (0.9%)	6 (0.6%)

Table 38- Adoption of Climate-Resilient Toilet Design

Adoption of Climate-Resilient Design	Jaipur (n=440)	Bhubaneswar (n=545)	Total (n=985)
Yes	29 (6.6%)	35 (6.4%)	64 (6.5%)
No	411 (93.4%)	510 (93.6%)	921 (93.5%)

Table 39- Adoption of Specific Climate-Resilient Toilet Design Features

Climate-Resilient Feature	Jaipur (n=29)	Bhubaneswar (n=36)	Total (n=65)
Elevated toilet foundation	16 (55.2%)	24 (66.7%)	40 (61.5%)
Elevated top/cover of the septic/pit tank	2 (6.9%)	28 (77.8%)	30 (46.2%)
Safe sealing of the base of the septic tank	0	23 (63.9%)	23 (35.4%)
Stronger roofs to resist cyclonic winds	0	19 (52.8%)	19 (29.2%)
Sealed drainage to prevent leakage, if connected to sewer	18 (62.1%)	5 (13.9%)	23 (35.4%)

Table 40- Household Toilet Waste Drainage

Household Toilet Waste Drainage	Jaipur (n=419)	Bhubaneswar (n=460)	Total (n=879)
Septic Tank	34 (8.1%)	141 (30.7%)	175 (19.9%)
Underground Pit	99 (23.6%)	246 (53.5%)	345 (39.2%)
Sewer	280 (66.8%)	65 (14.1%)	345 (39.2%)
Open Drain	4 (1.0%)	5 (1.1%)	9 (1.0%)
Others (Specify)	1 (0.2%)	0	1 (0.1%)

Don't Know	1 (0.2%)	3 (0.7%)	4 (0.5%)
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Table 41-Impact of Climate Hazards on Access to Primary Toilet Facility

Response	Jaipur (n=440)	Bhubaneswar (n=545)	Total (n=985)
Yes	30 (6.8%)	97 (17.8%)	127 (12.9%)
No	410 (93.2%)	448 (82.2%)	858 (87.1%)

Table 42- Impacts of Climate Hazards on Access to Primary Toilet Facilities

Impact	Jaipur (n=30)	Bhubaneswar (n=97)	Total (n=127)
Damage to toilet infrastructure	13 (43.3%)	83 (85.6%)	96 (75.6%)
Contamination of water sources	20 (66.7%)	64 (66.0%)	84 (66.1%)
Increased travel distance to find a toilet	17 (56.7%)	32 (33.0%)	49 (38.6%)
Reduced availability of clean water	11 (36.7%)	37 (38.1%)	48 (37.8%)

Table 43- Toilet Access During Climate Hazards

Toilet Access During Climate Hazards	Jaipur (n=30)	Bhubaneswar (n=97)	Total (n=127)
Open Defecation	5 (16.7%)	25 (25.8%)	30 (23.6%)
Community Toilet	8 (26.7%)	35 (36.1%)	43 (33.9%)
Public Toilet	12 (40%)	43 (44.3%)	55 (43.3%)
Shared Toilet (with Neighbours)	4 (13.3%)	8 (8.2%)	12 (9.4%)

Hygiene

Table 44- Presence of Handwashing Station on Household Premises

Handwashing Station Presence	Jaipur (n=210)	Bhubaneswar (n=545)	Total (n=755)
Yes	135 (64.3%)	273 (50.1%)	408 (54.0%)
No	75 (35.7%)	272 (49.9%)	347 (46.0%)

Table 45- Average Frequency of Handwashing with Soap per Day

City	Mean (times/day)
Jaipur	6.38
Bhubaneswar	5.68

Table 46- Access to Handwashing Facilities Following Natural Disasters

Access Level	Jaipur (n=135)	Bhubaneswar (n=273)	Total (n=408)
Yes, easily accessible	120 (88.9%)	196 (71.8%)	316 (77.5%)
Yes, but with limited access	3 (2.2%)	59 (21.6%)	62 (15.2%)
No, did not have access	12 (8.9%)	18 (6.6%)	30 (7.4%)

Table 47- Menstrual Products

Menstrual Product	Jaipur (n=63)	Bhubaneswar (n=73)	Total (n=136)
Sanitary Pads	58 (92.1%)	66 (90.4%)	124 (91.2%)
Clothes	3 (4.8%)	3 (4.1%)	6 (4.4%)
Others	2 (3.2%)	4 (5.5%)	6 (4.4%)

Table 48-Availability of Menstrual Products

Availability	Jaipur (n=63)	Bhubaneswar (n=73)	Total (n=136)
Yes	61 (96.8%)	68 (93.2%)	129 (94.9%)
No	2 (3.2%)	5 (6.8%)	7 (5.1%)

Table 49- Training on Menstrual Hygiene Management

Training Status	Jaipur (n=63)	Bhubaneswar (n=73)	Total (n=136)
Yes	39 (61.9%)	29 (39.7%)	68 (50.0%)
No	24 (38.1%)	44 (60.3%)	68 (50.0%)

Table 50- Presence of Handwashing Station on Household Premises

Handwashing Station Presence	Jaipur (n=210)	Bhubaneswar (n=545)	Total (n=755)
Yes	135 (64.3%)	273 (50.1%)	408 (54.0%)
No	75 (35.7%)	272 (49.9%)	347 (46.0%)

Table 51- Water Availability at Handwashing Station

Water Availability	Jaipur (n=135)	Bhubaneswar (n=273)	Total (n=408)
Always available	135 (100.0%)	266 (97.4%)	401 (98.3%)
Sometimes available	0	6 (2.2%)	6 (1.5%)
Never available	0	1 (0.4%)	1 (0.2%)

Table 52- Soap Availability at Handwashing Station

Soap Availability	Jaipur (n=135)	Bhubaneswar (n=273)	Total (n=408)
Always available	134 (99.3%)	263 (96.3%)	397 (97.3%)
Sometimes available	1 (0.7%)	10 (3.7%)	11 (2.7%)

Table 53- Handwashing Methods

Handwashing Method	Jaipur (n=135)	Bhubaneswar (n=273)	Total (n=408)
Only water	2 (1.5%)	5 (1.8%)	7 (1.7%)
Water and soap	130 (96.3%)	249 (91.2%)	379 (92.9%)
Soil and soap	0	2 (0.7%)	2 (0.5%)
Other methods	3 (2.2%)	17 (6.2%)	20 (4.9%)

Table 54- Awareness of Regular Handwashing Practices

Handwashing Practice	Jaipur (n=135)	Bhubaneswar (n=273)	Total (n=408)
Wash hands before every meal	134 (99.3%)	273 (100%)	407 (99.8%)
Wash hands after every meal	126 (93.3%)	273 (100%)	399 (97.8%)
Wash hands after defecation	135 (100%)	273 (100%)	408 (100%)
Wash hands before feeding a child	111 (82.2%)	138 (50.5%)	249 (61.0%)
Wash hands after attending to domestic animals	59 (43.7%)	41 (15.0%)	100 (24.5%)

Table 55- Methods of Menstrual Product Disposal

Disposal Method	Jaipur (n=59)	Bhubaneswar (n=53)	Total (n=112)
Waste Collector Van	59 (100%)	53 (100%)	112 (100%)
Burn it	1 (1.7%)	3 (5.7%)	4 (3.6%)
Dig and bury in the ground	0	2 (3.8%)	2 (1.8%)
Throw in flush toilet	1 (1.7%)	0	1 (0.9%)
Nearby open space or drain	1 (1.7%)	17 (32.1%)	18 (16.1%)

Table 56- Access to Soap and Water for Washing Hands After Changing Menstrual Products

Response	Jaipur (n=63)	Bhubaneswar (n=73)	Total (n=136)
Yes, always available	63 (100.0%)	68 (93.2%)	131 (96.3%)
Sometimes available	0	3 (4.1%)	3 (2.2%)
Never available	0	2 (2.7%)	2 (1.5%)

Table 57- Satisfaction with Quantity of Water for Menstrual Hygiene Management

Response	Jaipur (n=63)	Bhubaneswar (n=73)	Total (n=136)
Yes	60 (95.2%)	70 (95.9%)	130 (95.6%)
No	3 (4.8%)	3 (4.1%)	6 (4.4%)

Drainage Systems

Table 58- Type of Drainage System

Drainage Type	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
No Drain	58 (10.3%)	51 (9.3%)	109 (9.8%)
Open Drain	151 (26.9%)	43 (7.9%)	194 (17.5%)
Closed Drain	352 (62.7%)	452 (82.8%)	804 (72.6%)

Table 59- Structure of Drainage System

Structure of Drainage System	Jaipur (n=503)	Bhubaneswar (n=495)	Total (n=998)
Pucca	428 (85.1%)	484 (97.8%)	912 (91.4%)

Semi-Pucca	55 (10.9%)	7 (1.4%)	62 (6.2%)
Kuccha	18 (3.6%)	1 (0.2%)	19 (1.9%)
Under Construction	1 (0.2%)	3 (0.6%)	4 (0.4%)
Others	1 (0.2%)	0	1 (0.1%)

Table 60- Waterlogging Prone Areas

Response	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Yes	63 (11.2%)	127 (23.3%)	190 (17.2%)
No	365 (65.1%)	309 (56.6%)	674 (60.9%)
Only when it rains	133 (23.7%)	110 (20.1%)	243 (22.0%)

Table 61- Duration of Waterlogging Clearance

Duration of Waterlogging Clearance	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Within a few hours	489 (87.2%)	395 (72.3%)	884 (79.9%)
Within a day	27 (4.8%)	124 (22.7%)	151 (13.6%)
1-2 days	11 (2.0%)	19 (3.5%)	30 (2.7%)
More than 2 days	34 (6.1%)	8 (1.5%)	42 (3.8%)

Table 62- Responsibility for Managing Drainage Systems

Responsibility for Managing Drainage Systems	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Local Municipal Authorities	350 (62.4%)	349 (63.9%)	699 (63.1%)
Community Volunteers	26 (4.6%)	38 (7.0%)	64 (5.8%)
Private Contractors	15 (2.7%)	2 (0.4%)	17 (1.5%)
Household Members	233 (41.5%)	242 (44.3%)	475 (42.9%)
NGOs or Community-Based Organisations	11 (2.0%)	3 (0.5%)	14 (1.3%)

Table 63- Perception of Drainage System Preparedness for Extreme Climatic Hazards

Response	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Yes	225 (40.1%)	409 (74.9%)	634 (57.3%)
No	189 (33.7%)	121 (22.2%)	310 (28%)
Don't Know	147 (26.2%)	16 (2.9%)	163 (14.7%)

Table 64- Effects of Extreme Climatic Hazards on Drainage Systems

Effect	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Severely impacted (blocked/clogged)	65 (11.6%)	56 (10.3%)	121 (10.9%)
Temporarily impacted (short waterlogging)	132 (23.5%)	257 (47.1%)	389 (35.1%)
Not affected	255 (45.5%)	221 (40.5%)	476 (43.0%)
Don't Know	109 (19.4%)	12 (2.2%)	121 (10.9%)

Table 65- Structural Improvements to Drainage Systems Post-Calamities

Response	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Yes	117 (20.9%)	367 (67.2%)	484 (43.7%)
No	444 (79.1%)	179 (32.8%)	623 (56.3%)

Solid Waste Management

Table 66- Awareness of Waste Management Services Provided by Local Authorities

Response	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Yes	198 (35.3%)	429 (78.6%)	627 (56.6%)
No	363 (64.7%)	117 (21.4%)	480 (43.4%)

Table 67- Perception of Adequacy of Local Waste Management Services

Response	Jaipur (n=198)	Bhubaneswar (n=429)	Total (n=627)
Yes	169 (85.4%)	361 (84.1%)	530 (84.5%)
No	29 (14.6%)	68 (15.9%)	97 (15.5%)

Table 68- Perception of Adequacy of Local Waste Management Services

Response	Jaipur (n=198)	Bhubaneswar (n=429)	Total (n=627)
Yes	77 (38.9%)	91 (21.2%)	168 (26.8%)
No	121 (61.1%)	338 (78.8%)	459 (73.2%)

Table 69- Household Waste Segregation (Dry and Wet)

Response	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Yes	338 (60.2%)	533 (97.6%)	871 (78.7%)
No	220 (39.2%)	12 (2.2%)	232 (21.0%)
Don't Know	3 (0.5%)	1 (0.2%)	4 (0.4%)

Table 70- Frequency of Solid Waste Collection

Frequency	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Not Collected	86 (15.3%)	14 (2.6%)	100 (9.0%)
Daily	429 (76.5%)	490 (89.7%)	919 (83.0%)
Weekly	46 (8.2%)	37 (6.8%)	83 (7.5%)
Bi-Weekly	0	5 (0.9%)	5 (0.5%)

Table 71- Solid Waste Disposal Method

Solid Waste Disposal Method	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Municipal Collection Service	317 (56.5%)	504 (92.3%)	821 (74.2%)
Self-Disposal	231 (41.2%)	31 (5.7%)	262 (23.7%)
Private Waste Collector	5 (0.9%)	0	5 (0.5%)
No Disposal Method	6 (1.1%)	8 (1.5%)	14 (1.3%)
Don't Know	2 (0.4%)	3 (0.5%)	5 (0.5%)

Table 72- Wet Waste Disposal Methods in Households

Wet Waste Disposal Method	Jaipur (n=561)	Bhubaneswar (n=546)	Total (n=1107)
Collected by a municipal waste service	425 (75.8%)	535 (98%)	960 (86.7%)
Composted at home	8 (1.4%)	7 (1.3%)	15 (1.4%)
Disposed of in the general trash	8 (1.4%)	4 (0.7%)	12 (1.1%)
Used as animal feed	40 (7.1%)	17 (3.1%)	57 (5.1%)
Burned or incinerated	3 (0.5%)	35 (6.4%)	38 (3.4%)
Disposed of in a nearby open area or vacant land	107 (19.1%)	11 (2.0%)	118 (10.7%)
Others (Specify)	9 (1.6%)	0	9 (0.8%)
Don't Know	13 (2.3%)	0	13 (1.2%)

Table 73- Awareness Campaigns on Waste Collection and Disposal

Response	Jaipur (n=198)	Bhubaneswar (n=429)	Total (n=627)
Yes	81 (40.9%)	304 (70.9%)	385 (61.4%)
No	106 (53.5%)	84 (19.6%)	190 (30.3%)
Don't Know	11 (5.6%)	41 (9.6%)	52 (8.3%)

Table 74- Complaints About Streets Not Being Cleaned

Response	Jaipur (n=198)	Bhubaneswar (n=429)	Total (n=627)
Yes	42 (21.2%)	81 (18.9%)	123 (19.6%)
No	156 (78.8%)	348 (81.1%)	504 (80.4%)

Annexure IX: List of Field Researchers/Team Members

IPE Global Limited

Amod Khanna
Trinanjana Chakraborty
Ranveer Singh
Srimanta Kumar Khuntia
Shiv Chandra
Om Shashwat
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