WaterAid

WASH service delivery in small and medium towns

Policy insights and recommendations for Jal Jeevan Mission and Swachh Bharat Mission 2.0

Building on the findings of a study on the water supply and governance situation in six towns across India

Context

In India, out of the total population of 1.21 billion (as on 1 March 2011), about 377.1 million people live in urban areas, with a net addition of 91 million people in just one decade (2001–2011). The percentage of urban population, according to the Census 2011, stands at 31.6 per cent of the total population[1].

Within the urban demography, the results of Census 2011 also reveal that between 2001 and 2011 there has been a significant increase in the number of towns across India. A total of 2,774 towns (242 statutory and 2,532 census towns) have been added to the existing 5,161 towns because of the change in their demographic and workforce characteristics. Unlike earlier decades where urban population growth was noticeable in metropolitan cities, this new urban growth is occurring outside these areas, resulting in the existing small cities and towns growing at a much faster rate than the metropolises and big cities.

With such a significant growth in the demographic and workforce characteristics in most towns, especially the statutory towns, the demand for amenities and key services is also increasing. While the municipalities in urban local bodies have been divided as municipal corporations/ nagar nigams (for large urban areas), municipal councils/ nagar palika parishads (for medium-sized urban areas) and notified area councils/ nagar panchayats (for small town areas in transition from rural to urban settings) to improve their performance and address the problems of the communities effectively, urban governance and the public services delivery systems have not grown adequately and equipped themselves to

[1] http://mohua.gov.in/cms/urban-growth.php

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meet the needs of this rapid 'urbanisation'. These settings do not have the sufficient capacities and arrangements to realise and act upon this vast increase in demand for various public services in a timely manner, leaving many households unserved or underserved. The small and medium town settings are already inflicted with severe shortage of basic services like potable water, well laid out drainage systems, sewerage networks, sanitation facilities, appropriate solid waste disposal, and importantly, human resources to plan and impart all these. So there is an urgent need to attend to these settings as part of our urban focus; to meet their basic demands around water, sanitation, and hygiene (WASH) services and ensure the equitable and sustainable growth of urban India[2].

Given the substantial increase in migration from rural areas to small and medium towns for employment and education in the past two decades, it is important for various actors, from the local to the national level, to understand the existing scenarios associated with basic necessities, especially with regard to water supply and allied issues, and devise action plans that ensure its sustainability and meet the growing needs of these populations.

To throw light on the existing scenario of WASH governance, drinking water infrastructure, and service delivery situations in small and medium towns across the country, WaterAid India conducted an in-depth study of six small and medium towns in four different geographical regions of India. The study named 'Assessment of drinking water situation, governance and service delivery infrastructure in small and medium towns' intended to provide insights and guidance to various actors to improve WASH services with a focus on drinking water supply, and to build a case for political attention to these otherwise less attended urban segments. This policy note is based on the findings from this study, supplemented with a review of available literature on WASH governance and the existing scenario in small and medium towns, with emphasis on vulnerable and marginalised populations. This note intends to provide relevant actors at the national, state, and local body level with important insights and necessary recommendations to help improve WASH service delivery in thousands of small and medium towns across the country and achieve some of the specific objectives set out under the flagship missions in urban areas—the Jal Jeevan Mission and the Swachh Bharat Mission 2.0. In addition, it intends to contribute towards India achieving the United Nations' Sustainable Development Goal 6—Ensure availability and sustainable management of water and sanitation for all by 2030 and related goals.

[2] https://www.wsp.org/content/targeting-urban-poor-and-improving-services-small-towns-0

Brief description of the study

In order to address the critical knowledge gaps around the water supply situation, governance, and service delivery in small and medium towns of India and to provide recommendations to municipal bodies, water utilities, and governments, WaterAid India conducted a study in 2019 in six small and medium towns spread across India with the following objectives:

- To assess the drinking water supply situation and service delivery in four small and two medium towns. This included assessment of the quantity and quality of the water supplied.
- To understand sanitation systems at individual and household levels as well as community levels from a drinking water safety point of view.
- To understand the current mandates as well as the policy, regulatory and legal framework; specific functions; finances; and functionaries allocated to the local bodies in order to fulfil these mandates.
- To consolidate learning around critical service gaps and suggest solutions especially in the context of the poor and other marginalised populations in the small and medium towns of India.

In order to capture the perspectives of households and communities on their water supply and sanitation situation, a total of six towns from various parts of India were shortlisted. These were Bakshi Ka Talab nagar panchayat (Uttar Pradesh), Bodh Gaya nagar panchayat (Bihar), Dindori nagar palika parishad (Madhya Pradesh), Kanker nagar palika parishad (Chhattisgarh), Chandbali notified area council (Odisha), and Palamaner municipality (Andhra Pradesh). Among the selected six towns, Bakshi Ka Talab and Palamaner were considered as medium towns since their population ranges between 50,000 and 1,00,000, while the other four were considered as small towns with populations ranging from 20,000 to 50,000[3]. Within these selected towns, a total of 1,200 households were surveyed, covering a comparatively larger sample from medium towns, followed by approximately six Key Informant Interviews and one Focus Group Discussion per town. The entire study process was conducted between September and November 2019. In addition, shortlisted water samples from each town were tested for their water quality at an NABL-accredited laboratory.

[3] http://mohua.gov.in/upload/uploadfiles/files/URDPFI%20Guidelines%20Vol%20I.pdf

Key insights from the study

Policy and regulatory environment for water supply and sanitation in small and medium towns

An assessment of the policy measures on urban water supply and sanitation was conducted across all the selected six study towns through a review of existing state policy on water, groundwater regulation, water conservation, and solid and liquid waste management. The key points that emerged were that while the study states had adopted relevant policies, corresponding interventions and by laws by the urban local bodies (ULBs) were absent across states. It was also found that the state water policies for some states like Uttar Pradesh and Madhya Pradesh were as old as 1999 and 2003 respectively (the Uttar Pradesh policy was being revised at the time of preparing this brief).

When compared to their water policies, the wastewater reuse and septage management policies were recent and drafted between 2016 and 2019 in five of the six study states.

Also, while all the study states have adopted the national policy on faecal sludge and septage management (FSSM) as applicable to their states, the states' FSSM-related actions appear to be limited to cities and select Atal Mission for Rejuvenation and Urban Transformation (AMRUT) towns, leaving behind all the small and medium towns.

In terms of regulation on groundwater use, two states, namely Odisha and Chhattisgarh, still await enactment of the groundwater regulation bill.

In contrast, Andhra Pradesh was found to be one of the pioneering study states to have ground and surface water regulation measures in place through the Water, Land and Trees Act, 2002. However, implementation of these policies by the local bodies needs further attention in all the study states.

Water supply service delivery

1. Access to water supply and sources

Water supply service delivery by various public and private sector organisations in the form of individual piped water supply (PWS) connections, public tap posts, standposts, handpumps, borewells, and wells was found to be varied across the study towns. While Palamaner had the highest number and proportion of households dependent on public water sources, Bakshi Ka Talab (BKT), with the highest level of private water sources, had the lowest reliance on publicly provided water supply. Within the public water supply service delivery, Palamaner was the town with the highest number of household-level piped water supply connections, Kanker had the highest proportion of households relying on public tap posts or stand posts, and Chandbali had the maximum population primarily dependent on hand pumps. Across all six towns, Bakshi Ka Talab was the only study town that was found to not have any provision for PWS. Overall, while 69.1 per cent of the study households in the six study towns reported using public water sources as their primary water source, an important finding was that only 30.5 per cent of the 1,200 study households in the six towns had access to publicly provided household-level PWS, with the situation varying between towns (Figure 1).

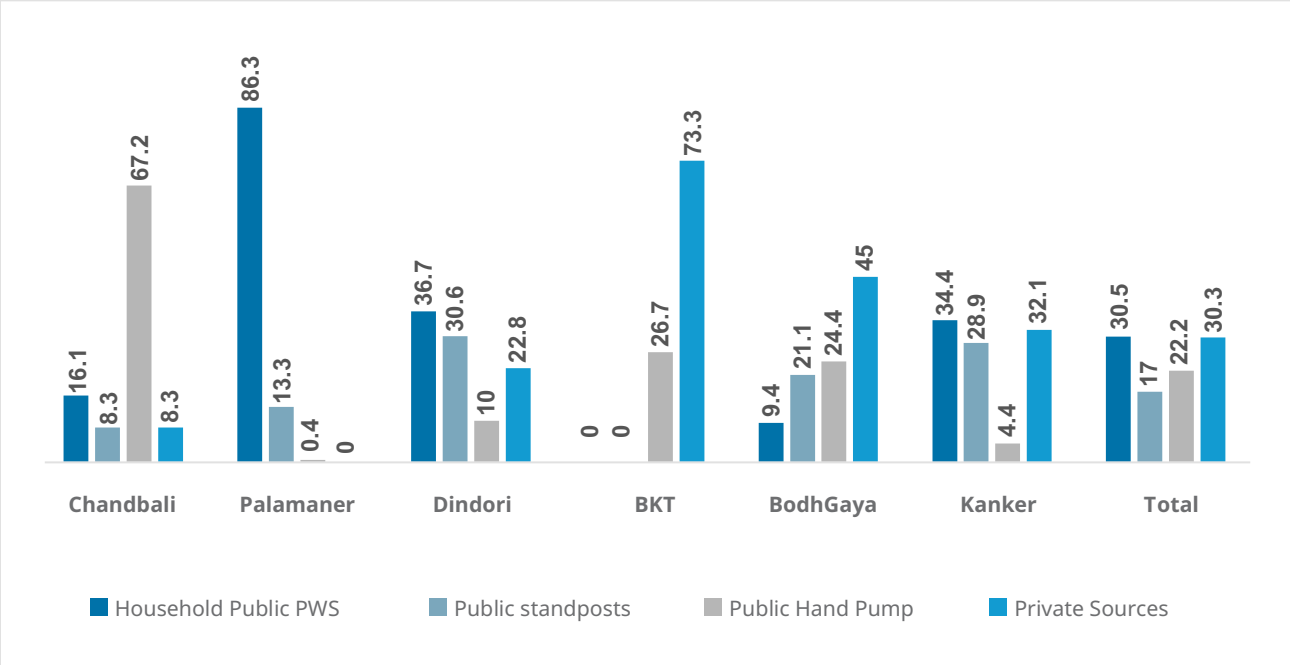

Figure 1 : Access to drinking water supply by sources (in %)

2. Equity and inclusion in water supply

Water sources inside household premises consisted of piped water connections, private borewells with submersible pumps, private handpumps and private dug wells, while water sources outside premises comprised public tap posts or standposts, public handpumps and community wells. In this respect, Palamaner was found to have the maximum number of households with access to drinking water sources within their household premises (86.3 per cent) via public piped water connections, followed by Bakshi Ka Talab via private borewells with submersible pumps. Of the 1,200 study households in the six study towns, it was found that 43.2 per cent did not have access to a drinking water source within their household premises (Figure 2a), though this varies heavily between towns.

Despite the availability of various public and private water sources, the challenges associated with accessing water from these sources have made many households dependent on tanker based water supply, both public and private. These are mainly households of marginalised families located in the periphery of the towns. The town authorities of Kanker and Palamaner, unlike the other four towns, provide regular tanker-based water supply to the last mile population while the other towns use tanker-based supply seasonally to address shortages. While Kanker supplies it free of cost, Palamaner charges INR 100/- per household per month for this service.

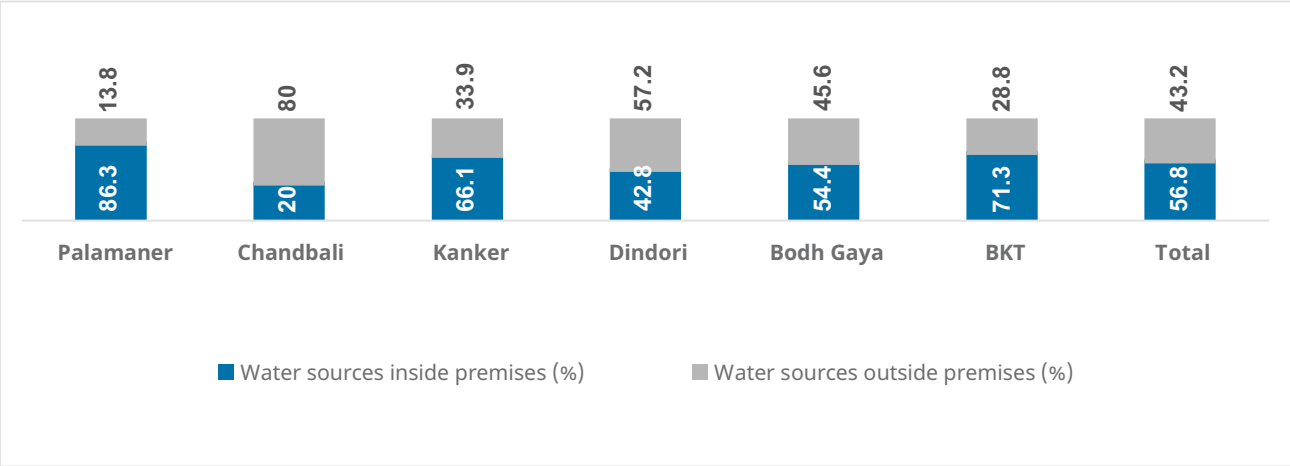

Figure 2a : Access to drinking water sources (in %) within and outside household premises in the six study towns. (n=1,200)

Of the 43 per cent of the total studied households who fetch water from outside, it was found that 59.55 per cent households were below the poverty line (Figure 2b). It was also found that of all the households with no access to a drinking water source within their premises, 38.82 per cent belonged to scheduled castes and 26.02 per cent belonged too there backward castes (Figure 2c).

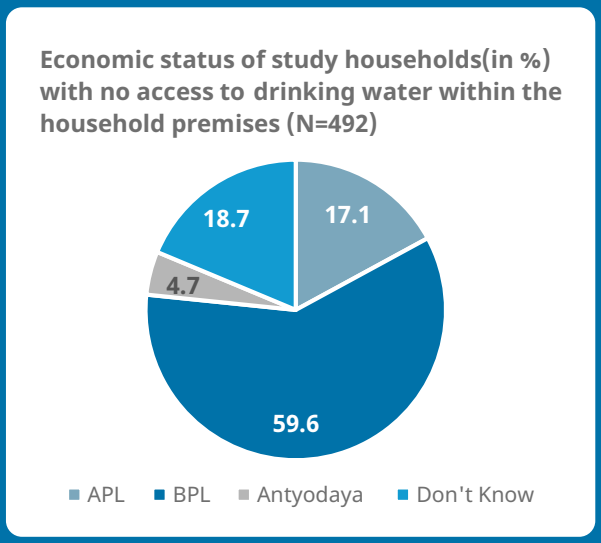

Figure 2b: Economic status of study households (in %) without access to a drinking water source within their premises. (n=492)

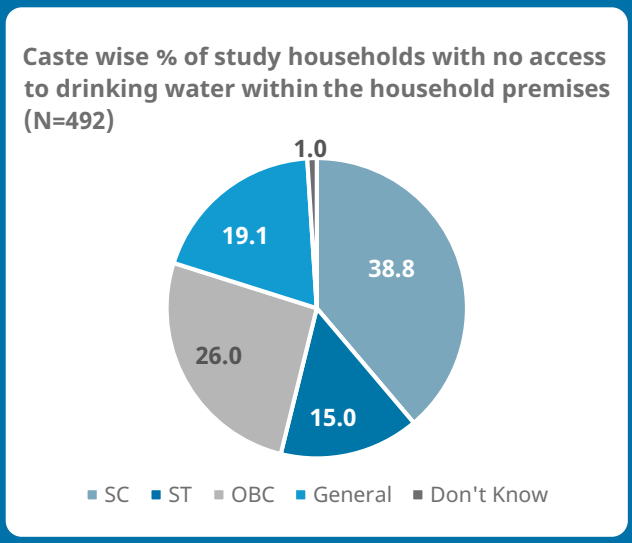

Figure 2c: Caste-wise percentage of total study households without access to a drinking water source within their premises. (n=492)

Figure 2c also indicates that 15.04 per cent of the households who do not have access to drinking water sources within their household premises belong to tribal communities. Another finding from the study revealed that within the 43 per cent households who fetch water from outside, 84.3 per cent of those surveyed indicated that water for their household was always fetched by the women in the family.

Water quality monitoring and tests results

Water quality monitoring mechanisms were found to be weak in all the six study towns with 97.3 per cent of the households reporting that no water sample was collected at the household level. An interesting find during this study was that water quality tests were being conducted in Bakshi Ka Talab and Bodh Gaya by private companies that sold water purification systems. These companies would then proceed to recommend the use of water filters to households.

Water quality tests conducted as part of the study revealed that water from various sources in all the six study towns had microbial contaminants above acceptable limits. Water samples from four study towns reported exceeding hardness and alkalinity. Two towns reported a high content of total dissolved solids (TDS) and bacteriological contamination through faecal coliform and E. coli. One town also reported elevated calcium levels. All the other parameters such as sulphate, arsenic, fluoride, iron, and nitrate were observed to be within acceptable limits in all the study towns (Figure 3).

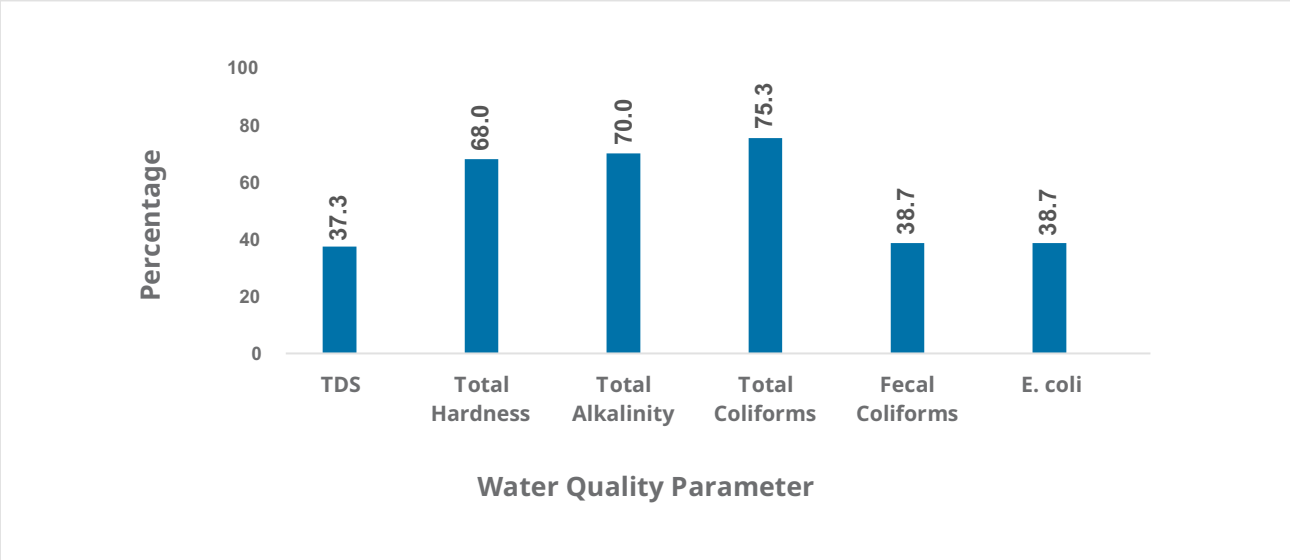

Figure 3 : Percentage of study samples exceeding acceptable limits for various water quality parameters. (n=150)

An interesting finding based on the water quality results was that in Palamaner, the study town with the maximum PWS connections, all the 13 source samples showed higher than acceptable levels of TDS, hardness, alkalinity, magnesium, and calcium. This possibly indicates that while some of the medium towns are forerunners in ensuring access to piped water supply to all households under their jurisdiction, their attention towards water quality could be weaker.

Another finding was that bacteriological contamination by total coliform and chemical contamination due to hardness and alkalinity was prevalent among all the study towns. Since the six small and medium towns were selected taking diverse factors into consideration, findings from this study could largely represent most small and medium towns across the country. Our overall findings infer that water quality surveillance and management across various small and medium towns is possibly suboptimal and needs attention.

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Financial aspects associated with access to water

1. Connection charges

Of the five study towns with provision for piped water supply (PWS), three (Bodh Gaya, Kanker, and Chandbali) have exempted households below the poverty line from payment of connection charges while Dindori and Palamaner charged INR 2,500/- and INR 200/- respectively. Dindori was the only study town where equal connection charges were imposed on households above or below the poverty line with no reduction or exemption for vulnerable families. Bodh Gaya was the only town where no connection charges were levied from either below poverty line (BPL), or above poverty line (APL) families. Further, Bodh Gaya did not extend the provision of public water supply to commercial establishments (Figure 4a).

2. Monthly tariff

In terms of monthly tariff, the majority of the study towns with a PWS connection had the same charges for APL and BPL households, with only Kanker and Chandbali following a differential approach. The monthly tariff for BPL households ranged from as low as INR 30/- in Bodh Gaya to INR 100/- in Palamaner, while charges for APL households ranged from INR 30/- in Bodh Gaya to INR 180/- in Kanker (Figure 4b). Tariff for commercial connections were observed to be varying from town to town.

3. Metering

None of the towns studied had reported introducing metering systems to measure the household-level piped water supply.

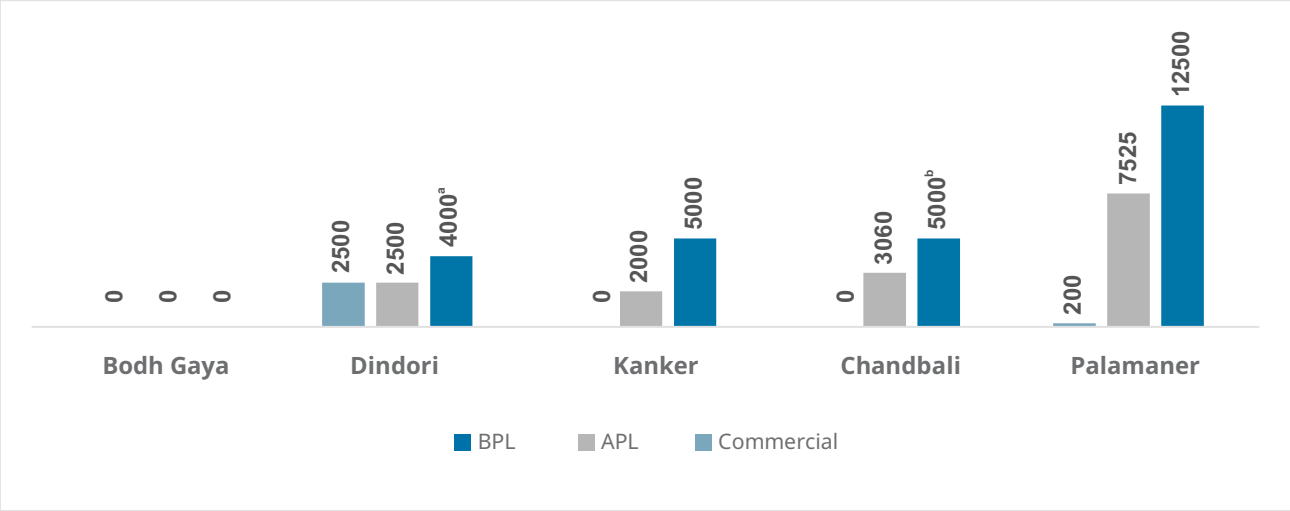

Figure 4a : Connection charges for PWS connections (in INR)

[a] Additional cost of INR. 2,000/- has to be borne by households as labour and material costs while installing the water connections.

[b] Additional cost of INR 1,000/- has to borne as labour charges while installing the water connections.

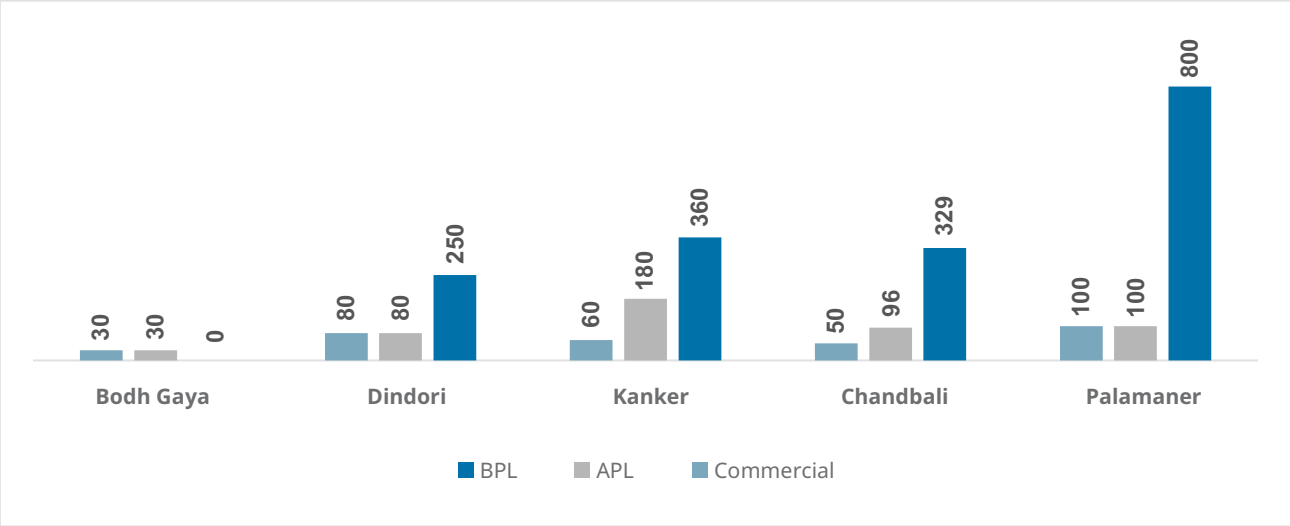

Figure 4b : Monthly tariff for PWS connections (in INR).

Reliability of water supply

In terms of frequency, the least reliable supply was in Palamaner, where water was supplied once every two days for a total of two hours. It was best in Chandbali with water supplied twice a day for a total of eight hours.

Impact of sanitation on drinking water safety

Though a vast majority of urban centres in India have achieved the open defecation free (ODF) status, the study found that only 80 per cent of the surveyed households (HHs) reported having a functional household toilet. This indicates that the remaining households were either dependent on community or public toilets or defecated in the open.

Out of all the study households with functional toilets, 49.4 per cent reported having a septic tank-based toilet structure and approximately 35 per cent had simple holding tanks (Figure 5a). While 80 per cent of the studied households had access to toilets within their premises, it was found that 84.6 per cent of the total toilets at household level were at an unsafe distance (<10m) from their primary water source (Figure 5b).

This could imply that although there has been much effort and emphasis to ensure that every household in small and medium towns is provided with functional toilets, the same is not the case with ensuring the sustainability of these toilets and the safety of water sources.

None of the study towns had access to faecal sludge treatment plants. People disposed the waste either into water bodies or in unoccupied lands nearby. WaterAid India, with support from the local administration, had started construction of a faecal sludge management plant in BKT at the time this report was being prepared.

In general, a safe horizontal distance (a minimum distance of ten metres) between toilet and groundwater source is needed only for pit latrines.

However, findings from our study indicate a large proportion of the studied toilets had simple holding structures. In the substructures counted as septic tanks, it was difficult to gather the adherence to the prescribed standards. Hence, it may be important to consider this issue while determining drinking water safety. Presence of faecal coliform beyond acceptable levels in drinking water samples from at least two towns and overall bacterial presence in all the towns also underlines this issue. Specifically, 31 per cent of the surveyed 1,200 households were found to be using groundwater sources as their primary water source. Among these households, it was found that the norm of safe distance between the toilet substructures (pits, septic tanks, simple holding tanks and drains) and the primary groundwater source was followed by only 65 per cent of the households.

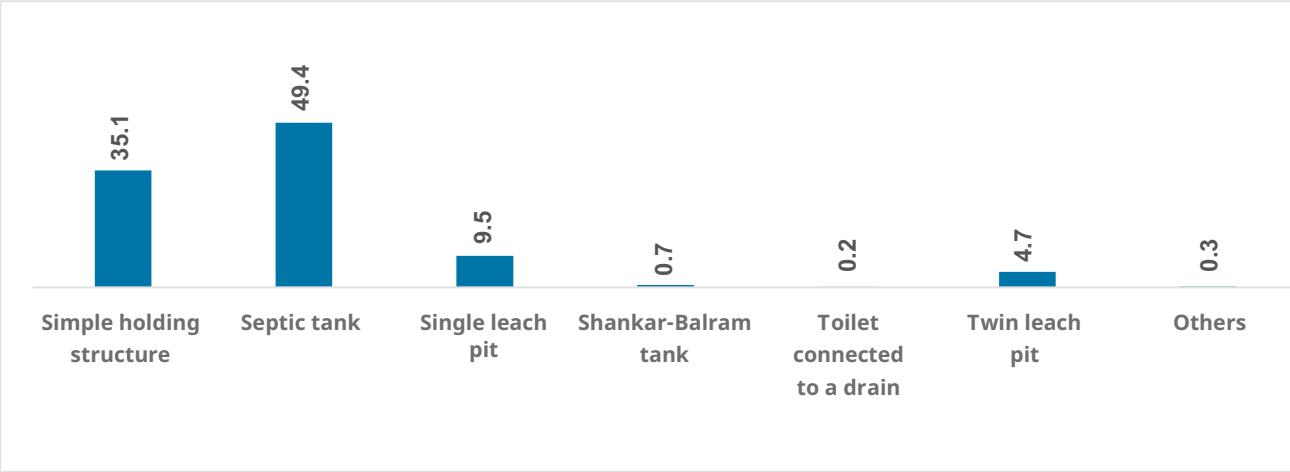

Figure 5a : Types of toilets (in %) at the household level (n=954)

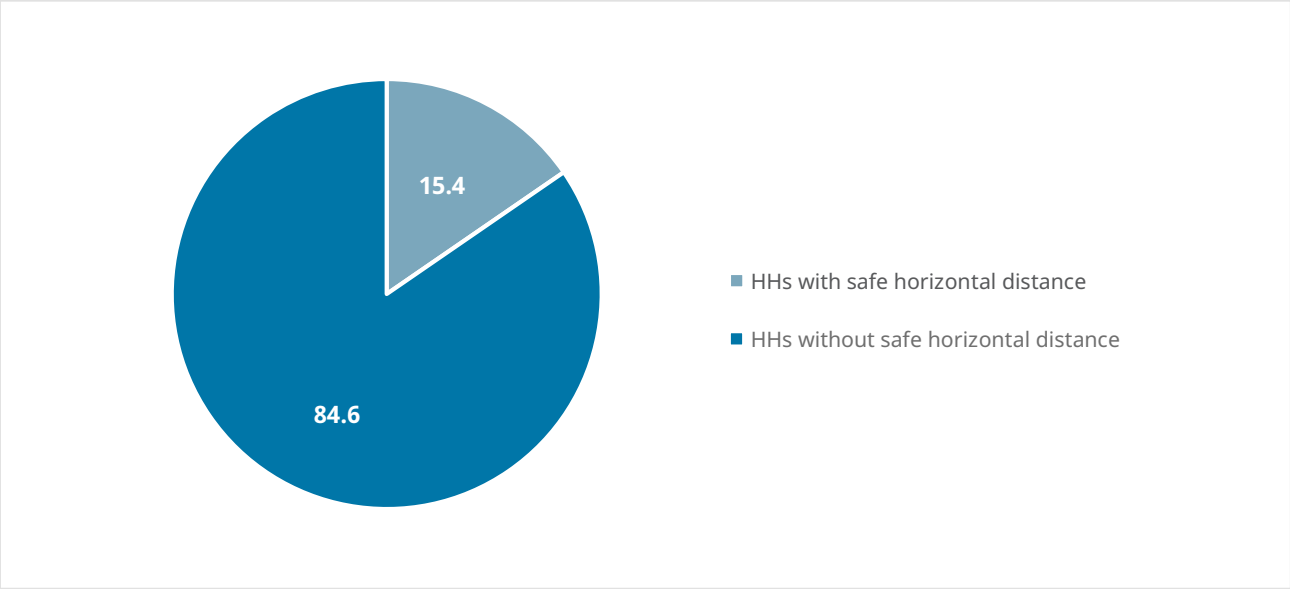

Figure 5b : Households (in %) with and without a safe horizontal distance between the primary water source and wastewater drain. (n=954).

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Sustaining sources

Measures to conserve and replenish groundwater had not been planned or advocated by any of the nagar panchayats or nagar palika parishads during the study period, except in Kanker, where source sustainability measures were being planned with the support of development organizations, WaterAid and Samarthan. The traditional practice of keeping and maintaining community ponds was fast dying out in all these six urban locations.

Water storage and handling practices

Since piped water is supplied for limited hours per day or on alternate days, water storage practices were not well established. Households were found to be storing water mainly in buckets (71 per cent of the studied 1,200 households), followed by tubs and cans. The use of overhead tanks was reported to be highest in Bakshi Ka Talab, followed by Bodh Gaya. Both of these were also the towns with the highest number of households reliant on private borewells with submersible pumps. Only 18.6 per cent of the total households surveyed reported purifying their cooking and drinking water as shown in Figure 6. The most common purification measure followed by these households was simple filtering, followed by boiling-cum-filtering, reverse osmosis-based filters, and simple boiling. Furthermore, around 60 per cent of households in total reported keeping drinking and cooking water at the ground level. This increases the chances of contamination by kids, pets, insects, and dust. Water handling habits were particularly poor in all the study towns with 80 per cent households consuming water for drinking by dipping a non-ladle vessel into the container. This could result in water contamination and affect the health of the family in the long run.

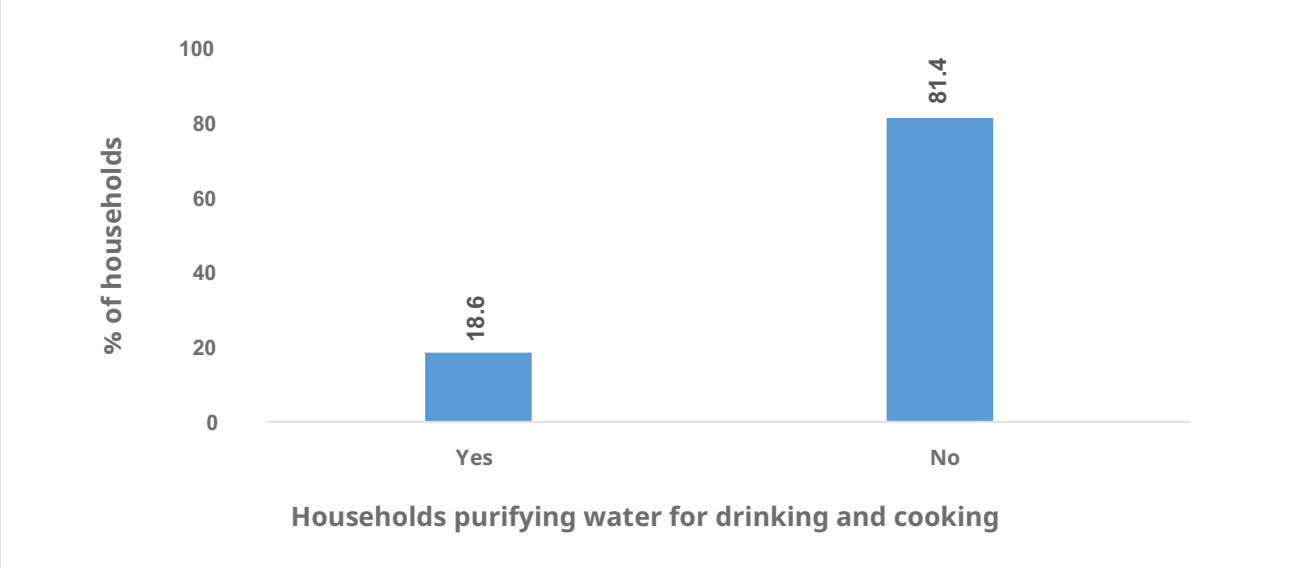

Figure 6 : Percentage of households with and without drinking and cooking water purification practices (n=1200).

WaterAid / Srishti Bharadwaj

Key policy recommendations for small and medium towns

Findings from the 'Assessment of drinking water situation, governance and service delivery infrastructure in small and medium towns' study conducted by WaterAid India in six small and medium towns with different characteristics present stark differences in the way each of the six study towns has provisioned and prioritised piped water supply service delivery for its population, yet the challenges faced by them have certain commonalities. It has shown that access to safe drinking water (in small and medium towns) is still a challenge due to absent or poor household-level piped water supply (PWS) coverage. The study also indicates that sanitation in these towns requires improvement if they are to achieve the sustainable development goals.

From this primary study and desk research of the limited secondary literature that is available on small and medium towns, it can be inferred that there is a huge need and scope for developing sustainable PWS in these settings and addressing the several challenges identified. For these towns to attain their maximum potential and achieve universal, safe, and sustainable PWS in a few years so as to reach the Jal Jeevan Mission Goals and eventually the Sustainable Development Goal 6, collective action by the relevant local, state, and central government actors, in coordination with civil society organisations and bilateral agencies, is important.

Hence, drawing from the study findings and literature review, WaterAid India proposes the following recommendations for various actors involved in this process, keeping in mind the indicators of Sustainable Development Goal 6 and related other goals associated with drinking water, sanitation, and hygiene (WASH). Since the characteristics of the six study towns broadly represent the different types of small and medium towns across the country, it is hoped that these findings can be generalised in a broad manner toaddress national, state, and local-level policy and programmes for WASH, with a focus on PWS in small and medium town settings.

- There is a need to have a focussed component within the Jal Jeevan Mission for various categories of small and medium towns, which are not covered by AMRUT and similar schemes currently. National allocation of funds to states needs to be modified to ensure adequate financial support for the considerable number of small and medium towns. This will help provide universal access to functional household-level tap connections and the necessary operations and

maintenance under these schemes and enable them to cover all the left-out households and populations; a large chunk of who belong to the marginalised sections of society and are reliant on public standposts to meet their water needs. States should be encouraged to plan their own schemes or to top up the national level schemes while ensuring that new PWS connections are provided at a minimal connection charge so that no household is left behind. These schemes can be extended to cover commercial establishments and market and public spaces as well.

- There is a clear need for ensuring periodic water quality testing as an inseparable element of piped water supply. This is missing in most small and medium town settings. There should be clear and actionable mandates, coupled with necessary provisions in all these towns towards this, including necessary human resources, infrastructure, and protocols. Special allocations should be made for towns located in water quality-affected geographies so that the necessary technological or other required strategies to address the water quality issues can be deployed.

- Instead of water tankers, water supply for the homeless or people living in informal settlements could be provided through overhead or ground-level water tanks that store sufficient water and provide running water at the community level at all times. This will help avoid overcrowding around water tanks and ensure adequate supply for everyone. Mobile water tankers from quality-certified vendors could be used for filling these stationary collection tanks.

- There is a need to initiate and strengthen ward and mohalla-level community platforms in all small and medium towns. This will ensure participation across social groups. Women and people from the most vulnerable groups can take part in the process of planning and imparting PWS in their locality and lead various measures for water security, sanitation, hygiene initiatives and their sustainability. Such structures can also help in ensuring inclusion of all the left-out groups and user-level monitoring of equitable service provision.

- Installing water meters and introducing usage-based tariffs have the potential to limit water usage, limit water scarcity, and ensure the sustainability of PWS across the country in the long run. However, the current pattern of PWS connections in all the study towns including small and medium towns, should make universal metering mandatory. While implementing functional household tap connection schemes in these town settings, metering should be ensured as part of all new household and commercial

connections from the very beginning. Meters should also be installed in those households who already have PWS connections to ensure universal metering. The process of recording and analysing the meter reading should be institutionalised as well. A gradual roadmap for linking tariffs to usage can be developed building on this, which would essentially lead to measured use of water. This will also enable differential water tariffs for commercial purposes.

- In order to ensure sustainability of PWS in small and medium towns across the country and to achieve the Sustainable Development Goal 6 by 2030, it may be important for the Ministry of Housing and Urban Affairs, with support from the Ministry of Jal Shakti and corresponding ministries at the state level, to develop necessary frameworks, design, and a road map for ensuring capacity building of actors involved in PWS. Staff members should be oriented thoroughly in technical, implementation, operations and maintenance, and monitoring and evaluation aspects.

- Other key issues that emerged from the six-town study were around gaps in terms of sanitation coverage and safety. The need for identifying and ensuring coverage of all left-out populations in these settings could be prioritised under Swachh Bharat Mission 2.0 (SBM 2.0) in urban areas. Similarly, corrective measures in terms of retrofitting, terrain-appropriate toilet technologies, and safe sanitation substructures can be brought to the fore of the SBM 2.0 (urban) in these settings as well.

- The study also highlighted the gaps in terms of solid and liquid waste management measures in these towns. Under SBM 2.0 (urban), it will be important to ensure clear guidelines accompanied by necessary financial provisions for various components under these, such as grey water management, stormwater management and faecal sludge management. This may also need to include technologies for treatment and reuse of wastewater. Legal and policy gaps, wherever prevalent, need to be addressed too, through appropriate measures. During this process, it may be important to ensure that programmes should be solution-driven and not just technology driven.

- In order to ensure planning and implementation of water safety, to manage PWS, and to ensure equitable sanitation and hygiene services across the town, it may be important to have mandates and provisions for water utility institutions that not only provide and manage services but also regulate the water and sanitation situation in the town with appropriate authorities for the same. A medium-term roadmap may be developed to set up such

While the apex or state-level water utilities can play an important role in this process, technical support from WASH sector experts, organisations, and successful utilities from other settings can be availed too.

- There is a need to build clarity around the responsibilities of the ULBs of small and medium towns in protection and recharging of groundwater sources, regulating groundwater depletion, and ensuring safety and sustainability of local water bodies such as wells, ponds, lakes, canals, streams, wetlands, rivers etc. Providing clear guidelines and indicators to local bodies towards their better upkeep will be important. Source sustainability of drinking water sources and measures like rainwater harvesting are the other measures wherein roles and responsibilities of the local bodies in these towns are to be fixed clearly. Wherever state level legislations and policies are missing in this context, it may be important to introduce them.

- The study also found major gaps in public knowledge, awareness, practices, and behaviours around water storage, purification, and handling. The sanitation situation indicates knowledge and practice gaps in those issues as well. There is a need to change behaviour related to disposal and management of solid and liquid waste as well, which lead to unhygienic surroundings and pollution of local water bodies. Here, it will be important to develop a comprehensive WASH behaviour change strategy for these settings, along with a clear roadmap, framework, and resources for its implementation, in partnership with a range of civil society actors.

- Finally, recent events such as the COVID-19 pandemic, floods, cyclones, and other natural disasters have highlighted the need for efficient and effective WASH delivery services to help recover from unforeseen events and to ensure good public health. However, our study suggests that the small and medium towns have a long way to go in this regard. Hence, it is important to develop WASH-related disaster preparedness and resilience strategies for small and medium towns with clear roles, responsibilities, and institutional arrangements, given their high-risk status due to rapid urbanisation, which led to sudden changes in their physical characteristics and leaves them highly vulnerable.

WASH service delivery in small and medium towns, February 2021

This note has been prepared by Amulya Miriyala, building on the findings of the study on *'Assessment of drinking water situation, governance and service delivery infrastructure in small and medium towns'* conducted by WaterAid India's policy unit.

The said study was led by Nirma Bora, supported by Anurag Gupta, Chanchal Kumar, Manas Biswal, Pankaj Kumar, Purna Mohanty and Shishir Chandra, under the overall guidance of Arundati Muralidharan and VR Raman. We would also like to acknowledge the review inputs to this note from Chandra Ganapathy and Vanita Suneja. We thank our supporting agencies, TRIOs Development Support (P) Ltd for conducting the household surveys and key informant interviews, and Equinox Lab for conducting the water quality tests. We thankfully acknowledge the facilitation support and inputs from the four regional office teams of WaterAid India and their partners, namely, People's Organization for Rural Development (PORD), Samarthan, National Institute of Women, Child and Youth Development (NIWCYD), Pragati Jubak Sangh, (PJS), Pragati Grameen Vikas Samiti (PGVS) and Vigyan Foundation.

For detailed individual reports pertaining to the study **'Assessment of drinking water situation, governance and service delivery infrastructure in small and medium towns'** click here.

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