



Institute of Governance Studies
BRAC University

POLICY NOTE

State of Service Delivery in Dhaka City: An Overview of Drinking Water Supply

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Introduction

An estimated 25 percent (36 million) of Bangladesh's population live in urban areas. The largest urban concentration is in the Dhaka Metropolitan Area (DMA), which has a total population estimated at about 12 million. Of this, about 8.6 million live in the core city (administered by the Dhaka City Corporation, DCC). About 4 million of the population of the DMA lives in urban slums (World Bank 2008). The Dhaka Metropolitan Area (DMA) is estimated to be one of the fastest growing megacity in the world. Piped water supply systems are available in the four largest cities of Bangladesh, Dhaka, Chittagong, Khulna and Rajshahi, as well as in 102 of the 309 *pourashabas* (urban municipalities) (ibid.), although coverage of piped water supply systems is partial, uneven and inefficient in many cases.

Under the WASA Act (1996), Dhaka Water Supply and Sewerage Authority (DWASA) has the sole responsibility of providing water, sewerage and storm water drainage services in Dhaka. The Act provides for DWASA to manage its facilities and operate with a high degree of autonomy. Though secondary statistics abound on investments in and coverage of piped water supply, there has been very few attempts to assess critical indicator like availability, accessibility, quality and reliability from the end user perspective. It was from this objective that IGS commissioned a survey on the state of service delivery of Dhaka city on August 2011 as a part of its State of Cities report. The service delivery survey was conducted among the 1600 Dhaka city dwellers residing both in slums and non-slum area of the metropolis.

The subsequent sections narrate the key findings emanating from this exploratory exercise.

1. Scope of the survey

The survey covered responses from 1600 households in Dhaka on a variety of quantitative and qualitative issues related to the

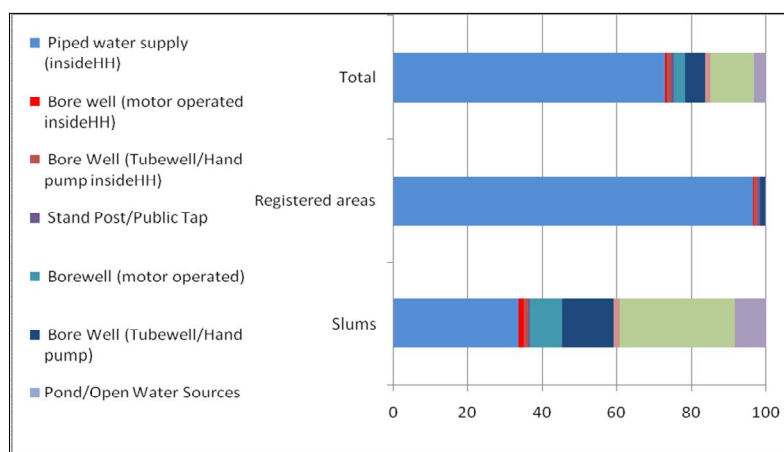


Figure 1: Sources of drinking water

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provision and usage of water. In particular, the survey probed experiences related to availability, accessibility and usage of different sources of water available to residents in Dhaka. In addition, the survey also looked into problems faced by citizens while using water supply services and the ability of the provider to respond to these issues. Experiences related to payment of bills were also explored. Finally, the survey captured citizens' satisfaction with the provision of water and elicited their recommendations to improve the services.

Key findings and pointers from the survey are discussed below:

1.1 Sources of drinking water supply

The survey reveals that in Dhaka, people have access to multiple sources of water. Access to a water source is good with three-fourths of the households reporting access to a water point inside their premises; rest depends on outside water sources.

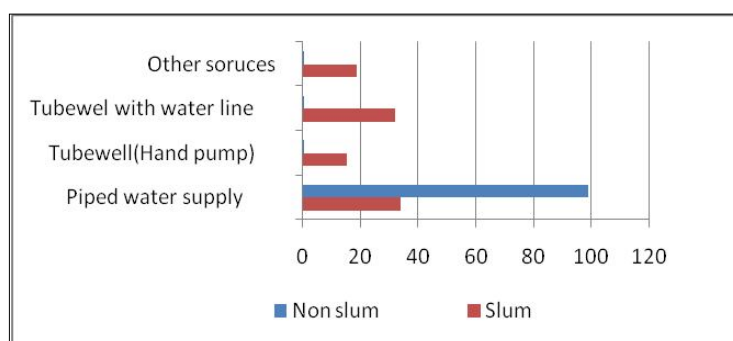


Figure 2: Water access to slum and non Slum

Connectivity to DWASA network is

good with , 73 percent household (among the 75 percent reporting a facility within the premises) using piped water supply. About 12 percent of the household use water from tube wells connected in the water line and another nine percent of the households in the city collect drinking water from bore well (either hand pump or motor operated) located outside and from roadside taps. Rest collect water from sources such as neighbour's house and different open water sources.

When disaggregated by their residence, it is found that the source of water varies hugely and significantly in the slums compared to the registered areas; in registered areas 97 percent use piped water as drinking water whereas in slums it is 34 percent. Tube well connected with water lined² is the option mostly used by the slum dwellers, 31 percent of the slum dwellers uses this source. 22 percent of the slum households collect water from various types of bore well. Use of open water sources is very limited in Dhaka city.

² This source is the illegal source of water for the slum dwellers. These connections are stolen from WASA connections, connected in tube wells in the slums and these are generally managed by a network of service providers in slums who are often closely linked with the gatekeepers in DWASA and slum owners. For details, please check SOC 2012.

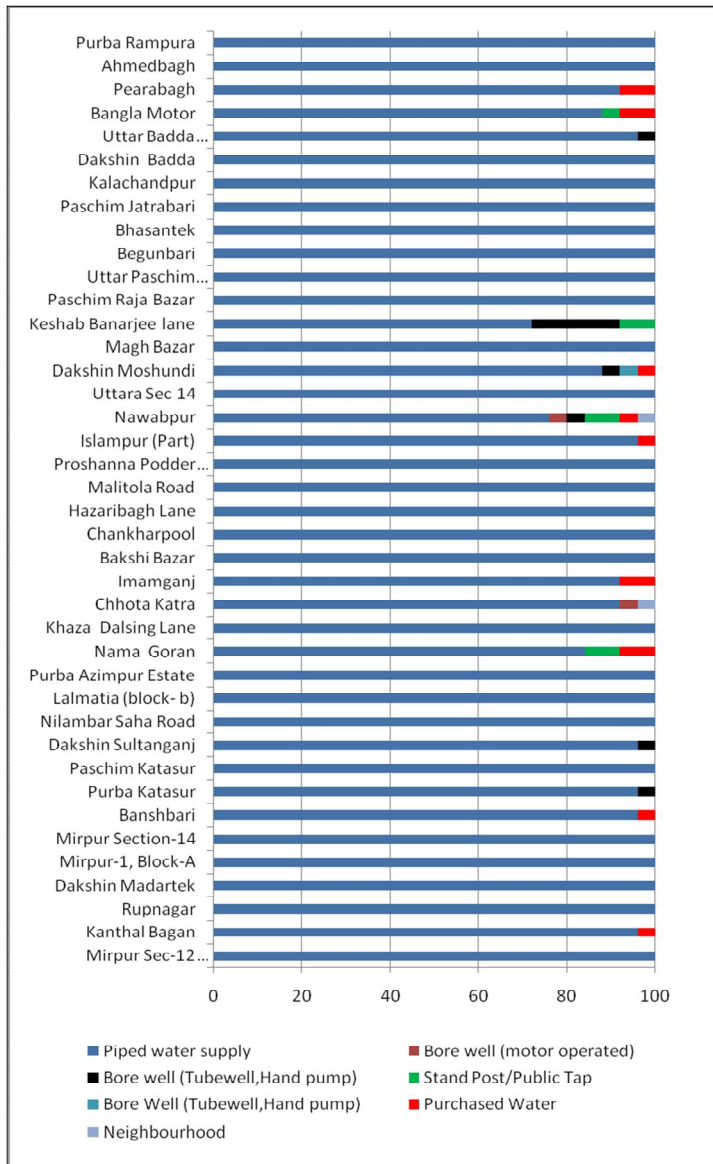


Figure 3: Access to drinking water by areas

March to July. The pattern is similar in both slums and non slum areas.

The survey findings do not report any pronounced variations in terms of water connection within the selected registered areas, even though it is noticeable that there are some areas which do not have full access to piped water. Particularly in Old Dhaka there are some areas where the coverage varies between 72 to 96 percent³.

1.2 Water scarcity:

Water scarcity is a major problem in Dhaka with one in two households (51 percent) reporting water scarcity during last year. Apparently, people living in registered areas suffer more water scarcity compared to slum dwellers which reveals that piped water supply gets mostly effected in scarcity times. Looking at the year wise scarcity pattern, it shows that Dhaka dweller faces water scarcity throughout the year, though the highest percentage of scarcity recorded has been for the period starting from

We have also asked them about their source of water during scarcity time. As shown in fig 5, use of piped water inside or outside household (connected with tube-wells) is much less in scarcity time comparing to the normal time. Alternatively, the use of outside water facilities such as bore-well, stand post, neighbourhood and other places, purchased water and City Corporation water tankers increase

³ The areas are West Katasur, Nawabpur, Nama Goran, Keshabchandra lane and Imamganj

considerably during the scarce season. In fact, sources like city corporation tankers are used solely during scarcity. People also use pond or well as water source in scarcity time. A major policy pointer from this analysis is that during times of scarcity a large number of people shift from safe to unsafe sources; a transition that could have serious health repercussions.

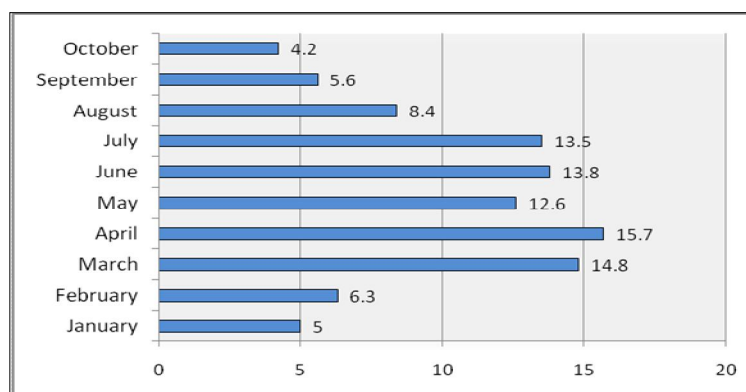


Figure 4: Water scarcity in Dhaka

1.3 Feedback on water facilities outside premises

According to responses from those who collect water from outside sources, the source is on average 83 yards (roughly 75 meters) from the household. In registered areas, water sources are less available and on average the distance is double than slum, 122 yards (111 meters) and 64 yards (58 meters) respectively.

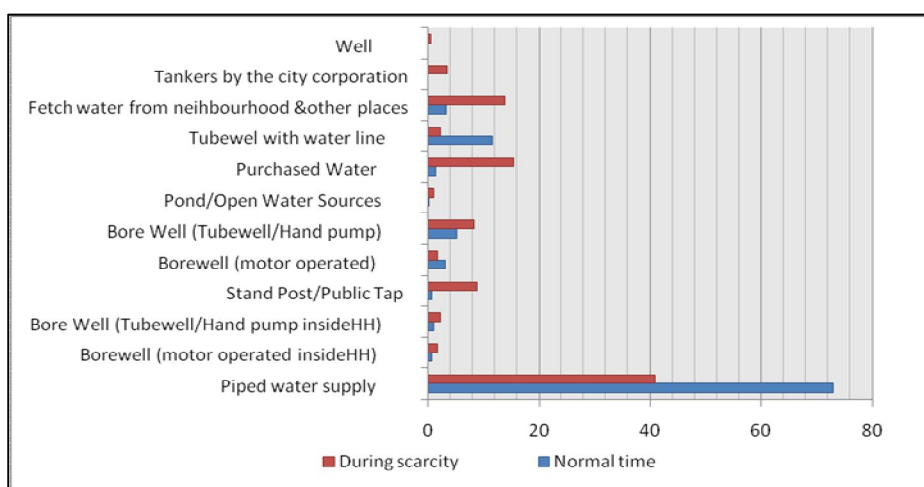


Figure 5: Water source in normal and scarcity items

According to responses from those who collect water from outside sources, the source is on average 83 yards (roughly 75 meters) from the household. In registered areas, water sources are less available and on average the distance is double than slum, 122 yards (111 meters) and 64 yards (58 meters) respectively. The average time taken to travel to the source and back is 9 minutes; it is 14 minutes for residents in non slum and 6 minutes for slum dwellers. Among the households who use outside water facilities, 43 percent never face any queue while fetching water, 39 percent sometimes face queue and 18 percent always face queue. As expected, percentage of households facing a queue is higher in slums compared to non slums. The average waiting time in slums is 16 minutes, while for non slum households it is 25 and slum household it is 11 minutes.

Table 1: Outside water supply:

	Total	Non-slum	Slum
Availability: Always	18.3	14.7	20.4
Sometimes	38.5	31.3	42.5
Never	43.2	54	37.1
Avg fetching time	9.1	14.7	6.4
Avg distance (yard)	83	122	64
Avg waiting time (min)	15.5	25.3	11.4

Among the 694 households of the surveyed population who use outside water sources, 60 percent opined that the time of getting water is convenient to them while the rest disagreed. In total 83 percent agreed with the statement that the timing of water supply is more or less predictable while 17 percent disagreed. 76 percent view that the water pressure is adequate and the rest disagree. Among the household who use outside water sources, adult female members of the households are responsible for fetching water (66%), followed by male members (25%) and hired persons (7%). In non slum household, a slightly higher percentage of male members are engaged in fetching water compared to female (41% and 40%) while in slums, 80 percent are females.

1.3.1 Problems

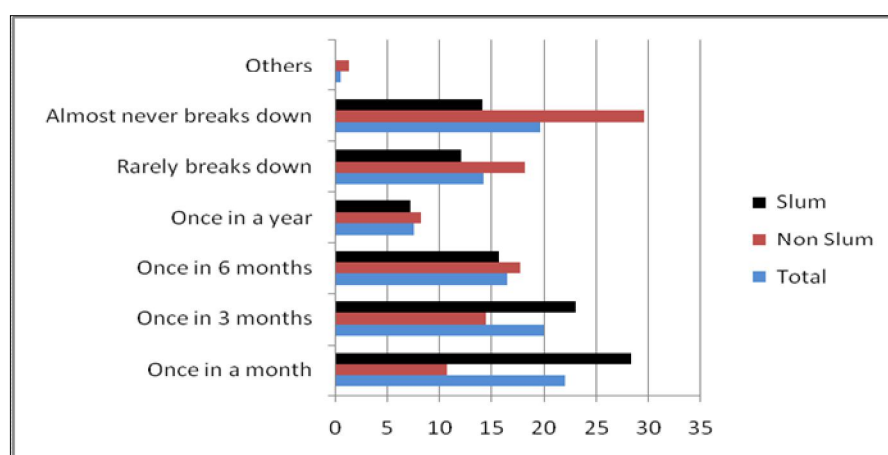


Figure 6: Frequency of problem regarding outside water facilities

We have also made queries about problems with the public water sources. Among the total households surveyed, 20 percent reported that the water source has never broken down during the last one year and another 15 percent reported very

rare instances of breakdown. But, worryingly, almost one in four households (22%) reported that water source breaks down in once in a month and another 20 and 17 percent reported breaking down once in three and six months respectively. Slum dwellers are more exposed to problems regarding public water sources compared to non-slum dwellers, with percentage of households in slum facing problem once in a month is double (or more) than the non-slum households. Again percentage of households rarely facing any problem in non-slum is double than that percentage in slums.

1.3.2: Problem Solving

According to the survey, the average downtime for repairing the drinking water source is two days, though there is a wide variations starting from a day to one month. It is apparent from the data that even in case of water sources located outside the household, they usually complain about it to the landlord (75%).. Only 11 percent of the residents directly send complain to Dhaka WASA. Another 16 percent do not complain to anybody. Compared to slum dwellers, more percentage of household in residential areas file complaints to the authority (24 % vs. 3%) which is quite expected as the majority of the connections in slums are not legal connection, and those connections are generally supplied and managed by the owner of the house. This explains why a huge majority (82%) of the slum households complain to the landlord.

Among the total, 44 percent respondents reported that the problem get solved immediately after complaining, 55 percent says it takes some time whereas another 1 percent claims that it never works. Finally we have queried if they are willing to get piped water supply inside the household, only 10 percent was affirmative.

1.4 Piped water

Among the household who has piped water, a huge majority (97%) reported that they have adequate supply of water during normal time, and in scarcity time/ dry time, 76 percent reported that they have adequate water supply. 48 percent of the respondent says the timing of water is convenient to them whereas another 52 percent disagreed. 35 percent reported that the water supply is always predictable, 41 percent says it is sometimes predictable. Only 23 percent reported that it is not at all predictable.

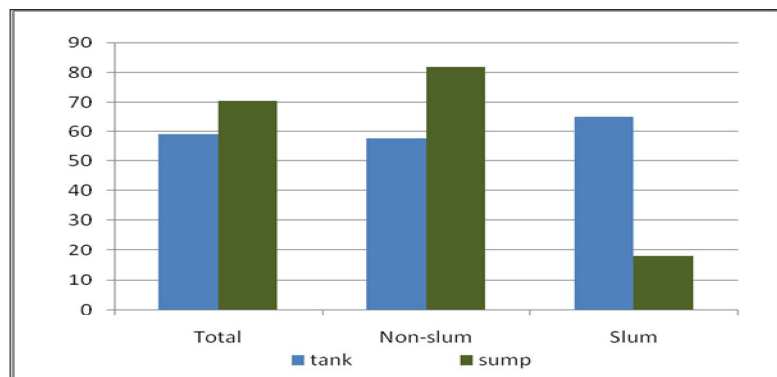


Figure7: Storing water

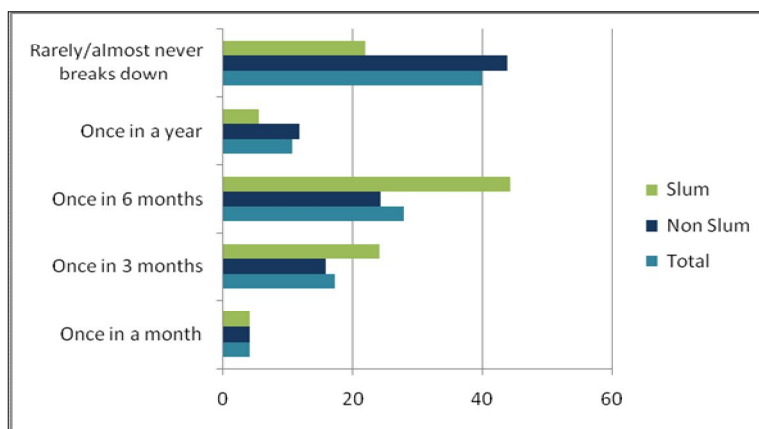
Regarding the water storage, it is found that the use of sumps and tanks are very common among the city dwellers. On average 88 percent of the households having piped water supply has either tank or sumps or both in their household. Among the households, it is evident that higher percentage of households located in registered area stores water compared to slums. While 90 percent of the households in registered areas also uses motor or water pumps to fill the sump or tank whereas it is only 11 percent in slums.

1.5 Bill payment

According to the survey, most of the households do not pay bills directly to the WASA, rather they have monthly agreement with their landlords and pay a amount mutually with the landlord. Among the total household, 60 percent of the households pay water bill to the landlord, whereas another 34 percent pay it to WASA. When disaggregated it is found that 83 percent of the households who lives in rented house pay bill to the landlord, while the 13 percent pay directly to WASA. Generally in slums, more people pay bill to landlords as a fixed amount compared to non-slums. That again relates to the observation that in slums, water connection are largely illegal and are provided by local middlemen in cooperation with the landlords.

The query that concerned the pricing of the water, we have asked them if they think the payment they are making is accurate or they are over charged. Majority (50.4%) of the respondents' view that the billing is accurate, whereas 13 percent disagree. There is no pronounced difference in overall response but more percentage of household in slum came up with 'don't know' reply compared to non-slum (54% vs. 27%).

1.5.1 Problem faced and solving them



Among those who have piped water supply, 40 percent said that they rarely face any problem with water supply. Even though the majority respondents are from the registered areas (44%), 21 percent of slum dwellers also supported the above observation. Among the rest, 28

Figure8: Problem faced by the household having piped water inside household

percent responded that they generally face problem with the water source once in every six months, 17 percent said they face problem once in every three months and another 11 percent said that they face it once a year. Only four percent said they face it every month.

The majority of households who reported a problem relied on their landlord to solve them; only 20 percent complain to formal authority if there is any problem. When compared between non-slums and slum households, it is evident that a larger proportion of households living in registered areas file a complaint to the authority as opposed to those living in slum areas (20 % vs. 4%). Slum dwellers rely mostly on landlord (84%) compared to 26 percent of non-slum residents. 17percent respondents report that the problem get solved immediately after complaining, 18 percent says it takes some time whereas another 3 percent view that it never works. There is no pronounced variance between slums and non slums.

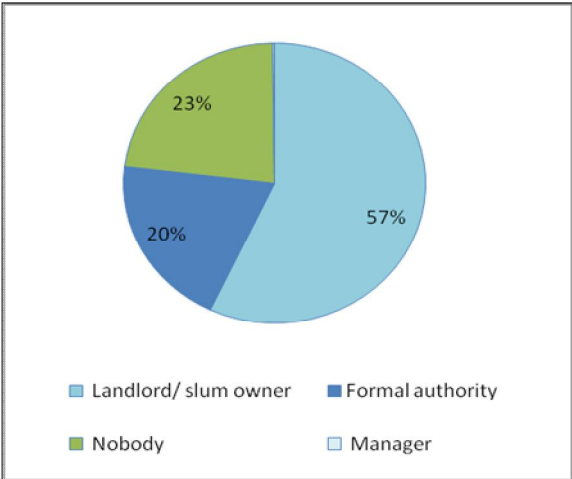


Figure 9: Filing complaints

1.6 Informal payment

As reported in the earlier sections, direct interactions between households and DWASA is quite minimal.

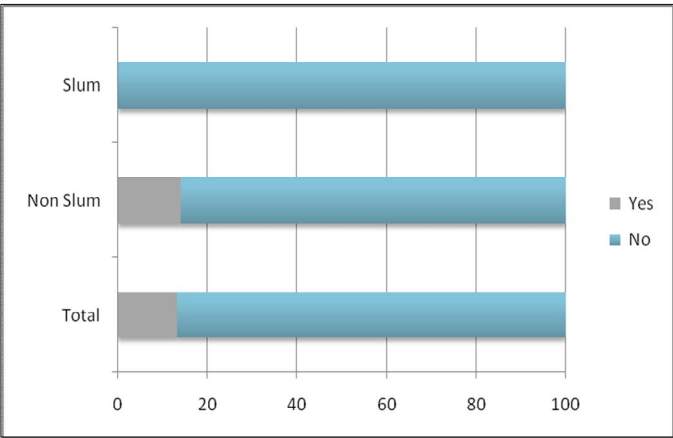


Figure10: Informal payment

Among those who said that they have interacted with DWASA, only a small percentage of respondents (13%) reported that they had to pay extra money to get their work done. Interestingly, all instances of such payments were reported by non slum households. All of them paid bribes through middlemen. 56 percent paid the amount because they could not get the work done without offering money, 37 paid to speed up the process and the rest paid to get more water supplies during scarcity period.

1.7 Quality

When asked about the water quality, majority replied that it is clear (63%) with no smell (63%) and with no particular taste (96%). 30 percent household reports that it as partly and 7 percent reports it as fully muddy. 37 percent also said it has foul smell and only about 4 percent said it tastes salty or a bit metallic (when it contains iron) or muddy.

The water supplied by DWASA is not trusted as a pure drinking water by the city

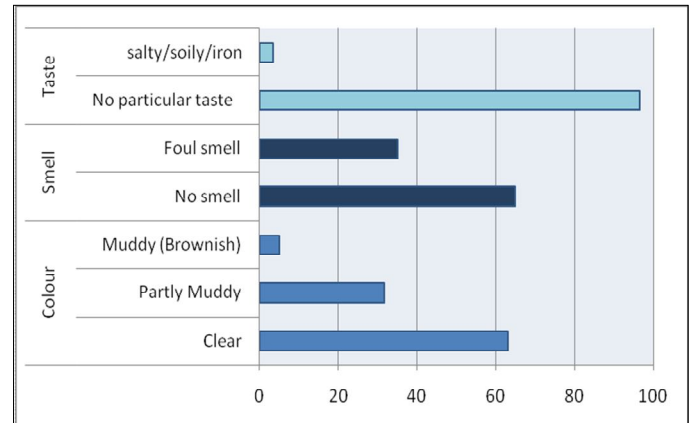


Figure11: Water quality

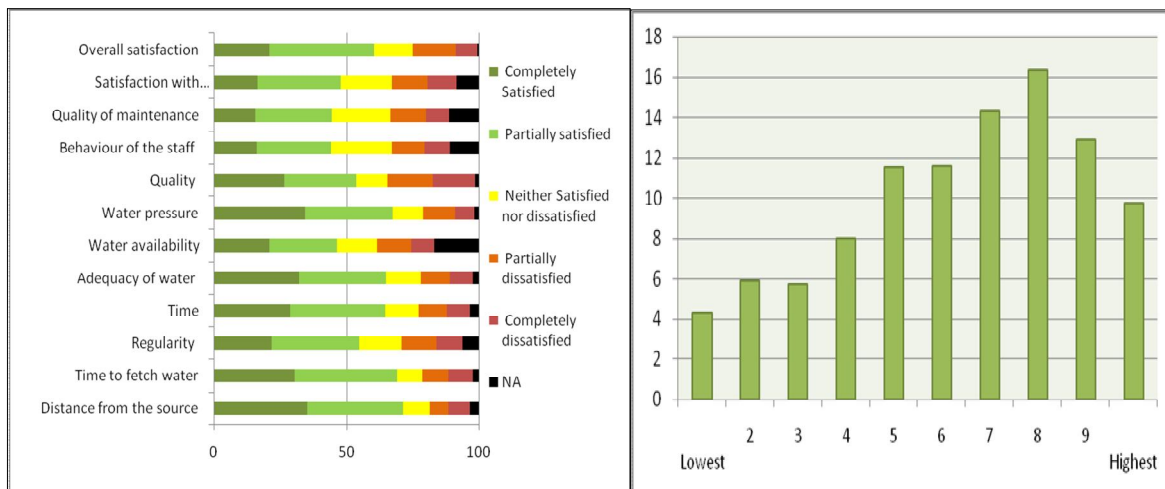


Figure 12: Satisfaction with different aspects of water supply

Figure 13: Satisfaction on a 10 point scale

Figure 13: Satisfaction on a 10 point scale. A bar chart showing the number of households reporting different levels of satisfaction on a 10-point scale. The x-axis represents the satisfaction level from 1 (Lowest) to 10 (Highest). The y-axis represents the number of households, ranging from 0 to 18.

Satisfaction Level (1-10)	Number of Households
1	4
2	6
3	6
4	8
5	11
6	11
7	14
8	16
9	13
10	10

Among the purifying methods, boiling is the most commonly used method, 94 percent drink boiled water. Other than that, using of water filter is also common among the Dhaka household (19%). Boiling is generally practiced by the non-slum dwellers, whereas uses of alum or water purifying methods are mostly practiced by slum dwellers compared to non-slum dwellers.

1.8 Degree of Satisfaction

Households were requested to evaluate the public water supply system. The respondents were asked about their degree of satisfaction or dissatisfaction with the services provided by the DWASA. It appears that majority of the respondents are generally satisfied (60%) about the water supply, but there are still a 15 to 20 percent households which are either completely or partially dissatisfied about the mentioned aspect of water supply. Dissatisfaction is generally high regarding water availability, regularity of water supply and the quality of water. We have also asked them to rate the satisfaction on a 10 point scale where the result is very similar to the overall one.

To get a clearer picture, we further probed the households who reported either partial or higher dissatisfaction to state their experience with water supply. We found that 31 percent said sometimes they have water coming with dirt, another 28 percent said the water they get has a foul smell. 20 percent also said that they do not have the supply available all the time.

1.9 Suggestions

In view of the above, we tried to elicit some suggestions from the service seekers. Then, respondents from city households came up with a number of suggestions to improve water provisioning by DWASA. They focused mainly on what aspects of services should be improved and not actually the 'how' part. We have classified the suggestions under few broad category namely availability, quality, maintenance, institutional performance and others.

As evidenced by the previous section, the highest dissatisfaction was about the availability of water and when it comes to suggestion, 29 percent suggested that DWASA should have supply 24 hours a day, whereas another 5 percent asked for more pumps and more public taps. Regarding water quality, 30 percent asked for purified water supply, 18 percent asked for dirt free and 5 percent asked for iron free water. The regular maintenance was another important aspect, 22 percent asked for regular cleaning of water pipes, 11 percent asked for the repairing of water line and 9 percent asked for the replacement of WASA pipe and another 3 percent asked for the regular cleaning of the tanks. Another 3 percent ask for keeping water line separate from other lines (e.g. sewerage). Under institutional capacity, suggestions like more supply centers were demanded by 7.5 percent of the respondents whereas another 5 percent asked for the responsiveness of the respected personals. Some recommendations asked for greater role of government and WASA (8% together) and improvement of the overall system (5%). Another 3 percent asked for recruiting efficient manpower and 2 percent asked for cutting down illegal connections. Among the other suggestion, household asked for preventing water wasting, use of alternative water pumps and awareness building activity . We give below in a matrix the suggestions received from the service seekers.

Table 2: Suggestions: Improvement of the drinking water supply (in percent)

	Availability	Quality	Maintenance	Institutional capacity	others
Need to have all-time water supply	29.4%				
Purified drinking water should be provided		30.2%			
Water pipe line should be cleaned			21.9%		
Water without bad odor should be supplied		18.2%			
Need to be concerned about the dirt in water		17.8%			
Need to repair the water line regularly			11.4%		
Need to change the main pipe of WASA			8.6%		
Water supply centers should be increased				7.5%	
Responsible persons should behave responsibly				5.4%	
Need to reduce iron from water					
Wasting water should be protected					4.7%
Govt. should take steps to improve the water quality				4.7%	
WASA should be more aware				4.2%	
Alternative water pump should be used					4.2%
More machines should be installed according to the demand	4%				
Improve the system				3.5%	
Water tanks should be cleaned often			3.4%		
Water line should be separated from other lines			2.9%		
Need to know about water quality and awareness					3.4%
Efficient manpower should be recruited				1.9%	
Corruption free system					1.7%
Water need to be cleaned by tablets		1.5%			
Illegal connection should be cut down				1.4%	
Taste of water should be improved		1.3%			
More public tap should be provided	1%				
Don't know	5.1%				

Conclusion:

In this specific paper, our findings regarding drinking water supply suggest that majority of the Dhaka dwellers are fully or to an extent largely satisfied with the water supply. When it comes to access, the survey shows that water connections are more or less available in registered areas, but in slums it is still managed by the informal channels, which suggests that there is a significant scope of improvement in this area by DWASA. If slums can be brought under the WASA coverage, it can simultaneously decrease water theft and can generate more revenue which are being now captured by the middlemen for their own profit. Again, this may ensure the better access to water by the slum households.

In spite of coverage, the findings suggest that the quality of water supplied by WASA is not drinkable. A huge majority of the service users resort to different mechanisms of purification, but there is a huge disparity in slums and non-slums. As purification measures like boiling involves costs in terms of fuel, whereas other purification mechanisms are also costly for which in slums of Dhaka majority of population drinks straight from tap water without purification. This gives rise to different water borne diseases in the city. If water quality is improved, this might have a significant impact on reducing health hazards in slums. On the other hand, ensuring safe water availability and maintenance of its regular should also be the focus of DWASA.

It is to be noted that *The State of Cities: Urban Governance in Dhaka report* recently published by the Institute of Governance Studies has a focus on service delivery which reveals that there is a huge gap between the water users and the providers of drinking water in Dhaka and people generally used different 'exit' mechanisms to solve the problems rather than to raise 'voice' against such problems (IGS 2012). Our analysis regarding water supply also reveals that the interactions between the service providers and receivers are minimum. If free flow of information can be ensured regarding the services provided and more complaint windows could be offered in form of report cards in addition to verbal and telephone complaints can be developed, people will be encouraged to interact more in the process. In this context, the responsibility lies more on the service providers i.e. DWASA to efficiently handle such problems in order to be citizen friendly, which would help to generate trust from the consumer end and can contribute towards bridging the existing gap between service providers and seekers for ensuring better urban governance.

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