

International Journal of Interdisciplinary and Multidisciplinary Studies, 2014, Vol 1, No. 2, 19-38.

Available online at <http://www.ijims.com>

ISSN: 2348 – 0343

## **State of Water Governance in Dhaka Metropolitan City of Bangladesh: Evidence from Three Selected Slums**

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### **Abstract**

Improvement of water management and services remains as a key challenge towards ensuring sustainable governance system presently. It is beyond belief that water rich countries like Bangladesh have to face water crisis notwithstanding her location at one of the largest fresh water store houses in the world. Water situation of Dhaka city especially in the poor slum areas is very wretched and under the threat of serious water borne diseases. It is evident from the survey findings commissioned in two slums under Dhaka City Corporation that, absence of governance in water management and services resulted in misappropriation of water and anguishes of the marginal dwellers living in the slums. The paper aims to explain the pattern of water governance at the slums in Dhaka Metropolitan City. It also directs efforts towards exploring causes behind conflicts surrounded by water issue as well as nature of conflict among three parties i.e. slum dwellers, the government and non-government. The study is ended with a set of recommendations in an attempt to ensure better water governance at the slum areas.

**Keywords:** Water Governance, Corruption, Slum Dwellers, Urban Local Governance, Bangladesh

### **Introduction**

Water now more precious than ever in our history, and is involved in many industries, including forestry, agriculture, navigation and mining. With decreasing availability and increasing demand for water, some have predicted that clean water will become the "next oil". Because, today, one out of six people—more than a billion—do not have adequate access to safe water. Currently, nearly 2 billion people live with water scarcity, and this number is expected to rise to 4 billion by 2025. World Water Assessment Program indicates that, More than 2.2 million people died in 2000 from diseases related to the consumption of contaminated water or drought<sup>1</sup>. All these statistics have become true as water sector under threat from depletion, pollution, mismanagement and even from being hijacked by multi-nationals.

Despite the many problems facing the water sector, including waste water treatment, none can be as pervading in determining the success or failure of water management in a country than governance. Hence, if a country has bad water governance, its water resources would not be managed sustainable. Water governance refers to the range of political,

## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

social, economic, and administrative systems that are in place to develop and manage water resources and the delivery of water services at different levels of society<sup>2</sup>.

Despite being one of the water rich countries in the world Bangladesh is under serious fresh water crisis especially in the urban areas. Due to the mention facts before both the availability and the quality of water is decreasing in the poor urban areas. Besides, the population situation of the country is getting more worsen in Dhaka, which became one of the mega cities in the world in terms of population and urbanization. Dhaka Metropolitan City has 9.13 millions people at the growing rate of 5.0 percent in a survey on 2005. But most surprisingly out of 9.13 million people 3.4 million lives in the slum, at the growing rate of more than 10 percent year on year. The percentage of slum population within the overall population has also increased from 25 percent in 1996 to current 37.4 percent, occupying an area of only 4 percent of the total DMA area<sup>3</sup>.

These slum dwellers face several social, economic and political problems. Among the list of these, crisis or scarcity of fresh water is one of the major concern for them. Because, due to increase of Dhaka city population, the gross daily water demand will rise from 2460 MI/d (million liters per day) to 7970 MI/d within next 15 years, assuming a system loss of 20 percent. There is already a major shortage of required supply of safe water. Due to over abstraction and loss of recharge areas, the groundwater table in Dhaka has declined at an alarming rate over the last couple of decades. Thus water governance has become one of the most important issues for the poor urban people.

### Materials and Methods

Measuring the water governance situation in Dhaka city slums is quite complex because the problems emanating out of the current situation are multi-faceted. The terms of reference for this study provided a coherent structure for the methodology that was used. The study draws on the preceding argument about the dialectics of water governance .i.e. the politicized interdependencies between society, nature and the state and applies it to the concrete circumstances of the Dhaka city's three slums, highly populated area with a long history of water problem and different approach to governance.

The study is based on a fieldwork conducted between January and February 2011 and involved the participant observation of meetings and, reviews of policy documents and archival documentation, and the application of a semi-structured, confidential interviews. Respondents were selected based on their income, sex, household size and education and 150 interviews were conducted among the three slums. Besides, municipal authorities and campaign activists; DWASA (Dhaka Water Supply and Sewerage Authority) information officer, DWASA Director, Chief officer of Slum Development Corporation, power elite and politicians; and activists of national NGOs in the study area were interviewed in order to gain comprehensive picture pertaining to the issue of water governance in slums<sup>4</sup>.

The frustration of the slum stakeholders with the persistence of recurrent precarious water supply, both quality and quantity of water and the patterns of formal and informal governance (the role of DWASA and middleman (power elite, politicians) in the distribution process and conflict situation were the predominant issues considered in discussions and

## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

interviews. On the other hand for secondary data source, a wide range of books, articles, paper clippings, research documents, seminar papers, concepts notes and related websites had been reviewed.

**Water Governance:** Water governance is defined by the political, social, economic and administrative systems that are in place, and which directly or indirectly affect the use, development and management of water resources and the delivery of water service delivery at different levels of society. Importantly, the water sector is a part of broader social, political and economic developments and is thus also affected by decisions outside of the water sector <sup>5</sup>. Water governance addresses among other things:

1. Principles such as equity and efficiency in water resource and services allocation and distribution, water administration based on catchments, the need for integrated water management approaches and the need to balance water use between socio-economic activities and ecosystems.
2. The formulation, establishment and implementation of water policies, legislation and institutions.
3. Clarification of the roles of government, civil society and the private sector and their responsibilities regarding ownership, management and administration of water resources and services, for example:
  - Inter-sectoral dialogue and co-ordination
  - Stakeholder participation and conflict resolution
  - Water rights and permits
  - Role of women in water management
  - Water quantity and quality standards
  - Bureaucratic obstacles and corruption
  - Price regulation and subsidies
  - Tax incentives and credits

As evident from the Global Water Partnership Framework for Action that, the water crisis is often a crisis of governance and it is termed as ‘the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society’. On the word of Rogers and Hall, the concept of water governance does consist of the legislative and institutional capacities for the purposes of public policies and institutional frameworks designing. It is connected with those political, social and economic organizations and institutions (and their relationships), which are important for water development and management; with the functions, balances and structures internal to the water sector (internal governance); and with the framing of social agreements on property rights and the structure to administer and enforce them known as the law. Even though governance overlaps with the technical and economic aspects of water, it “points us to the political and administrative elements of solving a problem or exploiting an opportunity”. The emphasis on the politics is further emphasized by Stockholm International Water Institute (SIWI), which simply states that water governance ‘determines who gets water, when and how’<sup>6</sup>. The stated principles of good water governance follow those of good

## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

governance in general and build on core concepts of equity, efficiency, participation, decentralization, integration, transparency and accountability. The figure-1 is self-explanatory. It illustrates about the engagement of multiple actions coupled with legislative process aimed at participatory and effective governance in water management <sup>7</sup>.

**Role of Dhaka City Corporation (DCC) in Water Management** : Dhaka became the capital of Bangladesh with the independence in the year 1971. City area was divided into 50 wards and election of Ward Commissioners was held in 1977 with the introduction of "Pourashava Ordinance, 1977". Ward Commissioners elected one of their members as the Chairman of the Municipality. In 1978, Dhaka Municipality was awarded the status of Corporation and the existing Chairman became the Mayor of the Corporation. Municipal Corporation was superseded by the promulgation of Martial law in March, 1982. Two adjacent municipalities, namely Mirpur and Gulshan Municipalities were merged with Dhaka Municipality in the same year. As a result the number of wards increased to 56. The corporation was started with the introduction of Dhaka Municipal Corporation Ordinance, 1993, repealing the application of Pourashava Ordinance, 1977. Later, number of wards was increased to 75 and Administrators/Mayors were appointed by the Govt. till 1994. In 1990, Dhaka Municipal Corporation was renamed as Dhaka City Corporation and was divided into zones to fulfill the objectives of decentralization. In 1993, the Government with a view to democratize the city corporation, made drastic amendment in Ordinance, 1983 and repealing the application of pourashava that the Mayor and the Commissioners will be elected by direct election on the basis of adult franchise. The City area is divided into 90 wards to represent one Commissioner, elected directly, from each ward. There are 18 reserved seats exclusively for women Commissioners who are elected by the Mayor and the Commissioners <sup>6</sup>. The election of the Corporation was held in January, 1994 and Mr. Mohammad Hanif became the first elected Mayor.

Dhaka City Corporation is entrusted with the responsibilities for ensuring civic services of the city dwellers including water management. Water management in Dhaka, the capital of Bangladesh and a city with 12 million inhabitants, faces numerous challenges such as flooding, poor service quality, groundwater depletion, inadequate sanitation, polluted river water, unplanned urban development, and the existence of large slums where more than one third of its population lives. Residents of Dhaka enjoy one of the lowest water tariffs in the world, which limits the utility's capacity to invest. The utility in charge of water and sanitation in Dhaka, DWASA, addresses these challenges with a number of measures. DWASA is under the authority of the Ministry of Local Government, Rural Development and Cooperatives. DWASA's Board consists of 13 members and is chaired by a customer representative. The Ministry is represented by a Joint Secretary from the Local Government Division. Two board members are appointed by the municipal authority and one by the Minister of Finance. The Executive Head of DWASA is also an ex officio member of the Board. Other Board members are appointed by professional associations and the Chamber of Commerce and Industry. Involvement of Dhaka City Corporation in water management is notable.

**Role of WASA in Water Management** : Dhaka Water Supply and Sewerage Authority (WASA) is a service oriented autonomous commercial organization in the Public sector, entrusted with the responsibility of providing water supply, sewerage disposal (wastewater), and storm water drainage services to the urban dwellers of the fast-growing metropolitan Dhaka, the capital of Bangladesh. It covers more than 360 sq. km service area with 12.5 million people

## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

with a production of almost 2110 million liters per day (MLD). Dhaka WASA faces a number of challenges. These include unplanned city development and informal settlements, transitioning to using surface water instead of groundwater, and large investment funding<sup>8</sup>. But Dhaka WASA has a number of notable achievements including significant increase in water production and productivity, improved service quality, increased revenue, reduction of non-revenue water, and provision of water supply at low cost. The main responsibilities of Dhaka WASA are:

- Construction, operation, improvement, and maintenance of the necessary infrastructures for collecting, treating, preserving, and supplying potable water to the public, industries, and commercial concerns;
- Construction, operation, improvement, and maintenance of the necessary infrastructures for collecting, treating, and disposing domestic sewerage and other sewerage; and
- Construction, operation, improvement, and maintenance of the necessary infrastructures for storm water drainage facilities of the City.

### Results and Discussion

The phenomenon of slums and squatters in Dhaka is as old as the city itself. But the city has experienced a prolific growth of slums and squatters since the independence of the country in 1971. By the end of 1976 only 10 slums existed with a population of 10,000. The number increased to 2,156 settlements with a population of 718,143 in 1991, and 3007 settlements with a population of 1.5 million in 1996. About 90% of the total number of slums and squatter settlements has developed in the last three decades. The highest concentration of growth (45%) took place between 1981 and 1990 followed by the previous decade's 26%. The slum population increased from 1996 to 2005 from 1.5 to 3.4 millions, while the number of slum communities increased by roughly 70% (from 3,007 to 4,966). The proportion of the population of Dhaka city living in slums increased from 30% to 37%. Undoubtedly Dhaka is one of the fastest growing cities in the world, with an estimated 300,000 to 400,000 migrants, mostly poor, arriving in the city each year for economic, social and political opportunities. These migrants' people reside mostly on slum areas, as they don't have better option for survive.

**The Study Area and Respondents:** The total number of slums in the Dhaka city corporation area is approximately 4,966. For the study different parts of three slums at Agargaon BNP Bazar, Tejgoan Railway and Mirpur 6 'Ta' Block were considered to undertake survey. The three slums were found to be diversified from each other on their size, location, occupation; nature of house, income level and most importantly divergence in terms of distribution of water. The study was carried out during January and February in 2011. In order to carry out the study, 150 respondents were interviewed from the three slums (50 each for every slum) based on their household size, income and gender. It is very difficult to select and conduct the survey among huge population in such a small numbers. Hence, we were relatively aware of the situation and selected the respondents very carefully to carry out my study. **The Table-1** encompasses detailed description of the socio-economic status of respondents.

### **Water Governance in Dhaka City: Evidence from Three Selected Slums**

Water distribution in the slums area in Dhaka City is informally governed by various groups such as political leaders, middle-men and middleman with the help of DWASA officials. In some slums various NGOs were found to be working for a long time. DWASA is responsible for water supply in Dhaka City Corporation and Narayanaganj. DWASA can provide 188 core liters against 212 core liters water demand per day leaving 24 core liters of water per day with scarcity. In such condition, it is very difficult for slums dwellers to get access to water regularly and adequately. On the other hand, there is no provision kept by DWASA for setting up water line on illegal land. In some cases, DWASA supplies water to slum areas through Community Based Organization (CBO) and street tape water. Prevailing limitations explained above indicates that, water governance is facing enormous challenges in the slum areas of Dhaka city and access to fresh water by the slum dwellers remains major challenges, without doubt. Slum population alters so much due to recurrent relocation resulting in less possibility to determine actual demand and supply ration of water in slum areas. Also the nature and extent of the slums make problematic to improve water governance situation. During my survey at the three slums, I also encountered number of difficulties to identify their actual problem and water governance situation. Despite such complications, finally I was able to gather following findings which are analyzed underneath:

#### **Informal Water Governance and Role of the Middle-Men**

Middle-men in the slum areas are those people who basically control over the slums. They control slums through utilizing their connections with political power, law enforcing agencies as well as displaying guns power. Without any exceptions, water distribution in the study areas is also governed by those middle-men. Win-win situation for both parties (middle-men and slum dwellers) triggers access to water at slum areas. The slum people want their daily used up water at any condition. So, with the help of middle-men they are able to get access to DWASA supply water paying at the higher rate. Conversely, middle-men earn huge money out of water supply. It is also apparent that, they manage DWASA officials by paying bribe while setting up water supply line in the slums (in some cases, water supply line is found at every household).

It has been apparent from some case that, they are showing undue influence over the function of CBO's in water distribution process. They also don't hesitate to use religious places for their water business as DWASA usually takes minimum charges for water supply at religious places. While undertaking survey at the study area, it is evident from the respondents that they are happy as water supply as per need is accessible. During survey conducted in the three slums it is found that, three different patterns of water distribution process being followed by the middle-men are stated underneath;

- DWASA water supply line is provided in every household illegally with the help of DWASA officials on bribe.
- Water is distributed through reserve tank. and
- CBO's role in water management as well as utilization of water line at religious institutions is influenced by middle-men.

### **Water Distribution Process**

#### **Agargoan BNP Bazar Slum**

Governance of water in Agargoan BNP Bazar Slum totally depends on the role of middle-men or slum owners. Founded on a government land this slum is controlled by different political elites and they take them on driving seat for distribution of water. The slum dwellers availed WASA direct line in their household unlawfully with the help of middleman and WASA officials. For connection of direct line in their household each family paid 10000 to 15000 taka on average. Besides, they pay at least 100 to 150 take monthly for their access over water. Not surprisingly, they pay that amount of money to the middleman who helps them to afford such facility from WASA. If they face any difficulty or any legal setback they appear before the middleman to address such complexity. Out of the 50 respondents roughly 90% is found to be pleased given that access to water is ensured.

#### **Tejgoan Railway Slum**

Water distribution process in Tejgoan Railway Slum is pretty unusual from other slums in Dhaka city. Tejgoan Railway Slum is situated at the heart of Dhaka city. The office of DWASA is not so far from the slums. Therefore a number of water pumps and sources are established near by Karwan Bazar. But there is no water pump or sources directly linked with slum dwellers household. The middle-men who control the slum established 10-12 reserves tank, few toilet and shower room in a specific place for slum people. They collect water from these reserves tank on the basis of daily needs paying specific amount of charges on daily or monthly basis. For the shower and the use of toilet each person has to pay every time use. Almost 80% respondents (Total 50 respondents) are not happy with the distribution process, as they have to spend huge money for water each day.

#### **‘Ta’ Block, Mirpur Slum**

Among the three slums water governance situation is much more systematic in ‘Ta’ Block, Mirpur 12 Slum. Similar to the other two slums, the middleman is found to be playing an important role over distribution of water. It is one of biggest slums in Dhaka City encountered severe water problem in the recent past. A number of NGOs and voluntary organizations are working here to distribute water among the slum dwellers. In 2010, with the help of urban center, the owner of different slum household set up a 100 mm DWASA line. From that line they made five extra sub-lines to distribute water into the entire slum. Water supplied twice a day and during that time each household get 10-15 minutes to collect their necessary water. Every household can only access once a day. Besides, DWASA line installed at the religious institutions is being exploited by the middle-men to get maximum financial benefit out of it. The entire distribution process is managed by the political elites and owner of the slums.

#### 1. Factors, Middle-Men Role and Slums Dwellers Perception

Besides the water distribution process of these three slums, it is important to mention some factors critically persuading water governance process. Such factors stated below agree on the perception of slum dwellers over middle-man role and role of government and non-government stakeholders in the water distribution process.

## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

### 2. Water pricing and Water Business

Higher price rate of water remains a problem for the poor slum dwellers. The middle-men in the study area plays a vital role over the water distribution process. They in collaboration with corrupted DWASA official control the whole process and take more than ten times higher price than the prevailing DWASA water price. Tables 3 & 4 will illustrate a clear picture about the water pricing of the study area:

From both tables (3 &4), it is apparent that the middleman and middle-men of the slums directly involve in water distribution process and doing an unethical business. They earn a huge amount of money every month with help of DWASA official. During my survey at Agargoon BNP Bazar Slum I found that, the power elite of the slum made available DWASA water supply line illegally by taking 15000-20000 taka installation charges on average. Utilizing such process they gain more than 10 million taka for a shorten period of time. Besides, they also obtain more than 75 000 taka profits in every month. In Tejgoan Railway Slum situation is more complex and expensive for the slum dwellers. Although they do not pay any installation charge for water supply, but they have to spend a huge portion of their income while purchasing water. Political leaders of the ruling party control the Tejgoan Railway Slum, which, is widely known for its drug business. This syndicate also controls the water business in the slum and earns more than 2 00,000 taka in every month. Water pricing and business in 'Ta' Block Slum is very organized given that the owner of the household took 2000-3000 taka from every family when the 100 mm pipe set up through CBO. There is almost 1500 household in the slum and it takes 14,0000 taka installation charge to set up the water supply line by DWASA. Besides, CBO leaders of the slum earn handsome money by taking this initiative. Regarding water supply bill, the owner attached it with the monthly house rent. By this process the CBO leaders again earn more than 1 lac taka in every month. Interestingly, only 'Ta' Block Slum pays their monthly water bill regularly as they set up metered connection in the slum. But, neither Agargoon BNP Bazar Slum nor Tejgoan Railway Slum pays any water bill to DWASA.

### 3. Water Demand and Supply Situation

Do you have any water shortage at your slum? While asking this question, in response every one respondent and out of total almost 70% respondents answer was 'NO'. But reality suggest that they only get an average of 150 gallon /liter (water supply vary on slum basis) water a day for their drinking, shower, toilet and other household works. This water supply situation does not fulfill their demand actually. A Dhaka City middle class household consumes 10 and 7.5 times more water than the slum people and had to pay lesser water bill. As they have to buy water on a higher rate the slum people aware of their demand and use it very sensitively. The table 5 will give a clear picture of water consumption of the three slums on different purposes and also shows water demand versus supply situation of the respondents:

### 4. Quality of Water

Access to safe drinking water is one of the main challenges for slum dwellers in Dhaka City. Only 55% of the poor households currently receive tap water in Dhaka City. Most importantly less than 40% of the slum dwellers have access to safe drinking water. On the other hand, none of the slums get proper sewerage services from WASA and only 9% of this population manages to get solid waste management services. As a result, both household waste and human



## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

generated wastes go directly or indirectly into the low-lying lands, open spaces or water bodies of the city. Moreover, inadequate safe drinking water in slums, they drink and use dirty water and suffer numerous health risks.

Respondents of the study area are very lucky, as they have access to DWASA water supply in various mechanisms. It is found that; compared to other slums they are in good position. Among 150 respondents, 80% is viewed that DWASA water is not suitable for drinking due to its bad smell. 98% respondents had to drink this water supplied by DWASA directly, as water filtration costs extra money. Table-6 will give us a lucid idea about the respondents view over the quality of water in the study area.

From the above table it clearly indicates that slum people are clearly unhappy with quality of water in the three slums. 48.67% respondents think that water quality is reasonable while 34.67% respondents think it is poor in quality. More interestingly in Agargoan slum, where water situation and other facilities are comparatively better than the other two slums, 38% of the respondents think that DWASA supply water quality is poor. Water related disease is common scenario at the three slums. They live in a very unhealthy environment. Besides, management of DWASA pipeline is extremely poor. These issues decrease the quality of water, which the slum people drink without filtration. Drinking such water, most of the slum dwellers affected by water related disease like diarrhea, typhoid, fever, cholera etc. In the study area, among 150 respondents 76.67% (115 respondents) have suffered various water related disease in last two years. Table 7 will give an overview of their immense sufferings due to water borne diseases.

### 5. Corruption, Accountability and Mismanagement

Though DWASA won prize from UNESCO in recognition of their role in water distribution, it is associated with a number of trail off in their work force. For instance, the respondent opined that corruption, lack of accountability and mismanagement are the three major impediments for bad water governance in the study area. In the three slums I surveyed, lack of accountability and mismanagement of DWASA officials and combined corruption of middle-men and DWASA officials is a very regular practice.

The respondents never saw any DWASA or Slum Development officials supervising in person in their slums last five years. So, not having any other options they complain regarding their water related issues to the middle-men of the slums. In this regard, if water supply is hampered or stopped, 90% respondents think that, there is no one to complain and will not get any result out of complaining. What are the main causes of poor supply according to its demand? In response, the respondents replied the questions presenting in the table 8. According to the respondents of the study area, major causes of poor water supply are rest with corruption (68%) and mismanagement (26%) of the DWASA officials. They also think that if government can control the corruption and mismanagement of the DWASA officials then better water governance could be established through earning extra revenue, as they want to pay formal authority instead of the middle-men of the slums. The respondents also tinted few aspects vis-à-vis corruption and mismanagement of the DWASA officials. Those are in following pie chart:

## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

According to the chart provided in figure-2, it is shown that 34% and 25% respondent thinks respectively that, water supply to the middle-men and illegal water supply line distribution are the major forms of corruption and mismanagement in the study area. These along with other factors such as illegally water selling by DWASA officials (10%), not repair water supply line (13%), water supply close down during crunch time (11%) and misuse (7%) made water governance situation very complex. These factors also reluctant to depend on DWASA officials for water supply rather rely on the middle-men of the slums.

### 6. Role of Various Stakeholders

There are various stakeholders along with governmental organization can play vital role regarding good water governance. A lot of good water governance model has been developed all over the world under the purview of public private partnership, CBO, NGOs etc. In the study area I find few thoughts, comments and observations of the respondent over CBO and NGOs role in water governance.

**Role of Community Based Organization (CBO):** The role of CBO in the three slums is not found to be significant rather occasional. CBO does not seem to be visible as they are under tremendous pressure from the middle-men who takes full control over water management at slums. About 90% (42 in Arargoan slum and 48 in Tejgoan Railway slum) out of 100 respondents of these two slums thinks that CBO possibly will slaughter their crisis over water and most importantly they can obtain water in a very low-priced rate. But no one of them is found to be enthusiastic to take any advance steps towards forming a CBO, as they think their life will be in jeopardy by the middle-men. Most importantly CBO could ruin their water supply business in the slums. Interestingly, scenario is very different in the other study area. In the 'Ta' Block slum water supply is set by CBO of the slum. But local political leaders are the members of the committee of the CBO. Although, theoretically CBO is a nonprofit, run on a voluntary basis and are self funded; but in practical it is very different in this slum. Through CBO, the local leaders, owners of the households and DWASA officials earn fairly a lot of money in every month. During my interview the respondents are very afraid to mention their name, as they will have trouble in living.

**Role of Government and NGOs:** There is no doubt that governments have the central role in planning and decision making on all aspects of water issues in the country. It is government who can involve different stakeholders if the capacity of government is far beyond from water supply and demand. In such condition the role of non-governmental organizations in water governance is to facilitate community-led initiatives that promote self-reliance and equal access is very important. This is important in areas where communities do not trust governments to protect their interests, or fulfill their role as service providers and regulators. In the study area respondents perception regarding the role of government and NGOs is very negative as they are disgrace and deprive from all kinds of water supply rights. So far government does not allocate any water distribution strategy for them. They buy water from the middle-men 7 to 10 time's higher price, which is quite unbearable for them with such a petite amount of income. So far government initiatives from government to mitigate the crisis are very minimal and 85% respondents think that government did nothing for them in water distribution. Though 15% (all of them from 'Ta' Block Slum) thinks that government has

## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

done little for them regarding water distribution in last year while set up a 100 mm line. Still, this effort is totally resolving their problem. So, at the same time a huge percentage of respondents are totally unhappy regarding the role of government in water distribution in the study areas. Table 9 illustrates the respondent's satisfaction level regarding the role of the government in water distribution in the study areas. According to the table 89.33% (134 out of 150) respondents is not satisfied with the role of government in water distribution and 8% of them is partially satisfied. In the Tejgoan Railway Slum 100% respondent is not satisfy with the government role in water distribution.

On the other hand the role of the NGOs is very poor and respondent's gratification about NGOs is not positive in the study area. According to most respondents (almost 90%) NGOs in the study area does not work properly and don't have long vision regarding their situation. Many of them work for middle-men of the slums. So they don't get any benefit from the NGOs. So far any NGOs took any steps for water supply in Agargoan and Tejgoan Railway slum. The activities of "Manusher Jonna" are not at the satisfactory level. They have not formed any committee or took any steps for water filtration in the slum. So, almost 90% respondent want active involvements of the NGOs in water distribution by facilitate community-led initiatives that promote self-reliance and equal access. Finally, 90% respondents are not satisfied with the both the government and NGOs role regarding resolving the problem. So, how can this problem can be solve is the ultimate question? In response the respondents provide their opinions in such a manner (table-10). According to respondents of the three slums, 38% thinks that combined efforts from government, NGOs and politicians can resolve water related problems in the study areas. Whereas 34.67% thinks that if government's initiatives take place in a proper way could possible to resolve water related problems. On the other hand 20% and 7.33% thinks that only politicians and NGOs respectively could play a vital role to overcome this problem.

### **Conclusion**

This paper tries to grasp and analyze the ongoing multi-faceted problems, with slight concentration on informal water governance and role of various actors at the city slums in water supply and distribution. The discussions on governance, water governance and factors behind water governance give clear hints that the efficient participation of formal and informal organizations/ various stakeholders in the management and development of water is necessary and thus demanded. Accordingly, this paper aims to generate a deeper understanding of the problems and thereby recommend some alternatives to improve the situation. The three slums we studied, have been coping with serious multi-faceted problems with water governance. Corruption is a factor, which has been aggravating the water problems and considerably disrupted the water governance in general. Middle-men of the slums control the whole water distribution process and are backed up by severe corruption of DWASA officials. Water charges set by those middle-men are not controlled and thus become too high for the slums dwellers. Public participation in decision-making is not encouraging and there is no accountability from DWASA officials. Politicians do not care about this crowded slum because it is regarded as an informal settlement and thus no efforts for basic services are made.

Moreover, such necessary principles for effective water governance as transparency, accountability, legitimacy and legality, equity and inclusiveness have not been put on their agenda. All these problems of course affect these slum

## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

dwellers negatively because they still don't get sufficient and affordable water. Improving the current water governance problems in the study areas is a very difficult and challenging task. We still think that if subsequent stepladders could facilitate us to surmount from such complicated circumstances:

- In order to lessen water crisis in the slum areas, CBO, off course could play a vital role in water supply and distribution provided if coordinated approach involving all parties including the slum dwellers. It will also help to trim down illegal DWASA supply line because these water supply lines mostly generate by the middle-men of the slums and they earn a lot of money through water supply business. So, it will ease their concern about water price. However, DWASA also encourages CBO in the slum areas in such a few conditions and there is a Ward Sanitation Task Force (WSTF), which role is to monitor CBO's functions in slums. Combined efforts from these organizations could help to execute improved function by the CBO in water distribution.
- However, improving the partnership between government and non-government organizations can be taken into consideration as one of the potential alternatives. In that case inclusion of private company for water distribution in the slum areas could be one of the best options for ease water crisis.
- Growth and extent of slums in Dhaka City is huge and it is not possible to find an elixir for water problems within a day or a year as slums is encountering chronic social problems. National and local efforts with appropriate assistance of the international community are to b directed initiating feasible and effective plans and strategies.
- One of the major problems of slum dwellers is their settlements on illegal land. As a result it is very difficult for policy makers to come up with a unique strategy to ensure basic needs. There is a glimpse of hope that Slum Development Corporation (SDM) is set up for developed living standard of the slum people. So far its role regarding water distribution and others service in the slums is not up to the mark. As a matter of fact SDM does not contain any data about number of slums in Bangladesh. It is strongly recommended that SDM could play a burly role vis-à-vis slums if it is appropriately knob with well-organized manpower.
- Whether or not current water governance reforms (e.g. decentralized decision making, establishment of stakeholder platforms, increased transparency etc) are leading to more democratic water management and improved and more sustainable water service delivery. In particular research is needed on where the line exists between token stakeholder participation and the real sharing of power in elaborating or implementing water policies and projects and in managing water resources and water service delivery.
- Another important question arises about the quality of DWASA supply water and it is widely aberrant for its awful water quality. Four purification projects and surface water quality is decreasing day by day. So, it is very important for DWASA to monitor and maintain the distribution line and purification project properly and should set up new project for water purification (eg; preserve rain water during rainy season).
- Last but not least, corruption and lack of accountability is one of the major problems in every sector in Bangladesh. So it is very important to control corruption and make them accountable to the public. In that case the role of Anti

## International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)

Corruption Commission and civil society is very important. If possible an Anti Corruption Cell within the DWASA could also play a major role reducing corruption in DWASA.

In conclusion, water is now become scarce resource and situation is getting worsen day by day around the world. Situation of Bangladesh is far better compare to many African countries and even from India. So, all of us should be aware of the whole situation as it is only the beginning of dilemma associated centering water issue. Misuse of water is a very common practice and we should have step up from that kind of practice since water crisis is not only emerging in the city slums but also at many high-class societies in and around Dhaka City. Hence, an effective governance of water is desirable for the betterment of people irrespective of caste, creed, education, religion, gender and so on in Bangladesh. Thus effective water governance could not be possible without the combined effort of every citizens, government and non-government stakeholders of the society. Time has come to work shoulder to shoulder with a view to promoting water governance in the slums areas across the country where the most underprivileged section resides.

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### Figures and Tables

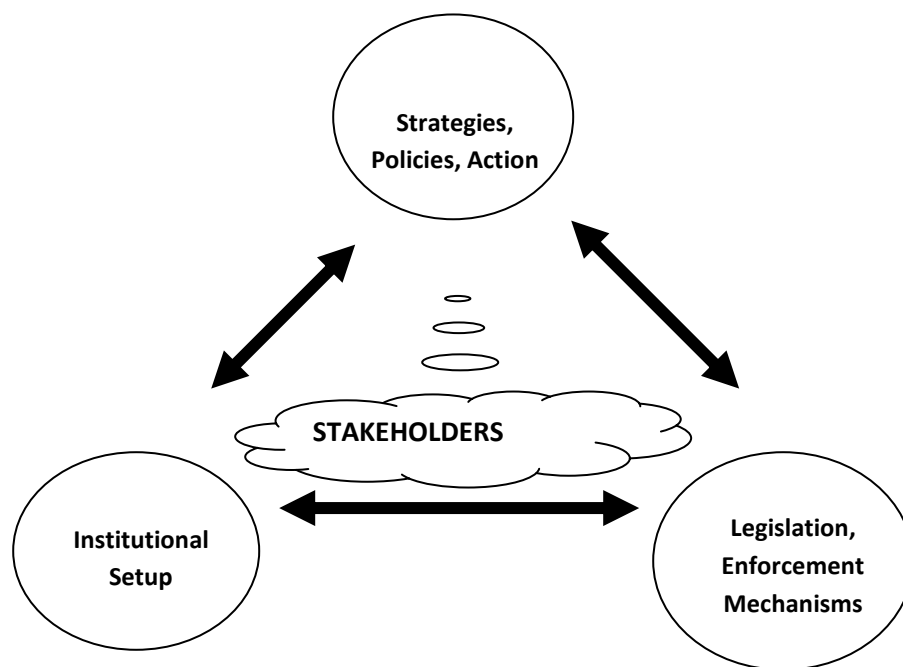


Figure 1: Effective Water Governance (Global Water Partnership (GWP), 2001)

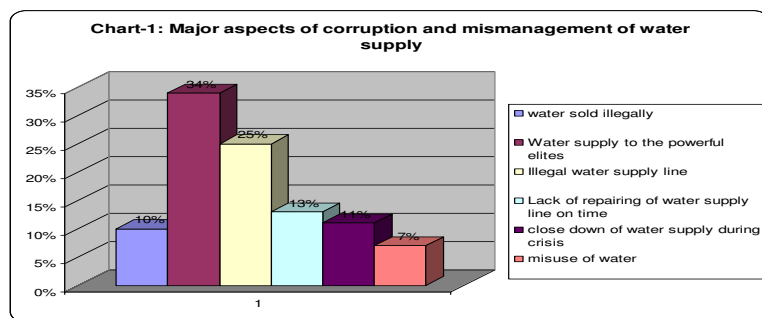


Figure-2: Major aspects of corruption and mismanagement of water supply

Table 1: Demographic profile of the respondents in the study

Demographic	Item	Respondents	Percentage
<b>Household Size</b>	1-2	13	8.67%
	3-4	43	28.66%
	5-6	48	32.00%
	7-8	32	21.33%
	9-10	10	6.67%
	10+	4	2.67%
<b>Income (In Taka)</b>	1000-2000	16	10.67%
	2001-4000	32	21.33%
	4001-6000	43	28.67%
	6001-8000	29	19.33%
	8000+	30	20.00%
<b>Gender</b>	Male	85	56.67%
	Female	65	43.33%

**Table 2:** General Water Distribution Profile of the Study Area

Name of the Slums	Agargoan BNP Bazar	Tejgoan Railway	'Ta' Block, Mirpur,
Number of places to collect water	X	10-12 reserve tank	5
Distance from house	Inside Household	Within 500 meter	Within 50 meter
Number of times water supply	Two times a day	Always Available	Two times a day (but those who got first time will not allow in second time.)
Distribution process	Illegal WASA line in house	Collect from reserve tank based on daily needs.	Supplied through pipe for 10 to 15 minutes in a day.
Number of Pump	1	2	0
Reserve Tank	X	10-12	X
Tube well	8-10	0	4-5
Distribution through pipe	No	No	Yes
Role of NGO	No	No	Yes
Conflict Situation	No	No	Sometimes
Role of Middleman	Yes	Yes	Yes

**Table 3:** Water Pricing Comparison

DWASA Water Pricing (Metered Connection)		Study Area Water Pricing (Per Household)	
Service	1000 Gallon/Liter	Name of the Slums	1000 Gallon/Liter
Community	21.12 Tk.	Arargoan BNP Bazar	30 Tk.
Religious	6.34 Tk.	Tejgoan Railway	80 Tk.
Domestic	6.34 Tk.	'Ta' Block, Mirpur	50 Tk.
Commercial	21.12 Tk.		
Industrial	21.12 Tk.		



**Table 4:** Study Area Water Pricing On Different Purposes (Per Household)

Name of the Slums	Arargoan Bazar	BNP	Tejgoan Railway	'Ta' Block, Mirpur.
Water Supply Line Installation Charge	1500-2000		X	2000-3000
Household Use and Drinking Water (Monthly)	150-200 Tk.		200-250	150-200
Average Water Consumption (Daily)	230-260 gallon/litter		70-90 gallon/litter	130-150 gallon/litter
Household Use and Drinking Water (Daily)	X		10 Tk. For 300 Liter.	X
Toilet (Each Person)	X		2 Tk.	X
Shower (Each Person)	X		3 Tk.	X

**Table 5:** Daily water demand and supply per household of the three slums

Name of the Slum	Drinking (in liter)		Household Use (in liter)		Shower (in liter)		Toilet (in liter)	
	Demand	Supply	Demand	Supply	Demand	Supply	Demand	Supply
Agargoan BNP Bazar	30-35	20-25	450-500	350-400	500-600	300-400	75-100	40-60
Tejgoan Railway	25-30	12-15	350-400	200-250	Paid on contract basis		Paid on contract basis	
'Ta' Block, Mirpur,	25-30	15-20	400-500	200-250	350-450	200-250	50-70	30-50

**Table 6:** Quality of DWASA supply water (% of households)

Name of the Slum	Agargoan BNP Bazar		Tejgoan Railway		'Ta' Block, Mirpur		Total	
	Respondents	Percentage (%)	Respondents	Percentage (%)	Respondents	Percentage (%)	Respondents	Percentage (%)
Very Good	1	2%	2	4%	1	2%	4	2.67%
Good	4	8%	5	10%	2	4%	11	7.33%
Moderate	21	42%	23	46%	29	58%	73	48.67%
Bad	19	38%	18	36%	15	30%	52	34.67%
Very Bad	5	10%	2	4%	3	6%	10	6.66%
Total	50	100%	50	100%	50	100%	150	100%

**Table 7:** Households affected by water related diseases in percentages (%)

Name of the Slum	Agargoan BNP Bazar		Tejgoan Railway		'Ta' Block, Mirpur		Total	
	Respondents	Percentage (%)	Respondents	Percentage (%)	Respondents	Percentage (%)	Respondents	Percentage (%)
Diarrhea	21	67.70 %	24	54.54 %	29	72.50 %	74	64.35 %
Typhoid	2	6.45 %	3	6.82 %	2	5.00 %	7	6.09 %
Fever	6	19.40 %	7	15.91 %	5	12.50 %	18	15.65 %
Others	2	6.45 %	10	22.73 %	4	10.00 %	16	13.91 %
Total	31	100%	44	100%	40	100%	115	100%

**Table 8:** Causes of poor water supply according to demand (households in %).

Name of the Slum	Agargoan BNP Bazar		Tejgoan Railway		'Ta' Block, Mirpur		Total	
	Respon de nts	Perce ntage (%)	Respon de nts	Perce ntage (%)	Respon de nts	Perce ntage (%)	Respon de nts	Perce ntage (%)
Manpower shortage	2	4%	1	2%	1	2%	4	2.67 %
Mismanagement	10	18%	14	12%	15	30%	39	26.00 %
Corruption	37	76%	34	84%	31	62%	102	68.00 %
Others	1	2%	1	2%	3	6%	5	3.33 %
Total	50	100%	50	100%	50	100%	150	100%

**Table 9:** Respondents satisfaction level regarding the role of the government

Name of the Slum	Agargoan BNP Bazar		Tejgoan Railway		'Ta' Block, Mirpur		Total	
	Respon de nts	Perce ntage (%)	Respon de nts	Perce ntage (%)	Respon de nts	Perce ntage (%)	Respon de nts	Perce ntage (%)
Satisfy	0	0%	0	0%	3	6%	3	2.00 %
Not Satisfy	46	92%	50	100%	38	76%	134	89.33 %
Partially Satisfy	4	8%	0	0%	8	16%	12	8.00 %
Very Satisfy	0	0	0	0%	1	2%	1	0.67 %
Total	50	100%	50	100%	50	100%	150	100%

**Table 10:** Respondents response to solve water related problems

Name of the Slum	Agargoan BNP Bazar		Tejgoan Railway		'Ta' Block, Mirpur		Total	
	Respon dents	Perce ntage (%)	Resp onde nts	Perce ntage (%)	Resp onde nts	Perce ntage (%)	Resp onde nts	Perce ntage (%)
Government	17	34%	14	28%	21	42%	52	34.67 %
NGOs	5	10%	2	4%	4	8%	11	7.33 %
Political	13	26%	10	20%	7	14%	30	20.00 %
Combined	15	30%	24	48%	18	36%	57	38.00 %
Total	50	100%	50	100%	50	100%	150	100%