

Fragmented Urban Basic Utilities Governance: Experience from Dhaka City, Bangladesh

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Abstract: Improved urban basic utilities i.e. water supply and sewerage, electricity, drainage, roads network; are the prerequisites for sustainable city living and business functions. Effective, efficient and responsive governance of these ultimately shapes the quality of an urban government. Dhaka's urban basic utilities governance has been tumbling behind the required standard for the last three decades. Consequently it resulted with high degree of inconvenience to urban living and loss of city economy's potentials. Frequent malfunctioning, supply shortage, belowaverage quality, incoherent service area jurisdiction etc. are the major features of these services. These are governed in fragmented manner and there is a general understanding within the concerned sphere that it has attributed with such inconveniences. As a potential remedy, adoption of a general purpose metropolitan government with prerogatives to plan, develop, manage services has been in discussion for quite a period within the related political, academic and administrative domain. This research examined two selected utilities to explore how the present fragmented governance is serving the end-users', how the present status surfaced and what are the prospects of a general purpose metropolitan government to replace the current mode as a better alternative.

JEL Classifications: H12, H71, H72, P36

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1. Introduction

The indispensability of urban basic utilities for spatial, economic and societal growth has been reiterated time and again - specially, in the course of world history after World War II (Moinuddin, 2010; ADB, 2007; Goodman, 2006; Rahman, 2005; World Bank, 2003; Dillinger, 1994; World Bank, 1993). Precisely, the efforts for economic progress resulted with built space expansion and improved peoples living conditions that - in a cyclical order - have proliferated the "demand for urban basic utilities for further growth" (Chong, 2003; p.19). This increased demand compelled city authorities or governments to amplify resources allocation for delivering urbanites with effective and responsive utilities and services that determines governance quality and efficiency (ADB, 2007; Goodman, 2006). As part of a fast growing region in the world, Dhaka has been following this trend too. However, improvement attempts by city's concerned entities have not been producing satisfactory results (Siddique, et al. 2000). As Moinuddin (2012) insisted, in the last one-decade, delivery and management of urban basic utilities have reached to a troubling status. Precisely, the provisions of water supply, sewage network, electricity supply and telecommunication are short in supply and irregular (Moinuddin, 2012, 2006; Rahman, 2005). Three to ten hours long electricity outage associated with intermittent water supply have become integral parts of Dhaka's living (Moinuddin, 2012). City dwellers are coerced in resorting to additional sources to meet

requirements i.e. installing IPS (Independent Power Systems) at households, fetching water from the community taps either on daily or weekly basis; that amplified the living cost substantially (Moinuddin, 2012). Absence of effective, efficient and responsive urban basic utilities governance is the prime obstacle towards improving Dhaka's economic portfolio i.e. inadequate and intermittent power supply is causing the GDP to lose approximately .8% on yearly basis - which amounts to US\$ 116 million (Choudhury, 2007; Islam, 2001). Thus, Dhaka's urban basic utilities governance is in a pressing need of reform.

2. Urban Basic Utilities, Spatiality and Urban Governance: Key Conceptual Underpinnings

Urban basic utilities such as gas, electricity, water, telecommunications, power, roads, fire service etc. provide the much-needed infrastructural base to the functioning of present day socio-economic systems (Graham and Marvin, 1994). Households, organizations and firms plying in the cityscape are essentially dependent on these (Graham and Marvin, 1994). Urban basic utilities are regarded as both technical and social systems as these support the flow of electricity, water supply, information etc. to city dwellers and assist their incorporation into city's socio-economic structures (Preston, 1991; Hughes, 1983). Through spread networks, such services hold together the contemporary city society. Urban systems are today more dependent on intense and entwined network of utilities than before - without which, functioning of a contemporary city would be impossible (Graham and Marvin, 1994; Tarr and Dupuy, 1988; Tarr, 1984). Urban basic utilities not only refer to roads or ducts or wires linking consumers to services but features that considerably underpin the spatial footprint of cities and are the basic elements of place-based capital that builds city economy and creates employment opportunities (G'kalp, 1992). This feature crafts the scope to contend that urban basic utilities are embedded with an element of space-specificity (Cox and Mair, 1988). Conceptually, such characteristic compels these to be deeply reliant on the economic and political status of the concerned localities – thereby attributing with a spatial character. Such an all-encompassing role refers to their relevancy and significance to urban living, economic development as well as to the proliferation of social relations in city sphere (Graham and Marvin, 1994).

Regarding to the relationship between urban governance, urban utilities and spatiality, on a broader perspective, Yates (1977) argued that urban governance is about delivering services to the urbanites that are daily, direct and locality specific. The widely visible nature of utilities entail citizens to decide on the success level of the governance arrangement i.e. delivery and management (Yates, 1977). Smith (2002) contended that urban utilities governance is about reflecting on the values, attitude and behavior pattern of the users and the service providers. And effectiveness of it requires reliance on building a mutually supportive relationship between servers and the served. Yates (1977) argued that it is normally the servers' delivery pattern, organizational structure, management practice that builds this relationship and from that perspective, urban governance is about managing city fabric by responding to the service requirements of the citizenry. Logan and Molotch (1987) explained this relationship as "growth statesmen" (p.74), which is keen to be engaged in the process of development of host cities or localities. Such an involvement becomes more apparent when urban governance arrangement assumes complete ownership and ensures a wider operational jurisdiction of basic services which in turn facilitates with the strengthening of its financial base and eventually, reduces national dependence for financing the construction, management - thus successfully uniting the same to the local socio-political process altogether (Graham and Marvin, 1994). Hence the relationship can be interpreted as following -

“Governance arrangement determines the functioning of urban basic utilities as well as the degree to which these can overcome the vulnerabilities inflicted by their

dependencies on economic and political conditions of single localities” (Cox, 1993; p.11).

These conceptual connotations on relationship between urban basic utilities, spatiality and urban governance indicate that a precise treatment of utilities governance by the urban political economy is essential (Moinuddin, 2012; Graham and Marvin, 1994).

In this connection, it is worth of introducing two broad approaches of urban basic utilities governance. These are metropolitan governance/governance without a government/fragmented governance and metropolitan government (Ross Stephens and Winkstrom, 2001; Vogel, 1997). Former’s basis rests with public choice theory. Scholars have explained fragmented governance as per respective research or academic focus. However, Barlow’s (1991 – also cited by Vogel, 1997; p. 189) explanation appears to be more appropriate to current paper which is as following –

“Metropolitan governance involves the governing of a metropolitan area without formal metropolitan government. Instead, reliance is placed on special-purpose bodies, the joint efforts of the local government and arrangements between levels government. There is a considerable fragmentation - both functional and territorial- and it is only by means of an array of institutional arrangements among the various agencies and governments that coordination is achieved.”

In this approach, production and delivery of urban basic utilities have been left to multiple sectors namely national government, autonomous and local government units (Mugabi, et al. 2007). The rationale rests with the perception that it is conducive for promoting competition amongst service providers thus enabling the dwellers to choose from a range of options based on their preference (Silvermann, 1992). Nonetheless, fragmented governance was perceived to be the way forward to ensure macroeconomic stability, attract investment, improve the quality of living and effective in ensuring the principles of good governance i.e. accountability, transparency, participation, efficiency (Prud’homme, 2004; Haines, 1992; Silvermann, 1992). Reliance on fragmented governance of urban basic utilities started in the early 1980’s (Prud’homme, 2004).

As for metropolitan government, proponents defined it quite extensively i.e. Rusk, 2003; Singh, et al. 1996; Barlow, 1991; Walsh, 1969 etc. Roberts and Sykes’s (2000) definition substantially reflects the capacities of the arrangement in curing the ills of fragmented mode of urban utilities governance -

“Metropolitan government is a comprehensive and integrated vision and action which leads to the resolution of urban problems and seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that are interdependent” (p. 27).

The very perception arose when local government units - collectively or individually - were unable to cope with area wide metropolitan condition relating to urban services/utilities delivery namely difficulties in policy coordination within local government units concerning public-works infrastructure development, unpatterned-inequality arising out of different locational tax profile and fragmented policy accountability fostered by multiple organization involvement in the early twentieth century (Lightbody, 1995; Barlow, 1991). In principle, metropolitan government mechanism thrives on local government’s comprehensive authority over the urban basic utilities affairs within the official metropolitan boundary. Campbell (1992; p.19) argued that such comprehensive authority enables a general purpose metropolitan government “to act in multiple capacities - providing local public services, realizing and distributing adequate resources for urban services development and maintenance, clearing the market of local public goods in response to

local expressions of demand, operates as an administrative agent of higher levels of government, embracing greater community representation in service governance domain so that their aspirations regarding service requirements are well represented.”

Thus, basing on these conjectural nuances, it can be asserted that the process of urban governance is largely aimed at the operation, management affairs of urban basic utilities and ultimately, outlines the characteristics of the concerned urban footprint or cities.

3. Methodology

The research resorted to multi-strategy approach involving examination of the selected utility providers’ organizational performance, analysis of end-users opinion concerning service usage. It is a combination of quantitative and qualitative analysis built on the premise that the outputs of the endeavor balances inherent limitations of the individual data analysis approach and strengthens the research result (Brewer, 2006; Arksey, 1999). In pursuit, the current research examined water supply and electricity. This choice has been made on the consideration that present city governance impasse in Dhaka emerged largely due to ailing delivery and management of these services (Moinuddin, 2010). Over the last one decade - in Dhaka city - public distresses have been made more visible and inevitable by the functioning mode of water supply, electricity, urban roads, surface drains, sewerage and fixed line telephone. However, prior evidence suggests that the amount of sufferings brought on by irregular water and electricity supply is the highest - considering their inevitability both at home and workplace (Moinuddin, 2012). Dhaka’s water supply is dependent on electricity. Precisely, 87% of city’s total supplied water is extracted from underground through electrically operated extraction pumps (Aminur, 2009). Thus, electricity failure at any time stalls the functioning of water supply (Aminur, 2009).

In order to extract end-users opinion on these two utilities, three neighbourhoods were selected to conduct questionnaire interview. The status of electricity supply was the selection criterion. The reason being that neighbourhoods or districts of Dhaka are distinguishable based on the quantity and quality of electricity supply. Additionally, Muhammad (2010) in his empirical study has found a relationship between the average income of the respective residents from all the ninety wards/neighbourhoods of Dhaka city and electricity outage scenario. According to his findings, areas experiencing 1 to 3 hours of electricity outage are largely inhabited by residents with an average income of US\$ ≥ 460 . 3 to 6 hours of daily electricity outage are experienced by dwellers with an average income ranging between US\$200 and US\$460 and residents living in areas or wards where the electricity outage is more than 6 hours, have an average income ranging between US\$75 and US\$200. The research selected three neighbourhoods from the above three categories. Precisely, from each of such category, one neighbourhood was selected randomly. Afterwards, questionnaire survey was conducted on the randomly selected respondents from these neighborhoods using a five-point likert scale. It is used to record respondents’ responses pertaining to satisfaction level and the determinant factors, types of service problems encountered. The scale had its lowest value set at 1 indicating highly negative attitude whereas 5 had been set as the highest value indicating highly positive attitude. The value of 3 has been set as neutral.

Table 1. Points used in likert scale for recording users’ response

Scale value	1	2	3	4	5
Response type	Highly negative	Negative	Neutral	Positive	Highly positive

The choice of an odd numbered scale has been made on two motives. Firstly, empirical study by Dormody and Clason (1993) found that scales with odd number of choices may produce slightly higher mean scores relative to the highest possible attainable score, compared to those produced from even numbered scales i.e. 4 or 6 or 10 point scale; and this difference tend to be statistically significant. Secondly, a 5-point scale is more preferable by the researchers as respondents might actually feel neutral about a given issue - and offering them a scale without a neutral mid-value could introduce favoritism as respondents are compelled to select a more optimistic or pessimistic response.

Basing on the findings of questionnaire interview, the key institutional capacity of the utility providers has been examined in order to gain an insight on to the mechanism of services governance. Specifically, the examination has been conducted with the notion that it would reveal the causes for the surfacing of present derelict status of the utilities, strengths and weaknesses of the governance domains.

4. Analysis of Respondents' Opinion

Questionnaire interview results pertaining to respondents opinion on the two selected utilities are as following -

4.1 Water Supply

Dhaka Water And Sewerage Authority (DWASA) is the solitary provider of potable water to the interviewed respondents. DWASA is an autonomous body under the ministry of works.

Collectively, respondents satisfaction level with the water supply is negative i.e. mean is 2.67; which is below the neutral point of 3 on the likert scale (table 2). Individually, it surfaced to be 2.79 in Banani-Gulshan, 2.69 in Mohammadpur and 2.56 in Mirpur respectively.

Table 2. Means and ANOVA results of residents overall satisfaction with water supply

Sl. No.	Neighborhood	N	Mean	Std. Deviation	F -score
	Three districts in aggregate	462	2.67	.625	5.869*
1	Banani-Gulshan	149	2.79	.523	
2	Mohammadpur	124	2.69	.510	
3	Mirpur	189	2.56	.494	

* indicates significant difference is at the 0.05 level.

Multiple regression models (table 3 on the next page) revealed that all four independent variables along with income and length of residency from control variable category have decisively contributed in respondents' dissatisfaction (i.e. general as well as Mohammadpur and Mirpur's models). In Banani-Gulshan neighbourhood, water quality, maintenance frequency and respondents' length of residency have emerged as the conclusive variables.

The results in table 3 suggest that in general, service provisioning is likely to be unequal (i.e. specially in Mohammadpur and Mirpur neighbourhoods) as coefficients for income are negative and statistically significant. Additionally, it infers that such dissatisfaction has been in place for quite a period of time since the coefficients for length of residency for all four models are negative and statistically significant. The respondents are likely to be receiving inadequate and polluted water at their end (i.e. coefficients of adequacy, quality, service disruption frequency and maintenance frequency; are negative and statistically significant) - specially, in Mohammadpur and

Mirpur. They are also likely to be encountering supply disruption and infrequent service maintenance as results of service disruption frequency and maintenance frequency suggest that.

Table 3. Regression models of respondents’ state of satisfaction with water supply

Variables		General Model		Model 1		Model 2		Model 3	
		Three neighbourhoods		Banani-Gulshan		Mohammadpur		Mirpur	
		β	SE	β	SE	β	SE	β	SE
	(Constant)	-.612	.490	2.549	1.303	1.286	1.442	1.698	.428
Control	Income	-.070*	.030	.108	.082	-.110*	.047	-.201*	.038
	Literacy	.082	.061	.075	.063	.161	.128	.022	.047
	Length of residency	-.189*	.057	-.106*	.059	-.207*	.096	-.218*	.102
	Adequacy	-.110*	.053	.103	.088	-.321*	.118	-.263*	.063
Independent	Quality	-.215*	.062	-.205*	.059	-.203*	.074	-.230*	.058
	Service disruption frequency	-.140*	.056	.099	.094	-.306*	.104	-.208*	.045
	Maintenance frequency	-.309*	.068	-.291*	.071	-.357*	.130	-.380*	.068
	F statistic	22.863*		8.614*		10.706*		12.533*	
	Adj.R ²	0.330		0.281		0.311		0.357	
	N	462		149		124		189	

* p≤.05, (two-tailed tests)

4.2 Electricity Supply

Two public limited companies namely Dhaka Electric Supply Company (DESCO) and Dhaka Power Distribution Company (DPDC) are responsible for distributing electricity across Dhaka city. Of the three selected districts, Mohammadpur has been found to be under the service jurisdiction of DPDC. Banani-Gulshan and Mirpur areas are being served by DESCO. Mentionably, both the companies are government controlled - precisely under the ministry of power.

Respondents’ satisfaction level is highly negative with the electricity i.e. mean is 1.56 (table-4). Mean of individual neighbourhood’s satisfaction level also belongs to this category: 1.48 in Banani-Gulshan and 1.54 and 1.62 in Mohammadpur and Mirpur respectively (table-4).

Collectively as well as in Mohammadpur and Mirpur, respondents’ absolute dissatisfaction has been attributed by all three independent variables (intermittent supply, voltage fluctuation and maintenance frequency) along with income from control variable category (table-5). In Banani-Gulshan neighbourhood, respondents’ sheer dissatisfaction is intensely related to intermittent supply and service maintenance frequency in addition to income.

Table 4. Means and ANOVA results of residents overall satisfaction with power supply

Sl. No.	Neighbourhood	N	Mean	Std. Deviation	F - score
	Three districts in aggregate	462	1.56	.611	7.932*
1	Banani-Gulshan	149	1.48	.588	
2	Mohammadpur	124	1.54	.604	
3	Mirpur	189	1.62	.619	

* indicates significant difference is at the 0.05 level.

Table 5. Regression models of respondents' state of satisfaction with electricity supply

Variables		General Model		Model 1		Model 2		Model 3	
		Three neighbourhoods		Banani-Gulshan		Mohammadpur		Mirpur	
		β	SE	β	SE	β	SE	β	SE
	(Constant)	.240	.320	.359	.781	.824*	.528	1.126*	.468
Control	Income	-.227*	.062	-.140*	.069	-.282*	.106	-.289*	.131
	Literacy	.106	.112	.196	.108	.212	.133	.189	.146
	Length of residency	.008	.020	.075	.083	.057	.035	-.028	.029
Independent	Intermittent supply	-.306*	.058	-.293*	.070	-.311*	.046	-.338*	.040
	Voltage fluctuation	-.109*	.044	.060	.052	-.161*	.053	-.203*	.055
	Maintenance frequency	-.196*	.042	-.136*	.065	-.207*	.049	-.245*	.048
F statistic		17.511*		9.895*		12.428*		13.241*	
Adj.R ²		0.292		0.243		0.290		0.328	
N		462		149		124		189	

* $p \leq .05$ (two-tailed tests)

Results reveal that highly negative satisfaction is stretched across the three examined neighbourhoods - similar to water supply (table-5). Coefficients for income surfaced as negative and statistically significant in all the models. Mentionably, selection of neighbourhoods for questionnaire interview has been made on the varying extent of daily intermittent supply situation across the city. Collectively, these suggests that provisioning of electricity is scarce and likely to be unequal across the three examined neighbourhoods. Moreover, electricity infrastructures in the three neighbourhoods are likely to be less regularly maintained i.e. coefficients for maintenance frequency are negative and significant (table-5). In this regard it is worth of citing here that Aminur (2009) in his empirical study on Dhaka's electricity distribution reported that infrequent or irregular maintenance of service infrastructures is one of the contributors to electricity scarcity. By aligning with this assertion, it can further be suggested that irregular maintenance is likely to be one of the contributors of supply shortage in the examined neighbourhoods. Voltage fluctuation coefficient surfaced as negative and statistically significant in Mohammadpur and Mirpur – suggesting that the interviewed residents there are likely to be grappled with this problem. This likely scenario, to some extent, complements DESCO's (2010) own assessment - voltage fluctuation prevails in areas with higher occurrence of load shedding.

5. Reasons for Unimpressive Status

The key contributors that prompted respondents to develop such negative or highly negative satisfaction stands as following -

5.1 Continuous Gap between Services Demand and Supply

Water demand of city dwellers is 23.70 million liters per day (mld) though DWASA can produce 21.80 mld (DWASA, 2012). The service area population, water demand, actual water supply and deficit are presented in table 6. It shows that though the deficit is gradually coming down since its highest in 1990, still it is in place. Erroneous projections of much needed

development initiatives i.e. water extraction, purification, distribution; are the reasons for sustaining deficits.

Table 6. Population growth, water demand, supply and deficit scenario in Dhaka city

Year	Population (millions)	Water demand (MLD)	Water supply (MLD)	Deficit (In %)
1963	0.85	150	130	13
1970	1.46	260	180	30
1980	3.03	550	300	45
1990	5.56	1000	510	49
2000	9.50	1550	1130	27
2010	15.60	2050	1860	19
2011	15.60	2300	2080	22
2012	15.60	2370	2180	19

Source: DWASA, 2012.

DPDC, DESCO have been failing to meet city dwellers electricity requirement from their very inception. The demand and supply scenario between 2001 and 2012 reveals a constant supply deficit (table 7). The causative factor has been the inability of these two companies to expand at a pace compatible to city's population and area growth (DPDC, DESCO 2010). Additionally, government's lacks of vision, inability to increase power production etc. have hindered the required growth rate (Moinuddin, 2012; NEXANT, 2009).

Table 7. Demand-Supply scenario of DPDC, DESCO between 2001 and 2012

Year	DPDC			DESCO		
	Demand (Mega watt)	Supply (Mega watt)	Deficit (Mega watt)	Demand (Mega watt)	Supply (Mega watt)	Deficit (Mega watt)
2001	407	385	22	98	73	25
2002	452	385	67	118	87	31
2003	502	415	87	144	100	44
2004	557	415	142	301	245	56
2005	618	415	203	377	245	132
2006	686	415	271	398	245	153
2007	762	500	262	451	262	189
2008	847	500	347	505	290	215
2009	977	545	432	545	290	295
2010	1138	615	523	618	355	263
2011	1210	844	366	688	405	283
2012	1226	910	316	715	470	245

Source: Compiled from DPDC and DESCO's annual report between 2009 and 2012.

5.2 Service Hardware Development and Maintenance Policies

The unsatisfactory performance of these two utilities is considerably attributed - alongside other factors - by policy decisions concerning service hardware or infrastructures. DWASA's supply deficiency is sustained due to its inability to secure much needed financial support for the construction of more surface water treatment plants as well as replacement of phased out water pumps (DWASA, 2012; Haq, 2006; Andrews & Yniguez, 2003). Additionally, DWASA - as per its approved specification - uses cast iron pipes for supplying water to the consumers. However, such pipes are highly vulnerable to scaling, rusting and leakage that gradually decrease the carrying

capacity through corrosion inside the network - leading to scarce supply at users end (Shahjahan, 2002). Lack of effective monitoring and supervision is regularly inducing system loss i.e. non-revenue connection; thus amplifying the scarcity. According to DWASA's annual report of 2011, the amount of system loss was 30% of the then supply capacity. In absolute terms, it was 6,240,000 liters per day. Comparing the actual amount of supply against the demand, DWASA's actual daily supply capacity was 14,560,000 liters in 2011. In other words, it could discharge 63% of daily demand. Over to that, rampant power cut on daily basis - which can be up to 10 hour long depending upon the locality - is also inducing supply interruption and scarcity (IWM, 2007). Thus, as an obvious consequence, the dwellers across the city are served with intermittent water supply.

Regarding scarce electricity, at the inception, it was suggested by the overseas donor agencies appointed advisors that it surfaced due to management failures i.e. lack of training, bigger organizational arrangement, lack of manpower etc (Moinuddin, 2012; Aminur, 2009). Establishment of more electricity plants was not perceived as part of the solution. Such improvement effort went on till the middle part of 1990's without producing any significant improvement (Moinuddin, 2012; Aminur, 2009). Fact remains that Dhaka's power demand and consumption pattern has been significantly higher from other cities of the country - it consumes 47% of country's total generated electricity due to its primacy status (NEXANT, 2009). However, out of 21 power stations meant for the city, only 11 are active - rest are dysfunctional either on maintenance ground or shortage of gas supply (Moinuddin, 2012). DESCO and DPDC have been established as electricity distribution companies - as part of the organizational reform prescribed by World Bank and Asian Development Bank (ADB) (Aminur, 2009). Under this pursuit, neither of the two has been authorized to install electricity producing plants that in return proved to be counterproductive and raised questions on the utility of such reform initiative (Aminur, 2009).

Thus, adoption and implementation of such erroneous service hardware policies for decades has driven the city into a scenario where present supply capacities of potable water and electricity struggles to match the demands.

5.3 Contamination

Supply mains have appeared as a major source of contamination for potable water (Haq, 2006). DWASA's supply mains are much prone to chemical contamination (Shahjahan, 2002). Support to this note also surfaced in a 2007 report by Institute of Water Modeling (IWM). It pointed out that standard of the delivered water fluctuates between various services zones of DWASA. According to the report, at the source, the physical, chemical properties of DWASA's extractable water - in general - are within the safety limits. However, at the consumers end, some of these properties have been found outside the acceptable ranges. IWM (2007) concluded - based on its citywide water test results from 1524 consumer discharge points - that it is in the water distribution network where such contamination is occurring. Specifically, it highlighted that Dhaka's water distribution network completely relies on cast iron pipes, which are very much prone to corrosion and causes chemical and physical contamination of water inside. Table 8 shows the test results of chemical and physical property analysis of the water production facilities as well as discharge points at the consumers' end from distribution zone three and five of DWASA. And two of three examined districts - Mohammadpur and Mirpur - are in zone three, and Banani-Gulshan is a catchment of zone five.

The results indicate that corrosion has taken place inside the distribution networks as the pH values have been found to be lower than the WHO prescribed standard or acidic at the consumer

¹ Refers to households, shop fronts/eateries, offices, clinics, schools, government establishments and industries.

points in three examined neighbourhoods (IWM, 2007). According to Duggal (1977), pH value below the neutral limit of 6 indicates the presence of corrosion inside pipe network.

Table 8. Chemical and physical property analysis result of water from selected DWASA extraction/generation and discharge points

Item	Unit	WHO* standard	Value measured at the generation point		Average value measured at consumers' discharge point	
			Zone 3	Zone 5	Zone 3	Zone 5
pH	-	6.00	6.00	6.02	3.80	4.88
Conductivity	µS/cm	-	362.00	241.00	402.00	266.00
PO ₄ -P	mg/l	6.00	<0.1000	0.60	0.107	0.76
Hg	mg/l	0.0005	<0.0004	<0.0004	<0.0004	<0.0004
Cd	mg/l	0.0050	0.0007	0.0008	0.0007	0.0011
As	mg/l	0.01	<0.01	<0.01	<0.01	<0.01
Pb	mg/l	0.050	0.003	0.003	0.007	0.0045
Cr	mg/l	0.0500	0.0017	0.0080	0.0033	0.0088
Mn	mg/l	0.10	0.083	0.06	0.33	0.26
Mg	mg/l	30-50	11.0	18.0	69.9	58.0
Ni	mg/l	0.10	0.01	0.01	0.07	0.06
Zn	mg/l	5.00	0.051	0.017	0.115	0.271
Cu	mg/l	1.00	0.004	0.007	0.010	0.022
Fe	mg/l	0.3-1.0	0.509	0.818	2.802	1.905
Al	mg/l	0.20	0.012	0.007	0.012	0.007
NH ₄ -N	mg/l	0.50	<0.0100	<0.0100	<0.0100	<0.0100
F	mg/l	1.00	0.20	0.33	2.82	2.10
K	mg/l	12	1.80	2.10	1.88	1.10
Cl	mg/l	250-600	35.0	19.0	105.0	82.5
Ca	mg/l	75	26.9	24.5	166.2	86.9
Na	mg/l	150-200	25.2	44.1	277.2	219.4
SO ₄	mg/l	300	22.0	39.0	22.0	39.0

* Water supply authorities across Bangladesh have long established the trend of relying on World Health Organization's (WHO) guidelines on deciding acceptable limit of physical, chemical and biological properties of potable water. Source: IWM (2007)

IWM (2007) explained that inner surface of cast iron pipes easily falls prey to corrosion as raw Ferrous (Fe) ores in it generates electro-chemical reaction with Manganese (Mn), Magnesium (Mg), Calcium (Ca), Sodium (Na); present in the water thus forming various compounds of oxides, sulphites, phosphites that remains dissolved within the supply in surfeit amount than the threshold limit (IWM, 2007).

Due to such contaminations, the incidence of water borne diseases associated to skin complications, hepatitis, etc. are on rise amongst city dwellers (IWM, 2007). The policy decision to use cast iron pipes in the distribution network was based on the premise of cost-effectiveness – not on public health (Haq, 2006). In a 2009 legal suit, the Dhaka High Court ordered DWASA to replace its derelict cast iron mains with PVC (Poly Vinyl Chloride) pipes with immediate effect (Moinuddin, 2012).

5.4 Lack of Cooperation and Coordination between the Operators

As argued by Sager (2004), Leland and Johnson (2004) Garmendia, et al. (2004), Ingraham, et al. (2003), improved service governance requires coordination and cooperation amongst the service providers. However, this much needed coordination and cooperation between service providers in

Dhaka city is non-existent (Moinuddin, 2009). This is particularly felt when service governance of water supply (DWASA), electricity (DESCO and DPDC) is taken into account. Functioning features of these are administered by the respective ministries and organizational ordinances (Moinuddin, 2012). The laid out operational directives in the respective ordinances are not conducive for the service providers to develop much-needed coordinated working arrangement between to deliver better services to the city dwellers (Moinuddin, 2006). Figure 1 below displays the existing top-down working norm – the guiding principle for resource, information, expertise and policy allocation from ministerial to operators’ level – of the two examined service providers.

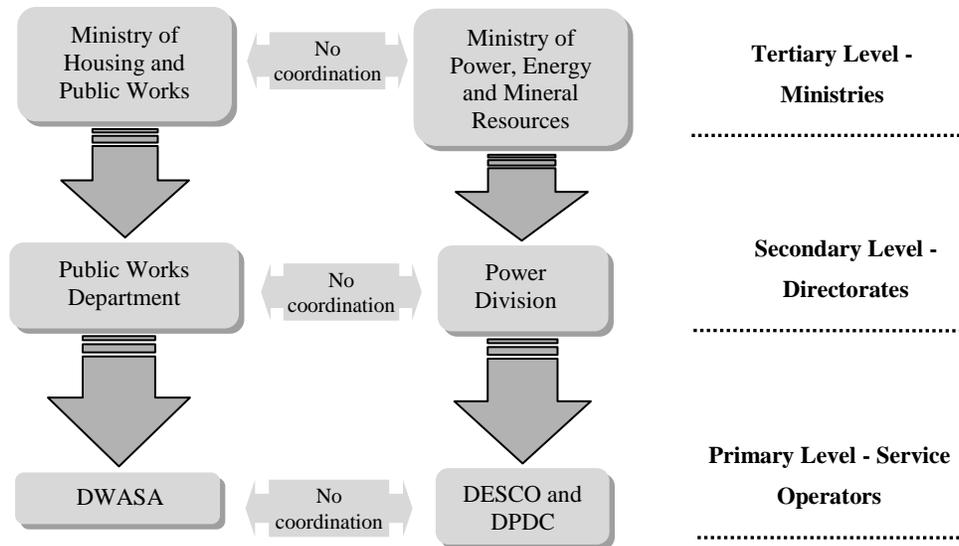


Figure 1. Top-down chain of command of the examined services

It is evident from the figure that there exists no horizontal coordination at any level of decision making/implementing. For instance, full capacity realization of water supply hardware installations is dependent on uninterrupted power supply. However, the common practice for DWASA has been to device plans, install service hardware, i.e. pumping machines; without considering the status of city’s power supply situation (Moinuddin, 2012). Reliance on this approach – in the last couple of years - has literally made all of its production augmentation drives ineffectual (Moinuddin, 2010). Between January and June 2010, DWASA installed 39 pumps raising the total number to 656 for augmenting the extraction of ground water (DWASA, 2010). However, due to acute power shortage and voltage fluctuation, around 250+ of the total installed pumps constantly remain dysfunctional (DWASA, 2010). Undoubtedly, DWASA ought to have considered power supply situation into its production enhancement plans beforehand. Precisely it should have had its development plans chalked in coordination with DESCO and DPDC.

5.5 Incoherent Service Area

It refers to the areal jurisdiction of the service provider as a planning unit in terms of social, economic and development integrity (Smith, 2002). The coherence of the planning area can be measured by the context to which decisions regarding future development of the service provisions are internalized within the structure plan area (Smith, 2002). The more self-contained the plan area, the more coherent, and therefore competent, it will be making effective choices about how the area is to be developed (Smith, 2002). However, in context of Dhaka, areal boundary mismatch between DESCO, DPDC, DWASA has attributed the respective service environment with a muddled façade – thus, effectively prohibiting coordinated and synchronized planning, development and governance

of electricity and water supply (Siddique, 2005). Additionally, such incompatible areal boundary enthused the growth of free-ridership of services, which furthered system loss (Moinuddin, 2006). Again, it is the respective organizational ordinances that are to be impugned - there exists no specific guideline/s for synchronizing spatial boundary between DWASA, DESCO and DPDC (DESCO, 1999; DPDC, 1995; DWASA, 1991).

5.6 Low Public Accountability and Transparency

DWASA, DESCO and DPDC's direct government character has made these accountable to the respective line ministries, directorates - but not to the community (Moinuddin, 2006). As per the approved operational guidelines in the respective organizational ordinance, there exists no provision of incorporating consumers or consumer groups in the service decision-making process (DESCO, 1999; DPDC, 1995; DWASA, 1991). Additionally, the decision-making environment is directly controlled by the line ministries (Moinuddin, 2012). Referring to this particular character of DWASA, DESCO, DPDC; Muhammad (2008), Choudhury (2007) argued that pro-people or customer orientation is absent within the governance domain of these service providers. Complete accountability to line ministry has surfaced as an encouragement for these organizations to carry on with the existing less responsive and less effective provisioning and governance (Siddique, 2005).

On the question of transparency, DWASA, DESCO and DPDC along with the respective line directorates and ministries have initiated to open up concerned accounts and audit reports. However, these are free of charges only on the respective websites. In a country with considerably low rate of internet access i.e. one connection for every 6000 people (Raihan, 2009); such a form of information dissemination is convenient to only a handful of populace. Besides, the uploaded reports do not seek public comment or opinion on any issue. The initiative can rather be classified as a form of public reporting (Moinuddin, 2012). For mass spreading of public documents, annual audit reports or seeking public opinion on specific development intension, the service operators are never known to have any appetite (Moinuddin, 2012). This particular form of non-involvement of citizens in the decision-making environment was categorized by Arnstein (1969) as "manipulation" and "therapy" (p.217). According to Arnstein's (1969) explanation, manipulation and therapy implies that the power holders in the governance process are not to encourage citizens to take part in decision-making, but to facilitate the decision-makers to "educate" and "cure" the same (p.217). Such educating and curing efforts allow the decision-makers to assert that all sides have been considered while making plans but in reality it is about maintaining status-quo by the former group (Arnstein, 1969).

6. General-purpose Metropolitan Government: Potential Remedy

The above experiences craft scopes for the current research to align with the proposal of concerned political, academic and administrative experts from Dhaka - adoption of a general purpose metropolitan government with prerogatives to plan, develop, manage service provisions would be a remedy of such impasse. The rationale is couched on the premise that metropolitan government is about augmenting urban economy, livability through achieving efficiency, effectiveness, equity and responsiveness in key urban service/utilities governance by overcoming the problems of respective tribulations i.e. lack of coordination between service providers, unequal service delivery, incoherent service area boundary etc. (Valorie and Andrews, 2009; Bird and Slack, 2007; Tsou, et al. 2005; Feulner, et al. 2005; Leland and Johnson, 2004; Hamilton, et al. 2004; Post, 2002; Stephens and Winkstrom, 2001; Vogel, 1997; Leland and Cannon, 1997; Caraley, 1977; Bish and Ostrom, 1973; Wheatley, 1969; CED, 1966; Bollens, 1965). Campbell (1992) noted that a

metropolitan government could assume functional responsibility for multiple services thereby reducing the aggregate administrative costs in public sector. Sager (2004), Fleischmann (2000) claimed that a metropolitan government is enacted with motives of rendering clear benefits i.e. social justice, sustainability and public accountability. In particular, Feulner (et al. 2005), Hamilton (et al. 2004); Sager (2004), Leland and Johnson (2004), Rusk (2003), Stephens and Winkstrom (2001), DeHoog (1997) pointed out that the benefits accruing out of metropolitan government includes achievement of scale economics in services infrastructure development, greater services tax realization and sharing that accrues through stretching of metropolitan area, greater public accountability, coordinated urban basic utilities planning etc.

Politically - according to Devas (2005), Beall, et al. (2002), Davison (2001) - creating a metropolitan government is about making rooms for stakeholders of different categories in the forums of service decision-making i.e. policy formulation, election of leaders, resources sharing and mobilization, implementation, monitoring and evaluation of decided programs. They insisted that such a structure provides opportunities for the urban community to exert influence in different ways - appropriate to the scale of the issue and the avenues available.

From functional point of view, Mugabi, et al. (2007), Siddique (2005), Sharpe (1995), Norton (1994), Paddison (1983) and Leemans (1970) claimed that metropolitan government possesses certain clear advantages concerning urban basic utilities governance that suits the profile of developing economies. Firstly, it creates a platform for a common focus, leading to a clear understanding of the delivery and management vision, mission and objectives. Secondly, the planning process itself helps to bring out structural deficiencies within, which triggers enabling legislation. Thirdly, through enhancing accountability and transparency, it creates confidence among internal and external stakeholders. Fourthly, devises effective tools to achieve significant process improvements and changes that are conducive for inculcating higher levels of performance in services delivery and management. And finally, crafts the scope for devising, implementing effective land use plans since the arrangement integrates economic and social metropolitan area through territorial and functional consolidation. The arrangement has emerged to be effective in avoiding some of the key problems of urban basic utilities governance in developing countries induced by fragmented governance namely service responsibility duplication between providers, existence of special purpose agencies imposed by respective organizational higher-ups that are unaccountable to local citizens (Garmendia, et al. 2004; Davison, 2001).

These conceptual and empirical connotations, in the 1990's, moved scholars of urban affairs from different ideological cloth - including those favoring fragmented governance - to the consensus that urban basic utilities specially, "those categorized as system-maintenance or as engineering one such as electricity, telecommunications, master planning, arterial highways, traffic management, public transport, general utilities, recreation areas, refuse disposal, fire and environmental protection etc. should be delivered in an integrated fashion on greater scale because of their operating character and benefits derived out of economics of scale" (Ross Stephens and Winkstrom, 2001; p.49). Moreover, fiscal equivalence, spillover effects, redistributive effects etc. also supported the idea that these urban basic utilities would be better governed under an integrated arrangement (Rusk, 2003; Foster, 1997). The necessity of integrated planning - at least on a project basis - was illustrated dramatically by the experiences in deregulated Britain i.e. London Docklands development, the Channel Tunnel and the Third London airport. In Canada, the government of Ontario launched a new program for metropolitan government formation through consolidation (Rothblatt and Sancton, 1993). The objective in this regard has been to realize economic growth that would lead towards social equity.

Reflecting on its utility in the developing nations, Mugabi, et al. (2007), Cohen (2004), Garmendia, et al. (2004), Prud'homme (2004), Brenneman and Kerf (2002) argued that governance

of urban basic utilities by a general-purpose metropolitan government captures more potentials for improving urban economy and living quality that needs faster growth of urban infrastructures. As a result, its appeal has gained momentum in a number of developing nations (Sanliyap, 2001; Barman, 1999; Steinberg, 1996). Empirical evidence from Namibia (World Bank, 2003), parts of Indonesia (Lanti, 1996) suggests that a metropolitan government is conducive in responding to the challenges and complexities of multi-jurisdictional management since it assumes a superior governance framework over several jurisdictions and increases efficiency in resources utilization, augments effectiveness in generating local resources for financing and managing the development initiatives, possesses better orientation and match of urban basic utilities infrastructure to contextual requirements, better integrates planning of urban utilities development project and accumulates public resources in the form of local institutional strengthening, augments realization of service taxes, enhances living quality, catapults better urban functioning system etc.

7. Conclusion

The discussions quite substantially highlighted that Dhaka city's reliance on fragmented urban basic utilities arrangement has been complimentary to shortage of supply, degraded quality, hardware degradation, poor or no public accountability and transparency etc. On the other hand, metropolitan government arrangement has proved its merit and worth to cure these ills to a considerable extent in different contexts at different times. In operational terms, enactment of metropolitan government arrangement is about strengthening the institutional arrangement of city governance that is largely about providing the citizenry with various urban services. Nonetheless, it can thus be stated that metropolitan government arrangement is about enhancing technical, political and institutional affairs of city governments in the developing world.

However, it is not without shortcomings. With its enactment, local government cost might increase i.e. Baton Rouge – East Baton Rouge Parish, Nashville-Davidson County, metro in Portland, Oregon (Stephens and Winkstrom, 2001), areal boundary of the city becomes rigid which - at times - escalates real estate price i.e. Baton Rouge – East Baton Rouge Parish, Nashville-Davidson County, metro in Portland, Oregon; Clacutta, India; Cukurova, Turkey (Savage and Dasgupta, 2006; Sayinlap, 2001; Eisenhardt, 1989), local government size gets bigger which could induce indolence in development and management tasks i.e. IUIDP across Indonesia (Talukder, 2006). Vogel (1997) criticized the arrangement for its overt interest in infrastructure development rather than urban renewal and social needs of the central cities, ignorance in developing mechanisms for smoothing national government-local government relationship. These empirical evidences suggest that operationally, metropolitan government possesses certain amount of challenges. Thus, it is worth noting here that there exists no governance mechanism that can be considered as everlasting panacea for urban basic utilities/services ills. With the change of time and socio-economic footprint, the governance mode for city ought to embrace changes or modifications to be responsive to respective requirements. Indeed, governance arrangement of cityscapes is an ever-evolving phenomenon.

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