

URBAN GROWTH AND GOVERNANCE OF BASIC SERVICES IN BAHAWALPUR CITY OF PAKISTAN

ASAD ALI KHAN*, SANA ARSHAD*, ADILA SHAFQAT* AND KINZA KHAN**

*Department of Geography, The Islamia University Bahawalpur, Pakistan

**Faculty of Veterinary Sciences, BZU Multan, Pakistan

ABSTRACT

Urban Growth is taking place unprecedentedly in almost all cities of Pakistan creating a pressure on governance mechanism of urban services. Bahawalpur is one of the fastest growing medium sized cities of Pakistan located in southern Punjab. Educational development, improvement in health and sanitation facilities, employment opportunities have attracted the population to migrate from peripheral rural area towards the city. In current research, population growth and urban growth of the city has been assessed temporally since 1947 to present. Urban services of the city are affected to a great extent by this growth in terms of provision and management. Three basic services have been examined from the perspective of governance including water supply, solid wastes and waste water. The past and present conditions of service delivery and governance mechanism have been analyzed using, for the most part, secondary data obtained mainly from concerned departments and offices. The roles of recent government programs operating for the improvement of management system have also been taken into account. The study also identifies the gaps found in the governance of basic services and suggests some measures to improve the mechanism.

KEY WORDS: Bahawalpur, Basic urban services, Geographic Information system, Governance, Urban growth

INTRODUCTION

At present, over half of the world population is residing in urban areas and its proportion has been on the rise year after year (World Population Data Sheet, 2014). Due to accelerated urbanization all over the globe and specifically in developing countries like Pakistan, present era may be termed as the 'Urban era'. The proportion of rural population is consistently decreasing over time for several reasons including the search for employment, sanitation and health facilities, educational opportunities and improved standard of living. The term

urbanization refers to the increase in the proportion of urban population whereas the term urban growth refers to the increase in population of cities on the pace of natural increase, rural to urban migration and reclassification of settlements into towns and cities.

It also refers to the expansion of urban boundaries or city limits in any particular direction. This expansion may take place either in the form of increasing built up densities, redevelopment of already built residential areas and new built up development resulting land use change (Angel et al 2005). According to UNO (2006), urban population of the world in the year 2005 was 3.2 billion, four times larger than it was in 1950 which contributed 49% of all world's population. By the year 2030, it is expected to reach 4.9 billion sharing 60% of world's total population. Rural urban migration and reclassification of rural settlements into urban ones are major factors for this increase of urban population especially in less developed countries like Pakistan.

It is also reported by UN (2006) that in the past, two less developed regions Africa and Asia were least urbanized till 2005. Afterwards, these regions experienced accelerated urbanization and it is expected that by 2030 Asia would rank first with 54% urban population followed by Africa with 51% urban dwellers. Some experts view that urban population of Asia is expected to reach above 60% by the year 2030 with highest growth rate contribution from some countries including Pakistan (Roberts and Kanaley 2006). According to 1998 census only 32.5% population of Pakistan was residing in urban areas which have now risen to 38.8%. In Punjab share of urban population was 31.3% and in Bahawalpur district it was just 27.01% (PCO 1998).

Population growth acceleration of Pakistan took place in the second half of 20th century in the consequence of rapid decline in mortality rate and continuing rise of fertility rate (Wazir 2013, GoP 2011) which affected all parts of the country including Bahawalpur. In 1981, urban population of Pakistan was 24 million people making 28% of the country's total population which increased to 43 million in 1998 making 32.5% of the country's overall population. In 2009, population of Pakistan reached to 162 million with 57 million urban inhabitants making 35% of total population (GoP 2011) which have now risen to 38.8%. According to 1998 census the share of urban population in Punjab was 31.3% and in Bahawalpur district it was just 27.01% (PCO 1998). However, afterwards rapid urbanization has occurred and current situation is completely different from that of in 1998. Nine

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

cities of Pakistan have total population of more than one million, seventy five cities have population ranging from one lac to one million and 285 cities have population ranging from 10,000 to one lac (Agha 2016).

As a consequence of rapid urbanization and urban growth, demands for municipal and other public services, including health and sanitation, residential infrastructure, clean drinking water supply, and recreational facilities have increased several fold. The increased urban population of the city has thus created numerous issues of urban or municipal services and has put a great stress on governance perspective. The biggest challenges are faced by the municipal governments of cities including Bahawalpur due to poor attention and lack of funding by national government. Municipal infrastructure of Pakistan is generally poor and alone cannot fulfill the needs of increasing urban population (Roberts and Kanaley 2006). One of major of these challenges in Bahawalpur is shortage of clean drinking water associated primarily to the depletion of underground water resources. With the passage of time water demands are increasing and surface water bodies are continuously getting polluted.

Another municipal governance issue relates to the management of sewage or waste water as in almost all cities of Pakistan it is collected through open drains and directly discharged into rivers, canals or other water bodies without any treatment. Furthermore, absence of sanitary landfill sites is also causing hazardous impacts of solid wastes not only on environment but also on human health (GoP 2011, SDPC 2016). Sustainable management of municipal services depends upon the national and local governance mechanisms which involves the viable management of city resources by elected authorities (John Harman 2005).

In the past, local government system at district level was not much established in Pakistan. Under the local government ordinance of 2001, a three tier local government structure was established at union, tehsil and district level. At the top of tier there was a single government called district government consisting of district administration and Zila Nazim. The major objective of district government was to address the problems and needs of the big cities (Haider and Badami 2010). In the middle of this tier Tehsil Municipal Administration (TMA) was present for every tehsil of the district that was under the control of Tehsil Municipal Officer (TMO) or Tehsil Nazim. TMA was responsible for the

infrastructure and services provision of the city including waste management, water supply, traffic control, parks and recreation etc. Planning department of TMA was responsible for land use planning of the city e.g. zoning of new construction and development of new housing schemes, development of slums and kachi abbadis (unauthorized settlements) etc. Lastly, union council makes the third tier of this structure. Every union council was under the control of Nazim or Chairman for the development at a very small scale (Anjum 2001). However, presently this three tier system is not fully functional and governance issues are becoming more intricate with increasing urbanization and rapid urban growth over time. It is thus meaningful to evaluate the governance issues of the cities. The study in point is an attempt in this connection and presents an assessment of the governance of basic services in Bahawalpur City which may prove helpful for similar studies in other cities of Pakistan as well.

STUDY AREA AND METHODOLOGY

The study area, Bahawalpur city (figure 1), extending over an area of 237.2 sq. km and having an estimated population of over one million is 12th biggest and one of the fastest growing cities of Pakistan. The city is located on the eastern bank of Sutlej River in climatically hot dry Bahawalpur plain at 71° east longitudes and 29° north latitude. Laying at transitional zone between fertile agricultural land on one side and hot dry Cholistan desert on the other side, it is one of the most significant and ancient cities of southern Punjab. The old-walled city is presently served by 7 gates. Having the status of divisional, district and tehsil headquarter, it is providing many services to its hinterland. The city was initially founded in 1748 (Wright 1922: 145) before the foundation of princely state of Bahawalpur in 1802 by Nawab Muhammad Bahawal Khan-II.

URBAN GROWTH AND GOVERNANCE OF BASIC SERVICES IN BAHAWALPUR CITY OF PAKISTAN

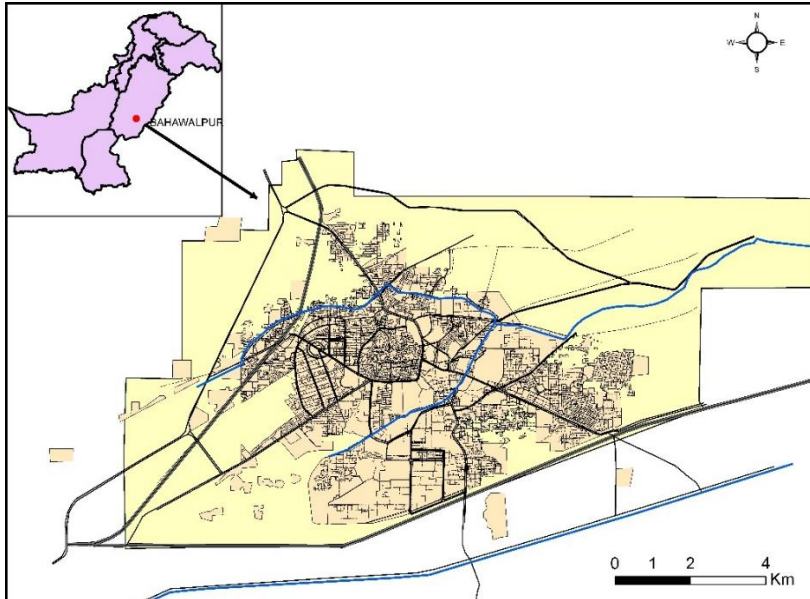


Figure 1: Layout of the study area (Bahawalpur City)

Historically, growth of Bahawalpur City keeps its own unique significance. The older name of Bahawalpur was Bahamnabad and it was a deserted village ruled by Amir Sadiq Muhammad Khan Abbasi. It was irregularly built and confined into the walled city with four main gates and two main roads running from east to west and north to South. With the passage of time, as population of the city grew, cultural and social development also increased and in 1874 Bahawalpur Municipal Board was established for better governance of the public services (GoPb 1974). Bahawalpur municipality constructed the main road network of the city namely 'Circular Road' and worked for the infrastructure development of the city. Hence city became a center in the whole district for providing services like health, education and employment to nearby villages, towns and cities. Now, Tehsil Municipal Administration (TMA) of the city is responsible for the management and governance of urban services headed by a Tehsil Municipal Officer (TMO). The functional distribution of the Bahawalpur TMA is shown in figure 2.

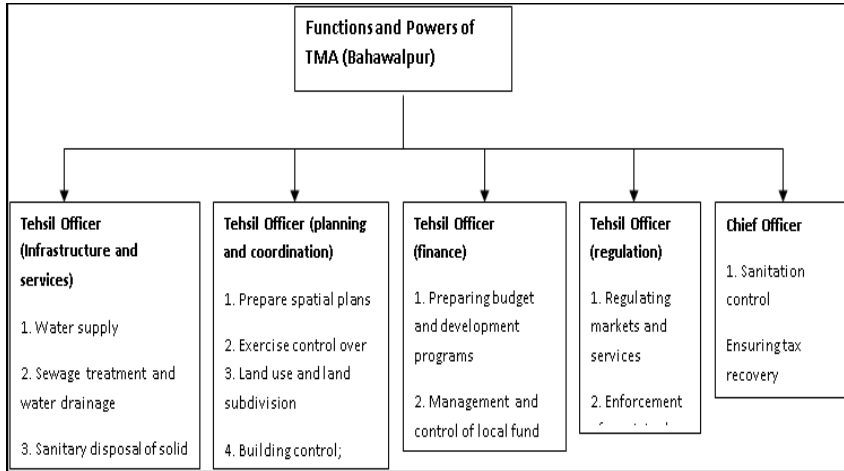


Figure 2: Functions of the main branches of TMA Bahawalpur City

(Arshad et al 2013)

This study focuses on to the governance of basic services in Bahawalpur city. Its objectives are three fold; firstly, to analyze the temporal growth of the city from the perspective of its population and urban area. Secondly, to examine the past and present situations of management of three basic urban services including water supply, solid wastes and waste water management. Thirdly, to examine the role of local government and others working for making Bahawalpur more livable and clean. SWOT (strengths, weaknesses, opportunities and threats) matrix has also been applied for analysis (figure 3). The temporal analysis of urban growth of the city since 1947 has been presented. Data about urban and population growth of the city has been gathered from census reports and Bahawalpur outline development plan. Local government of the city is responsible for the governance and management of range of facilities to its dwellers which includes water supply and sewage management, solid wastes management, green space and recreational management, road network and street lights management etc. Out of these, three basic services are most significant and directly related to the consequences of urban growth.

These include management of water supply system, solid waste management, and waste water management. Secondary data about these services were obtained from TMA of Bahawalpur city, Bahawalpur Solid Wastes Management Company, Engineering Branch of Public Health Department Punjab and Tehsil officer (Infrastructure

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

and services department). As GIS is a collection of computer hardware, software and different analytical procedures for decision making purposes and a strong tool to perform spatial analysis, therefore, secondary data obtained in the form of base maps, facts and figures were arranged accordingly in GIS environment and output maps of urban services are prepared to spatially represent the services distribution and their management.



Figure 3: SWOT Matrix

URBAN GROWTH OF BAHAWALPUR CITY

Urban growth of Bahawalpur city is associated with many demographic and socio economic factors. Natural increase and rural urban migration are the major factors that fostered the population growth of city. Educational facilities, employment opportunities and better living standards have motivated the people to migrate from nearby rural areas to city which is growing rapidly. Major impact of the city growth is on its land use and surrounding arable land. Land of the city is mainly in use of residential, commercial, educational, industrial and public buildings. Periphery area of the city is mainly occupied by agricultural land use. Spatial growth of city has passed through three different stages namely primary, medieval and expanding (Mohsin and Bhalli 2015). The primary stage tells the slow growth of city before 1944. The medieval stage continued from 1944 to 1973 during which medium paced growth of city has occurred. Third stage was initiated after 1973

and still continues during which the city started to expand faster in all directions.

Table 1: Population and area of Bahawalpur City in different years

Years	Population of Bahawalpur city	Inter-censal increase in population	Urban area (in acres)	Increase in urban area
1951	41646	-	590	-
1961	87377	45731	1081	491
1972	135263	47886	4308	3227
1981	180263	45000	5609	1301
1998	481858	301595	7731	2122
2012	560588	78730	11500	3769

Source: (Khan et al 2014).

However, the real story of spatial growth of city starts from the independence of Pakistan when a larger number of Muslims migrated to Bahawalpur. To house the migrated population many new rehabilitation and housing schemes were started and spatial expansion of city progressed along the regional roads. Posh areas like Model Town-A and B became occupied by high income group, Shahdra and Islamic colony became a settlement for low income group and One Unit Staff Colony was developed in 1955 for government officials (Khan et al 2014). Furthermore, a military division was also established in the city which resulted in the development of cantonment area.

Several settlements came in to being around the periphery of city especially on the western and northern side where low income people were mainly settled. Construction of Sutlej bridge in 1969 helped to improve the communication of the city with other parts of country and ultimately city gained momentum in its development and expansion (GoPb 1974). Meanwhile, development of educational and health facilities attracted the people for migration from nearby areas and to opt permanent residence in city. Consequently the area of city expanded from 590 acres in 1950 to 4287 acres in 1974. The next period of fastest population growth and city expansion is recorded from 1975 to 1998. The accelerated growth of city was further geared up after 1975 when the Islamia University and Quid-e-Azam medical college were established. The growth rate of Bahawalpur City from 1981 to 1998 was 5.04 while urban area of the city was increased to 7731 acres (DCR of Bahawalpur 1998).

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

During this period immigration from Afghanistan became a major cause of increase in population of this region. Besides, industrial development in the city also fostered the urban growth of Bahawalpur. This was the time when land use of the city became more fragmented into residential, commercial, industrial, religious, educational, and public places. More pronounced land use developments took place in residential, commercial and educational sectors of the city and residential area increased from 1975 acres in 1972 to 6617 acres in 2012 (Khan and Arshad 2014). Similarly, commercial area expanded from 75 acres in 1972 to 304 acres in 2012. Increasing educational opportunities also became prime factor for rural urban migration and attracted the people from peripheral rural areas. Educational land use expanded from 356 acres in 1972 to 479 acres in 2012 and overall urban area of the city reached to 11500 acres.

Thus increased population and urban area expansion of the city is the witness of urban growth of Bahawalpur city. The data in table 1 presents the population growth and urban area growth of the city from 1951 onwards up to 2012. As city grew in its urban extent, demand for improved public services also increased because more people require more infrastructure to use, better health facilities to survive and proper water and sanitation management. As it is not possible to view all public utilities of the city in detail as a part of this piece of work, therefore a brief of SWOT analysis made by urban unit (2012) for Bahawalpur city has been applied and revised as given in table 2.

Table 2: SWOT analysis of Bahawalpur City in terms of urban services

Kind	Strengths	Weaknesses
Internal	<p>Developed road network and good connectivity of regional roads with other cities.</p> <p>Potential of Industrial development.</p> <p>Better water supply distribution in city.</p> <p>Improving solid wastes management of the city.</p>	<p>Many unimproved housing schemes are creating irregular land use development in the city.</p> <p>Poor water quality is becoming hazardous for human health</p> <p>Absence of waste water treatment plant is causing pollutants mixing in ground water</p> <p>Absence of sanitary landfill site is creating environmental pollution</p> <p>Increasing traffic congestion at various points causing risk of accidents.</p>
	Opportunities	Threats
External	Improvement of already existing tourist places can	Low Investment in municipal services.

	<p>increase the economic revenue.</p> <p>Availability of new Master plan can help to make the city “smart city” in future.</p> <p>Conversion of open spaces in to green parks can make city more beautiful.</p>	<p>Increasing population pressure in the city is creating insufficient provision of public services.</p> <p>Haphazard land use growth is creating urban sprawl.</p>
--	---	---

Source: Modified from urban unit 2012.

The major governance related issues identified as a result of SWOT analysis of the city include; Unsafe drinking water supply distribution system Non availability of waste water treatment plant Non availability of sanitary landfill dumping sites **SPATIO-TEMPORAL VIEW OF GOVERNANCE MECHANISM FOR WATER SUPPLY DISTRIBUTION** Availability of safe and healthy drinking water is the prime requisite of urban dwellers and it comes under the responsibility of TMA of the city. One of the major consequences of urban growth in Bahawalpur City is increasing domestic demand for safe drinking water. Location of Bahawalpur city is noteworthy in a sense that on the northern side of the city river Sutlej is present while south of the city is occupied by Cholistan desert. Therefore aridity is the significant characteristics in the south of the city while area near to the river is sweet water zone. According to urban unit (2012) two main drinking water sources in the study area are the tube-wells installed along Sutlej river and along seepage zone of Bahawal canal.

Based on taste and quality of ground water, Bahawalpur City is divided into three categories namely sweet, brackish and others (figure 4). The brackish zone occupies more than half of the city area where quality of ground water is very poor. Water of this zone is saline and contain excessive amount of arsenic, calcium, E. coli, and iron. At various places a few other elements are also found which include potassium, magnesium, and some kinds of bacteria. A report on water quality of Bahawalpur city prepared by Pakistan Council for Research in Water Resources (PCRWR) reveals that in 76% water samples collected from different locations of the city, arsenic content amounting to over 50 ppb was present which is more than five times higher than that of WHO permitted limit (Mehmood et al., 2012). Although sweet zone also contains some iron content but less hazardous to health as compared to the water of brackish zone.

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

Although, supply of safe drinking water is the main responsibility of Tehsil Officer (Infrastructure and services) of TMA, but in prevailing situation this department alone seems to be unable to fulfill the increasing water demands of city inhabitants. For this reason, Punjab Health and Engineering Department (PHED) is also working in collaboration with TMA for providing better services of water supply in the city. The department was actually established in 1974 but started working in Bahawalpur City since 2006. The major objectives of this department were;

1. Construction of new ground storage tanks and overhead reservoirs
2. Maintenance or replacement of defected domestic water supply connections
3. Establishment of water testing lab

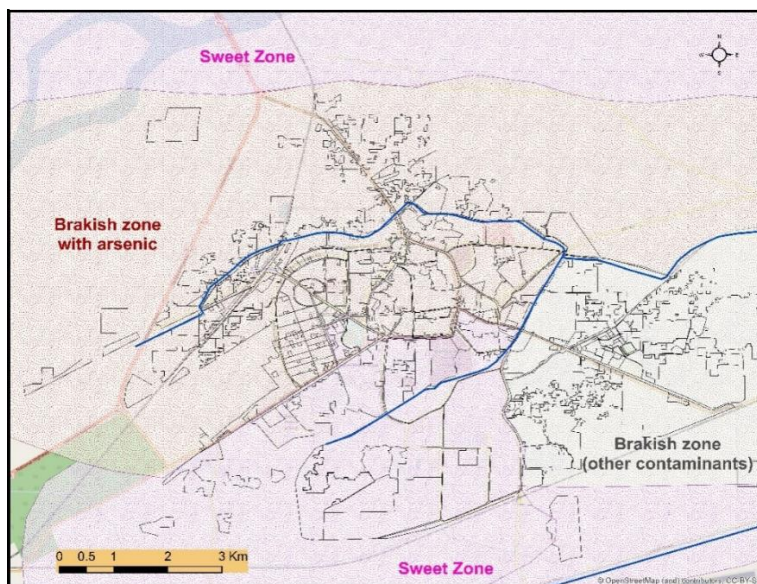


Figure 4: Water quality zones of Bahawalpur City

Up to 1990, water supply distribution system was confined only to 20-30% of the city covering Satellite Town, Model Town-A and B, Trust Colony, Officers Colony, and Old-walled City. Some educational institutes and hospitals had developed their independent water supply systems, while low income residential had no water supply system (GoPb, 1974). After 2004, distribution network of water supply improved in coverage of area and currently its distribution has been expanded to about 80% area of the city. Figure 4 shows the recent

water supply distribution mechanism of the city mutually governed by TMA, Southern Punjab Basic Urban Services Project (SPBUSP) and PHED. The major service supply areas of PHED include Maqbool Colony, Islamic Colony, Riaz Colony, Trust Colony, Haider Colony, Model Town-B and C, Kausar Colony and Welcome Colony (table 3). SPBUSP was launched by Government the Punjab in 2004 under the financial aid of Asian Development Bank.

The basic objective of this project was the development and improvement of urban services mainly water supply, solid waste management, water treatment, interlink roads development in six major districts of Southern Punjab. In Bahawalpur city they are providing the facilities of ground storage tanks (GST) and tube-wells to the Satellite Town, Tibba Badar Sher, Himaitiyan, Muhajar Colony, Mohallah Chah Fateh Khan, Trust Colony, Bhattajaat and Shahdrah Colony (figure 5 & table 3).

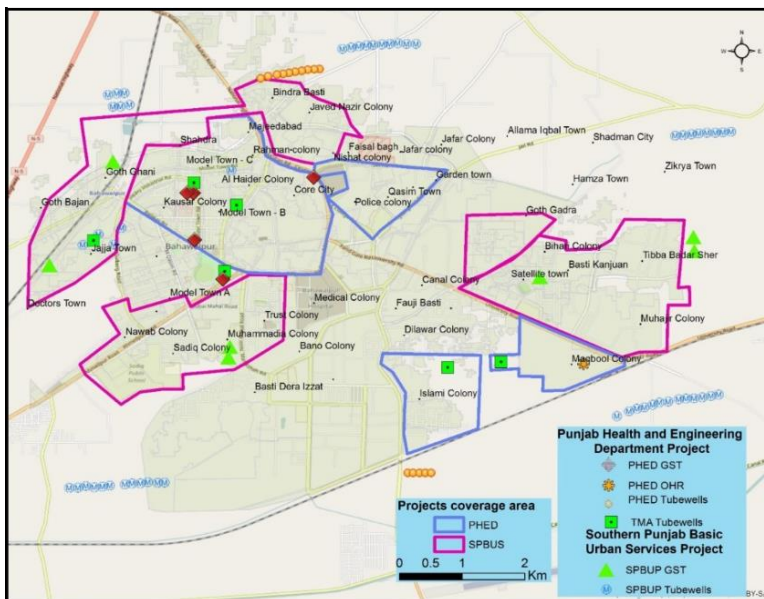


Figure 5: Governance of water supply distribution by all working authorities

Although three different departments are jointly working on supply of water to the Bahawalpur city but water supply related issues in the city are numerous resulting mainly from inefficient water supply related governance. Major water related issues identified by Rana (2011) in the city are three fold i.e. poor monitoring of water quality, less service

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

area coverage and poor distribution network. Water contamination is the main issue of drinking water quality in the city due to two reasons. Firstly, arsenic presence in the water is causing major health issues and secondly water distribution network becomes contaminated with sewage and other agro-chemical pollutants that are not monitored by any authority. Only 40% area of the city is served with the supply of piped water network with serving only 10 to 15% of the city population.

Some of the other main issues related to water supply management are;

1. Unplanned urbanization and rapid population growth is creating a competition for multiple uses of water
2. Increasing demand for water supply is seriously ignored by the concerned authorities
3. There is a serious lack of coordination among all service providers

Table 3: Services description of water supply by all working authorities

Governance Organization	Service Areas	Tube wells	GST	OHR	Filtration plants
SPBUSP	Muslim Town, Satellite town Sajid Awan Colony, Goth Gadra, Bihari Colony, Paradise City, Kanju Basti, Basti Allah Yar, Tibba Badar Sher, Himaitiyan, Muhajar Colony, Awami Colony, Chak 9/BC, Shafiqabad Colony, Madina Colony, Yasir Town, Muhallah Chah Fateh Khan, Bano Colony, Trust Colony, Muhammadia Colony, Bhatta No1, Bhatta No2, Bhatta No3, Bhatta No4, Nawab Colony, Sadiq Colony, Jajja Town, Islam nagar, Saeedabad, Rehmat Colony, Rahim Town, Goth Gani, Goth Bajab, Shafiq Garden, Insar Colony, Shahdrah Colony, Bindra Basti, Garibabad Colony, Majidabad Colony, Ismail Town, Nishat Colony, Javed Nazir Colony, and Rehman Colony	54	8	----	-----
PHED	Maqbool Colony, Gaziabad Colony, Islami Colony, Muhallah Ganj Sharif, Muhallah Mori Gate, Muhallah	18	7	1	-----

	Qazian, Muhallah Nawaban, Muhallah Mubarakpur, Muhallah Kajjalpura, Muhallah Aam Khas, Muhallah Muhammad Pura, Muhallah Bagh Mahi, Haider Colony, Model Town C, Model Town B, Faisal Bagh, Riaz Colony, Garden Town, Qasim Town, Kausar Colony, Welcome Colony, and Basti Devan				
TMA	Whole city	5	-----	8	4

SPATIO-TEMPORAL VIEW OF GOVERNANCE MECHANISM FOR SOLID WASTE MANAGEMENT SYSTEM

Waste management is the appropriate collection and handling of waste material at low cost and lowest environmental degradation (BWMC, 2015). Waste, either solid or liquid is hazardous for both human beings and environment. Hence proper governance of solid wastes and waste water is essential job of local government. Solid waste of the city is composed of domestic waste, paper and cardboard, cards and ceramics, shopping bags and PET bottles, plastic, rubber, straw, textile rags etc. as presented in figure 6. Previously, solid wastes management of the city was under the control of TMA and waste management process of municipality was running from collection of wastes by sweepers to dumping in temporary disposal sites and then towards final disposal sites. TMA served the 18 urban and 3 rural union councils of the city with a service coverage area of 70% and service population of 75%. Previous records of TMA department show that waste generation in Bahawalpur city was 225 tons/day in 2010 which increased to 273 tons/day in 2012 (Shafqat et al 2014). Solid waste was collected from 15 collection sites and stored in the filth depot of TMA and then dumped into temporary disposal sites at Chandi Peer, Kacchi Abbadi near Islami Colony, Quaid-e-Azam Colony, near railway station, and Chak 10-BC. The final dumping site of solid wastes was located near Tibba Badar Sher on the eastern side of the city.

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

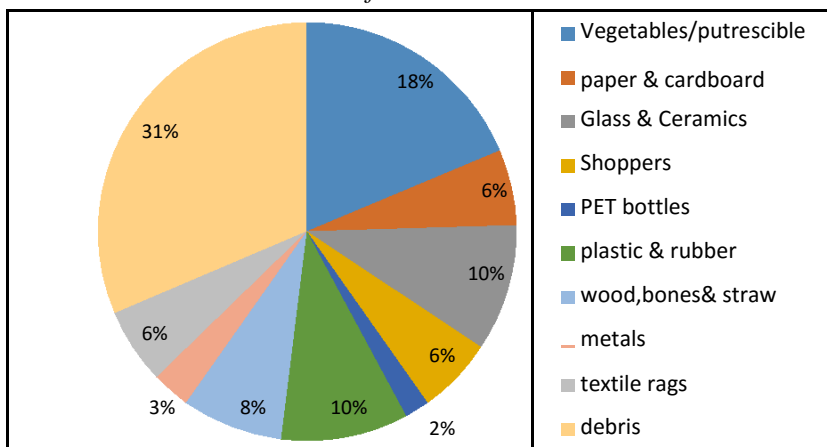


Figure 6: Wastes composition of Bahawalpur City (TMA, BWP)

Urban unit (2012) has reported in Bahawalpur city profile that identical to water supply management, SPUSP (Southern Punjab Urban Services Project) also worked in collaboration with TMA to facilitate the solid wastes management. In 2005, SPUSP fixed an amount of Rs. 68 million to purchase new machinery for wastes collection and dumping and also for the development of landfill site. The project continued till 2009 and then due to some issues relating to land pricing and resettlement of landfill sites, further development was stopped. Numerous internal and external factors of administrative structure of TMA also lead to the failure of solid wastes management by local authority. Unplanned residential development made many areas inaccessible unapproachable by the TMA for waste collection. Urban growth of the city not only increased the waste generation but also affected the waste distribution and collection. As a result, for the better governance of wastes collection and disposal Government of Punjab established another department namely Bahawalpur Wastes Management Company (BWMC) in 2013 under section 42 of companies' ordinance 1984. All functions and powers of SWM department of TMA were handed over to BWMC. The main functions of this company are;

1. Wastes collection, storage, transportation, transfer and removal
2. Mechanical and manual sweeping of roads
3. To resolve complaints regarding solid wastes

Table 4: Service efficiency of SWM in Bahawalpur City

Sr. No.	Service description	Quantity
1.	Percentage of area served	90%
2.	Union councils served	18 urban
3.	Percentage of population served	85%
4.	Waste generation (tons/day)	330
5.	Waste collection (tons/day)	300
6.	Dumped waste (at disposal sites)	200 tons
7.	Open dumping	130 tons
8.	Temporary disposal site (control dump site)	01
9.	Sanitary land fill site	In operation
Sr. No.	Equipment	Quantity
1.	Wheel bins	259
2.	8 cubic meter containers	1100
3.	5 cubic meter containers	100
4.	Hand carts	300

Source: BWMC, 2015

Table 4 shows current services and equipment used for solid wastes management by BWMC and tells that it serves 18 urban union councils of the city and excludes 3 rural union councils. It has been noted that current waste generation of the city has reached to 330 tons/ day. The increasing waste generation is the clear witness of urban growth of the city.

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

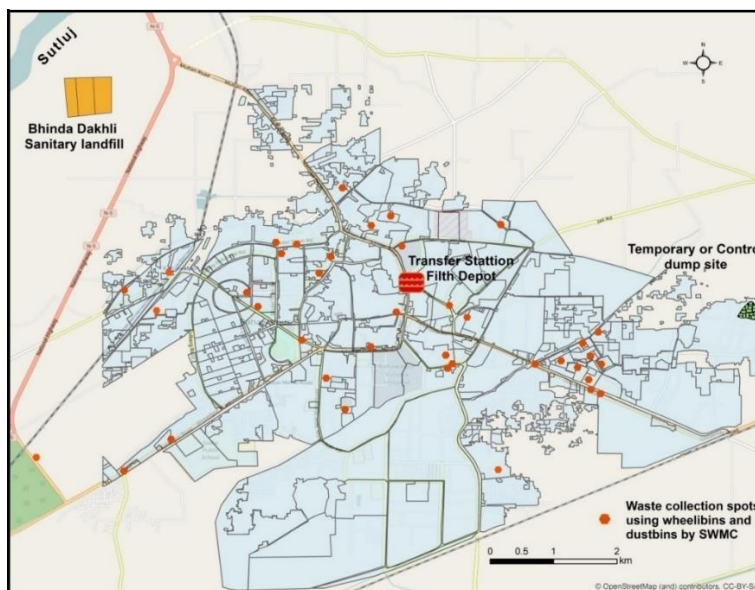


Figure7: Solid wastes management system of Bahawalpur City

Figure 7 is the spatial representation of current waste management system of Bahawalpur City. About 259 wheel bins are used for street wise collection of solid waste from whole city. The figure shows some of the major spots from which wastes are collected by sweepers in 5 cubic meter bin and shifted to filth depot located in TMA of the city. Manual sweeping is also performed at different times to collect the wastes from major streets and roads through hand or donkey carts. All collected waste is then shifted to filth depot of TMA and finally dumped to control dumping site in Tibba Badar Sher. But this dumping site can hoard only 200 tons of the waste per day. The remaining waste is left on the sides of roads or may not be lifted up which is causing serious health and environmental issues at local level. Increasing urban pressure in the city is also posing threat for the city management authorities. Hence, development of sanitary landfill site has become an urgent need of the population. Presently, concerned department is also working to establish an integrated solid waste management system and has proposed the development of a scientific sanitary landfill site at Bhinda Dakhli village at western bypass of the city also shown in figure 7.

SPATIO-TEMPORAL VIEW OF GOVERNANCE MECHANISM FOR WASTE WATER MANAGEMENT SYSTEM

Management of domestic and commercial waste water is also an increasing threat for city governors with increasing population and urban growth of the city. The major problem concerning sewerage structure of the city is the inadequate network of sewers and open drains. In almost all cities of Pakistan household effluent and wastes are discharged to present network of sewers, or nearby water bodies like rivers or canals which at the end may be used for irrigation purpose.

Table 5: Disposals working in Bahawalpur City for waste water collection

Sr. No.	Location area	Waste water collection (Cusecs per day)	
		In summers	In winters
1.	Lal Bagh	25 – 30	15-20
2.	Bhatta Jaat	8 – 10	NA
3.	Tibba Badar Sher	15-20	10
4.	Quaid-e-Azam Colony Goth Ghani	8	4 – 5
5.	MajidabadBindraPulli	5	3 – 4
6.	Basti Bhattian	02	01
7.	Chak 10 BC	0.25	NA
8.	Manzurabad Industrial Area	0.25	NA
9.	Arshad Town Near Multan Road and NH-5	Not working	NA

Previously, up till 2011, sewerage system of the city covered only 50% of its built up area (Shafqat 2011). However, currently service area has been enlarged to 70% having service population of 82% while the drainage coverage area is 12%. There are nine disposals or pumping stations working for waste water collection in the city with the pumping capacity of 152 cusecs. Total effluent discharge in the pumping stations is 27 cusecs. By the year 2011 only five disposal units were working for collection of waste from whole city which increased to six in 2012 and currently nine disposal units are working in whole city as shown in figure 8. The two main disposal units working in the city are Lal bagh unit located in Model Town-C and collecting the waste from Model Town-B and C, interior city, Shahdra Colony, Al-Haider Colony, Medical Colony and Trust Colony. The effluent discharge in this unit in summers is 25-30 cusecs per day while in winters it is 15-20 cusecs per day. The

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

second big disposal unit is located on the eastern side of the city near slum area named as Tibba Bdar Sher disposal unit which is collecting the effluent waste from Satellite town, Tibba Bdar Sher, Islami Colony, Shadab Colony, Gulzar Mahal, Muslim Colony, Sajid Awan Colony, Dilawar Colony, and Muhajir Colony. The effluent discharge in summers is 15-20 cusecs per day while in winters it is 10 cusecs per day (table 5). Besides these two, other working disposal units are collecting effluent and other waste water from rest of the city (figure 8).

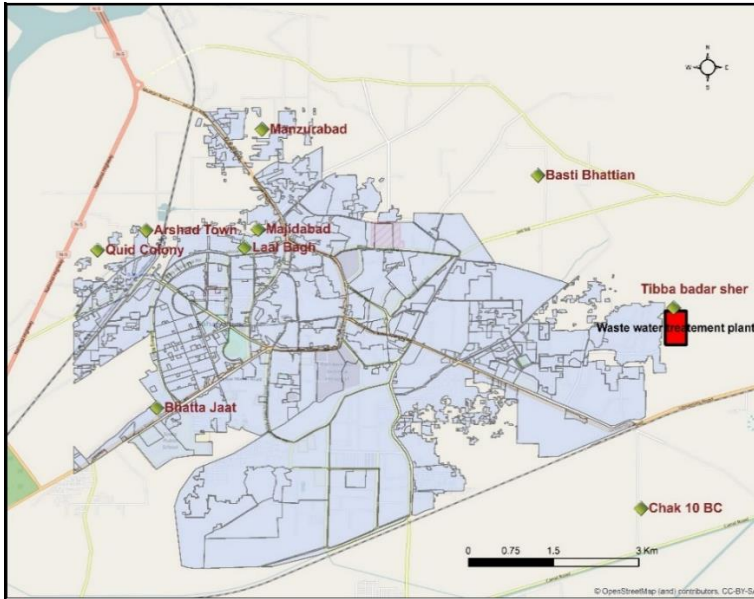


Figure 8: Waste water disposal units or stations in Bahawalpur City

Likewise other municipal services, waste water management in Bahawalpur is also facing many challenges in which unavailability of wastewater treatment plant is the major one. The only treatment applied is the screening of waste water at Tibba Badar Sher disposal station. Screening chambers separate the solid waste material including rags, sticks, tampons etc. from liquid waste. Grease, oil or other liquid waste rises to the top of surface and skimmed off. The remaining waste water is disposed of two river Sutlej or main irrigation canal of the city which ultimately poses a serious threat to the health and environment. The management of waste water system is mainly under the governance of TMA of the city. However, to meet the demands of increasing population, public health department is also providing some services regarding sewer lines and construction of new

disposal units. In addition, Southern Punjab Basic Urban Services Project is also constructing a new sewerage system by dividing the city into four equal zones. The major objective of this project is to provide sanitation and sewerage facilities to every kind of residential area including highly posh areas like Model Town-A as well as Katchi Abadies like Banga Basti and Dilawar Colony etc.

ROLE OF PUNJAB GOVERNMENT TO INITIATE PROJECTS FOR THE SUPPLY OF BASIC URBAN SERVICES

Although, the management efficiency of Municipal Administration of Bahawalpur city is reported as 'fair' in comparative analysis of 12 TMAs under Punjab cities improvement project (GoPb 2011), but still many deficiencies are observed in access and utilization of public services in Bahawalpur. Natural increase of population and rural urban migration has not only increased the demand for these services but also increased per capita water consumption and waste water discharge which is creating threats of water scarcity and ground water contamination in the region. To address the challenges of urban growth in the city Government of Punjab has established Urban Unit Department (a public sector company) for effective governance of urban services including supply and efficient use of safe drinking water; develop effective sewerage and drainage system etc.

Besides this, Government of the Punjab has also created an Urban development sector plan from 2014 to 2018 through active participation of Public Health & Engineering Department, Local Government Community Department, Transportation Department, Lahore Development Authority, Water and Sanitation Authorities, Punjab Housing and Town Planning Department and Urban Unit (GoPb 2014). This plan focuses on to following four major sectors associated with urban growth of the city;

1. Housing and urban planning
2. Water and sanitation governance
3. Solid waste management of cities
4. Improvement in intra-city public transport

Although, there is a long list of programs initiated under this plan for better governance of urban services in cities of whole Punjab and to make the cities more sustainable but a list of only those programs concerning Bahawalpur is given in table 6. Some of these programs are

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

meant for all cities of the Punjab whereas some are only for specific cities including Bahawalpur.

Table 6: Programs initiated by Government of the Punjab to improve governance of cities

Sr. No.	Project / Program	Brief description	Location	Time period
1	Punjab Intermediate cities improvement investment program PICIIP	To resolve and strengthen the urban infrastructure and services	12 intermediate cities of Punjab: Chiniot, Gijrat, Sargodha, Bahawalpur, D G Khan, Jhang, Okara, Sahiwal, Rahim Yar Khan, Kasur, Sheikhpura, Sialkot	2015-2025
2	Punjab Municipal services improvement program	To enhance the efficiency of TMAs for better governance and improved municipal services delivery	All cities of Punjab excluding five large cities	2014-2019
3	Solar energy harvesting	To overcome the energy crises in Punjab by establishing a Solar Park	Lal Sohanra and Dingarh in Bahawalpur	Continued from 2014 onwards
4	Solid waste management program	To establish the solid waste management companies for better governance of waste management	Lahore, Faisalabad, Multan, Gujranwala, Rawalpindi, Bahawalpur and Sialkot	Continued from 2014 onwards
5	WASH master plan	To develop a comprehensive master plan for all cities of Punjab under the technical assistance of UNICEF and urban unit	All Punjab	

Source: (GoPb, 2014).

CONCLUSION AND SUGGESTIONS

After examining the previous and current situation of three basic urban services in Bahawalpur City, it can be concluded that rapid urbanization has put a serious stress on urban infrastructure of the city and created a range of governance and management related issues at all levels. In the light of above results and discussion, it evident that as city is becoming more urbanized, its requirements for services and infrastructure are also increasing and good governance at city level is becoming more crucial for local government. Poor water supply and waste management in city can be harmful for humans and for environment. It is necessary for the human beings to live in healthy environmental conditions thus its improvement is indispensable. The responsibility of provincial and local governments therefore increases to make cities 'smart' and sustainable in nature.

This can be achieved only through good governance agendas and honest implementation of urban management projects. Current situation of governance mechanism in Bahawalpur City reflects an average level of satisfaction for management of mentioned services of water supply, solid wastes management and waste water management. Development of new projects and programs initiated in recent times, has not only shared the responsibilities of municipality but also helped to make the city more sustainable and livable. Services provided by Solid Wastes Management Company have made city comparatively cleaner and beautiful then it was earlier.

The only deficiency observed in this new system is the lack of sanitary landfill sites for final disposal of wastes. Water supply management is also working in fair conditions but monitoring of water quality is the overlooked part of this management system. Waste water management is poorly managed and comparatively ignored service in recent conditions and eight disposal units are poorly monitored by the authorities for its working efficiency. Untreated waste water is directly or indirectly used for irrigation purposes in the peripheries of the city causing adverse health conditions for the residents of city as the vegetables and other crops produced using polluted irrigation water are consumed by them. In the light of study following suggestions are made for better governance and sustainability of the city;

1. Institutional and financial upgrading of TMA is obligatory to improve the services governance mechanism of the city.

Urban Growth and Governance of basic services in Bahawalpur City of Pakistan

2. Trust based reciprocal coordination between local governments and funding agencies can be beneficial for making precise decisions concerning city governance.
3. There is a strong need to increase 'public service messages' about health and cleanliness for making city more attractive and healthy place to live.
4. Community participation, especially involvement of youth population can be exceedingly beneficial for city planners and local government, thus it should be encouraged.
5. Most of the foreign funded projects particularly supported by World Bank or Asian Development Bank are short term. Instead, long term sustainable planning, depending upon the future projections of population growth and urban growth are essentially needed.

REFERENCES

AGHA A 2016 Smart Cities and Infrastructure: Challenges, Issues and Initiatives in Punjab Pakistan. University of Cambridge.

ANGEL S, SHEPPARD S C & CIVCO D L 2005 Dynamics of global urban expansion. Washington DC: World Bank.

ANJUM Z H 2001 New Local Government System: A Step Towards Community Empowerment? *The Pakistan Development Review*, 40, 845-867.

ARSHAD S, SHAFQAT A, KHAN A A & SAFDAR Q 2013 Youth Environmental Complaints in Bahawalpur City Pakistan: an informational intervention for local environmental governance. *HUMAN GEOGRAPHIES: Journal of studies and research in Human Geography*, 7.1, 71-80.

BWMC 2015 Solid Waste Landfill Site at Bhinda Dakhli, Bahawalpur: Environmental Impact Assessment (EIA) Report. Bahawalpur: Engineering Consultancy Company (BWMC) Services Punjab.

GOP 2011 Task Force Report on Urban Development. Planning Commission: Government of Pakistan.

GOPB 1974 Bahawalpur Outline Development Plan: 1974-1990. Lahore: Government of Punjab: Housing and Physical Planning Department.

- GOPB** 2011 Punjab Cities Improvement Investment Program (PCIIP). Government of Punjab.
- GOPB** 2014 Urban Development Sector Plan 2014-2018. Housing Urban Development & Public Health Engineering Department, Local Government and Community Development Department
- HAIDER M & BADAMI M G** 2010 Urbanization and local Governance challenges in Pakistan. *Environment and Urbanization Asia*, 1, 81-96.
- KHAN A A, ARSHAD S & MOHSIN M** 2014 Population Growth and Its Impact on Urban Expansion: A Case Study of Bahawalpur, Pakistan. *Universal Journal of Geoscience*, 2, 229-241.
- MEHMOOD K, YOUNAS U, IQBAL S, SHAHEEN M A, SAMAD A & HASSAN S I**
2012 Physicochemical Profile of Ground Water in Bahawalpur City, Pakistan: Hazardous Aspects.
- MOHSIN M & BHALLI M N** 2015 Rapid Urban Growth and Change in Urban and Municipal Limits of Bahawalpur City, Pakistan: A Spatio-Periodical Discourse. *Journal of Basic & Applied Sciences*, 11, 528-538.
- PCO** 1998 Fifth Population and Housing Census of 1998 in District Census Report: Bahawalpur. Pakistan Census Organization.
- PCO** 1998 District and Provincial Census Reports of Pakistan.
- RANA A** 2011 District Economic Development Strategy-Bahawalpur. USAID.
- ROBERTS B & KANALEY T** (eds) 2006 *Urbanization and Sustainability in Asia*
Asian Development Bank.
- SDPC** 2016 Social Development in Pakistan: Annual review 2014-15. Karachi:
Social policy and Development Center: Karachi.
- SHAFQAT A** 2011 The role of the municipality in waste water management in Bahawalpur city. *Management of Environmental Quality: An International Journal*, 22, 282 - 291.

*Urban Growth and Governance of basic services in Bahawalpur City
of Pakistan*

SHAFQAT A, NOOR S & FATIMA M 2014 Practices and Challenges of Municipal Solid wastes management in Bahawalpur City, Pakistan. *Journal of Sustainability Science and Management*, 9, 90-98.

UN 2006 World Urbanization Prospects : The 2005 Revision. New York: United Nations: Department of Economic and Social Affairs, Population Division.development department, Lahore.

WAZIR M A 2013 Population dynamics in Pakistan: Past, Present and Future. *In: KHILJI, S. (ed.)*. Islamabad: Sustainable Development Policy Institute.

Write Arnold (eds) 1922 Indian States: A Biographical, Historical, and Administrative Survey. Asian Educational Services.

World Population Data Sheet 2014 Population Reference Bureau. USA.