Chapter 15
Politics of Water and Development: Case of Pune

Sharduli Joshi

Abstract Since early civilizations, rivers and streams are modified by human activities. These rivers and streams nurtured the civilizations to become urban areas. But these urban areas have turned their backs to the urban streams and rivers. It is crucial to better understand and integrate its functioning to urbanization dynamics.

If we narrow down, mismanagement of water resources which has given rise to the twenty-first century slogan that "Nothing is holy, sacred, or off limits when everything is for sale." This mentality leads us to mercilessly pollute the Earth, discharging industrial waste and sewage water into rivers and lakes.

A 2006 United Nations report stated that "There is enough water for everyone," but that access to it is hampered by mismanagement and corruption (UNWATER, Water, a shared responsibility, the United Nations World Water Development Report 2. UNESCO, 2006).

Today the struggle for scarce water resources in many places is unavoidable. Many river basins are unable to fulfill the demands of water even for their rivers to reach the sea. Further extraction of water for human use is not possible because limits have been reached and in many cases breached. Greater competition raises questions between states, countries, and regions over allocation of water, which is benefited, between those upstream and those downstream.

As politics (the process of decision-making of groups of people, involving the authoritative allocation of, e.g., resources), the actors, their interests, and interactions determine whether progress is made or hindered, it is important to understand the politics of water, and how it impacts on development is the key to improve water and development scenarios.

The paper analyzes the case of politics of water in the city of Pune and the surroundings. It discusses the issues of environmental flow, channelization, and several other factors related to development. It concludes with suggesting policy recommendations for afforestation, recycling of waste water, rainwater harvesting, etc. to resolve the issue of water shortage for environmental purposes.

S. Joshi (✉)
Brick School of Architecture, Pune, Maharashtra, India
e-mail: shardulijoshi@brick.edu.in

F. Seta et al. (eds.), *Understanding Built Environment*, Springer Transactions in Civil and Environmental Engineering, DOI 10.1007/978-981-10-2138-1_15

Keywords Urbanization dynamics • Mismanagement • Over allocation • Politics • Development

15.1 Introduction

Water is probably the only natural resource which is a primary requirement in all aspects of human civilization from agricultural and industrial development to cultural and religious values embedded in society. The need and demand for water has been a driving force for health, society, economic prosperity, cultural significance, and development throughout human history.

The city of Pune was established around 1,000 years ago near the confluence of rivers Mula and Mutha on the western side which was considered sacred to build any settlement due to its physical and religious significance. The river Mutha has been the structuring element of the city which divides the old and the new development.

There are five major rivers flowing through Pune city and nearby industrial area. Mula River is dammed thrice before it reaches to the city first at Panshet and then at Khadakwasla and Temghar.

Mr. Rajendra Singh, known as "waterman of India," quotes that the conditions of Mula and Mutha rivers passing through the city are worse than that of the Ganga (TOI 2013).

In research and site visits for this paper, it was observed that Mutha and Ram rivers collect wastewater from the residential areas of the city. Mula and Pavana rivers are mostly contaminated by industrial discharges, agricultural runoffs, and sewage. Indrayani River encircles the city passing through Alandi which receives wastewater from newly emerging industrial and residential areas from Dehu to Alandi. Pavana joins Mula River near Dapodi, while Mutha joins Mula River near the College of Engineering, Sangam Bridge. The combined river Mula crosses down south and joins Bhima River as shown in Fig. 15.1.

All these rivers are the victims of ultramodern high-tech development in their catchment areas (Joshi 2015).

15.2 Urban Stressors

15.2.1 Increasing Population and Urban Waste

The population growth of Pune is more than 0.2 million per annum which burdens the drainage systems leading to filthy living conditions with improper sewage disposal (Joshi 2015).

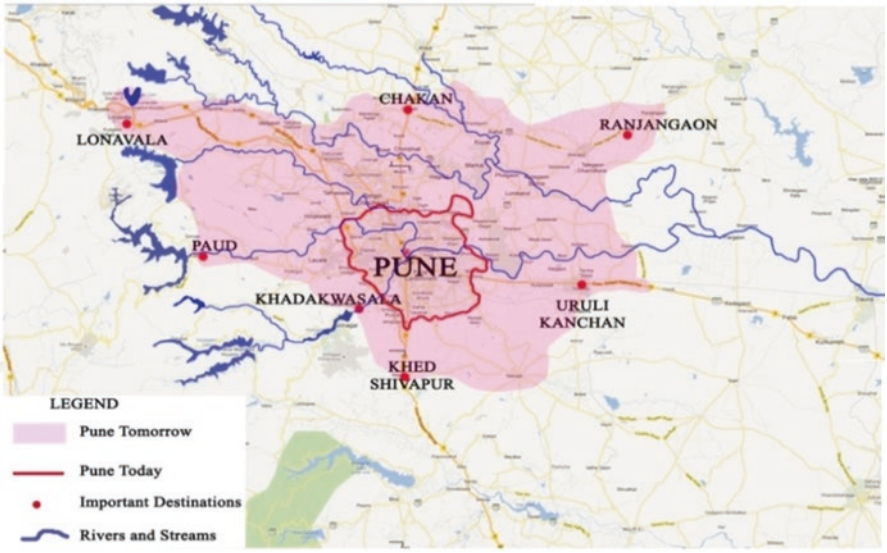


Fig. 15.1 Pune and its watershed (Source: Prepared for academic purpose with the help of Google maps)

Table 15.1 Values of DO, BOD, and COD of survey against values in ESR (2010)

Name of the point	DO (ESR)	DO (survey)	BOD (ESR)	BOD (survey)	COD (ESR)	COD (survey)
Mhatre bridge	1	0.6	30	140	55	320
Sangam bridge	1.2	0.5	26	100	80	360

(Source: Survey findings and ESR report, Pune 2010–2011)

A survey was carried out in May 2013 to check the water quality in terms of DO, BOD, and COD of the river at two different points. The results were drastically different from ESR, Pune 2010–2011 (Environmental Status Report). Refer to Table 15.1 for exact figures (Fig. 15.2).

Also in one of the interviews for TOI, Rajendra Singh states that "There have been attempts to get funds from the Central and state governments for restoration of these rivers. However, it seems that nothing specific has been done. We don't see serious steps by the administration in conserving rivers" (TOI 2013).

Inadequate sewerage system for four million strong population in Pune Metropolitan Area is leading to the pollution of natural drains in the city's watershed. These rivers have become large gutters carrying the sewage from the city.

Meanwhile, pollution-control authorities, government officers, journalists, citizens, and policy makers of state and central governments are expressing the urgent need for affordable indigenous pollution-control techniques which will improve the quality of environment for the society (Jaymala Diddee 2000). There is a gross system failure as the city service providers are not able to keep pace with the city's growth.

Fig. 15.2 Survey done for water quality testing at approximately the same points as ESR with reference to Table 15.1 (Source: Photographs clicked during the survey)

The pollution is reaching the water bodies through natural drains and streams that are used for drinking and irrigation purposes, making them unfit for any application. The contamination of rivers by sewage and industrial effluents has led to eutrophic conditions and dense growth of a particular aquatic species like water hyacinth and also caused the blackening of water due to accumulation of organic matter (Roy 1973). Thick mats of water hyacinth reduce the velocity of the river, thus becoming a breeding ground for mosquitoes and other nuisance insects. It adds to the problems downstream where the deposited organic matter undergoes anaerobic degradation.

15.2.2 Environmental Flow

Humans are not the only ones who are using available water for themselves. Aquatic, terrestrial ecosystems are also dependent on fresh water. Increasing economic activities as well as the standard of living is affecting the quality and quantity of water in the rivers. While deciding environmental flow to any river basin, usually two questions arise: (1) How to define environmental water needs? (2) How to quantify them? (Venot 2008). The climate is changing, affecting every aspect of neighborhoods, economies, and ecological systems.

If environmental flow is considered as a sector along with other sectors like irrigation, industries, etc. which compete each other for water, it is seen that the sectors other than environment have a voice, and they can pay for the services. Environmental sector neither has voice nor can it pay for its water demand (Upali 2009). Though 5 % water of the storage capacity is allocated for environmental flows, it is often neglected and is consumed by one or the other sector. Figure 15.3 shows the water flow in Bhīma subbasin in monsoon and post-monsoon months, respectively.

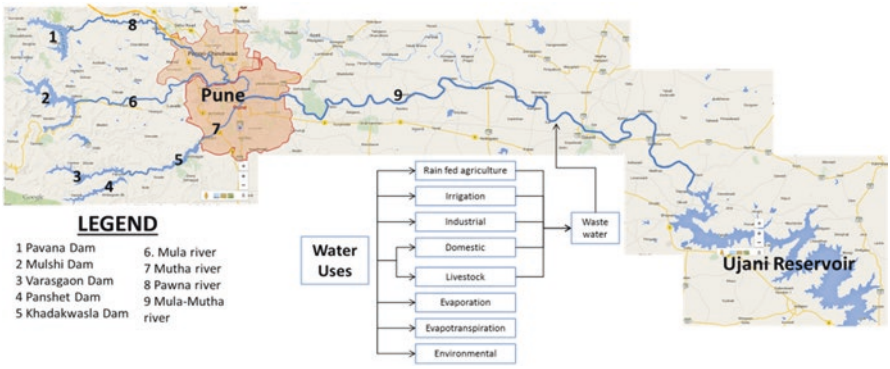


Fig. 15.3 Water flow in the river in monsoon and post-monsoon months, respectively (Source: Prepared for academic purpose)

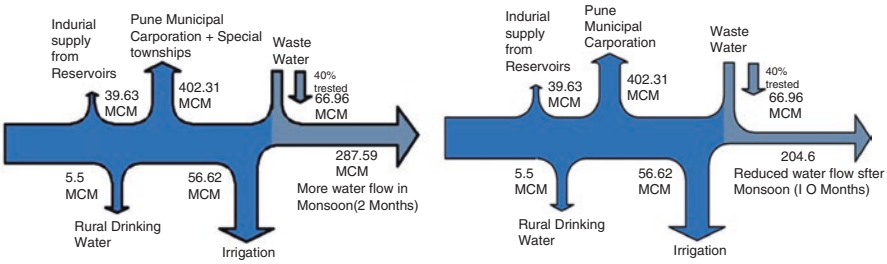


Fig. 15.4 Flow path of urban streams of Pune (Source: Prepared for academic purpose)

15.2.3 Water Development

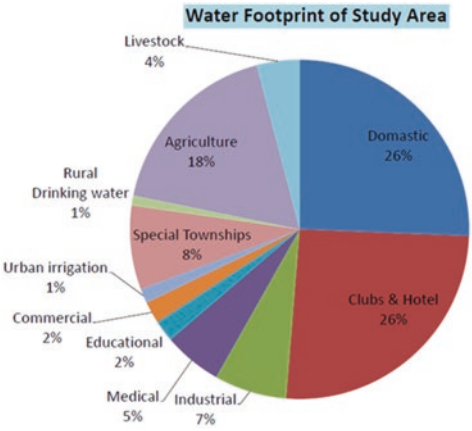
Pune is facing acute shortage of water since the last few years. In the month of April every year, the region is facing water crisis. Pune has five rivers (shown in Fig. 15.4) and four dams that supply water, which are more than enough to meet the city's needs. A lot of water is unfortunately wasted by citizens and farmers. Also, there is unequal distribution of water between the city and neighboring agriculture requirements.

The Mula-Mutha River has been dammed thrice upstream to provide water supply to the city, Khadakwasla, Panshet, and Varasgaon being the locations. The reason for damming the river is to hold water for certain areas for irrigation and not leave it ahead for irrigation. All of this is part of politics controlled by some influential people.

Maharashtra has the highest number of large dams in the country and is now claimed to be suffering the worst drought in four decades or more.

Hindu (2013) writes that at the post-budget press conference, Deputy Chief Minister Ajit Pawar conceded that 70 % of the water went to sugarcane cultivation

Table 15.2 Water uses in the study area for different purposes (unequal and non-priority distribution of water)



Water footprint of Study Area	
Domastic	146.65
Clubs & Hotel	146.65
Industrial	39.63
Medical	31.71
Educational	11.89
Commercial	11.89
Urban irrigation	7.93
Special Townships	45.60
Rural Drinking water	5.50
Agriculture	101.26
Livestock	23.36
	572.06

(Source: Prepared for academic purpose)

in rural Maharashtra. It further mentions, "As on 31st December, 2012, out of the total sugar production in the country, the share of the Maharashtra was 35.3 per cent." So the drought-prone districts produce more than a quarter of India's sugar. Table 15.2 shows unequal and non-priority distribution of water in Pune.

It slams the government for not making any attempt to curb either planting of sugarcane or other water-intensive crops or to curb any of the water-intensive activities like running of sugar and wine factories in drought-affected districts.

SANDRP (How is 2012–2013 Maharashtra drought worse than one in 1972? 2013) blames GoM, for making wrong decisions about building impracticable and unwanted dams, cropping patterns, unacceptable water management system, diversion of water for non-priority uses leading to reduction in per capita water.

15.2.4 Efforts of Restoration

A river restoration and navigation project is being planned in Pune, and before it is formally accepted, it seems that it is receiving special favors from the Pune Municipal Corporation (Yadvadkar 2011). Pune massively pollutes its rivers, with more than 744 million liters of sewage generated per day, out of which barely 30 % is treated. Rather than focusing strongly on river restoration and pollution control, this project, which is said to receive funds earmarked by JNNURM for river restoration, is focusing more on navigation. The works, which include large-scale channelization of the river, seem to be at cross purposes with restoration (Yadvadkar 2011).

The state water policy was formed by GoM in 2003 and was revised in 2011. The policy describes the water scenario, challenges, and perspectives. Policy framework emphasizes on Integrated Water Resource Management (IWRM) along with the need for watershed management, groundwater management, and aquifer management. The revised policy gives second priority to irrigation after drinking water (Patil 2012). Water for environmental purposes is still at fifth place. The policy mentions that dams should allow the minimum water flow as environmental flow in the rivers, but the minimum water flow is not defined as well as the water rights are not clearly mentioned. The political economy operates the water market in Maharashtra. If the water policy is rightly drafted and followed, some of the answers to water scarcity and droughts in Maharashtra can be fetched.

The state of Maharashtra has established Maharashtra Water Resources Regulatory Authority (MWRRA), in 2005 to finalize water tariff for irrigation and non-irrigational water uses with appropriate incentives and penalties. The establishment of such a body is quite creditable as it is the first state in India to form such a body which is responsible for monitoring and regulating water resources within the state as well as its trading, allocation, and utilization to maximize efficiency of water use.

15.2.5 Channelization of the River

There are plans of beautifying Mutha River under the river restoration plan of JNNURM which supports the riverside road project (IndianExpress 2011). This is an inspiration from the so-called successful Sabarmati Riverfront Development project which has become a hit and is being looked at as a model project for developing the riverfront in any city without giving a closer look to the local needs and context (ITDP and Embarq 2012). Several NGOs in the city pointed out that the detailed project report (DPR) does not really focus on restoration of the river, but on preparing a backdoor entry for river navigation and real estate development (TOI, River restoration plan draws flak 2011).

"The road construction in the river is violation of several environment norms. In such case, there is no other space for the road. So, instead of dumping mud and rubble, the authorities should construct a raised platform for the road which would allow free flow of water and avoid flooding of the area" (Yadvadkar 2011). To elaborate more on this, many nongovernmental organizations (NGOs) are opposing this idea of the road as it sits within the riverbed. Any construction within the riverbed is against the River Act of 1958. This would put an end to the natural condition of the river and make the environment more engineered with channelized hard edges (Fig. 15.5).

At present, instead of making new policies and governing bodies, collaborative and synchronized working of existing bodies is important. Also the grassroot level actions in individual subbasins and water sheds should lead to basin-level priorities.

Fig. 15.5 Channelization of Mutha River in Pune (Source: Clicked for personal use)

In the Bhima subbasin, MWRRA is facing the opposition from downstream users because of the very poor quality of water in the "Ujjani" reservoir because of untreated sewage from Pune and suburban areas. As this upstream area is a sugarcane belt, downstream cities like Solapur are experiencing scarcity of water. The dams located upstream have huge amount of dead storages.

During the survey conducted by SANDRP, it was observed that few hotel managers denied that there is water scarcity in Solapur. This shows that the poor are suffering from water scarcity, whereas the wealthy and powerful continue to get water whenever they want, regardless of the quantity. Pune ESR shows that 146 MCM water is diverted to clubhouses and hotels in urban and suburban areas of Pune which is equal to domestic water requirement of the entire city.

15.3 Conclusions

Water accounting and auditing is extremely important in order to save water by reducing water losses in undesirable sectors and for creating transparency and accountability within the system.

The political economy operates the water market in Maharashtra. If water policy is rightly drafted and followed, then some of the answers to water scarcity and droughts in Maharashtra can be fetched.

Some of the strategies to resolve the water crisis are afforestation to reduce runoff and salinity to increase availability of water, recycling of waste water which will reduce demand of freshwater, change in irrigation pattern and use of recycled water, rainwater harvesting in urban areas to increase availability of water, and storage of water through precipitation. These strategies are essential to make a change because "water is life"; otherwise water would be the cause of a third world war.

References

Hindu T (2013, April 4) Maharashtra drought man-made, says study. The Hindu
IndianExpress (2011, December 17) River plan hits a hurdle over cost break up. Indian Express
ITDP, Embarq (2012) Life and death of urban highways
Jaymala Diddee GS (2000) Pune: queen of Deccan. Eliphant design Pvt. Ltd., Pune
Joshi S (2015) Streams of Pune: waiting for restoration. In: Joshi S (ed) River me and environment. Menaka Prakashan, Pune, p 165
Patil (2012) Reforms in water resources sector in Maharashtra State, India. India Water Week 2012 – Water, Energy and Food Security, Water, Energy and Food Security (April 2012), pp 10–14
Roy M (1973) Rivers in the city. David Charles, Newton Abbot
SANDRP (2013) How is 2012–13 Maharashtra drought worse than one in 1972? SANDRP
TOI (2011, November 7) River restoration plan draws flak. Times of India
TOI (2013, May 1) Civic bodies must draft policy to restore rivers of Pune: expert. Times of India
UNWATER (2006) Water, a shared responsibility, the United Nations World Water Development report 2. UNESCO
Upali AT (2009) Strategic analyses of the National River Linking Project (NRLP) of India series 1. IWMI, New Delhi
Venot SB (2008) The lower Krishna basin trajectory: relationships between basin development and downstream environmental degradation. IWMI, Colombo
Yadvadkar S (2011, March 22) Fate of Pune's rivers: presentation by Sarang Yadvadkar. Retrieved March 2015, from India Water Portal: http://www.indiawaterportal.org/articles/fate-punes-rivers-presentation-sarang-yadvadkar