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A Geographical Analysis of Water Supply in Katraj Area of Pune City, Maharashtra

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Abstract: ***Rapid industrialization of any region triggers the growth of urbanization. The urbanization of a region leads to many urban problems; water scarcity is one of the main problems, which has evolved due to rapid growth of urban settlement. An attempt has been made to study the distributional pattern of water supply in Katraj area of Pune city. The study beings with two important hypotheses 1) there is irregular and intermitted water supply in the hilly area. 2) The low lying areas receive regular water supply. Katraj area is located along the Pune-Satara highway, the topography of Katraj is not uniform throughout the study area, the region comprised of highly elevated land and low lying area. The settlement pattern of Katraj also corresponds to the topography of the region. Socially and culturally the region has diverse demographic characteristics of population. Therefore the water supply of this area is not even. Economically the region also has mixed strata of society such as slums, flats and independent bungalows. So most of the families are suffer for regular water supply, in this study has tried to find out the geographical analysis of water supply of corporation.***

Keywords: Distribution, Industrialization, Settlement, Uniform, Urbanization

1. Introduction

More than fifty percent population lives in urban areas, due to urbanization and growth of the world population so many problems are increased. Because rural people are migrate from rural to urban areas and it results in growth in the size of the urban population and urban areas. These changes lead to changes in land use, economic activities and cultural aspects. Actual urbanization means transformation in socio, economic, cultural and political aspects. Sometimes it is good but it affect on regular facilities like inadequate housing, water, sanitation, transport and health care services etc. This types of problems occurs in Pune city also, So for the present study Katraj area has been identified, because in the year 1997, 37 villages have been attached into Pune Municipal Corporation due to this population of Katraj had increased and it's affected on distribution of water. Hence we should take care of using water to its proper utility and also take care of rain water harvesting method to overcome the scarcity of fresh water in all sectors like domestic industrial and agriculture.

Study Area

Katraj area is located at distance of 12 km from GPO, Pune. It lies between 18°27 ' North latitude and 74°52 'East longitude, it has covered an area 2133 hectors and population of this area is according to census 2011 is 31390.

Objectives

The main objective of the study is to examine the distribution pattern of water supply in the area and also to find out whether there is any significant impact of relief on the distributional pattern.

Data Base and Methodology

Present study is based on primary and secondary data. Primary data have been collected through questionnaire and field work. For sample survey ten percent persons are interviewed from apartments, societies, bungalows, industries and commercial sectors. Here an attempt is made to use of water, source of water, duration of water supply through survey, and also find out the total consumption. Secondary data have been collected from Pune Municipal Corporation, Daily News paper, Magazines and socio-economic abstract and census hand book etc. To represent this data suitable statistical methods and cartographic techniques has used.

Importance of Katraj

Katraj is sub-urban area of Pune, it is famous for Katraj Lake this lake is manmade lake, built at the time of Peshawa in the year 1749 to fulfill the demand of water of the society. In 19th century the Katraj lake water used to supply, through an underground canal to the old city of Pune. Several fountains, tanks, wells and pipelines were constructed to supply of water from Katraj Lake to local residents for domestic use and drinking purpose. In 1879, the Pune Municipal Corporation have to look over the city's water supply system and from began a gradual decline the use of Katraj lake, today this water only using for boating and watering the plants because waste water, sewage, silt etc. are entering to the lake from their external source. Hence all population of Katraj area is depends on corporation water supply. If we clean the Katraj Lake and start use of this water burden on corporation will decrease.

Analysis of water sources and distribution:

There is irregular and intermitted water supply in the hilly area and 32 percent population is settled in hilly area, the low lying areas receive regular water supply 68 percent population is settled in low lying area. Both areas received same water but due to topography hilly areas population facing scarcity of water.

Katraj area gets water from Parvati Water Treatment Plant; installed capacity of this plant is 537 MLD. (Million Liter per Day) and discharge per day from Parwati water treatment plant is 259.14 MLD, and population of Katraj area is 31390. According to urban development plan per person water requirement is 210 LPCD (liter per capita per day) but in katraj area it is different.

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Major Findings

The majority of people are depends on the municipal water supply for their daily needs. This water supply for Pune city received from rivers, dams, lakes and ground water. Basically Pune city received water supply from four dams that is 29.26 TMC among these, 16 TMC used for drinking purpose bifurcation of this 2 TMC for industry 2TMC for commercial and 12 TMC for household purpose and 14 TMC for agriculture purpose.

Table 1: Existing water storage capacity of dams

Dams	Storage capacity in TMC
Khadakwasala	1.97
Panshet	10.65
Warasgaon	12.82
Temghar	3.77

(Source: Pune City Sanitation Plan 2012)

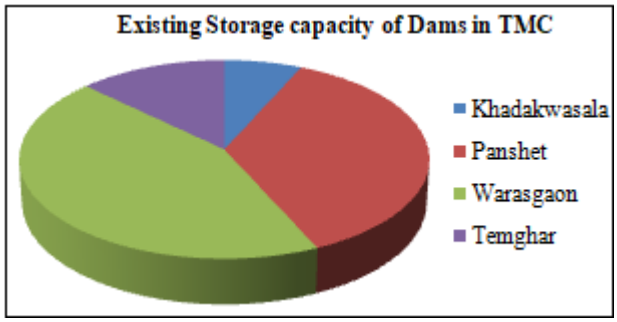

Figure 1

The following Table no. 2 shows that some people used water from multiple sources; the present study shows that about 93.5 percent of the households in Katraj use tap water. It is noted that 38.3 percent depend upon bore wells, 18.5 percent people get water through public tap, 1.9 percent people get water from wells and 7.1 percent people' depend upon the tankers provided by municipal corporation.

Table 2: Distribution of water sources

Sr. No.	Water resources	In percentage
1	Tap water	93.5
2	Bore wells	38.3
3	Public tap	18.5
4	Water tanker	7.1
5	Well	1.9

(Source: Compiled by the author)

The second largest source of water for a majority of people and industrialist in Pune city is groundwater (Bore wells) because of the rapid growth of population of the cities is making people more dependent on ground water to fulfill their needs.

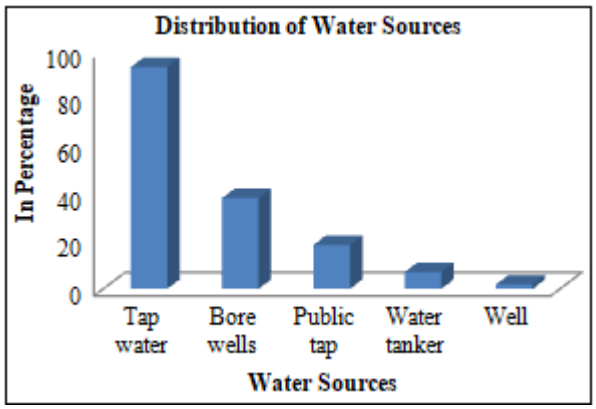

Figure 2

We observed in this region received irregular water supply, the present study shows that about 61 percent of the households in Katraj gets only one hour water supply, it is noted that 27 percent families gets only half an hour water supply, 7 percent people gets water 2 hours, and very few families gets water 24 hours that is only 4.5 percent from bore wells.

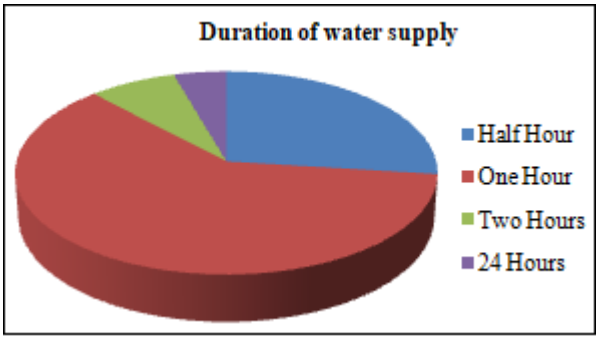

Figure 3

Water supply from Corporation is irregular 80 percent people state that they are getting water supply after two days, everyday gets water supply to the people percentage is very less only 10 percent people state that, and remaining 10 percent people gets water alternate days.

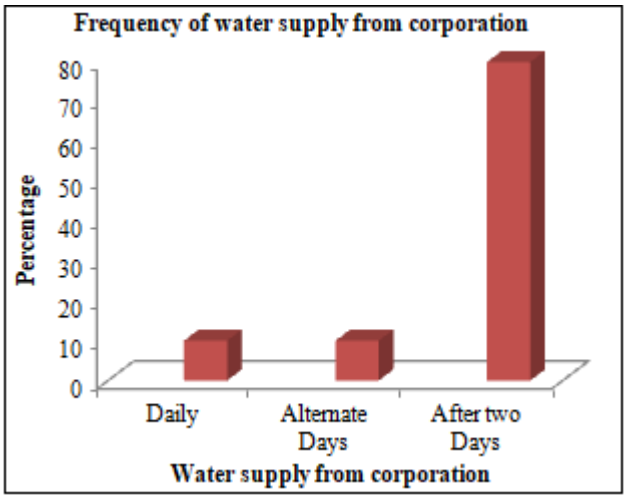

Figure 4

Use of water

In this study has try to measure the water consumption by per person through house hold survey in residential,

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commercial and industrial area. It is observed that in residential and commercial areas having more water consumptions compare to industrial area. Following table shows water consumption at different areas.

Table 3: Water Consumptions

Area	Percentage
Residential	93
Commercial	6
Industrial	1

(Source: Compiled by the author)

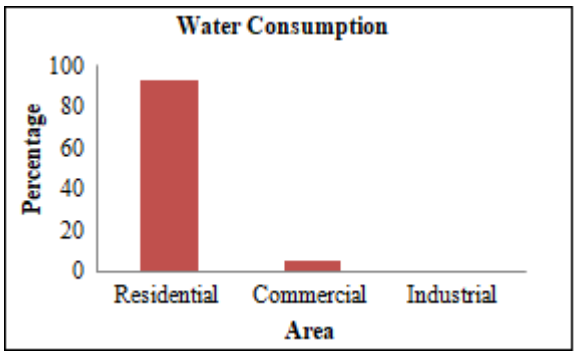

Figure 5

Quality of water

According to seasons quality of water is different 53 percent people state their opinion that in the winter season they gets good quality of water, 44 percent people state their opinion in the summer season they gets good quality of water but 98 percent people state their opinion they gets dirty water in the rainy season due to this they face in hygiene problems like gastro, throat infection, Cholera, typhoid etc. During this study 60 percent people affected by water pollution they faced gastro problem, 24 percent people affected by throat infection and 3 percent people faced typhoid, 2 percent people affected by cholera. It means people are not getting pure water for drinking it affects on their health.

2. Conclusion

In the present study, following conclusions are found.

1) Water supply from corporation is irregular, most of the families gets water supply only one hour.
2) Comparison has been made in water use of Residential, Industrial and Commercial area, it revealed that in residential area requirement of water consumption is more than commercial and industrial area because they need water for cleaning, bathing, cooking, washing clothes etc.
3) If corporation of Pune focused on katraj Lake water, burden will decreased on corporation, it is possible to get maximum utilization of Katraj Lakes as natural water supply source for nearby area.
4) Ninety eight percent people are gets water dirty in the rainy season due to this they suffer stomach and health problems.

3. Suggestions

1) Water supply times should be the same.
2) Regularly one to two hour water supply should be there.
3) Water supply should be clean.

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