

# Status of Water Demand and Supply of Meerut District

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### Abstract

Water is the most essential part of our life, it is required for sustenance of human life and sanitation. In 2010, about 87% of the global population (5.9 billion people) had access to piped water supply through other means like protected wells, spring supply etc. However about 13%(900 million people don't have access to proper source of water supply. Meerut is the 63<sup>rd</sup> fastest growing urban area in the world and ranked 242 in 2010 and second largest city in the national capital region of India (NCR) the 16<sup>th</sup> largest metropolitan area and 25<sup>th</sup> largest city in India situated between Ganga and Yamuna, close to the imperial capital (Jan Kumar Rajesh). Due to Rapid urbanization and population growth there is a scarcity of water in the District. There are two types of water sources-Ground water and Surface water (Jal nigam and Nagar nigam). Study was carried out to under stand the existing water supply and its demand. The work was done using both primary and secondary data. Primary data was collected through filled level survey and secondary data collected from were analysed to get the required conclusion.

**Keywords:** Essential, Sanitation, Protected, Demand, Supply, Metropolitan, Urbanization, Analysed.

### Introduction

Meerut is one of the fastest growing area of Uttar Pradesh, the District has a population density of 1,347 people per squire km and it saw a population growth rate of 15-92% over the last decade (2001-2011). It has 12 blocks and 3 tehsils and a total of 624 villages. It has got a historical significance as the first war of independence in 1857 started from this place. Hastinapur block of Meerut district can be associated with Pandavas and Kauravas of Mahabharat and Parikshitgarg is considered to be the capital of king Parikshit. Thus from the ancient time this place has always attracted kings and landlords to establish their empires and buisnesses. The topography and climate conditions also act a boon for doing so.

The trend of growth and development is still at a full pace in these place. At present in houses many industries and educational institutions. It is famous for sports goods, scissos, glass and wooden beads, embroder works, artificial jewelery and electric transform([www.msmediagra.gov.in](http://www.msmediagra.gov.in))

In the verge of growth and development the place is forgetting the sustainabilty of the natural resources. The available natural resources are used inefficiently to fullfill the needs of the ever increasing population. At the present time the area is facing the problem of water scarcity. There are two sources of water supply in this place- ground water and surface water , the water supply system of this place is this quite partial. Some places are getting surplus water whereas some are not getting enough to fullfil their needs. Thus in this present study an effort has been made to study the water damand and supply pattern of Meerut district.

### Objective of the Study

The study was started keeping in mind to analyse the demand and supply pattern of Water in different levels of administration of Meerut district like the Towns of Merrut block, Blockwise rural areas and city areas of Meerut district. The main purpose of doing the study was to know whether the water supply pattern is proper in all these places and whether the amount of water being supplied is as per the Government norms.

### Methodology

The present work was done using secondary data. The data regarding water demand and supply for different administrative divisions of Meerut district like the towns of different blocks, city area of Meerut and blockwise rural areas of Meerut district. The data were analysed and the trend of water supply and demand was found out. The population data for town and city for the year 2016 were abstracted from Jal Nigam and the

population of rural area were projected on the basis of 2011 census data using formula.

$$P=P_0+nx$$

Where,

P= Present Population

P<sub>0</sub>=Population of last known decade.

n=Number of decades

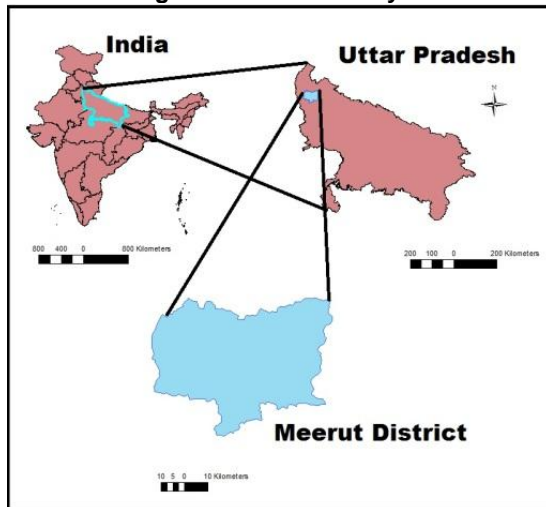
x=Average increase of population per decade.

The water demand in the rural areas was found out on the basis of the projected population data.

**Study Area**

Meerut District lies between 28°57' to 29°02' North latitude and 77°40' to 77°45' East longitude in the Upper Gangetic Plain region of India and its elevation is about 219 meters above the sea level. The geographical area of Meerut is 2,590 Sq. Km. It is bounded on the north by district Muzaffarnagar and south by Ghaziabad. Ganga River makes its boundary in east direction and separates it from the districts of Moradabad and Bijnor. Hindon River makes its Boundary in west direction and it separates it with the Baghpat district. Administratively the district is divided into three tehsils i.e. Meerut, Mawana and Sardhana and twelve development Blocks i.e. Sarurpur Khurd, Sardhana, Daraula, Mawana Kala, Hastinapur, Parikshitgarh, Machhra, Rohta, Janikhurd, Meerut, Rajpura & Kharkhoda.

**Fig 1-Location of Study Area**



**Result**

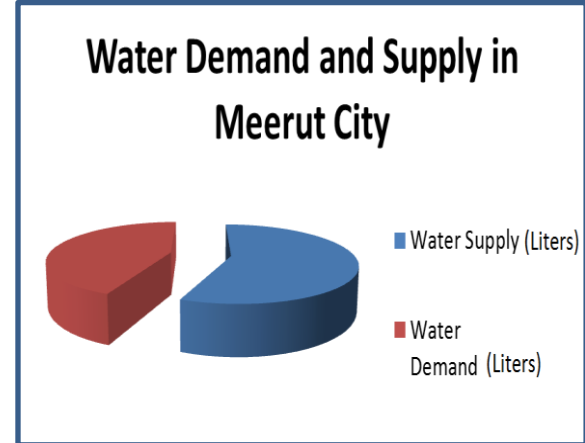
Water demand and supply are considered on the basis of population size and government norms. There are various sources of water supply and in the present study area there are mainly two sources of water supply 1.Ground water and 2. Surface water.

The source of surface water is the Gang Nahar and every day 100 MLD or 100,000,000 liters goes to the treatment plants and from there it is supplied to the city area. The ground water is extracted through tube wells, it is then stored in the tanks built by the Jal Nigam department. There are different tanks built in cities, towns and villages based on the demand of the local people.

The population of Meerut city as per 2016 is 143, 5972 (Jal Nigam Meerut). Based on it the present water requirement is 215000000 liters

(215 MLD) but 276000000 liters (276 MLD) of water is being supplied in the city area. As per the government norms the water supply in city area must be 150 liters per person but in Meerut city water supplied for per person is 192 liters, it clearly shows that the city area is getting water in surplus.

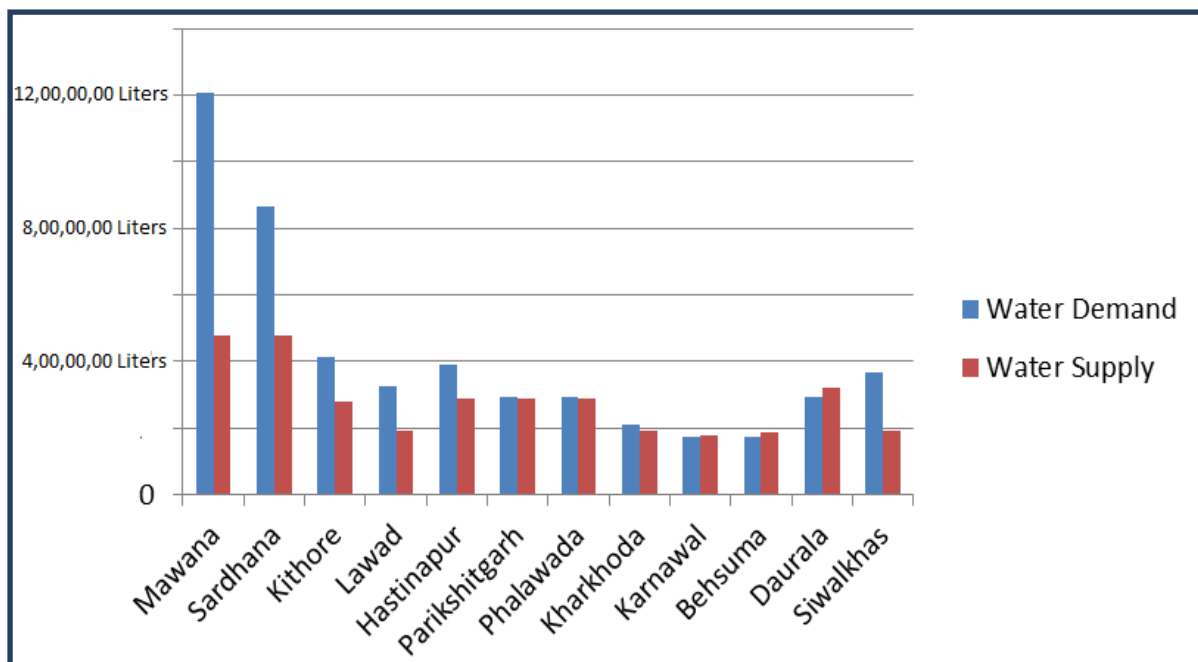
**Fig 2- Water Demand and Supply in Meerut City**



**Source-Jal Nigam Meerut**

In the town area the main source of water supply is the ground water. According to govt. norms in the town area per person water requirement should be 135 liters but in the real practice the situation in different as in Mawana the supply is 50 liters per person, in Sardhana it is 78 liters, in Kithor it is 60 liters,78 liters per person in Lawad, 100 liters in Hastinapur, in Parikshitgarh per person water supply is 108 liters, Phalawada gets 120 liters per person, 109 liters per person in Kharkhoda, in Behsuma it is 125 liters, Siwalkhas get 62 liters where as Karnawal and Daurala get surplus supply with 139 and 200 liters respectively. The total water requirement in different towns are Mawana has a water demand of 12090000 liters whereas the supply is 4800000, The water supply demand of Sardhana gets a water is 8650000 liters and it gets a supply of 4800000 liters, Kithore gets a water supply of 2800000 liters whereas its demand is 4150000, Lawad demands 3270000 liters of water but it gets a supply of 1920000 liters. Hastinapur gets a water supply of 2880000 liters and its demand is 3920000 liters of water, Parikchitgarh demands 2940000 liters of supply and it gets a supply of 2880000 liters of water, Pehlawada gets a water supply of 280000 and its demand is 2960000 liters, Kharkhoda has a demand of 2130000 liters but it gets a water supply of 1920000 liters of water, In Karnawal the water supply amount is 1800000 liters but its water demand is 1730000 liters. In Behsuma the water supply is provided in surplus amount of 1900000 liters but its demand is 1750000 liters, In Daurala the water demand is 2940000 liters whereas it gets a surplus water supply of 3200000 liters. Siwalkhas has got a water demand of 3690000 liters of water and it gets a supply of 1920000 liters of water.

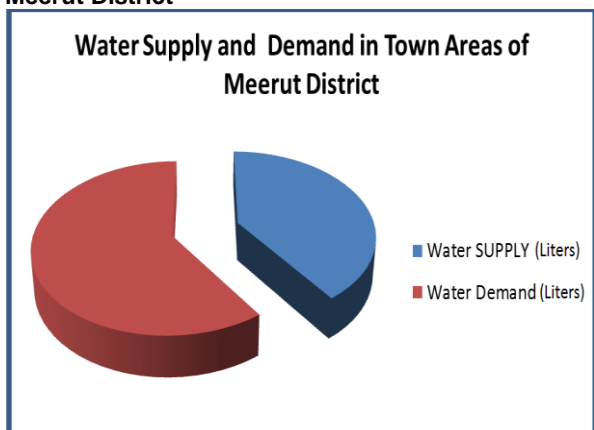
**Fig -3-Water Demand and Supply in Town Areas of Meerut District**



**Source-** Jal Nigam, Meerut

The above fig (Fig 3) clarifies the total supply deficit in water supply and water demand in the Town areas of Meerut district. It can clearly be seen that Karnawal and Daurala have no deficit in water supply. If the total water demand and supply is calculated it is found that at present the water demand is 50-22 MLD whereas the water supply is 33.7 MLD. The fig below (fig 4) clarifies this point, where it can clearly be seen that the required demand is more than the water actually supplied.

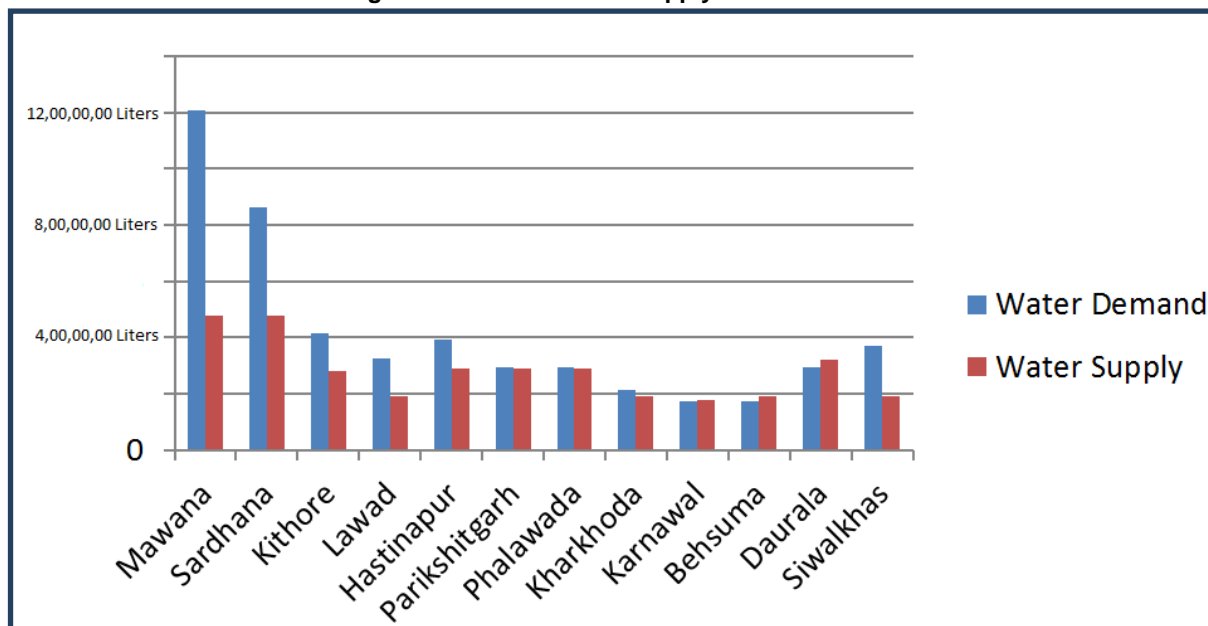
**Fig-4- Water Supply and Demand in Town Areas of Meerut District**



**Source-** Jal Nigam, Meerut

The water demand and supply in rural areas of Meerut district is also very erratic. According to the govt. norms in the rural areas per person water supply must be 70 liters but the actual situation is very disheartening. In Sarurpur the supply is only 8100000 liters and the water demand is 12440000 liters, Sardhana gets a low supply of 3050000 liters but its demand is 10800000 liters ,water supply in Mawana it is 1800000 liters and its demand is 9900000 liters in Hastinapur the rural places gets a water supply of 950000 liters and the demand in these places are 8800000 liters whereas Parikshitgarh gets 4300000 liters and its demand is 12700000 liters, 6050000 liters of water is supplied in Machara and the water demand in this place is 11640000 liters, in Rohata 4350000 water is supplied whereas the water demand in this area is 8600000 liters, Janikhurd gets 1450000 liters of water supply and its demand is 11900000 liters, the Rural areas Meerut block gets 3600000 liters of water supply whereas is demand is 4600000 Liters, the villages of Rajpura blocks gets a supply of 7600000 Liters and its demand is 13600000 Liters. Kharkhoda and Daurala get 7450000 and 3850000 liters of water supply respectively but the water supply demands of the villages of these blocks are 9000000 and 10400000 liters respectively. The situation is clarified in the fig below (fig-5).

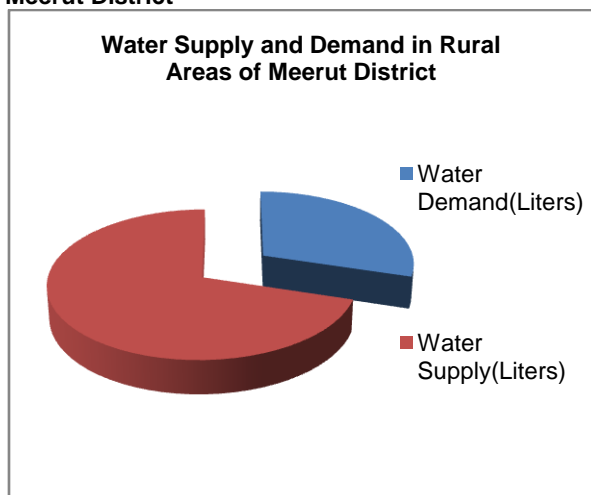
Fig 5-Water Demand and Supply in Rural Areas



Source- Jal Nigam, Meerut

The actual demand of the rural area is quite high it is 1243800000 Liters on the contrary only 525500000 liters water is being supplied to those areas. It states that the demand is more than the supply, the rural areas are quite neglected by the Government as it is trying to keep the villagers away from basic necessities. The situation can be made clearer with the help of fig 6.

Fig 6- Water Supply and Demand in Rural Areas of Meerut District



Source- Jal Nigam, Meerut

**Conclusion**

Water is the basic need for human being, without water the day to day sustenance is not possible. Water is supplied by different agencies and they keep it into consideration that the water is made available to each and every person. But the supply pattern is dictated by the total population of an area.

For eg., water is supplied more in the Town and city areas in compared to rural areas as Town and City holds more population. In the present study it was also found that the govt. norms considers supply

of more water in city and town areas but the supply pattern in Meerut district seems very partial as many town and cities were found to be getting surplus water supply even much more than the requirement on the contrary the situation of rural areas are totally different, where it is seen that the villages get very less water supply it is lesser than the defined Government norms this forces the rural people to arrange water for their daily needs by themselves. A country will develop only when we will think for the development from the grassroot level and in our country villages are considered to be the grassroot of the society. Even in the decentralization process villages are given more emphasis but in reality it is not happening as per the process. Thus it is the high time that we concentrate in developing the villages as India is still a rural country and most of its people live in villages. Thus each and every need of the people of village must be fulfilled for making our country strong and efficient.

**Reference**

1. Delowar, K, M, Hossain., Hakim, M, A., Mondol, Subrata., Khan, Shamin, Abu, Md., Siddique, A, A., (2014) "Water Supply and Demand gap Analysis ; A case Study on Jessore pourashava", Bangladesh, Journal of Bioscience and Agni.
2. Jain, Kumar, Rajesh., (2013) A Study on Sanitation System of Meerut U.P INDIA, Research Journal of Chemical and Environmental Sciences.
3. Manoli, E., Arampatzis, G., Pissias, E., Xenos, D., Assimacopoulos, D., (2002), Water Demand and Supply Analysis Using a Spatial Decision Support System, Global Nest Journal.
4. Malla, A., Muzaffar., Ahmad Firdous Umar, Rather, A, Manzoor., Teli, N, Muzafar., Kuchhay, A, Nisar., (2014) Assessing Water Demand and Supply For Srinagar City (J&K) INDIA, Under Changing climatic scenarios using water Evaluation and planning Modal (WEAP) Journal of Modern Engineering Research (IJMER)

5. Sun,Ge., Mcnulty, G,Steven., Myers, Moore,A,Jennifer., Cohen,C,Erika.,(2008)*Impacts of Multiple Stresses on water Demand and Supply Across The Southeastern United States.*, *Journal of the American Water Resources Association.*
6. Forkuor, G.,Pavlic, P., Asare, E., Obuobie , E.,(2014) *Modelling potential areas of ground water development for agriculture in northern Ghana using RS/GIS*, *Hydrological sciences Journal*, 437 – 451.
7. Wada, Yoshihide, Beek, Yan, P.H, Ludovicu., Kempen. Van, M, Cherye. , Reckman, W.T.M, Josef., Vasak, Slavek, Bierens, F.P, More., (2010), *Global depletion of ground water Geophysical Research letters*, vol.37.
8. Turner, A, Willets, J., Fane, S., Giurco, D.,Chong, j., kazagalis, A., and white, S. (2010) *Guide to demand management and integrated resource planning for urban water. Prepared by the institute for sustainable Future, university of Technology Sydney for the National Water commission and the water services Association of Australia.*
9. *Central Ground Water Board (CGWB),(1996), Development and augmentation of groundwater resources in national capital territory of Delhi. CGWB, Ministry of water resources, New Delhi. Pg 41.*
10. *Government of India, (1999), Water Resources Development plan of India: Policy and issues. National commission for Integrated water resources development plan, Ministry of water resources, New Delhi.*