

**ASSESSMENT OF QUALITY OF WATER SUPPLIES IN URBAN LOCAL BODIES
AND WAYS TO IMPROVE THE SAME BY DEVELOPING WEB BASED MIS**

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Abstract

Urbanization is maybe the principle examples of the 21st century, affecting worldwide financial development, energy usage, basic resource use, and human success universally; 3.6 billion people live in urban domains. The accompanying relatively few years will be the quickest season of urban development in humanity's arrangement of encounters, with 2.6 billion extra urban occupants expected by 2050. All of these new urban occupants will require water, yet amazingly little is considered where huge urban networks get their water or the consequences of this framework for the worldwide hydrologic cycle.

Past research has shown that as urban territories fill in people, the outright water needed for adequate common reserve grows too This augmentation inside and out metropolitan water demand is driven by the augmentation in urban people, yet likewise by an inclination for monetary progression to extend the irrelevant segment of the urban people that uses city supply rather than various sources, for instance, neighborhood wells or private water merchants Surely, growing permission to city supply for the world's poor is one of the Thousand years Improvement Objectives, since city supply is all things considered cleaner and safer than other water sources. Besides, the financial headway that generally obliges urbanization increases per-capita water use, as new advances like showers, garments washers, and dishwashers increase private usage of water. The overall development through and through metropolitan water demand makes urban zones search for new adequate, decently clean water sources, inciting the arrangement of to a great extent marvelous structures of urban water framework.

Keywords: *Web Based MIS, Quality Water Supply, Urban Development*

1. INTRODUCTION

Urban regions by their inclination spatially concentrate the water solicitations of thousands or millions of people into a little locale, which without assistance from any other individual would extend weight on restricted supplies of open freshwater near the midtown territory. For any situation, urban zones moreover address an intermingling of monetary and political power which urban territories use to collect urban water framework to satisfy their premium. As this framework can go out far from the midtown territory, or experience new wellsprings of surface water, groundwater or desalination, it routinely helps urban networks with moving away from water pressure. Our theoretical strategy in this paper was to separate these two wonders (centralization of water revenue and combination of power), to take a gander at when urban foundation is satisfactory to move away from water pressure and when it is deficient. We guessed that geological obstructions on water openness will impact instances of urban water lack – a couple of urban zones are simply in reasonably dry conditions, or arranged far from enormous water sources, and as such may encounter trouble getting adequate water. We also assessed that money related hindrances in the improvement of framework will impact instances of water lack, with more excessive urban networks with more resources prepared to fabricate more solid urban water foundation and subsequently move away from water deficiency. We coordinated the essential worldwide study of the water wellsprings of gigantic urban territories (people >750,000), auditing the 50 greatest urban networks and a representative trial of more than 100 other immense urban regions. Gigantic urban networks contain 1.5 billion people, one in every three urbanites. We use our audit to make authentic appraisals of water pressure for all colossal urban networks on Earth.

Water assumes an irreplaceable part in food of life and it is a vital mainstay of wellbeing determinant, since 80% of sicknesses in non-industrial nations are because of absence of good quality water. Helpless water quality keeps on representing a significant danger to human wellbeing. Diarrhoeal infection alone sums to an expected 4.1 % of the complete Disability-Adjusted Life Years (DALY) worldwide weight of illness and is answerable for the passings of 1.8 million individuals consistently. Subsequently, water borne sicknesses, for example, cholera and typhoid frequently have their episode particularly during dry season. High commonness of the runs among kids and babies can be because of the utilization of

hazardous water and unhygienic practice. In this manner, numerous irresistible illnesses are sent by water through fecal oral tainting. Sicknesses because of drinking of debased water prompts the demise of 5,000,000 youngsters yearly and make 1/6 of the total populace debilitated.

1.1 WATER RESOURCES USING GIS

Water is a scant asset that we can't live. Water comes from different sources like downpour, wells, springs, mountains just as ice. It is synthetically framed from oxygen and hydrogen. Living things like people should along these lines do whatever they can to guarantee legitimate management of this valuable asset. Governments have for since quite a while ago proposed guidelines on the utilization of water assets. It's vital for the point that without it, life can't exist. GIS is, anyway utilized in different exercises including water management. Water management utilizing GIS is useful for observing water assets.

1.2 LIST OF USES OF GIS IN WATER RESOURCES

- i. Storage and management of geospatial data:** Geographic information Systems keep information and records about water sources. The information gathered about water assets is put away on workers in various pieces of the world. A portion of the information is as a rule because of preparing done on information gathered by GIS. and information access is essential for the applications or employments of GIS.
- ii. Hydrologic management:** Studies on the water have shown that water is as a rule under movement, or changes its state and pressing factor with time. GIS comes to have a major impact in monitoring these water conditions.
- iii. Demonstrating of groundwater:** Groundwater displaying includes the hydrologists attempting to comprehend groundwater conduct and attributes. Remembering the shortage of water such a lot of study should be possible to ensure water catchment territories.
- iv. Quality investigation of water:** Not all water that exists on earth is ok for utilization by people or creatures. Taking inadmissible water can prompt antagonistic medical issue. Through GIS, concentrates on a slant, waste highlights, and land use examples can be utilized to anticipate whether the water in a given territory is protected.

- v. **Water supply management:** As we have seen before downpour is a helpful asset that no administration or individual can stand to squander. Water supply pipes are laid on the ground and can be checked on an ongoing premise. Spilling water system segments can likewise be distinguished and fixed on an ongoing premise, which is a lot of conceivable because of the combination of supply systems with GIS.
- vi. **Sewer system management:** Most of the human waste in many pieces of the world are dealt with and passed on to water bodies. Nonetheless, exacting and precise management of sewer lines should be occasionally made. Inability to deal with the sewer system well can prompt sicknesses flare-ups that lead to corrupting the nation's economy.
- vii. **Stormwater control and Floods calamity management:** During floods and tempests, almost certainly, water will amass in places possessed by individuals. This can demonstrate trying for the salvage group to go into salvage tasks with little information about the overwhelmed regions.

2. REVIEW OF LITERATURE

Madan KumarJha, et al (2020) - Groundwater is an indispensable wellspring of freshwater in both urban and rural districts of the world. Nonetheless, its imprudent abstraction and quickly expanding defilement are representing an extreme danger for manageable water supply around the world. Geographical Information System (GIS)- based groundwater quality assessment utilizing Groundwater Quality Index (GQI) has been end up being a practical apparatus for evaluating groundwater quality and its variability at a bigger scope. Nonetheless, the traditional GQI approach can't manage vulnerabilities associated with the assessment of natural issues.

\Kansara, Surendra (2019) The idea of quality is perceived as a fundamental instrument in achieving operational proficiency and extreme execution whether or not the item is unmistakable and theoretical, similar to administrations. Numerous issues identifying with the strategy for estimating the help quality arose to make it operational.

Rashid, Muhammad and Manzoor (2018) Urbanization regularly causes ecological debasement and damages human wellbeing in non-industrial nations. This study has a basic

spotlight on the impacts of quickly developing urban life and its effect on water assets in the Muzaffarabad city. The data for this paper comes from 20 inside and out interviews with individuals from the nearby government, political specialists and neighborhood occupants of the city, done during the year 2015, to dissect the manners by which expanding urban life is influencing water quality around there. The discoveries show that waters of the two waterways Jhelum and Neelum are as a rule violently sullied by the nearby inhabitants, which brings about a shortage of drinking water and various viral illnesses.

Chhillar, Krishan (2018) Geographical Information Systems (GIS) are PC based systems that empower clients to gather, store, and measure, break down and present spatial data. It gives an electronic portrayal of information, called spatial data, about the Earth's characteristic and man-made highlights. A GIS references these true spatial data components to an organize system.

Hoekstra, Arjen and Buurman (2018) we survey the expanding collection of research on urban water security. To begin with, we consider the four diverse focuses in water security writing: government assistance, value, maintainability and water-related dangers. Second, we make a stock of the different points of view on urban water security: disciplinary viewpoints (for example designing, ecological, public arrangement, general wellbeing), issue situated points of view (for example water deficiency, flooding, water contamination), objective arranged points of view (for example better water supply and disinfection, better sewerage and wastewater treatment, security from flooding, appropriate urban seepage), incorporated water versus water-coordinated viewpoints, and strategy insightful versus administration points of view.

Chaudhary, Sanjay (2017) the reason for this paper is to acquire a superior comprehension of the degree to which administration quality is conveyed by the e-Governance administrations. A model instance of the Smart City ULB e-Governance administrations is utilized for investigation of resident client insights and assumptions for administration quality. SERVQUAL is utilized to quantify administration quality among clients of MCD (ULB at Delhi, India and shortlisted for Smart City advancement by MoUD, India). The overview catches clients' assumptions for decent quality e-Gov. administrations and contrasts these and their impression of the help conveyed.

Singh, Arun (2017) Water is an essential human need and basic in deciding the quality of life. However Indian urban communities witness lacking water supply with sporadic pressing factor, inadequate amount and sketchy quality. Speed of urbanization and interaction of decentralization have affected the arrangement of urban water supply yet it is a long way from fulfillment. Varanasi is the most seasoned living city and one of the million urban areas since 1991 has seen a sudden increase in population.

Panwar, Manoj and Antil, Mr (2015) Increasing populace and climatic variety driven by environmental change has prompted water shortage across world. As referred to in United Nations Environmental program 2002, by 2025, 1.8 billion individuals will be living in nations or districts with supreme water shortage around two-third of the total populace, predominantly in agricultural nations will confront decently to high water pressure and half of the populace will deal with issue because of water shortage.

3. OBJECTIVES OF THE STUDY

The objectives for the following study are as follows:

1. To study the concept of water, quality, urban water quality and water resources using GIS etc.
2. To study the various parameters related with urban water supply.
3. To monitor the quality of water supply in ULBs by developing web-based MIS & App
4. To study the improvement in water supplies and development of web-based MIS.
5. To assess different technology options to improve quality of drinking water and examine the quality of water stress in urban local bodies.
6. To study the Proposed Standard Operating Procedure for collection of Water Samples and for maintaining quality of drinking water.

4. PROBLEM STATEMENT

The statement for the problem entitled “*ASSESSMENT OF QUALITY OF WATER SUPPLIES IN URBAN LOCAL BODIES AND WAYS TO IMPROVE THE SAME BY DEVELOPING WEB BASED MIS*” is to recommend suitable strategies and advances to improve the drinking-water quality all urban regions.

The current research will focus in on evaluation of quality of drinking water covering every one of the 170 ULBs of the state, distinguishing water quality pressure region, defining water quality pressure maps, giving appropriate innovative answer for improve quality of savoring water their urban areas, creating electronic MIS that could be helpful to all ULBs and giving Android based App at free expense to all residents of Gujarat.

5. RESEARCH METHODOLOGY

The research methodology will be outlined dependent on accomplishment of the study destinations and partitioned in to two sections viz., Primary sources and Secondary sources. Secondary sources basically comprise of writing overview like GPCB, CPHEEO standards norms, focal and state strategy lead to existing circumstance of water supply offices. This will likewise be upheld by essential overview including broad field assessment including test assortment and test at chosen districts, interviews with partners in various regions.

5.1 SOURCES OF DATA COLLECTION

Primary source

This study will cover all out 167 Municipalities and Municipal Corporation space of Gujarat for Quality of water supply to their resident. Testing of test of drinking water for quality within any event 3 examples from each ULBs at various timeframe will be done through outsider water quality research center. Plotting will be made for water quality pressure territory for Fluoride, Nitrate, Salinity and TDS to plan ACAD maps. Mixes of different customary and non-regular water quality improvement strategies will be recommended.

Item (1)	Per capita contribution (g / c / d) (2)	water supply (L / c / d) (3)	Sewage Generation 80 % of (3) (4)	Concentration (mg/L) (5)
BOD	27.0	135	108	250.0
COD	45.9	135	108	425.0
TSS	40.5	135	108	375.0
VSS	28.4	135	108	262.5
Total Nitrogen	5.4	135	108	50.0
Organic Nitrogen	1.4	135	108	12.5
Ammonia Nitrogen	3.5	135	108	32.5
Nitrate Nitrogen	0.5	135	108	5.0
Total Phosphorus	0.8	135	108	7.1
Ortho Phosphorous	0.5	135	108	5.0

Table 1: Water Supply and Savage Generation Concentration

- **Secondary source**

In secondary source the data have been collected through the magazines, internet, journals, annual report, books, thesis etc.

5.2 DATA SHEET

Techo-Econo investigation for every specialized arrangement will be made to recommend fitting innovative arrangement. Standard Operating Procedure for assortment of water tests in all Municipalities and Municipal Corporations will be proposed thinking about CPHEEO, MoUD and BIS suggestion and appropriate to Gujarat urban areas.

An expert data sheet is additionally set up to permit adding, refreshing or erasing existing ULBs or water zone in greater civil organizations. Data section work will be disclosed to all authorities of all ULBs of Gujarat. Additionally, to give information of water quality provided to residents on their water zone space of own city an android based mobile App with name "Urban Water" will be dispatched and made accessible from Google play store at liberated from cost.

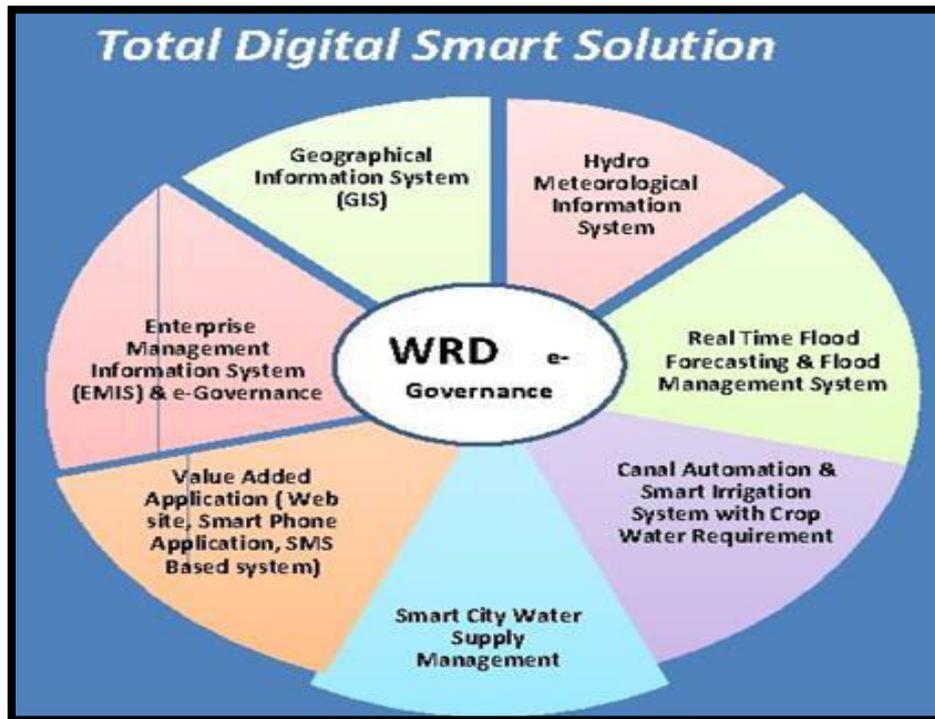


Figure 1: Digital Smart Solution

5.3 DETAILED METHODOLOGY

Detailed Methodology will be clarified with following stream outline:

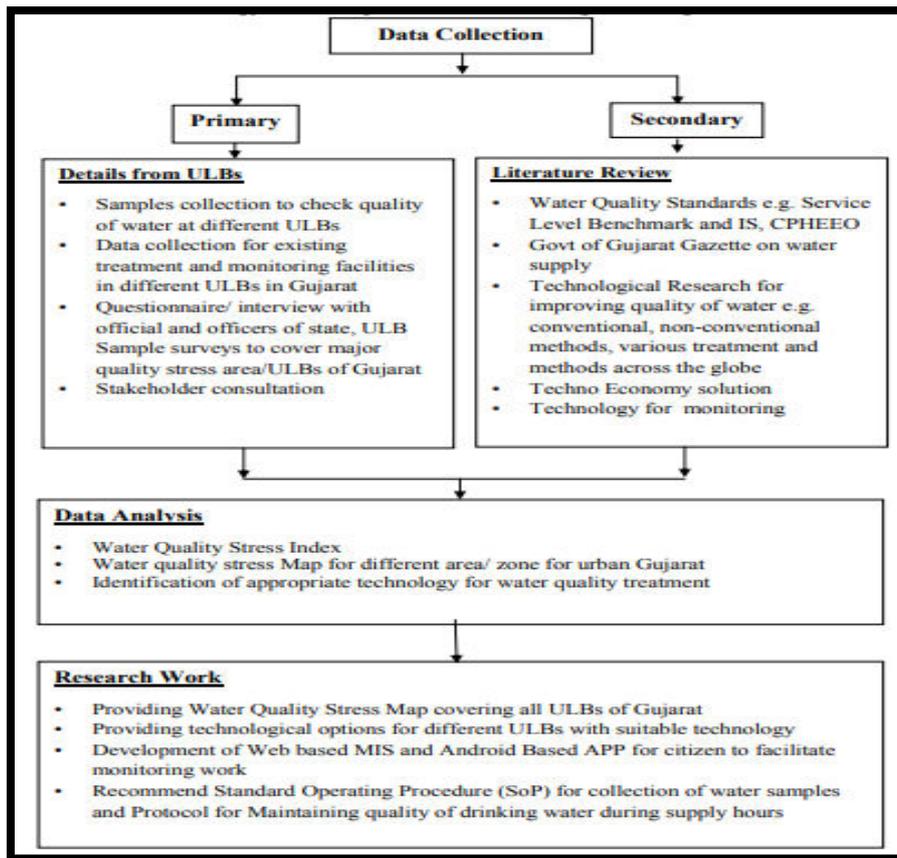


Figure 2:Detailed Methodology of the study

5.4 DEVELOPMENT OF MIS & APP

To produce MIS for every day and time to time basis, water quality testing data at ULBs level web site www.gtureserchonwater.com will be created and registered. An expert data sheet will likewise set up to permit adding, updating, or deleting existing ULBs or water zone in greater municipal corporations. To have consistency, data section work will be disclosed to every one of the officials of all ULBs of Gujarat.

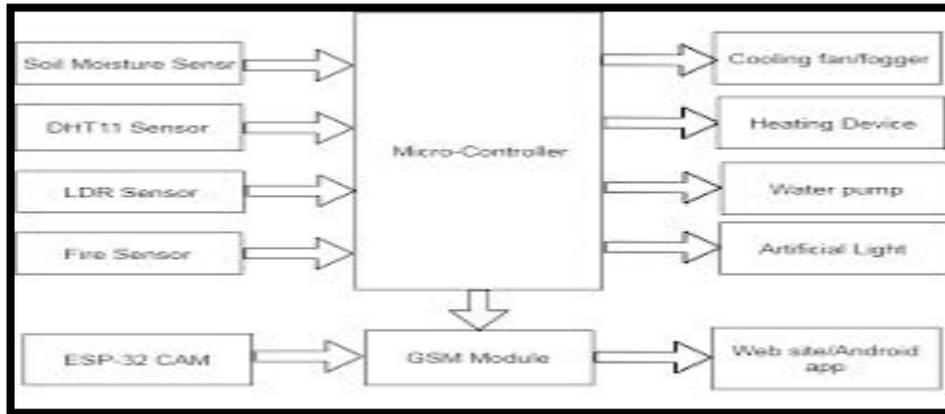


Figure 3: GSM Module

Furthermore, to give information of water quality provided to residents on their water zone area of own city, an android based versatile App with name "Urban Water" will be created and made accessible to common people from Google play store at free of cost. This App will be linked with the MIS and web site.

6. CONCLUSION

In view of data collection from every one of the 167 ULBs of Gujarat state, conversation with the majority of boss officials, everything being equal, and city engineers (water works) of all city enterprise, conversation with authorities of the state, advisor who have planned the water supply projects, authorities of Gujarat Water Supply and Sewerage Board, Gujarat Pollution Control Boards, UMC and CEPT college authorities drew in with PAS projects and so on, will prompt the research results. What’s more, drinking Water Quality pressure planning on AutoCAD and advancement of MIS and Android base App will be come about into a significant help instruments to know the quality of water by the end client. Inside and out audit of Literatures will likewise assist with examining suitable methods and innovation to improve quality of drinking water.

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