



Enabling Thrissur Municipal Corporation for WET with ArcGIS



Client: Thrissur Municipal Corporation

Industry: Government

Location: Thrissur

Organization Profile

Thrissur municipality came into existence on 1st July 1942 and later in the year 2000 it was upgraded to the level of municipal corporation, by merging the adjoining Ayyanthole, Ollukkara, Koorkanchery, Ollur and Vilvattom panchayths and parts of Nadathara panchayth with the erstwhile municipal area. Thrissur municipal corporation came into being on 2nd October 2000 with a total area of 101.42 sq km. The total population of Thrissur Corporation in 2001 was 317474 consisting 154188 males and 163286 females. The total households in the city is 66827 and sex ratio is 1092/1000 male. According to census 2001 the average population density is 2868 persons per sq km. In the central area of the town, the population density is as high as 3130 persons per sq km, while it is 1458 persons in the outer fringes of the city.

Solution

ArcGIS Enterprise with ArcGIS Hub and ArcGIS Desktops

Highlights

- GIS integration helped reduce Thrissur's water loss by providing a Data Driven Decision Support System.
- An efficient outage management and workforce management system enhanced the operational efficiency.
- Dashboards provided an interactive visual platform to analyse maintenance requests.
- GIS layers added richness to the data by improving queries through attributes.
- Water network simulation enabled authorities to ensure uninterrupted water supply to the consumers in Thrissur city.

Project Summary

Thrissur Municipal Corporation's Water Efficient Thrissur (WET) is an integration solution of GIS technology with Internet of Things (IoT) to optimise the water utility management and to provide a data driven decision support system to reduce the Non-Revenue Water. This solution affords Thrissur the luxury of becoming resilient to future water shocks.

To enable better overview, less risk and more reliability in water management, Thirussur corporation used GIS technology as the spine for water management. The technology has proven itself to be an excellent plug-in to pre-existing systems. It is based on the capabilities of Esri's ArcGIS software - an integrated GIS platform that lets users discover, create, use, and share location-based insights, on any device. WET is an authoritative GIS based repository for the assets and operational data of Thrissur's water supply network which help efficient decision-making on water network management and its operations. Through the utility network capabilities of Esri ArcGIS with help of IOT Sensors, the Non-Revenue Water and unauthorized connections which has led to pilferage and loss of revenue to TWA has been easily rectified.

Challenges

Thrissur Municipal Corporation was facing many challenges in water distribution. Various studies have consistently revealed Non-Revenue Water (NRW) to be more than 50%. City administrators have had difficulty grappling the problem because of the hidden and underground nature of water assets.

The Other challenges included the unavailability of authoritarian data of under and over-ground assets.

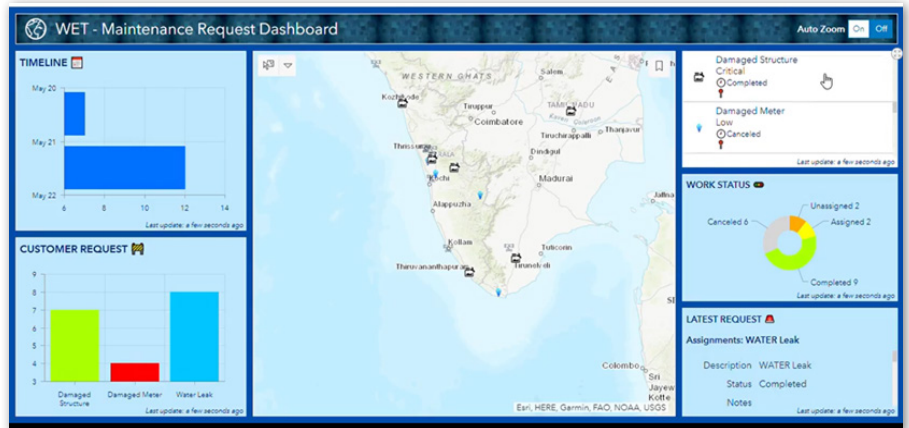
- Faulty meters & Absence of smart metering devices
- Inefficient water outage identification and management
- Absence of updated customer and consumption data
- Pilferage, leakage and poor monitoring of water assets
- Nonexistent customer redressal mechanism
- Unavailability of an integrated platform connecting the distribution management with legacy systems like Customer Information, Outage Management, Meter Data Management & Workflow Management

Thrissur Municipal Corporation needed a solution which could equip public water supply, especially within the old municipal area of Thrissur, with the most modern systems. One of the main objectives of this project was to reduce public water loss by bringing Non-Revenue Water below 15%.

Solution

The solution uses GIS and is based on the capabilities of Esri ArcGIS software - an integrated GIS platform that lets users discover, create, use, and share location-based insights, on any device. It has mapped asset data such as pipes, valves, hydrants, meters, and other network features, as well as operational data such as pressure zones, work routes, main breaks, and inspection locations.

- **A central repository of water pipelines and consumer networks:** GPR, Drone, GPS, DGPS and ground-based asset surveys helped build an authoritative network of supply pipelines.
- **Water meters:** Smart water meters at critical network junctions access pipeline flow. The meters log any drop in water flow; smart utility applications use IoT and sensors to determine pipeline fractures quickly. Such deviations are live updated into the central repository, alerting municipal authorities to the possibility of water loss.
- **Customer redressal and billing system:** Hand-held equipment like POS machines make on-the-spot billing and on-site logging of repairs a reality. GIS system integration with flow-meter reading, billing, and complaint redressal helps identify Non-Revenue Water at the neighborhood scale. An online portal registers consumer complaint and escalates pending complaints on a periodic basis to higher authorities.
- **Outage management system:** Dashboards provide a view of leaks and outage management. They also help trace and isolate leaks so that they do not disrupt the network, or citizen routines.
- **Hydraulic modeling:** GIS predictive analytics power WET to estimate and ensure the feasibility of new user connections, based on existing consumption loads, water pressure, and other parameters.
- **Workforce management:** Mobile applications are helping notify maintenance crews of maintenance work. A Water Service Assignment platform connects supervisors to their crew and enables them to communicate field assignments in a prompt and effective manner.



Benefits

GIS system integration helped reduce Thrissur’s water loss by striking at the root of the problem.

- Incorporation of various technologies like GIS, IoT Analytics and administrative applications like Billing Systems, Customer Feedback System helped in reducing the NRW by providing a Data Driven Decision Support System.
- An efficient outage management and workforce management system enhances the operational efficiency by reducing the response time to attend to any disruption/ customer grievance.
- Dashboards provide an interactive visual platform to analyze maintenance requests. Map views, timelines and pie charts communicate data to citizens in the simplest formats.
- GIS layers add richness to the data by improving queries through attributes.
- A geo-tagged digital database ensures that maintenance and future updates to the water network are proactive, and not piecemeal.
- Water network simulation enables authorities to ensure uninterrupted water supply to the consumers in Thrissur city.
- Most importantly, the WET Project pushes for accountable governance. It provides authorities with the tools to visualize and assess where they stand, in terms of water supply infrastructure. It gives citizens an interactive platform to air their grievances. Simple graphics and processes make the platform accessible to everyone, sans barriers of age or ability. It allows authorities to take charge of their assets and respond to how their city is growing.

