DRAINAGE NETWORK SYSTEM OF KERALA

Drain network visualization of Kozhikode, Palakkad, Thrissur, Kollam and Alappuzha.

**Introduction**

Drainage systems refers to the well-defined channels of a river system or man-made systems in an area. A proper drainage system is necessary as disposal of waste water into a river or a sea is not possible. In order to enhance the net benefits of drainage systems, more attention will need to be given to the water quality impacts of drainage water disposal. They are vital and necessary component of agricultural production systems and for the dissipation of collected water in flood prone areas. For the development of drainage network, feasible network of transportation is required. Therefore, the two maps provided include the drainage visualization and the transportation facilities in a particular area respectively.

**Methodology**

The purpose of this study is to visualize the effectiveness of the drainage system prevailing in five districts of Kerala namely Kollam, Alappuzha, Thrissur, Palakkad and Kozhikode and the map represents the accessible road coverage for the development of drainage network of the five districts aforementioned.

The data that has been used in this project is from Bhuvan web utility. The project makes use of Thematic Services provided by Bhuvan to gather the data of the state of Kerala. The theme ‘Urban Land Use (10K): NUIS’ was used in order to get the route map of drainage, canal, wetlands, waterbodies, rail and road network for the districts of Kollam, Alappuzha, Thrissur, Palakkad and Kozhikode.

QGIS software was used to create the maps. Using the WMS URL given by Bhuvan, Urban Land Use (10K): NUIS data for administration boundaries, drainage (line/poly), canal (line/poly), surface waterbodies, waterbodies line, wetlands, roads and railway network were loaded onto the provided district boundary shapefile. Along with the creation of the layout of each district, different talukas and towns were labeled with the help of Google maps using the WMS service provided by Google. The map was created under print layout using the layers mentioned above along with north direction symbol, legend and scale. Finally, the map was exported in the pdf format in order to utilize the complete availability of resolution.

**Application**

Kerala is known to have seen heavy downpours and drastic floods in the past years. These dense rainstorms have been disrupting normal life in almost all urban cities in India. This is especially true for a state like Kerala that suffers from clogged drainage and poor storm water management. These torrential rains have caused the power supply and communication links to be snapped, shortage of food and an increased need for potable water and medicines. Rapid urbanization, industrialization and population growth have contributed to drainage systems getting congested. These drains are not able to take the pressure of huge water accumulated due to heavy rain, leading to water logging. This facilitates the need for knowledge of proper drainage and canal systems along with wetlands and waterbodies present to evaluate the strength and water holding capabilities of these systems.

This project focuses on mapping the drainage and canal system for each of the district to understand its distribution and capacity with respect to the waterbodies present around it. The map provided gives an insight on the location of the drains that can facilitate the inspections for any clogs that may be present. It also informs the government and necessary authorities of the need for new drains and canals in various localities.

On the basis of visualization of the maps Thrissur has the better coverage of drainage system when compared to remaining four districts.

Government of Kerala can look forward into these types of maps for the betterment of the drainage network coverage within the state. Government can plan the easy accessible routes for early construction of drainage system.