

## IITB-AICTE-ISRO Mapathon 2020

Group ID: 3828 || Group Name: *Planner Peeps*

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Title of work:

### **Identification of SBM Public Toilet deficient areas in a city: A case of Surat**

The work displayed covers an extent of 325.515 sq km of administrative area of Surat municipal corporation. Researchers observed that several public toilets are established and operational in the city since past a few years. Interest further led towards exploration of Swachchh Bharat Mission (SBM) Guidelines that avails criteria for setting up accessibility of public toilets to urban citizens (based on CPHEEO recommendations). Curiosity leading to identify access deficient areas resulted in the currently attempted exercise.

#### **1) Methodology:**

It includes for the following process adopted for obtainment of spatial interventions in relation to the title of work

1. CRS used is UTM-84
2. Locational information about public toilets in Surat city is compiled from field observations, Open Street maps website (open-sourced), and records of Surat Municipal Corporation. Existing public toilets at 227 locations are identified within Surat city.
3. Location Points is generated in a layer using QGIS with Latitude and Longitude records; the points are assigned a customized style of display on maps (Point layer).
4. Surat city boundary layer is created with bifurcation at ward level along with zonal and city level municipal administrative boundaries. Georeferenced map of Surat Municipal Corporation boundaries is used (Polygon layer).
5. The ward boundaries are assigned **attributes** of its area (in sq km) and population based on the Census of India 2011 records available at [www.suratmunicipal.gov.in](http://www.suratmunicipal.gov.in).
6. Using a georeferenced map, major roads in the city are also traced as another layer (Polyline layer).
7. Using **Bhuvan website**, several polygons are created to obtain surface built-up area boundaries (status year 2018) by tracing, and it is imported in the QGIS as a separate layer (Polygon layer).
8. Point layer is assigned with a buffer of 1000m radial distance as per the SBM Guidelines for public toilets.
9. Overlaps of the layers are used to generate different maps (by creating a 'Map-Layout') showing spatial interpretation of facilities in place and deficient areas where citizens are settled.

#### **2) Complexities involved:**

Following are the complexities involved as identified while carrying out the task of generating maps.

1. Obtainment, georeferencing and tracing of municipal administrative boundary maps.
2. Observation/ Ground verification of public toilet locations with latitude and longitude details.
3. Tracing of surface built-up spaces in Google Earth to observe accuracy in measurements.

#### **3) Potential Applications**

The use of current mapping exercise shall lead to:

1. Identification of service deficient regions/localities at ULB level (need-based approach).
2. Prioritizing fund allocation to develop facilities in deficient regions/localities (optimized fund utilization) and attainment of increased public satisfaction.
3. Identification of potential areas for land reservation for public toilet complex construction (in addition to existing 115 sq km of public toilet deficient built-up spaces).
4. Public toilet quality assessment parameters can be added as attributes and updated frequently to have a visual check.