

# Mapping of Natural Resources / Man-made Features in Pune District

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## Introduction

Pune District is located between 17° 54' and 19° 24' N latitudes and between 73° 19' and 75° 10' E longitudes. Pune District is rich in diversity of ecology and climate from west to east due to which varieties of resources are available. By proper planning of these resources socio-economic development is possible.

In Pune most of population is dependent on agricultural activities but half of the area is under scarcity zone hence cultivators of this zone can't rely much on agricultural activities. From them it is necessary to do supplementary business during drought. For launch of business, planning of resources is essential. Factors like location, transport, availability of markets, industries and labourers are important resources to establish any business. Hence GIS or Maps can be effective tool to visualise these resources. By considering 17 goals of sustainable development maps are plotted.

## Problem statement

- a. Mapping of Natural resources required for agriculture.
- b. Mapping of all the resources required for supplementary business for farmers.

## Methodology

- a. *Data used*
  1. Bhuvan
  2. Census of India 2011, Maharashtra, District Census Handbook, Pune, Village and Town Directory, Directorate of Census Operations, Maharashtra
  3. Pradhan Mantri Krishi Sinchayee Yojana, District Irrigation Plan, Pune
  4. Pune Collector Office, Pune.
  5. Maharashtra State Road Development Corporation Ltd Maharashtra Industrial Development Corporation
  6. The Maharashtra State Agricultural Marketing Board.
  7. Mahtma Phule Krishi Vidyapeeth, Rahuri
- b. *Specific steps used in QGIS*
  - I. For geo-reference datasets like markets, industries, colleges.
    - i. Created shape file for Pune district with Sub districts/ Tehsils.
    - ii. Made attribute table with latitude and longitudes of datasets.
    - iii. Plotted with symbol related to dataset.

- II. For statistical datasets like census, rainfall, different zones.
  - i. Created shape file for Pune district with Sub districts/ Tehsils.
  - ii. Categorised the datasets for different ranges.
  - iii. Plotted with different colours/ indicators for Sub districts/ Tehsils.

### c. *Complexities*

It was difficult to extract different categories like Built-up, Agriculture, Forest, Wasteland, Water bodies from LULC but from observation and statistics available on website analysis was not bit difficult.

## Application

### a. *Map of Natural Resources required for Agriculture in Pune District*

For agriculture basic requirement is fertile soil, sufficient rainfall or water. By recording and plotting the layers of soil, water bodies and rainfall at particular period from preparation of soil to harvesting we can estimate the crop yield and crop pattern. From the plotted map we can say that western region of Pune has richest soil layer but efficient use of this soil can't be made by cultivators. Because of urbanization in Central region and lack of space this area can't be utilize for agricultural productivity. Eastern region is covered by Black soil which is highly fertile but there is no surety of rainfall. But Baramati and Indapur are highly productive sub districts.

### b. *Map of Resources required for Supplementary Business in Pune District*

As half of district is under scarcity zone cultivators of Pune must have supplementary business. Hence it will be beneficial and easy to visualise for farmers if map of required resources are plotted. If we consider Poultry farm then its requirement is land away from city and low lying area but it should be near to the markets. Therefore by plotting markets, roads, barren land we can estimate location and also wasteland will get utilized. Junnar, Shirur & Indapur are ideal sub districts for poultry farming. Similarly Bhor, Baramati, Indapur, Daund are best for dairy farming. For research purpose research institutes should be nearby. By using layers approach and developing algorithms for measuring lengths of roads, areas and capital required, farmer can analyse resources and estimate location and plan business accordingly. Further by analysing solar radiation maps and LULC map together wasteland can be used to make solar plants to power the whole tehsil or district.