Town Planning in Pandra Block

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ABSTRACT

Technology has advanced significantly. Geographic information systems are one type of technology that helps contemporary engineers (GIS). Engineers can gather and evaluate geographic data using GIS. Digital geographic maps can then be used to visualise the data in layered fashion. Software called a GIS (geographic information system) analyses, records, and modifies geographic data so that it can be displayed in relation to other data. It can be used in many different industries to gather data on everything from logistics to the environment. Engineers' roles are evolving, being disrupted, and growing as a result of GIS. In order to help engineers and other people make better decisions, it overlays data layers on geographic maps.

Urban sprawl, also known as sprawl or suburban sprawl, is the quick rise in the geographic size of cities and towns. Low-density housing, single-use zoning, and a greater reliance on personal vehicles for transportation are common characteristics of urban sprawl. Urban sprawl is a result of a demand for more living space and other residential amenities, though it is also a result of the necessity to accommodate a growing urban population in many metropolitan areas. Urban sprawl has been linked to higher energy use, pollution, and traffic jams as well as a loss of community identity and cohesion. Additionally, the issue results in the degradation of wildlife habitat and the fragmentation of remaining natural regions by increasing the physical and environmental "footprints" of metropolitan areas.

KEYWORDS

1. G.I.S
2. Pandra Block
3. B.M.C
4. B.D.A
5. Remote Sensing
6. Cadastral Information
7. Toposheet
8. Arc G.I.S(10.3)
9. Google Earth
10. K.M.L

INTRODUCTION

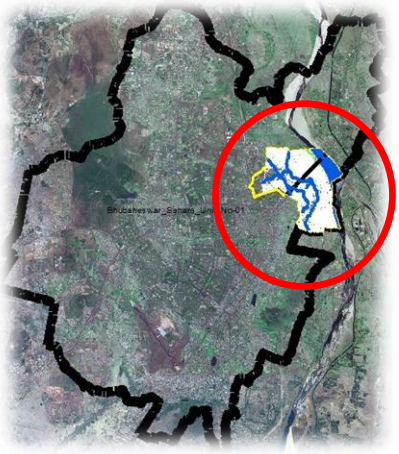
Bhubaneshwar and neighbouring towns in the state of Odisha are faced with an extremely difficult problem in managing the city's rapid urbanisation and growth, which has led to a demand for more infrastructure to support the expanding population. The state of the cities and towns of Odisha has been severely strained by the pressures of fast growth and years of neglect. The numerous difficulties they face, particularly in the area of infrastructure, are evident. For example, there are vast areas that are not served by public transportation, water supply, sewerage, street lighting, or housing for all income groups. Additionally, there are inadequate amenities for health and education.

It is necessary for the transformation of Odisha's cities and towns and the efficient management of new growth to have efficient planning protocols, processes, and institutions supported by efficient legislation and including the general public. A land's limited natural resources can be intelligently used to provide infrastructure and generate income for urban local bodies, corporations, and urban development agencies in order to manage future expansion effectively.

Pandra Block situated in the north-eastern region of capital city. It is on the bank of river Kuakhai. Comes under the governance of BMC(Bhubaneswar Municipality Corporation)It As the capital city Bhubaneswar is expanding tremendously in recent years Pandra block

was not set aside. It is a golden opportunity for planners to develop this area. This area is well connected with NH16 and newly constructed NH316(Puri By-pass). These two roads make a perfect triangle for this area to be planned properly. In this study our focus is to plan the Pandra block using GIS technology as per different planning parameters and by following various govt. norms of town planning.

AREA OF STUDY - PANDRA BLOCK



OBJECTIVES OF THE STUDY

These are the study's precise goals, in order.:

To find out the data inside the city which are degrading the architectural beauty of the city in field of planning and management.

Pandra block belongs to a place where most of the part is developed.

The development is done by looking into the perspectives of sanitization, living conditions, space management, and blockage to the development of the ward.

The resettlement plan area is of exact area as of the Pandra block designing and management of the space is done according to the BDA approved statistics, where each of the elements like living/parking/ recreational centres/hospitality area/ transportation parameters are maintained according to the govt. Society plan.

The site is selected according to the availability of space in the ward by keeping the view point of road & railway connectivity for the means of transportation, and health care system like things.

Town planning and development can be carried out through the spatial usage of satellite data, from which we can sort the data as needed and view the designs for new roads and extensions that will meet our needs. Urban expansion and transportation are interrelated, and one requires the other's assistance. Both transportation and planning must be done in a way that allows each road section and urban shaping to develop independently of one another.

With the use of GIS, public amenities and infrastructure can be represented spatially in a way that is very user-friendly.

The spatial and temporal distribution of natural resources as well as the kinds of activities that are endangering the country's natural resources can also be determined with the aid of GIS. With this knowledge, the government can take proactive measures to advance the cause of natural resource conservation in particular areas.

GIS can also be used to address the relatively new concept of multilevel parking requirements in developing countries.

GIS can assist in providing details regarding crime rates and types in various city-sectors and in various cities.

Techniques used in GIS and remote sensing can also assist in resolving issues with traffic, encroachments, air and noise pollution, water and power supply, etc.

METHODOLOGY

The preparation change detection/growth of area of interest follows the steps-

Survey of area of interest and digitization using imagery.

Modern technology used for mapping the Pandra Block region.

Combining socio-economic and geographic data.

Identification of the planned development model for each piece of information, structure, road, or water body. The creation of a change plan within a reasonable amount of time would require the creation of base maps at the right scale.

Obtaining satellite images from NRSC/ISRO and using them to create base maps for the city and its surroundings.

Geometrical calculation of changes in the area of interest to map out the growth/change.

TOWN PLANNING:

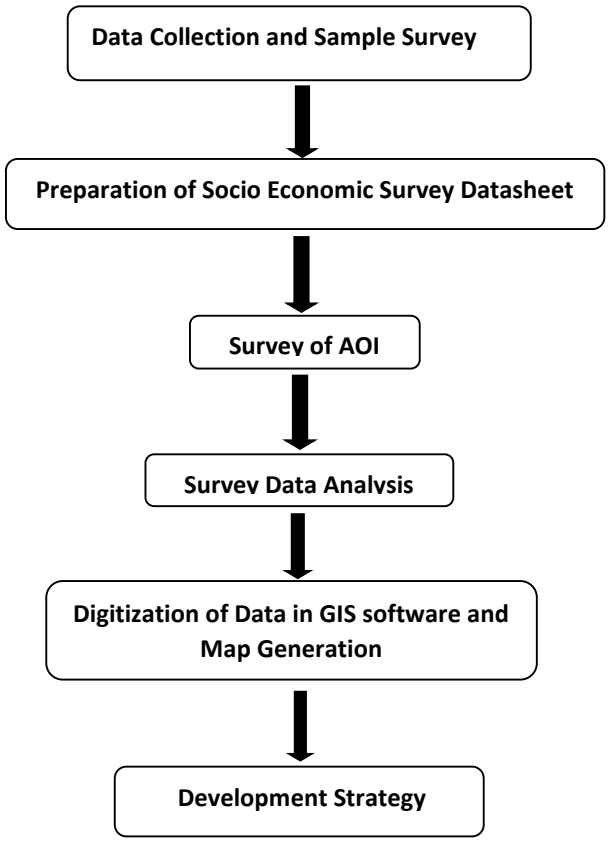
- Collateral data include cadastral information from the department of land records, toposheets from Survey of India, and temporal population statistics from government agencies.
- GIS layer creation involves digitising the built-up area, drainage system, and village boundaries from the research region's toposheets from 1972..
- Data from the National Remote Sensing Agency in Hyderabad on remote sensing..
- Data geo-correction and training data gathering for remote sensing.
- To determine the spatial changes in built-up areas over time, image processing Techniques are applied to (temporal and remote sensing data).
- Using environmental modelling to study these changes (both spatial and temporal).

The 1:50000 toposheet used for the present study region includes the following characteristics:

- Land use And land cover
- Drainage, water bodies, irrigation systems
- Contours and slopes
- A network of Roads and rail
- Administrative boundaries

PROCESS

The flow chart below is prepared to understand the thorough process.



DATA TO BE USED

Satellite imagery:

Artificial Satellites are one of the key elements that helped our generation to study our Earth in various aspects. It may be ocean observation, forest mapping, earth monitoring, or navigation. Satellites in their orbit continuously give images of Earth that are being used in various industries. Satellite images can be obtained in various resolutions. These images go through various processing techniques before being available for general use.

Tehsil authenticated village boundary

The first step in any planning is to acquire authenticated boundaries from authorised organisations. In our country the organisation which is responsible for this task is Tehsil. It is the responsibility of tehsil to keep records and to provide those data to respective parties. For updating of land records in the country, tehsil authorities along with other governmental organizations perform various survey for the accuracy of these records. In present time all these records are being kept in digital formats.

Google earth (to markout important features)

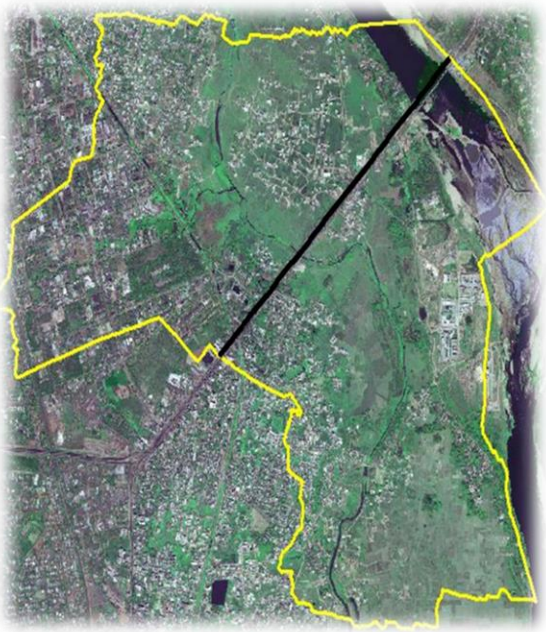
Google Earth is a tool that allows users to see the entire Earth in their finger tip. Previously it is known as Keyhole EarthViewer. A user can view both 2D and 3D representation of Earth. This is basically based on satellite imagery that are collected from various satellites. Google Earth enables to search for any place on earth. Users can, zoom, pan, rotate, and tilt the view of the Earth. It also enables users to create new data in form of layers (point, path, polygon). It also offers to view historical satellite images. It saves data in KML(Keyhole Markup Language) file extension.

Software (Arc GIS 10.3)

ArcGIS is one of the pioneer tool for mapping. It is the product of ESRI (Environmental Studies & Research Institute). It is a bundle of software or tools rather than a single software. This bundle may include various mapping tools like, ArcMap, ArcCatalog, ArcScene, and ArcGlobe. ArcCatalo acts as directory for any project. All the files are stored in ArcCatalog systematically so that when system calls a path it provides that fraction of seconds. In ArcMap shape files were created, digitized, edited and maps were produced. It also offers users to calculate geometry for various earth-referenced shapes. ArcScene&ArcGlobe are basically used for 3D mapping.

Boundary Identification on Satellite Imagery of Study Area

Tracing Major Road (NH) inside study area (Pandra) Boundary

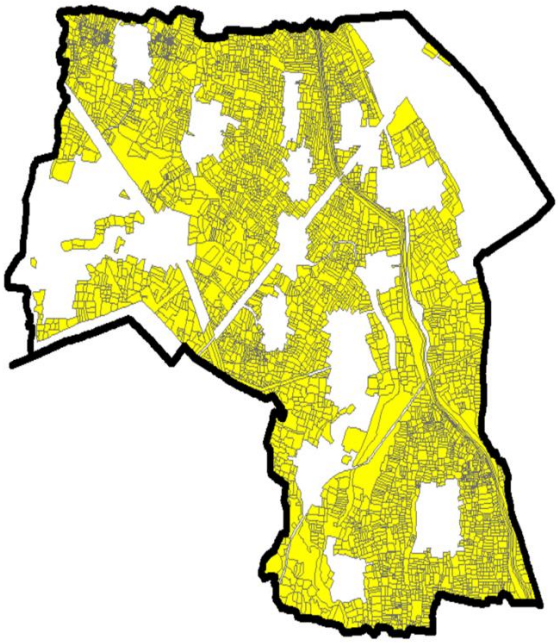


Identification of Roads inside area of study

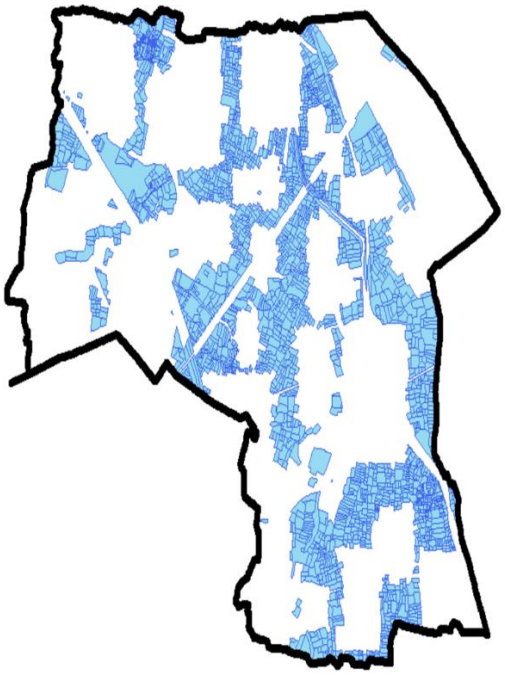
Mapping Out Water boady from Pandra Satellite Map

Mapping Out Drainage System from Pandra Satellite Map

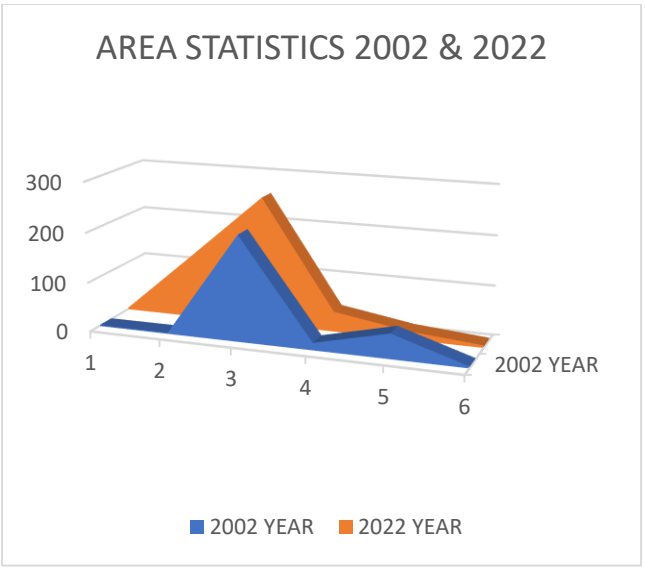
RESIDENTIAL AREA



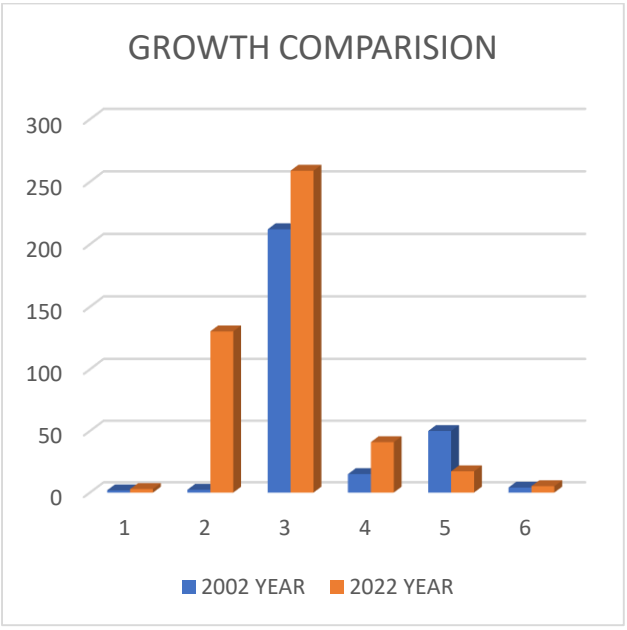
COMMERCIAL AREA



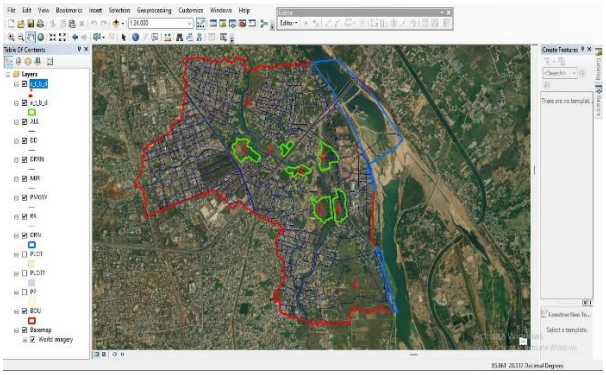
AREA TYPE	YEAR	
	2002	2022
ROAD	1.82	2.83
VEGETATION	2.3	130.33
COMMERCIAL LAND	212	258.84
RESIDENTIAL LAND	15	40.9
OPEN SPACE	50	17.23
DRAIN / WATER BODY	4	5.17



Area_Ac	Area_Ha	AREA NO	CO ORDINATE IN DECIMAL DEGREES
14.04	5.68	1	85.873, 20.299
6.54	2.64	2	85.872, 20.304
13.44	5.44	3	85.874, 20.305
1.34	0.54	4	85.869, 20.307
2.23	0.90	5	85.868, 20.306
12.95	5.24	6	85.876, 20.299
14.65	5.93	7	85.862, 20.306



OPEN SPACE WE FOUND TO BE DEBLOP



FUTURE SCOPE

This settlement plan is not only for the Pandrar dwellers but also can be implemented for other Pandra redevelopment plans. As Bhubaneswar city is still expanding and the population from rural Odisha is migrating into the capital city it's only a matter of fact that the Pandra problem in the city will be intensified in near future. There are still many additional small and medium-sized Pandra in the city that aren't able to provide for the fundamental needs of their residents, which is necessary to raise living standards and enhance the quality of life for Pandra residents.. These area can be recreated or resettled in this resettlement plan. Those area dwellers can become part of socio-economic development like the residents of Pandra. So this settlement plan can be used as a benchmark for other Pandra development plans. The settlement plan can accommodate other area dwellers as the plan was designed keeping the Pandra area problem issue in mind. The Physical Infrastructure was designed to provide

Pandra dwellers facilities like Water Supply, Solid Waste Management, Sanitation, Public health protection, and Electricity supply, with better transportation. This expansion in physical infrastructure will help to improve the habitat, quality of life, and living conditions.

CONCLUSION

Planning for new urban expansion must be shifted to locations with less importance for food production due to the loss of scarce arable land caused by population growth.

Systematically updating the urban database using GIS and RS to find new changes, which mainly depend on the frequency and incidence of urban changes and the socioeconomic growth of the districts.

The rapid increase in population is the primary driver of urbanisation. In order to protect the valuable and restricted agricultural land and boost food production, this issue needs to be thoroughly studied across multiple dimensions.

REFFERENCE

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