

Infrastructure Planning for Changanassery Municipality

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ABSTRACT: Changanassery is a municipality in the state of Kerala in India. Due to the lack of an efficient development plan, the town faces some serious issues in its infrastructure. The study particularly aims at identifying the major issues and find the magnitude of the same for which surveys are conducted in the study area. From the survey, it is found that issues are with the physical infrastructure such as water supply and solid waste management. The existing infrastructural facilities and the demand for the same in future are studied and several proposals are put forward to contribute to the infrastructural development of the town.

Keywords: Changanassery, Infrastructural demand, Physical infrastructure, Solid Waste Management,

I. INTRODUCTION

Infrastructure is generally defined as the physical framework of facilities through which goods and services are provided to the public. It may be broadly divided into five categories viz., physical infrastructure, social infrastructure, commercial infrastructure, miscellaneous infrastructure and transportation, of which physical and social infrastructure are given prime importance in this study. Physical infrastructure is further subdivided as: water supply, solid waste, sewerage, drainage and power. Social infrastructure may be subdivided as: health, education, sports facilities, communications, security/safety-police, distributive facilities, socio-cultural facilities etc. [1]

Changanassery is a municipality in Kottayam district in the state of Kerala, India. It is located 18 km south of Kottayam and 8 km north of Thiruvalla and Adoor on the Main Central road. It has a total area of 13.5square kilometres and a population of 47685. The town is situated near the tripoint of Kottayam, Alappuzha and Pathanamthitta districts.

Changanassery was a renowned place for its monopoly in trade and education. But it lost its importance due to the lack of a well-co-ordinated and planned growth. The neighbouring municipalities Palai, Thiruvalla, Pathanamthitta etc. have developed master plans recently and are successively implementing the same. It is high-time that Changanassery also has a development plan which will help in its renaissance as a place of economic importance.

This study aims at identifying the various issues faced by the residents of the area through a detailed socio-economic survey. After the issue identification, the issues were enlisted based on their priority and studied. The existing infrastructure is compared with the demand of the same in future and suitable proposals are made.



Figure 1: Location of Changanassery

Source: Author generated, 2017

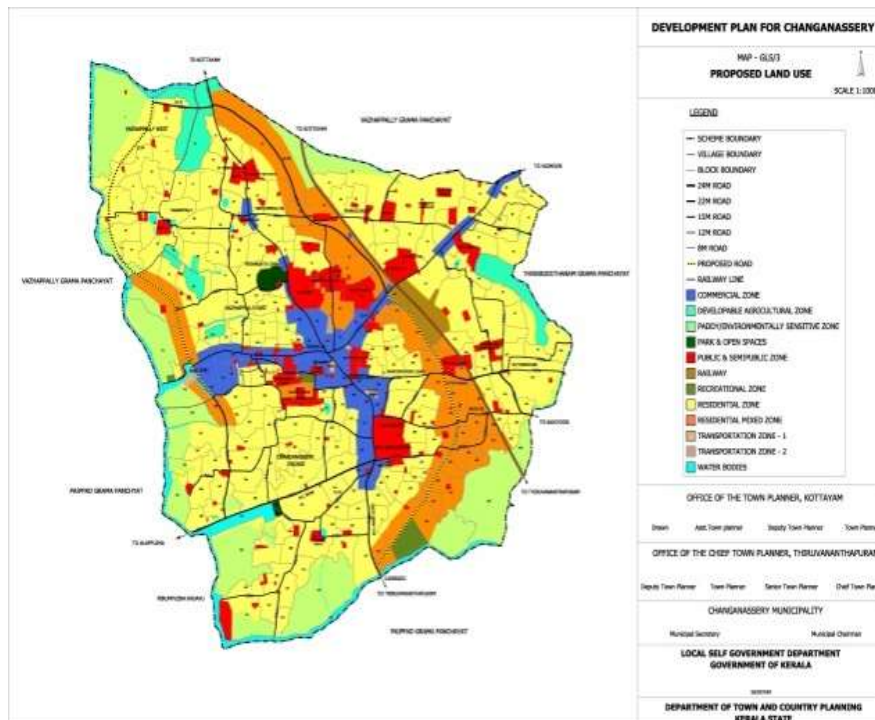


Figure 2: Land use map of Changanassery
Source: Kottayam Town Planning Office, 2010

II. METHODOLOGY

The plan preparation process consists of collection of data (both primary and secondary), analysis (both spatial analysis and local level analysis), consolidation of findings, envisioning process (including setting up of goals and objectives, arriving development concepts and framing policies and strategies), and detailing (including the projection of requirements, sectoral detailing and land use planning). The first step is area delineation. It includes the selection of area for the study. Here we have chosen Changanassery municipality as the area of study. The next step is data collection. It is subdivided into two viz., primary and secondary data collection. Primary data collection involves reconnaissance survey, questionnaire survey and interviews with officials. Secondary data collection involves collection of data from government offices. The collected data is then analyzed and various issues faced by the people are found out. The issues are then enlisted on the basis of their priority. Development vision focuses on people’s participation. In this step, the needs and requirements of certain group of people representing the residents of the place are enquired. And their vision is also considered. Then comes the process of development of concepts. Finally the policies that are to be followed are fixed and various proposals are put forward. [2]

III. PRIMARY SURVEY

Primary survey was conducted among the local population and households. A pilot study was conducted to determine the questionnaire parameters for survey such as socio-economic conditions, evaluation of infrastructure, issues and demands of the local population.

3.1 Respondent Groups

The respondent groups chosen were the local population (Questionnaire survey), others (Interview), temporary/permanent commercial establishments, people’s representatives, government officials, social/religious organisations in Changanassery and staff and service providers.

3.2 Sampling

As the survey primarily intended at identifying the major difficulties encountered by people of the planning area, a sample of 10 percent of total number of households in the area were selected to be subjected to the questionnaire survey. The sampling was done as follows:

Total population of Changanassery (as per 2011 census) =47685

Total number of wards=37
 Therefore, average population of each ward= $47685/37 \approx 1200$
 Total number of households= $1200/5=240$
 Number of household as per 10% sampling percentage =10% of 240=24
 Number of wards selected for surveying (random selection) =5
 Therefore, total number of households to be surveyed= $24*5=120$

3.3 Existing infrastructure

3.3.1 Physical infrastructure

3.3.1.1 Water supply

The water supply scheme for Changanassery Town was commissioned in 1970 before which individual wells were the main source of drinking water. Undulating topography of the town is the major hurdle in providing drinking water. In the socio-economic survey conducted at the primary phase of the study, 54% of people reported that well is the major source of water and 40% of people reported that water supplied by Kerala Water Authority is the main source of water. Community well (4%), other sources (2%) are the other sources of water as per the socio-economic survey. The average daily consumption of water, as per KWA records, is 1.46 million litres.

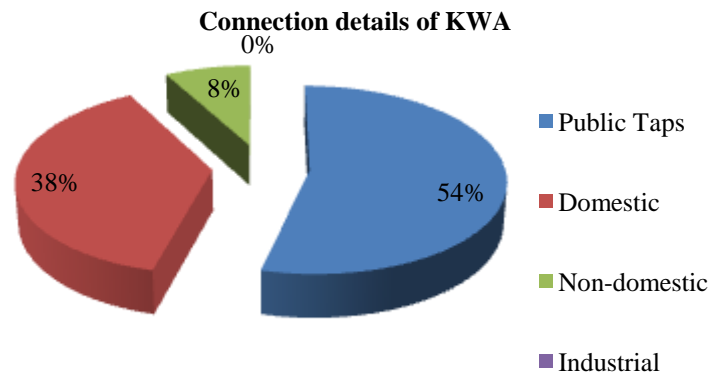


Figure 3: Connection details of Kerala Water Authority
 Source: Kerala Water Authority

3.3.1.2 Sewerage and Sanitation

There is no public sewerage system in the town. Septic tank is the major form of sanitary waste disposal system; use of pit latrine is also seen. Better Sanitation system is available for the houses in the town and nearly 80 % of houses have septic tanks.

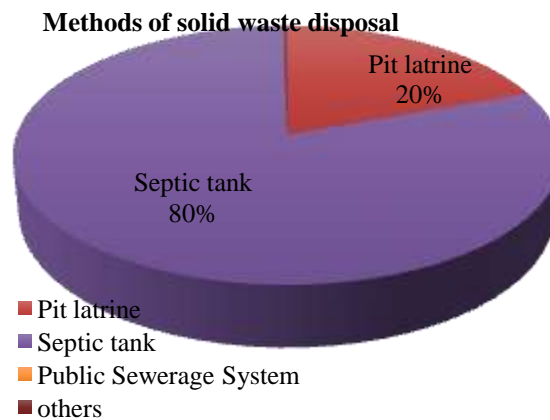


Figure 4: Method of Sanitary Waste Disposal
 Source: Socio-economic survey conducted by author, 2017

3.3.1.3 Electricity

Low voltage is not a problem. All houses are electrified. More street lights are required. More electric power for domestic purpose is required. Commercial consumption is very less compared to domestic and industrial. There is only negligible level of agricultural activities in the area as it can be seen from Fig.5.

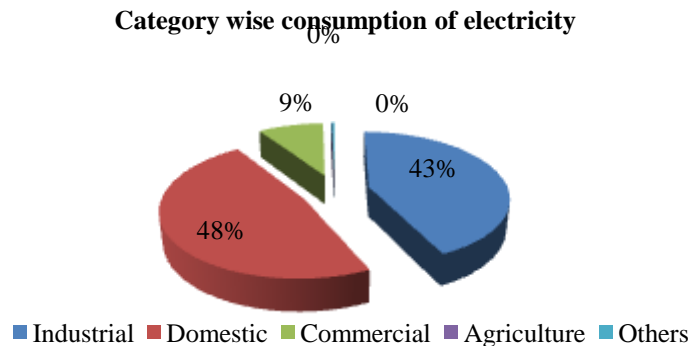


Figure 5: Category wise consumption of electricity
Source: Kerala State Electricity Board

3.3.1.4 Solid Waste Management

Handling of solid wastes is one of the major problems faced by the urban local bodies. Increase in the volume of urban waste is principally due to increasingly affluent life style, rather than urban growth. The total quantity of solid waste generated may be approximated as:

1. Domestic: 28.00 tons
2. Commercial - market: 9.00 tons
3. Hospitals and Clinics: 2.00 tons

There is a total of 39 tons and the combined per capita generation may be approximated as 0.62 kg/head. The system of ‘disposal at source’ is adopted in the Municipality. The Health wing of the municipality is headed by a Health supervisor. Municipality practices communal storage for collection and disposal. Infrastructure consists of a number of concrete / metal bins, metal dumpers of capacity approximately, 2 old lorries and 2 tripper lorries. Manpower in the health department consists of sweepers, sanitation workers, drivers and helpers. Town sweeping is done by the Municipal staff and the town sweeping covers Market road, Perunna road, SB college road, Vazhoor road.

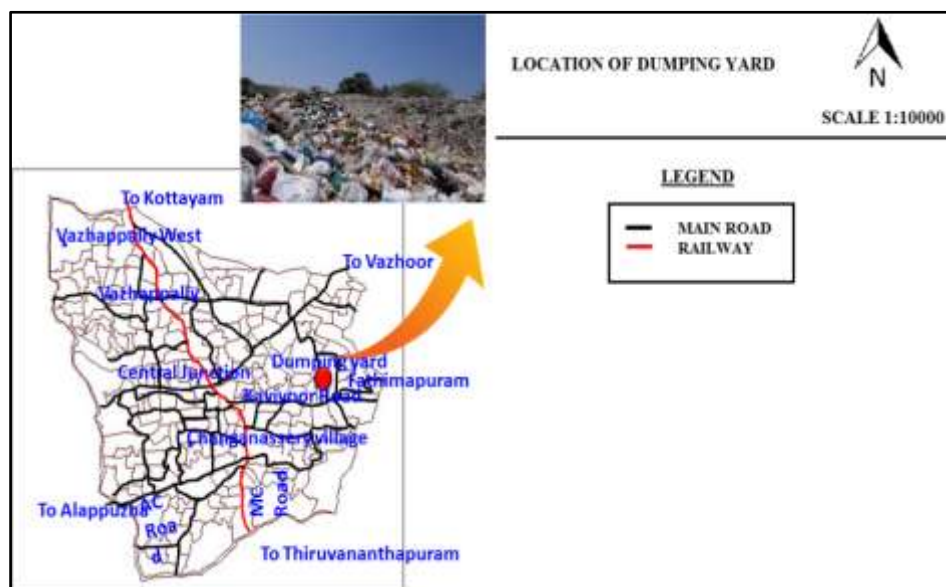


Figure6: Location of dumping yard

Source: Author generated,2017

The solid wastes generated are disposing at different place especially at source itself. Non-degradable wastes are disposed by land filling at different places. The waste disposal yard is located at Fathimapuram and around 1 acre of land is available here as shown in Fig.6.

3.3.2 Social infrastructure

3.3.2.1 Education

There are 7 colleges, 6 HSS schools, 9 high schools, 5 upper primary schools and 12 lower primary schools, 2 TTI schools, 2 VHSS schools at Changanassery, which serve needs of the town as well as the surrounding region. The teacher student ratio for school is 1:24. The High schools and Colleges attract students from the influence region of the town also.

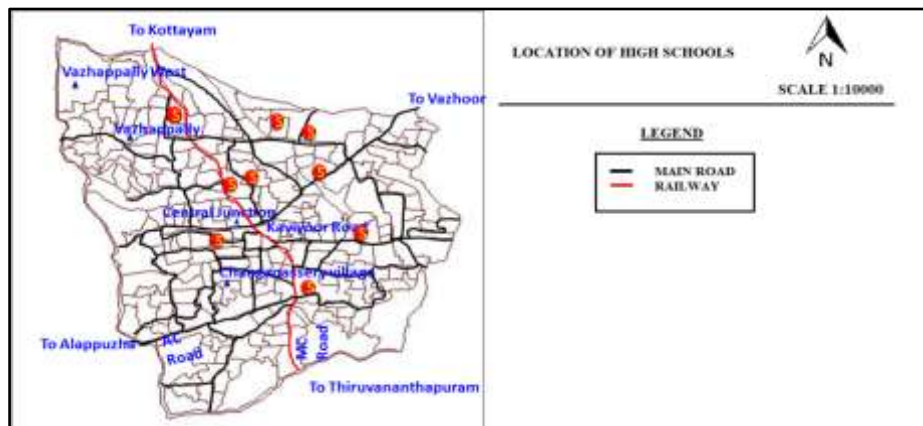


Figure7: Location of high schools

Source: Author generated, 2017

The distance to pre-primary schools, primary schools, upper primary schools and high schools shall be available within a distance of 0.50, 0.50, 1.00 and 3.00 km respectively. [3]

3.3.2.2 Healthcare

There are many medical institutions in the Changanassery town comprising of different types of hospitals and clinics. This is quite adequate if the town alone is considered, but they also serve the region surrounding it. Adequate infrastructures and advanced diagnosis facilities shall be made available in hospitals of Government sector.

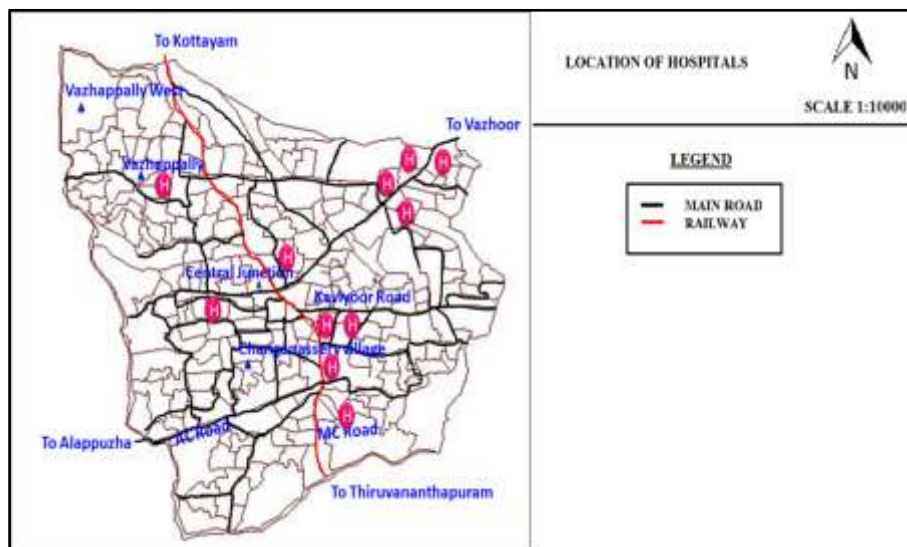


Figure 9: Spatial Distribution of hospitals

Source: Author generated, 2017

3.3.2.3 Others

Anganwadis

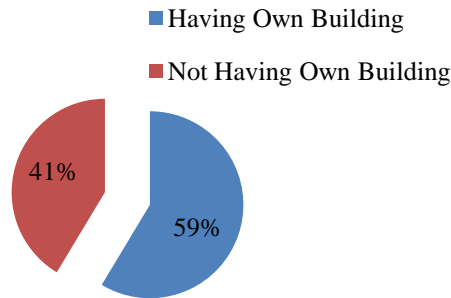


Figure 10: Number of anganwadis

Source: Author generated, 2017

There are a total of 145 anganwadis of which 59% have their own building and the remaining does not. [4]

Social And Cultural Institutions

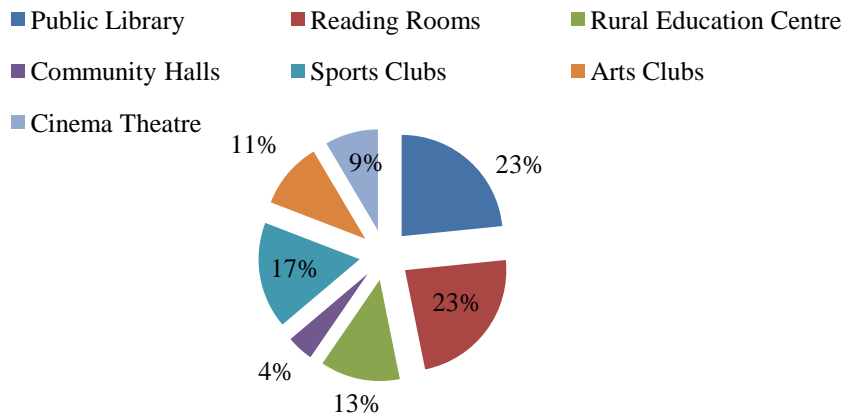


Figure 11: Number of social and cultural institutions

Source: Author generated, 2017

The social and cultural institutions like public libraries, reading rooms, sports clubs etc are reportedly sufficiently available and uniformly distributed in the study area. [4]

Banking

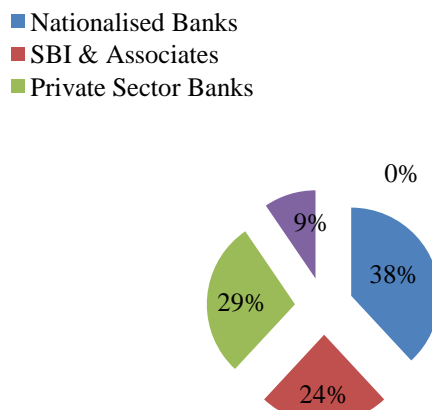


Figure 12: Number of banking institutions

Source: Author generated, 2017

Active banks and banking facilities are available throughout the study area. There are a total of 21 banking institutions in the municipality. [4]

IV. Analysis Of Issues

From the socio-economic survey conducted in the preliminary stage of the study, the following issues were identified.

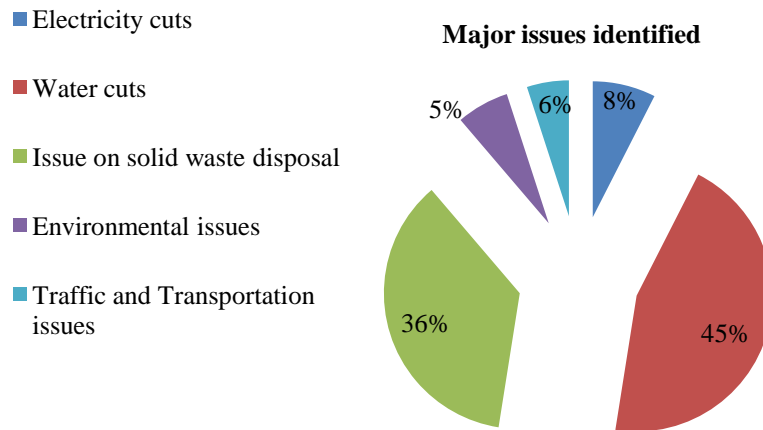


Figure 13: Major issues identified

Source: Author generated, 2017

The study then proceeded in finding the details of the issues identified.

V. INFRASTRUCTURE DEMAND

From the census population records, the population of Changanassery municipality for various years was obtained. [5] Using the incremental increase method of population forecasting, the population in the years 2016 and 2026 were determined as 45069 and 36983 respectively. The demand for various infrastructures in the years 2016 and 2026 were found out and tabulated as below.

Table 1: Infrastructural demand in Changanassery

Infrastructure	Existing (a)	Per Capita Demand as per URDPFI, 2014 [1]	Demand 2016 (b)	Demand 2026 (c)	Gap (b) – (a)
<i>Physical</i>					
1. Water Supply	1.46 mld	70 lpcd	3.15 mld	2.58 mld	1.69 mld
2. Capacity of solid waste treatment plant	0	0.85 kg/cap/day	38.308 tons/day	31.43 tons/day	38.308 tons/day
<i>Social</i>					
1. Education					
i. Pre primary	12	1 for 2500	2	1	Sufficient
ii. Primary	14	1 for 5000	9	7	Sufficient
iii. Higher Education	7	1 for 1,25,0000	1	1	Sufficient
2. Healthcare					
	11	1 for 1,00,000	1	1	Sufficient

From the above values it can be inferred that the infrastructural demand exceeds the existing infrastructure in the case of water supply and capacity of solid waste treatment plant. The existing social infrastructure is quite sufficient to satisfy the need for the same in the future.

VI. DEVELOPMENT CONCEPT AND PROPOSALS

The development concept is formulated purely based on the current demand for the various infrastructures found out as given in the previous chapter. As social infrastructural facilities are sufficiently available to satisfy the needs of the future population, proposals are not made for them.

6.1 Water Supply

The crisis with the water supply is proposed to be solved by introducing a new water supply scheme with an increased capacity of 3.2 million litres of water per day.

6.2 Solid Waste Management

The prevailing issues with solid waste management are proposed to be solved primarily by segregation at source followed by transportation to primary and secondary units of collection which are supposed to be placed at various junctions and near major centres and roads. The wastes from secondary collection units are supposed to be taken to a biogas plant for biodegradable wastes, a plastic recycling plant for plastic wastes, and finally an incinerator for other non-biodegradable, non-recyclable wastes at a site near Fathimapuram. The site is already used as dumping yard for wastes and has an area of around 1 acre (as mentioned in Chapter 3.3.1.4). The proposed plants are to be located at vicinity of each other for the ease of transportation and to reduce cost of the same.

VII. Conclusion

As mentioned in previous chapters, Changanassery which had its trademark as an economy in the state of Kerala lost it due to the inability to handle the amenities available and to develop new infrastructural facilities for the betterment of living standards of the people. This study was an attempt to identify the issues and potentials of the place at its real scale. The proposals we put forward basically aims at contributing to the infrastructure thereby solving the issues already prevailing and ultimately attract people from other places to migrate to the place causing an inductive growth of the town.

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