A CRITICAL SWOT ANALYSIS FOR SMART CITY PLANNING: A MODEL STUDY FROM ELURU CITY

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ABSTRACT

In order to provide the citizens of Andhra Pradesh with every basic need in every sector urbanization of towns is much required now a day. Urbanization not only involves provision of roads water supply etc. but also education employment health etc. totally there are 24 sectors in which city is to be developed. This paper briefs these 24 sectors by taking eluru as case study. The existing facilities requirements are clearly studied and few solutions were given. The main identified problems are underground drainage, traffic and storm water drains.

Key words: Sensors, Smart City, Urban Development, Urban Infrastructure, SWOT.

1. INTRODUCTION

Our past few decades urban planning has been considered as major criteria for planning of small towns for both infrastructure and transportation. Now a days it is considered as national interest as well as smart cities but there is no actual definition of smart cities, just work objectives and development options which includes citizen engagement and higher official consideration (such as collector and S.P) a government body is formed for the better function of the development. Smart city development process includes **SWOT** analysis which means (**strength weakness Opportunities threats**) done by the citizens. Cities are responsible for the consumption of worlds energy 60-80 percent and they emit 75 percent of greenhouse gases in total and half of the total population lives in cities and it's raising day by day with decreasing resources a result, sustainable urban development and it's evaluation by means of indicators becoming important. In association with the economy or jobs smart city is used to describe a city with a smart industry. This implies especially in field of information and technology and other industries implying IT in their production processes. Sustainable city are only possible when the power consumption of the city is from the renewable energy .the topography of city or time plays a major role. Paper will draw out these underlying enchantments and further evaluate their legitimacy in perspective of evolving needs.

2. DESCRIPTION OF STUDY AREA

- Eluruis the district headquarters of the west Godavari district which is located in Andhra Pradesh in southern part of India. It is also a revenue division.

- The total population of the eluru city is 283,648 which consist of 140,059 males and 143,589 females.

- The area of eluru city is 11.52 Sq.km

- The population density of the eluru city is 19000 Sq.km.

- The average elevation of the eluru city is 22m (72ft).

- The average annual temperature is 28.2 degrees Celsius.

- City receives precipitation I the month of July receives an average rainfall of 992mm (39.1in).

- Major types of soils present in eluru surrounding area are Sandy looms, Black cotton soils, and costal lands.

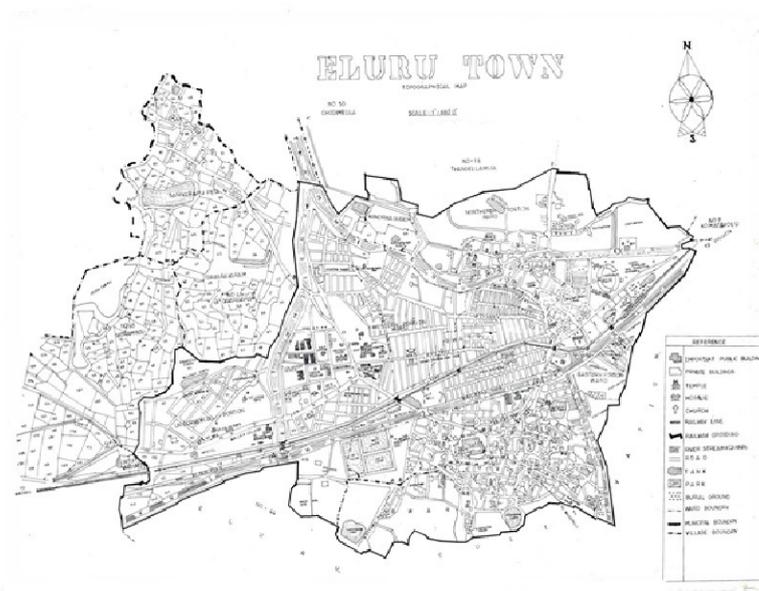- Major drainages are Godavari, Yerrakaluva, Tamilleru, and Ramleru.
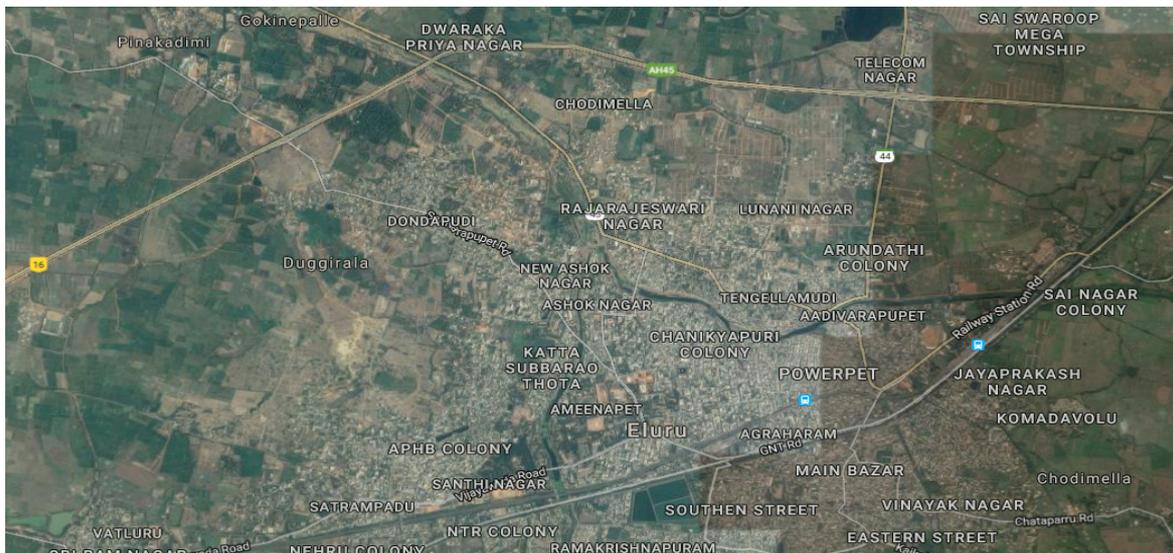
Figure 1 Master plan of eluru

Figure 2 Satellite image of Study area

3. OBJECTIVE:

1. Conducting the field work for collection of questioner in various aspects analysis purpose.
2. To analyse Strength Weakness Opportunities and Threats (SWOT) by analysis and to prepare the smart city plan Eluru, in a sustainable way for the people and to develop the infrastructure.

4. METHODOLOGY

Assessment of strength, weakness, opportunities, and threats of city or a town structure is to prepare a relevant city or town development plan. SWOT analysis of city is to be done because to analyse various sectors of the city or town.
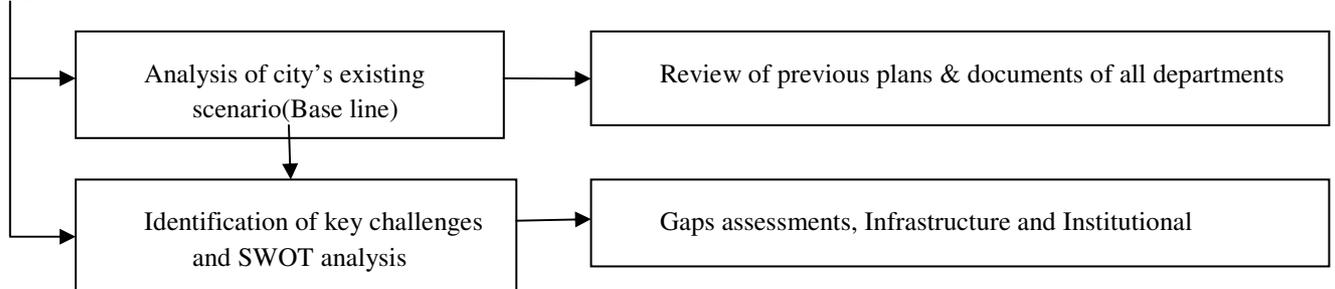
According to the estimation fifty percent of the India's population will live urban areas and town's to accommodate such population we have to be very careful about town planning.
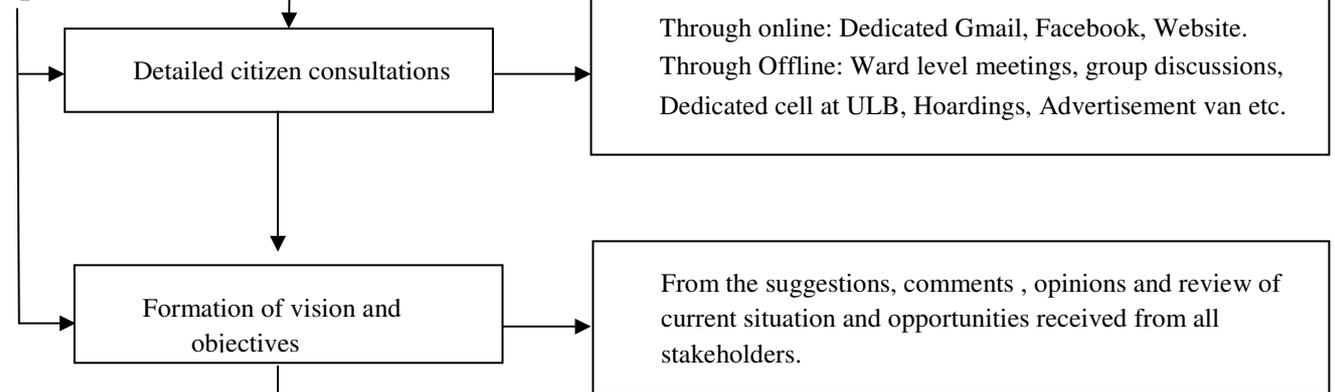
For doing SWOT analysis we need to have data from the questioner survey from people and students and city citizen.

Most preferred sector to be developed for transforming Eluru into a smart city by considering fallowing sectors they are continuous water supply, uninterrupted power supply, solid waste management, storm water management, development and widening of roads, housing for poor, slum up graduation, public transportation, public safety, health, education, employment, skill development are some of the sectors

Step-1:

Analysis of city's existing scenario(Base line)	→	Review of previous plans & documents of all departments
Identification of key challenges and SWOT analysis	→	Gaps assessments, Infrastructure and Institutional

Step–2:

Detailed citizen consultations	→	Through online: Dedicated Gmail, Facebook, Website. Through Offline: Ward level meetings, group discussions, Dedicated cell at ULB, Hoardings, Advertisement van etc.
Formation of vision and objectives	→	From the suggestions, comments , opinions and review of current situation and opportunities received from all stakeholders.

Step-3:

Preparation of Draft Smart	
In public Domain for suggestions and comments	→
Final SCP	

Proposals, Capital, O&M Cost (Block level) , revenues, financial analysis focus will be on transformative projects with the highest possible impact on

(i) economic growth in the city (e.g. number of new jobs created, new firms attracted, increased productivity and business climate in the formal as well as informal sectors, recognition of and incorporating urban vendors), and

(ii) improving the quality of life for all, especially the poor: (e.g. reduction in commuting time, support of non-motorized transport, improvement in air and water quality/increased coverage of water, solid waste management, street lighting, enhanced green public spaces, improved safety and security).
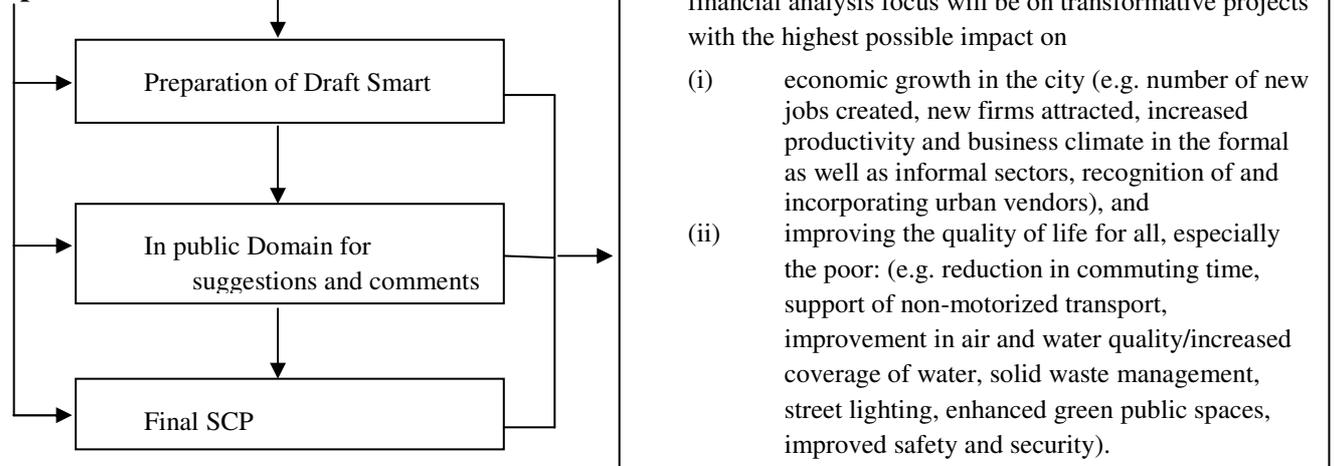
Figure 3 Step by step processing of methodology

We have collected about opinion of about 600 members around and taken average from the questioner survey and identified the problems.

5. RESULT AND DISCUSSION

The major problems that are given by the people are given below:

5.1 Solutions through SWOT analysis

For the identified problems after the clear studies few proposals were formulated so that the impact of the concerned problems can be reduced to a certain extent.

5.1.1. Water Distribution.

5.1.2. Solid Waste Management**.**

5.1.3. Renewable Energy.

5.1.4. Social Security.

The solution of the smart cites are explained below:

5.1.1. Water Distribution:-

Every town has challenge in water supply or water sufficiency or deficiency here are the sources of water.

Table 1 Water Distribution Table

Source of water supply	Godavari canal and Krishna canal
Total storage in SS tanks	3680ML
Treatment plants	44.82MLD
Present daily supply	31MLD
Total service reservoirs	26 no's , 18,310KL capacity

The total population of the eluru city is 283,648

Water supply per head is 135 lt/day (as per code)

Requirement of water supply per day for total population of Eluru

= population of Eluru * Water supply per head

= 39 million litres per day

The water supplied per day is 31 million per day by the municipality of eluru.

According to the data daily 31 million litters were supplied. But we know the demand per capita per person is 135 litters by which found out that the need is only 39 million litters so we can say that water supply is not efficient.

5.1.2. Solid Waste Management

There are many types of waste they are natural waste, E-waste, medical waste etc. Solid waste management is one of the process provided by the municipal authorities to make the urban areas clean. With rapid increase in the urbanisation, solid waste treatment is somehow critical. Quantity of solid waste generated in ELURU town is approximately seventy tons a day which is collected by door to door method and the waste is dumped in the dumping yard. There are challenges to be faced over the course such as general cleanliness of the city and solid waste collection and segregation from homes, offices and bins and to transport them to the disposal site and we have taken care about leachate contamination of ground water in open dump yard's.

Treatment of solid waste
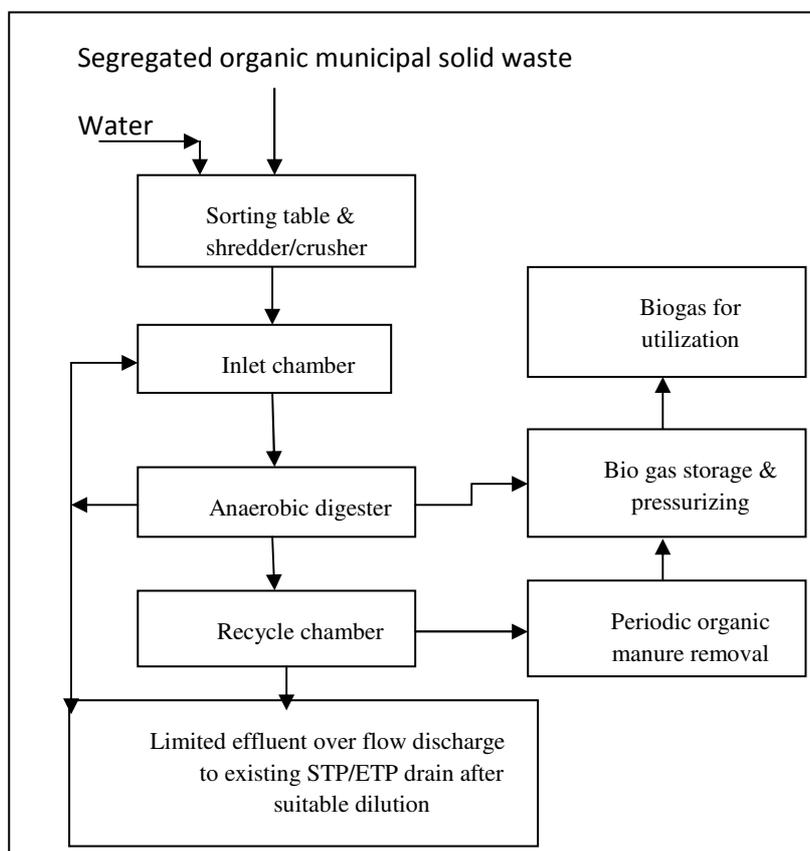
These are solutions generally provided for the solid waste management

- Composting.
- Landfill –bioreactor.
- Plasma gasification.

By the method of composting we will compost the organic waste and some of the recyclable material by pre-sorting aerobic composting by means of mechanical processing and landfill of the compost.

By landfill bioreactor we have allocate area for each cell and total number of cells. Fill it with waste materials and closed for a certain time period and then opened again for another landfill.

5.1.3. Renewable Energy

Solar energy is renewable energy of which no emission of global warming gases and very essential for sustainable development of the cities. Factors influence solar energy development in town abundant availability of sun's radiation zero fuel charges zero pollution and low maintenance cost are some of the things. It can feed back to grid when pump house is shut down or under maintenance with non-metering arrangement. Urban planning arrangements for a sustainable power source require the coordinated effect of diverse orders both in research and practice. When considering sustainable development, environmental assessment shall be completed by an inquiry of the socio-cultural, economical, juridical, aesthetical and ethical aspects characterizing the planning or decision process.

5.1.4. Social Security

Providing security for the citizen of town or a city is the major priority of police or the administrative system by inducing some of the smart elements we can better governance of social security. Intelligent Traffic Management (ITM) is one of security which have two stages of operation.

Vehicle accidents and very common in urban areas rapidly growing urban population which causes conjunction for pedestrians buses are the main causes for the 12-20 percent of the accidents in cities.

Automatic detection of the traffic flow from areas can detected and delays can be calculated and users can avoid the route. Crime scenes can be better negotiated by use surveillance cameras and has a solid evidence to prosecute criminal. Pedestrian's paths like foot paths, zebra crossing should be provided at regular intervals and maintained by the local bodies such as municipalities. Collection of data on movement of vehicles and public transport buses and coaches, provide the capacity control volume of traffic.

As per SWOT analysis we proposed some of the solutions which were correct as before and which some were calculated by us. There is water deficiency of 8 million litres as per the calculations done.

- With the population of 283,648 the city is well connected with roadways (NH-16) and railways.

- National water way 4 is also running through the city.

- The city also can be quoted as industrially develop region.

- In terms of education eluru competes with the top cities.

- Drainage system is one of the main drawback of the city.

- Adding smart elements to the traffic control system enhances the city transport system.

- Provision of skill development centres can be an asset to the city by encouraging the entrepreneurship.

- Along with provision of UGD system underground wiring serves the aesthetic purpose.

- Further development of existing tourism spot like Kolleru Lake contributes to the city's economy.

By contrasting all the factors and by induction smart elements into the process like governance, supply chain and security. We make cities more sustainable and liveable like there just need of twenty nine million litters of water a day for daily needs but municipality will pump thirty one million litters which goes to waste or excess use of water we can prevent this by using sensors which is an efficient way.

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