Case Study of Implementation of Smart City in Baramati
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Abstract— Indian cities are currently facing high challenges because of growing urbanization and the effects of climate changes. The Baramati city and communities initiative of the smart city concept and regions people from village tend to shift in cities due to employment and other reason in taking ambitious measure to develop by 2020 toward the 70% Increase the population in urban area. The main object of this paper is to potential document of the smart city principle towards the achieving smart city in Baramati. In term of this study the evolution of the Buildings, Roads, Water supply and Waste water management standard toward the smart city concept will be presented, followed by discussion regarding the provisions of a plan smart city and smart city definition. Additionally, past studies discussing on the role of smart city concept will also be reviewed. The conclusion of the analysis on the likely of concept in plan smart cities will provided same useful in sight toward the actions required in the town developments in order to achieve the envisioned smart city in Baramati.

Key words: Smart Road, Water supply, Building, Waste water, optimal energy systems, Smart city

I. INTRODUCTION
Baramati town is the head quarter of Baramati Tahsil in Pune district of Maharashtra State. It is being at present administered by a “B” class Municipal Council. The first development plan for the old municipal limit was prepared by Baramati municipal council and was sanctioned by government of Maharashtra which came into force with effect from 1st June 1963. The old municipal limit of Baramati municipal council covers an area of about 721 acres i.e. 291.77 hectares. The revised development plan was then prepared for old municipal limit. It was sanctioned by government of Maharashtra, urban development and public health department under notification no. T.P.S.1675/1400 U.D.-DTED 7/1/1977 which came into force with effect from 15/2/1977. The Baramati municipal council has made a proposal to government of Maharashtra for extension of municipal limit. On 18/8/1977 an additional area of admeasuring 143.44 hectares i.e. is 354.21 acres is included in the extended municipal limit.

For this additional area Baramati municipal council under its general body resolution dated 4/9/1978 declared an intention to prepare a development plan.

A development plan for additional area was sanctioned by the govt. of Maharashtra urban development department on 30/12/83 and was came in to force on 10/3/1984 subsequently it was revised on 18/3/1991 and was came into force on 1/5/1991.

Now Baramati part, Rui, Jalochi, Tandalwadi area is a additional area. Baramati municipal council old limit development plan is sanction by urban development department no. T.P.S.1811/941/CR274/11/D.P.Sanct/UD-13, dt 12/04/2012 was came into force on 25/05/2012.


Baramati municipal council vide its general body resolution no.80 date 24/8/2013 declared its intention to prepare additional area development plan i.e. additional area. Under section 23 and 38 of M.R.T.P. ACT 1966. A notification to that effect was published in the Maharashtra govt. gazette Pune division supplement date 17/10/2013 on page 23. the Baramati municipal council consultation with joint director of town planning Pune division Pune appointed the town planner, Baramati branch, Baramati as the town planning officer in accordance with the provisions of section 24 of the M.R.T.P. ACT 1966 for carrying out surveys, preparing an existing land use map and formulating proposals of development plan. The map was prepared as required under section 25 of M.R. and T.P. ACT 1966. And it was handed over to Baramati municipal council on 15/02/1914. decisions were taken on the suggestions and demands received from various government and semi-government departments. The tentative proposals of the draft development plan were then formulated, giving due consideration to the suggestions and demands received from various Govt. and Semi-Government Departments.

A. Information

<table>
<thead>
<tr>
<th>Location</th>
<th>Altitude</th>
<th>543 meters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>latitudes</td>
<td>18° 2’ 44” N - 18° 23’ 19”</td>
</tr>
<tr>
<td></td>
<td>longitudes</td>
<td>74° 13’ 8” - 74° 42’ 47”</td>
</tr>
<tr>
<td>Area</td>
<td>5058.78 Hect.</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>2011 - 51084</td>
<td>2015 – 117968 (forecast)</td>
</tr>
<tr>
<td>Meterology</td>
<td>Maximum – 42° C</td>
<td>Minimum – 6.8° C</td>
</tr>
<tr>
<td>Temperature</td>
<td>465 mm</td>
<td></td>
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<tr>
<td>Rainfall</td>
<td>Dry</td>
<td></td>
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<tr>
<td>Humidity</td>
<td>West - East</td>
<td></td>
</tr>
<tr>
<td>Wind Direction</td>
<td>Pune – Baramati – Songaon (S.H.120)</td>
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<tr>
<td>Connections</td>
<td>Nira – Baramati – Indapur (S.H.121)</td>
<td></td>
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<tr>
<td></td>
<td>Bhigwan – Baramati (S.H.54)</td>
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<td></td>
<td>Phaltan – Baramati (S.H.60)</td>
<td></td>
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</tbody>
</table>

Table 1: Information
II. STUDY AREA

Baramati tahsil lies between 18° 2´ 44˝ N to 18° 23´ 19˝ North latitudes and 74° 13´ 8˝ E to 74° 42´ 47˝ East longitudes. It is located at an altitude of 538 meters above mean sea level. The tahsil lies in the eastern part of Pune district of Maharashtra. The river Nira flows west to east forming the southern boundary of the Tahsil and the district. The river Karha flows northwest to south-east Baramati tahsil is bounded by Indapur tahsil towards the east, Satara district towards the south, Purandar tahsil towards the west and Daund Tahsil towards the north.

III. METHODOLOGY

In this project work we have decided to implement some recently used technique for enhancing quality of human being tuning with better utilization of renewable energy source. From this smart concept of smart city It will achieve flexibility & reliability in transportation and some day to day need of human being.

As per above mentioned requirement the following methodologies is decided for implementation

1) Recycling of waste water for gardening and plantation purpose also can be used for cultivation.

2) Installation of waste water treatment plant These waste water treatments plan the process that removes the majority of the contaminants from wastewater or sewage for disposal to the natural environment and sludge. It is biological processes can be applied.

3) Rain water harvesting compulsory for new development In this technology use for collecting and storing rainwater from rooftops, catchments. Rainwater is collected in simple vessels at the edge of the roof.

4) Counseling of the society for economic use of water In this system use of the water meter, use to the presses of measuring water use. The mart city concept, developed city water meter are used to measure the volume of water used residential and commercial building that are supplied by public water supply system.

5) Electrical supply system by using close conduits totally underground.

6) Solar car or Electric car This car using electrical energy stored in rechargeable batteries. Electrical cars argent torque, creating strong and smooth acceleration and three times efficient as cars with an internal combustion engine. Promoting solar car or electric car for pollution free transportation system.

7) Intelligent transport technologies This Intelligent transport system vary in technologies applied, from smart city concept, such has traffic signal control system. It is increasing number of vehicles are equipped with in vehicle GPS satellite navigation system that have two way communication traffic data provider. Positions regarding vehicular used to vehicle speeds. Use of intelligent transportation system like electronic toll collection, use of GIS/GPS for tracking vehicles etc.

8) Use solar energy for street lights, signaling system.
IV. PROPOSED WORK

A. PHASE 1
In this project we have collected the all required data related to the smart city concept, such as availability of drinking water, electricity, transportation, solar energy, traffic density present water distribution system in the city also studied literature related to smart city concept.

B. PHASE 2
According to phase 1, we find some problems. To overcome these problems we have decide to smart and recently used techniques in various sectors as follows:
   1) For their use and saving of water we install capacity of 8 MLD waste water treatment plant.
   2) For better utilization & for independence on commercial energy soured. We use solar panel and underground distribution cables.
   3) For fast and better transportation use of solar and electric car also it reduces air pollution, sound pollution and harmful impacts on environment.
   4) From this smart city project we provide water for 24 hrs. By using automatic computerized digital water distribution metering system.

C. PHASE 3
   1) Using this smart city project achieve better utilization of electricity by replacing our head distribution line by underground electricity distribution cables.
   2) For the street light, government offices, in garden, public spaces, market we use solar energy instead of Non-Renewable energy.
   3) By using electric car, various road signals and CC TV cameras in island, we reduce traffic problems, accident, achieve crime presentation, speed of transportation with minimizing pollution.
   4) By installing 8MLD capacity of waste water treatment plant, we reuse and save huge liters of water.
   5) Preservation of valuable natural resources like water, sand, soiled.

V. CONCLUSIONS
Some conclusions can be drawn from this study and are as follows:
We make our city smart by minimum changes and modification in existing system and utilize optimum benefits from it. It increases economy level and lifestyle of all livings in the city. The city becomes green city or eco-friendly city. From this smart city concept we utilize natural sources of energy and trying save nature with our overall development.

VI. FUTURE SCOPE
1) Increasing quality life
2) Reduces traffic problems
3) Reduces hazardous environmental effects
4) Provide all types of facilities
5) Increases ground water table
6) Better energy utilization

REFERENCES