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SPATIAL PLAN FOR SUSTAINABLE DEVELOPMENT OF SMART CITY BELAGAVI: STUDY IN URBAN GEOGRAPHY

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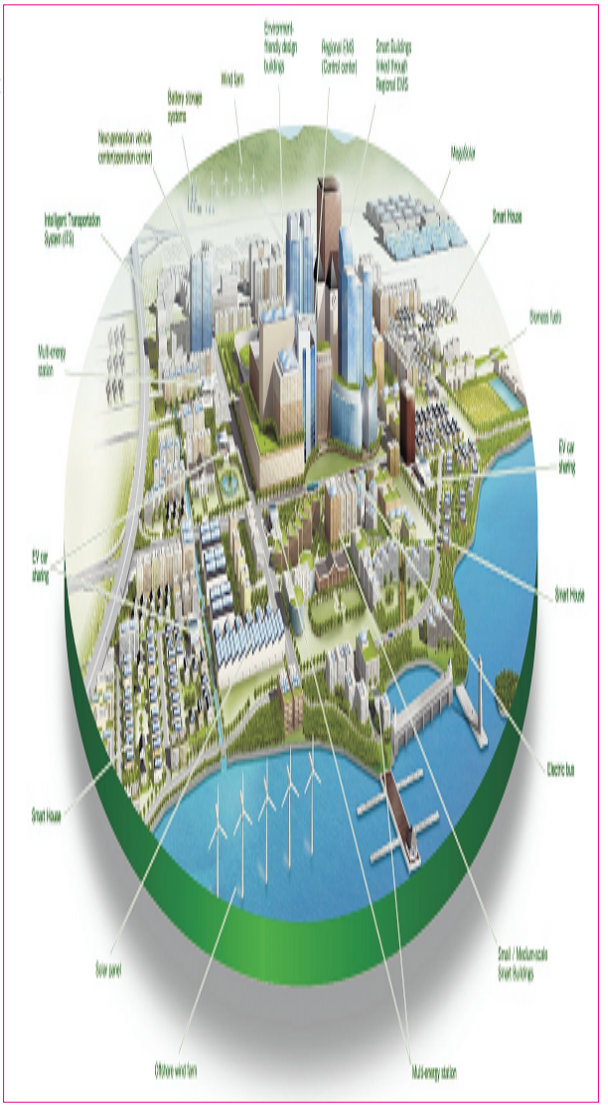

ABSTRACT:

A Smart Sustainable City is a city that meets the needs of its present inhabitants without compromising the ability for other people or future generations to meet their needs, and thus, does not exceed local or planetary environmental limitations, and where this is supported by ICT. Smart Cities is today a concept advanced by the business sector. It is a catchword that draws enormous interest from companies involved in ICT and infrastructure. A Smart Sustainable City is a city that meets the needs of its present inhabitants without compromising the ability for other people or future generations to meet their needs, and thus, does not exceed local or planetary environmental limitations, and where this is supported by ICT. Belgaum is one of the oldest, strong, prominent and well cultured historical place, nestling high in the Western Ghats Belagavi City Corporation is preparing the Smart City Proposal with an intent to plan and provide smart solutions to urban infrastructure issues of the city and welcomes the citizens of Belagavi to post their views, opinions, thoughts and plans on smart solutions for their infrastructure needs related to water supply, sanitation, solid waste management, storm water drainage, housing, amenities related to recreational activities, sports facilities, energy efficiency, non-motorized transport, safety, electrification, open space development and management, healthcare, education, public transport, key infrastructure such as pedestrian walkways, cycle paths, roads, underpasses, over-bridges, services such as e-governance tools etc. Inputs from citizens is crucial for framing a vision for tomorrow's Belagavi and to get shortlisted as one among the top 20 cities in the first year.

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KEYWORDS: *Smart City, Sustainable City, Sustainable Development,*

Sustainability, ICT

INTRODUCTION:

The origin of the concept of Smart Cities can be traced back to at least the Smart Growth Movement of the late 1990s. Gabrys find the roots of the concept earlier, namely from what they call the "cybernetic ally planned cities" of the 1960s,in proposals for networked or computable cities in urban development plans from the 1980s onwards. To a great extent, Smart Cities is today a concept advanced by the business sector. It is a catchword that draws enormous interest from companies involved in ICT and infrastructure. Townsend [4chooses to highlight a few of them, and describes their different interests as: "if Siemens and Cisco aim to be the electrician and the plumber for smart cities, IBM's ambition is [to] be their choreographer, superintendent and oracle rolled into one" [Townsend 4, p. 63]. From the business side, repacking ICT solutions in a "smart city" framework holds the potential of launching a kind of wholesale concept, and to direct this to the public sector of city administrators. Most of the ICT included in the smart city concepts already exist. The novelty is thus not so much the individual technologies, products or services but the interconnection and the synchronization of these and the systems they include, so that they work in concerted action. This is also where the challenge is and what makes the market so interesting for the big companies that have the potential to develop those broad solutions. As a first attempt to define Smart Sustainable Cities, we have chosen to base the concept on the Brundtland definition, while taking the above discussion into account. A Smart Sustainable City is a city that meets the needs of its present inhabitants without compromising the ability for other people or future generations to meet their needs, and thus, does not exceed local or planetary environmental limitations, and where this is supported by ICT.

OBJECTIVE OF THE STUDY:

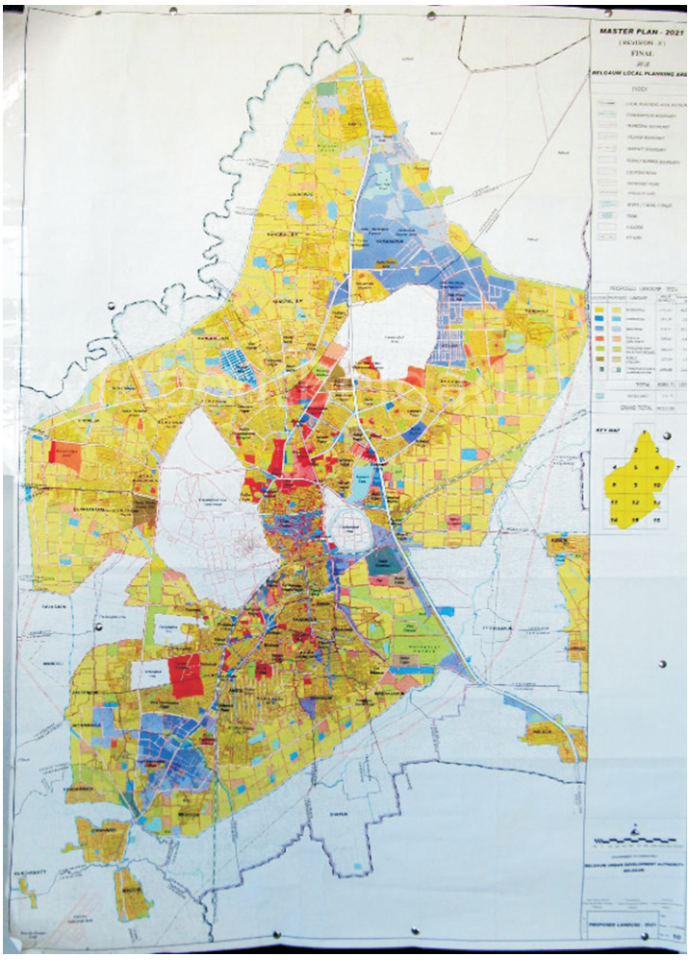
- To study the geographic personality and physical as well as socio-economic phenomena of the Belagavi City.
- To study the SWOT analysis.
- To analyze the spatial pattern of plan Belagavi city.
- To suggest a spatial plan for the Sustainable development of Belagavi Smart city

METHODOLOGY:

• The secondary data will be collecting from various Government and Semi- government department such as district statistical office, public work department such as daily news paper etc. Data will also analyze with the help statistical diagrams, charts, graphs and computer generated maps. The standard statistical techniques will be use for the study.

Geographic Personality the Belagavi City:

Belgaum is one of the oldest, strong, prominent and well cultured historical place, nestling high in the Western Ghats. The old town area with cotton and silk weavers stands gloriously besides the modern, bustling, tree-lined British Cantonment. Step out of the forts and you have a wide choice of temples and churches to visit. Belgaum has an enviable heritage and offers much to be discovered. It lies in the zone of cultural transition between Karnataka, Maharashtra and Goa with a known antiquity clearly traceable up to 2nd Century A.D. Due to its proximity with the states of Maharashtra and Goa, Belgaum has acquired the cultural flavor of these states and blended it with the local Kannada culture to create a rich heritage, which is unique in its manifestation. It is also known as Malenadu or Rain Country and the vegetation here is verdant green throughout the year.



SUSTAINABLE CITIES

As mentioned above, initiatives on "sustainable cities" have typically focused on technical solutions for a more efficient urban metabolism. The sustainability of a city has typically also been focused on sustainability impacts occurring within the city's administrative boundaries. Together, these two practices result in a situation in which only parts of the challenges and solutions related to sustainable urban development are identified. The main reason for this is that few (if any) cities are self-sufficient. To support the life of its citizens, the city is dependent on a hinterland, from which resources are taken and to which pollutants and waste are disseminated. In the historical past, this hinterland was located in close proximity to the city, more or less starting on the other side of the city wall. However, due to the processes of industrialization, urbanization and globalization, an increasing share of the goods consumed in the city is produced further and further away. This means that the environmental impacts of the consumption taking place in a city are scattered over the globe, and, consequently, that the environmental impact of a city cannot be delimited to the urban metabolism within the city boundaries. Thus, a better understanding of the concept of sustainable cities requires a global perspective in which sustainability assessments and urban development's are made in a way that takes into account the global consequences of local action or inaction. A global perspective can be taken in essentially two different ways. One is to use a production-based accounting approach with a full life-cycle assessment, meaning that the impact of a city is determined by the production taking place within the city boundary, including all impacts upstream and downstream of the production. The second way is to use a consumption-based accounting approach by which the impact of a city is determined based on the consumption of a city's inhabitants, no matter where the production of the consumed goods takes place . A consumption-based account thus builds on a relational understanding of space and emphasizes both intra and inter-generational justice. As a result, the system boundary delineating where ICT solutions can be used includes not only the infrastructures, technologies and everyday life in the city, but the entire life-cycle of products and services consumed by the citizens.

Smart City Definition

A developed urban area that creates sustainable economic development and high quality of life by excelling in multiple key areas; economy, mobility, environment, people, living, and government. Excelling in these key areas can be done so through strong human capital, social capital, and/or ICT infrastructure.

SWOT ANALYSIS OF BELAGAVI CITY

STRENGTHS

- Belagavi city at the height of 717 metres above sea level has a pleasant all year round climate. It is cradled by six rivers – Ghataprabha, Malaprabha, Markandaya, Hiranakeshi, Tamraparani and Mahadayi which recharge its aquifers and water bodies and ensure adequate water availability.
- Belagavi is extremely well positioned, being equidistant from Mumbai, Bangalore and Hyderabad and just about 100 kilometres to the Western coastline, near Goa.Belagavi has excellent connectivity by rail, road and air. It is situated on that stretch of the 'Golden Quadrilateral' that is acknowledged to be the best. It has NH4 and 4A and SH-20 running through it. Its airport now has an international link to UAE, Thailand and Sri Lanka.
- Belagavi has 10000 acres of industrial area developed under NIMZ which is acknowledged in the whole region for its industrial skills, especially in crankshaft and camshaft turning, industrial castings and forging, machinery, hydraulics and for alumina and aluminum manufacturing.
- The feather in Belagavi's cap is the Aerospace SEZ – India's first – to which Boeing, Airbus, Lockheed-Martin and others have stakes in aircraft manufacturing operations.
- Belagavi's traditional strength in manufacturing Shahapur Silk Sarees is now augmented by power looms, on which 30,000 people are now directly dependent.
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- Although Belagavi is a 1000 year old city, almost 80% of the city's area, including its vast Cantonment has been laid out in a planned manner. In 2014, Master Plan is approved with high degree of scope for mixed land use.
- The planned Cantonment area, both in the East and the West of the city, has 80% of green cover that acts as a 'lung' for the city, oxygenating its air space and maintaining the air quality to desired level. Belagavi, has a perennial water source that is expected to meet the demand for potable water till 2040.
- Belagavi Corporation has successfully implemented 24 X 7 water supply project as a pilot in 10 wards on performance based management contract with reduction of NRW to 12%. Up scaling project to cover entire city been approved at a cost of 663 cr. It is the only ULB in the country to have augmented the surface water with ground water through rejuvenated open wells. The purified water is being supplied at a cost of just 0.75 rupees per kilolitre,
- Intermittent water supply in 48 wards of the city. Belagavi Corporation has successfully implemented 24 X 7 water supply project as a pilot in 10 wards on performance based management contract with reduction of NRW to 12%. Up scaling project to cover entire city been approved at a cost of 663 cr. It is the only ULB in the country to have augmented the surface water with ground water through rejuvenated open wells. The purified water is being supplied at a cost of just 0.75 rupees per kilo meter,
- Belagavi is an educational hub – with three Universities, six medical colleges and several technical, management and life science colleges. The Karnataka States' apex university for technical education the Vishveshwarayya Technological University is located in Belagavi. All the above having combined human resources output of 20000 professionals per year.
- The KLE Society, now in its 100th year – which runs 238 educational institutions in Karnataka, Maharashtra and Delhi is founded and based in Belagavi.
- Belagavi is renowned for its healthcare with 10,120 beds – the highest per capita in all Karnataka provide primary to advanced medical care also aiming towards health tourism. Rs. 350 cr is sanctioned by Govt. of Karnataka for a new Super Speciality Hospital In Belagavi.
- Belagavi is the destination to which the Karnataka State shifts the entire legislative and administrative

machinery for two months of the year and the Government functions from the Suvarna Soudha complex which was completed in 2012.

- Belagavi is hub for horticulture (vegetables, fruits etc.), floriculture, cash crops which are being transported to nearby areas like Goa.
- The Bangalore - Dhabhol gas pipeline is accessible to the city for both domestic and industrial use. Availability of CNG gas from Sept 2016 and PNG gas from November 2016 for households. A cricket stadium which can accommodate the international cricket matches is ready in Belagavi. The viewer's gallery is under construction.
- Weakness
- Centralized commercial activity in old part of the city with degree of congestion.
- Absence of ring road increased traffic congestion.
- Only 48% of the city covered with sewerage network and absence of STP.
- Intermittent water supply in 48 wards of the city.

OPPORTUNITIES:

- Making use of the available skilled manpower, 10000 acres of industrial area developed under NIMZ, crankshaft and camshaft turning, industrial castings and forging, machinery, hydraulics and for alumina and aluminum manufacturing has a good potential for becoming industrial hub in the region.
- Due to the excellent medical facilities, an educational facility there is a good potential for development of health tourism, educational hub.
- There is an excellent opportunity to develop a textile cluster.
- Due to the strategic location of Belagavi, there is a good opportunity for growth of logistics parks and Container logistics center.
- There is an opportunity to leverage the strength of rural Belagavi in Agricultural, Horticultural and dairy products.
- Due to salubrious climate and rich heritage, there is a good potential for developing tourism industry centered on Forts, Wildlife Sanctuaries, Due to salubrious climate and historical places, very good potential for tourism industry taking advantage of nearby Goa.
- Considering the abundance of green cover, water bodies, ground water reserves, surface water availability, industries, salubrious climate, planned growth, Belagavi has good potential for becoming environmentally sustainable city.
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- With many medium and small scale industries, educational institutes and hospitals of national repute, mix of farm economy and dairy production, power loom textile industries,
- Belagavi has a good potential for becoming a city which is economically becoming robust.

- With cosmopolitan city culture with Kannada, Marathi, Konkani, Telugu, urdu and English speaking people living and celebrating different festivals and with different cultural programmes, Belagavi is culturally vibrant, and has an opportunity becoming a well integrated city.
- Due to lot of untapped government owned open spaces, there is a good opportunity for planned unlocking of land in the city and its periphery to augment financial resources.
- Building upon experience gained in formulating infrastructure projects on PPP format, there is a good opportunity to develop projects on PPP mode

THREATS:

- Lengthy land acquisition procedures for development of a ring road is increasing the cost and delaying the project.
- Development Strategy: Over the past five years our strategy for development of Belagavi is based on the Robust citizen engagement programme which took place over the years, by which it was mandated that we converge various development schemes for infrastructure development in the city and also leveraging on potential sectors to ensure economic growth, viability and employment.
- 24 x 7 water supply schemes, implementation of the master plan, Under Ground Cabling works, planning and clearance for UGD system and development of ten water bodies, rejuvenation of open wells, construction of RoB, pedestrian underpass was the result of the citizen engagement and were implemented on the basis of aspirations of the citizens.
- Now it is our strategy to extend our approach further on the basis of recent reengagement of the citizens to cover the comprehensive and integrated infrastructure development in following areas;
- Drawing upon our experience over past 5 years in the two demo zones, where the per capita consumption of water has dropped from 105 lpcd to 85 lpcd., we are upscaling the 24x7 metered water supply to the whole city with upgradation with smart meters and e-billing.
- We are planning for Sewerage network for uncovered Areas and a Sewage Treatment Plant for the entire city with reusage of treated sewage water for industries.
- We are planning for Multi Utility Centers with Green building concepts for innovative use of open spaces available. These MUCs will act as new public services centers under one umbrella, impetus to the economic development of surrounding areas and also acts as a revenue generating model for ULB.
- As part of our strategy we are having plans for protection of water bodies in the city and also beautifications of their surroundings and develop tourism and recreational areas. For rejuvenation of water bodies all primary and secondary storm water drains are planned.
- Hence it is proposed to develop the water body or the moat around the fort and the pertinent area as Heritage Park. Within the fort a district museum is proposed. The ancient temples and mosques inside the fort are to be properly showcased.
- The strategy is to develop 18 Km stretch of potential commercial corridor generating 7% of total ABD area for the commercial activity. 153 acres of wooded land was preserved by a govt order of 2001 as Heritage Park and botanical garden. Plan has been developed in consultation with SPA, Delhi in 2013 for conservation of this area. To showcase the rich culture of belagavi area new art, drama
- Belagavi is already having a landfill site with compost plant facility. The strategy is to develop 100% segregation at source, upgrade the compost plant facility and develop a waste to energy plant for reduction of solid waste. Emphasis is on renewable energy both solar and wind power, we are planning for solar roof top power generation of 30 MW and wind power plant of 30 MW augmenting the power requirement upto 20% by renewable energy by year 2020.

Spatial planning for smart city plan proposal

Belagavi city is gearing up to present the final proposal for the Smart City plan. The plan includes Area Based Development and Pan City solutions as listed below: Area based development in a 10.78 sq.Km area is planed as below:

1.Retrofitting of the area with underground ducting for utilities

Skill development and employment generation in the manufacturing sector
2.Organization of informal sector - hawker zones, hawking spaces and eat streets
3.Decongesting traffic in the area
4. Improvement of Public Transport
5. .Multi-Utilities Facilitation Centers (MUFC)
6. Public Convenience & Amenities
7. Development of Markets Creation/improvement of parks &recreational spaces
8. Conservation & Preservation of Heritage Structure Housing for the poor
9. Improvement of city's waste water and sewerage system with Smart Metering
10. Solid Waste Management

Plan City Proposal

Improving mobility with Intelligent Transportation Systems

- E-Governance (Citizen Transaction Enablement).
- Improving energy efficiency and utilizing renewable energy sources. (On PPP)
- Water Supply, Sewerage and Solid Waste Management. (under Convergence)

CONCLUSION

Belagavi city is gearing up to present VISION FOR BELAGAVI "A livable, inclusive and vibrant Belagavi city, in which every citizen has adequate access to good quality of affordable and sustainable physical & social infrastructure, employment opportunities, in which cultural heritage and environment are protected and preserved through good governance and city management" . A Smart Sustainable City is a city that meets the needs of its present inhabitants without compromising the ability for other people or future generations to meet their needs, and thus, does not exceed local or planetary environmental limitations, and where this is supported by ICT.

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