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Smart city: A case study of Kakinada in Andhra Pradesh

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Abstract
A Smart city is an urban development vision to integrate multiple information and communication technologies (ICT) solutions in secure fashion to manage a city assets- the cities assets include, but not limited to local departments information systems. In Andhra Pradesh three cities are announced as smart cities these are Vishakhapatnam, Tirupathi and Kakinada. Kakinada is one of the fastest developing cities in Andhra Pradesh with a population of 3 Lakh 13 Thousands in 2011 in urban agglomeration registering a growth of 5% over the past decade. The city as around 83 Thousands houses which generate 260 metric tons of solid waste per day. This paper tries to explain the Kakinada opportunities, Strengths & Weakness of the city.

Keywords: Information, Technology, Communication, Solid Waste, Urbanization, Industrialization.

Introduction
The Government of India announced a list of 98 cities including 24 state capitals which are to be developed as Smart Cities. In Andhra Pradesh 3 cities are announced is are Visakhapatnam, Tirupathi and Kakinada. Smart city is a city equipped with basic infra-structure to give a decent quality of life a clean and sustainable environment through application of smart solutions.

The first question is what is meant by a 'smart city'. The answer is, there is no universally accepted definition of a smart city. It means different things to different people. The conceptualisation of Smart City, therefore, varies from city to city and country to country, depending on the level of development, willingness to change and reform, resources and aspirations of the city residents. A smart city would have a different connotation in India than, say, Europe. Even in India, there is no one way of defining a smart city.

Some definitional boundaries are required to guide cities in the Mission. In the imagination of any city dweller in India, the picture of a smart city contains a wish list of infrastructure and services that describes his or her level of aspiration. To provide for the aspirations and needs of the citizens, urban planners ideally aim at developing the entire urban eco-system, which is represented by the four pillars of comprehensive development-institutional, physical, social and economic infrastructure. This can be a long term goal and cities can work towards developing such comprehensive infrastructure incrementally, adding on layers of 'smartness'.

In the approach of the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities.

The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalysing the creation of similar Smart Cities in various regions and parts of the country.

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The core infrastructure elements in a smart city would include:
i) Adequate water supply,
ii) Assured electricity supply,
iii) Sanitation, including solid waste management,
iv) Efficient urban mobility and public transport,
v) Affordable housing, especially for the poor,
vi) Robust IT connectivity and digitalization,
vii) Good governance, especially e-Governance and citizen participation,
viii) Sustainable environment,
ix) Safety and security of citizens, particularly women, children and the elderly, and
x) Health and education.

As far as Smart Solutions are concerned, an illustrative list is given below. This is not, however, an exhaustive list, and cities are free to add more applications.

The purpose of the Smart Cities Mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes. Area- based development will transform existing areas (retrofit and redevelop), including slums, into better planned ones, thereby improving liveability of the whole City. New areas (greenfield) will be developed around cities in order to accommodate the expanding population in urban areas. Application of Smart Solutions will enable cities to use technology, information and data to improve infrastructure and services. Comprehensive development in this way will improve quality of life, create employment and enhance incomes for all, especially the poor and the disadvantaged, leading to inclusive cities.

a. Transportation condition in the city
Kakinada has planned grid road network. Average traffic speed on Major Corridors is 12-30kmph. Average trip length within the city is 3.4km excluding walk.10% citizens use NMV but more than 90% of the roads doesn't have footpaths. Citizens depends on 8000 Autos as Public transport facility is absent

b. Water availability in the city and reduction in water wastage/ NRW
The main source of raw water is the Godavari Canal through summer storage tanks. The Present water supply is 45 MLD with per capita supply of107 lpcd. NRW has reduced from 40% to 35% from 2012-13 to 2014-15 and further reduce to 20% by 2015-16 with the implementation of ongoing APMDP scheme.

c. Solid waste management programs in the city
The following programs have been initiated;
(1) Door to Door Collection in 70% of the city through tricycles
(2) Introduced night sweeping of main roads
(3) Developed 1MT compost plant to treat organic waste
(4) Already transaction is in progress to establish Waste to Energy (WtE) Plant

d. Safety/ security conditions in the city
Kakinada is a safe and secure city. The fatal accidents is ranging from 32 in 2012 to 35 in 2015 similarly the non-fatal accidents have reduced from 116 in 2012 to 91 in 2015. To ensure safety & security Police Department has installed 80 CCTV and 20 PTZ cameras.

e. Energy availability and reduction of outages in the city
Kakinada has reliable power supply with 2,300MW capacity power plants in the region. The outages at Kakinada are almost nil. The city has consumed 300.3MU, 331.36MU and 366.62MU in the years 2012-13, 2013-14 and 2014-15. Transmission & Distribution Losses are 3.75%, 1.96% and 3.11% during years 2012-13, 2013-14 and 2014-15.

f. Housing situation in the city, specifically role of municipality in expediting building plan approvals, enhancing property tax collection, etc.
The property assessments have increased from 61,742 to 64,547 between 2012-13 and 2014-15. In same proportion the property tax collections have gone up from Rs.1897.13Lakhs to Rs.1971.37 Lakhs during 2012-13 and 2014-15. The percentage building sanctions was 92.4% in 2012-13 to 83.2% in 2014-15 enforcing strict byelaws.

Administrative Efficiency
a. Overall attendance of functionaries
KMC has already introduced Biometric Attendance System and the objective is to bring transparency and efficiency in administration. KMC has installed around 11 CCTV cameras in all sections of corporation office. to ensure efficiency and service delivery biometric attendance for both office and outdoor staff.

b. Two-way communication between citizens and administration
Kakinada Municipal Corporation is maintaining the website-kakinadacorporaiton.ap.gov.in for relevant information to the citizens of Kakinada. Corporation is also maintaining a call centre with Phone No.0884-2352299 and recently "Online Grivances Redressal Tracking System (OGRTS)" was launched to address public grievances. KMC also introduced Dial Your Commissioner and Mee Kosam initiatives.

c. Use of e-Gov to enable hassle free access to statutory documents
KMC has 5 Meeseva centers covering online services like registration of birth & death, application for water connections, applying for building permission, payment of property tax, water tax and title transfers etc. KMC also using e-tendering platform. The main objective is to enhance quality, transparency, convenience, certainty and accountability in providing each municipal service.

d. Dashboards that integrate analytics and visualization of data
The data of Kakinada Municipal Corporation is available on website and dashboards related to property tax, water charges, advertisement tax, trade licenses, aadhar, street lights, work list; building plan approvals, drinking water resource, Swacha Andhra and housing are available on websites http://cdma.ap.gov.in/ and http://urban.ap.gov.in/

e. Availability of basic information relevant to citizens
Basic information related to municipal online services like annual budgets, contact details of the officials, Water tap connection, Property tax, Birth and Death registration, Procedure & guidelines for various services Application forms,

circular & proceedings of the meetings and other relevant information is available on the websites and citizen charter.

SWOT
City's Strengths Are
Port and Marine Economy: There is an active port and marine economy dealing with fertilisers, oil refineries, bio-fuel products and agro- products. Public investment has led the expansion of port activities and promoting refining & petrochemical units as the anchor industry whilst private investments have followed in the downstream industries focusing on exports.

Oil and Gas Growth Sector: The city is the focus of growth for the O&G sector- there is a new GMR SEZ, PCPIR and the presence of big industries like RIL, GPCL, two new upcoming petrochemical industries.

Fertilizer Industry - known as the "Fertilizer city of Andhra Pradesh", City is a huge producer and reputed ones are Nagurjuna Fertilizers and Chemical Limited (NFCL) and Coramandel Fertilizers Limited (CFL).

Education Hub - Kakinada is also an educational hub of the state offering courses in engineering, medicine, IT and management at the graduate and postgraduate levels through various professional colleges in the city.

The city's Weaknesses are
Traffic & Congestion: Congested roads (Less than 20 kmph journey speed in certain areas), lack of public transport (with demand met from unorganized private modes) and unorganized parking (with high levels of on-street parking reducing the capacity of roads) combined with an unsafe environment for non-motorised traffic and few footpaths, significantly impacts on economic growth.

Unskilled Workforce: A workforce that is unable to participate in the upcoming industrial development due to lack of skills

Inferior City Infrastructure: There is a lack of comprehensive underground sewerage and Storm water drainage. Non-availability of disposal site leading to insanitary conditions.

Inclusive Growth: There is a lack of affordable housing and facilities to cater to a diverse range of population (40% population lives in slums).

Pigs and Dogs: Pigs and dogs are very high lack of proper responsibility taken by the Kakinada Municipal Authorities. Pigs and dogs are creates in convince.

City's Opportunities are
PCPIR: City is part of the Vishakhapatnam- Kakinada Region PCPIR, which would be the largest petrochemical hub of Region. This development would mean that Kakinada would have to balance the sudden economic development triggered by the new development with the existing city so that the development is planned as well as promotes good quality of life for the residents of the Kakinada.

Kakinada SEZ: Spread over 10,000 acres in an area rich in oil and natural gas, the SEZ has the potential to create up to 70,000 jobs in next 5 years. Set up as a 'Port Based Multi Product Special Economic Zone', the site will cater to existing industries as well as expanding into new and emerging sectors based in and around Kakinada.

Proposed Petrochemical University: O&G sector requires highly skilled employees in the field as well as associated function (including office based). For the local and national population to get the most out of the opportunity, it is highly desirable to offer Petroleum Engineering and related courses in the city.

VCIC: Kakinada is part of the East Coast Economic Corridor (nation's first coastal corridor) and is poised to play a critical role in driving India's new "Act East Policy". It aims to increase industrial output & employment opportunities, increase in labor productivity & wages, promotion of dynamic SMEs and expanding exports over the next two decades. Promoted by Asian Development Bank and Government of Andhra Pradesh ADB is working under the guidance of Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, GoI & GoAP for development of VCIC region

Port Industries: Leading industrial giants have a stake in Kakinada and are invested in its future growth. Making use of the world class sea port and readily available industrial land, city can help promote the growth of both downstream petrochemical units as well as import dependent industries.

Rich In Resources: The city has uninterrupted electricity and water supply. It is also rich in natural resources. Monetarily, ADB has a significant commitment to invest in the region for sustainable growth.

Tourism: The tourism potential of the city still lies unexplored. Kakinada will look to diversify its economy further by promoting itself as an eco-tourism and religious destination in India. Kakinada is already included under Swadesh Darshan scheme by GoI and expected receive a grant of Rs.100Cr.
Capitalising on the city's proximity to the Coringa Wildlife Sanctuary, the Mangroves and forests, Kakinada will seek to become a new tourist hub on the South East coast of India. The environmentally sensitive but luxurious development of Hope Island as well as the numerous temples and the sea coast will seek to attract a wide range of visitors to the area. The coast of Kakinada is also expected to be installed with INS Vikrant.

Yokohama's Interest in Kakinada: Under Yokohama Partnership of Resources and Technologies (Y-PORT) scheme City of Yokohama is keen to support Kakinada to transform into smart city. The initiative is at advanced stage and MoU is expected to signed very soon between GoAP and City of Yokohama.

City's Threats Are
Natural Calamities: Being located in the coast of Bay of Bengal, Kakinada is prone to Cyclones and Floods.

Regional Competition: City faces competition from two nearby sea ports. Vishakhapatnam, which is 159 KM away. It handles significantly more cargo than Kakinada and has more facilities too. In addition to this, Vishakhapatnam is undergoing a Modernisation programme which will increase its capacity.

Krishnapatnam Port (523 km) South of Kakinada handles a diverse cargo. Although a significant distance away, the port has a 12,000 acre SEZ located in the vicinity of the port which could compete with Kakinada for crucial investment.

Connectivity: City has poor regional connectivity. The nearest airport is at Rajahmundry which is over 60 km away. The airport only offers flights to Hyderabad and Bangalore.

City is also connected to the 270km long National Highway 214 (which then connects onto NH5). The national North-South and East West corridor does not run through Kakinada and the Golden Quadrilateral, once finished, will run straight to Vishakhapatnam and will miss the city too. This could potentially take more business away from the city.

Kakinada should leverage on the strengths and opportunities to become a major economic hub in the Country. The economic development and invest in and around the city would demand for quality services. Traditionally it has been observed that economic development associated with industrialisation and urbanisation would lead to more pollution and degradation of natural resources. Thus it is imperative to have sustainable development which is inclusive at the same time economically vibrant. In totality the Kakinada should be liveable – a place where every citizen including differently abled can lead safe, healthy and prosperous life.

Kakinada has to be ready with avenues to attract investment which shall promote economic upliftment and create jobs. The economic development shall be in tandem with and complimentary to the existing & proposed developments. The projects shall also support the tourism development which is proposed to happen due to implementation of Swadesh Darshan Scheme. So Kakinada shall plan for projects like convention centre, malls, multiplexes, budget hotels, markets, etc., which trigger local economic development.

The 10,500 acre GMR SEZ, RIL, ports and other oil & gas giants are expected to pump in huge investments. Hence Kakinada is going to be developed as City of Ports. The local economic planning area will include 32sq.km Kakinada city and surrounding area covering all the economic / investment regions.

The proposed investments will provide more than one lakh jobs in next five years requiring a range of skill sets. The citizens of the Kakinada shall be made ready to capture the upcoming opportunities with required skills for which dedicated skill development centres are planned.

Conclusion

The city will be ready with resilient infrastructure, high quality services and conducive environment for all the citizens including women, children, elderly and differently abled. So city shall overcome its weakness of inadequate infrastructure, poor connectivity, congestion, lack of affordable housing, inadequate health facilities, inferior quality of education at government schools, poor IT connectivity and reducing recreation facilities. Kakinada shall plan for upgradation or development of robust infrastructure and facilities.

To become a sustainable in long run, Kakinada shall plan for harnessing renewable energy to meet at least 10% of its total consumption, improve green cover at least 15% of the total area, conserve resources, become energy efficient, encourage NMT, safe processing & disposal of waste and protect marine life & sea coast.

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