Smart Cities in India: Concerns, Challenges and Smart Solutions

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Abstract:

The origination of smart cities concept pave a way at the time when the entire world was facing one of the most worst economic optimization of urban resource with best healthy and eco-friendly context. Basically, the concept of smart cities is to use digital technology to make a city more efficient and sustainable. The smart cities concept is an innovative and new initiative by the Government of India to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens. As technology growth can be used into planning smart cities which can gradually tackle several issues in a society. The building of a smart city requires large investments by the either government/ private or both. The city must be planned in such a way that smart transport can be made available from residential areas to commercial and office areas. Under the impression of smart cities in India, the smart cities in India are expected to attract investments, building cities that work well especially for business and developing new technologies for communication. The Smart City Mission tries to create smart cities in some ways- through retrofitting, redevelopment, Greenfield development plus a Pan-city inventiveness in which Smart Solutions are applied covering larger parts of the city. Since existing structures are largely to remain intact in this model, it is expected that more concentrated infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city.

Keywords: Smart Cities, Sustainable Development, Smart Solution, Natural Resources, Sustainable Economy, Smart Technology

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Introduction

The concept of smart cities originated at the time when the entire world was facing one of the most worst economic crises. In 2008, IBM (International Banking Machines Corporation), American multinational technology company, began to work on a "smarter cities" concept. There are some triumphant smart cities in other countries such as Amsterdam, Barcelona, and Stockholm etc. There is no universally accepted definition of a smart city and it may mean different things to different people. The concept of a smart city can fluctuate from people to people, city to city and country to country. Basically, the concept of smart cities is to use digital technology to make a city more efficient and sustainable. The term encompasses a vision of an urban space that is ecologically friendly, technologically integrated and meticulously planned, with a particular reliance on the use of information technology to improve efficiency.

According to Frost and Sullivan (2003), smart cities include smart governance and smart education, smart healthcare, smart building, smart mobility, smart infrastructure, smart technology, smart energy and smart citizen.

Indian scenario

Indian cities lodge nearly 31per cent of India's current population and contribute 63per cent of GDP. Urban areas are expected to house 40per cent of India's population and contribute 75per cent of India's GDP by 2030. This requires inclusive development of physical, institutional, social and economic infrastructure. A hundred years later, in 2000, the world's urban population had increased to almost 2.9 billion, about 47 per cent of the total. The 21st century is therefore an urban century and this sets it apart from the all the centuries that have gone before it. Drastic shift in human history, more people will live in cities than in the countryside. All are important in improving the quality of life and attracting people and investment, setting in motion a virtuous cycle of growth and development. Development of smart cities is a required step in that direction.

The smart cities concept is an innovative and new initiative by the Government of India to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens.

The upshot of our century's old model of city growth is rise inequality. Government bureaucracy is apparently unable to provide efficient and effective services. Needless to say, that's undesirable on many levels.This is a global challenge. Examples inIndia, China, Africa and here in Australia richly illustrate the need for smarter solutions to deal with massive population growth, rural to urban migration, and resource depletion.Several cities are dealing with the crisis of overpopulation, causing a dearth of natural resources. Social and economical imbalance among citizens creates problems in the society. As technology growth can be used into planning smart cities which can gradually tackle several issues in a society. The building of a smart city requires large investments by the either government/ private or both. On the other hand, it is one of the best changes possible in lifestyles if done with mindful implementation. Smart cities are designed for optimum usage of space and resources along with an efficient and optimum distribution of benefits. It also aims at increasing connectivity at various levels among citizens, as well as between the administration and population. Public properties such as public utility, schools, roads, and hospitals are improved. The system can tackle several redundancies of the present system and save time, money and optimum output.

Smart cities should be smart with environment-friendly policies. There are devices which can keep track of air purity level, as well as other environmental and health-related factors. The investment in such a city should also include the safeguarding of a conscious work-force which shall review and amend the system. Therefore, a smart city shall only reach a nourishing stage if it stands-up to the social, economical and psychological needs of the society.According to the Smart City Index, one of the best parameters to conclude if a city is a smart city is to check the transport and mobility parameter. It is estimated that annually India loses 60,000 crore annually because of fuel wastage due to traffic jams and indecent roads. Also, several people choose to commute by private transport of crowded or unavailable public transport facilities. A centralized server based on real-time data streams can decide how to source the public transport system efficiently. Things such as traffic lights can be modulated as per the live traffic input from the server. These minor parameters can go a long way to making the concept of mobility as a service a reality.

Smart transport and digitalized mobility services is the key to reducing pollution levels, minimize the number of vehicles on the road and improving the on the whole wellness of a city. The city must be planned in such a way that smart transport can be made available from residential areas to commercial and office areas.

Under the impression of smart cities in India, the smart cities in India are expected to attract investments, building cities that work well especially for business and developing new technologies for communication.

Smart Cities Mission

Smart cities focus on their most pressing needs and on the greatest opportunities to improve lives. The Government of India has launched the Smart Cities Mission on 25 June 2015. The objective is to promote sustainable and inclusive cities that provide nucleus 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 lighthouse to other aspiring cities. The Smart Cities Mission is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country. Some of the nucleus infrastructure elements in a Smart City would include adequate water supply,including solid waste management, assured electricity supply, sanitation, efficient urban mobility and public transport, affordable housing, especially for the poor, robust IT connectivity and digitalization, good governance, especially e-Governance and citizen participation, sustainable environment, safety and security of citizens, particularly women, children and the elderly and health and education.

They tap anassortment of approaches - digital and information technologies, urban planning best practices, public-private partnerships, and policy change - to make a difference. They always put people first.In the approach to the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a civilized quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and all-encompassing 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 is meant to set

examples that can be simulated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country.National Smart Cities Mission is an urban revitalization and retrofitting program by the Government of India with the mission to develop smart cities athwart the country, making them citizen friendly and sustainable.The Union Ministry of Urban Development is responsible for implementing the mission in association with the state governments of the respective cities. The mission initially included 100 cities, with the deadline for achievement of the projects set between 2019 and 2023.

Smart Cities Mission envisions developing an area within the cities in the country as model areas based on an area development plan, which is expected to have a rub-off effect on other parts of the city, and nearby cities and towns. Cities will be selected based on the Smart Cities challenge, where cities will contend in a nationwide competition to obtain the benefits from this mission. As of January 2018, 99 cities have been selected to be upgraded as part of the Smart Cities Mission after they defeated other cities in the challenge.It is a five-year program in which, except for West Bengal, all of the Indian states and Union territories are participating by nominating at least one city for the Smart Cities challenge. Financial aid will be given by the central and state governments between 2017–2022 to the cities, and the mission will start showing results from 2022 onwards.

Each city will create a Special Purpose Vehicle (SPV), headed by a full-time CEO, to implement the Smart Cities Mission. Centre and state government will provide ₹1,000 crore funding to the company, as equal contribution of ₹500 crore each. The company has to raise bonus funds from the financial market as a debt or equity.

Smart Cities Mission Strategy

The Smart City Mission tries to create smart cities in some ways- through retrofitting, redevelopment, Greenfield development plus a Pan-city inventeness in which Smart Solutions are applied covering larger parts of the city. Below are given the metaphors of the three models of area- based smart city development-

- **Retrofitting:-** it will commence planning in an existing built-up area to achieve smart city objectives, along with other objectives to make the existing area more efficient and livable.

In retrofitting, an area consisting of more than 500 acres will be identified by the city in conference with citizens. Depending on the existing level of transportation services in the area and the vision of the residents, the cities will prepare a strategy to become smart. Since existing structures are largely to remain intact in this model, it is expected that more concentrated infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. This strategy may also be completed in a shorter time frame, leading to its replication in another part of city. Example – Connaught Place in Delhi, Bhendi Bazar in Mumbai.

- **Redevelopment:-** reconstruction of already built-up area of more than 50 acres that is not amenable for any interventions. Example- Kidwai Nagar in Delhi.
- **Greenfield Development:-** new areas (Greenfield) will be developed around cities spanning more than 250 acres in order to accommodate the expanding population in urban areas. Example – land pooling / land reconstitution in Outer Delhi, GIFT city in Gujarat.
- **Pan-city: -** pan-city components could be interventions like intelligent transport solutions (say traffic management using mobile apps to help people to divert to less overcrowded roads, allowing ambulances and other emergency vehicles to control the traffic signals) that benefit all residents by reducing commuting time. Pan-city is an additional feature to be provided alongside proposals for retrofitting or redevelopment or green field development.

Implementation of Smart Cities Mission

- For the implementation of the Mission at the city level a Special Purpose Vehicle (SPV), for each smart city, has been formed. The SPV has been accorded the responsibilities to plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate Smart City development projects. The members a SPV, headed by a full time CEO, are to be nominated by Central Government, State Government and ULB on its Boards.

- The SPV is to be a limited company incorporated under the Companies Act, 2013 at the city–level. In this company the State/UT and the ULB are going to be promoters having 50:50 equity shareholdings. The private sector or financial institutions can also be considered for getting equity stake in the SPV on the condition that the shareholding

pattern of 50:50 of the State/UT and the ULB remain intact and the State/UT and the ULB together hold majority of shareholding and control of the SVP.

- The State/ULBs have to ensure the availability of a dedicated and substantial revenue team to the SVP in order to make it self-sustainable so as to it could evolve its own credit–worthiness for raising additional resources from the market. The State/ULBs have also to ensure it that Government contribution for Smart City is used only to make infrastructure that has public benefit outcomes. The execution of projects is to be completed through Public – Private Partnership (PPP), joint ventures, subsidiaries, turnkey contracts, etc. suitably attached with revenue streams.

Fund Release under Smart Cities Mission

- Each selected Smart City, in the first year, according to the proposal of the Central Government, will be provided a sum of Rs. 200 crore to create a higher initial corpus. After deducting Rs. Two crore advance and A & OE share of the MoUD, each selected Smart City is going to receive 194 crore out of Rs. 200 Crore in the first year followed by Rs. 98 crore out of Rs. 100 crore every year for the coming next three years.

- The conditions for the release of yearly installment of funds to SPVs include timely submission of the City Score Card (CSC) every quarter to MoUD; satisfactory Physical and financial progress as shown in the Utilization Certificate and the annual city score card; achievement of milestones provided in the road map contained in SCP; and fully functioning SPV as penned down in the Guidelines and Articles of Association

  No. of Smart Cities in each State

  The total number of 100 smart cities have been distributed among the States and UTs on the basis of an equitable criteria. The formula gives equal weightage (50:50) to urban population of the State/UT and the number of statutory towns in the State/UT. Based on this formula, each State/UT will, therefore, have a certain number of potential smart cities, with each State/UT having at least one. This distribution is given below. The

number of potential Smart Cities from each State/UT will be capped at the indicated number. (This distribution formula has also been used for allocation of funds under Atal Mission for Rejuvenation and Urban Transformation - AMRUT).

The distribution of smart cities will be reviewed after two years of the implementation of the Mission. Based on an assessment of the performance of States/ULBs in the Challenge, some re-allocation of the remaining potential smart cities among States may be required to be done by Ministry of Urban Development.

Convergence with other government schemes

Comprehensive development occurs in areas by integrating the physical, institutional, social and economic infrastructure. Many of the sectoral schemes of the Government converge in this goal, although the path is different. There is a strong complementarity between the AMRUT and Smart Cities Mission in achieving urban transformation. While AMRUT follows a project-based approach, the Smart Cities Mission follows an area-based strategy.

Similarly, great benefit can be derived by seeking convergence of other Central and State Government Programs/Schemes with the Smart Cities Mission. At the planning stage itself, cities must seek convergence in the SCP with AMRUT, Swachh Bharat Mission (SBM), National Heritage City Development and Augmentation Yojana (HRIDAY)- External Website that opens in a new window, Digital India, Skill development, Housing for All, construction of Museums funded by the Culture Department and other programs connected to social infrastructure such as Health, Education and Culture.

SMART SOLUTIONS

The smart solutions under the mission refer to use of technology in such a way that it leads Smart outcomes. Some examples of smart solutions are as follows:

E-Governance and citizen services: This includes public information and grievance Redressed Electronic Service Delivery, Citizen Engagement, Citizens as City's eyes and ears, Video crime monitoring etc.

Waste Management: This includes waste to energy and fuel- waste to compost; treatment of waste water, Recycling etc.

Water Management: Smart meters and management,Leakage identification, prevention and maintenance, water quality monitoring.

Energy Management: Smart meters and management, renewable source of energy, green buildings.

Urban Mobility: Smart parking; intelligent traffic management; integrated multi-model transport.

Others: Telemedicine; Incubation / trade facilitation centers, skill development centers.

Financing the Smart Cities

The Smart City Mission will be operated as a Centrally Sponsored Scheme (CSS) and the Central Government proposes to give financial support to the Mission to the extent of Rs. 48,000 crores over five years i.e. on an average Rs. 100 crore per city per year. An equal amount, on a matching basis, will have to be contributed by the State/ULB; therefore, nearly Rupees one lakh crore of Government/ULB funds will be available for Smart Cities development.

CHALLENGES TO OVERCOME

The India Smart Cities Challenge- External Website that opens in a new window is a competition designed to inspire and support municipal officials as they develop smart proposals to improve residents' lives. 100 cities will compete in the first round - with the best proposals receiving funding from the Ministry of Urban Development.

Bridging the gap between where we are now and what can be might seem like a tall order, particularly on account of how disruptive – socially and economically – broad-scale change can be.There will be an inevitable reshuffling of the power structures as they presently stand, producing new winners and losers. It won't be easy to convince those in a winning position today to relinquish that advantage, regardless of the ultimate benefit to society.

History has taught us that government cannot do this alone. It's going to require champions across government, industry and civil society to make a convincing case as to why we need to start doing things differently. I believe it's important to start reshaping the narrative about what 'smart cities' really means toward a more holistic perspective. Because, ultimately, when I say

'winners and losers', I'm speaking purely in terms of short-term considerations. In the long run, everybody wins; because, for whatever profits or power that initially slip away, the new situation – once it's established – will be one in which inefficiency and waste is minimised, and everybody will enjoy a greater return on their efforts.

- This is the first time, a MoUDprogramme is using the 'Challenge' or competition method to select cities for funding and using a strategy of area-based development. This captures the spirit of 'competitive and cooperative federalism'.

- States and ULBs will play a key supportive role in the development of Smart Cities. Smart leadership and vision at this level and ability to act decisively will be important factors determining the success of the Mission.

- Understanding the concepts of retrofitting, redevelopment and greenfield development by the policy makers, implementers and other stakeholders at different levels will require capacity assistance. Major investments in time and resources will have to be made during the planning phase prior to participation in the Challenge. This is different from the conventional DPR-driven approach.

- The Smart Cities Mission requires smart people who actively participate in governance and reforms. Citizen involvement is much more than a ceremonial participation in governance. The participation of smart people will be enabled by the Special Purpose Vehicle (SPV) through increasing use of ICT, especially mobile-based tools.

SMART MANTRA FOR SMART CITIES

Right now, in year 2021, we have to not only tackle with current context but for next year 2030-50. From here, it can be suggest to the policy makers and interest holders to prepare ourselves today for future such under as:

1. Smart Procurement- Decisions regarding the procurement routine should not be taken too hurry, but must rely on the result of a business models and/or by feasibility study of the smart cities projects. Effective procurement and financing is very important to success, and the underperformance of urban projects can usually be traced back to an initial poor procurement decision. While Public Private Partnership (PPP)provisions are justifiably winning popularity due to the optimum capital requirements for smart project and their ability to effectively allocate

risk, each project will need to carefully select their financing model to meet the specific outcomesfor respective situation. We should avoid the one-size-fits-all model.

2. Smart Project Planning- Project planning needs to be smart, and should combine technical expertise with political sensitivity and engagement with stakeholders. Planning should include involving the private sector in 'reality checking', particularly relating to the financing of projects.

3. Smart Strategic Consistency- Local bodies e.g. municipal corporation, should be taken in confidence. For authorities to deliver factual civil benefits from smart cities projects, they must set a long-term path and then work continuously towards it.

4. Smart Legitimacy- Withoutunderstandingthe local people' need, there is likely to be limited support for a smart cities projects. All major projects will go through multiple and major challenges before they are delivered, and without legitimacy, politicians are often unable to sustain either the resources or the delivery mechanisms required to successfully deliver the plan.

5. Smart Authority -The political institutions that make decisions about urbanization, need to also have the authority to drive them through. In other words, decisions about smart cities projects must be made by bodies that can command the powers to ensure they can be delivered. This may thoroughunderstandable.

6. Smart Governance–Central and State governments need to define rules for the disbursement of Central and State funds that impose accountability upon authorities.

CONCLUSION

The Smart Cities Mission in India is an urban regeneration programmed. In terms of its finances, the Mission encourages Indian cities to move towards market based mechanisms of accessing funding. The 'smart city' need not endow with detailed information while formulating financial capacities of the city as cities are expected to state the quantum of finance required for the city and the sources of funding. A trend in India of finances across rounds indicates a move towards more conservative budgets and greater reliance on public sources of funding. The Smart Cities mission re-centralizes power with state governments and shifts power away from local democratic institutions. Furthermore, finds that the processes of citizen engagement are not

recorded precisely in the proposals and indicate that despite the extensive speechifying of public participation. The smart cities concept has gained a lot of concentration lately and it will most likely continue to do so in the future. Cities can also start joining up efforts across departments releasing more of their data, learning from international case studies on what works and what doesn't, joining new networks, and collaborating with the private sector and other partners to test products and identify new business models to take projects forward.

The private sector should: Work in partnership with cities on designing products and services that are financially viable and respond to local needs and challenges. Publicize international solutions that might be replicated in the UK and partner with cities to test new products. Work with applicable parties on identifying and building the business models needed to permit to take projects forward.

The Government should continue to make funding available to test new products and initiatives and also make sure that, Efforts are coordinated rather than inaccessible (across the different Catapults for example, where there is currently a risk of unintended duplication). Initiatives like the Smart Cities Forum involve representatives and gather insights from all the relevant sectors. Interventions stay flexible and steer away from focusing on certain sectors/initiatives, recognizing that cities have varying needs and challenges.

References

M. Thynell, D. Mohan, and G. Tiwari, Sustainable transport and the modernisation of urban transport in delhi and stockholm, Cities, vol. 27. 6, pp. 421–429, 2010.

Sivaramakrishnan, K.C. 2011, Re-visioning Indian cities, The urban renewal mission. New Delhi: Sage.

C. Chandramouli and R. General, "Census of india 2011, Provisional Population Totals. New Delhi: Government of India, 2011.

P. Neirotti, A. De Marco, A. C. Cagliano, G. Mangano, and F. Scorrano, Current trends in smart city initiatives: Some stylised facts, Cities, vol. 38, pp. 25–36, 2014.

L. G. Anthopoulos, "Understanding the smart city domain: A literature review," in Transforming city governments for successful smart cities. Springer, 2015, pp. 9–21.

Ministry of Urban Development, 2015 . Smart Cities Mission Guidelines. New Delhi: Government of India.

L. G. Anthopoulos, Understanding the smart city domain: A literature review, in Transforming city governments for successful smart cities. Springer, 2015, pp. 9–21.

Shrimoyee Bhattacharya, Sujaya R. S, Anusree P.N.T., 2015. Reconceptualising Smart Cities: A Reference Framework for India,
https://niti.gov.in/writereaddata/files/document_publication/CSTEP%20Report%20Smart%20Cities%20Framework.pdf

Khan, S. 2017, The Other Jawaharlal Nehru National Urban Renewal Mission: What Does It Mean for Small Town India?. In Z. M. Denis E., Subaltern urbanisation in India. New Delhi: Springer.

M. NIC, All polls/survey under smart cities.

MoUD, Smart city mission and guidelines, pp 334-338, 2015.

https://www.digitalpulse.pwc.com.au/why-we-need-smart-cities   what-is-smart-city-all-you-wanted-to-know-in-5-points/

Smart Cities Mission: A step towards Smart India, https://www.india.gov.in/spotlight/smart-cities-mission-step-towards-smart-india.