Smart Cities for Smarter India –
Progress, Challenges and Way Forward

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Abstract

Smart City Mission was introduced to bring a push in the city development process and alleviate problems caused by urbanization. It planned to make cities well-equipped to handle infrastructure as well as environmental problems. This idea though is influenced by smart cities from abroad, doesn't mean it is supposed to be an exact replica of them. This is so because the definition of smart cities varies for city to city and country to country. This variation exists because a smart city is supposed to look at the drawback specific to that area and work in overcoming them and pushing them further for development. They also work as goal to be achieved by other cities.

The Government of India came up with 100 Smart Cities since January 2016. This paper reviews the progress of smart city mission. The mission was introduced with high hopes of developing light house cities. It focused on bringing in smart solutions, real time information, hi-end technology and infrastructure to make a city more efficient. This was to be done by keeping the city eco-friendly with better electricity and water supply and improved health care and education. Since the implementation of the Smart City Mission we have seen a lag in project completion and implementation. To top it all, fund release and management of the program is also facing delays. Enough priority has not been provided to health and education. All these factors combined are posing a major hurdle for the mission. In this context, this paper focuses on reviewing the progress of smart cities till now and identify the challenges and way forward in its implementation.
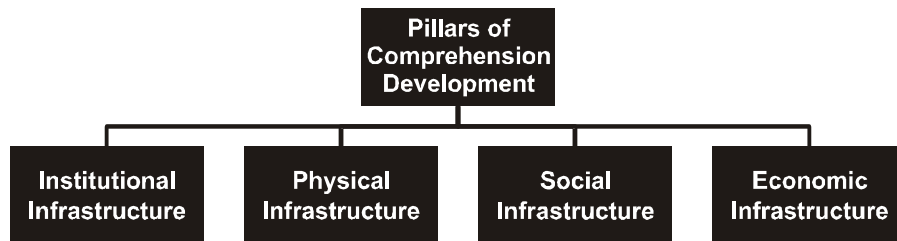
Key Words

Smart Cities, Problems & Challenges, Progress, Urbanisation, Infrastructure Development, Health Care and Education, Sustainable Environment, Inclusive Development Lags in Project Completion and Implementation, Delay in Fund Release, India

INTRODUCTION

The government keeps on coming up with different measures to facilitate growth of a country in all areas for an overall growth to be maintained. In this process, Smart Cities have been introduced for alleviating the problems caused by the growth of urban population and accelerated urbanization. Though there is no universally accepted definition of it because the concept of smart city varies from city to city and country to country. Their understanding depends on the level of development of that particular country.

Smart cities act as a light house for the aspiring cities around it. It guides cities in a mission to improve, for example, improved infrastructure and services, smart solutions etc. The planners aim at developing the entire urban ecosystem by using pillars of comprehension development those are institutional, physical, social and economic infrastructure (See Figure 1).

Source : Smart Cities Mission, Government of India, http://www.smartcities.gov.in/upload/ uploadfiles/files/What%20is%20Smart%20City.pdf

The objective is to promote cities to provide core infrastructure and decent quality of living, clean and sustainable environment and application of 'Smart' Solutions. At an overall level, it aims for sustainable and inclusive development. The concept of Smart Cities is not a new concept. It has existed longer; examples of such cities areTakshila and Nalanda.

The core infrastructure elements in a smart city as mentioned by the government are :

- Adequate water supply,

- Assured electricity supply,
- Sanitation, including solid waste management,
- 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.
- (Source : Smart Cities Mission, Government of India, http://www.smartcities.gov.in/upload/uploadfiles/files/What%20is%20Smart%20City.pdf)

As we all already know, Government of India came up with 100 Smart Cities in different rounds through a transparent and competitive procedure. First selection of 20 cities in January, 2016 and from there onward different rounds were held to include further more. Since then we expect to see some result from the new policy framework. This paper focuses on reviewing the progress of the Smart Cities till now.

OBJECTIVES

1. Review the progress of Smart Cities till present.
2. To identify the challenges and way forward in its implementation.

METHODOLOGY

The present study is based on secondary data available from the Smart City Mission website of the Government of India and Cochin Smart City Mission Progress website. This data is used for the basic understanding of the proposed expenditure of the government. Also, different research papers and private sources are referred to review the progress and understand different challenges and way forward in its implementation.

Need for Smart Cities

Migrating for jobs and better education has led to over populating the already existing urban areas. Due to this phenomenon, a rise in peri-urban areas is seen. People who cannot afford to stay in the main city move to these peri-urban areas. These are highly congested areas with lack of clarity of physical boundaries. Neglect in monitoring physical development in these areas

by the government causes contagious physical changes as well.

Simultaneously, agricultural lands are being indiscriminately converted to urban use. A part of the problem is extension of slums. India's 5% of total population and 17% of urban population lives in slums. The data states that between 2001 to 2011 population in slums grew by 25% (Aijaz, 2016). Shortage of drinking sources and non-existence of toilet within premises comes up as a challenge and deteriorates the quality of living. Deteriorating quality of water and air makes the situation worse. All in all, the quality of life is very poor. This has led to the demand for smart cities, which will act like a guiding light for the rest of the cities.

Progress and Challenges of Smart Cities in India

To combat these issues the concept of Smart City was introduced. The strategy opted is Area Based Development, which includes retrofitting, Greenfield, redevelopment and Pan City development. Through a transparent and competitive manner, proposals were invited and cities were selected from it. The positive aspect was that the focus of development was moving out of the concept of only metropolitans to Tier 1 and Tier 2 cities and the selection process was competitive and transparent. Every city had to submit a proposal and the best were selected out of these. This competitiveness did bring out the best in these cities.

The first round came up with 20 cities out of which top five cities are Pune, Bhubneswar, Jaipur, Surat and Kochi. These cities are to complete the work by 2021-22. Unfortunately, these cities are lagging behind in terms of number of projects completed till now. Bhubneswar and Kochi had not completed any projects till 2017, Pune had completed four out of thirty four, Jaipur had completed seven out of forty seven and Surat had completed seven out of fifty two projects till 2017. Surat led with over Rs 2000 crore as work in progress (Navya, 2017).While comparing these five smart cites to smart cities like London, Seoul etc. we see that they were able to finish the work within three to four years. As we all already know, lag in infrastructure project not only just increases cost but also affects the efficiency of work as well.

Total spending on the completed projects for Jaipur, Pune and Surat comes out to be 0.8%, 6% and 2.5% of the total outlay respectively (Navya, 2017). In the year 2018, Pune went through a major cash crunch as well. Where out of Rs 400 crores, Rs 200 crores were to be given but were failed to be released. On 9th April 2019, Cochin Smart City Mission Progress came out with the data regarding its progress and cost structure. This report clearly mentions

that till now only one project has been completed and three are being implemented and for rest either tenders are issued or Department Performance Report (DPR) is being prepared (as seen in Table 1).

There are other challenges too. For any developing country, a long-run growth incorporates health and education. By education, we just do not mean primary education but knowledge, skill etc. A long run growth not only just

Project Status Current / Awarded   **09-04-2019**

Projects	Project Cost (in Cr.)	Expen-diture (Cr.)
Projects Under Implementation		
Solar Panels in Govt. Buildings	5.70	1.30
Walkway from Ekm Jetty to Metro Station	9.00	2.10
Public Bicycle Sharing	10.00	1.50
Project Under Implementation Total	24.70	4.90
Project Awarded		
Cancer Extention Block, General Hospital	17.00	
E-health Solution for General Hospital	3.71	
Integrated Command, Control and Communication Centre (IC4)	64.50	
Intelligent Traffic Management Systems (ITMS)	26.90	
Project Awarded Total	**112.11**	
Grand Total	**136.81**	**4.90**

Progress Summary   **09-04-2019**

Source of Fund	No. of Projects	Project Cost (in Cr.)	Expenditure (in Cr.)
Project Under Implementation	3	24.7	
Project Awarded	4	112.11	
Tender Issued	20	754.17	
DPR Under Preparation	18	220.32	
DPR to be Prepared	19	204.26	
Tender Cancelled	1	4.9	
DPR Prepared	5	19.8	
Grand Total	**70**	**1340.26**	**4.90**

Source : Cochin Smart City Mission : http://csml.co.in/progress
(See Appendix 1 for detailed figures)

adopts physical agenda of infrastructure but also social agendas like education for sustainable and inclusive growth. What we see here is that most of these cities have focused on the infrastructure aspect of it. Though in the objective of smart city health and education are part of it but no benchmark is either mentioned or achieved by any of the smart cities.

Though the smart city process will use high-end technology and might create jobs for the skilled labour force and expect them to migrate and settle there. But for the long run development of quality education is to be prioritized to improve on human development for future.

On the other hand, to establish Greenfield cities Indian Government is facing another issue. An important example of it is Dholera. There are three aspects to it. Firstly, land acquisition is always problematic for the government of India. Secondly, the land needed for Dholera encroaches upon arable land, unlike other countries like China who used wastelands for such purpose. Thirdly, due to employment insecurities people owning the land like to keep it with them for a crisis scenario. It acts like a safety net in case of any sudden loss of their job or source of income (Chattaraj, 2015). To give up such kind of well thought after security surely will not be easy for anyone. Therefore, the government needs to come up with a well-defined and worked out way of compensation or wastelands to develop before it dwells into these projects.

One important aspect of smart city is that a part of the city will be selected to carry out the projects during the five year duration and the rest will be governed in the usual manner. This approach can widen inequality. In that case any part selected might not give us a good idea about inclusiveness, if the marginalized are part of it or not cannot be determined or even if determined are not necessarily part of it. There is no data or information on how their lives will be improved on. Also, another aspect that has been neglected is the informal sector, roadside sellers. The other problem here is that to provide a 24x7 facility of water supply or electricity there might be cases of lowering its supply in the other parts of the city (Aijaz, 2016). This has been the general trend seen for commercial establishments such as malls. This could widen the inequality gap further.

Last but not the least, the problem in the working mechanism. Special Purpose Vehicles (SPV) are supposed to head these projects. In many cases, these SPVs are either missing or keep changing frequently (Aijaz, 2016). This can be the major reason for slowing of the development process.

CONCLUSION

The concept of Smart Cities envisioned by the present Central Government is timely and need of the hour. It was suggested very enthusiastically with high hopes and has the potential to transform the urban landscape of India if implemented properly. The progress achieved in implementing Smart Cities projects are not upto the mark. Unfortunately, Government is facing some challenges in its smooth implementation that need to be taken care off. Lag in fund release, lag in project implementation, missing SPV, land acquisition etc. have been a major roadblock in India's development not just now, but have been existent in all the policies implementation.These need to be taken care by the government as soon as possible for the expected high result. Further, basic necessities like education and health shouldn't be ignored by providing such hi-end development projects. In the long-run, overall growth is needed. If these roadblocks are removed, then there is a scope to develop the expected light houses for the aspiring cities.Above all, adequate real time data must be made available so that high level research is possible on various dimensions of Smart Cities in India.

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Table 1
ABD Project Status   **09-04-2019**

Sector	Project Name	Project Cost	Fund	Status	All Accorded Account (in Cr.)	Status of Technical Sanction Amount	For Project Under Implementation % of work done	Eexpenditure (Amt. in Crore)	Cumulative %
Urban Mobility	Wallway from Ekm Jetty to Metro Station	9.00	SCM	Project Under Implementation	9.0	9.0	24%	2.10	23%
Energy Efficiency	Solar Panels in Govt. Buildings	5.70	SCM	Project Under Implementation	5.7	5.7	23%	1.3	23%
Urban Mobility	Bicycle Sharing	10.00	PPF	Project Under Implementation	10	10	15%	1.5	15%
Main Roads	Intelligent Traffic Management Systems (ITMS)	26.90	SCM	Project Awarded	27.0	27.0			0%
Health	E-health Solution for General Hospital	3.71	SCM	Project Awarded	3.95%	3.95%			0%

Health	Cancer Extention Block, General Hospital	17.00	SCM	Project Awarded	17	17			0%
Urban Mobility	Integrated Comm-and Control and Communication Centre (IC4)	64.50	SCM	Project Awarded	84.7	84.7			0%
Energy Efficiency	Implementation of Smart LED Lighting	36.00	SCM	Tender Issued	36.0	36.0			0%
Solid Waste & Sanitation	Smart & Improved Secondary Storage & Transportation of Solid Waste Using Portable Compactor Technology	4.40	SCM	Tender Issued	4.4	4.4			0%
Solid Waste & Sanitation	Smart & Improved Mechanical Street Sweeping at West Kochi & Emakulam in ABD Area	3.20	SCM	Tender Issued	3.2	3.2			0%
Solid Waste & Sanitation	Litter Bins for Improvement of Waste Segregation in ABD Area	0.97	SCM	Tender Issued	1.0	1.0			0%
NMT Roads	Development of Other Roads in Emakulam ABD Area	36.30	SCM	Tender Issued	36.60	36.60			0%
NMT Roads	Development of Other Roads in West Kochi in ABD Area	60.20	SCM	Tender Issued	60.20	60.20			0%
Main Roads	Development of Smart Roads in Emakulam ABD Area	52.40	SCM	Tender Issued	52.40	52.40			0%
Main Roads	Development of Smart Roads in West Kochi in ABD Area	24.50	SCM	Tender Issued	24.50	24.50			0%
Energy Efficiency	Development of Electrical Infra-structure in ABD Area	58.60	SCM	Tender Issued					0%

Tourism	Development of Dutch Palace Node Parking Area and Palace Street Entry	1.10	SCM	Tender Issued	1.1	1.1			0%
Toruism	Fort Kochi Beach Front Improvements - Part A Vasco Square	1.58	SCM	Tender Issued	1.58	1.58			0%
Tourism	Open Air Theatre (OAT) at Fort Kochi Zonal Office	1.10	SCM	Tender Issued	1.1	1.1			0%
Health	Out Patient & Admin Block, Fort Kochi Zonal Office	4.65	SCM	Tender Issued	5.1	4.65			0%
Health	Out Patient & Admin Block, Women Child Hospital, Mattancherry	4.57	SCM	Tender Issued	5.25	4.57			0%
Energy Efficiency	Smart Poles	301.58	PPP	Tender Issued	301.58	301.58			0%
UGSS	Improvement to Sewer Collection System for West Kochi	143.30	SCM	Tender Issued	154	143.3			0%
Solid Waste & Sanitation	Public Toilets in West Kochi & Emakulam Market using Septic Tank	1.80	SCM	Tender Issued	1.8	1.8			0%
Park and Open Space	Open Space Corridor linking DH Ground to Mangalavanam (Depends on Ecological Senstivity)	7.10	SCM	Tender Issued	7.1	7.1			0%
Education	Higher Secondary Block Central Calvathy GHSS, Fort Kochi	4.67	SCM	Tender Issued	5	4.67			0%
NMT Roads	MLCP and Commercial Complex at Kacheripady & 2 Other Parking	6.16	SCM	Tender Issued	6.8	6.2			0%
Main Roads	Signages	2.40	SCM	DPR Prepared	5				0%
Safety and Security	Safety & Security - CCTV Survellance ABD Area	5.35	SCM	DPR Prepared	5.35				0%

Source : http://csml.co.in/progress