

An Appraisal of Indian Smart Cities Mission (Scm): Status of Smart Cities in Punjab

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Abstract

The Smart City mission (SCM) is an ambitious plan of the Indian Government and all the state governments. A "smart city" is described as an urban region that makes use of numerous electronic IoT (Internet of Things) sensors for gathering data and utilizing it to support services and resources that are necessary for efficient municipal operations. The policy may provide solutions to one problem of the city but may not provide solutions to the other problems that exist in a city. This research will review smart cities' constantly changing dimensions and their implementation progress at the PAN India level and in the state of Punjab. Limited this research to the main relevant articles, papers, and books; it will cover the theoretical concept of "smart cities", and its conceptual framework. Also, this study will provide insight into the goal statement, the implementation procedures, and numerous possibilities and obstacles in the execution of smart city initiatives. Towards the end, this study will analyze the implementation status of Smart Cities in Punjab as well as at the PAN India level.

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1. Introduction

On June 25, 2015, India's 14th and current PM Shri Narendra Modi unveiled the Smart Cities Mission of India, with a target completion date of 2020 (5 years). The goal was to highlight urban areas that provide necessary services and ensure their residents have a respectable standard of living. Special Purpose Vehicles (SPVs), supported by the individual state governments, were tasked with carrying out the job on the municipal level.

Sanitation, Adequate water supply, good governance, affordable housing, assured electricity supply, efficient public transportation, robust IT connectivity & digitization, safety and security of citizens, health, and education are just a few of the essential elements for the development and expansion of Smart Cities. An (SPV) Special Purpose Vehicle is a limited liability business backed by the state and an urban local body that will be responsible for carrying out the Smart Cities Mission.

There are three smart cities selected in Punjab under the Indian Smart Cities Mission. In 2016, Ludhiana was one of the 20 cities considered initially for the Smart Cities Mission's under the "Smart City" initiative. In the subsequent rounds, Amritsar and Jalandhar were chosen.

As per the guidelines of the mission, three SPVs i.e. Ludhiana Smart City Limited (LSCL), Jalandhar Smart City Limited (JSCL), & Amritsar Smart City Limited (ASCL) were constituted under the Punjab Municipal Infrastructure Development Company (PMIDC), a nodal agency, for implementation of SCM.

A total of 175 projects are proposed under the Smart Cities Mission in Punjab of which 79 are proposed in Jalandhar, 51 are proposed in Ludhiana and 45 are proposed in Amritsar. The type and subtypes of projects and their implementation status are further elaborated on in the paper.

2. Smart Cities Mission

2.1 What is a Smart City?

There exist numerous meanings for the smart city. By substituting other adjectives for "smart," like "intelligent" or "digital," a spread of conceptual variations may be produced. The term "smart city" may be a nebulous notion used in a variety of ways. There's no one blueprint for defining this term, then there is no single definition exists for it [1, 2, 3, 4, 5].

The assumptions and perceptions of the term have always been questioned supported by the profession or field of smartness. Thus, the definition of a sensible city differs depending on the person quoting it, like an urban planner will have a special outlook than an infrastructure engineer or a government official [6].

Many people migrate to cities in search of better economic opportunities. Good quality housing; cost-effective physical and social infrastructure, including water, power, education, sanitation, clean air, entertainment, healthcare, security, etc. are essential to people's happiness and comfort. According to this definition, "Smart Cities" are those that are able to entice capital for the improvement of public infrastructure and other social amenities. A city that is investor-friendly will have the necessary infrastructure in place, as well as digital processes that are easy to understand and follow, allowing entrepreneurs to quickly and effectively launch their businesses [7, 8, 9, 10].

According to the Smart Cities Mission Statement & Guidelines, the Indian smart city definition explains "A developed region that uses human capital¹, social capital², and ICT (information and communication technology)³ to provide sustained economic growth and good quality of life [11].

¹ Human Capital: "The skills, knowledge, and experience possessed by an individual or population, viewed in terms of their value or cost to an organization or country."

² Social Capital: "The networks of relationships among people who live and work in a particular society, enabling that society to function effectively."

³ ICT: "Convergence of audio-visual and telephone networks with computer networks. ICT is a broad subject and the concepts are still evolving."

2.2 Smart Cities Dimensions

From countless definitions, we will unquestionably excerpt the core keywords related to the term. Most of the definitions are revolving around the term intelligent and digital, meaning using ICT for creating output or processes to be highly efficient. Another frequently used word is sustainability, considering their economy or environment. Hence beginning from the designing phase to the ultimate execution phase the aspect of sustainability is taken care of. Other commonest words were governance, infrastructure, mobility, living, policies, strategies, etc. but most of them are concentrating on elevating the lifestyle of the people and calling it the people-centric concept [12, 13, 14].

Most commonly used or universally accepted ones are six key dimensions that broadly cover all of them namely, (a) smart people; (b) smart living; (c) smart environment; (d) smart mobility; (e) smart governance; also (f) smart economy. The diverse aspects convey a city's diversity and the goal of a smart city.

These six dimensions are broader categorizations of various problematic or potential sectors of a city. But intimately, there'll be various associated components. In terms of the component levels employed in the smart city structure, smart cities often vary from one another. This is often where the contextual definition helps the city to have a unique “smart” aim.

2.3 Mission Coverage and Implementation Duration

100 cities across India will be covered by the Mission. Based on objective criteria, there is a total of hundred Smart Cities have been divided between the Union territories and States. The formula assigns the several statutory towns in the UT/State and the urban population of the UT/State equal weight (50:50). According to this method, each UT/State will thus have a minimum of one prospective Smart City and a maximum of a certain number of them. Each UT/State will be limited to a maximum number of possible Smart Cities [15].

Due to the Covid-19 Pandemic and other relevant factors, the mission's original five year timeline (FY2015–16 to FY2019–20) were subsequently extended until June 2023. As of October 2022, only 37% (INR 75,827 Cr) of Smart City projects are completed [16]. According to the government, it takes these initiatives 16 to 18 months (or 1.5 years) to get off the ground once they are chosen. Even by this standard, however, progress has been sluggish since 6% of the projects that have been submitted are still in the detailed project report (DPR) stage. Only five states— Madhya Pradesh, Karnataka, Gujarat, Uttar Pradesh, & Rajasthan—accounted for around 50% of the completed projects. Despite six years since the Mission's inception, not a single project has been finished in 10 of the 100 selected cities.

2.4 SCM Implementation by SPVs

The City level execution of Missions carried out on the city levels through an SPV (“Special Purpose Vehicle”) was established for a purpose. SPV is responsible for appraising, planning, approving, and releasing money, also as managing, implementing, monitoring, operating, and evaluating the initiatives of Smart City development.

SPVs formed are incorporating limited companies on city levels as per the 2013, Companies Act, with the ULB and therefore the UT/State as promoters with equity shareholdings of 50:50. The financial institutions or private sector, were also measured within the SPV for

equity stakes, as long because the 50:50 ownership arrangement between the ULB and the UT/State was maintained and the both of these had majority control and shareholding over the SPV. The Indian government provided the SPV with money as part of the SCM mission in the form of an approved grant, which is secured in a special grant fund.

Following the 100 cities selected in Stage II of the Challenge, the SPV was established to start the project implementation process. The SPV would tend full autonomy in managing and implementing the initiative of Smart City, while the ULB/State would take measures. "Project Management Consultants" (PMC) are hired by many SPVs to develop, plan, manage, and execute area-based initiatives. The impanelled consulting companies on the MoUD's roster, also as the handholding agencies, also are assisting SPVs. SPVs are following fair and transparent measures as agreed under ULB/State financial guidelines for the procurement of services and goods. They're also using model frameworks as per the MoUD for projects of Smart Cities.

2.5 Funds for Implementation

India is developing at a high pace and there's a constant increase in urbanization and urban population, in the budget it submitted to the Indian Parliament in July 2014, the government suggested allocating INR 7,600 Crore (USD 1.24 billion) for the construction of 100 smart cities. This design shows renovating existing cities in addition to developing new cities from the ground up. It is the intention of the Central Government to contribute INR 48,000 crores to the SCM mission over the course of 5 years, or around INR 100 crores per city, every year. The SCM mission would be managed as a (CSS) Centrally Sponsored Scheme. Due to the need that the State/ULB to pay an equivalent amount on an equal basis, about Rs. 1 lakh crore of ULB/Government money would be made available for developing smart cities.

As of October 2022, the 100 smart cities have tendered out 7,757 projects worth INR 1,84,727 crores; work orders are issued in 7,656 projects worth INR 1,82,543 crores, and 4,436 projects worth INR 75,827 were completed [16].

2.6 Convergence with other Government Schemes

Comprehensive progress happens when the institutional, physical, social, and economic infrastructures are all integrated into a given region. Many of the government's sectoral plans converge on this objective, but the route is varied. Urban change may be accomplished through a major synergy between the (AMRUT) "Atal Mission for Rejuvenation and Urban Transformation" and the SCM mission. This mission uses an area-based approach, while AMRUT uses a project-based strategy.

Other federal and state government initiatives and schemes that are allocated with the objective of smart cities will also provide substantial advantages. As early as the planning stage, cities will look for SCP convergence with AMRUT, SBM ("Swachh Bharat Mission"), HRIDAY ("National Heritage City Development and Augmentation Yojana"), "Housing for All," "Digital India, Skill Development," and other programs. The cultural department also provides funding for various social infrastructure projects including culture, health, and education, as well as for the construction of museums [17].

Merging with other government programs is important in accomplishing a city's development objectives, and it has been raised in several other urban development programs as well. The

many components of the project and the implementation strategy for these cities are also not completely clear [17].

3. Smart Cities in Punjab

A total of three cities in Punjab were selected for SCM launched in 2015. In 2016, Ludhiana, in the Indian state of Punjab, was one of the first 20 locations chosen for Smart City development. Later batches included Amritsar and Jalandhar. The Punjab Municipal Infrastructure Development Company (PMIDC) is the nodal agency for the Smart City Mission, and it has formed three Special Purpose Vehicles (SPVs) to carry out the mission: the Jalandhar Smart City Limited (JSCL), the Ludhiana Smart City Limited (LSCL), and the Amritsar Smart City Limited (ASCL).

3.1 Type and Numbers of Proposed Projects

There is a total of 175 projected projects (including sub-projects) across the three smart cities in Punjab, 132 of which fall under Area Based Development (ABD) and 43 of which fall under PAN City development. A maximum number of projects i.e. 79 are proposed in Smart City Jalandhar followed by 51 and 45 in Ludhiana and Amritsar subsequently. Refer to the below-given table for the type and numbers of proposed projects in various smart cities of Punjab.

Table.1 Type and Number of projects in cities of Punjab under SCM

City Name	Proposed Projects (including sub-projects)		
	ABD Projects	PAN City Projects	Total Projects
Ludhiana	40	11	51
Amritsar	31	14	45
Jalandhar	61	18	79
Total	132	43	175

Source: Compiled by Author, data from <https://smartcities.gov.in/cities-profiles>

3.2 Funding under the SCM and Project Implementation Status

As mentioned above, the Smart City Mission involves a 50:50 financing model with the Centre contributing INR 500 crore and the state giving an equal share for five years. The Central Government intends to provide financial assistance to the Mission to the tune of INR 48,000 crore over 5 years, or an average of INR 100 crore per city each year, since the Smart City Mission would be run as a Centrally Sponsored Scheme (CSS). There would be almost 1 lakh crore of Government/ULB funding available for Smart Cities development, as the State/ULB will be required to contribute an equivalent amount on a matching basis.

3.3 Implementation Status in Punjab as of October 2022

In terms of the number of projects, around 73 (41%) projects are complete out of a total of 175 projects in all three smart cities of Punjab. Most of the projects i.e. 85 (48%) are still in the work order stage and around 17 (11%) are in tendering stage (Refer Table 2). Very interestingly if we analyze the same in terms of project cost, projects worth only INR 188.1

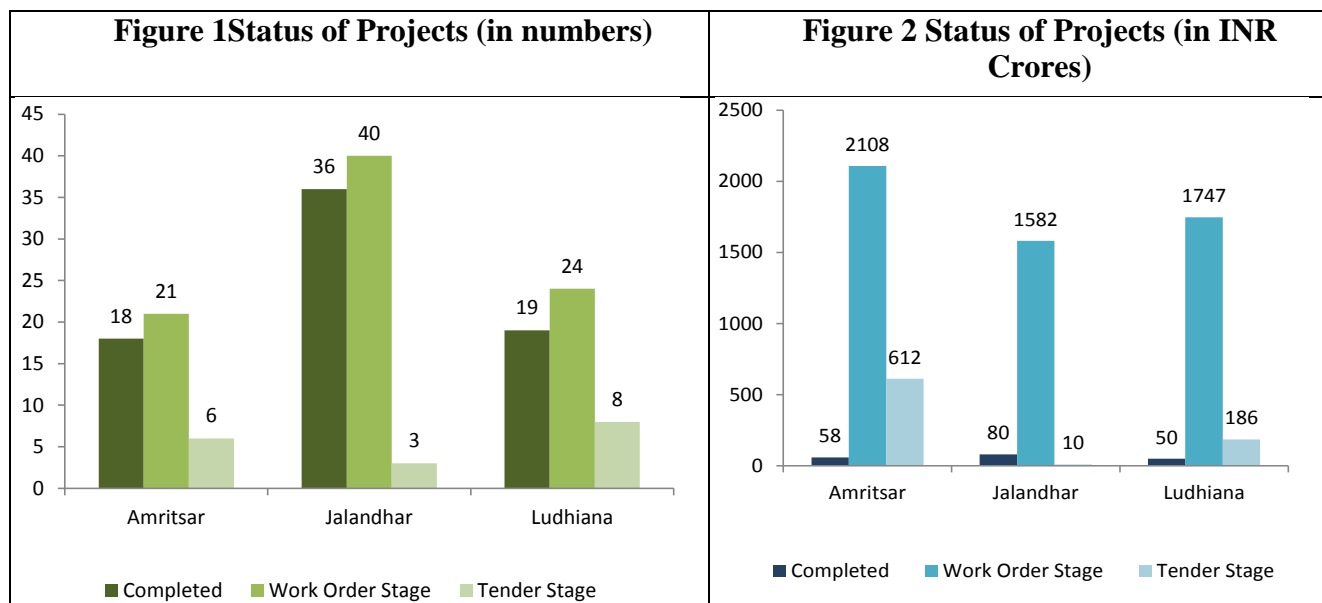
(2.9%) Crores are completed by October 2022 and most of the projects worth INR 5437.1 (84.5%) Crores are in the work order stage. Also projects worth INR 807.3 (12.6%) are in tendering stage. It is found that 36 out of the proposed 79 projects in Jalandhar, 19 out of 51 in Ludhiana, and 18 out of 45 in Amritsar are completed by October 2022.

There were 175 projects with a total value of INR 6432.5 crore as of October 2022, however, only 73 (41%) had been finished at a cost of INR 188.1 (2.9%). All other projects were either in the process of receiving work orders or of being bid on. In terms of cost, the smart cities of Punjab are crawling with only 2.9% of the projects completed even after the extended deadline of SCM of June 2023 is close by.

Table.2 Status of Projects of Smart Cities in Punjab under SCM (as of Oct 2022)

Status of Projects	Amritsar	Cost	%age of Cost	Jalandhar	Cost	%age of Cost	Ludhiana	Cost	%age of Cost	Total Projects	Cost	%age of Cost
		(INR Cr)			(INR Cr)			(INR Cr)			(INR Cr)	
Total Projects Sanctioned (including sub-projects)	45	2778.7	100	79	1671.6	100	51	1982.2	100	175	6432.5	100
Projects Completed	18 (40%)	58.4	2.1	36 (45%)	80.1	4.8	19 (37%)	49.6	2.5	73 (41%)	188.1	2.9
Work Order Stage	21 (46%)	2108.2	75.9	40 (50%)	1581.9	94.6	24 (47%)	1747.0	88.1	85 (48%)	5437.1	84.5
Tender Stage	6 (14%)	612.1	22.0	3 (5%)	9.6	0.6	8 (16%)	185.6	9.4	17 (11%)	807.3	12.6

Source: Compiled by Author, data from <https://smartcities.gov.in/cities-profiles>



Source: Analysed by Author

4. Overall SCM Status as of October 2022

At the PAN India level, as of October 2022, only 37% (INR 75,827 Cr) of Smart City projects were completed. As of October 2022, the 100 smart cities have tendered out 7,757 projects worth INR 1,84,727 crores; work orders are issued for 7,656 projects worth INR 1,82,543 crores, and 4,436 projects worth INR 75,827 were completed [16].

5. Probable key reasons for Hindrance

There may be various reasons for the slow progress of the implementation of the project. If we match the status of the number of completed projects in Smart Cities of Punjab with the number of all 100 Smart cities, the progress is similar in the range of 35-50% number of projects completed. However, in terms of project cost the numbers are almost invisible. The probable key reasons for hindrance are:

- Geographically varied locations and projects;
- Slow Pace of Fund Generation;
- Poor governance & Institutional Capacity at the Local Level (ULBs);
- Long Gestation Period;
- Complete dependence on Government funding;
- Lack of innovative funding mechanisms;
- Shortage of experts like town planners, civil engineers, MBA Finance, etc.; and
- Citizens' willingness to change and reform.

From the time of selection to the start of construction, the government estimates 16-18 months (1.5 years), as noted above. Progress has been sluggish even by this standard, with the vast majority of planned projects still in the work order or bidding phase.

6. Conclusion

In the above appraisal, we took an insight into India's Smart Cities Mission. Various aspects of the mission such as guidelines, implementation details, and challenges are studied. By providing a safe, affordable, and sustainable place, SCM emphasizes a positive future vision that will benefit urban regions and the wellness of both inhabitants and industries.

However, on the one hand, the sustainability of these programs involves the participation of the whole community. We need greater openness in the ways that policymakers, stakeholders, corporations, communities, and citizens work together. However, "many Smart City efforts are heavily relying on technology." [18]. As a result, there is still a lot of work for academic and professional researchers to accomplish on technological and technical issues. To develop more Smart City models, several ICTs disciplines, including AI, IoT, nanotechnology, as well as big data analysis are included.

Also, there is a need to assess the reasons in detail for the slow progress of various smart city projects and sub-projects (in Punjab and at PAN India level) as well as reasons for the successful and timely implementation of completed projects. The smart city development and plans need to be appropriately modulated and develop for the provision of effective, efficient, and speedy services. Towards this, a smart thinking, well-integrated, practically strong, smart, and comprehensive urban planning approach is required.

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