

Chapter 2 Concept of Smart City in India



In recent years, many countries and cities around the world have seen many efforts toward the realization of smart cities. As introduced in Chapter 1, the concept of smart city covers many areas. Therefore, when preparing smart city guidelines, many governments and cities start by defining the future city image and at the same time selecting key areas. It also establishes comprehensive approaches from the physical, institutional, social and economic aspects.

As India is no exception, the Indian government launched the “Smart Cities Mission (SCM)” in 2015 to promote cities that provide core infrastructure, a clean and sustainable environment, and give a decent quality of life to their citizens through the application of ‘smart solutions’ [1]. Urban areas in India are expected to house 40% of the population and contribute 75% of GDP by 2030. This requires

comprehensive development of physical, institutional, social, and economic infrastructure. The government mentioned in the guideline for the smart city, “*All are important in improving the quality of life and attracting people and investments to the City, setting in motion a virtuous cycle of growth and development. Development of Smart Cities is a step in that direction.*” [2]. Thus, realizing smart cities is an important mission for sustainable urban development in India.

This chapter describes the objectives and mechanism of the SCM as based on the cases of smart cities in India.

Smart City Mission in India

1: Mission Objectives

According to the guideline for the SCM, the mission objective is to

promote cities that provide core infrastructure and give a decent quality of life to Indian citizens, a clean and sustainable environment, and the application of Smart Solutions. “Smart Solutions” enable cities to use technology, information, and data to improve infrastructure and services, as shown in Figure 2-1 [2].

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 the liveability of the whole city. New areas (greenfield) will be developed around cities to accommodate the expanding population in urban areas. The application of Smart Solutions will

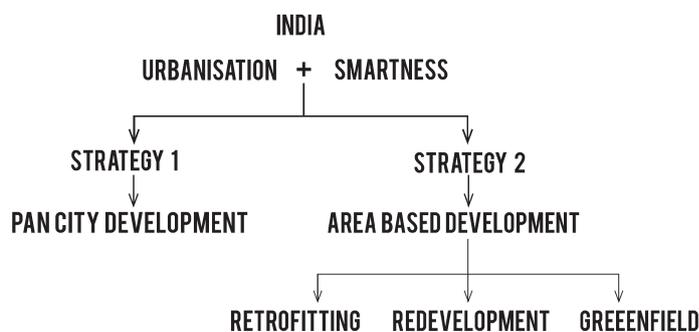
Figure 2-1 Smart Solutions in Smart Cities Mission [2]



Figure 2-2 Area-based Development in Smart City Mission [1]



Figure 2-3 Strategies in Smart Cities Mission [3]



enable cities to use technology, information, and data to improve infrastructure and services. Comprehensive development will improve quality of life, create employment and enhance incomes for all, especially the poor and the disadvantaged, leading to inclusive Cities. As shown in Figure 2-2, the strategic components of area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment), and city extension (greenfield development), plus a Pan-city initiative in which Smart Solutions are applied, covering larger parts of the city.

2: Mission Strategies and Features

The SCM proposal enlisted two development strategies: Pan-City development and Area-based Development (Figure 2-3). Pan-city development envisages application of selected smart solutions to the existing city wide infrastructure.

This would be refining and managing the existing infrastructure and services for affective productivity. Second is the area-based development which consists of three strategic components; Retrofitting, Redevelopment and Greenfield.

- Retrofitting model is the planning of an existing built up area (consisting of more than 500 acres) considering objectives of that place to achieve smart city objectives, to make the existing area more efficient and liveable.
- Redevelopment is creating a new layout for an existing area (more than 50 acres) with enhanced infrastructure, using mixed use and increasing density.
- Greenfield is to develop a previously vacant area (more than 250 acres) into affordable housing for the poor.

The Indian Government envisages the following elements as integral parts of every Smart City:

- Assured electricity supply with at least 10% of the energy requirements met through renewable energy.
- Adequate water supply with the recycling of waste water, harvesting and the reuse of storm water.
- Adequate urban transport with an emphasis on no-motorized transport, pedestrian-friendly pathways, intelligent traffic management and smart parking facilities.
- Enhanced citizen experiences with engaging usage of open spaces and a safe environment for women, children and the elderly.

3: 100 Smart Cities

Indian central government shortlisted 100 potential smart cities and asked for specific city proposals from the state government. The state government consulted all the associated professionals, prepared a proposal/master plan,

and responded to the central government. The evaluation was done based on feasibility in terms of resources, economy, and practicality by experts. All the proposals were scored on common grounds.

- Between June and July 2015, all states and union territories (UT) within the country were required to submit nominations of cities for consideration in the 'India Smart Cities Challenge.' From these submissions, the Ministry of Urban Development (MoUD) selected 100 cities in August 2015. The selection criteria gave equal weightage to the urban population of the state/UT and the number of statutory towns in the state.
- In January 2016, MoUD announced 20 cities as winners from the first phase of the Smart City Challenge. The selection process consisted of extensive reviews of city-level and proposal-level criteria—by three independent panels of experts—of Smart City Proposals submitted by each city.
- In May 2016, MoUD released the second list of an additional 13 cities, selected on a fast-track basis to be included in the first phase of the SCM. These 33 cities from the two lists were to receive funding to be developed as model smart cities.
- In September 2016, in the second round of the Smart Cities Challenge, the government announced the third list of 27 additional cities, bringing the number of selected Smart City Proposals to 60.
- The final list of 40 cities was released at the end of June 2017.

The location of selected 100 smart cities is described in the map of Figure 2-4. These cities are selected through passing the process of examination of a smart city proposal. The selection process is as follows;

According to the guideline [2], each aspiring city competes for selection as a Smart City in what is called a 'City Challenge'. There are two stages in the selection process as described in Figure 2-5.

Stage 1 of the competition:

Shortlisting of cities by States. The State/UT begins with shortlisting the potential Smart Cities on the basis of conditions precedent and scoring criteria and in accordance with the total number allocated to it. The first stage of the competition will be intra-state, in which cities in the State will compete on the conditions precedent and the scoring criteria laid out. These conditions precedent have to be met by the potential cities to succeed in the first round of competition and the highest scoring potential Smart Cities will be shortlisted and recommended to participate in Stage 2 of the Challenge.

Stage 2 of the competition: The Challenge round for selection. In the second stage of the competition, each of the potential 100 Smart Cities prepare their proposals for participation in the 'City Challenge'. This is a crucial stage as each city's Smart City Proposal is expected to contain the model chosen, whether retrofitting or redevelopment or greenfield development or a mix thereof, and additionally include a Pan-City dimension with Smart Solutions.

By a stipulated date, to be indicated by Ministry of Urban Development (MoUD) to the States/UTs, proposals will be submitted to MoUD for all these 100 cities. These will be evaluated by a Committee involving a panel of national and international experts, organizations and institutions. The winners of the first round of Challenge will be announced by MoUD. Thereafter, while the winning cities start taking action on making their city smart, those who do not get selected will start work on improving their SCPs for consideration in the second round.

Figure 2-4 Location of 100 Smart Cities in India [4]



4: Case of Smart cities: Ahmedabad

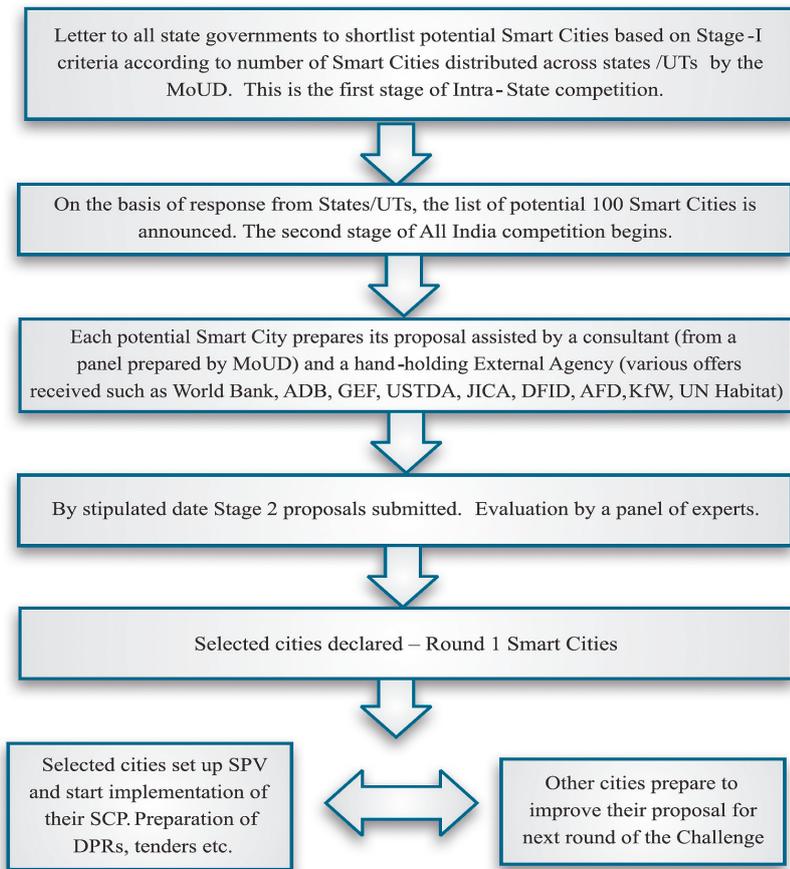
Ahmedabad is the largest city in Gujarat, and the administrative capital of Ahmedabad district. The city is at present divided into six zones namely, central, east, west, north, south and new west zone. Each zone is further split into nine wards. There are 64 wards. It serves as the seat of Gujarat High Court and is the

seventh largest metropolitan area in India. Ahmedabad is an important economic and industrial hub and is reported to be one of the fastest growing cities of the decade. As shown in Figure 2-6, the Sabarmati River cutting the city from the middle plays a vital role in providing the urban life as well as fragmenting the city into two. The main motive of designing of any kind of strategies or policies for this city would be

the providing a strong connection between the fragments [5].

This city was selected among the first 20 Smart Cities in India under the Smart Cities Mission of the Ministry of Housing and Urban Affairs. Ahmedabad has scored 66.81% for the Smart City Plan submitted on 15th of Dec 2015. In spite of being the 2nd largest city on the list, this city stands at 6th in rank in the country

Figure 2-5 Smart City Selection Process [2]



for its Smart City Plan. In Ahmedabad, several smart city initiatives have been introduced, ranging from transit management, city surveillance, e-governance, Integrated Command and Control Centers, digital payments in utilities, and many more, as described in Figure 2-7 [6].

Two projects are taken up as Pan City Proposals as follows:

- (a) Smart Transit – Integrated Transit Management Platform with Common Card Payment System – a web and mobile based application to ease access to public transit systems, provide real time tracking and plan trips & journeys. It intends application of smart solution – technology, information and data – to the existing and proposed transit infrastructure (BRTS, AMTS, GSRTC and proposed Metro) to improve public transit
 - (b) Command Control Centre (CCC) with OFC network – The CCC will be an integrated system that will operate and manage multiple city service operations including real time monitoring and help in improving services delivery & governance. OFC’s primary function will be to connect all AMC offices, city civic centers, urban health centers, schools and municipal buildings, thus reducing future bandwidth costs.
- Other applications are:
- Integration of existing control rooms
 - Traffic / AMTS / BRTS / E-governance / Pollution
 - Emergency & Disaster Response System
 - Incident Management System with support from Fire, Police, Traffic, AMC and other departments
 - Traffic control: Traffic management, offence tracking at major junctions & smart parking
 - Environment & Climate monitoring
 - air quality monitors and automatic rain gauge stations

Figure 2-6 Map of Ahmedabad

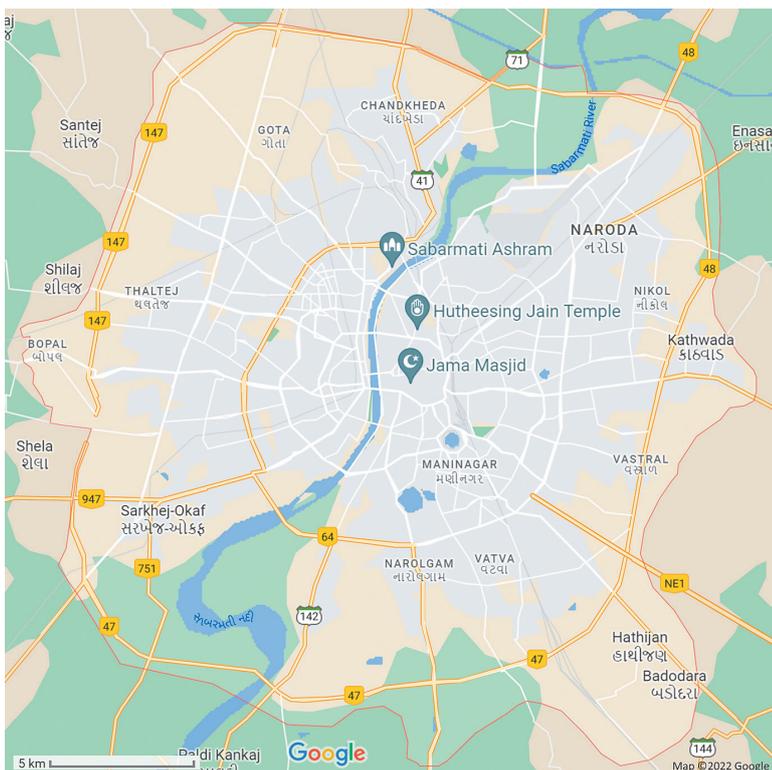
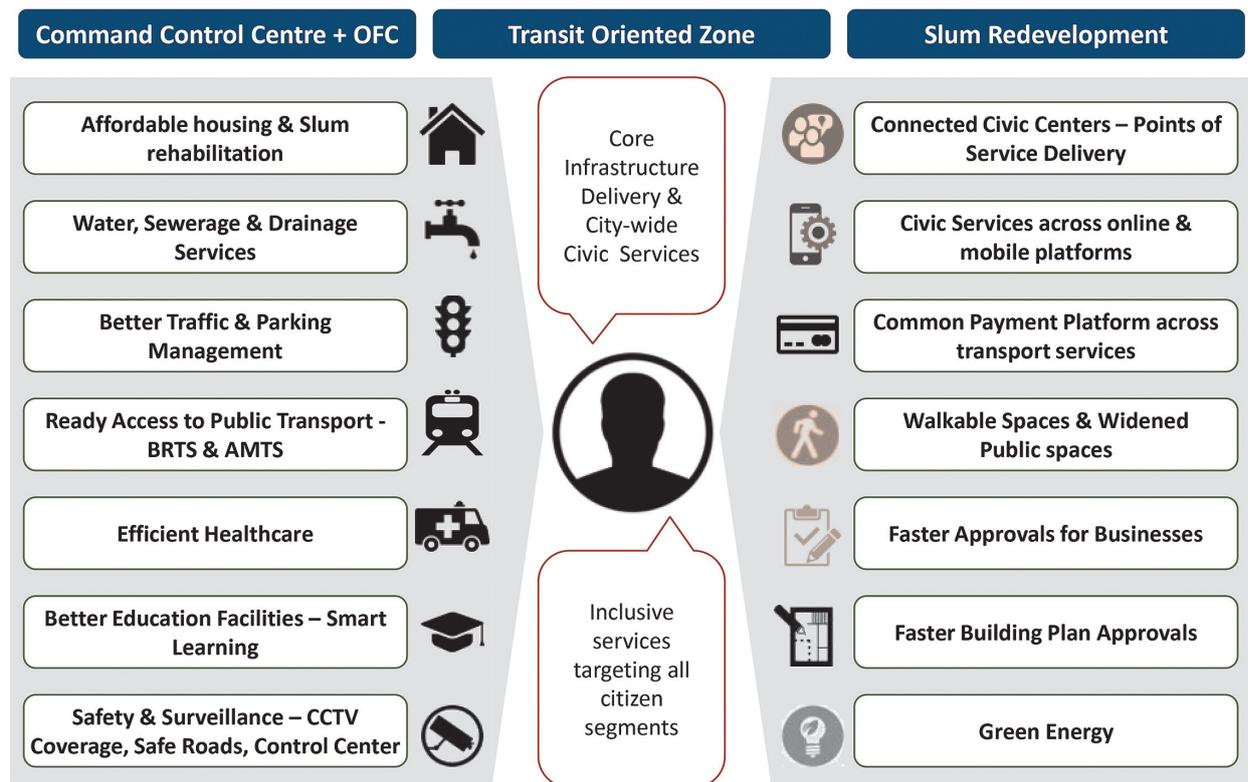


Figure 2-7 Ahmedabad Smart City Proposal [6]



References

- [1] Ministry of Housing and Urban Affairs. : <https://smartcities.gov.in/>, 2021.
- [2] Ministry of Urban Development: Smart Cities Mission Statement & Guideline, <https://smartnet.niua.org/sites/default/files/resources/smartcityguidelines.pdf>, 2015.
- [3] Alankrita, S.: Shaping Indian Cities: Planning and Design with Smart City Technologies. Master Thesis of Delft University of Technology, 2017.
- [4] Housing and Land Rights Network: India's Smart Cities Mission: Smart for Whom? Cities for Whom? Published in New Delhi, 2018.
- [5] Ahmedabad Smart City Mission: <https://ahmedabadcity.gov.in/portal/smartcitymission.jsp#smartCitiesMissionDiv>, 2021.
- [6] Amdavad Municipal Corporation: https://ahmedabadcity.gov.in/portal/jsp/Static_pages/pi_smartcity.jsp#, 2022.