© JULY 2026 | IRE Journals | Volume 10 Issue 1 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I1-1719376

Time Slippage in Smart City Projects: A Case Study of SIR-Dholera [INDIA]

DR. PK CHATURVEDI, RETD
Ex Chief Engineer EPFO/DUSIB: Ex GM-Design IRWO

"Crab along with a swan and a pike, set out to drag a wagon along the road,
It was not their load so was difficult to move;
But the upward strained the swan, toward skies above,
The crab kept stepping back, the pike was for the pond.
And which was right or wrong, I neither know nor care:
I only know the wagon's still there" - Ivan A Krylov [1]

Abstract- Looking at the maximum pros of the smart city concept worldwide, India is also adopting it at a very fast pace. To provide core infrastructure with a decent quality of life to habitants, smart city mission is created. Through the application of 'Smart' solutions, a clean and sustainable environment is planned. Moreover, citizens can now expect everything to be easily accessible related to government services as well as to make living comfortable. A Special Purpose Vehicle (SPV) has also been created in each state in order to look after the proper implementation of the Smart City projects. Main focus is on offering an elevated lifestyle and environment to the entire community. However, what is lacking in the mission's timeframe to complete is not as per requirement of the project. It needs to be more flexible. Based on the case study of Dholera-SIR, it would be a great idea to elongate the span of completion above to ten years. There is also an urgent need to look into minor issues at the same time service providers need to be placed well in advance of their requirements.

Keywords: Urbanization, Smart, Planning, Strategy, Accessibility, Sustainable.

I. INTRODUCTION

SMART CITIES IN INDIA

Human beings live in an environment to which they are physically and constitutionally attuned and depend on it for their survival. In the course of living in this environment, the physical environment may influence or be influenced by the social behaviour of human beings. While living in this environment human beings have been successfully able to adjust/ adapt to the pressures exerted on them by nature, Governance compliances and their way of living. They adjusted their behaviour and surroundings to adjust.[15]

The Smart Cities Mission was launched on June 25, 2015 by GOI. It is denoted as "SMART" – Specific, Measurable, Achievable, Relevant, and Time-Bound. The population living in cities and contributing to the economic growth are addressed by getting quality of life improved. As per the data collected in Census 2011, almost 31% of the population of India lives in cities. It is projected in various reports that around 40% of India's population will be living in cities by 2030. The United Nations-Habitat's World Cities Report 2022 states that India's urban population is estimated to stand at 675 million in 2035. India's urban population is growing from 48,30,99,000 in 2020 to 54,27,43,000 in 2025 and 60,73,42,000 in 2030. The report said that "smart city" has become a globally popular catchphrase and major policy paradigm for technology-driven urban innovation and development. "Many municipal administrations choose to adopt a smart city agenda, to provide strategic and programmatic direction for urban development", the report said.

This mission of the government of India of 2015, promises to improve the quality of life in 100 cities and towns in all states except WB, Mumbai and Navi Mumbai (They refused to adopt on political issues). The Indian government also created a Special Purpose Vehicle (SPV) in each state to look after the implementation of the mission. Rs 7,20,000 crore is

provided as initial funds to this mission. The Project intend to cover the followings: -

- The states will have more flexibility to use the land for various purposes and make bye-laws as per the requirement of land as mixed land use keeping environmental safeguards.
- Smart Cities require more housing projects to cater to large and lower-income demographics as well as for all as essential requirements.
- Smart Cities will reduce congestion, strict security, minimal air pollution and promote interaction and local economy. Pedestrians/ walkers and cyclists will have new ways to reduce accidents.
- To enhance the quality of life for Indian citizens, recreational spaces like playgrounds, parks, and open gyms will be developed.
- Transit-oriented development (TOD) and public transport are promoted.
- Online services where a citizen can use an online website instead of going to the municipal offices will make governance smart with transparency and accountability.
- The city will have the education sector, health sector, local cuisine, sports, culture, art, furniture etc. prominently.
- Infrastructure and services for area development are done with smart solutions. It is expected to cover-
  - Public Information and Grievance Redressal
  - Video Crime Monitoring
  - Electronic Service Delivery
  - Citizen Engagement
  - Waste to Compost, Energy and Fuel
  - Treatment of C&D waste
  - Leakage identification
  - Water quality monitoring
  - Water and electricity management by smart meters
  - Green buildings, and adoption of renewable energy in infrastructure developments
  - Integrated multi-modal transport with Intelligent Traffic management system and Smart parking
  - Trade Facilitation Center
  - Tele-medicine
  - Skill Development Centers

II. FINANCING

The government has funded a sum of Rs 7,20,000 crore as a Centrally Sponsored Scheme (CSS) on a 50:50 model. But until November 2021, the Center government released Rs 27,282 crore, whereas states have released only Rs 20,124 crore.

III. CASE STUDY- DHOLERA SIR

In Guajrat, Dholera, an ancient port-city 30 km from Dhandhuka village of Ahmedabad was selected in 2011. However, several investors who initially signed the Memorandum of Understanding to develop the project, have withdrawn silently. As a result, nothing visibly progressed. Year 2009-2019 passed as follows [4]:-

- Act enacted in Jan 2009
- Dholera-SIR announced and master planning started in May 2009
- Development Authority formed in Feb 2010
- Dholera Welfare Society in Aug 2012
- Development Plan sanctioned and control regulation passed in Sep 2012
- Program manager hired in May 2013
- TP scheme sanctioned in Oct 2013
- Environmental Clearances obtained in Sep 2014
- Engineering Design prepared in Mar 2015
- SPV formed in Jan 2016
- Contract awarded for road, service and administration building in Mar 2016 (ABCD).
- Infrastructure ready in 2019

Only in the last few years, many National and International companies signed the Memorandum of Understanding to set up their projects in Dholera-SIR like Adani, Mahindra, Reliance, Renew, etc. Further, the region is in a low-lying area and in August 2019, the area was waterlogged and remained cut off from other cities for quite some time. An International Airport, Seaport, Special Investment Region (SIR), Mass Rapid Transit System (MRTS) are coming up in this project. 1427 hectares of land for the said project has been allocated by the state govt while 75

© JULY 2026 | IRE Journals | Volume 10 Issue 1 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I1-1719376

hectares has been allocated for commercial development by the central govt. However, the project is spread over an area of 35,000 hectares. 14,000 hectares area is proposed for processing, and the rest is a non-processing zone. It is understood that Seaport is also temporarily withheld

DHOLERA SIR

Fig-1: Source Dholera.Gujrat.Gov.In

Location

- National Highway connects the Dholera Special Investment Region with Ahmedabad, Bhavnagar and Mumbai by NH-8 and 8A. It also augments Bagodara -Bhavnagar, Bagodara- Surendranagar-Radhanpur links.
- As a part of Golden Quadrilateral, the 500 km Mumbai- Ahmedabad- Vadodara Expressway connects the region.
- In order to make the region more accessible, an airport and a port are proposed in this region.
- Approx 2057 hectares of land allocated for the port site is proposed to be connected by road with Ahmedabad – Bhavnagar highway at a distance of about 11 kilometres.
- Railways MG Bhavnagar is 34 kms and BG Tarapur is 103 km as on today

Location

Fig-2: Source [15]

Present Status

Dream Project of 2007, conceived in 2009. But actual development was started in 2016 March, when DICDL allotted two projects to two different companies.

- L&T is given the contract of constructing 72 kms of roads at the cost of 1734 cr. Moving delay in deadline
- Baroda based Cube Construction is given the contract to construct ABCD Building where they will build the structure of 16500 sq.mtr at the cost of 73 cr. Cube construction also lacked a time schedule for structure work where their project's deadline was September 2018.
- WTP's work has been started, and they are also doing well and also in advance.
- Phase 1 construction has been completed.
- Successful runway testing was conducted on 4 June 2026.
- Supporting airport infrastructure is progressing rapidly.
- Future Plans:
- Commercial flight operations are expected to begin in 2028.
- The airport will improve domestic and international connectivity.
- It is expected to become a major connectivity for industrial growth in Dholera and worldwide trade.
- Tata Semiconductor Plant
- The Tata Semiconductor Plant represents India's semiconductor manufacturing ambitions. Dholera will be the home of India's

© JULY 2026 | IRE Journals | Volume 10 Issue 1 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I1-1719376

first semiconductor plant which will act as a global supplier.

- Current Status:
  - 24x7 Construction by LnT.
  - The project is expected to attract a large ecosystem of suppliers, vendors, and technology companies.
  - Expected to be operational by 2028.

- Impact on Dholera:
  - 20,000+ direct and indirect jobs.
  - Increased demand for residential and commercial developments.
  - Strengthening Dholera's position as a semiconductor and technology hub.
  - Dholera Solar Park
  - Dholera is also home to Asia's largest solar park.

- Current Status:
  - 1300 MW already operational.
  - 1000 MW by Gujarat Power Corporation Limited (GPCL) and 300 MW by Tata Power Solar.

- Future Plans:
  - The Dholera Solar Park aims to develop approximately 5,000 MW of renewable energy capacity.
  - It will support industries with sustainable power infrastructure.
  - Ahmedabad-Dholera Expressway
  - Connectivity plays a crucial role in any city's development.

- Current Status:
  - Ahmedabad-Dholera Expressway was inaugurated by Prime Minister Narendra Modi on 31 March 2026.
  - Travel time between Ahmedabad and Dholera has been significantly reduced to 45 minutes.

- Benefits:
  - Faster movement of people and goods.
  - Better industrial logistics.
  - Improved accessibility for investors and businesses.
  - High-Speed Rail Connectivity
  - Rail connectivity is set to become another major growth driver.

- Recent Development:
  - The Government has approved the Ahmedabad-Dholera Rail Project, a semi-high-speed corridor with an estimated investment of ₹20,667 crore.

- Future Benefits:
  - First time in India, with a speed limit of 220Km/Hr.
  - Faster connectivity between Ahmedabad and Dholera.
  - Improved workforce mobility.

Fig-3: Source- Qoura [11]

Hurdles/ no hurdles but invisible issues

In 2007, Modiji dreamed Dholera to be six times Shanghai and double of Delhi. It is dreamed of having a place with less control by the government, no hassle for business and everything digital with smart all around. Main consol planned to be at Admin-Business-Center-Dholera structure. Goods of make-up, start up and fit India conglomerated in Dholera-SIR. $2.7 billion estimated with no payback period planned. There are no political crises but mainstream media is sleeping for this project. Infrastructures developed but ISMC digital withdrew after signing MOU and moving to Karnataka. Jio phone remained as hot talk and moved to Tirupati. In 2018-19, Lockheed Mastin Corporation emerged for the Solar project and disappeared also. As a result, investment numbers being high still discounts are existing. Yes, Tata Chemicals' Ion lithium battery

© JULY 2026 | IRE Journals | Volume 10 Issue 1 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I1-1719376

plant is in progress and the recent MOU of Vedanta-Foxconn with the Govt of Gujarat for a $20bn semiconductor project is a hot topic in the media.

Probable causes for brain storming
Visibly tail tale signs hint that [5]-
a. Planning not proper
b. Controllers lack professionalism
c. More restrictions causing basic freedom curtailed
d. Govt itself claims 70% achievements without explaining reasons for 30% failure because 70% glass looks filled.

- Land Pooling and Legal Hurdles: The Delhi-Mumbai Industrial Corridor (Dmic) Adopted A Unique Land-Pooling Mechanism Rather Than Traditional Acquisition, Requiring Voluntary Group Agreements and Consent. This Approach Triggered Legal Challenges, Including Disputes with Local Farmers, Which Slowed Early Town Planning Activities. [1]
- Global Supply Chain Constraints: The Development of Major Industrial and Semiconductor Facilities—Such As the Massive Tata Electronics Fab—Has Faced Potential Logistical Snags. Disruptions In the Supply of Speciality Gases, Chemicals, And Metals from Global Markets Have Pushed Production Schedules and Added to Cost Concerns. [1]
- Infrastructure And Connectivity Delays: Key Transport Lifelines, Such As the Ahmedabad–Dholera Expressway, Have Faced Localized Construction Setbacks. Delays In Relocating Local Utility Infrastructure (Like Power Substations) And Building Connecting Bridges Have Shifted Inauguration Timelines. [1]
- Massive Scale and Phased Rollout: As A Greenfield City, Building Core Utilities from The Ground Up Requires Massive Upfront Capital and Multi-Agency Coordination. The Project Relies on A Staged Delivery Plan That Focuses on Activation Zones First, Stretching Out the Overall Timeline. [1, 2]

IV. EMPIRICAL FINDINGS

Table-1

Project Name	Implemented Agency	Status	Estimated Cost
Design and Construction of ABCD Building	Cube Construction and Engineering Ltd	Completed	72.31 Crores
Raw Water Transmission Main	D.R. Agarwal Infra Pvt Ltd	Completed	29.67 Crores
Adhiya River Bunding Phase-1	Jugalkishor Ramkishan Agarwal Pvt Ltd	Completed	11.87 Crores
Interior Works of BBC Building	New Concept	Completed	19.44 Crores
Experience Zone at ABCD Building	Tagbin	Completed	4.84 Crores
Design and Construction of Roads and Services	Larsen and Toubro Ltd	Ongoing	1801.07 Crores
Canal Front Development Zone -2	P.R. Patel and Company	Ongoing	26.43 Crores
Canal Front Development Zone -3	P.R. Patel and Company	Ongoing	14.99 Crores
Service Area	Bridge and Roof Co.	Ongoing	32.82 Crores

Buildings	India Ttd		
Common Effluent Treatment Plant	Larsen and Toubro Ltd	Ongoing	156.86 Crores
Sewage Treatment Plant (STP-10 MLD)	Larsen and Toubro Ltd	Ongoing	53.13 Crores
Balance Works of WTP	MS Khurana Engineering Ltd	Ongoing	87.97 Crores
Earth filling in Selected Plots of Activation Area	Montecarlo Ltd	Ongoing	86.01 Crores
ICT MSI Project	D.R. Agarwal Infra Pvt Ltd	Ongoing	68.99 Crores
Interior Works of SPV Building	New Concept	Ongoing	15.58 Crores
Adhiya River Bunding Phase-2	Kalthia Engineering and Constructio n Ltd	Ongoing	21.25 Crores

Source: Dholera-Gujarat [3]

V. RECOMMENDATIONS

- Project based target time frame needs to be decided rather than a template of 5 years. At present 5 years is common target
- There is a need to have many projects separately monitored and linked with this great mission. It can give fast progress and less hurdles
- Research and findings should be done in order to know why particular projects are not being carried out. Some of these cities are Muzaffarpur, Shillong, Bhagalpur, and Amravati.
- The authorities should generate more funds for the amount to mobilise. Moreover, the transfer of funding can also be made accessible for development.
- For safety of cities under smart, Cybersecurity/monitoring should be included in development plan. This will ensure unbreachable encrypted data security.
- Last but not least, 'Dholera-SIR will not be on hold like Amravati or closed like Lavasa. At least it will be nearer to Shanghai as an Industrial hub on Delhi-Mumbai corridor."

REFERENCES

[1] IvanAKrylov-books.google.co.in.

[2] Chaturvedi PK (2011) Community Based Sustainable Responses to emergent Relief at District Level- Col PK Chaturvedi, Chief Engineer - Featured post of BVP/EEE/facebook

[3] Dholera.gujarat.gov.in/projects

[4] https://www.dholerametrocity.com/Dholera-SIR-current-status.php

[5] https://mahabahu.com/dholera-modis-dream-project-turns-lifeless-and-barren/Kakali Das

[6] https://www.eprmagazine.com/green-zone/is-india-renewable-ready-for-smart-city-challenges/

[7] https://www.gvsu.edu/cms4/asset/8C0B809B-0726-4E3B-1EBA4A40A82D8597/smart-goals_fillable.pdf

[8] https://economictimes.indiatimes.com/news/india/indias-urban-population-to-stand-at-675-mn-in-2035-behind-chinas-1-bn-un/articleshow/92561893.cms

[9] https://www.outlookindia.com/outlooktraveller/travelnews/story/71247/dholera-special-investment-region-dsir-to-host-gujarats-largest-airport

[10] https://www.ndksopan.com/dholerasir.html

[11] https://www.quora.com/Why-is-the-Dholera-project-in-Gujarat-so-slow-running

[12] https://www.squareyards.com/blog/dholera-smart-city-smcart

[13] https://nebullusbuildcon.com/dholera-sir-project/

[14] https://www.dholeraprime.com/about-dholera-smart-city-of-india/connectivity/

[15] https://globaljournals.org/item/6654-delhi-slums-under-3-d-fire