

# Indo-Pacific Smart Megacity System Megacity Studies: Is Kolkata Ready to Be the Gateway to Indo-Pacific Region?



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**Abstract** Locational factors along with geopolitical conditions are contributors to the growth or decline of settlements since historical times. Kolkata region has gained from these factors and has experienced phenomenal growth leading the country not only in socio-cultural and political ethos, but also in economic and urban planning as well. The authors consider the factors that have led to shaping the region to be causal to its growth as well as its decline. This research delves into the pertinent aspects in current times to understand the benefits that can be derived from learnings so as to push Kolkata into the next phase of leading the nation by taking advantage of the current geopolitical environment.

**Keywords** Kolkata · Indo-Pacific · Industry · Geopolitics · Megacity

## 1 Introduction

Kolkata has been at the helm of industrial activity in India from medieval times. The city and the area around it have reinvented itself from time to time under various regimes and have maintained the continuity of various economic activities in varying phases of economically successful and vibrant decades with some declining periods of growth. Each decline has, however, seen a revival mainly due to the resilience of its people.

The last few decades have been that of declining industrial growth, which has impacted the socioeconomic and cultural aspects of the society. The city region is currently at the juncture of the next stage of success in the form of the opportunity provided by the role being played by the country in the Indo-Pacific region. Recent policies at the national level to liberalize the economy and to promote industrial

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development, need to be adequately capitalized at the state level to erase the deterrents of industrial growth.

The geopolitical developments in the eastern part of undivided India have gravely impacted the societal ethos which has over the years impacted the political spirit and in turn the development policies of successive state governments. It is high time that the learnings from past events be appropriately shaped in policies for the overall development of the region.

This research traces the history and growth of Kolkata since medieval times and highlights the problems faced currently, the emphasis being on the industry and the port of Kolkata on the premise that manufacturing or secondary sector is the key to a long-lasting growth of the regions and the sector needs to be substantial contributor to the regions gross domestic product. The port holds importance as it is the interconnecting link between the hinterland and the overseas world and has the capacity to provide leapfrog jump in the growth of the economy. The study concludes with discussion and puts forth ideas such that Kolkata can successfully emerge as the gateway to the Indo-Pacific.

The words Kolkata and Calcutta have been used interchangeably, as these appear in the timeline of the growth of city. The state government adopted the name Kolkata in 2001 [1]. Attempt has been made as best possible to use the two names as these appear on the time scale of city. Similarly, Hoogli and Hooghly have been used interchangeably, Hoogli being in use mainly during the British era.

## 2 Indo-Pacific Region

In the widest sense, Indo-Pacific region comprises of the waters of Indian Ocean and Pacific Ocean and all the nations surrounding both the oceans encompassing east Africa, Asia, Australasia, Western Americas, and the island nations in these oceans. Ichthyological studies based on the occurrence of number of species in the region define the Indo-Pacific region as the tropical waters of the Indian Ocean, the western and central Pacific Ocean, and the seas connecting the two [2]. Based on the variation in the presence of species, it does not include the temperate and polar regions of the Indian and Pacific oceans, nor the Tropical Eastern Pacific.

Indo-Pacific identity did not exist until the eighteenth century, an era when India and China had started to have an impact on the world, with both collectively contributing more than half of the global gross domestic product [3, 4]. This prominence of the two countries on economic front on the global scale had become the basis for Karl Haushofer's identification of Indo-Pacific space [5].

The term Indo-Pacific combines the Indian and the Pacific oceans into a singular regional construct as stated by [4] the two regions are vastly dissimilar in geoeconomics as well as security environment which largely shapes the geopolitics [4]. In contemporary times, the term Indo-Pacific was first described in a geopolitical context by Japanese Prime Minister Shinzo Abe's speech entitled [5]. Since the late 2010s, the term has been increasingly used in geopolitical discourses.

The recent prominence of the region in geopolitical, research, and academics discourses is nested in the feelings of political insecurity experienced by the countries in the region due to One Belt One Road initiative of China. Through this initiative, China plans to economically dominate over much of the Indo-Pacific space across Central and Southeast Asia, to Africa, and Europe. China's military buildup in the region, particularly its island-building strategy in the South China Sea as well as the building of foreign bases in East Africa and along the Indian Ocean coast [6, 7] and its strategy of building and maintaining hubs in countries like Pakistan, Oman, Yemen, Djibouti, Sri Lanka, Bangladesh, Singapore, and Myanmar [8] has been a step toward destabilizing Asia. The countries in the Indian and Pacific Oceans feel a common threat by China and are coming together to build a common identity to establish an alliance. The term Indo-Pacific is a response to these developments, as countries are concerned for their survival based on free and open trading routes in the Pacific and Indian Oceans.

China's expanding military footprint in Indian Ocean made the United States realize the inadequacy in its use of term Asia-Pacific to meet the geopolitical objectives in Asia. The term Asia-Pacific was used by United States but excluded South Asia and the Asia-Pacific Economic Cooperation excluded India as a full member. With the remarks by Hillary Clinton, US Secretary of State in 2010, United States officially recognised Indo-pacific for the first time [9]. As mentioned by Khurana [4], in 2012, the US PACOM's command was renamed from Asia-Pacific to Indo-Asia-Pacific. President Trump, in 2017 further altered the Indo-Asia-Pacific formulation to Indo-Pacific contextualizing it to partnership with India. In 2018, Secretary of Defense James N. Mattis officially announced the US Pacific Command would become US Indo-Pacific Command, recognizing the increasing connectivity between the Indian and Pacific [10]. Within days of President Trump's Indo-Pacific articulation, India, Australia, Japan, and United States of America held their first joint secretary level meeting of the Quadrilateral Dialogue (QUAD) [11]. Current US leadership under President Joe Biden regards China as the main challenger to US global primacy and is building a coalition of democracies aimed at outcompeting China on a wide range of issues, mainly economic [12].

The Indo-Pacific region, pivotal to defining the course of the twenty-first century, is the world's fastest growing region. It offers innumerable opportunities in sectors of trade, research, manufacturing, and education. The stability of this region is an assurance to the development of the global economy and international security.

In the Indo-Pacific, the focus of India is to bring countries together in the spirit of cooperation. India revised its geopolitical strategy in 1990s with the 'Look East' policy of the P.V. Narasimha Rao government in 1991 [13], which was an effort to cultivate economic and strategic relations with Southeast Asia. As stated by [12], this was seen as an important component of India's decision to open its economy and take advantage of the dynamic East Asia region. The guiding force for the change in the strategy was disputes with Pakistan in the west and China to the north which were limiting its overland communications and trade options. US policy of rapprochement with India as an aftermath of 1998 nuclear tests leading to closer Indo-US ties and later formation of coalition between United States, India, Australia, and Japan to

provide assistance to those affected by the tsunami of December 26, 2004, though only for a week [12], formed the basis of notion for quadrilateral grouping. In the Indo-Pacific geography, India may not be a significant player east of Malacca Straits, but to its west, India dominates owing to its maritime and land borders with four of the eleven ASEAN nations. India recognizes the centrality of ASEAN to its Indo-Pacific strategy. India regards the Indo-Pacific as a geographic and strategic expanse, with the 10 ASEAN countries connecting the two great oceans.

India has been active in advocating the concept of free and open trade in Indo-Pacific introduced by Prime Minister Shinzo Abe in 2016 [14]. The United States, Australia, and the members of the ASEAN have all expressed a common view that India should play a greater role in the region. India does not see the Indo-Pacific Region as a strategy or as a club of limited members and maintains a stance that security in the region must be maintained through dialogue, a common rules-based order, freedom of navigation, unimpeded commerce, and settlement of disputes in accordance with international law. India's view is to work with other like-minded countries in the Indo-Pacific region to cooperatively manage a rules-based multi-polar regional order and prevent any single power from dominating the region or its waterways [14].

Taking this stance of India as the basis, this research delves into the plausibility of Kolkata megacity as being the gateway to Indo-Pacific for India.

### 3 Constituents of a Megacity

A megacity as defined by the United Nations [15] is a city with more than 10 million inhabitants. The United Nations Department of Economic and Social Affairs in its 2018 World Urbanization Prospects reported urban agglomerations having over 10 million inhabitants as megacities. The term megacity came into common use in the late nineteenth or early twentieth centuries when it was documented by the University of Texas in 1904 [16]. In the mid-1970s, the term was coined by urbanist Janice Perlman referring to the phenomenon of very large urban agglomerations [17]. The definition of megacity has evolved with increasing concentration of people in large urban centers as cities having a population of more than five [18], eight [19, 20], or ten million people [18]. Initially, the United Nations used the term to describe cities of 8 million or more inhabitants, but now uses the threshold of 10 million [15]. A megacity is an outgrown metropolitan city that is a contiguous spatial spread of the leading and subsidiary city along with the peripheral rural area with a population above 10 million [21].

Concentration of population in urban centers is an increasing trend and a recent phenomenon that has occurred since the first industrial revolution. In 1800, only 3 percent of the world's population lived in cities, which increased to 47 percent by the end of the twentieth century. As per the United Nations [22] estimates, 60 percent of the world's population will be living in urban areas by 2030.

While the big cities that emerged due to concentration of people in big cities for work in the now developed world because of the industrial revolution, the trend of emergence of megacities is predominantly in the less developed parts of the world. In 1950, there were only two megacities, New York and Tokyo. This number was 14 in 1955 and currently is 34. Of these, only 4 are in the developed world and 6 are in India, namely Mumbai, Delhi, Chennai, Bengaluru, and Kolkata. Being the country's first metropolitan center, having a population of above 1 million in 1901, Kolkata has been among the largest cities of India since before Independence. India, recognises the definition of United Nations and considers those metropolitan cities that have a population above 10 million as megacities.

#### 4 Kolkata's Role in Indo-Pacific Region

Kolkata (erstwhile Calcutta) that was initially a village and was developed as a trade post by the East India Company of British is now one of the five megacities of India. It consists of a complex set of administrative entities—4 Municipal Corporations, namely Kolkata Municipal Corporation, Howrah Municipal Corporation, Bidhan Nagar Municipal Corporation, and Chandan Nagar Municipal Corporation, 37 Municipalities, and 23 panchayat samities<sup>1</sup> [24]. Kolkata Municipal Corporation, spread over an area of 185 sq km and consisting of 141 wards, grew out of villages of Gobindpur, Kalikata, and Sunatuni and developed into a trade post and later into the city of Calcutta.

Calcutta has continuously expanded over the years and is now the core of 1851 sq kms Kolkata Metropolitan Area. Kolkata Metropolitan Area lies between 22° 19' N to 23° 01' North latitude and 88° 04' E to 88° 33' East longitude and within this Kolkata Municipal Corporation is located between 22° 37' N to 22° 30' North latitude and 88° 23' E to 88° 18' East longitude (Ref). Kolkata Metropolitan Area stretches in a linear pattern along the east and west bank of the river Hooghly. The present-day Kolkata Municipal Corporation was once surrounded by marsh and swamp, which has been reclaimed and developed upon for urban use in the last over 300 years. The urban local bodies of Bidhan Nagar, Rajarhat, Sonarpur, and Maheshtala [25] are a few that have been developed on the wetlands [26] in recent years primarily for decongesting of the urban core of Kolkata.

While Kolkata is often perceived as a coastal city, it is about 145 km inland from the coast of Bay of Bengal but within tidal reach of Hooghly River. Kolkata is home to one of the oldest airports in the country. It is a major domestic hub of not only East and North-Eastern India but also neighboring countries in Southeast Asia. Kolkata Airport has non-stop passenger flights to 63 destinations in 10 countries and 49 domestic flights to major and small cities in the country [27]. In the last few years, cargo operations have seen a steady rise [28], especially from the North-Eastern

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<sup>1</sup> Rural local government at grassroots level [23].

India. The growth of the airport and seaports in domestic and international space establishes the primacy of Kolkata in the region.

#### **4.1 History of Kolkata**

Kolkata the capital of West Bengal and a primate city is located on the eastern bank of the Hooghly River. It is the business, commercial, and financial hub of Eastern India. As per the Census of India, 2011 [29] Kolkata was the seventh-most populous city in India, having a population of over 4 million within the municipal limits forming the core of the Kolkata Metropolitan Area which had a population of over 14 million making it the third-most populous metropolitan area in the country. In 2021, it is estimated (Census 2021 is deferred due to COVID-19 pandemic [30]) that Kolkata metropolitan area had about 15 million people living in the region [31]. The Port of Kolkata is India's oldest and only riverine operating port.

The word Kolkata derives from *Dihi Kolikata* in the local language, Bengali, and was the name of one of the three villages, where the root of the present-day city lies [32]. Before the British took control of the area, the region was ruled by the Nawab of Bengal under Mughal suzerainty. The British trading company, East India Company had obtained trading rights in 1690 and the area was developed by East India Company into an increasingly fortified trading post. In the next hundred years, East India Company was able to abolish the native rule and assume full control of the region, which primarily included the villages of Kolkata, Sutanuti, and Gobindpur [33]. Under the East India Company and later British rule, Calcutta served as the capital of British held territories in India until 1911, when the capital was shifted to a more central location at New Delhi. Calcutta continued to be the capital of the Bengal Presidency. Partition and Independence in 1947 resulted in political violence and economic stagnation bringing much loss to Kolkata and the areas surrounding the city, which was once the cultural, political, and economic hub of the country.

#### **4.2 Demography, Land Use and Planning**

The metropolitan region of Kolkata lists among the 34 largest megacities of the world having a population of more than 10 million [15]. The population 2011 Census [29], the population of Kolkata Metropolitan Area was 14.11 million, of which Kolkata Municipal Corporation accounted for 4.49 million. The population density in Kolkata Metropolitan Area was 7,950 persons per square kilometer. The municipal core of Kolkata, which is the heart of the region, is denser with a population density of 23,149 persons per square kilometer accounting for 31 percent of the region's population within 10 percent of its area. Since the turn of the century, the population has been declining in the region. The population growth rate of Kolkata Metropolitan Area was 7.6 percent between 2001 and 2011 and has declined to 6.1 in 2011–2021. Kolkata

Metropolitan Area population was projected to increase to 20 million in 2021, and 21.1 million in 2025 [24].

Owing to the COVID-19 pandemic, the census as scheduled in 2021 has not been conducted [30]. It is estimated to be 14.97 million in 2021 which is much lower than the projected population. However, there has been a 28 percent increase in the Kolkata Municipal Corporation population [31] after a negative growth rate in the previous decade which needs to be ascertained after the actual census count. Although the population growth rate in Kolkata Metropolitan Area shows a declining trend, the absolute size of the population and its high density continue to pose challenges to urban growth.

Kolkata's demographic growth trend has been irregular over the decades, primarily due to its conspicuous socioeconomic and political trajectories. Kolkata's population has had a declining growth rate since 1981. The first decline in the growth rate was seen in 1960s which reversed in the next decade, but since has been steadily declining and in 2001–2011 has experienced a negative growth rate [29]. The population in the Kolkata Metropolitan Area, however, has been growing at a much higher rate than Kolkata Municipal Corporation (Refer Table 1). Reasons for the decline can be a saturation to absorb population in terms of available built-up space, poor and depleting infrastructure, a stagnant economic structure of the city, and an increased cost of living. Further, transportation systems developed in recent decades have facilitated daily commute allowing individuals to move to residential locations developed in peripheral areas, where land and low-cost housing is easily available, a reason for rapid growth of peripheral areas. Though this has exerted excessive strain on economy, infrastructure, environment, and land, in turn leading to rise in poverty and deteriorating the overall quality of life.

The measures adopted by the government have been in terms of establishing new townships through financial deregulation and public–private partnership development model which has emerged to be a real-estate-driven model benefitting the housing needs of a better-off section of the society. Unfortunately, both the local and state governments have been ineffective in resolving the urban issue.

### ***4.3 Land Use***

The city's role as the nucleus of labor employment and economic opportunities has attracted both short and long-distance inter and intra state migration. Efforts have been made to divert the migration to other areas of the state by developing some secondary cities such as Asansol, Durgapur, and Siliguri. However, Kolkata continued to remain the city of attraction for livelihood leading to horizontal and vertical expansion of the city. Unplanned expansion led to encroachment of agricultural lands and wetlands. The urban pattern as it exists today is of a highly dense core which is linear residential development.

Urban built-up land constitutes 54.2 percent of the total area of Kolkata Metropolitan Area with the remaining under non-urban use. Among urban uses,

**Table 1** Population and growth rate of Kolkata Municipal Corporation and Kolkata Metropolitan Area

Census year	Kolkata Municipal Corporation population	Growth rate	Kolkata Metropolitan Area population	Growth rate
1901	1,009,853	–	–	–
1911	1,117,966	10.71	–	–
1921	1,158,497	3.63	–	–
1931	1,289,461	11.30	–	–
1941	2,352,399	82.43	–	–
1951	2,956,475	25.68	–	–
1961	3,351,250	13.35	–	–
1971	3,727,020	11.21	–	–
1981	4,126,846	10.73	9,194,000	–
1991	4,399,819	6.61	11,021,900	19.88
2001	4,572,876	3.93	13,114,700	18.99
2011	4,496,694	(1.67)	14,112,536	7.61
2021	5,800,000	28.98	14,974,073	6.10

Source Primary Census Abstract, West Bengal, Census of India, 2011 [29]

residential use is pre-dominant (31.2 percent of total area), followed by industrial, transportation, public, and recreational uses (14.7 percent of total area), and the remaining is under mixed built-up land use (8.3 percent of total area) [34].

The land use pattern in Kolkata Municipal Corporation is even more urban, reflecting 300 years of organic growth. The white town areas were planned by the British, whereas the rest of the areas developed organically and was later given a piecemeal and surgical treatment to make the living conditions better. The land over which urban expansion occurred was mostly wetlands requiring reclamation. Various organizations have progressively converted the wetlands over time for urban use. The Calcutta Improvement Trust reclaimed considerable area to the east and south and developed planned colonies for residential purposes [26]. With almost nonexistent land use planning or control, the bulk of land use reflects mixed use. Both residential and non-residential uses co-mingle in most areas with little or no demarcations. In the Kolkata Municipal Corporation, residential or mixed residential accounts for 68 percent of land use followed by 9.5 percent under open space and parks, 6 percent under industrial, 5 percent under commercial, 4 percent under agriculture, and 3 percent under transportation and storage [34].

To comprehend the issues in Kolkata region, an intricate composition of the urban space needs to be understood. Kolkata Municipal Corporation has a large proportion of its population living in slums and squatters, constituting 33 percent of the total population, in 2,011 registered, and 3,500 in unregistered such settlements [35], which are spatially concentrated in six of 141 wards. Slums in Kolkata Municipal Corporation are the hub for many informal manufacturing units, some of which are



producing highly toxic acids and chemicals [34]. The increasing population pressure, dense urban environment, and low coping capacity of population living in slums make these the most vulnerable parts in the city. The infrastructural facilities in terms of water supply, roads, electricity, sewerage, health, and education remain sub-standard.

#### ***4.4 Urban Planning and Development***

Kolkata became a corporation on September 4, 1726, by a royal charter of the then British colonial system. Since then, several laws have been passed and amended to improve municipal governance of the city. Calcutta Municipal Act, 1923 provisioned the election of a mayor in the municipal Government of Kolkata and the enfranchisement of women. Municipalities, namely Cossipore, Maniktala, Chitpore, and Garden Reach were merged with Kolkata though later Garden Reach was separated. Kolkata Municipal Corporation was envisioned as a policymaking, directive, and rule-making civic institution with the enactment of Calcutta Municipal Act, 1951 [36]. Despite several amendments over the next two decades, the provisions of Calcutta Municipal Act, 1951 were, however, inadequate to provide requisite guidelines for the better governance of a problem-ridden city.

In response to the demands of the expanding city and the depleting civic conditions of Calcutta, an Improvement Trust was established in 1911, which continued to be the agency responsible for expansion and improvement of Calcutta and its urban surroundings. The trust was responsible for development of urban infrastructure through maintenance and building lakes, housing, roads, rehabilitation projects, and commercial complexes.

Multiple urban development plans have been prepared since the 1950s. The Calcutta Metropolitan Planning Organization was created in 1961. Along with a team of eminent international and Indian planners, and supported by the Ford Foundation, Basic Development Plan for 1966–1986 for the urban development of Calcutta Metropolitan District was prepared [34].

Based on the analysis of land use and population growth patterns, the plan recommended the development of a counter magnet, Kalyani-Bansberia in the northern-most periphery of Calcutta Metropolitan Area [37]. In 1970, the Calcutta Metropolitan Development Authority was created by a state legislation and was given the responsibility of implementing the plan. However, substantial changes had taken place in the urban structure during the intervening two decades. Population growth in Calcutta had declined whereas it had grown considerably in the suburbs. Addressing these changes, another plan was developed in 1976, the Perspective Plan which recommended a multi-modal development with several growth centers [37]. The plan was further revised in 1982 and has also witnessed additional changes over the years based on ground realities and current situation.

From 1970 to 1981, Kolkata Metropolitan Development Authority worked as the development agency in the Calcutta Metropolitan Area primarily because most of

its constituent Urban Local Bodies were under suspension, with no elected representative. The Kolkata Metropolitan Development Authority has since functioned in collaboration with the elected Urban Local Bodies, working toward efficient governance and holistic development of the region. With the enforcement of the 73rd and 74th Constitutional Amendment Act, 1992 and the West Bengal Metropolitan Planning Committee (WBMPC) Act, 1994, the process of decentralized planning and development gained momentum in the Kolkata Metropolitan Area. Kolkata Metropolitan Planning Committee was formed in 2001, following the provisions of the WBMPC Act, 1994. The WBMPC mandates the Kolkata Metropolitan Planning Committee to prepare the development plan for the Kolkata Metropolitan Area [24]. Kolkata Metropolitan Planning Committee is also provisioned to oversee the developmental activities launched by various state and central government agencies within the administrative jurisdiction of the Kolkata Metropolitan Area, to ensure that such activities are in consonance with the development plans.

The Kolkata Metropolitan Development Authority's functions broadly cover three domains: planning for development, project implementation, and regulatory functions. In addition to this, the Kolkata Metropolitan Development Authority acts as a nodal agency, providing consultancy services and implementing projects on behalf of various government departments and institutions. Over time, the Kolkata Metropolitan Development Authority has become the technical secretariat of the Kolkata Metropolitan Planning Committee. Thus, the Kolkata Metropolitan Development Authority has carried out several projects in diverse sectors of civic infrastructure, such as water supply, sewerage and drainage, traffic and transportation, township and area development, housing and slum improvement, commercial complexes, and parks and playground [36, 38].

According to the guidelines of the West Bengal Town and Country (Planning and Development) Act, 1979, the Kolkata Metropolitan Development Authority must prepare existing Land Use Maps and Registers (LUMRs) for various ULBs within the Kolkata Metropolitan Area to help them prepare Land Use and Development Control Plans (LUDCPs) for those sub-areas. The responsibility of enforcing LUDCPs and DCRs is delegated to the individual ULBs, while the KMDA retains enforcement power in particular areas and zones [36]. The KMDA executes various planning exercises, ranging from perspective plans to the formulation of investment programs; it must continually upgrade perspective plans and sectoral development plans to keep up with changing socioeconomic, physical, and other contexts [24].

In 2017, the state government merged Kolkata Improvement Trust and Kolkata Metropolitan Water and Sanitation Authority with Kolkata Metropolitan Development Authority under the aegis of West Bengal Town and Country Planning Act, 1979 which resulted in repeal of Kolkata Improvement Trust Act of 1919 and Kolkata Metropolitan Water and Sanitation Authority Act of 1966 [39]. After the merger, Kolkata Metropolitan Development Authority is responsible for the planning and infrastructure development of 125 municipalities and the intermediate rural area across either side of Hooghly [24].

In order to improve the infrastructure of the city, City Development Plan for Kolkata Metropolitan Area was prepared under JNNURM, a Government of India

program launched in 2005 [40], which aimed at creating economically productive, efficient, equitable, and responsive cities, with a focus on -

- improving and augmenting the economic and social infrastructure of cities;
- ensuring basic services to the urban poor including security of tenure at affordable prices;
- initiating wide-ranging urban sector reforms with a primary objective of eliminating legal, institutional, and financial constraints that impede investment in urban infrastructure and services;
- strengthening municipal governments and their functioning in accordance with the provisions of the 74th Constitutional Amendment Act of 1992.

The metropolitan region of Kolkata has been dotted with small towns at the periphery of the dense core with the intent of decongestion. These small towns have been treated as experimental grounds to de-densify the metro region [41]. The development of Rajarhat on the eastern fringe of Kolkata is one such case. At a distance of 17 km from Kolkata, the area once comprised of water bodies, salty marshes, and extensive areas of wasteland. Rather than being a city-for-all as planned and initially envisioned, Rajarhat's on ground development has been exclusionary favoring high-income consumerist inhabitants. As stated by Chowhan et al. [41], the idea to develop an eco-friendly, inclusive township with minimal dispossession turned into a nightmare for fairly developed self-reliant villages of Rajarhat. Instead of blindly valorizing economic growth or technological advancement, the need to situate sustainability within the rubrics of urban planning by anchoring down justice, equity, and inclusivity at the heart of city-making projects [41]. The case showcases the existing situation of the majority in the city in varying measures.

In 2015, the union government launched its new urban agenda, aiming to develop 100 smart cities across the country. According to Smart City Mission's (SCM) guidelines, these cities would have adequate civic amenities and services; affordable housing; smart transport solutions; efficient governance and participation of citizens; safe, secure, and sustainable city environment for all, with particular emphasis on the elderly, children and women; and accessible healthcare and education [36]. While the SCM's agenda and methods of implementation have triggered a debate in the academic and political spheres, it is crucial to examine critically the extent to which smart cities can help achieve a sustainable and inclusive city (SDGs Goal 11, put forth by the UNDP) [36, 42]. However, as stated by Tiwari, Sarkar, and Jana [43], integration of the SCM with the development plan of the city will be pertinent as it will ensure efficiency and facilitate the completion of projects.

Despite various urban development and welfare policies, programs, schemes, and missions under the aegis of both national and state governments and other development agencies, Kolkata is yet to become a sustainable and inclusive city. While some sectors like real estate, information technology, tourism, and physical infrastructure have progressed significantly since the economic liberalization, at the micro-level, spatial inequalities persist in terms of adequate housing, access to essential amenities and civic services, and the financial well-being of residents. Moreover, issues continue to pose challenges to making Kolkata a sustainable and inclusive

city: unregulated built-up growth, planning violations, mismanagement of municipal waste, environmental degradation, traffic congestion and restricted spatial mobility, unsafe public spaces, exclusionary social practices, and unaffordable technology-driven infrastructure. Considering these issues, the question persists if Kolkata is ready for being the gateway under the Indo-Pacific Policy of Government of India.

Kolkata, a mega agglomeration, and a center of economic, political, and business activities in East India, has held geopolitical importance since colonial times. In east India, it is a popular livelihood destination for migrant labor from the neighboring states of Uttar Pradesh, Bihar, Odisha, Sikkim, and seven North-Eastern states which along with cross India migration has probably pushed Kolkata into a premature megacity.

#### ***4.5 Industry and Economy***

In the pre-Independence period, Bengal experienced a very long and economically rewarding industrial history since ancient times. The cottage industries were dominant comprising mainly of silk weaving in Murshidabad and Malda areas, metal work in Bishnupur, embroidered clothes in Dacca, conch-shell bangles and pearl button of Kharagpur and rural area of Dacca (now Dhaka, capital of Bangladesh), are significant examples of industries that existed in Bengal [44]. When the British arrived first in India, Bengal's cotton handloom industry was the leading in the production of highest quality of cotton [45]. However, its decline started in the early nineteenth century due to British economic and political policy and resultant deindustrialization [46]. The focus of the British in India shifted from industrial production to agricultural production. The agricultural produce was exported to Britain and factory manufactured finished goods were imported to India, which severed as a stiff competition to the indigenous produce of the cottage industries. There was some industrial growth from 1854, when the British established cotton and jute mills in Calcutta and Bombay areas which too served as a source of competition to the local cottage industry setups. During the First World War, Indian industries got a boost as India became the key supplier of cotton and woolen textiles. During the Second World War, due to the paucity of raw materials, industry experienced a decline.

After Independence, India adopted a system of Five Year Plans, under which each period focused on one key sector's development. While the first Five Year Plan focused on the agricultural sector, the second plan laid emphasis on industrial growth. The period from 1950 to 1970 was of the first three national Five Year Plan. There was a compounded growth rate of industries in West Bengal at 5.7 percent during the first Five Year Plan which increased to 7.2 percent during the second plan and rose to 9.0 percent during the third Plan period. During the period 1951–1965, West Bengal's industries prospered keeping pace with the all-India industrial growth rate [47]. In the period 1951–1965, the value of industrial output in West Bengal increased by 28.7 percent. Registered factory employment in West Bengal during this period increased by about 35.02 percent [48]. West Bengal during his period was among the

leading states in the country having concentration of industrial units in and around Calcutta.

The period from 1970 to 1980 having two Five Year Plan saw industrial recession primarily due to the Indo-China war (1962) Indo-Pak wars (1965 and 1971), which resulted in diversion of public investment to unproductive uses leading to the decline in the growth of the industrial sector. Successive draughts, from 1965 to 1966 and 1966–1967 and later 1971–1972 and 1972–1973 reduced agricultural production and in turn adversely affected industrial development. The oil crisis in 1973 further led to a significant imbalance in industrial production. These collectively caused an industrial recession in India and the state as well [44, 49].

During the next two Five Year Plans in the 1980s decade, relatively buoyant economic conditions prevailed in India as well as in West Bengal, though lack of interest was shown by the big investors to invest in the large-scale industrial sector in the state [50] due to persistent labor issues and not so favorable industrial policy of the state.

The 1990s saw a positive industrial growth both in India and West Bengal. There were two phases of industrial growth, though first four years faced prolonged recession, in the second phase (1992–1996), steady industrial growth had been seen after the extended industrial deceleration [51]. In 1997, the State Government announced an investor-friendly industrial policy which was a turning point in the industrial sector and opened the private capital investment in the still not so vibrant economic backdrop of the state [52]. The state government introduced schemes for developing the infrastructural segment as well, like road transport and development of the power sector [53]. This resulted in an increase in industrial output in West Bengal. It gained further momentum at the turn of the century as the state government took many steps for development in Information Technology [54]. Traditionally, an agrarian economy, nearly 70 percent of West Bengal's population continues to live in rural areas [55]. In recent years, the tertiary sector has started to dominate the state GDP, currently at around US\$ 85 billion [56].

As with all metropolitan regions, Kolkata too has seen a rise in the secondary and tertiary sectors and a decline in the share of primary sector (largely agriculture). Manufacturing industries and construction activities constitute the core of secondary sector activities while the banking, insurance, and transport sub-sectors constitute the core tertiary sector. The jute textile industry has been traditionally dominant in Kolkata Metropolitan Area making the region the largest hub in the country. The growth rate of state domestic product reflects the recent trends of structural changes in the economy of Kolkata Metropolitan Area. Contribution of Kolkata Metropolitan Area to state domestic product and variation in the per-capita income over the years. The average per-capita income for 2001–2002 in Kolkata Metropolitan Area was Rs. 15, 281 (at 1993–94 prices) (Refer Table 2).

In the Kolkata Metropolitan Area industries are concentrated in Kolkata Municipal Corporation (68 percent) and Howrah Municipal Corporation (14 percent) that of jute manufacturing, light and heavy engineering, leather products, textiles, paper, pharmaceuticals, chemicals, tobacco, food products, glass products, and electrical

**Table 2** Annual average growth rate of state domestic product for Kolkata Metropolitan area

Sectors	Kolkata Metropolitan Area		West Bengal	
	1985–1986 to 1993–1994	1993–1994 to 2001–2002	1985–1986 to 1993–1994	1993–1994 to 2001–2002
Primary	1.58	4.79	5.62	4.18
Secondary	1.81	5.71	4.92	6.36
Tertiary	3.80	11.06	8.42	9.50
<b>Total</b>	<b>2.96</b>	<b>9.04</b>	<b>6.51</b>	<b>7.13</b>

Source JNNURM, 2005 [34, 57]

and electronic products. Among the 9,000 industries in Kolkata Municipal Corporation about 1 percent are categorized as large, 3 percent as medium, and the remaining 96 percent as small-scale industries [34, 57]. Highlighting the dominance of small-scale industries since historical times (Refer Table 3), the concentration of number of units is highest in Kolkata though area-wise Murshidabad has highest area under industrial estates.

There has been an economic resurgence in the last decade due to the information technology industry and business parks in areas like Bidhan Nagar and Rajarhat-New Town having a trickledown effect, furthering dichotomy between the haves and have nots. The city's IT sector has grown at a rate of 70 percent per annum, twice that of the country average [36]. There has also been a surge in investment in Kolkata's booming real-estate sectors. Despite the development in the IT sector, the city continues to struggle with endemic poverty, traffic congestion, and pollution.

Independence and Partition resulted in the decline of industry and commerce in Kolkata. Two-thirds of the province, both area and population-wise, had become part of West Pakistan. Industry in Bengal had been centered around Kolkata. However, its primary and commodity hinterland that was rich and fertile was in East Bengal (now Bangladesh). It was the source of food and other agricultural produce required both by the city's growing population as well as for industries as raw material. With the partition, a greater part of this hinterland, industry, particularly jute, was gravely impacted. Most of the jute growing areas were in East Bengal, while the majority of the jute mills were in West Bengal [50].

Partition had an adverse effect on the investible surplus too as most of the capital invested by the Bengali entrepreneurs came from the large surpluses of the big landlords who were based in East Bengal and had been left bereft of land and money due to the partition impacting the loss of surplus for industrial investment. The continuous influx of refugees and cross-border illegal migration was mainly to Calcutta that increased the stress on the city's civic amenities, employment, food supplies, and its living space which overwhelmed the government machinery. This was something which the government could hope to tackle for many decades.

The distance between Kolkata and the North-Eastern hinterland increased and Assam, Tripura, Manipur, and other North-Eastern states suddenly became far-off places. Transportation between these places and Kolkata became much more time

**Table 3** Distribution of industrial estates and key industries in West Bengal

District name	No. of industrial estates	Major industries	No. of Units	Area (hectares)
Kolkata	12	Leather goods, printing, binding, Engineering, Fabrication Job, Transformer mfg., Pharmaceuticals, Air-Conditioning, Synthetic fishing nets, food manufacturing, offset printing, handicraft, detergent powder	581	29.06
Birbhum	1	Tiles, Plastic packaging	32	8.47
Jalpaiguri	3	Engg., Electrical, Electronics, Food Products, Plastic, Furniture, Chemicals, Sports goods, Transformer	253	63.03
Murshidabad	2	Hotel & Restaurant, garments mfg., Diagnostic center	24	80.19
Nadia	3	Engg. Fabrication job, Woolen fancy garments, Technical Institute, Product of Haldia Downstream Chemical, Plastics, Packaging, Engg. Fabrication job	184	28.53
North 24 Pargana	1	Garments and Chemical products	10	0.73
Purba Bardhaman	5	Fabrication job, Engg. Work, Wooden furniture, Electronics goods	169	26.63
Purab Medinipur	1	Plaster of paris, Engineering materials	54	5.20
South 24 Pargana		Engineering fabrication job, Printing, synthetic fishing net, garments	89	15.69
Uttar Dinajpur	1	Under allotment	2	6.74

Source West Bengal Small Industries Corporation [58]

consuming as now travel and transportation of goods were required to be routed through north Bengal.

Though many Bengalis had an acumen for industry, the commercial and industrial sector of the province had been dominated mainly by the British, and among the Indians, by the Marwaris [59]. This socioeconomic change clubbed with poor government incentives and unfavorable economic conditions led to slow modernization, product development, and diversification causing obsolescence of machinery and shrinking of markets especially in jute, engineering goods, and tea industries.

The industry's problems were compounded by the Government of India's freight equalization policy of 1956 that persisted till 1993 [60], destroyed the locational advantage of Eastern India. For transportation of minerals, freight rates were equalized which became advantageous for industrialists to set up factories in other states as the minerals could be procured at same rates as from within West Bengal, Bihar,



Orissa, and other mineral rich states. In terms of industrial development, this policy shifted the center of gravity to Western India. Discovery of oil on the Arabian Sea seaboard was another factor which gave a fillip to the petro-chemical industry in Western India.

In time, Bangladesh, which had most of the jute growing areas started competing with Indian jute. Internationally, the demand for tea fell and countries like Sri Lanka, Indonesia, and Kenya emerged as major competitors with cheaper tea.

Since before Independence, West Bengal suffered from protracted industrial unrest. The State experienced labor movements which continued in one form or other for many decades after Independence, digressing the industrialists due to lack of political stability in the state. All these factors have collectively put West Bengal into a quandary having a negative multiplier effect on the psyche of the people, especially industrialists. All these factors collectively led to the decline and stagnation of industrial growth of Kolkata and its immediate hinterland.

#### **4.6 *Kolkata Port***

A port city is a settlement situated at the coast or the bank of a river close to the coast, where land and sea meet, which over time may have grown into a town or a city, where ships load and unload or where ships may take refuge in times of storm. Port cities grow into centers of exchange of cultures, goods, people, and ideas. They essentially are the links between their hinterland and the outside world, across the seas and oceans.

Port cities are not merely large settlements on the shore but are maritime economies [61]. In growing urban morphology and culture, port cities need to be nodes having economic functions based on prominence of sea-based trade [62]. More than being a settlement with a port as an appendage, the port cities are a space on land and a node of amalgamation of goods and people and intermixing of cultures and ideas coming from the maritime space [63]. Port cities function not merely as entry or exit points for goods, labor, and capital but also serve as nodal centers for the reception and transmission of culture, knowledge, and information [64].

Port cities thrive on the interlinkages between internal (rail, road, and air) networks with external trans-national ones. The essential functions of the port city are largely determined by their relative positions between hinterland on the one hand and the ports overseas [65].

Hinterlands are one of the major reasons for the ports to thrive. The concept of the hinterlands, however, is varied, and their typologies include the immediate hinterlands that port area itself, primary hinterland that is the area where port and city assume a commanding role and determine life of area; commodity hinterland which is based on shipment of particular types of commodities; and the inferred hinterland where the port's hegemony over a particular area, to the extent that it satisfies the demand for imports and exports in the area it serves [66]. The influence



which the hinterland exerts on the port city itself depends on the economic, political, and social relationships between the geographical entities.

Prior to the three villages being developed as Calcutta, the area was a series of small riverine marts settled by weavers and artisans. It transformed from a small weaver's settlement to a center for India's trans-oceanic trade and a thriving port on river Hoogli, with a large hinterland from the foothills of Assam and the fertile valley of river Brahmaputra in the northeast to the fertile plains of Ganga in the north largely due to the colonial interests of the British. The geopolitical situation of the time and the consolidation of British power initially in Bengal and later whole of the subcontinent led to the Calcutta gain its importance.

The emergence of Calcutta port in the map of Indian subcontinent was preceded by two important ports of the Mughal empire Hoogly and Sonat on the west coast of the river. The then prevalent structure of intra-Asian trade in the western Indian Ocean had been disrupted and eventually collapsed, which became a growth catalyst for the British led trade's reorientation toward China with the final destination in Europe. Eventually, this led to Britain's dominance in India's international trade through the ports of Calcutta in the east and later Bombay in the West.

Apart from the changing political and geopolitical environment on the subcontinent, the navigational aspect of the prior ports or the lack of it, too led to the growth of Calcutta. The dominance of the settlements along the Bhagirathi Hoogli channel of Ganga in the sixteenth century had become unsuitable for navigation due to silting, especially for the bigger vessels. Apart from this, the frequent bends in the river upstream made it very difficult for large vessels to sail through, making it more conducive to the development of Calcutta port.

One of the settlements upstream, Satgaon, which was a flourishing riverine port at the confluence of rivers Saraswati and Bhagirathi had become inaccessible for sea going ships causing the large sea going ships to dock at Betor and be fed by smaller ships from Satgaon, which later became the reason for the shifting of the factories from Satgaon to Hoogli. Hoogli continued to be an important center of trade through seventeenth century under the influence initially of Portuguese and later Dutch and British. The trade from Hoogli led to the development of trade marts along the river downstream up till Sunatuni and Govindpur. These two settlements, later, along with Kolkata became the hub of British East India Company. The setting up of factories in these new settlements gained importance which eventually led to the shifting of key Indian businesses of the time from Satgaon.

Moreover, the region had been well surveyed by the British to gauge the navigability of the area in terms of its capacity to handle large ships. The trade through Calcutta primarily consisted of export of agricultural and semi-finished products. The growth of exports led to the setting up of ancillary and support industry in the service sector like insurance, banks which furthered the siphoning off the savings and profits from India to Britain weakening the economic structure of the society.

Calcutta and the trade from the city got impetus with the setting up of Calcutta Port Trust in 1870 that was responsible for the development of infrastructure facilities at the port. The development of railway network in the subcontinent enhanced trade providing easier means of transportation of goods from remote parts of the rich inland

regions to the port. By then the British had gained a stronger political hold in the subcontinent, which furthered the export of raw materials and import of finished products and Calcutta continued to be the gateway for this trans-continental trade.

At the time of formation of the Trust, there were four jetties and a wharf accommodating 52 vessels with a total tonnage of 48,000. During the next decade, the number of jetties increased to 6 accommodating 143 vessels with a total tonnage of 2,22,000 tons. The goods handled were grains, seeds, raw and semi-finished jute products. In 1860, Budge Budge petroleum wharf and a tea warehouse were added as well and by 1892 Kidderpore docks were completed leading to phenomenal growth in export and import through Calcutta which by then included coal. From 1772, when Calcutta became the capital of British India until 1911 when New Delhi was made the capital, the port city thrived as an administrative and cultural port city.

Calcutta's growth all through the British colonial period was due to its vast hinterland that was tapped by the British traders linking the agricultural producers and the merchants in India to consumers in China and Europe [67]. Prior to the British establishment, the Mughals had controlled the river systems and by denying the Europeans trade rights and access to inland markets, the Mughals had been able to keep the Europeans at bay. With the decline of Mughals and their ports, the British were able to gradually develop an alternative system that of railways for supplying goods to the port.

With Calcutta emerging as a nationalists center the British moved their capital to New Delhi which is seen as a deterrent to the growth of Calcutta in the long run. Calcutta continued to grow as a port city, especially after opening up of Suez Canal, which shortened the route to England by 6500 KMs leading to increase in volume of commercial traffic moving through the port which in time required the development of new docks, like King George docks in 1929 [68].

Partition of Bengal in 1905, Bengal famine 1943–1944, Independence in 1947, Partition of India and the near continuous influx of refugees and illegal migration from Bangladesh and Myanmar have had an adverse impact on the port city's growth. The boundary created by the Radcliffe Commission left 42 percent of the total Hindu population of undivided Bengal (12 million) in the newly created state of West Pakistan. There was initially no massive migration as had happened in Punjab, but the refugees and cross-border migrants came in a series of waves. For the first 10 years following partition (1947–1958), over 4 million refugees and migrants came to West Bengal. Between 1959 and 1971, another 1.5 million from West Pakistan sought refuge in India. By the early 1980s, it was estimated that at least 8 million migrants from the region of East Bengal had settled in West Bengal.

This influx of migrants put considerable strain on the resources of West Bengal, aggravating social problems and causing severe over-crowding. Most of the migrants converged around the Calcutta area, and 70 percent of the total refugees and migrants came to concentrate in the city, giving rise to proliferation of squatter colonies in the city [65].

The Partition deprived the Calcutta port of nearly 30 percent of its primary hinterland. The impact of this loss was tremendous as [69] has shown the sharp decline in the volume of cargo handled at the Calcutta port from 95 percent in the eastern

Indian sector in 1951–1960 to 51.4 percent in the decade 1961–1970. A contributory factor leading to the decline of the port was the silting of the approaches to the Calcutta port. By early 1960s, deep-drafted vessels had found it almost impossible to navigate their way into the Calcutta port, prompting the port authorities to develop a new satellite port at Haldia, about 50 miles downstream of Calcutta to overcome the difficulties encountered by the old port. This development which was complemented with an adjoining industrial township and connected by roads and railways to major cities in the region, was major blow to Calcutta's primacy as the major port city of east India [70].

After New Delhi had replaced Calcutta as the political center of India in 1911, Mumbai soon became the financial and economic capital. West Bengal, along with Maharashtra, had been India's leading industrial state until the 1960s, accounting for 14 percent of the country's overall industrial output. By 1980–1981, West Bengal's share had fallen to 9.8 percent, and a decade later had dropped to 5.6 percent. The declining share of Calcutta's port in the country's overall foreign trade showcases the decline. In 1964, Calcutta port handled 92 percent (by tonnage) of India's export and 25 percent of its import; 30 years later, by 1995, this had fallen to 2.69 percent and 5.5 percent, respectively, which in 2019 was 2.65 percent [65, 71]. Political tension between the state and the center complicated attempts at successful planning in Calcutta, leaving the city and state in a state of neglect, a situation that has not been helped by an economic stagnation, decaying infrastructure, and continued political confusion.

Having the longest navigational channel in India, longer than all the major Indian ports combined, Kolkata port today has two dock systems—the Kolkata Dock System (KDS) and the Haldia Dock System (HDS) (Kamath 2009). In 2011, Kolkata Port handled about 43.2 million tons of cargo, 0.6 million TEUs of container traffic, and 3,186 vessels. By 2020, this had increased to 47.09 million tons, KDS' share being 13.34 and HDS' being 33.76 MT. The port has 52 berths, 35 including 6 oil jetties at KDS and 17 including 3 jetties at HDC [72]. Two deep seaports are on the anvil -

- a deep seaport at Sagar is planned as a joint venture of the Government of West Bengal and Ministry of Shipping, Govt. of India in PPP mode, and
- a deep seaport is planned at Tajpur, in Purab Medinipur in PPP mode by State Government.

It is to be noted that the ports on the East Coast of India, like Krishnapatnam, Karaikal, Vishakhapatnam, and Paradeep, even though smaller in size and capacity serve as a competition to the port in Kolkata due to there being good deep-water ports and having sufficient catchment areas to handle large container ships.

Kolkata Port is the gateway to eastern and northern India, including landlocked countries of Nepal and Bhutan. As per the Kolkata Port Trust, it has a vast hinterland, comprising the entire Eastern India including West Bengal, Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Punjab, Haryana, Rajasthan, Assam, Northeastern States, and the two landlocked neighboring countries viz. Nepal and Bhutan. The industrial development, commerce, and trade of this vast hinterland are inseparably linked to the development of Kolkata Port and vice versa.

## 5 Discussion

Decentralization of industries and regional development are interrelated phenomena. The development on the periphery of the city undoubtedly contributes to a more balanced local and regional growth. Decentralized industrialization leads to lesser concentration of population in select cities, resulting in greater dispersal economic benefits and development. The Government of West Bengal has taken some initiatives for industrial expansion—setting up new industries in urban fringe and rural areas; strengthening the linkage between agrarian and industrial economy; and setting up of sector focused industrial parks for sustenance of the MSMEs.

It is imperative that manufacturing units be improved in capacity and quality of products to compete with national and international markets. In order to enhance the level of economic development, government policies needs to ensure higher and continuous channels of investment in secondary sector which needs to be embedded in the policy of decentralization of industries so as to make utilization of raw materials and human resource, thereby leading to balanced regional development in the state.

To summarize, the industrial policy of 1978 had given priority to small and cottage industries and sought to curtail the dominance of big industrial houses and foreign multinational firms. With the intent of reviving the inadequacies and product of small and local units. However, success was not achieved in reviving the industrial situation in West Bengal which can be attributed to poor implementation of the policy and conflict with the central government. This led to the state's ranking falling continuously in industrial production.

The 1990s saw the liberalization of India's economy. The initial response of the Government of West Bengal was to oppose the liberalization policy [73]. However, taking advantage of the central government initiative, the West Bengal government attempted to bring an end to the license raj by formulation of the Industrial Policy in 1994. This was a radical move from the earlier policy as it welcomes foreign investments in the state, with initiatives from successive chief ministers to attract foreign investments. However, despite the new policy and some increase in investments, the state continued to experience the decline in its share of ex-factory value added output in 1990 from 6 percent to 3.9 percent by 2000 [73].

In the last decade, the compounded annual growth rate of gross value added for West Bengal was 2.7 percent whereas that of all India was 6.4 percent. Further, according to the Annual Survey of Industries, the state slipped from 9th rank at all India level to 11th rank in terms of net value addition in the last decade. However, even in the early phase after Independence (1948–1958), West Bengal's manufacturing industries recorded a compound annual growth rate of 3.3 percent whereas, that of all India was 2.8 percent. Standing in the middle of twenty-first century, West Bengal's industrial legacy appears as a talk of antiquity when we see the closed shutters of the jute mill factories and the chemical plants [74].

West Bengal's manufacturing sector is predominantly informal in nature where the firms are not registered with the government. Hence, these firms do not have access to any government securities and support, making them vulnerable to market

fluctuations. As of 2015, the informal firms accounted for more than 95 percent of the total manufacturing firms in the state. These informal firms employ 93 percent of the total workers working in the manufacturing sector.

Most of the industrial initiatives of the state since 2013 have been directed toward marketing and advertising self-employed small and medium enterprises through the flagship program of *Bishwa Bangla* and the cash transfer scheme of *Shilpa Shathi*. Though marketing does increase the sales revenue but only if there is capacity to produce. The loans given under the cash transfer scheme do not ensure revenue generation due to the weak follow-up strategies of the scheme. The acquired loans are utilized inappropriately, and the small-scale industrialists are not able to break free from the indebtedness [74].

It was argued that due to industries becoming more capital intensive, the employment in the manufacturing sector has fallen from 23 to 18 percent (Employment and Unemployment Survey and Periodic Labour Force Survey) from 2011 to 2019. This is falsified in case of West Bengal due to two reasons, firstly, the state is lacking in adequate capital generation to be invested in capital intensive production techniques and secondly the informal manufacture employs 93 percent of the workforce in the manufacturing sector. West Bengal has the highest number of micro and small-scale enterprises (MSMEs), comprising of 11 percent of the total country's MSMEs, and these are in the informal sector, which face the twin issue of lack of capital creation and unavailability of loan advances from the government for investment in any kind of industrial improvement and enhancement.

Major reasons for the continuous decline and non-revival of industries are coordination failure between the Center and the state government, lack of a comprehensive industrial policy, and lack of conducive political environment for industrial growth. It should be highlighted that the factors that resulted in a crisis of capital creation, which is the underlying economic reason behind the industrial crisis of West Bengal are predominance of informal firms in the sector who are suffering from access to capital both in terms of fixed assets and loans and decline in the formation of fixed assets for the formal sector firms.

This research recommends and reiterates the need to create a sound decentralized industrial policy with a firm agenda of creation regional capital by empowering the MSMEs and a progressive intervention to boost large enterprises investments. Government initiatives and policies need to be driven toward capital formation, production, and revenue generation.

To conclude, a multi-pronged approach needs to be adopted, at the node level that is the port of Kolkata modernization, and expansion requires augmentation, which needs to be based on digital technology and concept of ease of business. This system should be robust enough to attract business to use Kolkata as a desirable port for export and import. Further, in this whole gamut, as stated by Bedi and Mahavir [21], there is a need to balance the environment, competitiveness, and quality of life of the citizens which can be achieved through better governance based on extensive use of technology.

At the area level, the livability in Kolkata metropolitan region needs redressal. Decongestion and decentralization need to be the basis for future planning based on

the principles of ecology of the city rather than ecology in the city. On a linear scale, interconnections with the hinterland need to be reliable, inexpensive, and rapid. This needs to be particularly addressed in relation to the states in the northeast India.

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