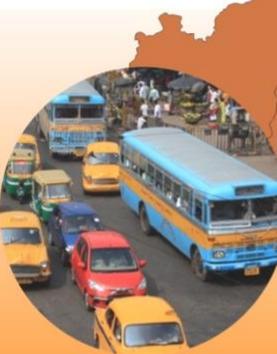
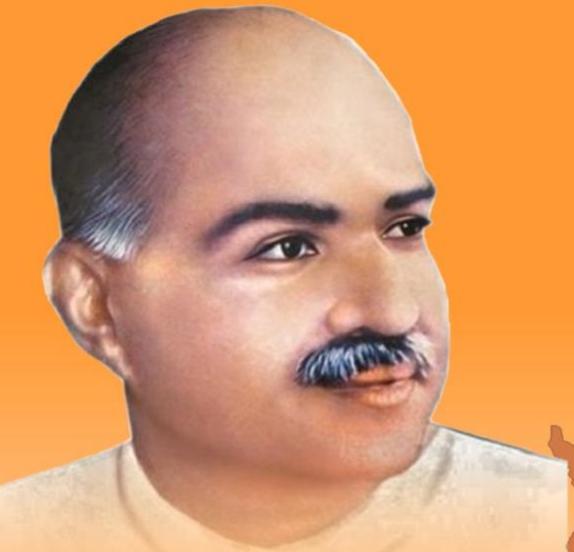




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A Connectivity Vision for West Bengal

Action Agenda for a Logistics Masterplan

Pritam Banerjee

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for West Bengal**
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Preface

From time immemorial, connectivity is quintessential for economic growth and prosperity of any region. There are numerous examples from all over the world including from ancient India on the role that connectivity played in fostering trade and other economic linkages between regions.

The undivided Bengal was no exception. The history of this region is replete with examples about its glorious past, which was primarily due to the role that inland water ports such as Tamralipta, Saptagram played in connecting various parts of this region and with the outside world. Taken together, it was because of waterway connectivity in the Ganga-Brahmaputra-Meghna basin that made it possible for ancient Bengal to prosper.

The advent of road connectivity during the medieval times, followed by rail and air connectivity during British rule fostered it further by furthering the linkages between coastal areas with the hinterlands of Bengal and the result was the emergence of a number of trading and industrial hubs such as the present-day Kolkata, the Asansol-Durgapur-Raniganj mining belt.

However, the irony is not only this connectivity-led economic growth and prosperity of the undivided Bengal got disrupted following its partisan in 1947, there was hardly any emphasis towards its revival except during a decade-and-half old period immediately after independence under the visionary leadership of Dr Bidhan Chandra Roy.

Since then (early 1960s) there is hardly any effort towards connectivity-led/induced economic development efforts in West Bengal. The result is that all development

efforts in West Bengal has become Kolkata-centric. This is in contrast to the needs and aspirations of its hinterlands.

Whatever efforts were made were during the tenure of Shri Atal Bihari Vajpayee in the late 1990s and that was because, being a coastal state, it was a part of Shri Vajpayee's vision for the Golden Quadrilateral project.

This has received a further boost under Prime Minister Shri Narendra Modi as he understands the importance of connectivity in and with West Bengal as that is an imperative to achieve our objectives of the Neighbourhood First Policy as well as the Indo-Pacific Strategy.

Therefore, it is time for taking a holistic look at the imperative of developing new age connectivity in West Bengal. This, coupled with a state-of-the-art logistics plan along with necessary regulatory reforms, can help the state to not only reclaim its position as one of the economic engines of India but will also foster value chains led economic development in India and its neighbouring countries including its extended neighbourhood in the Bay of Bengal and the Indo-Pacific region.

This document is a blue-print for that to happen. Other than narrating the existing state on connectivity in West Bengal, Dr Pritam Banerjee has laid out a plan for furthering multi-modal and inter-modal connectivity by all means - road, rail, inland water, maritime and air - between various economic hubs of West Bengal, other states of India and our neighbours.

He has also articulated the reasons for why connectivity initiatives are to be coupled with a holistic logistics plan so as to boost all three types of economic activities - agriculture, manufacturing and services - and their inter-linkages, particularly for operationalising an "One District One Product" initiative, which will further ensue the development of an ecosystem for growth with job creation in West Bengal.

Dr Syama Prasad Mookerjee Research Foundation is honoured to publish this document, which is a part of our endeavour for the socio-economic revival of West Bengal. I

am sure that this and other such documents of this initiative will make a significant contribution towards this goal for a state, which is at the cusp of a change for good.

I thank Dr Pritam Banerjee for his efforts to prepare this very interesting and thought-provoking document and Shri Bipul Chatterjee, Executive Director, CUTS International and Honorary Convenor of Dr Syama Prasad Mookerjee Research Foundation's Working Group on Socio-economic Revival of West Bengal for his guidance.

December, 2020

**Dr Anirban Ganguly
Director
Dr Syama Prasad
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Objective and Vision Summary

This document on connectivity and logistics strategy for West Bengal is a vision statement for the state's revival as an economic powerhouse, and engine of growth and prosperity for the whole of India. The action items for this revival require the state to engage at several levels with different initiatives programmes that already exist. The central government under the leadership of Prime Minister Modi is implementing a number of connectivity initiatives to weave the country together.

For example, the Bharatmala program for roads, Sagarmala for maritime and coastal, UDAN for air, the dedicated freight corridor (DFC) for rail, the industrial and economic corridors for overall national supply-chain integration. However, the state of West Bengal has consistently underperformed in its ability to use central projects and translate them into economic opportunities in the last five decades.

The action items identified in this document, therefore, emphasise the need for the state to leverage the opportunities these initiatives present, and build on them to revive industry and emerge as a central force in national value-chains as it once used to be more than five decades ago.

The central government under Prime Minister Modi has also been translating the vision for regional economic integration and acquiring geo-strategic depth through linkages with rest of South Asia, Southeast Asia, and East Asia into action. The Indian Act East Policy serves as the fulcrum for democratic, free and equitable Indo-Pacific. The Undivided Bengal has historically been a critical

element for India's eastward economic, political and cultural reach into Southeast and East Asia.

Today, West Bengal sits at the heart of the BBIN (Bangladesh, Bhutan, India, Nepal) sub-region, the only Indian state sharing borders with all the other three BBIN countries, and central to the Bay of Bengal sub-region defined by the Bay of Bengal Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) comprising Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand.

Therefore, this document discusses the incremental action items that would enable the state of West Bengal to leverage multiple emerging connectivity opportunities so as to integrate itself with regional value chains across South, Southeast, and East Asia, and reclaim its position as the economic centre for the Bay of Bengal region.

But connectivity is not just about the macro-narratives of economic integration. It touches people and their daily lives. Therefore, it looks at how West Bengal can leverage new ideas about how to use local trains and state buses to provide the means for its vibrant rural artisanal industry to reach national and global markets, how air connectivity can revive agro-industries in the Malda region while helping millions of Bengali migrant workers across India spend those few extra days during their holidays by saving travel time.

It delves into how reforms on how rules are enforced on the road can not only make road transport efficient and seamless but restore the dignity of drivers and traders by protecting them from daily harassment and humiliation. How addressing congestion for cargo can also speed up passenger travel and save precious hours for commuters.

The document puts equal emphasis on such governance reforms and innovations because they are the key to policies for improving quality of life and revive positive investment sentiment towards the state that has taken a beating in the last several decades. Action items related to ease of doing business in warehousing or setting up logistics parks, and commercialisation of real estate in

Kolkata port to help create thousands of new jobs are just some examples of this in this report.

In short, while the report focuses on the big picture as described above, it delivers on the detail which has to be the essence of any serious public policy document or a manifesto for change. It follows Chanakya's philosophy of thinking big, but acting small - that is imagining the big picture but still needing to paint it with small precise brushstrokes.

Introduction

West Bengal is the beating heart of Eastern India and Bay of Bengal region, and has been so for two millennia. The strong maritime trade network emanating from Bengal and extending upriver through the Ganges into the central and north India has been recorded in Indian and Roman accounts. Today West Bengal finds itself in a strategic geographic location and part of key national and regional infrastructure projects.

A vision for connectivity is therefore not only central to West Bengal's future but has ramifications for development for the Northeast region of India, India's economic and strategic relationship with BIMSTEC and ASEAN (Association of Southeast Asian Nations), and critical role in integration with regional value chains. Since the Andaman Sea and Straits of Malacca lie within the wider Bay of Bengal, the geo-strategic aspect of such connectivity to ensure economic and resource security for India, and ability to deny strategic space in Bay of Bengal to hegemonic designs of other powers is also of great important to India's future.

Effective connectivity is enabled by quality physical infrastructure for transport in combination with policies to support commercially viable logistics businesses and policies that facilitate domestic and international trade. Given the increasing importance of services in the economy, connectivity for people - that is consumers and workers is as important as connectivity for goods.

Quality infrastructure refers to both the trunk infrastructure of road, rail, sea, and inland water transport (IWT), as well as the specific local solutions that reduce congestion, ensure effective traffic management, and provide facilities for efficient, safe, and environmentally sustainable transport operations. Providing multi-modal options for transporting goods, and

ease of transferring goods from one mode to another (i.e. inter-modality) is another important benchmark for quality infrastructure.

Policies to support commercially viable logistics business include state support for development of logistics parks that reduce cost of logistics through economies of scale and provide value-added logistics services at competitive prices. It also includes policies that help logistics businesses to innovate and help them come up with new services, or help attract more sea and air services to the state's ports and airports. Proactive state support to help quick execution of central government supported transport infrastructure projects is another important aspect of policy.

Facilitation related support includes ensuring seamless and efficient movement of road transport inside the state, and supporting proactive and innovative solutions to effective movement of goods across international gateways. It also requires the state taking an active role in promoting trade facilitation initiatives of the central government and designing local solutions to any challenges to trade facilitation.

Thus, this document takes up the key transport modes in individual sections - that is road, rail, inland water, sea and maritime and air, and discusses the key infrastructure assets that serve for each of them. It follows this up with a vision for connectivity for each of these each modes in terms additional infrastructure, services and management related to these logistics assets. A key element of this vision is related to the state being able to best leverage central projects for its economic development by proactively anticipating its needs for incremental infrastructure and services and investing in them.

This discussion on hard infrastructure is supplemented by an analysis of the issuesfacilitation and ease of doing business associated with logistics with specific discussions on state led reforms on regulations of trucks on the road, a single-window for warehouse approval and a policy for warehouse and logistics park

development, and trade facilitation for international trade. In combination, the different sections attempt to provide the basic building blocks of a state logistics and connectivity masterplan. The development of such a masterplan along with a timebound execution framework should be the priority of forward-looking state government leadership.

Before getting into the specific discussions in each section that follows, it is important to first underline that the starting point for an assessment of West Bengal's connectivity needs is the specifics of geo-spatial location of the major clusters of economic activity in the state. The linkages of these broad clusters with each other, with rest of India, and with international markets forms the basis of the existing state of connectivity and underpins the future need for logistics related development. For the purpose of this document, the five main production and consumption clusters in the state are:

The Greater Kolkata Cluster: Kolkata cluster covers an extended urban and industrial belt located on both banks of the Hooghly river stretching for around 100 kilometres, from Kalyani in the north to Falta in the south. It includes the metropolitan Kolkata, which is a hub for services industries like finance, information technology (IT) and IT-enabled services, health, education, media and entertainment.

Asansol-Durgapur-Bardhaman Cluster: Like Greater Kolkata, this represents a mature industrial belt. It has several relatively well-developed industrial zones. Given its access to a number of raw materials, a relatively mature industrial eco-system, this region has the potential for enormous job-creation focusing on industries such as steel including high-end steel, heavy machinery, electronics, paper, cement, and fertilizer. High-tech industries such as advanced alloys, nanomaterials, renewable energy related equipment to just name few also hold potential with the right kind of state support and policies.

Medinipur Cluster: Centred around Kharagpur and Haldia, and satellite industrial towns around these two urban centres, the Medinipur cluster remains relatively underdeveloped. The Haldia node of this cluster is relatively well developed with a range of industries and a major port. Kharagpur node is relatively less developed.

North Bengal Cluster: Centred around the twin-cities of Siliguri-Jalpaiguri, this cluster links together the hill towns Darjeeling, Kurseong, and Kalimpong with their tea, horticulture and timber industries, and the Dooars area urban centres of Alipurduar and Cooch Behar which has a similar industrial and economic profile. Siliguri-Jalpaiguri serves as an important centre for trade, transit, and services for North Bengal and North East India.

Bahrapur-Murshidabad-Malda Cluster: With several small to medium sized towns in this belt, the economic focus of this cluster is on agro-processing and horticulture. It has the potential for emerging as major centre for sericulture and silk production. Driven by remittances from migrant labour, this cluster is a major consumer economy.

The connectivity needs for West Bengal has to prioritise the linkages of these key clusters with rest of India as well as international markets. Equally important are the inter-linkages between these clusters, and their connectivity infrastructure that connects these clusters with their hinterland across districts. The next section briefly discusses the existing physical infrastructure of connectivity in this context.

Road Networks

A discussion on the vision for improved road connectivity for West Bengal needs to start with an understanding of the key arterial connections. The table below provides the list of these key arteries.

Connections with Rest of India	Key road corridors within the state
<p>NH 49 connecting to Odisha, Central and Western India</p> <p>NH 16 connecting the state to Odisha and onwards to South and South-Central India</p> <p>NH 27 and NH 17 to Northeast India</p> <p>NH 19 and NH 18 to Jharkhand and onwards to North and North Central India</p> <p>NH 33 and NH 27 connecting North Bengal to Bihar and onwards to North India</p>	<p>NH 16 connecting Kharagpur via Kolaghat to Kolkata and Haldia</p> <p>NH 12 connecting Kolkata to South Bengal up to Sagar Island</p> <p>NH 14 connecting Kharagpur to Asansol-Durgapur via Bishnupur and Bankura</p> <p>NH 19 connecting Asansol to Kolkata via Bardhaman and Dankuni</p> <p>NH 14 connecting Asansol-Durgapur to North Bengal via Baharampur and Malda</p> <p>NH 12 connecting Kolkata to North Bengal via Baharampur and Malda</p> <p>NH 10 and 110 connecting Siliguri to Kalimpong/Sikkim and Darjeeling</p>

Significant stretches of the above-listed arteries include those that are part of the cross-border road network connecting India with rest of BIMSTEC and ASEAN - that is the Asian Highway (AH) and SASEC (South Asian Sub-regional Economic Cooperation led by the Asian Development Bank) corridor network. These include:

- The entire stretch of NH 16 from Sonakania to Dankuni, also coinciding with AH 45 and the stretch between Kolaghat to Dankuni coinciding with SASEC corridor 2 and 3
- The entire stretch of NH 112 from Kolkata to Petrapole land border with Bangladesh coincides with AH 1 and SASEC corridor
- The entire stretch of NH 19 between Kolkata and Asansol coincides with AH 1

West Bengal's location at the heart of BBIN means that the state has road land-borders with each of the BBIN member countries. The main road land-borders of the State are as follows:

- Petrapole border with Bangladesh in Uttar 24 Parganas district about 90 kms from Kolkata
- Ghojadanga border with Bangladesh near Barasat in Uttar 24 Parganas
- Hili and Mahadipur connecting Balurghat and Malda with Bangladesh
- Phulbari border with Bangladesh in Jalpaiguri district
- Changrabandha border with Bangladesh in Cooch Behar district
- Panitanki with Nepal in Darjeeling district
- Jaigaon with Bhutan in Alipurduar district

The state, therefore, already has a good network of roads connected to rest of the country and to the wider BBIN region. But quality of roads, traffic management and congestion management, and incremental road

infrastructure to address key bottlenecks and last mile needs to be addressed. In light of this, the following three elements could be described as the vision for road connectivity in the state that needs to be prioritized in a State Logistics Masterplan.

1. Average speed minimum speed of 80 kmph for passenger and 60 kmph for heavy commercial vehicles in all corridors (NH and SH) connecting the major economic zones within the state, with major national networks and main land border crossings.
2. Removal all major congestion points along these corridors
3. Creating a safe and secure environment for road transporters

In order to achieve the same, the following action items are critical:

- All of these critically important corridors to be upgraded to multi-lane (from single or double lane)
- All stretches of these corridors which are currently bituminous top (BT) to be converted to concrete cement top (CCT). All other state highways or rural/municipal roads which are currently water bound macadam top to be converted to bituminous top (BT)
- Detailed kilometre by kilometre assessments of average speeds and levels of utilization to be carried out for these critical corridors. All stretches where average speeds are below target, and variation in average speeds between peak and non-peak periods in more than 20% are to be identified in this exercise. Also, all stretches where Volume to Capacity Ratio (VC Ratio) is 0.75 to 1 id to be identified. VC ratio measures the level of congestion on a roadway by dividing the volume of traffic by the capacity of the roadway. VC ratio of 1 or more indicates severe congestion.
- For all such stretches that show congestion based on the above metrics, alternative traffic management

strategies to be developed: Broadly some of the solutions would include:

- If congestion is due to passing of the stretch through an urban agglomeration, then possibility of a bypass could be explored.
 - In case bypass is unfeasible, elevated road, flyover, or underpass solutions need to be explored
 - In case the traffic congestion is only periodic for short periods of time, urban traffic management strategies could be explored
- State Ministry of Transport would develop a corridor traffic performance command centre. This command centre would leverage FASTag readers and map-based traffic speed and congestion apps to make real time assessment of traffic performance and traffic volume trends. This data would be used to develop operation research-based models to predict future need for new road infrastructure. It will be the State Ministry of Transport's responsibility to put together an annual plan for acquisition of land for such new road development and present this to the State Assembly, and also submit their progress on land acquisition for such new infrastructure as presented in previous plans.
 - A key challenge that adds delays and cost to logistics operations are problems to last mile road connectivity between trunk infrastructure, i.e. the identified corridors, and key logistical and industrial infrastructure such as ports, airports, land-ports, Inland water terminals, logistics parks, special economic zones, power plants, refineries or industrial clusters. An assessment of the location and causes of congestion and delays would be conducted of such last mile connectivity, including a gap analysis of infrastructure, and appropriate solutions put in place. A basic target of achieving average speed of 40 kmph in all such last mile road stretches would guide the planning and implementation of these solutions.

- A safe working environment for transport workers, especially drivers is the key to safe roads. The State Logistics Masterplan would put in place a plan to develop proper roadside rest-stops with all requisite amenities including appropriate first aid and first responder medical assistance required for roadside emergencies and accidents. The execution of this plan is to be time bound and progress subject to quarterly scrutiny
- The State Logistics Masterplan would put in place a strategy to make the key corridors generators of renewable energy. Innovation in using roadside space and dividers for solar and wind energy generation would be adopted. West Bengal can emerge as the first state with 100 per cent of its trunk roadside infrastructure dedicated to generation of renewable energy, and with a plan to leverage the energy generated from these roadside grids to power a state-wide network of roadside charging stations for e-vehicles.
- In order to optimally use West Bengal's unique location at the heart of BBIN, in addition to the road infrastructure interventions identified above, local traffic management in the municipalities adjacent to land-ports is a critical objective. To that end, a comprehensive traffic management for all of the land-ports, including management of access to the land-port through the municipal area, bypass/underpass/elevated road as required, and adequate truck parking facilities that are competitively priced and transparently managed, need to be put in place. The State transport department would be responsible for developing such a plan and its execution in a time bound manner. Additional trade facilitation interventions associated with policy innovation and adoption is discussed in detail in Section 8.
- Seamless road movement is just not a function of infrastructure interventions. State agencies associated with tax, transport, police, and forest departments have

mandates to regulate, check and inspect vehicles for different reasons. Such multiple checks and inspections can become cumbersome and add to delays and operational costs. They can also be a source of arbitrary decision making and rent-seeking at the ground level. Section 6 discusses the challenge and the solutions in detail.

- West Bengal has good state-bus network. These passenger buses could be leveraged to carry small parcels of goods from the relatively under-connected towns and villages. This already happens unofficially. But development of an app, and simple GPS based tracking of buses would allow local logistics companies as well as larger courier services to activate a robust network for collection and distribution. On one hand, this would allow the State's villages access e-commerce markets more easily. On the other hand, they can also more easily sell and distribute on e-commerce channels and find a cheaper means to send their product to retailers and agglomeration centres in urban areas. Such a network would empower the rural artisanal industry as envisaged in the one-district one product (ODOP) strategy as well. The state could develop a 'loghu udyog sharothi' programme that would provide the technology back-end and provide overall oversight to this network. Large bus terminals would develop small cargo handling and storing facilities to support this system. The Loghu Udyog Sharothi would not just cover road, but rail as well. This is discussed in Section 2.

Rail Networks

West Bengal has been one of the biggest beneficiaries of rail development in India, and has extremely well connected with rest of India. The rail connections between major economic centres in West Bengal are also quite robust. The table below lists the main rail arteries in the state.

Major Rail Arteries Serving West Bengal

- Kolkata-Kharagpur with onward connection to Jamshedpur, Rourkela and Nagpur to Central and Western India
- Kolkata-Kharagpur with onward connection to Bhubaneswar, Vishakhapatnam and Southern India
- Kolkata-Bardhaman-Asansol with two onward branches to Gaya and Patna and on to North and North Central India
- Asansol-Ranchi-Bokarao with branches connecting to Kolkata and Kharagpur
- Kolkata-Baharampur-Malda-Siliguri onwards to Guwahati and rest of Northeast India
- Siliguri to Patna via Bhagalpur and rest of North India

While the state has a strong rail network, the major arteries connecting it to rest of the country and within the state has gotten extremely congested over the years due to rising volumes of passenger traffic. While the same is

largely true for India, Eastern Indian states and especially West Bengal is a particularly bad case.

West Bengal would, therefore, be a key beneficiary of the under-development Eastern Dedicated Freight Corridor (EDFC) which would connect Dankuni in West Bengal to Ludhiana in Punjab. It would connect West Bengal to all the main economic centres in Bihar, Uttar Pradesh, Delhi, Haryana and Punjab. The EDFC would connect with the Western Dedicated Freight Corridor (WDFC) at Dadri, thus, providing West Bengal access to the critical economic centres across Western and Central India. The construction of the Son Nagar to Dankuni stretch lying mostly within West Bengal is lagging behind rest of the EDFC and this is a cause for concern from West Bengal's perspective.

In terms of cross-border rail connectivity, there are three main cross-border rail corridors between West Bengal and Bangladesh. These are:

- Gede-Darshana and Petrapole-Benapole that connect Kolkata and Southern Bengal to Bangladesh
- Singhabad-Rohanpur in Malda and Radhikapur-Birol in Dinajpur connecting North Central Bengal to Bangladesh
- Haldibari-Chilahato near Jalpaiguri connecting North Bengal to Bangladesh

Infrastructure shortcomings currently prevent direct cargo train connectivity between Kolkata and the main Bangladeshi economic cluster of Dhaka. The existing Padma bridge does not allow a full cargo rake to cross the river, requiring trans-shipment using trucks. The ability to run a through cargo train service across the Padma river will provide a direct connection between West Bengal and Dhaka, and onwards to Northeast India. The transit rail route through Bangladesh will substantially reduce travel time main clusters in South and Central Bengal and North-East India. Two ongoing projects in Bangladesh, the development of the Padma rail bridge allowing heavy cargo

trains to cross the river, and double gauging of Dhaka to Sylhet and Chittagong sections will make this possible.

The state's vision for rail-based connectivity should focus on putting together a strategy that helps leverage existing rail infrastructure and plan ahead to leverage future rail infrastructure development. The key rail connectivity projects for West Bengal is the Eastern DFC, and the developments happening across the border in Bangladesh that will allow direct rail connectivity between West Bengal and Tripura in the North East India via Bangladesh, including for heavy-laded cargo trains. Many of the key objectives in such a strategy would require a cooperative approach with central agencies like Customs and CONCOR (Container Corporation of India). The focus of a state logistics masterplan would have to be such cooperation.

The elements of this strategy should include the following action items:

- Work with Central government, specifically Ministry of Railways, to expedite the completion of the Eastern DFC which will benefit the state tremendously. This would include providing all ground level assistance to complete issues and challenges related land acquisition and right of way.
- Forward planning for rail linked private terminals and PPP (public-private partnership) terminals along the DFC in West Bengal. Developing land banks for this purpose should start in earnest.
- Develop Dankuni rail yard, the eastern terminal of DFC into a multimodal logistics facility with bonded warehouse. Use of vertical space and high-tech handling can overcome the lack of land and maximize the scale of operations that can be managed.
- Develop a rail-based dry port in Petrapole (or nearby). Actively work with central agencies for the same. This would reduce congestion by truck traffic up to Petrapole.

- Address any congestion issues and last-mile connectivity challenges for the Inland Container Depots (ICDs) in Siliguri and Durgapur
- Develop an ICD in Kharagpur.
- Develop a rail-linked terminal at or nearby Malda. Have in location customs presence for clearance of international containers.
- Develop Cossipore Rail yard as an extended port gate for Kolkata port with bonded facility. Modern design, including use of vertical space (multi-storey storage and container stacking) can help overcome land shortage.
- Development of a regular barge service connecting Kolkata port to Shalimar rail-yard, along with modernized jetties and handling facilities in both sides of the river. This would allow for direct barge-based transfer of containers to Shalimar rail yard from Kolkata port (see the discussion on maritime and ports).
- Extend to the concept of Loghu Udyog Sharothi by taking the lead in becoming the first state to use EMU (electric maintenance units) and inter-city trains for e-commerce parcel distribution. A joint project with Railways to add parcel vans to EMU and inter-city trains, and develop basic railway platform-based handling (rapid loading-unloading using mechanized pallets on wheels) would create a low-cost network through which the rich artisanal products of rural industry in West Bengal (as envisaged in One District One Product) can leverage the rail network to reach markets in urban centres in Bengal, and rest of India. EMU and local inter-city trains can feed into rail-side warehouse facilities developed in PPP mode by the state in key railheads like Howrah, Sealdah, Malda, New Jalpaiguri, Asansol, Bardhaman, and Kharagpur for onward connections to rest of India. The Rail network would be a force-multiplier for the road network using state transport buses for parcels.

Inland Water Transport

National Waterway 1 (NW1) is operationally and commercially the most important inland waterway in India and West Bengal is its critical economic node. NW connects Prayagraj to Haldia, and flows right through West Bengal. Completion of the new navigational lock at Farakka will facilitate smoother and faster dispersal of vessels using the NW1.

RoRo (Roll on-Roll off) Inland Water Terminals (IWT) under development in Manikchak and Rajmahal will enable multi-modal operations using NW 1 from North and North Central Bengal, and the intermodal terminals and Kalyani and Tribeni would facilitate multi-modal operations using NW1 for the Asansol-Durgapur-Bardhaman and most of central Bengal.

The India-Bangladesh Inland Water Transit and Trade Protocol Route (IWTTP) connects NW 1 to Bangladesh to North East India. There are currently two main operational routes:

- Kolkata/Haldia to Karimganj in South Assam via Khulna and Dhaka
- Kolkata/Haldia to Silghat in Assam in North Assam via Khulna and Guwahati (Pandu)

An extension of NW1 across the border from Dhulian in West Bengal to Rajshahi in Bangladesh also exists, but currently of limited use. However, if this waterway is extended upto Aricha downstream in the Padma river, it will provide a direct connection to between North Bengal, Bihar, and Jharkhand to Bangladesh and onwards to Assam without having to come all the way south to Haldia.

West Bengal is the biggest beneficiary of IWT development. While the Central government is investing in the development of NW1 and working bilaterally with Bangladesh on the protocol routes, leveraging maximum benefits of IWT connectivity would require a focused strategy at the state level. Some of the main action items that need to be included in a State logistics Masterplan includes the following:

- Supporting the development of IWT terminals in Kalyani and Tribeni. The state should work to develop a mid-sized logistics park around these terminals in PPP mode
- As was discussed in the section on port eco-system development, work with Customs and other central government agencies to develop an 'extended port gate' concept for these terminals at Kalyani and Tribeni allowing for direct evacuation of both container and dry bulk cargo by barge to these locations
- State Transport and industry departments to work together with IWAI and with major business associations to popularize the use of the protocol routes for trade with Bangladesh, as well as transit cargo to North East
- State government must push centre and IWAI to work expeditiously to make the Dhulian to Aricha fully operational. This will open up the shortest waterway route to Dhaka and North East India from central and north Bengal. West Bengal's location at the heart of this international waterway connecting North India with Bangladesh and North-East India would create additional opportunities for economic development and help creation of alternative supply chains to support the state's industrial development
- A comprehensive operational and commercial feasibility for Damodar Valley Corporation Canal (NW 34) for barge-based movement of bulk to and from Kolkata and Haldia ports to be undertaken. If made operational, this would help natural resource based

and metallurgy related industries in the Asansol-Durgapur industrial region by providing them another low cost transport option for bulk transportation of goods.

Maritime Connectivity

West Bengal is served by the Dr Syama Prasad Mookerjee Port Trust (SPMPT) comprising of two distinct systems. The Kolkata docks located within the metropolis and the deep-water docks at Haldia. It is India's only riverine major port. It serves a huge hinterland extending to Jharkhand, Bihar, Sikkim and North East India, as well as for landlocked Nepal and Bhutan. It is equipped to handle both containers, liquid and dry bulk. In addition, there is a proposal to develop a deep-sea port at Tajpur.

SPMPT is a centrally managed major port. State government's vision should be to proactive partner with SPMPT and Ministry of Shipping to upgrade the efficiency and capacity of these ports. This would increase SPMPT's commercial attractiveness and help attract more services, leading to much improved connectivity. In addition, the vibrant port led economy would create a large number of jobs and economic opportunities.

Since the riverine port system of SPMPT is limited in its capacity to handle larger ships, the state would also need to consider the development of a deep-sea port at Tajpur in the mid to longer term. Development of Tajpur would require advance planning, including proactive land acquisition not just for the port but also for ancillary logistics activities and industrial development around the port. The state should strive to set a target of 2025 for Tajpur port inauguration. Since the year marks 150 years of our national song Vande Mataram, Tajpur should be named as Vande Mataram Port Trust.

Key action points for the state to develop a vibrant maritime and port ecosystem are as follows:

- Work on a comprehensive strategy in partnership with SPMPT for active commercial development of port authority land in metropolitan Kolkata. SPMPT owns around 300 acres of land in the vicinity of its ports. A significant amount of such land is in proximity to Kolkata central business district. Conservative valuation of this land is about INR 12,000 crores. Proper real-estate development strategy can push up realization to over 15,000 crores. However, state government would have to take a lead role in stakeholder management to free up this land from semi-legal and illegal occupiers and squatters, and help upgrade roads, sewage etc. River front commercial and residential properties are attractive and add quality of life value. This would in turn help attract service sector industries and generate very significant employment. The revenue earned by SPMPT through sale, lease and rental would create a fund that can help support the following initiatives (fully or partially)
- Actively identify congestion points for trucks travelling to and from the port, and bottlenecks arising due to traffic restrictions on truck movement in certain hours. Alternative strategies that would need to be considered
 - Barge based movement of containers directly from Kolkata port to Shalimar rail yard on Howrah side, with appropriate jetty and cargo handling facilities. Also barge movement to planned Kalyani and Tribeni terminals upriver as a part of Inland Water Transport development. This would reduce the number of trucks that need to visit the port to pick up and drop goods.
 - Work with railways to develop a strategy for direct evacuation of containers using double stacking to Dankuni from the Kolkata and Haldia ports. This would require infrastructure interventions since double stacking requires re-engineering of overhead contact wire height as discussed in the rail related

section. Double stacking would optimize rail evacuation. Further, not all berths have rail sidings, this needs to be rectified to the extent possible. Such direct rail evacuation would also help reduce the need for number of trucks

- Additionally, state to work with Ministry of Railways to address current bottlenecks to rail access at Ranichak and congestion due to single-track between Durgachak and Haldia dock rail system.
- The barge ferry facility in Howrah, the IWT terminals in Kalyani and Tribeni, and Dankuni rail yard should be declared as 'Extended Port Gate, i.e. all customs and other formalities would take place in these locations and not at the port. This would allow rapid evacuation of containers and bulk from port without having to use the port yard facilities for temporary storage as clearance takes place. This would further free up space and help de-congest ports.
- Explore development of access-controlled underpass and elevated corridor that would ease traffic challenges for Kolkata port bound trucks
- Currently not all berths in Kolkata and Haldia dock system are mechanised. State would work with Ministry of Shipping to bring best-in-class cargo handling equipment for Kolkata and Haldia ports. A special taskforce under State industry department with Ministry of Shipping, SPMPT, terminal operators and other key stakeholders can be set up to achieve this goal. State industry department can outreach and involve expertise from leading maritime economies like Japan, Germany, or Korea to support this project. The vision would be transforming SPMPT into the most advanced port in its class (in terms of size and operational parameter as a riverine port) in Asia.

Additional target should be to make SPMPT into a carbon neutral zero polluting port by 2030.

- Work with SPMPT to use available land near Haldia port into a PPP Logistics park. State Industry department can develop a proposal and take the responsibility for time bound execution.
- Develop a state-of-the-art dedicated berth for handling of goods using the protocol route to Bangladesh and North East India using IWT
- Development of deep-sea port in West Bengal at Tajpur should be a priority goal to provide the state with a new state of the art port capable of handling large vessels. While the port itself can be PPP with the state government in the lead, some of the critical infrastructure required, for e.g. a proposed 7 km dyke to enable adequate depth (draft) for large vessels to call can be supported through central funds through projects such as Sagarmala.
- Master-planning for Tajpur should include a comprehensive plan with a logistics park, adequate yard space that ensures that there is no need for additional off-port container freight stations, end to end rail connectivity, and a industrial zone adjacent to the port. Entertainment and tourism related development for additional revenue generation and creative use of space in the dyke as a walkway with restaurants could also be considered. Leveraging the extended coastal space created by the dyke for wind, tidal, and solar energy generation should also be part of the masterplan. Tajpur should represent the best in port design in its class when it is developed.

Air Connectivity

West Bengal is served by the Netaji Subhash Chandra Bose International Airport in Kolkata. It is the most important air hub in eastern India with connections to all major cities in India, and 16 international destinations in South Asia, South-East Asia, China and Middle-East.

North Bengal is served by Bagdogra International Airport. Bagdogra also serves passenger from eastern Bihar, western Assam, and Sikkim. The airport is co-located with an Air Force base which restricts its ability for infrastructural growth to serve civilian needs. Bagdogra is connected to the major metros across India and few locations in NE India. It also has international connections to Bhutan and Singapore.

Other airports in West Bengal include:

- Kazi Nazrul Islam Airport is a well-developed operations ready airport located at Andal near Durgapur but currently does not have any regular flight services.
- Cooch Behar Airport is a well-developed operations ready airport, and has potential to serve the whole Duars and Western Assam area, but currently does not have regular flights.
- Malda Airport is a very small facility with no current flights. It needs major upgradation to handle operations.
- The Kalaikunda Airbase in Kharagpur is a relatively large facility, and has the potential to co-locate a civilian airport along the lines of Bagdogra. Indian Air Force has indicated that it is willing to support civilian aircraft use the runway. But a separate civilian

terminal to handle passenger and cargo at a distance away from the airbase needs to be developed.

Given this existing eco-system, the vision for air connectivity in Bengal must have the following components and action items:

- Developing NSCI airport as a genuine air-hub. In order to do this, Kolkata must target both regional passenger traffic to increase the commercial viability for a large number of flights to an expanded list of destinations and attract airlines to provide such services. The right strategies can help even airports with relatively low local passenger volumes to scale-up. Helsinki in Europe or Doha provide good examples. It is important to note that most of cargo travels in the belly-space of passenger liners, and having an extensive passenger service is the first step towards developing an air logistics hub. Increased air connectivity is also key to future development of high-tech industries in Greater Kolkata region and developing a state-of-the-art services economy. In light of this, the following action items are important:
 - Work on attracting direct connections to Europe, more connections to East and South East Asia. To make a compelling case to airlines to offer these direct services, put together a strategy to compete for Indian international passenger traffic from non-metro cities increasingly travelling to SE Asia and Europe. Elements of this strategy include:
 - ✓ Discounts on passenger fees and airport charges on airlines for connections to non-metro destinations in India, and direct connections to Europe, SE Asia, East Asia. Similarly, flight that bring additional transit passengers from BIMSTEC countries should also be given such discounts. State government would need to work

out a compensation strategy for AAI working with the Central government

- ✓ Special incentives should be given to airlines who add capacity in new routes in BIMSTEC - for example, NSCI to Mandalay, Khulna or Chiang Mai.
 - ✓ Easy transit facilities for passengers
 - ✓ Work with Ministry of Civil Aviation and AAI to optimize scheduling and slot management in a way that helps airlines provide maximum passenger throughput including transit passengers
- Developing state of the art ground handling capacity to ensure rapid turnaround, but with competitive costs. Work with AAI and Central Government to develop benchmarks and put in place an implementation plan
- ✓ Work with logistics companies to upgrade the cargo terminal into a state-of-the-art facility. This would include a plan for completely paperless customs clearance and mechanized handling and warehousing operations. State should create a special purpose vehicle (SPV) in partnership with private sector to achieve this goal
 - ✓ State Industry Ministry should be tasked with coming up with an action-oriented strategy to develop NSCI into the e-commerce air operations hub.
 - ✓ State industry department would earmark land in vicinity of NSCI preferably with convenient road and rail connectivity for an Air Freight Station (AFS) with a Free Trade Warehousing Zone (FTWZ). This would serve as an agglomeration hub, and facilitate efficient

logistics operations without congesting the air cargo terminal or add to traffic near the airport.

- West Bengal has a great opportunity to leverage the UDAN scheme to provide viable air connectivity from smaller regional airports that serve the main economic zones. The bellyspace of passenger aircraft flying to these smaller airports would also act as a force multiplier for parcel networks and e-commerce for local artisanal rural industry, adding another layer to the local train and state-bus network solutions. Also, high-end agro-food based perishables and high-end silk industries would find increased connectivity options from such airports to national markets to and via major hub airports, to international markets. The following action items are important:
 - Bagdogra is a mature operational airport. Infrastructure development is restricted due to its co-location within an airbase. An alternative solution in consultation with Central Government, that allows for expansion of the passenger and cargo facilities without compromising the airbase needs to be implemented. A longer-term plan for a new airport by 2030 (including land acquisition) needs to be also put in place. The incentives and policies discussed in the context of NSCI earlier can also be applied here to increase Bagdogra's connection with rest of India, and emerge as a hub serving BBIN and NE India. Its connection to Bangladesh, as a gateway for education and tourism traffic needs to be considered and connections to Dhaka and Chittagong developed.
 - Cooch Behar is an operations ready airport with no flights with potential to serve Duars and western Assam. Key demand destinations need to be mapped and UDAN leveraged to start regular services.

- Kazi Nazrul Islam Airport, Andal/Durgapur is a well-developed operations ready airport. Poor planning led to discontinued flights services. Regular flights need to be revived with support from UDAN. Low cost turboprop services to Kolkata and industrial hubs in Odisha, Jharkhand and Bihar need to be operationalized. A special taskforce supported by State Industry ministry needs to be put in place to achieve this goal with support from an anchor airline.
- Malda airport has huge potential. Leveraging schemes like UDAN, reasonably priced airline connection for the region's large migrant population in India's metros would be a very popular measure. It currently takes up to two days or more to travel by train to Malda from Punjab, Delhi, Ahmedabad, Mumbai, Pune, and Bengaluru. Feeder turboprop services from Kolkata and Bagdogra would also help.
- Kharagpur Airport (Kalaikunda) needs a development plan that would allow development of a passenger terminal without compromising the needs of the Air Force operating the airbase. Land is available south of the base. The development of the terminal with a high-speed corridor connecting the runway to this civilian terminal to be taken up expeditiously. This corridor will pass under NH49 (Mumbai Road) and the railway tracks in the Kharagpur-Tatanagar section of South Eastern Railway

Regulatory and Governance Reforms associated with Logistics and Connectivity

Regulatory reform for road corridors: A vision for seamless movement with minimum stoppages, inspections and harassment

Enforcement of domestic movement of goods by road in India is governed by several regulatory touch points including tax regulations, vehicle, transport, and on road traffic rules and product market regulations. State government is responsible for this enforcement.

Majority of these requirements are still largely enforced through physical interdiction and inspections. Multiple stops and inspections add to operational delays, and adds a regulatory compliance burden in terms of time and effort for the transporter. The driver who has to deal with regulatory authorities on road are subject to harassment. A system of manual inspections and payment of fines through cash leads to a lack of transparency and resultant loss of revenue for the state.

West Bengal connectivity vision should therefore include a vision for a system that allows seamless movement of truck on National and State Highway with minimum stoppages and physical inspections, and full transparency and accountability in enforcement to ensure that drivers and transporters are not harassed.

The building blocks of the system would include the following:

- Installation of geotagged ANPR camera to capture registration no of vehicles and their image, sensors to

measure dimension, Weigh-in-Motion sensors to check truck weight, speed radars in key locations. to register over-speeding

- An IT application for enforcement that will be get data feed from the all the above-mentioned equipment and make it available to officers
- The IT application would be integrated with GSTN database that provides declaration on goods being carried in the truck and VAHAN database of Ministry of Road Transport and Highways (MoRTH) that has all vehicle related details such as fitness, permit validity, insurance, registration details, etc.
- A system for issuing challans electronically would integral to this application
- A risk management algorithm based on previous experience of offenses and enforcement experience that would identify which trucks to interdict and scrutinize

Based on the above IT hardware and systems, the following new enforcement methodology would be adopted:

- The sensors would check for over-weight, rash driving and other traffic violations. In case of any violation, electronic challan would be issued electronically. The IT app would inform the nearest mobile police team to react urgently.
- ANPR or Fastag would also capture the truck registration number. The application would use the registration number to extract data on the vehicle and the goods it is carrying
- Based on this information, the risk algorithm will pre-select trucks approaching an inspection point for further scrutiny
- Only those trucks selected by the system would be stopped. Officer on the ground would not have any discretion on choosing trucks. If officer over rides the system, full explanation must be provided

- All inspections would take place under CCTV camera and videorecording. The transporter and goods owner would have right to access this recording
- The inspection point would have sensors that independently record the registration number of trucks that are stopped to provide daily cross-check whether only those trucks selected by system were stopped or officers are ignoring this guideline
- The inspection point would have proper truck bays for loading/unloading to ensure goods inspections are done properly and does not clog traffic
- All challans would be issued electronically

Such a system would realize the vision of making West Bengal's road corridors the most operations and business friendly, allowing seamless movement with the minimum stoppages and delays. Most importantly, it would be the most humane, minimizing harassment for driver and helpers who are the unsung heroes of India's supply chain resilience, and yet do not get their deserved respect by authorities on the road.

Vision for Ease of Doing/Running Business: Single-Window Approvals for Warehousing and Warehousing Policy

A robust infrastructure of warehousing offering efficient and cost-effective distribution and inventory management services is critical to overall supply-chain efficiency. Warehouses can also offer value-added services related to packaging, quality-control, and even minor assembling of products.

In the case of agricultural and non-agricultural commodities (i.e. minerals and natural resources) important to the West Bengal economy, they would allow capitalisation of inventory through the issuance of warehouse receipts. Agro products supply chains are critically dependent on quality warehousing with pack-houses or cold chain. As technologies such as 3D printing being common, warehouses would play an even more

enhanced role within supply-chains. Last but not the least, warehouses are a tremendous source of employment generation.

Logistics parks (including multi-modal logistics parks or MMLPs where you have two or more modes of infrastructure available - for example, physically connected by both rail and road) are important for two reasons. First, such large-scale investment allows economies of scale bringing down prices of services. Second they serve as agglomeration centres that allow efficient transport planning and management of transport services. In this sense they add tremendous value to supply-chain management.

It is, therefore, critical for the state's logistics master plan to have adequate provisions for warehouse development. Like in the case for enforcement for transport, warehousing related regulations are the domain of the state government. The state is the primary player in facilitating investment and business development in warehousing. In light of this, the vision for warehousing development in the masterplan should have two main goals; have the most transparent processes related to warehouse set-up and be the most business friendly location for warehousing with the right incentives and policies.

Single-Window Approval for Setting-up Warehousing Facilities

Warehouses require between 12 to 20 different approvals from 6-8 different state agencies, depending on the nature of the warehouse. The table below provides a summary.

Change of Land Use	Local Body NOC	Occupany Certificate	Legal Metrology License
Environmental Clearance	Fire NOC	Consent to Operate (CTO)	Hazardous Waste Authorization
Building Plan Approval	Consent to Establish (CTE)	Shops and Establishment License	Drugs and Cosmetics License
Building and Other Construction Workers Approval	Chief Electrical Inspector to Gov (CEIG) approval	Contract Labour (CLRA) Registration	FSSAI License

This is a tremendous hassle for businesses. Besides the need to visit different offices and go through onerous paperwork and document submissions, these processes can be time consuming. While some processes can be done simultaneously, others are sequential, i.e. initiating the process depends on having first completed another, which can add further to delays. Officers who would want to harass or rent-seek can drive a potential investor to desperation by simply refusing to decide, i.e. sit on the file.

In order to make West Bengal the Number 1 destination in ease of doing/running business in this area, the State masterplan would make a provision for a Single Window Authority for warehousing approvals. This authority would coordinate all approvals and commit to a time-bound window of no more than one month for all of them. If any agency does not give its decision on a file within time, it would be considered to be a deemed approval. Frivolous and unsubstantiated refusals on file would be tracked and officers made accountable.

Warehousing and Logistics Parks Policy

In order to attract warehousing and value-added supply-chain investments into the state the following wish list of policies needs to be considered. Many of them are already on offer in several states, so West Bengal would have to play catch-up.

- 100 per cent Stamp duty exemption
- FSI relaxation and height restriction relaxation

- Relaxation on zone restriction and ease of land-use conversion
- 100 per cent Electricity duty exemption for ten years
- Interest rate subsidy in the form re-imburement for investments made. A scheme should be available for warehouse development in less developed areas and logistics park in general.
- State commitment of support (up to 50% of cost) for last mile infrastructure upgrade up to 500 metres for warehouses, and up to 2 kms for logistics parks
- Exemption on vehicle registration fee (tractor-trailer) for developers of logistics parks and large warehouses
- For urban go-downs and warehouses involved in city distribution, a special incentive scheme on e-vehicles (including electric plus pedal)-zero tax, no toll payment for first 3 years from registration and a small interest subsidy. This would also be available to transporters who serve urban logistics from such urban and urban peripheral go-downs.

Trade and International Logistics Facilitation

The effective management and regulation of international trade is as critical the success of international corridors as physical connectivity. While trade regulation and rule-making is a central subject, a state can play the role of force multiplier by lobbying for reforms, suggesting new regulatory innovations, and supporting the central government in facilitation efforts.

West Bengal's centrality to BBIN and BIMSTEC and the economic potential for the state that the development of robust trade corridors with South East Asia and Bay of Bengal region represent means that it has a lot at stake in the success of these corridors. It is therefore imperative for the state's logistic and connectivity vision to have concrete trade and logistics facilitation action points that would help West Bengal optimize its international linkages.

Some of the key action items in this regard are:

- Become a champion for the BBIN Motor Vehicles Agreement (MVA) that would allow seamless movement of trucks across borders, and also allow trucks from West Bengal to directly travel to North East India via Bangladesh. This would optimize cross-border road connectivity. Also champion the BIMSTEC MVA that would lead to seamless connectivity with SE Asia.
- Help promote the idea of inland border clearances in the BBIN and BIMSTEC MVAs. This would mean customs clearances would not take place at borders, but in inland location instead. This would helping de-congest borders as trucks will not have to stop at the borders for any processing. This can be done through strong representation in the National Board of Trade and National Trade Facilitation Council.
- Become a strong voice for BIMSTEC Coastal Shipping agreement. Set up an annual conclave in partnership with logistics and shipping companies to explore running short-sea shipping pilots between Bay of Bengal ports, with Kolkata acting as the hub port for such activities. The demonstration effect would lead to development of regular services and greater economic linkages.
- Set up a joint taskforce with Bangladesh, supported by the central government to help promote inland waterway-based logistics solutions to optimize benefits of the protocol routes.
- Host an annual BIMSTEC festival in Kolkata, with help of the central government, and push for such trade and logistics reform agenda among the member countries through dialogues (Track 1.5 and 2 diplomacy including para-diplomacy).
- Develop the concept of a Highly Facilitated Trade Corridor (HFTC) that connects Kolkata to Northeast via Bangladesh, and Kolkata to the Southeast Asian trade hub of Singapore. Such a corridor would result in seamless movement of goods, efficient cargo management, and customs and other clearances in

advance of goods arriving at the port/airport. This would result in maximum efficiency and least cost. The state government can make this a prestige project with outreach to Bangladesh and Singapore governments, and with support of all central agencies in India.

Conclusion

The global economy today is a sum-total of integrated value chains. These value chains underpin global production and consumption and determine the role any country, region, or state has to play within the global economy. Understanding the connectivity needs for a state and implementing a strategy for its implementation is crucial to the economic future of a state and its inhabitants. Every different supply chain that feed into these value-chains have specific needs. Some depend on rail, some on road and some must have effective air-connectivity.

An effective connectivity and logistics strategy is bottom-up. It builds on existing infrastructure incrementally and puts in place conditions that will allow different types of logistics solutions to operate on this infrastructure. From a state's perspective, this means working proactively with the centre and filling in gaps where central projects do not address the state's needs. It also means getting its policy and regulatory architecture right.

Last but not the least is to ensure that logistics supply providers are provided an enabling and friendly business environment. This document touches upon all of these facets in the context of West Bengal. It tries to build a bridge between a pure macro over-view to a set of more nuanced specific recommendations and action points.

But the most important aspect of connectivity are the people, and how they benefit from it. This document tries to illustrate how connectivity and logistics can positively touch the lives of Bengal's people and the scope of economic opportunities, ease of living, and development it can bring.

This document is the beginning of a journey of ideation and policy-think towards a future where West Bengal,

lying astride some of most important trade routes nationally, regionally, and globally, reclaims the honourable distinction of being a major economic force, and an engine of growth for our motherland - Bharat.



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