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## Benefits of BBIN Motor Vehicle Agreement to the Northeast region: A supply chain analysis

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**BENEFITS OF BBIN MOTOR  
VEHICLE AGREEMENT TO  
THE NORTHEAST REGION:  
A SUPPLY CHAIN ANALYSIS**

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419

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PAPER

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## List of Abbreviations

AAGR	Average Annual Growth Rate
APEDA	Agricultural and Processed Food Export Development Authority
API	Active Pharmaceutical Ingredients
BBIN	Bangladesh, Bhutan, India, Nepal
BL	Bill of Landing
CHAs	Custom House Agents
CONCOR	Container Corporation of India Ltd
DEH	Districts as Export Hubs
FBCCI	Federation of Bangladesh Chambers of Commerce and Industry
FPO	Farmer Producer Organisation
FTA	Foreign Trade Agreement
GDP	Gross Domestic Product
GST	Goods and Services Tax
IBP	Indo-Bangladesh Protocol
ICD	Inland Container Depot
ICP	Integrated Check Post
IWT	Inland Water Transit
JNPT	Jawaharlal Nehru Port Trust
LCS	Land Custom Station
LDC	Least Developed Country
MoU	Memorandum of Understanding
MVA	Motor Vehicle Agreement
NEIDS	North East Industrial Development Scheme
NER	Northeast Region
NERAMAC	North Eastern Regional Agricultural Marketing Corporation
NW	National Waterway
ODOP	One District One Product
PLI	Production Linked Incentive Scheme
RCA	Revealed Comparative Advantage
SB	Shipping Bill
SMEs	Small & Medium Enterprises
TIDC	Tripura Industrial Development Corporation
UAE	United Arab Emirates
UK	United Kingdom
US\$	United States Dollar
USA	United States of America

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## Abstract

This paper examines how the BBIN MVA can help in improving the export competitiveness of the North eastern region. Using secondary data and an in-depth primary survey a detailed examination of supply chain of two key items – pharmaceuticals and fresh and processed pineapple is undertaken to understand the impediments in the inbound and outbound supply chains. The efficiency of current supply chains is measured in terms of time and cost incurred in various stages of the supply chains and indicative costs on alternative routes are obtained to assess how the sectors could benefit and improve their export competitiveness.

The paper suggests measures the NER states and the Centre can adopt to improve the export competitiveness of the region. Some of the suggestions are related to improving recording of export data, improving functionality of inland container depots in the Northeast, improving the logistic ecosystem, creating backward linkages, addressing trade policy distortions and adopting capacity building measures to improve the quality of the workforce in the logistic sector.

**Keywords:** BBIN MVA, Northeast Region (NER), exports, supply chain, pharmaceuticals, pineapple

**JEL classification:** F02, F13, L5

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# Benefits of BBIN Motor Vehicle Agreement to the Northeast Region: A Supply Chain Analysis

Nisha Taneja, Biswajit Nag, Sanjana Joshi, Rashmi Rastogi and Sanya Dua

The Bangladesh, Bhutan, India, Nepal (BBIN) Motor Vehicle Agreement (MVA) lies at the cornerstone of India's Act East Policy and is a major step towards integrating the entire BBIN region and also provides an opportunity to integrate the Northeast Region (NER) with India and neighbouring countries.

The Motor Vehicles Agreement for the Regulation of Passenger, Personal and Cargo Vehicular Traffic (MVA) between Bangladesh, Bhutan, India, and Nepal (drafted on the lines of the SAARC MVA) was signed in June 2015. Due to domestic concerns, Bhutan in 2017 decided to opt-out of the MVA for the time-being but has offered its consent to the other three to go ahead. In February 2020 an enabling MOU to be signed by India, Bangladesh and Nepal for implementation of the BBIN MVA by the three countries, pending ratification of the MVA by Bhutan was finalised. The BBIN-MVA saw progress on 7-8 March 2022 when the stakeholder countries met in New Delhi to finalize a Memorandum of Understanding (MoU) on regulating seamless passenger and cargo vehicular traffic between the four countries.<sup>1</sup>

The BBIN MVA awaits finalisation of protocols for its operationalisation. Once operational it will enable "through" transport for seamless cross-border trade among the member countries. In order to help with inland cargo clearance, the agreement allows a customs-sealed vehicle or container to transit up to a member country's dry port or an inland customs station for clearances. By eliminating the time-consuming process of trans-shipment of goods, the agreement aims to reduce border congestion so that goods can be traded easily with neighbouring countries.

## 1. About the Study

The objective of this paper is to examine how the BBIN MVA can benefit the North eastern region especially

in terms of improving the export competitiveness of the region. The paper maps the possible BBIN routes through the NER, highlights the possible benefits of the MVA and examines how export competitiveness of products in the NER can be improved. The paper examines key economic indicators of the NER identifies thrust areas of NER states and analyses export trends to understand the environment within which supply chains operate. A detailed examination of supply chain of two key items – pharmaceuticals and fresh and processed pineapple is undertaken to understand the impediments in the inbound and outbound supply chains. The efficiency of current supply chains is measured in terms of time and cost incurred in various stages of the supply chains and indicative costs on alternative routes are obtained to assess how the sectors could benefit and improve their export competitiveness. The paper suggests measures the NER states and the Centre can adopt to improve the export competitiveness of the region.

## 2. Approach and Methodology

Export competitiveness is generally a supply side concept to understand the capability of an exportable sector to sustain or increase its international market share. Competitiveness has been calculated through traditional measures such as Revealed Comparative Advantage (RCA)<sup>2</sup>, trade intensity index<sup>3</sup>, export concentration<sup>4</sup> etc. (UNCTADStat, n.d.; WITS, n.d.).

In recent times, more holistic approaches have been considered such as extensive and intensive margins to understand the ability of the country to diversify products and enter new markets along with increasing share in existing markets<sup>5</sup>. Further, other indicators used to better understand export competitiveness include 'unit price', transaction costs, and trade barriers. The overall policy environment in terms of export incentives, or advantages through free trade agreements, have also been considered to assess export competitiveness in more qualitative

1 Ministry of External Affairs, GoI (2022)

2 Country A is said to have a revealed comparative advantage in a given product  $i$  when its ratio of exports of product  $i$  to its total exports of all goods (products) exceeds the same ratio for the world as a whole.

3 The trade intensity index is used to determine whether the value of trade between two countries is greater or smaller than would be expected on the basis of their importance in world trade.

4 Herfindahl concentration index reflects degree of diversification in country's export pattern.

5 Hummels & Klenow approach of extensive and intensive margin looks for products and market diversification. This is measured comparing the export pattern in two time period.



terms. In regions that suffer from poor connectivity, transport costs in particular have been found to be an important factor in determining the export competitiveness of the region due to savings in transit time and cost of transportation. The reduction in transportation costs due to improved transport connectivity and infrastructure increases the demand for domestic goods in foreign markets (Ding et al., 2022). For instance, the elasticity of export growth with respect to savings in time and cost is 60% in the intraregional trade in South Asia and 30% in South Asia's trade with the rest of the world (Chaudhury et al., 2015). Similarly, an improvement in transport connectivity by rail and road between three Central Asian countries namely Kazakhstan, the Kyrgyz Republic, and Tajikistan has a positive and significant impact on trade (9.15% increase in exports and 5.12% increases in imports) within the region and with major trading partners (Karymshakov and Sulaimanova, 2020).

Export competitiveness is generally measured at the country level. In this study, possibility of higher exports once BBIN route is operational is studied from the sub-national (North East Region) perspective. Hence, the existing methodology used by scholars is not suitable. The study has taken a more nuanced approach considering, state/district level data, governments' policy towards promoting production and exports (Appendix 1), and the implications of better transportation and connectivity that is likely to occur with the BBIN MVA. Both quantitative and qualitative information have been used to assess existing (as-is) situation and potential (to-be) situation.

Two key products pharmaceutical (from Assam) and Fresh and Processed pineapple (from Tripura) have been identified for an in-depth study (Appendix 1). The main routes expected to be operational under BBIN MVA are likely to pass directly through the border points in these two states. The emphasis on choosing manufactured items for our study is that there are no studies to our knowledge that have examined manufacturing supply chains. Given that machinery required for most manufacturing items is not available in the north east nor is the raw material, high transport costs are likely to have a huge impact on the export competitiveness of these products. For agriculture items most studies have examined supply chains related to agriculture products like kiwi, fresh spices, ginger, bamboo, lemon, pineapple, mandarin/citrus, turmeric, passion fruit, kiwi, large cardamom (Kathuria and Mathur, 2016; CUTS, 2019; NIAM, 2018; SFAC, n.d.). However, these studies do not

examine their export competitiveness even though agriculture accounts for a major part of the GDP in the NER states. A rigorous exercise using national and state/district wise production, and exports was undertaken and the thrust areas mentioned in state policies were taken into consideration for selection of the items for supply chain analysis (Appendix 1). This was further discussed with state government officials for validation.

The study uses a mixed method approach. It uses existing studies, secondary data and primary data for the analysis. For the supply chain analysis of pharmaceuticals and fresh and processed pineapple, a semi structured questionnaire with open ended questions was canvassed across different representatives of stakeholder groups to elicit quantitative and qualitative insights based on their opinions and experiences. Focus Group Discussions were also held to get a broader perspective which was followed by in-depth interviews with knowledgeable respondents who could provide further information relevant for the study. The goal was to develop an understanding of the eco-system and identify factors that hamper the export competitiveness of supply chains located in the northeast region.

Meetings were held with the Office of the Drug Controller of Assam based in Guwahati to understand the pharmaceutical industry in Assam. Discussions were also held with the officials from the Act East Department, Government of Assam, India, the Department of Industries and Commerce, Government of Assam, India, Assam State Transport Department. A Focus Group Discussion was held with the pharmaceutical companies located in Kamrup district which was facilitated by the Office of the Drug Controller. Follow up interviews with several of these firms were carried out to get more detailed information.

For fresh and processed pineapple, meetings were held with farmers, food processing firms, truckers' association and with several departments which included horticulture and soil conservation, Tripura Industrial Development Corporation (TIDC), North Eastern Regional Agricultural Marketing Corporation (NERAMAC), and Agricultural and Processed Food Export Development Authority (APEDA) (Ministry of Commerce & Industry, GoI, 2022a).

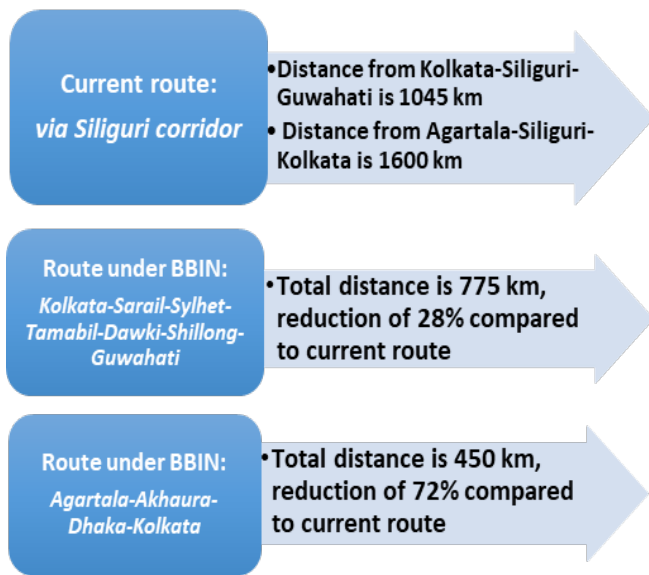
Expert opinions provided an idea about enabling policies, future directions, and current challenges. Interviews with the private sector representatives were initiated with an introduction to the BBIN MVA

as most of them were not aware of it. Respondents provided information on the organisation of supply chains, bottlenecks faced in sourcing inputs and raw materials and in accessing domestic and export markets. Open-ended questions helped in collecting information on indicative costs at every stage of the supply chain. Alternative route options under BBIN

were discussed with the respondents and their inputs on indicative costs incurred in these alternative supply chains created through the BBIN routes were also elicited. Respondents also provided information on possible solutions to the impediments faced by them.

### 3. BBIN MVA Routes through the Northeast Region

Figure 1: Road Routes through NER

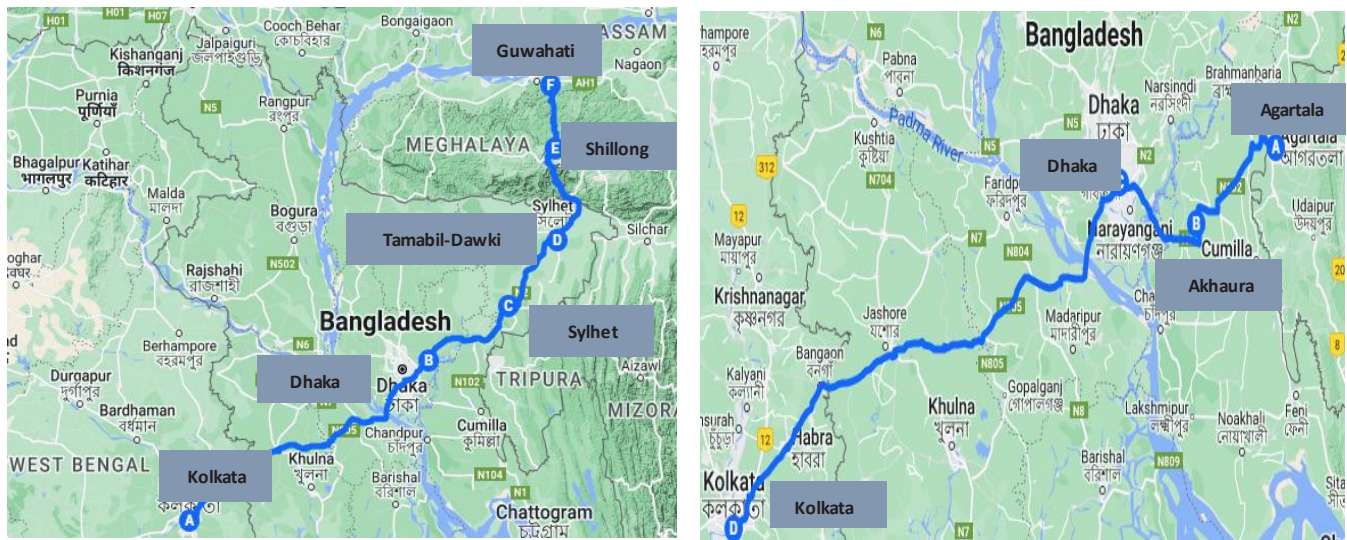


Two important road routes under the BBIN MVA for transportation of cargo through the NER are most likely to be,

- Kolkata-Dhaka-Sylhet-Tamabil-Dawki-Shillong-Guwahati,
- Agartala-Akhaura-Dhaka-Kolkata.

At present, the route for movement of domestic cargo between northeast and rest of India and bilateral trade between India and neighbouring countries (Bangladesh, Nepal & Bhutan) is only through the Siliguri route. Under BBIN MVA, on the first route, the distance is 775 km which is reduced by 28% and on the second route, the distance is 450 km with a reduction of 72%.

Figure 2: Two Important Routes under BBIN MVA through the NER



Source: Mapped by ICRIER

India and Bangladesh have an Inland Water Transit (IWT) and trade protocol which specifies two routes through the NER,

- National Waterway (NW)-2 on Brahmaputra River - Dhubri-Neamati-Dibrugarh-Sadiya and
- National Waterway (NW)-16 on Barak River -

Sridharpur-Bhangra.

For inter-country trade, four ports have been designated in each country, Haldia, Kolkata, Pandu and Karimganj in India and Narayanganj, Khulna, Mongla and Sirajganj in Bangladesh. The first one has a total of 12 terminals that connect Pandu in

Guwahati with Kolkata port and the second one connects Silchar, Karimganj and Badarpur in Assam

with Haldia and Kolkata ports through Indo-Bangladesh Protocol (IBP) Route.<sup>6</sup>

**Figure 3: Inland Water Transit & Indo-Bangladesh Protocol Map**



Source: Press Information Bureau

#### 4. Benefits of the BBIN MVA

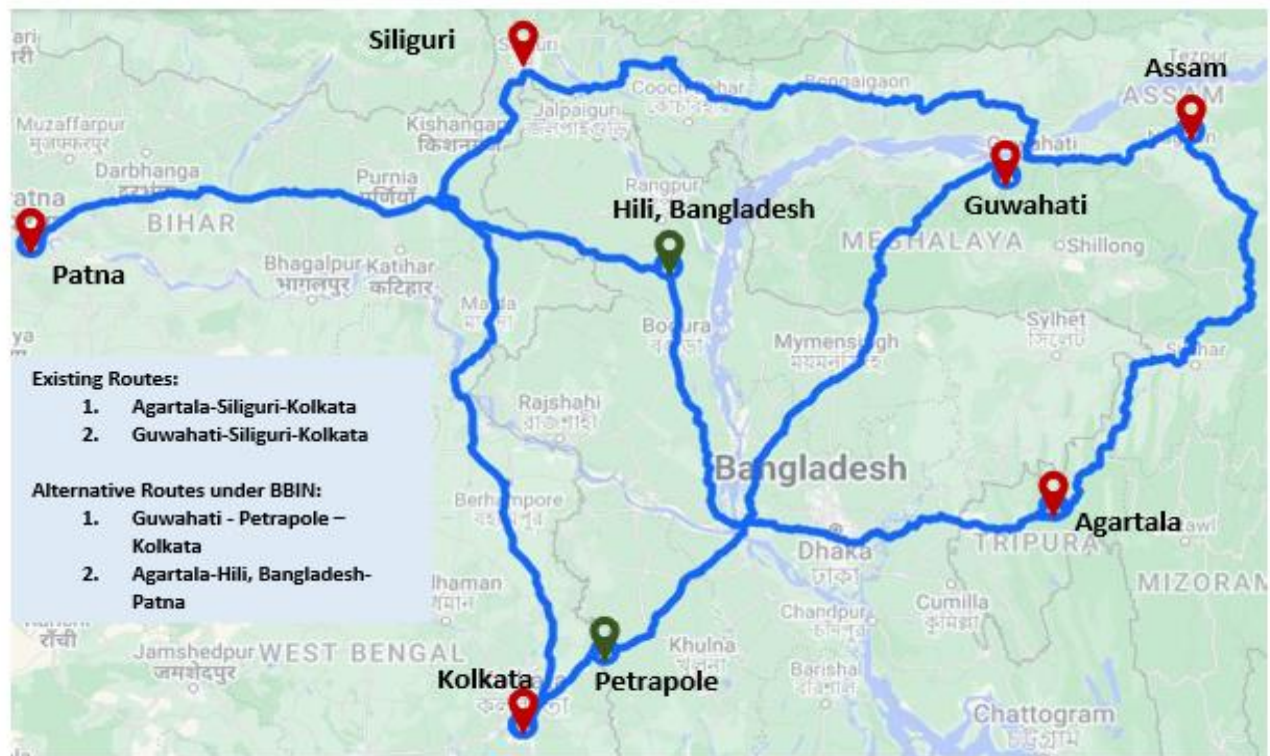
India's trade with BBIN countries is expected to increase by 13% through the BBIN MVA agreement (AT Kearney and FICCI, 2014). By allowing cargo vehicles to cross borders, the need for changing vehicles would be eliminated, thereby reducing the delays in trans-shipment of goods into another vehicle at the borders.

Overall, the BBIN MVA promises to provide increased market access along with creation of new markets; facilitation of transit by helping develop regional transit and logistics hubs; creation of regional supply chains across the sub-region; increased trade volume between member nations; creation of backward and forward linkages; transforming the corridor into specialized transit and manufacturing hubs through infrastructural development- thus transforming this transport corridor to a developmental corridor; reducing costs of connectivity between industrial clusters in eastern, southern, and western India, and the North-Eastern States; synchronization of BBIN MVA with other regional efforts such as Asian Highway etc. and thereby expanding trade linkages and opportunities; potential integration with different FTAs having focus on trade facilitation.

The seamless transportation will help to eliminate the risk of rent-seeking activities and exposure to damage and pilferage in the process of transshipment which adds to cargo handling charges. The potential gains of the BBIN MVA to the NER states would be in terms of savings in distance, transport time, cost and reliability of transit (AT Kearney and FICCI, 2014; Dappe & Kunaka, 2021; CUTS, 2019). The distance and time would significantly reduce inbound goods such as raw materials and machinery from Mainland India to the northeast region. For instance, the distance between Agartala and Kolkata port via the existing route 'Siliguri' is 1600 km. The same distance can be reduced to 450 Km by using Bangladesh as a connecting point and would lead to time-saving by 60% and save transport cost by 14%-18% (AT Kearney and FICCI, 2014; Dappe & Kunaka, 2021; CUTS, 2019). Similarly, on average the existing route between Guwahati and Kolkata via Siliguri takes 164 hours and costs Rs. 3129 per tonne. Using Petrapole-Benapole land port in Bangladesh as a linking point, the time and cost would be reduced by 18% and 21%, respectively (World Bank, 2021). Similarly, the route from Agartala to Patna via Siliguri takes 237 hours and costs Rs. 4614 per tonne. However, the same route through Hili would reduce travel time by 45% and cost by 31% (World Bank, 2021).

6 Inland Waterways Authority of India. (n.d.)

Figure 4: Possible Alternative Routes under BBIN MV



Source: ICRIER

The reduction in transportation costs makes the goods competitive in the market. Price reduction due to saving in transportation costs results in more demand for products and an increase in income. Using the Spatial General Equilibrium model, Dappe & Kunaka, 2021 has computed the impact of BBIN MVA on income in India and Bangladesh under two scenarios- inefficient MVA (with large waiting time approx. 55 hours at the border) and efficient MVA (with less waiting time approx. 10 hours at the border). An inefficient scenario allows for cross-border entry of trucks in India and Bangladesh with long waiting times at the border, while an efficient scenario allows for cross-border entry of trucks along with minimal waiting time at the border. In an inefficient scenario, income in India will increase by 1.4% and by 3.5% in Bangladesh, and in an efficient scenario, income will increase by 5.6% and 11.3% in India and Bangladesh, respectively. The study also finds an increase in wage dispersion across states- North-Eastern states near to Bangladesh border tend to gain more in terms of wages as compared with states far away from the border due to the migration of people from distant places to border states in employment and business opportunities.

The BBIN MVA is expected to enhance the export competitiveness of NER products, as it would be cost-effective to transport the finished products to both the domestic and export markets. It has been

projected that NER will contribute up to 2% of India's trade with the other BBIN nations. This would benefit manufacturing units in NER as sourcing of inputs would become cheaper, it would lead to welfare gains for the consumers in NER, and facilitate the development of Regional Value Chains through the northeast region. There is a huge potential to create value chains in several sectors including plastics, cement, petroleum, textiles (silk, cotton, and handloom), and food processing (AT Kearney and FICCI, 2014). This can positively impact development issues, such as, poverty alleviation, employment generation, income growth, opportunities for SMEs and women.

The agreement will reduce informal intra-SAARC trade, increase market access by landlocked LDCs such as Bhutan and Nepal, increase the trade in services such as logistics, banking, and finance due to movement of passengers across the borders, and also increase the share of tourism sector in the region's GDP (Pal, 2016; Kathuria and Mathur, 2020; and AT Kearny and FICCI, 2014). With BBIN MVA, there is also potential to establish a link between travel and tourism which can boost NER GVA by 2% and create more than 15 lakh additional jobs (AT Kearney and FICCI, 2014).

It may be iterated that the BBIN MVA alone will not help in its development and integration with the

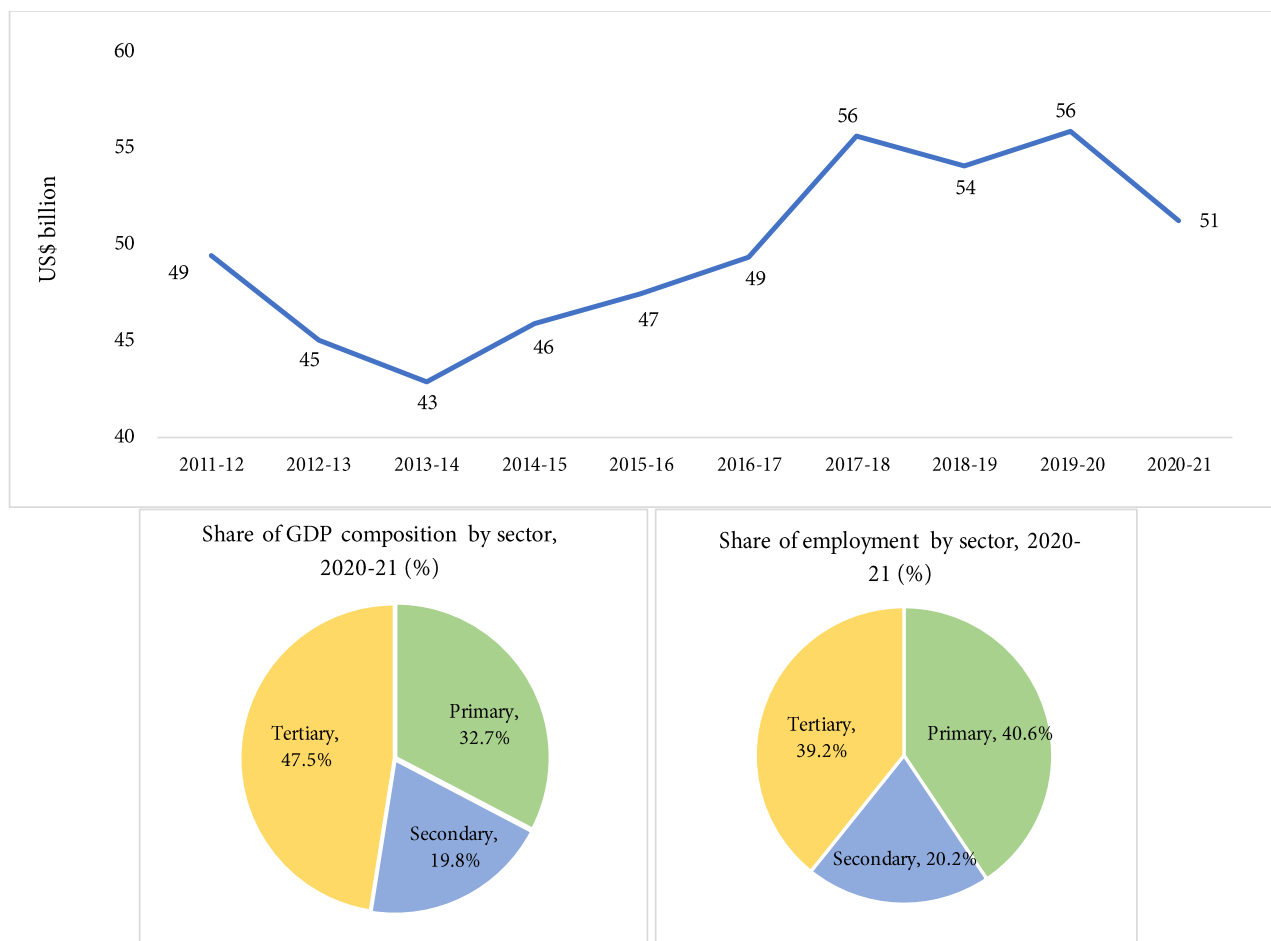
hinterland, neighbouring countries, and the rest of the world. It may be iterated that BBIN MVA is only focusing on improving connectivity and does not address the challenges that supply chains of different products would face in the region.

## 5. Economic Development, Thrust Areas, Incentives and Exports from NER

### 5.1 Economic Development and Thrust Areas

The Northeast Region (NER) witnessed an Average Annual Growth Rate (AAGR) of 5.5%. However, NER as a whole account for only 3% of India's GDP. The growth rate in the NER falls significantly behind the fast-growing states like Gujarat and Karnataka which achieved growth rates of 8.2% and 7.4% respectively.

Figure 5: NER Combined GDP over 10 years, 2011-12 to 2020-21



Source: Ministry of Statistics and Programme Implementation (MoSPI); Periodic Labour Force Survey, 2020-21

The primary sector accounted for 32.7% of the combined GDP of the north-eastern region while secondary sector accounted for 19.8% and tertiary accounted for the remaining 47.5% in 2020-21. The economy is largely agrarian, with around 40.6% per cent of the population engaged in agriculture for livelihood in 2020-21.

In the agriculture sector, forestry, logging and industrial wood accounts for 27%, fishing and aquaculture for 19% and fruits and vegetables

accounts for 14% of the total agriculture production in the Northeast region in 2018-19.<sup>7</sup>

In the manufacturing sector, refined petroleum is the largest industry accounting for 34% of the manufacturing output in the Northeast region in 2018-19. This is followed by pharmaceuticals and food products accounting for 18% and 12% respectively. Among all tertiary sector activities, trade, repair, & hospitality; and public administration are the most dominant service sectors in the northeast region

<sup>7</sup> Agriculture Statistics, Download reports. (n.d.). Ministry of Statistics and Program Implementation (MOSPI), GoI. [https://www.mospi.gov.in/download-reports?main\\_cat=ODUx&cat=All&sub\\_category=All](https://www.mospi.gov.in/download-reports?main_cat=ODUx&cat=All&sub_category=All)

accounting for 27% and 21% share respectively in total service sector activity in NER.<sup>8</sup>

In the context of our study, the pharmaceuticals sector is important in NER as it also accounts for 6% of India's production of pharmaceuticals and is a key export item for India. In 2022-23, pharmaceutical exports accounted for 5.5% of India's total exports. In recent years, there has been a marked increase in the establishment of such units in the NER states, especially Assam, Within NER, Sikkim accounted for 88% of the pharmaceutical output whereas Assam accounted for 12% (Appendix 1). Sikkim has a distinct advantage over NER as it is better connected with the Indian hinterland. One of the major routes (Kolkata-Dhaka-Sylhet-Tamabil-Dawki-Shillong-Guwahati) is likely to be operational under BBIN connects Kolkata with Guwahati through Petrapole/Benapole crossing and Dawki/Tamabil crossing. This route may emerge as an alternative to Sikkim and is likely to have a direct impact on the industries located in Assam.

Pineapple is an important agricultural item produced in the entire northeast region except in Sikkim. The region accounts for 49% of the total pineapple produced in India. Within the northeast, Assam accounted for 44%, Nagaland 14%, Tripura 11%,

Manipur 11%, Meghalaya 10%, Arunachal Pradesh 7%, and Mizoram 2% (Appendix 1). Despite the importance of this item, there are very few processing plants in the region. One possible BBIN route is likely to connect Agartala through Dhaka to Kolkata and the state of Tripura is likely to have immediate gains from this route, especially for agricultural products.

As part of their development strategy, the North Eastern states have specified their thrust areas related to agriculture, manufacturing, mining and service activities based on the potential they hold. All the northeast states lay down agriculture & horticulture, food processing, handloom, and tourism and wellness as thrust areas. Other thrust areas include bamboo, animal husbandry, sericulture, forestry, tea, fishery, pharmaceuticals, minerals, information technology and higher education.

These identified thrust areas are well aligned with the government's recent One District One Product (ODOP) and Districts as Export Hubs (DEH) initiative. The ODOP-DEH initiative aims to identify locally produced goods that have export potential in order to transform each district of the country into a manufacturing and export hub. The ODOP has been merged with the DEH initiative (Ministry of Commerce & Industry, GoI, 2022b).

**Table 1: State-wise Thrust Areas in the Northeast**

States/Sectors	Assam	Manipur	Mizoram	Nagaland	Meghalaya	Arunachal Pradesh	Tripura	Sikkim
Agri/Horticulture								
Food Processing								
Handicraft								
Tourism								
Bamboo								
Animal Husbandry								
Sericulture								
Forestry								
Tea								
Fishery								
Pharma/Bio-med.								
Minerals								
Information Technology								
Higher Education								
Power								
Rubber								
Oil and Gas								

Source: Respective States' Policy Documents: Arunachal Pradesh State & Industrial Policy, 2020; Assam Industrial & Investment Policy, 2019; New Industrial Policy of Manipur, 2002; Meghalaya Industrial & Investment Promotion Scheme, 2016; Industrial Policy of Mizoram, 2021; Industrial Policy of Nagaland, 2000; Department of Commerce & Industries of Sikkim, Department of Industries & Commerce, Tripura

8 National Accounts, Ministry of Statistics and Program Implementation (MOSPI), GoI. <https://www.mospi.gov.in/data>

NER being resource rich, all of its states have the capacity to produce a variety of fruits, vegetables, bamboo, silk, and spices. These products are identified under the DEH & ODOP initiative. Mineral resources like limestone, cement, and boulders, as well as traditional jewellery, handloom arts and crafts are other goods that have been recognised.

It may be noted that pharmaceuticals feature as a key product from Kamrup district in Assam under the One District One Product (ODOP) District Export Hub initiative<sup>9</sup>. Similarly processed pineapple has been identified from the districts of Gombi, Dhalai, and Unnakoti in Tripura under ODOP-DEH program.

## 5.2 Incentives for North East Region

Incentives are provided at the Centre and State level. The Central Government provides incentives through the North East Industrial Development Scheme (NEIDS) e.g., GST reimbursement and incentive on working capital<sup>10</sup>. PM-DevINE (2022-23 to 2025-26) is another Central Government Scheme which has an outlay of Rs. 6,600 crores. The Ministry of DoNER will implement it through North Eastern Council or Central Ministries. The scheme's objectives include funding infrastructure, supporting social projects, enabling better youth and women livelihoods, and

addressing development gaps. It aims to generate employment and ensure project sustainability.<sup>11</sup>

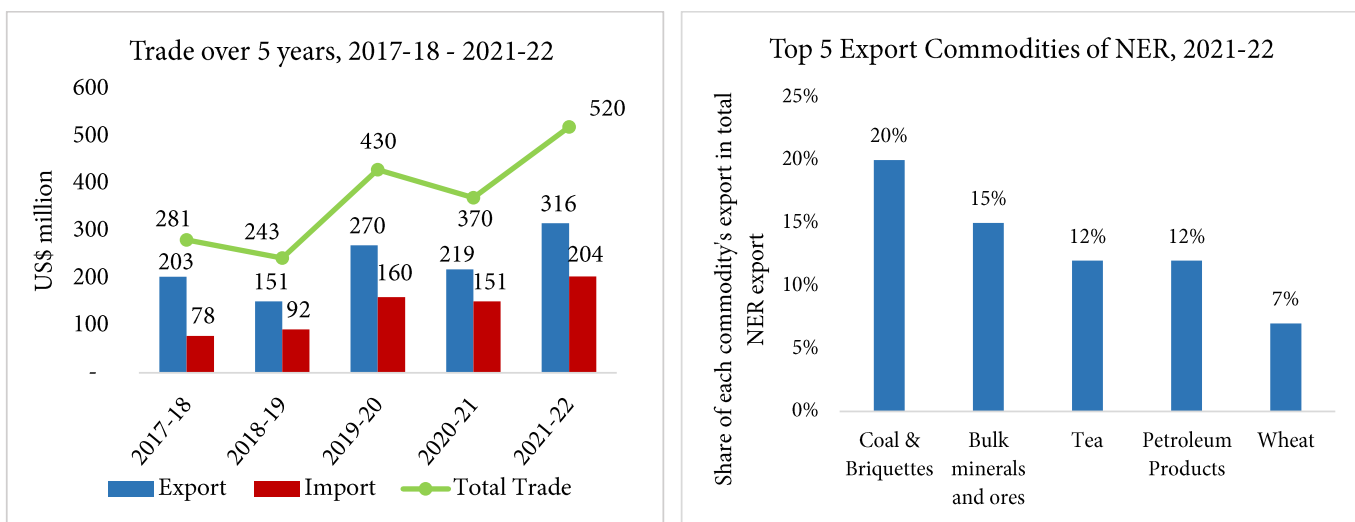
At the State level some of the key incentives include reimbursement of State GST, power subsidy, stamp duty reimbursement, and subsidy for quality certification.

A key incentive offered to manufacturing units is the Production Linked Incentive (PLI) scheme which allows manufacturing units to avail of 4% to 6% incentive on incremental sales on the base year. Processed foods, pharmaceuticals and Active Pharmaceutical Ingredients- a key raw material for pharmaceuticals) fall under this scheme. So far to our knowledge no firm in the northeast in these sectors has availed of the PLI incentive.

## 5.3 Exports from the Northeast Region

Total trade of the northeast region increased from US\$281 million in 2017-18 to US\$520 million in 2021-22. Even though total trade has been fluctuating past five years, the region has had a trade surplus throughout these years. Coal & Briquettes, Bulk Minerals and ores, Tea, Petroleum Products and Wheat were the top 5 commodities exported by the NER, accounting for 66% share in total NER exports in 2021-22.

Figure 6: Trade Trend of Northeast Region



Source: DGCI&S Port-wise Data

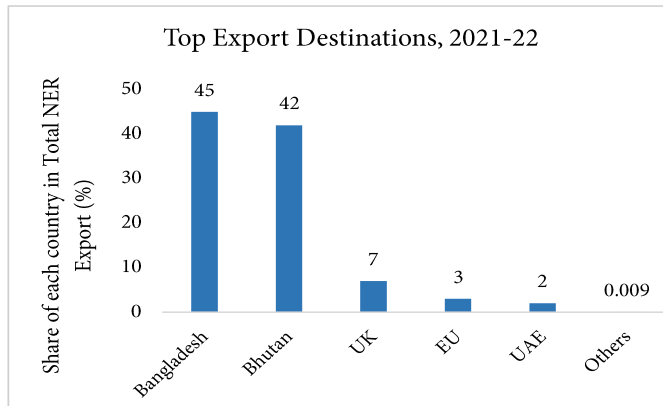
9 Ministry of Commerce & Industry. (2022b). One District One Product (ODOP) initiative operationally merged with 'Districts as Export Hub (DEH)' initiative. Press Information Bureau, Government of India. <https://pib.gov.in/PressReleasePage.aspx?PRID=1881486>

10 "The North East Industrial Development Scheme (NEIDS), 2017, implemented by the Department of Promotion of Industry and Internal Trade (DPIIT) covers manufacturing and service sectors. The scheme provides incentives to eligible industrial units including Central Capital Investment Incentive for Access to Credit; Central Interest Incentive; Central Comprehensive Insurance Incentive; Income Tax Reimbursement; Goods & Services Tax Reimbursement of Central Share of Central Goods & Services Tax and Integrated Goods & Services Tax; Employment Incentive; and Transport Incentive." (Press Information Bureau, Ministry of Development of North East Region, 2023, Retrieved from <https://pib.gov.in/PressReleasePage.aspx?PRID=1911211>).

11 Press Information Bureau. (2022). Cabinet approves new Scheme "Prime Minister's Development Initiative for North East Region (PM-DevINE)" for the remaining four years of the 15th Finance Commission from 2022-23 to 2025-26. Press Information Bureau, GoI. <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1867079>

The northeast region shares 98% of its borders with its neighbouring countries. Trade with neighbouring countries is facilitated through Land Customs Stations and Integrated Check Posts located all along the Northeastern borders. Being land locked, export

goods to the rest of the world are transported from the the northeast region to Kolkota- the nearest sea port which can be accessed only through the ‘Chicken’s neck’. From Kolkata the goods are shipped out to the rest of the world.



Source: DGCI&S Port-wise Data

The export products are also segmented between the neighbouring countries and markets located in the rest of the world. While a range of commodities are being exported to the neighbouring countries (mainly coal, coke & briquettes, bulk minerals, spices and petroleum products), only one item- tea is being exported to countries in Europe, Middle East and the USA.

All tea is exported to the rest of the world from only one Inland Container Depot located in Amingaon, Assam while a diversified range of items are exported from 24 functional Land Customs Stations (LCS) and Integrated Check Posts (ICPs) located on the borders of the Northeast region.

## 6. Supply Chain Analysis

### 6.1 Supply Chain for Pharmaceuticals (Assam)

There are 30 pharmaceutical units located in Assam.<sup>12</sup> Most of these are units of large companies which have their headquarters in the hinterland. Some of these companies include Ajanta pharmaceuticals, Sun Pharma laboratories and Eris Lifesciences Limited. Assam has Pharmaceutical Parks at Chaygaon and Kamrup, and Pharmaceutical Clusters at Kuruwa, Kamrup, Balipara, and Sontipur.

#### *Organisation of Pharmaceutical Supply Chain*

Pharmaceuticals industry located in the northeast has a complex supply chain. The inbound supply chain

A large proportion of exports from the northeast region is destined to the neighbouring countries. In 2021-22 only two neighbouring countries- Bangladesh and Bhutan accounted for 87% of exports from NER (up from 65% in 2017-18) while the remaining 13% was accounted for by a wide range of countries which included UK, UAE, Ireland, Poland, USA, Netherlands and others.

comprises of a one-time cost incurred in sourcing machinery to setup the plant and a recurring cost to source the raw material. The machinery is imported mostly from European countries through Kolkata port while the basic raw material for Pharmaceuticals – Active Pharmaceutical Ingredient (API) is sourced largely from China through ports in Gujarat or Maharashtra. The Pharmaceutical industry in the northeast is completely reliant on the Indian hinterland and other countries to set up manufacturing facilities. There are no firms producing APIs in the northeast. Packaging material, another input required for the finished product is also sourced from the hinterland. The finished pharmaceutical products manufactured in the northeast are then exported to the rest of the world from the Northeast. The consignments are sent in containerised trucks to JNPT, Mumbai from where they are shipped to the final destinations mainly in the USA and Europe. Due to unavailability of containerised trucks in the Northeast region, empty trucks have to be moved from Kolkata to the factories in Assam where they are loaded and then sent to JNPT for onward movement.

The organisation of the inbound and outbound supply chain for pharmaceuticals indicates that additional transaction costs are incurred as all goods are transported through Chicken’s neck through Siliguri. Taking an example of a typical large firm located near Guwahati in Kamrup district of Assam, the current costs incurred for the inbound and outbound supply chains were mapped and impediments identified at every leg of the supply chain. These additional costs are

<sup>12</sup> Information received from Drug Controller, Licensing and Controlling Authority and Government of Assam. (2023). Allopathic manufacturing units. Commissionerate of Food & Drugs Administration, Government of Assam, India. Retrieved from <https://fda.assam.gov.in/frontimpotentdata/allopathic-manufacturing-units>.



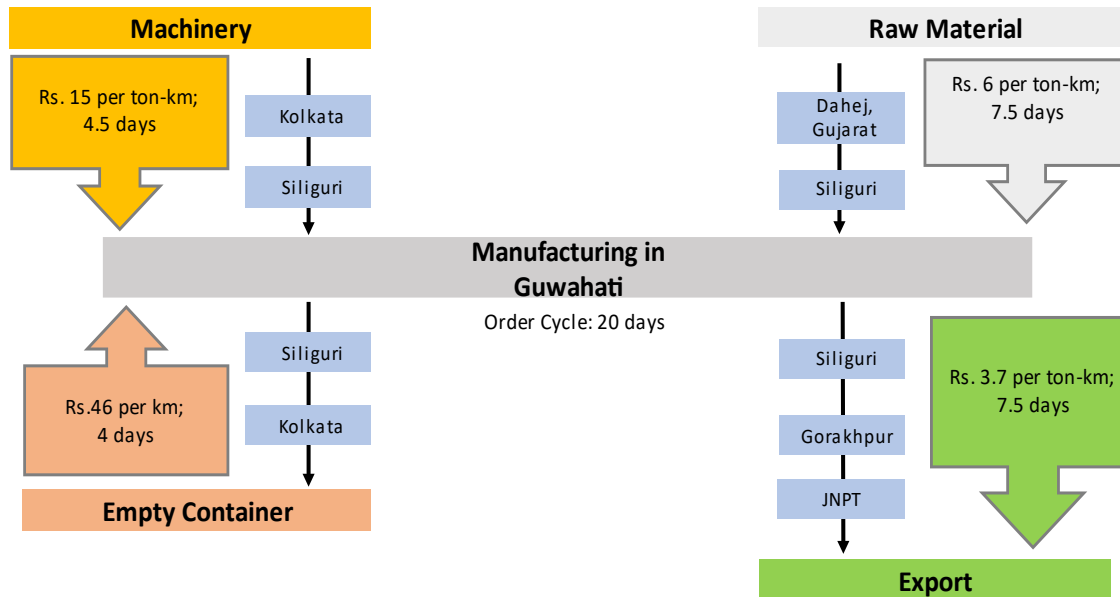
incurred at four levels of the inbound and outbound supply chains:

- Sourcing machinery - a one-time cost (from Kolkata to Guwahati)
- Sourcing raw materials - a recurring cost (from

Dahej, Gujarat to Guwahati)

- Procuring empty containers for preparing export consignments (from Kolkata to Guwahati)
- Exporting goods through JNPT (from Guwahati to Mumbai)

**Figure 7: Current supply chain for pharmaceutical manufacturing unit**



Source: ICRIER Survey

**Table 2: Average Time Release for Sea Ports<sup>13</sup>**

Port	Average Export Release Time	Average Import Release Time
JNPT	8 days	4 days
Kolkata	8 days	6 days
Chittagong	5 days	11 days

Source: National Time Release Study (2022), CBIC, Government of India; Time Release Study, National Board of Revenue (2022), Government of Bangladesh

### Impediments in Supply Chain

Most stakeholders were aware of the differences in efficiency level of the different sea ports that the NER could have access to.

There are a number of ongoing reforms for all sea ports, however the present average release time is high and there are differences in their efficiency level.

Key impediments identified in the current inbound and outbound supply chain included:

- While machinery is imported from Kolkata port by the manufacturing unit in Guwahati, this port is

inefficient as compared to JNPT port in Mumbai. The average import release time at Kolkata port is 6 days, whereas at JNPT it is 4 days.

- For imports of raw material, JNPT or Dahej is preferred to Kolkata port as these ports are more efficient than Kolkata port even though the distance between Guwahati and Dahej/JNPT is much more than it is between Guwahati and Kolkata. Due to the time sensitive nature of the raw material required, predictability and speed are important considerations.
- To source empty containers for exporters, manufacturers have to rely on Kolkata port due to unavailability of empty containers in Guwahati. This

<sup>13</sup> Average time release for sea ports is used as a proxy for measuring efficiency level of the sea port.

adds considerably to transaction costs.

- Export consignments are mostly shipped out from JNPT rather than from Kolkata as the former is more efficient. Even though Amingaon ICD near Guwahati is very close to the pharmaceutical cluster in Kamrup district, it is not equipped to handle clearances of any item other than tea. There is no provision for the through Bill of Lading or Shipping Bill from Amingaon for any item other than tea, hence items being exported from the Northeast are shipped from Kolkata or JNPT, Mumbai. Thus, any export originating from the Northeast and destined for countries other than neighbouring bordering countries moves as domestic cargo from the northeast until it reaches the port of exit located in another state e.g., Kolkata port (West Bengal) or JNPT (Maharashtra). Hence the bill of lading<sup>14</sup> and the shipping bill<sup>15</sup> shows the origin of the export cargo from these states and not from the North east. Accordingly, the exports originating from the northeast get recorded in export data of the state from where the cargo is shipped for export.
- Manufacturers handle logistics within their own firms. Sourcing of empty containers, loading, unloading and making the cargo export ready is done at the manufacturing facility as there are no logistic operators or CHAs who could handle these activities in the NER.
- There are very few Custom House Agents (CHAs) present in Guwahati. These CHAs are familiar only with procedures related to tea and lack expertise in procedural and other requirements related to export

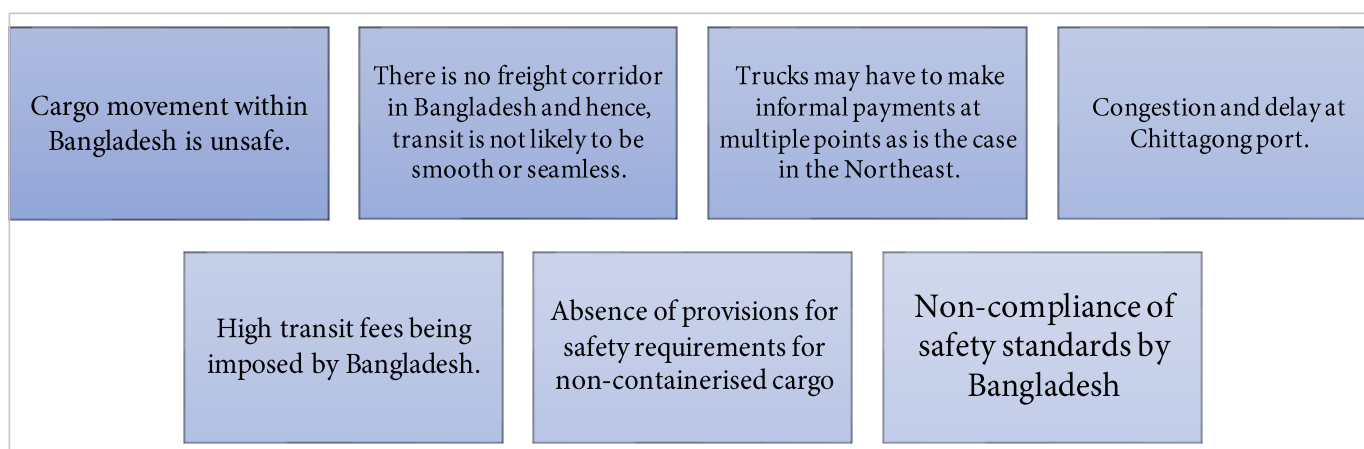
of other items.

- At present, the Amingaon ICD is functional for clearance of rail cargo but not road cargo. Most ICDs in the Indian hinterland clear both rail and road containerised cargo.
- There is only one rail track from Amingaon which is used by Indian Railways for moving goods trains, and passenger trains. The same track is also used by Container Corporation of India (CONCOR) for moving containerised cargo. Hence the train takes 2 days to reach Kolkata from Guwahati. Consultations with officials at CONCOR revealed that if there is a dedicated freight corridor on this route, the cargo would take only 10 hours to move from Amingaon to Kolkata.
- Stakeholder consultations also revealed that there was no institutional mechanism or designated agency that would allow manufacturers to raise their concerns regarding logistics.

### Alternative Supply Chains

While it is expected that the BBIN MVA will lead to a significant reduction in transaction costs, stakeholders have apprehensions about the benefits that are likely to flow from the BBIN MVA. While eliciting information on transaction costs from stakeholders the perception was that there were several reasons due to which BBIN MVA may not yield the expected benefits due to the following reasons:

**Figure 8: Domestic Bottlenecks in Bangladesh**



Source: ICRIER Survey

14 Bill of Lading (BL) is a document that is issued by the shipping company, to carry the consignment from port-of-receipt to port-of-discharge, and signed by the carrier. The bill of lading has details of the shipper, name of the port of loading, port of discharge and place of delivery, number of containers and packages, description of goods in terms of quantity and gross weight.

15 Shipping Bill (SB) is an export declaration presented to customs by the exporter before goods can be exported out of the country. The shipping bill contains the nature of goods exported, name of vessel, country of destination, the port at which the goods are to be discharged, exporter's address, importer's address, details of the packages, quantity and free on-board price and real value of goods.

Media reports (The Business Standard, 2023; The Daily Prothom Alo, 2022; New Age, 2020; Dhaka Tribune, 2020) in Bangladesh corroborate some of these perceptions (Figure 4). Reports noted the presence of extorting rackets on the highway. Chamber of commerce and trade bodies have made representations to the government on this issue. Rampant extortion has been identified on Dhaka-Tangail highway and also on Dhaka-Aricha Road. The Bangladesh High Court intervened in this matter and requested the Government to take necessary actions. Federation of Bangladesh Chambers of Commerce & Industries (FBCCI) identified this 'hidden toll' as one of the main

drivers for high transport cost in Bangladesh.

Stakeholders opined that the north eastern region could benefit from the BBIN MVA if these constraints are addressed.

Possible supply chain options for both inbound and outbound supply chains were mapped along with the time and costs incurred on these routes. Best options were then selected based on the information collected. The BBIN MVA will provide alternative options at all four levels on the inbound and outbound supply chains (Table 2 & Appendix 2.1).

**Table 3: Pharmaceutical Supply Chain in Assam**

Inbound & Outbound Transportation	Current Supply Chain	Alternative Supply Chain		
<i>Inbound for Machinery</i>	<b>Route: Road</b> <i>Kolkata-Siliguri-Guwahati</i> Cost: Rs. 15 per ton-km Time: 4.5 days Distance: 1045 km	<b>Route 1: Road</b> <i>Chittagong-Dhaka-Guwahati</i> Cost: Rs. 11 per ton-km (Cost reduction: 27%) Time: 3.5 days (Time reduction: 22%) Distance: 700 km (Distance reduction: 33%)	<b>Route 2: IWT</b> <i>Kolkata-Pandu-Guwahati</i> Cost: Rs. 1.23 per ton-km (Cost reduction: 92%) Time: 12 days (Time increased: 167%) Distance: 1425 km (Distance increased: 26%)	
<i>Inbound for Raw Materials</i>	<b>Route: Road</b> <i>Dahej (Gujarat)-Siliguri-Guwahati</i> Cost: Rs. 6 per ton-km Time: 7.5 days Distance: 2625 km	<b>Route: Road</b> <i>Chittagong-Dhaka-Guwahati</i> Cost: Rs. 3.6 per ton-km (Cost reduction: 40%) Time: 3.5 days (Time reduction: 53%) Distance: 700 km (Distance reduction: 73%)	<b>Route: Road</b> <i>Kolkata-Dhaka-Guwahati</i> Cost: Rs. 4.5 per ton-km (Cost reduction: 25%) Time: 4.5 days (Time reduction: 40%) Distance: 750 km (Distance reduction: 71%)	
<i>Inbound for Empty Trucks</i>	<b>Route: Road</b> <i>Kolkata-Siliguri-Guwahati</i> Cost: Rs.46 per km Time: 4 days Distance: 1045 km	<b>Route: Road</b> <i>Chittagong-Dhaka-Guwahati</i> Cost: Rs. 25 per km (Cost reduction: 45%) Time: 2 days (Time reduction: 50%) Distance: 700 km (Distance reduction: 33%)	<b>Route: Road</b> <i>Kolkata-Dhaka-Guwahati</i> Cost: Rs. 40 per km (Cost reduction: 13%) Time: 3 days (Time reduction: 25%) Distance: 750 km (Distance reduction: 28%)	
<i>Outbound for Exports</i>	<b>Route: Road</b> <i>Guwahati-Siliguri-Gorakhpur-JNPT</i> Cost: Rs. 3.7 per ton-km Time: 7.5 days Distance: 2900 km	<b>Route 1: Rail</b> <i>Amingaon ICD Rail Route</i> <i>-Guwahati-Kolkata</i> Cost: Rs. 1.65 per ton-km (Cost reduction: 55%) Time: 2 days (Time reduction: 73%) Distance: 1000 km (Distance reduction: 65%)	<b>Route 2: Road</b> <i>Amingaon ICD Road</i> <i>Route-Guwahati-Dhaka-Kolkata</i> Cost: Rs. 3 per ton-km (Cost reduction: 19%) Time: 4.5 days (Time reduction:40) Distance: 750 km (Distance reduction: 74%)	<b>Route 3: Road</b> <i>Amingaon ICD Road</i> <i>Route-Guwahati-Dhaka-Chittagong</i> Cost: Rs. 2.5 per ton-km (Cost reduction: 35%) Time: 3.5 days (Time reduction: 53%) Distance: 710 km (Distance reduction: 75%)

Source: ICRIER Survey

### ***Import of Machinery***

Currently machinery is being imported through Kolkata which is moved to Guwahati through Siliguri. There are two options for the import of machinery instead of importing it from Kolkata.

- (i) Kolkata to Pandu (near Guwahati) through the waterways route under India-Bangladesh Protocol (IBP) route
- (ii) Chittagong port to Guwahati on the BBIN road route

Even though the IBP waterways route is cheaper by 92% compared to the current route through Siliguri, it takes 167% more time. This route will not be preferred route because waterways is used largely for moving bulk cargo and not containerised cargo. Also, using waterways would mean loading and unloading at multiple points which may not be suitable for machinery cargo.

Moving cargo from Chittagong to Guwahati would be the preferred option as the cost reduction would be 27% and it would take 22% less time compared to the Kolkata- Guwahati route through Siliguri.

### ***Import of Raw Material***

Raw material (API) currently being imported into Guwahati from Gujarat through Siliguri can be sourced from Chittagong port or from Kolkata port through Dhaka under the BBIN MVA. Two alternative routes would be

- (i) Kolkata-Dhaka-Guwahati
- (ii) Chittagong-Dhaka-Guwahati

Compared to the existing costs incurred in importing raw material from Gujarat, costs incurred in terms of money and time are lower for imports from Chittagong than from Kolkata. The reduction in cost in sourcing from Chittagong is 40% while time saved is by 53% compared to the existing route while sourcing from Kolkata would imply a cost reduction of 25% and time saving by 40% compared to the route through Gujarat.

Given the time sensitive nature of the raw material sourcing through Kolkata would mean passing through two transit points (one each on the Assam-Bangladesh border and West Bengal-Bangladesh border) Correspondingly, a major advantage of using Chittagong port is that there would be only

one transit point through Dawki/Tamabil. However, import release time at Kolkata is 83% higher than at Chittagong port. The decision to use either route would finally depend on the prevailing efficiency of the ports at Kolkata and Chittagong and on the time taken at the border transit points once the BBIN route becomes operational.

### ***Sourcing empty containers***

Currently empty containers are being sourced from Kolkata. These containers could be sourced from Chittagong or from Kolkata through Dhaka under the BBIN MVA. Chittagong would be a preferred option as the cost reduction would be 45% compared to 13% cost reduction when sourcing from Kolkata under the BBIN route compared to the current route from Kolkata to Guwahati through Siliguri. The key factor accounting for this difference is that sourcing from Chittagong would entail crossing only one transit point whereas as sourcing from Kolkata would mean crossing two transit points through Dawki/Tamabil and Petrapole/Benapole.

### ***Exports***

There are three optional routes. While the route directly related to BBIN

- (i) Amingaon-Guwahati-Dhaka-Chittagong (ICD road route)
- (ii) Amingaon-Guwahati-Siliguri-Kolkata (ICD rail route)
- (iii) Amingaon-Guwahtai-Dhaka-Kolkata(ICD road route)

Once the BBIN MVA route becomes operational, export cargo can be shipped from Kolkata or from Chittagong. Under the BBIN route exports through Kolkata cost and time reduction would be would be 19% and 40% respectively compared to the existing route through Siliguri while for exports through Chittagong the reduction in cost and time would be 35% and 53% respectively. The key reason for higher costs of exporting through Kolkata is that the cargo has to move through two transit points where as Chittagong can be accessed through a single transit point at Dawki/Tamabil. Another likely reason for preference of Chittagong port over Kolkata for exports of finished items is that Chittagong port is 38% more efficient than Kolkata port in terms of time taken for release of export cargo.

Perhaps the largest reductions in cost and time can be

seen if Amingaon Rail ICD becomes operational for more export items. The preference for Amingaon Rail ICD was categorically expressed by stakeholders. The reduction in cost and time is the largest through this

route when compared to the BBIN routes, provided this route is made operational for other commodities in addition to tea.

#### KEY INSIGHTS FROM PHARMACEUTICAL SUPPLY CHAIN

- The Pharmaceuticals sector in the northeast is dependent on sourcing raw materials and machinery either from the Indian hinterland or from foreign markets. The key raw material API is not produced in the northeast region even though this sector can avail of the PLI scheme. In fact, even empty containers have to be sourced from Kolkata. Hence, better connectivity to sea ports and to the Indian hinterland is key to improving export competitiveness.
- Only Sikkim and Assam manufacture pharmaceuticals. Even though all North eastern states are entitled to similar incentives, Sikkim has a major advantage in terms of connectivity and therefore accounts for 88% of the pharmaceutical products in the Northeast.
- All export cargo from the Northeast region moves as domestic cargo until it reaches a port in the Indian hinterland. Hence these exports are recorded as originating from the state from where the cargo is being shipped. The shipping bill and the bill of lading mention the point of origin of cargo which is used for collecting trade data.
- While BBIN MVA will open up shorter routes for exports from Guwahati to Kolkata and Chittagong, there is only one transit point to access Chittagong while there are two transit points to access Kolkata. Similarly import cargo would move through only one transit point from Chittagong and two transit points from Kolkata. In balance, the combined effect of transit times and port efficiency will determine which route would be preferred.
- The already existing rail route from Amingaon ICD if made operational for all commodities would be the best option for exporters as this route is cheaper than the road routes. An added advantage would be that exports of these commodities would be recorded as originating from Amingaon as the shipping bill and bill of lading would record exports as originating from the point of origin at Amingaon.
- The CHAs lack requisite skills to handle exports of commodities other than tea. All logistic operations are handled by the manufacturing firms. Unless the requisite training is given to CHAs, Amingaon even if made operational for other commodities will remain under-utilized.

## 6.2 Supply Chain for Fresh and Processed Pineapple

### 6.2.1 Fresh Pineapple

Pineapple in the state of Tripura the state mainly grows two varieties of pineapple – Kew and Queen. The production of Queen pineapple accounts for only 10% and has a shelf life of only 3-4 days. This variety is used for table purposes and not for processing purposes. We therefore focus on the Kew variety which has a shelf life of 5-6 days.

Harvested pineapple is sold by farmers for Rs. 1 to Rs. 2 per piece; middlemen sell the produce at Rs. 10 to Rs. 15 per piece; and the retail price in Agartala is Rs. 30 to Rs. 35 per piece (Figure 7). The main reason for this low remuneration to farmers is the absence of a Mandi in Agartala. A Mandi, facilitates price discovery by auctioning the produce of the farmers

to the highest bidder. Due to the absence of a price discovery mechanism farmers are unable to demand their market price. The closest Mandi is located in Guwahati.

Post-harvest, the pineapples are heaped in open fields on the roadside from where they are loaded on to trucks and moved to the aggregation point in Agartala. This aggregation point is demarcated by locals and is basically an open space with no infrastructure. Thus, there is no protection from ground moisture, rains, insects, pests, moulds, rodents, birds, fire, etc.

Due to lack of knowledge of post harvesting techniques, losses at farm level were reported to be around 5% to 7%. There are further losses during transportation. During loading, the produce is directly dumped into the lorry without any packaging. There is damage during loading and unloading and during transit.

From Agartala the pineapple is moved in small trucks. Producers and manufacturers depend on incoming trucks from Guwahati to meet transportation needs. To minimise wastage and to preserve the shelf life, the locals have devised indigenous methods. For instances, when placing the pineapples in trucks, the crowns are made to face each other to protect the pineapples during transit. The pineapple is not packed – only stacked in trucks. Total losses until the produce reaches the retailer in another state in the Northeast was reported to range between 30% to 35%.

The produce is brought to the aggregation points also by Farmer Producer Organisations (FPOs) but the concept of FPOs is relatively new in Tripura. Currently there are only four FPOs in Tripura.

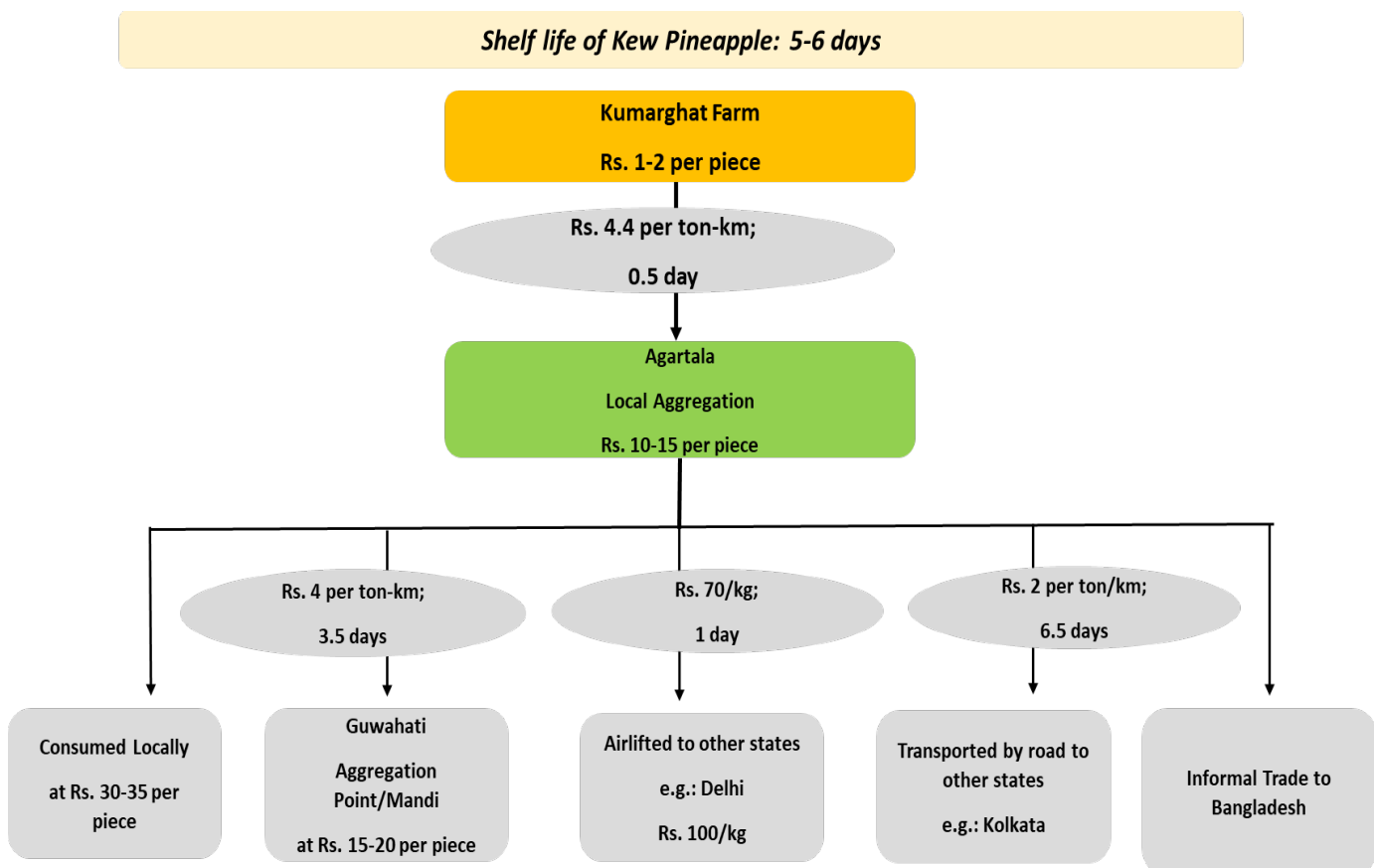
There are no truck weighing scales or weighbridges

in Agartala. Weighing of pineapples is done by rudimentary methods (dharamkanta).

There is no packaging, sorting and grading facilities. Cold storage facilities are missing. No reefer containers are used. It was also stated that the cost of using reefer trucks outweighs the marginal increase in shelf life hence reefer trucks are not used.

There are five distribution channels for pineapple from Agartala (i) local consumption in Tripura, (ii) transported to Guwahati for consumption in northeast, (iii) transported by road to other states e.g., Kolkata, (iv) airlifted to other states, (v) informally traded to Bangladesh. Indicative estimates suggest that 70% of the pineapple produced in Tripura is exported informally to Bangladesh. Informal export takes place because Bangladesh does not allow import of fresh pineapple from the northeast region.

**Figure 9: Current Fresh Pineapple Supply Chain**



Source: ICRIER Survey

The best options for pineapple produce in Tripura would be to

- (i) sell formally to Bangladesh
- (ii) set up processing plants in Tripura

### 6.2.2 Processed Pineapple

Despite the availability of fresh pineapple in Tripura, there are hardly any private processing plants in Tripura. The domestic investment from local entrepreneurs has not been forthcoming. Lack of

knowledge on developments in modern technology and the associated skills required for setting up processed food plants has discouraged local entrepreneurs.

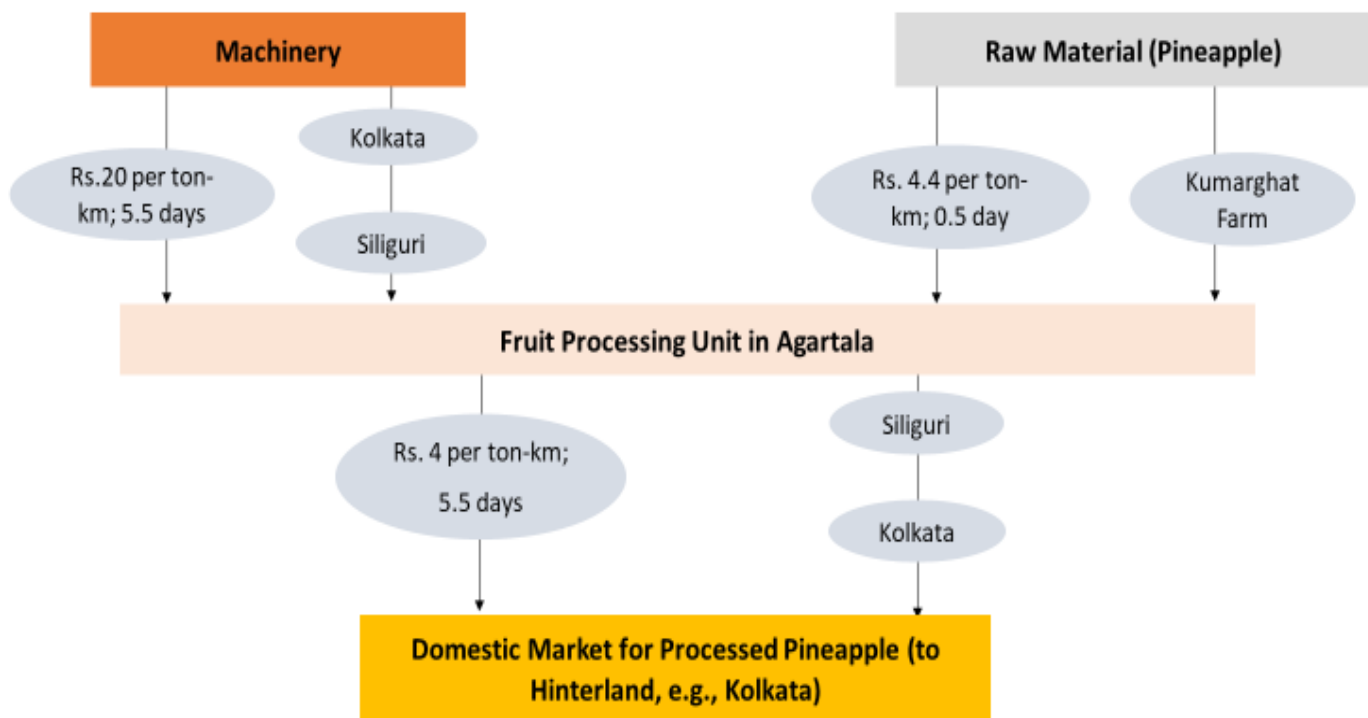
Efforts have been made by North Eastern Regional Agricultural Marketing Corporation (NERAMAC) to set up processing plants in the past but they have failed because they could run only for 9 months in a year due to seasonality of the fruit and workers had to be paid for the whole year. The units were also set up for a single fruit - i.e., pineapple.

In recent months, there has been an interest in setting up processing plants by manufacturers located in the Indian hinterland who are already engaged in fruit processing. These manufacturers have the technical and marketing expertise in this sector as they are already engaged in this activity in

the hinterland. Field interviews revealed that these manufacturers have tried to source pineapple from Tripura, but due to the distance, and short shelf life it was uneconomical to source the fruit. The advantage of setting up manufacturing facilities in Tripura is seen in locating the plants close to the production area which enables procuring raw material at a lower price and also minimizes wastage. Currently, there is one such unit which is operational. It is expected that more manufacturers from the hinterland will set up processing facilities.

Based on information collected from the only operational pineapple processing unit in Tripura, an attempt has been made to understand the organisation of the current supply chain, and the impediments encountered in the inbound and outbound supply chain. An alternative scenario under the BBIN MVA is also presented.

**Figure 10: Current supply chain for pineapple fruit processing unit**



Source: ICRIER Survey

### Organisation of Supply Chain

Currently the processing plant set up in Agartala, sources locally manufactured machinery and other packaging material from Kolkata and other places in the hinterland. The processed food is transported back to Kolkata or to other places in the hinterland. The only disadvantage seen in setting up the plant in Tripura is the distance between Agartala and Kolkata through Siliguri. Hence alternative route options

under BBIN MVA are likely to provide major cost advantage to processing units being set up in Tripura.

### Alternative Supply Chain

Processing firms in Tripura are likely to see major advantages through the BBIN MVA. The alternative route option available with the BBIN MVA would be as follows:

- (i) Agartala-Dhaka-Kolkata

(ii) Agartala-Dhaka-Chittagong

The distance on the BBIN MVA route through Dhaka current will be shorter than route between Kolkata and Agartala through Dhaka as it reduces from 1600 km to 450 km- a reduction by almost 72%. Under the BBIN MVA the cost of transporting machinery and other inputs from Kolkata is likely to reduce by 40% and the time by 63% through the Kolkata-Dhaka route. The processed fruit can either be sold domestically in the hinterland or it can be exported through Kolkata port or Chittagong port. To sell

processed fruit in Kolkata, the time from Agartala to Kolkata would reduce by 71.5% compared to the existing route through Siliguri (Table 3 & Appendix 2.2).

Under the BBIN route, exports through Kolkata port would result in cost and time reduction of 50% and 71.5%, respectively compared to the existing route through Siliguri while for exports through Chittagong port, the reduction in cost and time would be 62.5% and 73%, respectively.

**Table 4: Supply Chain for Processed Pineapple in Tripura**

Inbound & Outbound Transportation	Current Supply Chain	Alternative Supply Chain	
<b>Inbound for Machinery</b>	<b>Route: Road</b> <b>Kolkata-Siliguri-Agartala</b> Cost: Rs. 20 per ton-km Time: 5.5 days Distance: 1600 km	<b>Route: Road</b> <b>Agartala - Dhaka - Kolkata</b> Cost: Rs. 12 per ton-km (Cost reduction: 40%) Time: 2 days (Time reduction: 63%) Distance: 450 km (Distance reduction: 72%)	
<b>Inbound for Raw Materials</b>	<b>Route: Road</b> <b>Kumarghat Farms (Tripura) - Food Processing Unit in Agartala</b> Cost: Rs. 4.4 per ton-km Time: 0.5 day Distance: 120 km	<b>Route: Road</b> <b>Kumarghat Farms (Tripura) - Food Processing Unit in Agartala</b> Cost: Rs. 4.4 per ton-km Time: 0.5 day Distance: 120 km (Assuming no change since domestic transportation within Tripura)	
<b>Outbound for Domestic Market Distribution/Export of processed pineapple</b>	<b>Expected cost of the present route</b> <b>Route: Road</b> <b>Agartala-Siliguri-Kolkata</b> Cost: Rs. 4 per ton-km Time: 5.5 days Distance: 1600 km	<b>Route: Road</b> <b>Agartala-Dhaka-Kolkata</b> Cost: Rs. 2 per ton-km (Cost reduction: 50%) Time: 2 days (Time reduction: 71.5%) Distance: 450 km (Distance reduction: 72%)	<b>Route 2: Road</b> <b>Agartala-Dhaka-Chittagong</b> Cost: Rs.1.5 per ton-km (Cost reduction: 62.5%) Time: 1 day Distance: 430 km (Distance reduction: 73%)

Source: ICRIER Survey



### KEY INSIGHTS FROM FRESH AND PROCESSED PINEAPPLE SUPPLY CHAIN

- There is no Mandi in Agartala. Due to the absence of a price discovery mechanism enabled through a Mandi, farmers cannot demand their market price. Hence, they get an unfair remuneration.
- Post-harvest losses at the farm level are 7% to 10% while losses from farm level to the retailer range between 30% to 35%.
- The pineapples are heaped in open fields on the roadside from where they are loaded on to trucks and moved to the aggregation point in Agartala. This aggregation point is demarcated by locals and is basically an open space with no infrastructure.
- There is no packaging, sorting and grading facilities, and the cold storage facilities are missing. During transportation, no reefer containers are used as the cost of using reefer trucks outweighs the marginal increase in shelf life of the pineapple.
- There are five distribution channels for pineapple from Agartala (i) local consumption in Tripura, (ii) transported to Guwahati for consumption in northeast, (iii) transported by road to other states e.g., Kolkata, (iv) airlifted to other states, (v) informally traded to Bangladesh because its import is not permitted by Bangladesh.
- There are two options for pineapple produce in Tripura (i) set up processing plants in Tripura and (ii) export formally to Bangladesh.
- In recent months, fruit processors in the hinterland have shown an interest in setting up manufacturing facilities in Tripura. Machinery and other packaging material are sourced from the hinterland and processed pineapple is sold back to the domestic market in the hinterland.
- These processing plants set up in Tripura are likely to gain immensely from the BBIN MVA. The distance from Agartala to Kolkata through Siliguri is currently 1600 km and would reduce to just 450 km through the BBIN route through Dhaka which is likely to result in a huge reduction in cost and time by 40% and 63% respectively.
- The processed fruit can either be sold domestically in the hinterland or it can be exported through Kolkata port or Chittagong port. Under the BBIN route, exports through Kolkata port would result in cost and time reduction of 50% and 71.5%, respectively compared to the existing route through Siliguri while for exports through Chittagong port, the reduction in cost and time would be 62.5% and 73%, respectively. Overall efficiency of the Kolkata and Chittagong port will be important once BBIN MVA becomes operational.

## 7. Preparedness Measures

We suggest measures required for more efficient functioning of supply chains. The suggestions are based on the study of only two sectors. While these suggestions cannot be generalised, they will be helpful in addressing sector specific needs which emanate from the eco system within which these supply chains operate. Key lessons can be drawn for other supply chains and other North Eastern States. We have also suggested concerned agencies who can look into each of the preparedness measures discussed in this section (Table 5).

### 7.1 Preparedness Measures for Pharmaceutical Industry

#### 1. ICD at Amingaon should be improved with additional functions

- (i) Necessary procedures (documentation such as issue of bill of lading and shipping bill)

should be put in place so that pharmaceutical and other items can be exported from Amingaon ICD. This would mean enabling of issuing a through bill of lading and shipping bill from Amingaon for all items.

- (ii) ICD should be made functional for road cargo as well so that consignments can move through Bangladesh when BBIN MVA becomes operational.
- (iii) Customs and CONCOR could be the concerned agency to enable ICD Amingaon for exports of all commodities through rail and road transport.

#### 2. Recording trade data from the Northeast region

- (i) Currently, trade data is being recorded for all items only at the land ports and at Amingaon for tea as goods are shown as originating from the ports from where goods are being shipped.

- (ii) Enabling ICD at Amingaon for items other than tea will automatically ensure collecting trade data on exports from Amingaon. All other exports to the rest of the world originating in Assam and in other North eastern states are being shipped from ports in the hinterland and are being recorded in the state's trade data from where the exports are being shipped.
- (iii) Customs and CONCOR could be the concerned agency for recording of trade data for all items at ICD Amingaon.

### 3. *Improving the Logistic Ecosystem*

The northeast region lacks a well-functioning logistic eco system.

- (i) Containerised trucks should be made available. The concerned agency for this could be Kolkata Port.
- (ii) More CHAs are needed in the Northeast. Customs will need to provide training so that the required skill base can be developed in the region.
- (iii) A dedicated rail track is required for movement of containerised cargo in order to improve rail connectivity through Amingaon ICD. Indian Railways and CONCOR could help in expedite the process. The Indian Railways can also undertake a feasibility study for the development of a dedicated rail track where only containerised cargo can move.
- (iv) Efficiency of Kolkata port needs to be improved and release times need to be reduced substantially to bring it on par with the best performing ports such as JNPT.

### 4. *Creating backward linkages*

- (i) Currently there are very few manufacturing facilities in the northeast. Assam can set up a bulk drugs park as are being set up in Andhra Pradesh and Gujarat.
- (ii) Production of API under the Production Linked Incentive scheme can help create backward linkages for the pharmaceutical industry.
- (iii) All packaging material is sourced from the Indian hinterland. Setting up manufacturing facilities will help in creating backward

linkages.

- (iv) The State Department of Commerce and Industry in consultation with private sector can set up manufacturing of packaging materials and bulk drug parks in Assam under PLI scheme.

## 7.2 Preparedness Measures for Fresh and Processed Pineapple

Measures that can be adopted for fresh and processed pineapple are listed below:

### 1. *Improving Infrastructure*

- (i) A Mandi should be set up in Agartala so that price discovery mechanism is established formally. This will help farmers in getting their due remuneration for their produce.
- (ii) A more formal aggregation and collection method needs to be put in place in consultation with the Farmer Producer Organisations. Basic infrastructure with a cemented ground and aeration and running water and toilets should be provided at aggregation points.
- (iii) Basic infrastructure for weighing e.g., truck weighbridge needs to be installed.
- (iv) The State Department of Agriculture and private sector can be involved to construct warehouses at aggregation point.
- (v) There are very few CHAs in Tripura. Customs need to build capacity of CHAs so that they can undertake the document processing tasks related to trade. There needs to be greater awareness on the need for CHAs as they form the backbone of the services required for fulfilling procedural requirements.
- (vi) Customs can conduct capacity building program for the CHAs, the program should cover customs procedures and regulations, use of technology to streamline custom clearance processes and improve efficiency at the land ports, knowledge of logistics can also be helpful for cost-effective transportation and delivery of goods.

### 2. *Improving Logistics*

- (i) Since Agartala is likely to gain tremendously from the BBIN MVA, it is important to have

an efficient border crossing which would reduce time and cost of moving the cargo through the ICP.

- (ii) The Government may consider setting up an Inland Container Depot (ICD) so that off-border clearances are facilitated. CONCOR and State Department of Commerce and Industry and Customs could be consulted for setting up an ICD.
- (iii) Reefer trucks should be made available by the State Department of Commerce and Industry.

### 3. *Attracting more firms to avail the PLI scheme*

- (i) The processed food sector has the potential to expand if domestic firms from all over India can avail of the incentive and set up manufacturing facilities in the northeast.
- (ii) Domestic investment from within the state also needs to be encouraged. State Government can spread awareness on the benefits of the PLI Scheme.

### 4. *Addressing trade policy distortions*

- (i) Bangladesh does not permit all items to be imported from the land ports in the Northeast region. In particular, fresh fruits are not permitted. Pineapple and other items should be removed from Bangladesh's negative list of import from the Northeast so that informal trade can shift to formal channels.
- (ii) A study could be undertaken by Department of Commerce of India and Bangladesh to understand the opportunity cost owing to trade policy restrictions and thereby the two governments can take a decision to remove agriculture items from the negative list.
- (iii) Setting up food processing units will also allow farmers to find a ready market for their produce within the state. The State Department of Commerce could enable an environment that motivates the private sector to invest in food/fruit processing in Tripura.

### 5. *Capacity Building*

- (i) Farmers need technical assistance and training so that they can adopt modern methods to reduce post-harvest losses.

- (ii) Assistance is required to set up more Farmer Producer Organisations (FPOs).
- (iii) Farmers need to be provided with marketing assistance.
- (iv) Domestic firms located in Tripura also need technical assistance to set up manufacturing facilities.
- (v) State Department of Agriculture could be the concerned agency for capacity building of farmers for technical assistance, training and setting up FPOs. The government can conduct training programs that should cover all aspects of post-harvest management including storage, packaging, transportation, and marketing. Support from the government could also be provided with respect to offering financial assistance or subsidies for the adoption of post-harvest technologies.

## 7.3 Key Messages for other North Eastern States and Supply Chains

- (i) Currently pharmaceuticals are being produced in Sikkim and Assam only. Connecting other states to the main BBIN routes will encourage other states to set up manufacturing facilities in pharmaceuticals.
- (ii) Setting up one ICD in each state would create the basic infrastructure required for exports of other manufactured items from other north eastern states as well. Undertaking traffic analysis projection could be helpful in understanding if there is sufficient demand for one ICD in each state.
- (iii) Setting up professionally managed logistic services which includes packaging and handling, forwarding and clearing, warehousing, cold chain, and transportation in each state will encourage all north eastern states to set up manufacturing facilities in several items.
- (iv) Providing training to Customs House Agents will provide the necessary soft logistic infrastructure in all north eastern states and encourage trade in all items.
- (v) Strengthening FPOs and providing technical training in post harvesting practices will strengthen capacity of farmers to reduce wastage in agriculture items.

- (vi) Encourage investors from the hinterland already engaged in manufacturing to set up facilities in all north eastern states.
- (vii) Creating awareness in all the states about the BBIN MVA and the benefits it is likely to bring to the region will encourage other states to prepare for exports of manufacturing and

agriculture and processed food items.

- (viii) Removing trade policy restrictions imposed by Bangladesh will provide additional market access to all the North eastern states especially Tripura, Assam, Mizoram and Meghalaya.

**Table 5: Preparedness Measures and Concerned Agencies**

<b>Pharmaceuticals</b>		
<b>Improving ICD at Amingaon</b>	Enable ICD at Amingaon for all commodities by Rail	Customs and CONCOR
	Enable ICD Amingaon for Road transport	Customs and CONCOR
	Enable recording of trade data for all items at ICD Amingaon	Customs and CONCOR
<b>Improving the Logistics Ecosystem</b>	Making containerised trucks available	Kolkata Port
	Training of CHAs to handle procedural requirements for all commodities	Customs
	Improve efficiency of Kolkata Port	Kolkata Port
	Dedicated rail track for movement of containerised cargo	Indian Railways and CONCOR
<b>Creating backward linkages</b>	Set up bulk drug parks in Assam under PLI scheme	State Department of Commerce and Industry in consultation with Private sector
	Set up of manufacturing of packaging material	Industry in consultation with Private sector
<b>Fresh and Processed Pineapple</b>		
<b>Improving infrastructure</b>	Set up a Mandi in Agartala and in places where it is absent	State Department of Agriculture
	Construct basic infrastructure at aggregation points	State Government and Private sector
	Install truck weighing bridge	State Department of Agriculture
	Set up sorting grading, and packaging facilities	State Government
<b>Improving Logistics</b>	Make reefer trucks available	Subsidy by State Department of Agriculture
	Set up an ICD at Agartala	CONCOR, State Department of Commerce and Customs
<b>Avail PLI scheme</b>	Encourage firms to set up fruit processing facilities under the PLI scheme	State Department of Commerce and Private sector
<b>Remove trade policy distortions</b>	Request Bangladesh to remove agriculture items from the negative list	Department of Commerce in India and Bangladesh
<b>Capacity Building</b>	Provide technical assistance to farmers to reduce post-harvest losses	State Department of Agriculture
	Provide marketing assistance to farmers	State Department of Agriculture
	Assist in the formation of more FPOs	State Department of Agriculture
	Provide training to CHAs	Customs

## Appendix

### Appendix 1: Data & Methodology for Selecting Pharmaceutical & Pineapple for the Supply Chain Analysis

Prior to selecting the sectors, the two states that were selected for the supply chain analysis were Assam and Tripura as the two most likely BBIN routes are likely to be

- (i) Kolkata-Dhaka-Sylhet-Tamabil-Dawki-Shillong-Guwahati,
- (ii) Agartala-Akhaura-Dhaka-Kolkata

Two sectors- Pharmaceuticals and Pineapple Fruit Processing were selected for the supply chain analysis. Both qualitative and quantitative indicators were used to select these two sectors. For qualitative analysis, the thrust areas mentioned in each state's industrial and investment policy were used to understand sectors of importance for the NER. In addition, information on products identified under the One District One Product (ODOP) Districts initiative was mapped for the NER states.

For quantitative analysis, the key variable considered for the analysis is Value of Output/Production for both agriculture products and manufacturing industry.

Parameter	Variable	Data Source
Agriculture Products	Value of Output/Production	Ministry of Statistics & Program Implementation (MOSPI) – Agriculture Statistics (2018-19)
Manufacturing Industry	Value of Output/ Production	Ministry of Statistics & Program Implementation (MOSPI) – Annual Survey of Industries (ASI) Database at Unit-level & 3-digit disaggregated level (2018-19)

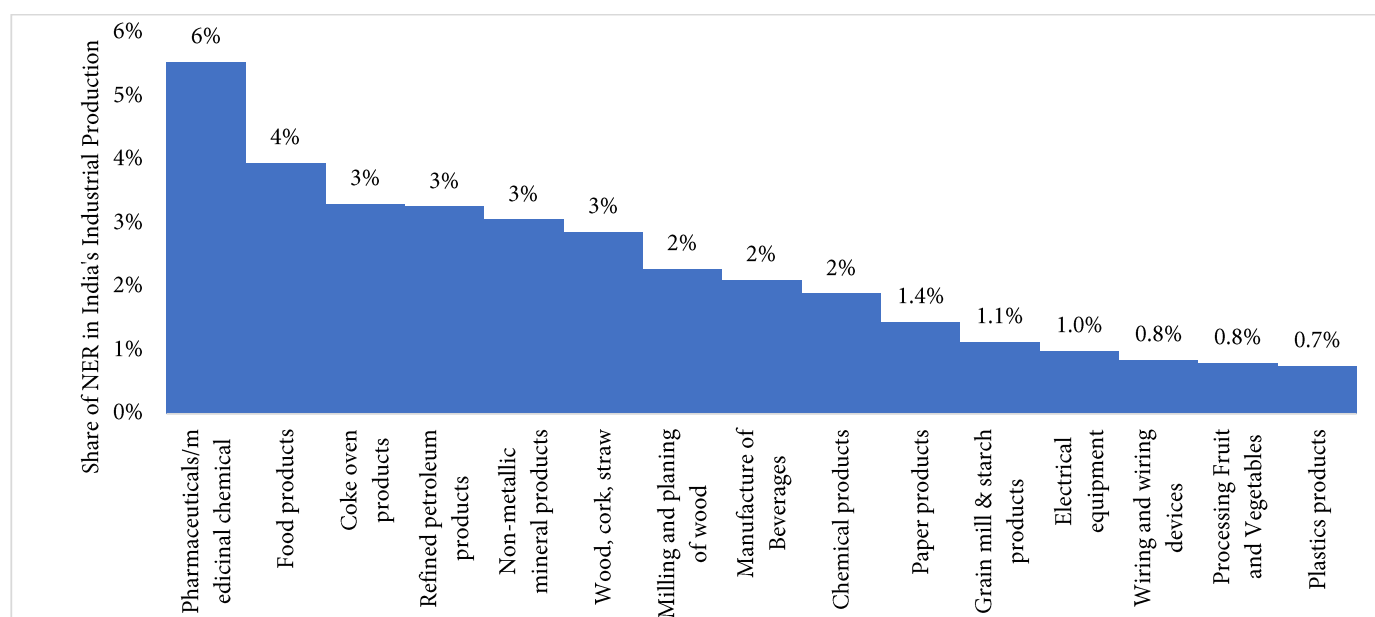
### Pharmaceutical Sector in Assam

According to the state government's industrial and investment policy,<sup>16</sup> pharmaceutical sector is identified as the thrust area for Assam. Further, Kamrup district in Assam has been identified as the only district for manufacturing and exporting

pharmaceutical items under the One District One Product (ODOP) District Export Hub initiative.<sup>17</sup>

Using the quantitative approach, production data revealed that the NER contributed 6% share in India's overall pharmaceutical manufacturing output in 2018-19.

**Figure 11: Share of NER in India's Industrial Production**



Source: Ministry of Statistics & Program Implementation (MOSPI) – Annual Survey of Industries (ASI) Database at 3-digit disaggregated level (2018-19)

<sup>16</sup> Assam Industrial & Investment Policy (2019)

<sup>17</sup> Districts as Export Hubs. (n.d). Directorate of Foreign Trade (DGFT), Government of India. <https://exporthubs.gov.in/>

**Table 6: Top 15 Manufacturing Industries of NER; 2018-19**

NIC 3-digit	Manufacturing Industry	Value of Output/Production (US\$ billion)	Share of Output in Total Industrial Output of Northeast Region (%)
192	Refined petroleum	5.2	34%
210	Pharmaceuticals/bio-medicinal chemical	2.7	18%
107	Food products	1.8	12%
239	Non-metallic mineral	1.3	9%
241	Basic Iron and Steel	0.9	6%
202	Chemical products	0.8	5%
106	Grain mill and starch products	0.5	3%
201	Chemicals, fertilizer & nitrogen compound	0.4	2%
170	Paper products	0.3	2%
222	Plastics products	0.3	2%
110	Manufacture of beverages	0.3	2%
273	Wiring and wiring devices	0.1	1%
162	Products of wood, cork, straw	0.1	1%
191	Coke oven products	0.1	1%
243	Casting of metals	0.1	0.5%
<b>Others</b>		0.5	3%
<b>Total NER Industrial Production</b>		<b>15.2</b>	<b>100%</b>

Source: Ministry of Statistics & Program Implementation (MOSPI) – Annual Survey of Industries (ASI) Database at 3-digit disaggregated level (2018-19)

Within the NER, refined petroleum is the largest sector accounting for 34% of total NER industrial production followed by Pharmaceuticals & bio-medical chemicals with an 18% share. Further, of the total NER production of pharmaceutical and biochemicals, Sikkim accounted for 88% whereas Assam accounted for only 12% in 2018-19. Taking into account the fact that Sikkim has a major advantage in terms of connectivity and already accounts for a major portion of the pharmaceutical production in the Northeast, it is justifiable to focus on tapping the potential Assam can have once the BBIN MVA is operational.

Based on the above observations, the pharmaceutical sector in Assam was selected as one of the sectors for supply chain analysis for this report.

### Fresh and Processed Pineapple in Tripura

Considering the high share of fruit production such as pineapple, passion fruit, jackfruit in the NER, fruit processing is identified as a thrust area for all NER states. A total of 14 NER districts are targeting Multiple Fruit Processing as a part of One District One Product Scheme.

Using Ministry of Statistics & Program Implementation, Agriculture Statistics, 2018-19 data on agriculture production, it was observed that Pineapple was produced in large quantity and accounted for 49% of the total pineapple production in India.

**Table 7: Share of NER in All India Production of each Agriculture item**

Major Agriculture Item of the NER	Share of NER in All India Production of each agriculture item
Passion fruit	83%
Tea	62%
<b>Pineapple</b>	<b>49%</b>
Cardamom	35%
Citrus fruit	23%
Jack fruit	17%

Source: Ministry of Statistics & Program Implementation (MOSPI) – Agriculture Statistics (2018-19)

Seven out of the eight states in the north-eastern region produced pineapple in significant quantities in 2018-19. Assam produced the largest volume of pineapple accounting for 44% share in NER's total

pineapple production. Nagaland and Tripura ranked second and third in the northeast, contributing 14% and 11%, respectively, to the northeast region's total production.

**Table 8: Share of each NER State in total production of Pineapple in the Northeast Region**

NER State	Share of each state in overall NER production of Pineapple
Assam	44%
Nagaland	14%
<b>Tripura</b>	<b>11%</b>
Manipur	11%
Meghalaya	10%
Arunachal Pradesh	7%
Mizoram	2%
Sikkim	0%
Total of NER	100%

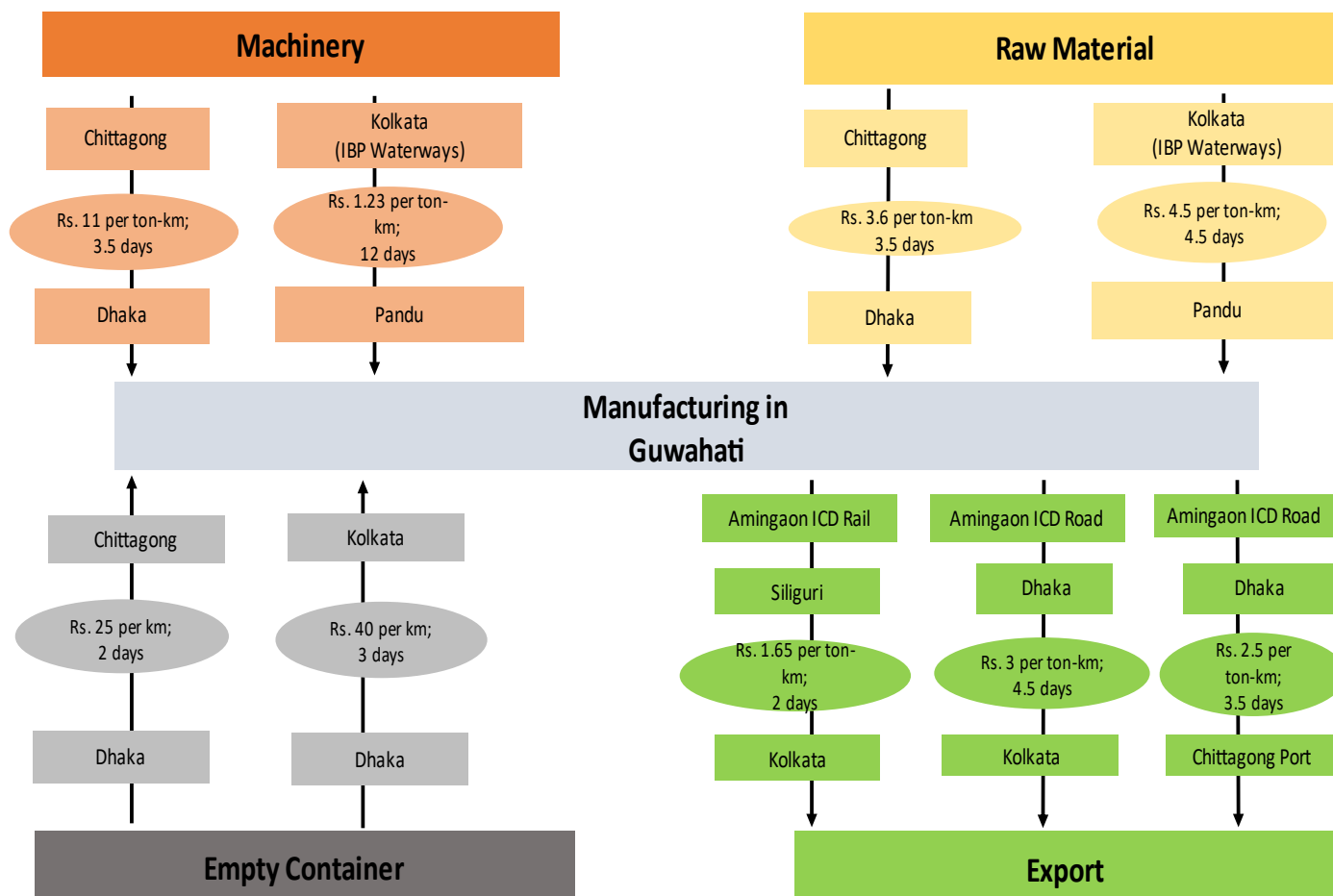
Source: Ministry of Statistics & Program Implementation (MOSPI) – Agriculture Statistics (2018-19)

Also, processed pineapple has been identified from the districts of Gomti, Dhalai, and Unnakoti in Tripura under ODOP-DEH program.

Based on these observations, fresh and processed pineapple was selected for the supply chain analysis.

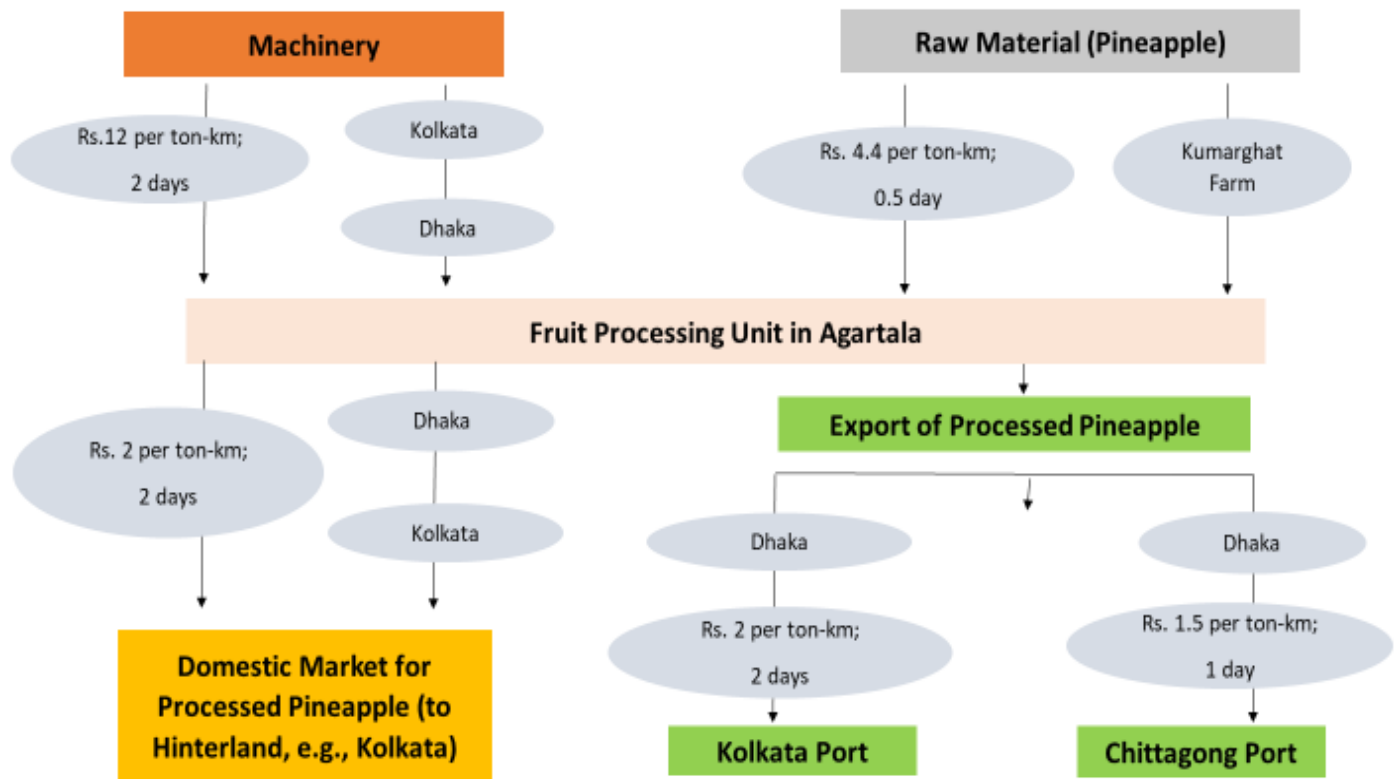
**Appendix 2: Alternative Supply Chain Flow Chart**

**Appendix 2.1. Alternative supply chain for pharmaceutical in Assam under BBIN MVA**



Source: ICRIER Survey

**Appendix 2.2: Alternative supply chain for processed pineapple in Tripura under BBIN MVA**



Source: ICRIER Survey



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