Infrastructure Development of Industrial Estates in Tripura

Industrial Policy Report
September 2022

Final Report

Strictly private and confidential

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1.1. Background

Government of Tripura (GoT) applied for financing under Project Readiness Financing (PRF) facility from Asian Development Bank (ADB). The PRF loan is sought for project readiness activities, for preparing a sector development program and preparation of the project and design activities for investment-ready ensuing project(s) for the "Infrastructure Development of Industrial Estates in Tripura" in/ around 15 industrial estates of 6 districts in the state. The Department of Industries & Commerce (DoI&C) GoT is the executing agency (EA) with Secretary, DoI&C as the Project Director (PD).The PD will be assisted by a project management unit (PMU) established under implementing agency (IA)–Tripura Industrial Development Corporation Limited (TIDCL) with suitable resources.

In this regard, Tripura Industrial Development Corporation Limited (TIDCL or "Client") intends to develop an industrial strategy and investment plan for the state. As part of TIDCL's mandate of industrial development in the state, it has appointed individual consultants from PricewaterhouseCoopers Pvt. Ltd. ("PwC" or "Consultant") for formulating strategy and action plan for development of industry strategy. The consultants have built on the outputs of North East Economic Corridor (NEEC) Report developed by Asian Development Bank as a guiding document. The NEEC report provides a view on the priority sectors for the region supported by value chain and OD analysis for the sectors. Further NEEC reports concludes on the infrastructure status in the region and identifies projects which will enable the development of overall North East Region. As part of this engagement the consultants have been mandated to conduct analysis and derive outputs to support the PRF loan. The scope of work of the consultants comprises the following:

a. Outline the economic profile of various districts/ areas in the immediate vicinity of each industrial node/ large industrial area or cluster/ border growth centre or urban growth centre;

b. Prepare an overview of the industrial scenario of the districts of the industrial nodes/ areas, which shall include:
(1) taking inventory of the types of industries available in the districts,
(2) mapping of competition at the state and district levels, and
(3) mapping of existing industrial clusters/ hubs along with available transport network and ancillary facilities;

c. Prepare suitable product/ activity mix for the delineated zones within the industrial nodes/ areas or growth centres;

d. Determine the product mix for the processing and non-processing areas of the industrial node/ area taking into account the land requirement, while ensuring compatibility with land-use planning proposals delineated in master planer surrounding existing land-uses, any provisions in the NER regional plan/ city development plan, etc., and whether any adaptation and/or mitigation measures are to be incorporated in project planning and design/ implementation;

e. Assess and plan for export-oriented industries which can be located in the industrial node/ area or growth centres; and

f. Align industrial planning with quality infrastructure to foster industrial development, including development of SMEs, meeting national standards/ benchmarks/ rules and regulations, and/or international standards and best practices.

1.2. Objective

The objective of the report is to provide strategic support to TIDCL to enable the agency to carry out the development of industrial estates in Tripura. Therefore, this report covers the following topics-

- Identifying policy-level interventions that could enable Tripura to achieve holistic industrial growth.
- Identifying necessary interventions needed to improve institutional capacity of bodies that provide investor support.

2. Introduction

2. Introduction

2.1. Economic Profile of North-East

To achieve India's commitment of becoming a USD 5 trillion economy by 2025, it is important to propel industrial development in the whole nation, especially the North-Eastern Region (NER). The North East Region (NER) of India is fast gaining attention for its rich economic resources and strategic location. It has large deposits of oil, natural gas, coal, and limestones, and a sizable proportion of land under cultivation for agro-horticulture products, tea, bamboo, and rubber.

Tripura is home to a wide variety of flora and fauna. About half of the state's land area is under forest cover. The Sal, a valuable tropical hardwood, is widely found. Various varieties of bamboo can also be found across Tripura. The region's geography and prevailing climatic conditions make it ideal for high-value horticulture. Tea, rubber, cash crops, and many kinds of fruits are cultivated in Tripura.

The NER is strategically located. Its geographic proximity to South East Asia makes its location even more favorable in relation to India's Act East policy, serving as the country's gateway to South East Asia. The region shares its land border with Myanmar which may act as a gateway for India to foster trade relations with other ASEAN countries. With increased ASEAN engagement becoming a critical part of India's foreign policy, the NER states have become strategically significant as important cultural and physical bridges. The NER also shares its border with the BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) nations (a group of seven countries i.e., Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand). The region has enormous potential to serve these neighboring nations and treat them as target markets. It connects the product market of the rest of the country and the robust South and Southeast Asian markets.

Apart from this, the fact that the Government of India (GoI) set up a separate Ministry of Development of North Eastern Region in September 2001 speaks to the region's position as a crucial driver of India's Act East Policy (called the Look East Policy in its earlier form) and overall development as well.

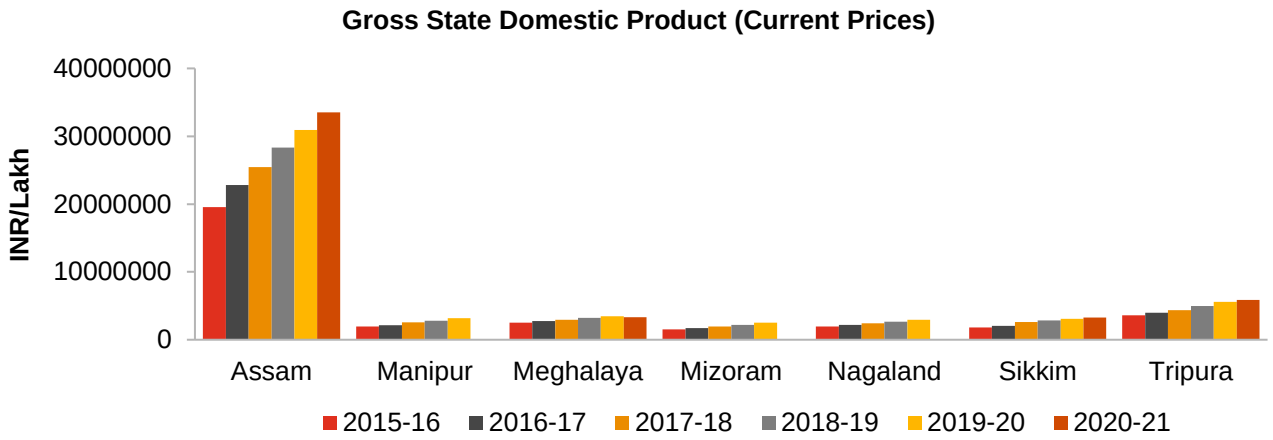
However, despite its rich natural capital, strategic position, and government intervention, the fact remains that the NER contributes 2.8% to the nation's GDP[1], low in comparison with other states (the group of southern Indian states, for instance, contributes ~30% to economy[2]). The region has great economic potential across many sectors including agriculture, oil and gas, and tourism. But inadequate infrastructure limits its growth and production, and ability to attract investors and reap the benefits of its natural proximity with South Asian nations. Challenging terrains, limited connectivity, and an inadequate business ecosystem are among the primary causes for low private investments and the generally dilapidated condition of industry in the region.

The NER has an abundant natural resource base as well immense potential for horticulture and agriculture. The economic opportunities can be translated into high growth industries if developed, owing to the existence of potent input market catalysts like social (diversity, cultural richness), physical (potential energy supply hubs), human (inexpensive, skilled labour) and natural (minerals, forests, biodiversity) capitals.

[1] Gross State Domestic Product (Current Prices), : National Statistical Office, Ministry of Statistics and Programme Implementation, (2021)

[2] Gross State Domestic Product (Current Prices), : National Statistical Office, Ministry of Statistics and Programme Implementation, (2021)

Figure 1: Economic structure of NER



Source: Reserve Bank of India (RBI)

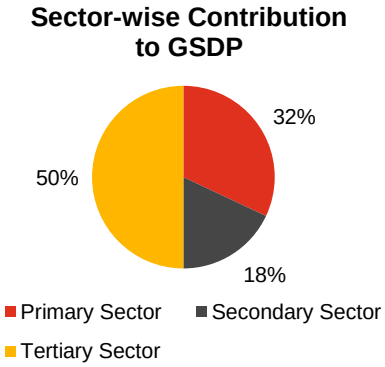
Examining macroeconomic trends reveals that the Gross State Domestic Product (GSDP)s of the states in the NER have shown a rising trend (except for Meghalaya which registered a slight fall between 2019-20 and 2020-21). Between 2015-16 and 2020-21, each of the states has registered an increase in its GSDP, indicating that their economies have been expanding steadily. The economy of the NER is largely characterized by the presence of agro-, mineral-, or forest-based industries.

The **primary sector** accounts for 31.4% of the states' income[3], revealing the importance of the agriculture sector in the region. Traditionally, two primary types of farming practices are seen in the region. They are settled agriculture and slash and burn cultivation. Settled agriculture is prominent in the plains, valleys, and gentler slopes, and slash and burn cultivation (known locally as *jhum*), is especially popular in the hilly regions of Meghalaya, Mizoram, and Nagaland. Over 70% of the population in the NER states is involved in agriculture.[4] Rice, cereals, pulses, and oilseeds are among the major crops grown in the region. Besides this, growing of cash crops like cotton and developing commercial plantations for rubber and tea cultivation is underway. Further, state governments in the NER are now focusing on gaining from the immense scope of the bamboo and high-value floriculture sectors to usher in accelerated growth.

The **secondary sector** in the NER contributes to just about 18%[5] of the states' incomes. The contribution of industries is a small share of their NSDP at below 20%. The NER's industrial development level remains lower than that of the rest of India even though there is potential for growth across a diverse set of sectors, for instance, tea, petroleum, petroleum refineries and petroleum products, chemicals and fertilizer, plywood, pulp and paper, cement, and thermal power-generating units.

The presence of a strong cottage industries is another characteristic of the NER. Silk yarn, cloth, and other forest-based industries like bamboo products, furniture, and a variety of domestic utility goods are produced by the industry. Further, industries producing cement, bricks, plywood, tea, and special varieties of rice and ginger can also be found in the NER.

Figure 2: Sector-wise Contribution to GSDP



Source: NITI Aayog

Sectors like oil and gas, tea, and timber are predominantly based in Assam, while activities around mining, sawmills, and plywood are present in other parts of the region. Among the NER states, Assam is the most

[3] North Eastern Region District SDG Index Report and Dashboard 2021-22, NITI Aayog (2021).
[4] North Eastern Region District SDG Index Report and Dashboard 2021-22, NITI Aayog (2021).
[5] North Eastern Region District SDG Index Report and Dashboard 2021-22, NITI Aayog (2021).

industrialized with a diverse manufacturing base. The primary concern in developing the sector further is the inadequate domestic market presence. Besides this, a major barrier to the growth of industry in the region is the distinctly sparse presence of the private sector- less than 1%[6] of the corporates in India are present there. Also, the lack of transport connectivity with other parts of India poses a significant challenge to the growth of the secondary sector. Though the region has a huge potential for exports. However, this has not translated into reality. In 2019-20 and 2020-21, the NER accounted for only 0.16% of India's exports.

The **tertiary sector** accounts for almost 50% of the income of the NER states. Also, the sector's share in state domestic product values has been showing an upward trend. A majority of the contribution in the services sector is led by public administration indicating a huge dependence of the state on government jobs. The other major sub-sector is trade, hotels, and restaurants. These two sectors account for more than 50% of contribution in the services sector.

To promote economic development in the region, the GoI has initiated multiple schemes aimed at promoting industrialization in the region. A few of the latest initiatives are as follows:

- **North East Special Infrastructure Development Scheme**: was approved by the GoI in 2017. Under the scheme, 100% centrally funding is provided to the State Governments of North Eastern Region for projects of physical infrastructure relating to the::
  - Development of physical infrastructure for water supply, power, and connectivity.
  - Development of social infrastructure, education, and health
  - Tourism projects

  In Tripura, there are currently 4 education sector, 3 health sector, 1 power sector, and 3 roads and bridges related ongoing projects under the scheme.[7]
- **North East Industrial Development Scheme**: This scheme aims to push industrialization into the NER by providing financial assistance of up to INR 200 Crore/unit with few caveats. The scheme covers the manufacturing and service sectors, and aims to stimulate the growth of MSMEs in the two sectors. It came into effect in 2017 for a period of five years. In FY 2021-22, INR 30 Crore was released to the NER states. The benefits provided under the scheme, similar to those provided under the NESIDS, are as follows:

  a. Central Capital Investment Incentive for access to credit

  b. Central Interest Incentive

  c. Central Comprehensive Insurance Incentive

  d. Income Tax Reimbursement

  e. Goods and Services Tax Reimbursement

  f. Employment Incentive

  g. Transport Incentive

- **North-Eastern Development Finance Corporation (**NEDFi): To ignite the entrepreneurial spirit in the region, the NEDFi Opportunity Scheme for Small Enterprises (NoSSE) was launched to aid first generation entrepreneurs who are setting up industrial units and are short of equity. It is the designated nodal agency responsible for the disbursal of Central incentives to industries in the NER.
- **North East Venture Fund**: Similar to the NEDVFC's NoSSE, the NEDFi has set up a fund of INR 100 Crore to provide financial assistance to start ups in the region. It is a wholly owned subsidiary of the NEDFi that aims to promote entrepreneurship while maximizing returns on investments. For this, it provides capital as well as other forms of support.
- **UDAN 3.0:** This is a regional connectivity scheme, aimed at enhancing aerial connectivity and increasing the routes covered in the region. The scheme, introduced in 2016, will run for 10 years.
- **Special Accelerated Road Development Programme- SARDP-NE:** This initiative has been taken up by the Ministry of Road Transport and Highways. This programme envisages providing road connectivity to all

[6] North Eastern Region District SDG Index Report and Dashboard 2021-22, NITI Aayog (2021).

[7] Sector Wise Sanctioned, Completed, and Ongoing NESIDS Projects (2022-23), http://nesids.mdoner.gov.in/.

the district headquarters in the NER by constructing highways with a minimum of two lanes. The SARDP-NE Phase 'A' is expected to be completed by 2023-24.

- **National Highways and Infrastructure Development Corporation:** this is a company owned fully by the GoI's Ministry of Road Transport and Highways which works to establish, design, build, operate, maintain, and upgrade National Highways and Strategic Roads including interconnecting roads in parts of the country which share international boundaries with neighboring countries. It aims to enhance regional connectivity to promote cross-border trade and commerce, and to help safeguard India's international borders. It is also focused on improving road connectivity and efficiency of the international trade corridor through the expansion of 500 km of roads in the North Bengal and the NER to enable efficient and safe transport regionally with other South Asia Sub-regional Economic Cooperation (SASEC) member countries. Some of the projects are being funded by the ADB.

2.2. Tripura: Overview

Tripura became a full-fledged state on 21 January 1972. It is the third smallest state in the country. On its northern, southern, and western sides, it is flanked by Bangladesh and the length of its international border with Bangladesh is about 856 km, or about 84% of its total border. It shares the rest of the border with Assam and Mizoram. The border with Assam is 53-km-long while with Mizoram is 109-km-long. The state has eight districts, namely Dhalai, Gomati, Khowai, North Tripura, Sephaijala, South Tripura, Unakoti, and West Tripura. The state is spread across 10,491 sq km. of which 60% is forest area. Only 27% of its total area is under cultivation. Further, Tripura has 87.22% literacy rate which is more than the national average.

The following table provides some key insights into the socio-economic scenario of the State:

Table 1: Key Insights: Tripura

Key Insights: Tripura	
GSDP at current price (Lakh/INR) – 2020-21	58879.53
Estimated Population (2019-20)	40,12,000
Population density	350 persons per sq. km
Literacy Rate	87.2%
Value of Exports (Crore/INR)- 2020-21	16.39
Value of Imports (Crore/INR)- 2020-21	716.87
Tourist inflow (2018-19)	5,29,879[8]
Overall SDG Index Score	58

Source: Economic Review of Tripura (2020-21), Directorate of Economics and Statistics, Government of Tripura (2021).

Profile of the districts in Tripura

Tripura has eight districts, namely Dhalai, Gomati, Khowai, North Tripura, Sephaijala, South Tripura, Unakoti, and West Tripura. This section provides a glimpse into each one.

1. **Dhalai:** Socio-economically, this is the most backward district in Tripura.[9] In 2006, the Ministry of Panchayati Raj named Dhalai one of the country's 250 most backward districts (out of a total of 640). It is

[8] Department of Tourism, Government of Tripura (https://tripuratourism.gov.in/sites/default/files/TRIPURA_TOURISM_POLICY__3rd_Feb_2020_1230.pdf)

[9] District Profile: Dhalai, Tripura, Government of Tripura (2016).

the only district of Tripura which receives grants from the Union Government under the Backward Regions Grant Fund (BRGF).

Demographically, it has large tribal population, constituting more than half of the total population, and 25% of the households in the district are classified as Below Poverty Line (BPL).[10] The district has a literacy rate of 96.79%, higher than Tripura's 96.82% and India's 74.04%.

The districts economy is majorly dependent on primary sector. An overwhelming 76% of the total workers are involved in agriculture.[11] Out of this, 37% are cultivators, 26% are marginal farmers, 10% work as agricultural labour, and 3% work in agri-allied sectors.[12] The gross cropped area in the district is 35,753.0 Ha, and it produces 1,01,632 MT of vegetables and 1,82,953 MT of fruits.[13] Agriculture, however, remains largely subsistence level– the practice of Jhum cultivation continues in many parts of the district. With increasing plantation activities like horticulture and sericulture, jhum cultivation has decreased to an extent in the last few years. Further livestock rearing for meat and dairy purposes is also an important livelihood in the region. The yearly meat production is about 3585.79 MT while egg and milk production are 1.99 crore and 13924.29 MT, respectively.[14]

13,272 Ha of land is used for non- agricultural purposes. 6% of the total working population are cottage industry workers and 18% are engaged in other livelihoods.

A water quality assessment carried out by the TIDC at the district's headquarter, Ambassa, reveals that the groundwater in the region has an acceptable pH limit of 7.1 and is free of toxic contaminants, making it suitable for a wide variety of uses. It does however have a high amount of dissolved iron (0.57 mg/l) which, if not controlled, may hinder crop growth and damage irrigation equipment. The water also has a high volume of dissolved solids (286 mg/l).

Dhalai has 16 reported registered factories.[15] These include manufacturing units that produce wood/wooden based furniture, paper and paper products, and electrical machinery and equipment.

Dhalai is home to one Industrial Area, namely the Infrastructure Development Centre (IIDC) at Lalchari covering 54 acres, and two tea estates in Kamalpur and Halahali. Besides this, sericulture is an upcoming sector and the current area under sericulture is 169.6 Ha.[16] There are 5 handloom units and 1650 handloom weavers in the district, and it also has 4 registered handicraft units and 204 trained handicraft artisans.[17]

The region has some key strengths- a huge natural resources base, fertile land, climate conducive to a wide variety of crops, adequate and well spread rainfall, a high literacy rate, and its strategic location and connectivity via NH 44.

2. **Gomati:** this district was created in 2012. With 72% of the rural population living below the poverty line,[18] socio-economically it is among the relatively underdeveloped regions of Tripura. Out of a population of 4,41,538, 42.70% of the population is tribal.[19]

   In the district the primary sector is the most dominant with agriculture being the primary occupation in the region. 12.6% of the working population are cultivators, 8-9% are agricultural laborer's and 1.61% are dependent on trade and commerce.[20] Paddy is the main food crop grown. Potato, sugarcane, mesta, jute, and mustard are some other crops grown in the district. Tea, coffee, rubber, jackfruit, banana, mango, and

[10] https://dhalai.nic.in/about-district/
[11] District Profile: Dhalai, Tripura, Government of Tripura (2016).
[12] District Profile: Dhalai, Tripura, Government of Tripura (2016).
[13] District Profile: Dhalai, Tripura, Government of Tripura (2016).
[14] District Profile: Dhalai, Tripura, Government of Tripura (2016).
[15] District Profile: Dhalai, Tripura, Government of Tripura (2016).
[16] District Profile: Dhalai, Tripura, Government of Tripura (2016).
[17] District Profile: Dhalai, Tripura, Government of Tripura (2016).
[18] https://gomati.nic.in/
[19] District Profile Gomati District, Tripura, Government of Tripura (2018).
[20] District Profile Gomati District, Tripura, Government of Tripura (2018).

pineapple are the major plantation crops. However, only 31.61% of the land in the district is cultivable and land holdings are small.[21]

A water quality assessment carried out by the TIDC at the district's headquarter, Udaipur, reveals that the groundwater in the region has an acceptable pH limit of 7.2, and does not contain toxic contaminants, making it suitable for a wide variety of uses. However, like in Ambassa, here too, the groundwater is rich in iron (0.5 mg/l). Further, the water has been found to have high turbidity (14 NTU).

The district has 204 reported registered factories that employ 2208 people[22]. Sericulture and handicrafts are among the important secondary sector activities pursued in Gomati. 139.6 Ha are currently being used for sericulture and there are 688 weavers.[23] There are 6 handloom units and 16,370 workers engaged in handloom weaving while the handicrafts industry has 2,380 artisans.[24] Besides this, an industrial estate has been set up at Dhajanagar in an effort to catalyze industrial growth in the region. One of the major strengths of the district is its 100% literacy rate. Further, it is marked by lush green and fertile valleys along the river Gomati, making it suitable for the development of agriculture-allied industries.

3. **Khowai:** lies between West Tripura and Dhalai. It also shares a border with Bangladesh. The estimated total population of the district is 3,27,564 while the estimated literacy rate is 87.78%.[25]

   Primary sector activities are most common in the district. There are 32,079 farmer families in the area.[26] The irrigation system upon which agricultural activities depend is entirely controlled by the local drainage system i.e., streams, rivers, canals, springs, and dug out wells. The net sown area is 24824 Ha, the gross cropped area is 44192 Ha, and the area under food grain cultivation is 21949 Ha.[27] There is little fallow cultivable land left as more than 70% of the district is hilly and forest covered, and the terrain is mostly undulating.[28]

   Paddy is the main crop grown across the region. Beans, cowpea, and brinjal are cultivated during the monsoon. Among fruit crops, banana, papaya, citrus fruits, mango, areca nut, and litchi are cultivated. Mining is another important primary sector activity. Extraction of brick earth is carried out to provide raw material to brick kilns in the district.

   The major secondary sector activity in Khowai is brick manufacturing. It has 15 brick kilns.[29] The availability of brick earth makes the district suitable for further expansion of the sector. As part of its efforts to improve industrial prospects in the district, the Tripura government has set up a Government Industrial Training Institute in the district, to create a skilled labor pool.

4. **North Tripura:** The North Tripura District has a geographical area of 1422.19 sq km and a population of 4,44,579.[30] It is mostly hilly and shares a boundary of 53 km with Assam, of 109 km with Mizoram, and a 96-km-long international boundary with Bangladesh.[31]

   The economy of North Tripura is primarily based on primary sector activities like agriculture, animal resource development and fisheries. The main crops grown in the district include paddy, orange, pineapple, jackfruit, banana, lemon, Areca nut, and mango. Fisheries are also an important source of income, and many small- and medium-scale fisheries are in the region. Further, North Tripura also houses tea gardens, and rubber and bamboo plantations. The Jampui Hills region has been a major orange producing area.

[21] District Profile Gomati District, Tripura, Government of Tripura (2018).
[22] District Profile Gomati District, Tripura, Government of Tripura (2018).
[23] District Profile Gomati District, Tripura, Government of Tripura (2018).
[24] District Profile Gomati District, Tripura, Government of Tripura (2018).
[25] https://khowai.nic.in/.
[26] District Profile Gomati District, Tripura, Government of Tripura (2018).
[27] District Survey Report: Khowai District, Tripura, Government of Tripura (2018).
[28] District Survey Report: Khowai District, Tripura, Government of Tripura (2018).
[29] District Survey Report: Khowai District, Tripura, Government of Tripura (2018).
[30] https://northtripura.nic.in/.
[31] https://northtripura.nic.in/.

However, due to diversion of land for non-agricultural activities, there was a fall in orange production. The government is currently trying to revive citrus farming in the region.

The secondary sector is still growing in the district. It houses one industrial estate in Dharmanagar and an IIDC at Dewanpasa. Its closeness with Bangladesh and abundant horticultural output both make it a potential hub for food processing. The presence of the IIDC and the industrial estate will act to catalyze industrial growth in the region. There are 248 reported registered factories in North Tripura that employ 4482 people.[32] There are also many micro and small enterprises as well as artisan units in the district. There are 26 ready-made garments and embroidery units employing 182 persons; 12 wood/wood-based furniture units with 100 employees; 7 leather-based units employing 135 persons; 1 chemical-based unit with 16 employees; 7 rubber, plastic and petro-based units employing 170 persons; 2 mineral-based units employing 115 persons; 21 steel-based units employing 480 persons; 34 engineering units employing 110 persons; 42 repairing and servicing units employing 480 persons; and 96 other units employing 2694 persons.[33]

The existing manufacturing units in North Tripura will support the state government's current efforts to expand the secondary sector in the district.

5. **Sepahijala:** covers 1043.04 sq. km and has a population of 5,42,731[34]. Only about 12% of the district is occupied by small hilly ranges while the remaining 88% is almost plain land, bordering Bangladesh on the west and the south. The literacy rate of the district is 97.76%.[35]

   The main sources of livelihood are mostly primary sector based. A large number of people are involved in horticultural farming (vegetables and fruits) and rubber cultivation. The main crop cultivated in the district is paddy. Seasonal crops like potato, cabbage, radish, pulses, oilseeds, pineapples, and maize are also cultivated. Cash crops like rubber and tea are grown in many areas as well. The gross cropped area 93,399 Ha while 313 Ha of fallow land are yet to be developed.[36] Much of the agriculture is rain-fed or and by the local drainage system of streams, rivers, canals, and dug out wells. A few important rivers flowing through the district are Burima/Bijoy, Kachigung and Gomati. Mining is another important primary sector activity. Extraction of brick earth is carried out to provide raw material to brick kilns in the district.

   The major secondary sector activity in Sepahijala is brick manufacturing. It has 25 brick kilns.[37] The availability of brick earth makes the district suitable for further expansion of the sector. The district also has a commercial power plant, the Monarchak Solar Power Station, that is run by the North Eastern Electric Power Cooperation.

6. **South Tripura:** covers 1514.322 sq km and as per the Census (2011), the total population of the region is 4,30,499.[38] It shares a 204.487 km border with Bangladesh. The district is connected to Agartala by NH – 08.

   Anticlinal hill ranges forms the watersheds from which various drainage channels emerge. The district is drained by many perennial rivers, and the major rivers are Gomti, Muhuri, and Feni. A water quality assessment carried out by the TIDC at various locations in the district, namely Belonia, Sabroom, and Wards 2,4, 5, and 13 of Santirbazar, reveals that the groundwater in the region has a permissible pH limit. It does not contain toxic contaminant. However, the water in Belonia contains the highest volume of chlorides (35 mg/l) of all the locations included in the study. It also contains a high amount of calcium carbonate, increasing alkalinity. Additionally, it is relatively more turbid (5.4 NTU), falling above the permissible limit. The water in Sabroom and the four wards of Santirbazar, on the other hand, are less turbid, and have been found to have an acceptable taste and odour.

   The economy of South Tripura district is mainly primary sector based. Paddy, pineapple, jackfruit, banana, nuts, and mango are cultivated here. Fisheries are one of the main sources of income. There are several rubber and bamboo plantations in the region as well. 70% of the workers are dependent on agriculture for

[32] Brief Industrial Profile of North Tripura District, GoI.

[33] Brief Industrial Profile of North Tripura District, GoI.

[34] https://sepahijala.nic.in/

[35] District Survey Report: Sepahijala District, Tripura, Government of Tripura (2019).

[36] District Survey Report: Sepahijala District, Tripura, Government of Tripura (2019).

[37] District Survey Report: Sepahijala District, Tripura, Government of Tripura (2019).

[38] Brief Industrial Profile of Tripura (South) District, GoI.

their livelihood.[39] The tribal population continues to practice Jhum cultivation (shifting cultivation).

The district also has a vibrant secondary sector with 167 MSMEs.[40] These include, among others, 61 fabricated metal producers; 32 bricks/ cement producers; 23 food based units; 11 motor vehicle/cycle/automobile repair and service centres; 9 candle/decorative article/furniture and wooden fixtures/stamp manufacture units; 1 automobile battery servicing 1 ; 3 rubber sheets/ tyre retreading units; 3 screen printing, still photography/ computer servicing units; 4 bamboo and cane article/ wooden product manufacturing units; 1 jute article producer; 5 filtering and purifying machinery/ iron removal plant/ pumps and compressors repair units; 2 textile garments/tailoring units; and 5 agarbatti/bio-fertilizer making units. 3321 persons are employed in these units.[41]

Further, the state has four industrial areas – the Dhajanagar Industrial Estate, the Jalefa IIDC, the Sarasima IIDC, the Gokulpur IIDC, and a sawmill at Belonia.

7. **Unakoti**: covers 686.97 sq km and has a population of 2,98,194.[42] It shares a total international boundary of about 50 km with Bangladesh and is connected to the rest of Tripura by NH-44. The literacy rate of the district is 86.91%.[43]

   Primary sector activities provide livelihoods to a large section of the district's population. Paddy is the main crop grown here. Beans, cowpea, brinjal, banana, papaya, citrus fruits, mango, Areca nut, and litchi are also cultivated. The total cropped area in Unakoti is 22,442 Ha. Livestock and poultry farming are major sources of livelihood for the people of the region.

   There is some level of manufacturing activity in the district as well. There are 46 registered factories employing a total of 3994 persons.[44] These include wood and tea-based units and brick kilns.

8. **West Tripura:** is the most industrialized district in Tripura, covering 3544 sq kms.[45] It has all the essential infrastructure such as a well-developed airport, railway station, urban transportation, and rural transportation facilities. It has a population of 17,24,619.[46]

   Rural West Tripura is mainly dependent on primary sector livelihoods such as agriculture and allied activities. Paddy cultivation is the main agricultural activity. There are nineteen tea estates which makes the district the largest producer of tea.

   There are 1,863 registered industrial units and a total of 2,000 industrial units in West Tripura,[47] indicative of the flourishing secondary sector in the district. It also houses five industrial parks estates— the Arundhutinagar (AD Nagar) Industrial Estate, the Badharghat Industrial Estate, the Dukli Industrial Estate, Bodhjungnagar Growth Centre, and the Bodhjungnagar Export Promotion Industrial Park. Industries like steel plants, plastic- and rubber-based industries function out of these industrial estates. Dry fish, raw hides and skin, coir mattress, and fresh ginger are the major exportable products made in the region.

   The government has identified the following tertiary sector industries that can be set up in the region— automobile battery servicing; clinical laboratories; dyeing and printing units; fast food centres/ restaurants; pest control services; printing presses; watches and clocks repairing, sales and services; cycle and cycle rickshaw repairing; repairing of household electrical appliances; and web designing.[48]

Natural Resources: Tripura is well-endowed with natural resources, such as agro-horticultural and forest resources including a wide variety of medicinal plants, oil and natural gas, and mineral deposits.

[39] https://southtripura.nic.in/economy/
[40] Brief Industrial Profile of Tripura (South) District, GoI.
[41] Brief Industrial Profile of Tripura (South) District, GoI.
[42] https://unakoti.nic.in/demography/
[43] https://unakoti.nic.in/demography/
[44] https://unakoti.nic.in/factories-boilers/
[45] Brief Industrial Profile of Tripura (West) District, GoI.
[46] Brief Industrial Profile of Tripura (West) District, GoI.
[47] Brief Industrial Profile of Tripura (West) District, GoI.
[48] Brief Industrial Profile of Tripura (West) District, GoI.

The state, with climatic and geographical conditions that make it suitable for the cultivation for many kinds of horticultural and floricultural cultivation, is known for its vibrant food processing, bamboo, and sericulture industries. Local flora and fauna bear a very close affinity and resemblance with floral and faunal components of Indo-Malayan and Indo-Chinese sub-regions.

This section provides a brief exploration of the natural resource base of the region.

a. **Bamboo:** The state is a home to 21 species of bamboo, and an area of 7,195 hectares is used for bamboo cultivation.[49] Tripura's total bamboo yield is 1,88,512 MT/year out of which 82.7% is Muli Bamboo, 8.5% is the B. Tulda (Mrittinga) variety, while other varieties constitute the remaining 8.8%.[50] Further, it houses the largest bamboo flooring unit in India with a turnover of INR 25 Crore.[51]

b. **Rubber:** Tripura produces 83,701 mt of rubber[52] making it the second largest producer of rubber in India after Kerala. The area under rubber cultivation is 85,000 hectares. The state has more than 1 lakh rubber growers. Rural economy of INR 1,200 Crore is rubber-based and its cultivation has helped settle tribal *jhumias* (shifting cultivators).[53]

c. **Tea:** It is the fifth largest tea producing state of India. The state has 58 tea gardens as of February 2020 that cover an area of >6,885 hectares.[54] There are a total of 23 tea processing factories, of which 4 are cooperatives, 2 are public sector ones while 17 are privately owned.

d. **Tropical harvest:** Tripura has the optimal climatic conditions for the cultivation of various tropical fruits and horticulture crops like pineapple, jackfruit, and oranges. Plantation crops like Areca nut, Coconut, Cashew, various winter and summer vegetables, spices, and flowers can also be cultivated here. As per the third advance estimate of 2019-20, the total fruit production in the state is 562.46 thousand MT, while vegetables and spice yields are 811.67 thousand MT and 33.15 thousand MT respectively. The total area under horticulture in the state is 121160 ha. An additional 1370 ha area for fruit cultivation, 1142.6 ha for Areca nut cultivation, 5050 Ha for vegetables and 200 Ha for open field flower have been brought under cultivation during 2019-20 which has benefitted nearly 30,000 farmers in the state.[55]

e. **Natural gas:** Tripura is endowed with natural gas (~97 methane) with estimated availability of 400 BCM, this is commercially exploitable but due to lack of physical infrastructure to transport it to main nodes, it is still untapped. For the upstream segment, Assam and Tripura are the primary hydrocarbon producers.

f. **Medicinal Plants:** Tripura's tropical climate supports the growth of various plants with medicinal value. It is home to 266 medicinal plants, 581 herbs and 379 species of trees. Out of the 266 medicinal plants identified by the Tripura Forest Department, 12 are suitable for cultivation and income generation.[56] Between 2008 and 2011, 1,513 kg Gamar seeds were marketed by the Medicinal Plant Board of Tripura to Oushadhi Pharmaceuticals. Further, from 2011 to 2014, Kalmegh amounting to 984 kg was marketed by the board, generating sales proceeds of INR 33,209.[57]

g. **Sericulture:** In Tripura, mulberry sericulture was introduced at a small level during the 5th five-year plan on the recommendation of the North Eastern Council. Initially it was confined only to government farms but was slowly expanded into villages. At present, there are 20 sericulture clusters functioning across the state's 8 districts.[58] In 2020-21, 3.6 MT silk was produced in the state while 40.3 MT of mulberry cocoons were harvested.

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49 ENVIS Centre (http://trpenvis.nic.in/test/forest.html).

50 Government of Tripura (https://www.indianchamber.org/wp-content/uploads/2019/03/DESTINATION-TRIPURA-INVESTMENT-SUMMIT.pdf)

51 Government of Tripura (https://www.indianchamber.org/wp-content/uploads/2019/03/DESTINATION-TRIPURA-INVESTMENT-SUMMIT.pdf)

52 Government of Tripura (https://www.indianchamber.org/wp-content/uploads/2019/03/DESTINATION-TRIPURA-INVESTMENT-SUMMIT.pdf)

53 Government of Tripura (https://www.indianchamber.org/wp-content/uploads/2019/03/DESTINATION-TRIPURA-INVESTMENT-SUMMIT.pdf)

54 ENVIS Centre (http://trpenvis.nic.in/test/forest.html).

55 Government of Tripura (https://www.indianchamber.org/wp-content/uploads/2019/03/DESTINATION-TRIPURA-INVESTMENT-SUMMIT.pdf)

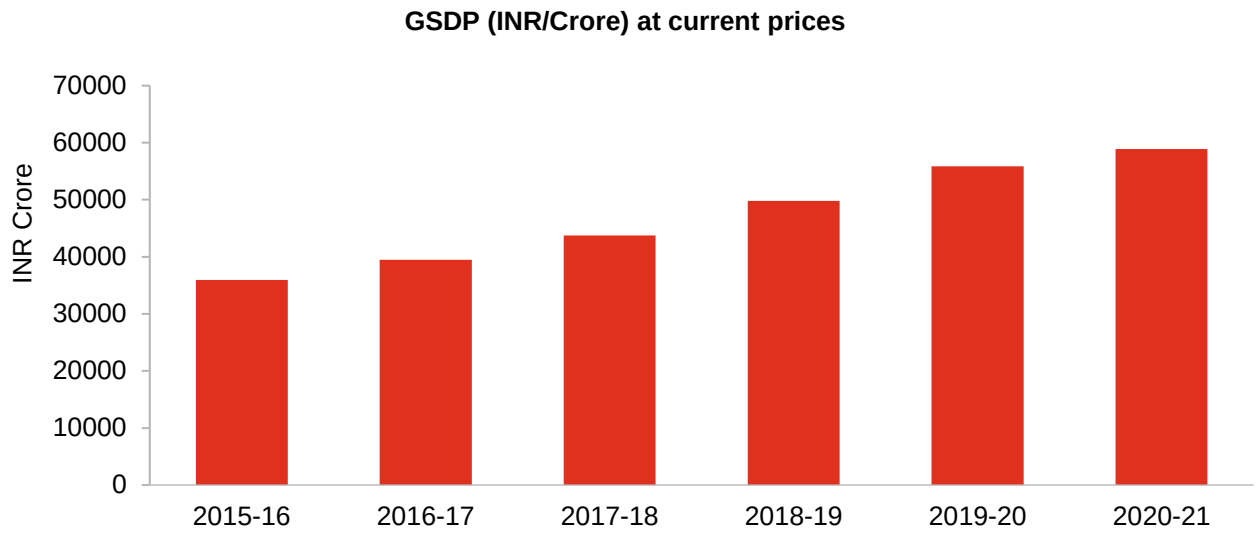
56 Government of Tripura (https://farmersportal.tripura.gov.in/PDF/profile/forest/Medicinal_New.pdf)

57 Government of Tripura (https://farmersportal.tripura.gov.in/PDF/profile/forest/Medicinal_New.pdf)

58 North Eastern Development Finance Corporation Ltd (http://databank.nedfi.com/)

Economic Profile of Tripura:

Figure 3: Tripura's GSDP at current price



Source: Directorate of Economics & Statistics, Government of Tripura

Tripura has been registering an upward trend in its GSDP, revealing a steady growth of the state's economy. The annual growth rate of GDP (at constant prices) per capita is 8.84%[59]. The NSDP of the state has grown at a CAGR (in INR) of 10.15% between 2015-16 and 2020-21.[60]

While there has been a clear increase in Tripura's GSDP, Tripura remains industrially backward, the primary reason for this being its geographical isolation. The low availability of infrastructure has made economic development and decentralization challenging, which has kept the state from realizing the full potential of its diverse resource base.

It is a primarily agrarian state, with more than 40% of the population depending on agriculture and allied activities[61]. However, only about 26% of the land in the state is cultivable, as the rest of the terrain is hilly and forested, which constrains the amount of land available for farming. Rice is the most widely grown crop in the state. Its climate is suitable for a variety of horticultural/ plantation crops as well, including pineapple, jackfruit, tea, rubber, and bamboo. The undulating topography of the land favors fruit production.

The contribution of the primary sector to the state's GSDP was 43.02% in 2020-21, marginally lower than that of the tertiary sector. As stated above, geographical conditions in Tripura are suited to the cultivation of horticultural crops such as banana and pineapple, and several horticultural schemes have been initiated, including programmes for the development of fruit trees, and of kitchen gardens.

Cropping accounted for 45.42% of the sector's GSDP while livestock rearing and mining and quarrying contributed 11.69% and 21.21%, respectively. Other major primary sector activities in the state include forestry and logging. Small and marginal farmers constitute about 96% of the total farmers in Tripura against 78% that of country. Agriculture and allied activities are main backbone of the state's rural economy. In 2020-21, INR 1091.30 Crore was spent by the state government on agriculture and allied services.

The secondary sector contributed 10.86% to the state's GSDP between 2020-21. Within the sector, the share of construction in the GSDP was 48.86%, making it the most profitable secondary sector activity in the state while water supply had the lowest contribution at 3.1%. The manufacturing sector accounted for 21.48% of the secondary sector's GSDP, indicative of the need to strengthen manufacturing activities in the state.

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[59] Economic Review of Tripura 2020-21
[60] Ministry of Statistics and Programme Implementation
[61] Economic Review of Tripura 2019-20

The tertiary sector's share in Tripura's GSDP in 2020-21 was the highest of the three sectors at 46.13%. The largest contributor in the tertiary sector in Tripura is public administration. Public administration had the largest share out of all tertiary sector activities at 28.11%. Trade, hotels, and restaurants were a close second, with a 24.01% share in the GSDP. The smallest share was that of financial services at 6.01%, followed by transport, storage- and communication-related services, which accounted for 8.45%.

There has been a gradual shift in economic base from primary to tertiary sector activities. Manufacturing activities have not seen similar growth owing to low industrialization and infrastructure related challenges. To remedy this, the government has taken various steps to increase industrialization and attract investments. The state currently has one SEZ, five industrial estates, six industrial areas, and four PSUs.[62]

The table provided here shows the sector-wise contribution to the GSDP and is indicative of the weak secondary sector of the state, which consistently contributes the least to the GSDP.

Table 2: Sector-wise Percentage Contribution to GSDP at current prices

Sector	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19 (2nd RE)	2019-20 (1st RE)	2020-21 (ADV)
Primary	33.48	32.67	33.29	41.22	43.18	43.05	40.15	41.43	43.03	43.02
Secondary	14.11	15.27	14.19	15.01	12.95	13.65	13.49	13.43	11.69	10.86
Tertiary	52.41	52.06	52.52	43.77	43.87	43.3	46.36	45.14	45.28	46.13

Source: Economic Review of Tripura 2020-21

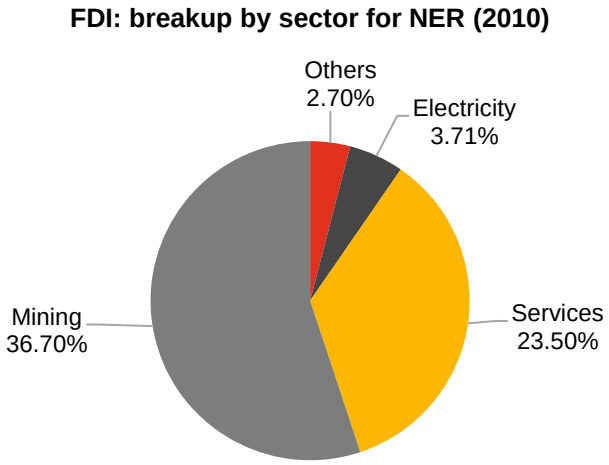
Investment Trends: Tripura has recorded impressive growth rate during the last decade; the state's economy achieved a growth rate of 9.2% in real terms during 2014-15.[63]

a. **Foreign Direct Investment (FDI):** Owing to the relative lack of industrialization in the state, the FDI inflow into Tripura is lower than that of many other Indian states. FDI inflow into Tripura stood at USD 122 million between April 2000 and September 2019. Between October 2019 and March 2021, inflows stood at USD 0.43 million.[64] Out of the total FDI sums India draws, the share of the NER states in this is less than 1%.[65]

According to the GoI's Department for Promotion of Industry and Internal Trade, the top ten sectors that attract FDI inflows are the services sector, computer software and hardware, telecommunications, trading, construction development (townships, housing, built-up infrastructure, and construction development projects), automobile industry, construction (infrastructure) activities, chemicals (other than fertilizers), drugs and pharmaceuticals, and hotels and tourism.

62 Niti Aayog
63 TIDC (https://tidc.tripura.gov.in/about-tripura)
64 Department for Promotion of Industry and Internal Trade (DPIIT)
65 Northeast Economic Corridor: Bringing People and Markets Together, ADB (2020).

Figure 4: FDI Breakup of NER region



Source: CMIE database

the FDI breakup by sector for the NER states shows that mining attracted the largest share of investments followed by the service sector. Considering the overall share of Tripura's foreign investments alongside that of other states in India, despite its huge manufacturing potential and high literacy rate, the region attracts low FDI inflows.

b. **Exports and Imports:** Tripura's foreign trade is focused on Bangladesh. The total volume of trade has increased manifold- from a meagre INR 4.12 Crores during 1995-96 to about INR 537.08 Crores during 2018-19[66].

The following table shows the trade volume during last few years as well as the rising level of exports:

Table 3: Trade Volume of Tripura

Year	Imports (Crore/INR)	Exports (Crore/INR)	Total (Crore/INR)
2014-15	357.65	1.02	358.67
2015-16	381.76	1.96	383.72
2016-17	300.23	4.6	304.83
2017-18	384.22	6.46	390.68
2018-19	522.42	14.66	537.08

Source: Department of Industries & Commerce, Government of Tripura

Given below are tables showing the composition of imports and exports between 2020-21:

Table 4: Composition of Exports

S. No.	Commodity	Total Value (INR Cr)
1.	Fresh Ginger	4.51

[66] Department of Industries & Commerce, Government of Tripura

S. No.	Commodity	Total Value (INR Cr)
2.	Seeds of Cumin	4.34
3.	Grapes	2.31
4.	Pomegranate	1.73
5.	Citrus	1.51
6.	Dry Fish	0.88
7.	Wood Apple	0.36
8.	Onion	0.08
9.	Fresh Orange	0.07
10.	Tamarind	0.07
11.	Other commodities	0.53
Total		**16.39**

Source: Directorate General of Commercial Intelligence and Statistics (DGCIS), Annual Industries Survey (AIS)

Table 5: Composition of Imports (2020-21)

S. No	Commodity	Total Value (INR Cr)
1.	Variety of fish- Small fish	248.61
2.	Food Items	157.67
3.	Cement	130.13
4.	Dry Fish	47.31
5.	Steam Coal	42.37
6.	Plastic Items	19.72
7.	Steel Sheets	14.47
8.	PVC Pipes/ Tube	12.05
9.	Flavor Drinks	9.84
10.	MS Rod	6.94
11.	Other commodities	27.76
Total		**716.87**

Source: DGCIS, AIS

Primary sector exports dominate the total exports of the state, emphasizing the need to strengthen the secondary sector. With the state government focusing on bamboo and rubber products, and food processing, secondary sector exports in nearby markets can be increased.

Apart from the export commodities mentioned in the table above, other major exports from Tripura include limes, jackfruit, and pineapples. Its primary foreign trade partner, Bangladesh, has also been importing spare parts of CNG-run vehicles, broomsticks, and rubber latex from the state since 2018.

Existing Infrastructure: To fully understand the investment trends in Tripura, it is important to look at the current physical infrastructure of the state.

Though it can be said to be strategically located in terms of its potential to help build India's trade relations with South East Asia, the Partition of India in 1947 left Tripura greatly disadvantaged in terms of connectivity. Prior to partition, the distance by road from Agartala to Kolkata for instance was about 500 km. After partition, the route to Kolkata via the Siliguri land corridor became 1,700 km long. Connectivity through various waterways too was severed.

1. **Roadways:** Tripura currently has 6 National Highways spread over 854 km, and 4 in-principle declared National Highways covering 229.25 km.[67] The National Highway, linking Agartala to Guwahati, has been upgraded and extended up to Sabroom (the southern-most point in the State), which is about 75 km. away from Bangladesh's Chattogram port. The state is currently developing the Kailashahar – Kumarghat section of NH-208, the Khayerpur – Amtali section (Agartala bypass) of NH-08, the Agartala – Khowai section of NH-108B, the Kailashahar – Kurti bridge of NH-208A, the Manu – Simlung section of NH-44A, and the Churaibari – Agartala section of NH-08 (strengthening with paved shoulder). Besides this, two RCC Bridges over river Muhuri and over river Gomati are being developed and geometric improvement on the 21.789 km long Churaibari – Agartala section of NH-44 has also been undertaken.

   Apart from this, a new bridge, the Maitri Setu has been constructed as an important roadway in the state. The bridge is a 150-metre (490 ft) bridge on the Feni River. It links Tripura with Bangladesh's Chattogram port, and thus provides a shorter and more economical route between the state and Bangladesh as well as between India's eastern and western states. The bridge was opened to the public in March 2021.

2. **Railways**: Currently, the rail route in Tripura covers 264 km. This network is entirely broad gauge. In 2019, it completed the 38 km Belonia–Sabroom rail line, connecting Sabroom, Tripura's southernmost town, to the rail network. This was the last section of a new 114 km broad gauge Agartala–Sabroom rail line.

   Currently, the major outgoing commodity by rail are bricks and stones which are shipped by rail to Assam, West Bengal, and Odisha. Meanwhile, food grains (mainly from Punjab and Haryana) arrive in Tripura by rail. The main origin stations for goods in Tripura are Jirinia, Belonia, and Kumarghat, while the main destination stations are Agartala and Belonia.

   The Agartala–Akhaura broad-gauge rail line connecting Tripura and Bangladesh, a major 12-km-long rail project, is under construction in the state. The length of the section in India is expected to be 5.5 km and the remaining 6.5 km is expected to be in Bangladesh. The entire cost of the project, including the rail line in Bangladesh, will be borne by the GoI. The Ministry of Development of North Eastern Region is financing the work on the Indian side, while the GoI's Ministry of External Affairs is financing the work on the Bangladeshi side.

3. **Airports**: Owing to the hilly terrain, landslides, and other socioeconomic factors, air travel is the most efficient way of commuting to and from Tripura. This means that while industries like tourism and information technology depend squarely on flying, others (whose cargo is not transported by air) are also dependent on air-based transport for personnel to run and expand their businesses. Agartala Airport is the second busiest airport in North East and efforts are currently underway to make it an international one. People in Tripura are dependent especially on the flights operating between Agartala-Kolkata and Agartala-Guwahati. Besides, recent improvements have been made to air connectivity with other sectors of the country- from Agartala to Delhi, Mumbai, Bangalore, Hyderabad and Chennai. The runway at the airport has been extended to 7,500 feet and an Instrument Landing System has been successfully installed making night operations possible.
4. **Inland Waterways**: Two inland waterway routes that can connect the rest of India to Tripura are Kolkata–Ashuganj–Agartala and Kolkata–Daudkandi–Sonamura. They shorten the distance between Agartala and

[67] PWD (R&B), Tripura

Kolkata significantly (the current road distance via the Chicken Neck Corridor is ~1,650 km).

As India and Bangladesh signed a Protocol on Inland Water Transit and Trade (PIWT&T) in 1972, which allows inland vessels of one country to transit through the routes of the other country specified in the protocol, the development of these waterways have the potential to benefit both nations.

5. **Electricity**: The state is presently a power-surplus one. In 2019-20, 712,16 MU of power was generated in the state.[68] The Tripura State Electricity Corporation Ltd has a total capacity of 110 MW from 3 generating stations, namely the Gomuti Hydro-electric Project, the Baramura Gas Thermal Power Station and the Rokhia Gas Thermal Power Station. In addition to this, it has diesel-based generating units of 5.85MW, which have been in operation since pre-1947.[69] Further, there is also an ONGC-run power plant in Udaipur district's Palatana village.
6. **Industrial Infrastructure**: In order to improve industrial infrastructure, the Tripura Industrial Development Corporation Ltd. Is to set up a Special Economic Zone (SEZ) at Paschim Jalefa, Sabroom, South Tripura District. This will be a multi-sector SEZ.

   Other infrastructure for trade includes **Land Custom Stations** (LCSs) and **Border Haats**. Tripura currently has 8 notified LCSs at Agartala, Srimantpur, Muhurighat, Khowaighat, Dhalaighat, Manughat, Old Raghnabazar and Sabroom. However, out of these, the Dhalaighat LCS is operational for immigration purposes only and the Sabroom LCS is yet to become operational.

   Further, two Border Haats, located at the Srinagar-Chhagalnaiya and Kamalasagar-Tarapur border points have been set up on the Tripura- Bangladesh border. Both the haats are functional and have contributed not only to boosting the local economy but to strengthening the ties between the people of the two countries.[70] New haats have been proposed for development at Raghna (North Tripura) and Kamalpur (Dhalai). In addition, a site has already been selected for a similar haat at Kathalia (Nirbhaypur) in Sipahijala and the site selection process is underway for a haat at Khowai. The goods sold by people from Tripura include local handicrafts, horticultural produce like banana and jackfruit, cosmetics, steel utensils, saree, and unstitched cloth. Sellers from Bangladesh trade in dry fish, bakery items, sarees, plastic goods, fruits like green apple and watermelon, and some local vegetables.

Industrial policy: To promote economic development, Tripura offers various incentives to its investors under the Tripura Industrial Investment Promotion Incentive Scheme (TIIPIS), 2022[71], which will remain in force for a period of five years, ending on 31st March 2027.

A brief of the same are provided in the table below.

Incentive	Benefits	Special Provisions for Thrust Sectors [72]
Capital Investment Subsidy	30% on fixed capital investment subject to a ceiling of INR 100 Lakh per enterprise.	For thrust sector industries subsidy rate is 40% and the ceiling is INR 125 Lakh per enterprise

[68] Tripura State Electricity Corporation Ltd. Agartala

[69] TSECL

[70] Department Of Industries & Commerce, Government Of Tripura

[71] Tripura Industrial Investment Promotion Incentive Scheme (TIIPIS), 2022, Government of Tripura (https://industries.tripura.gov.in/sites/default/files/TIIPS-2022.pdf).

[72] The state has identified the following as its thrust sectors: **(I) Manufacturing Sector**: Industrial units which are using bamboo, rubber, agriculture and horticultural produce and natural gas as their major raw materials during production; Tea manufacturing; agar oil extraction industry; rubber wood processing industry; industrial units using plastic waste/e-waste as major raw material during production; Municipal Waste Processing; packaging material manufacturing activity; agricultural waste processing industry; industries manufacturing/using bio-degradable plastics; industries making cutlery items using areca nut leaves or bamboo, and **(II) Service Sector**: tourism promoting activities (water sports, ropeways, adventure and leisure sports, and floating restaurants) with a minimum investment of INR 3 Crore

Incentive	Benefits	Special Provisions for Thrust Sectors [72]
Procurement Preference	15% on all purchases through tenders by State Government Agencies on products manufactured by eligible enterprises	-
Industrial Promotion Subsidy	Subsidy equal to the net amount of the "Goods and Services Tax" actually paid by an enterprise. Subject to an overall ceiling of INR 80 Lakh per annum. The aggregating limit of entitlement of an enterprise for 5 years cannot exceed 150% value of investment made in plant and machinery.	The annual upper ceiling of the subsidy is INR 125 Lakh per enterprise.
Export Promotion Subsidy	Paid to industrial enterprises on exporting goods through the Land Custom Stations in the state at a rate of 10% on value of export. Subject to an upper ceiling of INR 50 Lakh per annum. Only for the items manufactured in Tripura, provided an enterprise achieves at least 20% value addition within the state.	-
Power charges	Provided to all eligible industrial units with connected load of above 20 HP at a rate of INR 5.00 per unit without any upper ceiling. Industrial units with connected load up to 20 HP will be provided partial reimbursement of power charges at 25% of power charges actually paid by the enterprise, subject to a maximum amount of INR 15.00 Lakh per enterprise per annum.	Annual upper ceiling is INR 25 Lakh per enterprise per annum.
Partial Reimbursement of Interest on Term Loans	4% of the interest on term loan availed by the enterprise. Subject to an upper ceiling of INR 5.00 Lakh per enterprise per annum.	Rate of 5% with an upper ceiling to INR 12 Lakh per enterprise per annum.
100% Reimbursement of Standard Certification charges/ fees/ expenses	One-time payment for standard certifications in 12 selected areas issued by national and international bodies. Also applicable for reimbursement of fees/ charges on account of yearly renewal of standard certifications. One-time full reimbursement of fees payable for acquiring Technical Know-how/ Technology Transfer from any recognized	-

(excluding cost of land); hospitals/nursing homes with minimum investment of INR 3 Crore (excluding cost of land) with a minimum capacity of 25 beds.

Incentive	Benefits	Special Provisions for Thrust Sectors [72]
	national/ international research laboratories/ technical institutes/ universities.	
100% Exemption from the payment of Earnest Money and Bid Security Deposits	For all eligible local enterprises on tenders floated by State Government Agencies.	-
Employment Cost Subsidy	-	Full reimbursed to eligible Micro, Small and Medium Enterprise belonging to the thrust sector on contribution made towards EPF and ESI Scheme. Subject to employment of 20 or more skilled and semi-skilled workers who are domicile of Tripura.
Subsidy on fees paid for Credit Guarantee of loans	Paid to micro and small enterprises on loans granted by Banks/ NBFCs.	-
Subsidy for participation in fares and exhibitions	-	To be reimbursed at a rate of 50% of the expenditure incurred for travelling expenses of one person and transportation of goods. Subject to an upper ceiling of INR 1.00 Lakh for each participation. This is further subject to two maximum participations a year per unit.
State Transport Subsidy	50% of transportation cost incurred for transportation of secondary raw materials by rail from the railway station nearest to the location of the seller to the Railway Station nearest to the location of the buyer as per Railway Standard Parcel Rate	-
Operational Subsidy to industrial units	New eligible industrial units availing fixed capital investment subsidy from any subsidy scheme of the State/ Central Government to be provided all operational subsidies	-
Special Incentives to Industrial Enterprises that continue to operate for five (5) years a. Industrial	a. Industrial Promotion Subsidy: provided to enterprises at 25% of Goods and Services Tax actually paid after 5 years of operation with the condition that the aggregating subsidy amount paid since	a. - b. the annual upper ceiling is INR 25 Lakh per enterprise. c. -

Incentive	Benefits	Special Provisions for Thrust Sectors [72]
Promotion Subsidy b. Power Charge Subsidy c. Employment Cost Subsidy	commissioning of the project shall not exceed the 150% of investment in plant and machinery b. Power charges will be provided to all eligible industrial units with connected load of above 20HP at a rate of INR 5.00 per unit without any upper ceiling. The industrial units with connected load up to 20 HP will be provided partial reimbursement of power charges at 25% of the power charges actually paid by the enterprise, subject to a maximum amount of INR 15.00 Lakh per enterprise per annum. c. Employment cost subsidy for MSMEs employing 20 or more persons domiciled in Tripura at a rate of 50% of employer contribution paid towards EPF and ESI after 5 years of operation.	

Similarly, **central schemes** also provide various incentives to industries in the state. Under the GoI's North East Industrial Development Scheme, the following incentives are provided to eligible industrial units on a reimbursement basis:

Central Capital Investment Incentive for Access to Credit: 30% of investment in plant and machinery with an upper limit of INR 5 Crore per unit.

Central Interest Incentive: 3%
on working capital credit advanced by eligible banks/financial institutions for the first 5 years from the date of commencement of commercial production of a unit.

Central Comprehensive Insurance Incentive (CCII): Reimbursement of 100% insurance premium on insurance of building and plant and machinery for 5 years from the date of commencement of commercial production of a unit.

Goods and Service Tax (GST) Reimbursement: Reimbursement up to the extent of the Central Government's share of CGST and IGST for 5 years from the date of commencement of commercial production of a unit.

Income Tax Reimbursement: Reimbursement of the Centre's share of income tax for the first 5 years, including the year of commencement of commercial production of a unit.

Transport Incentive (TI): The following are the subsidies provided under this-
a) 20% of the cost of transportation including the subsidy currently provided by the Railways/ Railway PSU for movement of finished goods by rail.

b) 20% of the cost of transportation for finished goods, for movement through inland waterways.

c) 33% of the cost of transportation of air freight on perishable goods (as defined by the International Air Transport Association) from the airport nearest to the place of production to any airport within the country.

Employment Incentive (EI): The Centre pays 3.67% of the employer's contribution to the Employees Provident Fund (EPF) in addition to Government bearing 8.33% Employee Pension Scheme (EPS) contribution of the employer in the Pradhan Mantri Rojgar Protsahan Yojana (PMRPY).

The overall cap for benefits under all the components is INR 200 Crore per unit.

Challenges Faced by Tripura: Limited private investments and rudimentary physical infrastructure restrain the state's growth potential.

Though it now has essential infrastructure, this is hardly sufficient to stimulate industrialization. Reasons for the current state of insubstantial development are mentioned below:

Geographical:

- Due to restrictions, the only way possible to traverse is through its own boundaries by passing Chicken's Neck (via Siliguri corridor), which increases travel time manifolds.
- Geographical isolation from rest of India escalates the logistics cost and time for the products to reach target markets, reducing its competitiveness.

Climate:

- Coupled with the geographical isolation of the state, the climate of Tripura, with its long rainy season of 6 months, limits the working season to 4-6 months. Thus, projects completion time and costs both increase substantially.

Funding and financing:

- Tripura is special category state and dependent on its funding from the central government. But the "management of its long international border imposes huge administrative and financial costs"[73] on Tripura.
- Also, as a result of the relatively slow pace of industrialization and high unemployment, the state has a limited tax base.[74]

Absence of skilled labor:

- Although, Tripura has a high literacy rate of 87.22%, that does not assure high skilled labor or relevant talent for carrying out any activity to run the industry.

Inadequate infrastructure:

- Irregular topography makes it difficult and creates transportation choke points.
- Absence of cold storages and proper warehousing facility lead to agri-wastage and lowers the income of farmers.
- The development of agriculture and allied activities, especially for integration into global value chains, is crucial.

Environmental challenges:

- While Tripura's forest cover provides huge ecological as well as economic benefits to the state, there is an 'opportunity cost in terms of the area that becomes unavailable for other economic activities and this results in development and fiscal disability'[75].

Considering the above challenges and opportunities in Tripura, the following sections in the report focus on identifying priority sectors for the state and on developing an industrial policy that can help stimulate growth in these identified sectors. As part of this, policy instruments have been identified. Further, actionable policy interventions that can improve the current investment climate of Tripura have been suggested as well.

[73] Economic Review Of Tripura (2019-20), Directorate of Economics and Statistics, Government of Tripura (2020).
[74] Economic Review Of Tripura (2019-20), Directorate of Economics and Statistics, Government of Tripura (2020).
[75] Economic Review Of Tripura (2019-20), Directorate of Economics and Statistics, Government of Tripura (2020).

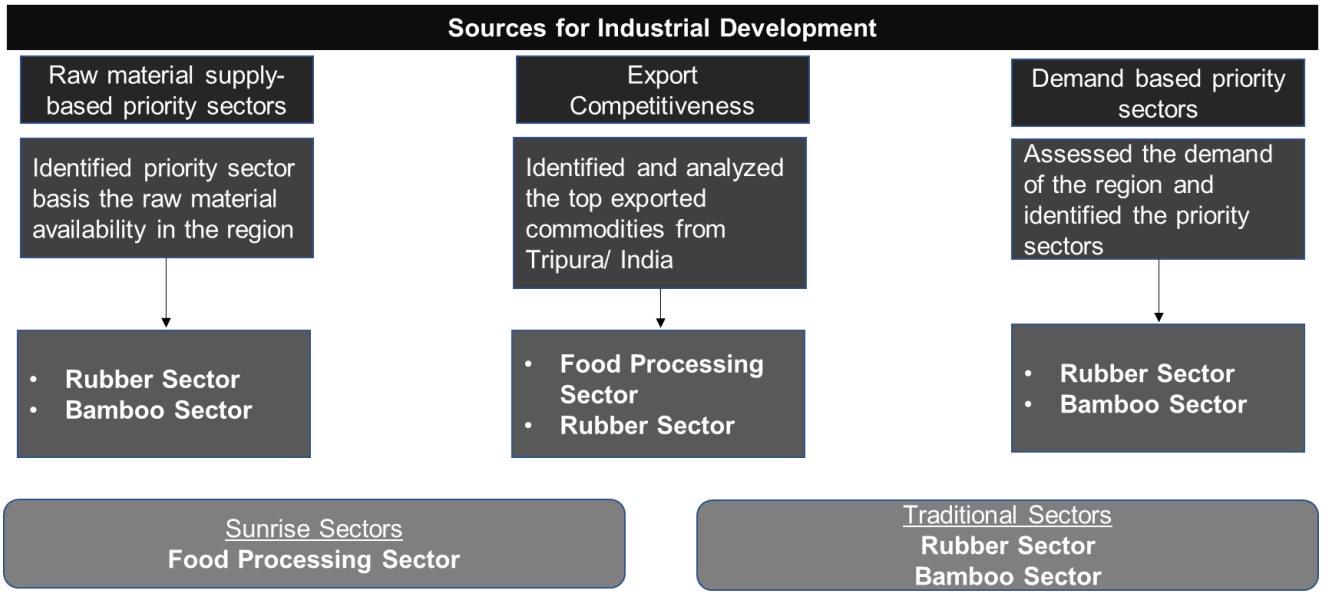
3. Identification of Priority Sectors

3. Identification of Priority Sectors

The selected priority sectors should be able to develop/ enhance the capability of the region for serving both current and emerging needs of the market. The framework given below builds on ADB's feasibility study, Northeast Economic Corridor: Bringing People and Markets Together, to develop an economic corridor in the NER. The NEEC report has identified priority sectors for the region which included agro-processing, bamboo, oil and gas, rubber processing, cement, and medical tourism.

The following sector identification framework for Tripura explains the step-by-step process of identifying the priority sectors (both traditionally strong and sunrise sectors) and focusses on both current performance and future potential of industries/ sectors in Tripura.

Figure 5: Framework adopted to identify priority sectors for Tripura



A three-criteria framework has been used to identify priority sectors.

1. **Raw material-based priority sectors:** As a part of this criterion, priority sectors will be identified by assessing the raw material availability in the state and its production capacity.
2. **Export competitiveness:** In this criterion the consultant has undertaken assessment of potential exports from Tripura. Further value-added products which can be competitive have been identified based on origin destination analysis. This assessment will help in arriving at a list of products with high export potential.
3. **Demand based priority sectors:** As a part of this criterion consultant has analysed India's top imported commodities over the recent years. Further based on the raw materials available in Tripura, consultant shall shortlist imported products in India which can be manufactured in Tripura. Finally, the consultant will explore whether the Import Substitution Industrialization (ISI) is feasible considering the domestic manufacturing cost and cost of current imports.

A prioritized list of sectors has been compiled based on the outcomes of these four criteria. Using this list, further division into two different categories, i.e., traditionally strong and sunrise sectors has been prepared.

3.1. Identification of priority sectors

As discussed in the previous sub-section on selection framework, identification of priority sectors is done using the following four criteria:

3.1.1. Export competitiveness

In this subsection, products from Tripura which can be exported have been identified. Currently, few commodities mostly in their natural form are being exported to various countries. These include vegetables and fruits.

Tripura has a significant trade deficit, with an import value of INR 717 crores and an export value of INR 16.39 crores (FY 2020-21). Below mentioned is the volume of total trade from FY 2006-07 till 2020-21.

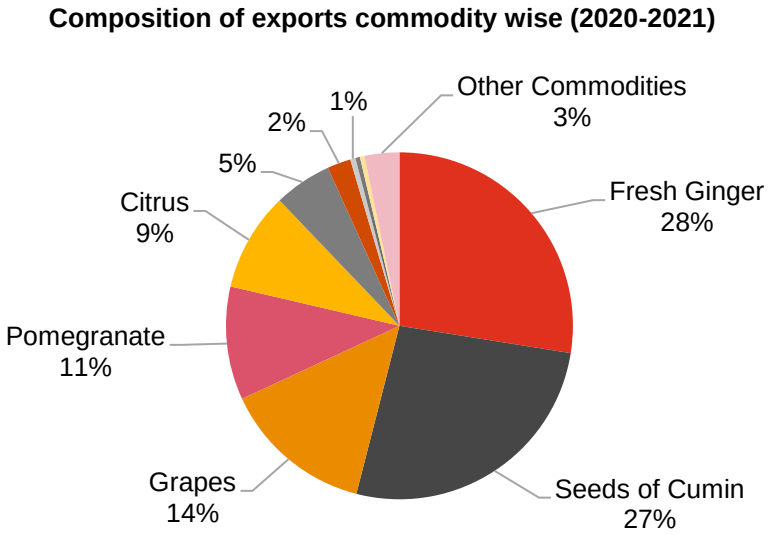
Table 6: Volume of Trade- Imports and Exports of Tripura

Year	Imports (Rs. in Crores)	Exports (Rs. in Crores)	Total
2006-07	48.69	0.87	49.56
2007-08	84.15	1.51	85.66
2008-09	125.94	0.26	126.20
2009-10	162.88	0.42	163.30
2010-11	255.88	1.71	257.59
2011-12	329.05	1.55	330.60
2012-13	342.65	0.41	343.06
2013-14	229.89	0.41	230.24
2014-15	357.65	1.02	358.67
2015-16	381.76	1.96	383.72
2016-17	300.23	4.60	304.83
2017-18	384.22	6.46	390.68
2018-19	522.42	14.66	537.08
2019-2020	644.78	30.34	675.12
2020-2021	716.87	16.39	733.26

Source: https://ecostat.tripura.gov.in/eco-review-2020-21.pdf (Economic survey 2021)

Given below is the composition of export commodities in FY 2020-21. It may be observed that all the products which are being exported are in their natural form and no major processing of the goods is happening, leading to low value exports.

Figure 6: Composition of exports commodities



Source: https://ecostat.tripura.gov.in/eco-review-2020-21.pdf

However, considering the favourable weather conditions in the region, there are a wide variety of crops that are available. The table below highlights the various crops and the production quantity in FY2020-21

Table 7: Crops and their production in FY 2020-21

S. No.	Crops	Area (Ha)	Production (Lakh MT)	Productivity (MT/ Ha)
1.	Mango	10288	52366	5.09
2.	Pineapple	9859	143744	14.58
3.	Orange	4707	21087	4.48
4.	Jackfruit	5491	133251	24.27
5.	Banana	10677	110400	10.34
6.	Litchi	933	3219	3.45
7.	Lime/ Lemon	5014	24167	4.82
8.	Papaya	3146	31775	10.10
9.	Sapota	91	569	6.25
10.	Musambi	1190	2404	2.02
11.	Guava	673	3156	4.69
12.	Others	2208	19210	8.70
Total		**54277**	**545348**	**10.05**

Source: Horticulture and Soil Conservation, Tripura

Currently, most of the fruits are not processed and are being sold in their natural form. The food processing industry in the state is still at a nascent stage. Further it could also be noted that fruits such as pineapple and jackfruit are extremely popular crops from the region. In 2018, the President of India also named Queen variety of pineapple as the state fruit of Tripura.

Only about 5-10% of the total produce is currently processed in India in contrast to developed countries like USA where 95% of the produce undergoes food processing. As per Agricultural and Processed Food Products Export Development Authority, there is huge potential for food processing industry in the northeast region. The table below highlights the food processing potential for major crops in north east. Among these crops, Tripura is famous for Pineapple and Jackfruit.

Table 8: Marketable surplus in some of the key crops grown in NER

Product Name	Production in NER (MT)	Consumption in NER (MT)	Market Surplus (MT)	Market Surplus as % of production
Ginger	355454	49241	306213	86.1
Lemon	215287	38605	176682	82.1
Orange	589736	86606	503130	85.3
Pineapple	777144	38891	738253	95.0
Jackfruit	492898	82295	410603	83.3
Rice	6754700	6387320	367380	5.4
Maize	350000	10246	339754	97.1
Banana	1208197	243846	964351	79.8
Chili	122444	89760	32684	26.7
Litchi	78847	3666	75181	95.4
Papaya	216462	80259	136203	62.9
Grapes	23980	4054	19926	83.1

Source: Agricultural and Processed Food Products Export Development Authority

Considering the above food processing potential and the availability of produced fruit in the region, food processing has been considered as one of the priority sectors in Tripura.

Currently, Tripura has competitive advantage in the production of pineapple, jackfruit, rice, food grains, etc. Upon further analysis, it is found that rice and food grains produced in the region are locally consumed with a surplus of less than ~10-20%, but in the case of fruits like pineapple, jackfruit, and orange the market surplus after consumption can go be as high as ~85-90%. This indicates a huge potential for setting up of fruit processing industries. Further, organic farming is gaining a lot of prominence and the state government has certified 2,000 hectares of land for organic farming. This may further boost the growth of organic farming and organic food processing in Tripura.

3.1.2. Demand based priority sectors

In this subsection, products whose current demand is being met through imports, but which can be manufactured competitively in Tripura are identified. Demand based priority sectors is a strategy focusing on promoting domestic production to foster industrialisation. The strategy aims towards self-sufficiency by protecting and incubating local industries so that the goods produced by them are competitive with the products that are currently being imported.

Currently India imports various products. However, considering the availability of natural resources in Tripura, products which can be manufactured in Tripura using natural rubber could be targeted for domestic manufacturing.

Tripura is the second largest producer of rubber in the country, after Kerala. Total rubber production of the state stood at ~90,712 MT with a yield of 1350 kg/hectare/year which is slightly less than the national average, the total area under plantation is ~86,892 hectares of land. Tripura contributes ~9% of India's total production.

Among all the imports, the products which use rubber as major raw material have been identified and listed in the table below.

Products
4. Tyres
5. Tubes
6. Flaps
7. Contraceptives
8. Other Hygienic & Pharmaceutical Products
9. Conveyor Belting
10. Latex Foam Sponge
11. Other Rubber Articles

Source: Primary research, Study Team Analysis

A detailed value chain analysis on the products listed above in the next section will help in shortlisting those which can be manufactured in Tripura.

3.1.3. Raw material-based priority sectors

Tripura is endowed with a vast natural resource base. It is rich in natural resources such as bamboo plantation, natural gas, rubber, tea, and medicinal plants.

12. Plantations: Tripura has an area of 2005.75 sq.km of bamboo plantation with a total yield of 1,88,512 MT/yr.[76], 58 tea gardens covering an area of >6,885 hectares, as of February 2020[77] and 85453.63 hectares of rubber plantation[78]. As per the study of the National Bureau of Soil Survey and Land Use Planning, an ICAR organization located in Nagpur under the Ministry of Agriculture, the maximum area that can be brought under rubber cultivation in Tripura is 1 lakh Ha.[79].
13. Horticulture: Tripura's geography and climatic condition, as well as the soil types means that horticulture in the state has great scope for development. The climate is conducive to the growing of a number of tropical and sub-tropical fruits and vegetables. Fruits like Pineapple, Jackfruit, Orange, Banana, Litchi, Lemon /Limes as well as plantation crops like Areca nut, Coconut, Cashew, various winter and summer vegetables, spices, and flowers can be cultivated here. Further, the topography of the state is such that it is suitable for horticultural crops.

[76] https://www.destinationtripura.com/bamboo.html

[77] ENVIS Centre (http://trpenvis.nic.in/test/forest.html).

[78] https://tidc.tripura.gov.in/rubber/

[79] Department of Industries and Commerce, Government of Tripura (https://industries.tripura.gov.in/rubber-overview#:~:text=As%20per%20the%20study%20of,point%20in%20terms%20of%20area.).

Further based on industrial output as per the ASI data of Tripura, a long list of sectors that have the potential to grow in the state have been identified. They have been identified based on natural resources availability in the state. The list is given in the table below.

Table 9: List of sectors and products along with their output

Sectors	NIC code (Product)	Products	Tripura Output (2017-18) (INR Lakhs)
Manufacture of food products	103	Processing and preserving of fruits & vegetables	786
Manufacture of food products	105	Manufacture of dairy products	2650
Manufacture of food products	106	Manufacture of grain mill products, starches & starch products	12440
Manufacture of food products	107	Manufacture of other food products (coffee, tea, mate, spices, bakery)	24747
Manufacture of food products	108	Manufacture of prepared animal feeds	1704
Manufacture of beverages	110	Manufacture of beverages	6344
Manufacture of tobacco products	120	Manufacture of tobacco products	565
Manufacture of textiles	131	Spinning, weaving & finishing of textiles	82
Manufacture of products of bamboo, cork, straw and plaiting materials	162	Manufacture of products of bamboo, cork, straw & plaiting materials	1431
Printing and reproduction of recorded media	181	Printing and service activities related to printing	1258
Manufacture of coke & refined petroleum products	192	Manufacture of refined petroleum products	10822
Manufacture of chemicals & chemical products	201	Manufacture of basic chemicals, fertilizer and nitrogen compounds, plastics and synthetic rubber in primary forms	119
Manufacture of rubber & plastic products	221	Manufacture of rubber products	18929
Manufacture of rubber & plastic products	222	Manufacture of plastic products	2444
Manufacture of other non-metallic minerals (cement, ceramic)	239	Manufacture of non-metallic mineral products (cement, ceramic)	42482
Manufacture of basic metals	241	Manufacture of basic iron & steel	6308

Sectors	NIC code (Product)	Products	Tripura Output (2017-18) (INR Lakhs)
Manufacture of basic metals	243	Manufacture of basic precious & other non-ferrous metals & casting of metals	89
Manufacture of fabricated metal products, except machinery and equipment	259	Manufacture of other fabricated metal products; metalworking service activities	1024
Manufacture of electrical equipment	273	Manufacture of wiring and wiring devices	200
Manufacture of furniture	310	Manufacture of furniture	1390

Source: DGCIS, AIS

Further the above long list has been refined by analyzing regional concentration of upstream and downstream industries (location quotient [LQ]).

The LQ quantifies how concentrated an industry is in a region compared with a larger geographic area such as the state or country. It reveals what makes a particular region unique when compared with the national average[80]. Industries with a high LQ are typically (but not always) export-oriented industries, which are important because they bring money into the region rather than simply circulating money that is already in the region. Industry LQs are calculated by comparing the industry's share of regional output with its share of national output. LQ is always positive. LQ > 1 can be interpreted as indicating that the industry under study is more concentrated in the region than the national average. The basic uses of industry LQs include:

- determine which industries make the regional economy unique,
- identify the export orientation of an industry and identify the most export-oriented industries in the region,
- identify emerging export industries beginning to bring money into the region, and
- identify endangered export industries that could erode the region's economic base.

For a given industry, i, and for any given region, j, the LQ is defined as follows:

$$LQij = \left(\frac{\frac{xij}{xik}}{\frac{xkj}{xkk}}\right)$$

where xij represents output of industry i in region j, xik is the total output of industry i in all regions, xkj is the total output of all industries in region j, and xkk is the total output of the overall region.

[80] F. Strotebeck. 2016. *The Location Quotient – Assembly and Application of Methodological Enhancements*. https://www.researchgate.net/publication/299536337_The_Location_Quotient_-_Assembly_and_Application_of_methodological_enhancements (accessed 29 May 2020).

The values of LQ for the selected long list sectors are shown below

Table 10: List of sectors and products along with their LQ

Sectors	Product	LQ
Manufacture of rubber & plastic products	Manufacture of rubber products	11.10
Manufacture of other non-metallic minerals (cement, ceramic)	Manufacture of non-metallic mineral products (cement, ceramic)	8.56
Manufacture of food products	Manufacture of other food products (coffee, tea, mate, spices, bakery)	4.33
Manufacture of beverages	Manufacture of beverages	4.16
Manufacture of furniture	Manufacture of furniture	3.47
Manufacture of products of bamboo, cork, straw and plaiting materials	Manufacture of products of bamboo, cork, straw & plaiting materials	3.19
Manufacture of food products	Manufacture of grain mill products, starches & starch products	2.19
Manufacture of food products	Processing and preserving of fruits & vegetables	1.68
Manufacture of food products	Manufacture of prepared animal feeds	1.6
Printing and reproduction of recorded media	Printing and service activities related to printing	1.5
Manufacture of food products	Manufacture of dairy products	0.81
Manufacture of rubber & plastic products	Manufacture of plastic products	0.62
Manufacture of tobacco products	Manufacture of tobacco products	0.6
Manufacture of coke & refined petroleum products	Manufacture of refined petroleum products	0.59
Manufacture of basic metals	Manufacture of basic iron & steel	0.52
Manufacture of fabricated metal products, except machinery and equipment	Manufacture of other fabricated metal products; metalworking service activities	0.42
Manufacture of electrical equipment	Manufacture of wiring and wiring devices	0.12
Manufacture of basic metals	Manufacture of basic precious & other non-ferrous metals & casting of metals	0.05
Manufacture of chemicals & chemical products	Manufacture of basic chemicals, fertilizer and nitrogen compounds, plastics and synthetic rubber in primary forms	0.02
Manufacture of textiles	Spinning, weaving & finishing of textiles	0.01

Source: DGCIS, AIS

Based on the above assessment, the following sectors can be shortlisted as priority sectors due to availability of raw materials and locational advantages in the region.

Table 11: Manufacturing sectors identified based on above parameters

Sectors	Products
Manufacture of food products	• Processing and preserving of fruits & vegetables
	• Manufacture of grain mill products, starches & starch products
	• Manufacture of other food products (coffee, tea, mate, spices, bakery)
	• Manufacture of prepared animal feeds
Manufacture of products of bamboo, cork, straw, and plaiting materials	• Manufacture of products of bamboo, cork, straw & plaiting materials
Manufacture of rubber & plastic products	• Manufacture of rubber products

Source: Primary research and Study Team Analysis

Based on the assessment of above filter criteria and considering all the stakeholder's consultation during site visits resulted in identifying the following priority sectors:

The shortlisted priority sectors are:

14. Food processing
15. Rubber
16. Bamboo

Food processing has the potential for exports specifically in pineapple and jackfruit segment. While considering the import of fish in the state, processing of fish could be considered as one of the priority segments. Rubber and bamboo industry has huge availability of raw material in the region further supported by domestic and regional demand. Based on the current investments and industrial scenario of the region, the next section segregates the identified sectors into traditional and sunrise sectors.

3.2. Classification of priority sectors

In this section, the shortlisted priority sectors have been classified into two categories: traditional sectors and sunrise sectors (emerging new sectors).

Traditional sectors

Traditionally, strong sectors have been identified based on their previous contribution to manufacturing output, contribution to exports, and number of people employed. These sectors are well established and are sectors wherein Tripura already has a competitive edge compared to other states.

Owing to incentives being provided through Tripura Bamboo Mission and successful setting up of rubber park in the state, there is an established
ecosystem in Tripura focusing on manufacturing of rubber and bamboo-based products. Hence rubber and bamboo sectors can be classified as traditional sectors.

Sunrise sectors

Some of the key features of sunrise sectors are high growth rates and future potential. These sectors usually need initial impetus in terms of fiscal incentives and policy support to help them attain their true potential. Tapping into these sectors can further help aid further diversification of Tripura's economy. As highlighted

above, most of the food products are currently being consumed in their natural form or are being exported in their natural form. This shows the potential for growth in food processing industry. However due to lack of existing supply chains, there is a need for certain impetus to support the growth in this sector. Hence, the food processing sector has been classified as a sunrise sector.

Based on these observations, two categories are as follows:

Table 12: Classification of priority sectors

Traditional sectors	Sunrise sectors
• Rubber processing • Bamboo industry	• Food processing industry

3.3. Rubber Sector:

3.3.1. Rubber industries in India

India is amongst the largest rubber producing countries of the world. In FY 2019-20, India produced 7.12 lakhs tonne of Natural Rubber (NR) accounting 5.1% of world's total rubber production. India is the second biggest consumer of rubber with a consumption of 11.34 lakhs tonne of NR accounting 8.4% of total world's consumption. Out of India's total production 68.4% is primary processed, low value-added product such as Ribbed Smoke Sheet (RSS). The average yield of NR in India is 1459 kg/hectare/year. Given below is the overall performance of sector in India.

Table 13: Rubber consumption in India

FY 2019-20	Natural Rubber	Synthetic Rubber	Reclaim Rubber	Total (tonnes)
Production (T)	712000	399400	137010	1248410
Consumption (T)	1134120	649610	136110	1919840
Import (T)	457223	314378	NA	771601
Export (T)	12872	NA	NA	12872

Source: Rubber board of India

Data indicates that India's total rubber consumption including natural, synthetic, and reclaimed rubber is outnumbering India's total production. Hence, to satisfy the overall demand, nation imported 7.71 lakh tonne of rubber and its articles. Around 40% of India's demand met from imports. Another significant reason behind import of rubber is its price in international market. Indigenously produced NR is 25% costlier than the imported one. 45% of total rubber import is RSS. Sheet rubber, block rubber and latex account for 47%, 43% and 8% respectively in NR consumption. 68% of NR consumption in India is in the automotive tyre sector.

Apart from imports, India has made marginal exports of low value-added products in FY 2019-20 of 12,872 tonnes of natural rubber. Almost 91% of the total exported rubber was in the form of block rubber. Since, rubber articles/ products fetch higher rates than RSS, Cenex etc hence, it is imperative to manufacture such product indigenously.

Traditional rubber-growing states comprising Kerala and Tamil Nadu account for 81% of production. Major non-traditional rubber growing regions are the Northeastern states of Tripura, Assam and Meghalaya, Odisha, Karnataka, Maharashtra, and West Bengal. Sheet rubber is the most preferred form of processing accounting for around 70% of processed rubber. Block rubber and latex comprise 17% and 12% respectively of rubber production in the country. Major rubber producing states in India are as follows:

Table 14: Major rubber producing states in India

S. No.	State	Production of NR (2018-19) (T)
1.	**Kerala**	490460
2.	**Tripura**	53050
3.	**Karnataka**	38200
4.	**Assam**	24300
5.	**Tamil Nadu**	21500

Source: Rubber board of India

Globally and locally natural rubber is largely grown by smallholders and 91% of rubber planted area and 92% of production is in smallholding sector (below 10 ha). There are around 1.3 million rubber growers and 0.6 million workers in rubber plantation sector in India. Average size of holding is the lowest in India among the major NR producing countries at 0.57 ha.

We can further classify rubber and its articles with the help of adopting ITC HS system code. For rubber ITC HS code is HS-40 (two-digit level). Below table outlines the relevant categories along with their description:

Table 15: Rubber and its articles along with ITC HS codes

ITC HS Code	Name/ Description
40	Rubber and articles thereof
4001	Natural rubber and gums, in primary form, plates, etc
4002	Synthetic rubber
4003	Reclaimed rubber in primary forms or in sheets
4004	Rubber waste, parings, and scrap (except hard rubber)
4005	Compounded unvulcanised rubber, in primary forms
4006	Un-vulcanized rubber as rods, tubes, discs, rings, etc.
4007	vulcanized rubber thread and cord
4008	Rubber plate, sheet, strip, rod etc., except hard
4009	Rubber tube, pipe, hose, except hard rubber
4010	Conveyor and similar belts or belting of rubber
4011	New pneumatic tyres, of rubber
4012	Tyres, retreated, used pneumatic, solid, cushioned
4013	Inner tubes of rubber
4014	Hygienic or pharmaceutical articles of rubber

ITC HS Code	Name/ Description
4015	Rubber clothing and accessories, except hard rubber
4016	Articles of vulcanised rubber except hard rubber,
4017	Hard rubber (e.g., ebonite) in all forms, articles, scrap

As India's consumption is higher than its production and moreover, India manufactures low value-added products, therefore, to satisfy the demand it is important to import the rubber and its articles from other nations. Below table shows the top five destination in terms of value from where India imports rubber and its articles:

Table 16: List of top countries from where India imports rubber

Partner Country	FY 2019 (USD millions)
Indonesia	290
Thailand	286
Korea	286
People's Republic of China	284
Japan	269

Source: http://www.dgciskol.gov.in/

Conventionally, natural rubber is not an export-oriented commodity due to deficit in production. Marginal export happens to adjust temporary demand-supply imbalances in the natural rubber domestic market. Below table shows the top five destination in terms of value where India exports rubber and its articles:

Table 17: List of top countries to where India exports rubber

Partner Country	FY 2019 (USD millions)
USA	548
Germany	196
UAE	130
UK	103
Bangladesh	99

Source: http://www.dgciskol.gov.in/writereaddata/Downloads/20210224114037Commodity%20Profile%20of%20Rubber.pdf

To make India self-reliant in the rubber industry, Tripura may take a leap forward taking advantage of its suitable climatic conditions such as fertile soil, availability of sunshine and longer monsoons.

3.3.2. Rubber sector of Tripura

Natural rubber is one of the most important cash crops of Tripura. The state is the second largest producer of rubber in the country, after Kerala. Total rubber production of the state stood at ~90,712 MT in FY 2020-21 with a yield of 1281 kg/hectare/year which is less than the national average, this gets produced on ~86,892 hectares of land under rubber cultivation. Tripura contributes ~9% of India's total production. There are more than 1 lakh rubber growers in the state. Rubber sector is a labour-intensive sector therefore, growth of this sector might open avenues for employment for semi-skilled laborers. Given below is the item wise production of rubber in Tripura:

Table 18: Item wise production of rubber in Tripura

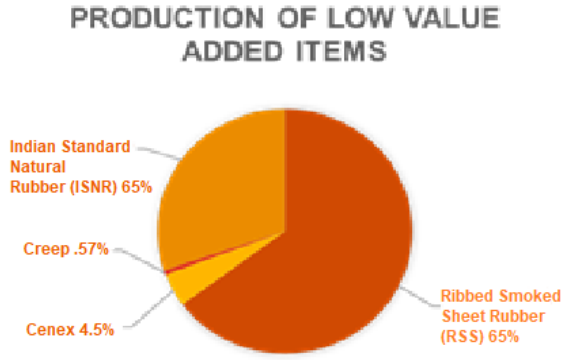
Production (Item wise)			
Items	**Production (Kg)**	**Production (MT)**	**%**
Latex for sheet	53989597.37	53989.60	59.62
Latex for Cenex/ Creep	4362213.00	4362.21	4.81
FC for **Indian Standard Natural Rubber** (ISNR)	32359727.00	32359.73	35.67
Total	**90711537.37**	**90711.54**	**100**

Source: TIDC

At present, most of the rubber produced in Tripura is being marketed as raw material for other industries or being supplied as a primary processed low value-added product like RSS to the other states of India. In Tripura, currently there are few industries focused on producing rubber threads from Cenex used by textile industry.

Due to current restrictions on exports via ICP at Agartala, manufacturers in Tripura are not able to export their products to Bangladesh. Furthermore, shipments to Bangladesh need to be sent through Kolkata escalating the cost and time, making the product uncompetitive. Hence, they are being sent to manufacturers in Gujarat.

Figure 7: Manufacturing Share of Rubber in Tripura



Source: Rubber Board of India, TIDC

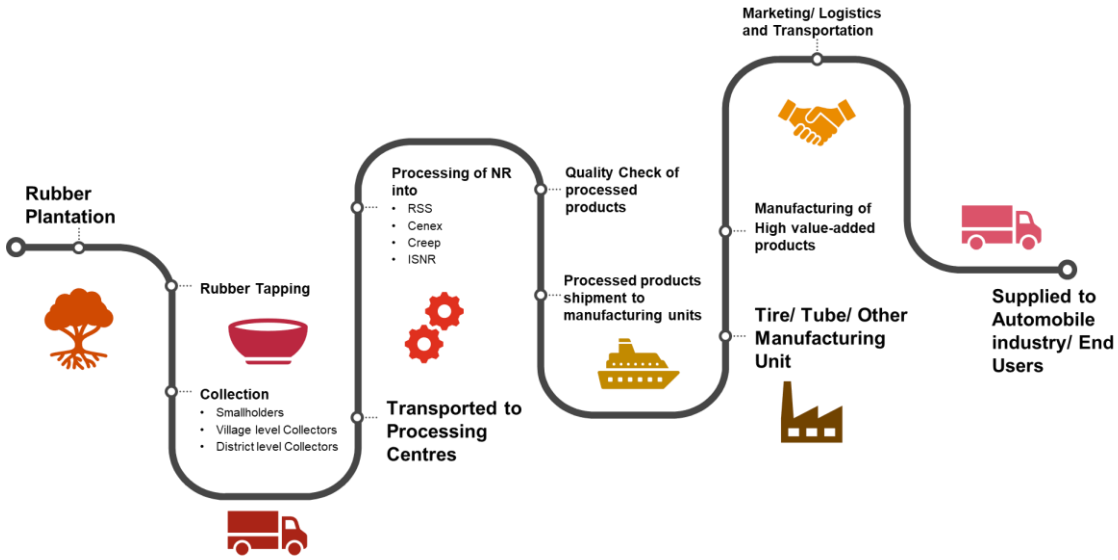
One of the main reasons manufacturers from Tripura are not being competitive, is the time taken for transportation compared to alternate sources of rubber producing states. It is estimated that the time taken to transport products from Kerala to the target market is 3 to 4 days, whereas for Tripura it takes ~8 days, rendering the products from the state Tripura uncompetitive.

However, strategic roads and rail network are being built, which will improve the connectivity to rest of India. Large number of rubber-based manufacturers could be attracted to make investments in the region. A detailed value chain analysis in the next section has been used to highlight the various products that can be manufactured in Tripura.

Rubber industry value chain

The value chain begins from rubber plantations and ends terminates at units manufacturing a wide range of latex-based products. Given below is the value chain of rubber industry:

Figure 8: Value chain of rubber industry



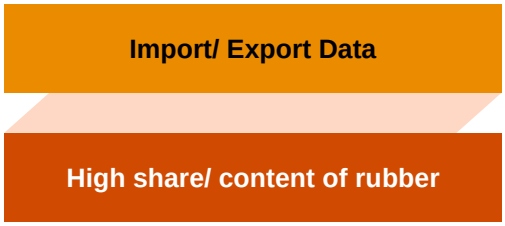
Source: Primary research, Study Team Analysis

India has a huge potential of exports for rubber products and the report suggests that Tripura's strategic location can be leveraged as this is in line with India's Act East Policy. The manufacturing of high value-added products like tubes, tyres, surgical gloves, rubber contraceptives, etc can be promoted in the state. At present, only primary processing is being undertaken to produce RSS as a major product.

Mentioned below is the framework to identify priority products for the Rubber sector. This framework is used to shortlist the products from rubber sector.

c. **Import/ Export Data**: Import and export data of multiple products has been gathered and analysed to understand the current scenario of the respective rubber products. Products which are getting imported at large quantity, may be considered to be substituted with domestically produced products to promote Aatmanirbhar Bharat. Also, products which are getting exported at large quantity and at competitive pricing are being considered as potential products for manufacturing in Tripura.

Figure 9: Framework to shortlist priority products

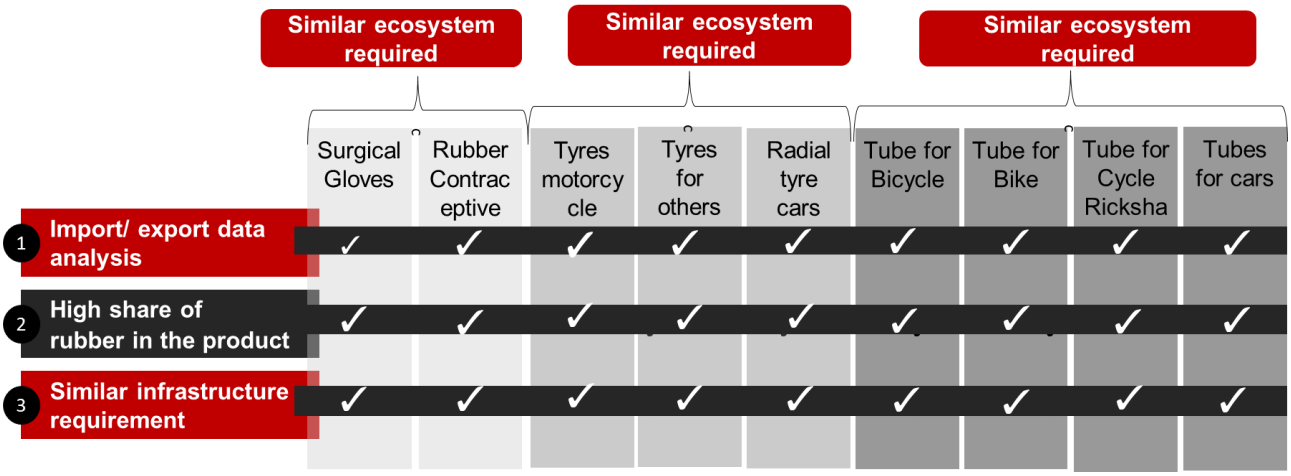


Source: Study Team

d. **High share/ content of rubber:** The manufacturing processes of multiple products has been analysed. Those products wherein the majority of raw material is either primary processed RSS or latex concentrate have been considered.

Shortlisted products as per the framework are as follows:

Figure 10: Shortlisted products of rubber as per framework



Source: Primary research, Study Team Analysis

In the study, **more than 75 rubber products** have been identified **(a list of which has been provided in the annexures)** out of which **14 products** have been shortlisted for manufacture in Tripura. They have been selected based on the following parameters:

a. High share of rubber in raw materials required for production
b. Production processes requiring minimal technical knowhow
c. Products with high expected growth rate
d. Products needing minimal infrastructure
e. Products with high domestic demand (based on analysis of import data)

Figure 11: List of shortlisted products of rubber

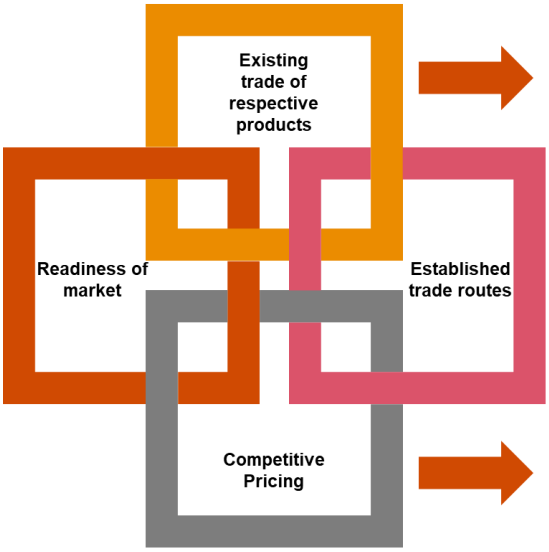
Surgical Gloves	Rubber contraceptive (Male)	Rubber contraceptive (Female)	Tubes for Cars	Tubes for Truck and Bus
Tubes for bicycle	Tubes for motorcycle	Tubes for cycle rickshaw/ powered rickshaw	Tyre Motorcycle	Tyre Scooter
Tyre other than bike/ scoote	Radial Tyre Cars	Tyre for Bicycle	Tyres for Truck and Bus	

3.3.3. Analysis of product competitiveness

After shortlisting the products, the competitiveness of identified products in target markets have been assessed. The assessment focused on comparing the landed cost of identified product in target market to the landed cost of product in case they are manufactured in Tripura. Considering that most of the products identified are value added products which are currently being imported into India, the assessment focuses on comparing the imported landed price of products with the manufacturing cost in Tripura. Based on the assessment, the products got mapped to their target markets and accordingly, industrial strategy for each product has been proposed. Apart from catering to demand from rest of India, the requirements of nearby growing markets such

as Bangladesh, Bhutan, Nepal (BBN), Sri Lanka and Myanmar can be addressed by industries in the state. The criteria for selecting the target market are given below:

Figure 12: Criteria for selecting the target market



Product	Target market	Exports	Export (INR Lacs)	Competitive Pricing
Surgical Gloves	Bangladesh	✓	1199.94	✓
	Bhutan	✓	339.38	✓
	Nepal	✓	2079.91	✓
	Srilanka	✓	642.81	✓
	Myanmar	✓	214.92	✓
Rubber Contraceptives	Bangladesh	✓	161.83	✓
	Bhutan	✓	22.52	✓
	Nepal	✓	774.29	✓
	Srilanka	✓	148.40	✓
	Myanmar	✓	53	✓
Hot Water Bottle	Bangladesh	✓	123.9	✓
	Bhutan	✓	9.28	✓
	Nepal	✓	27.94	✓
	Srilanka	✓	NA	✓
	Myanmar		NA	✓
Feeding Bottle Nipple	Bangladesh	✓	2.08	✓
	Bhutan	✓	0.38	✓
	Nepal	✓	31.71	✓
	Srilanka		NA	✓
	Myanmar		NA	✓
Tubes	Bangladesh	✓	362.01	✓
	Bhutan	✓	1.52	✓
	Nepal	✓	1039.49	✓
	Srilanka	✓	17.19	✓
	Myanmar	✓	46.51	✓

Source: Primary research, Study Team Analysis

A framework has been used to identify international target market for the priority products wherein 4 criteria which a target market must meet have been selected.

e. Readiness of market: Similar products are already available in the target market.

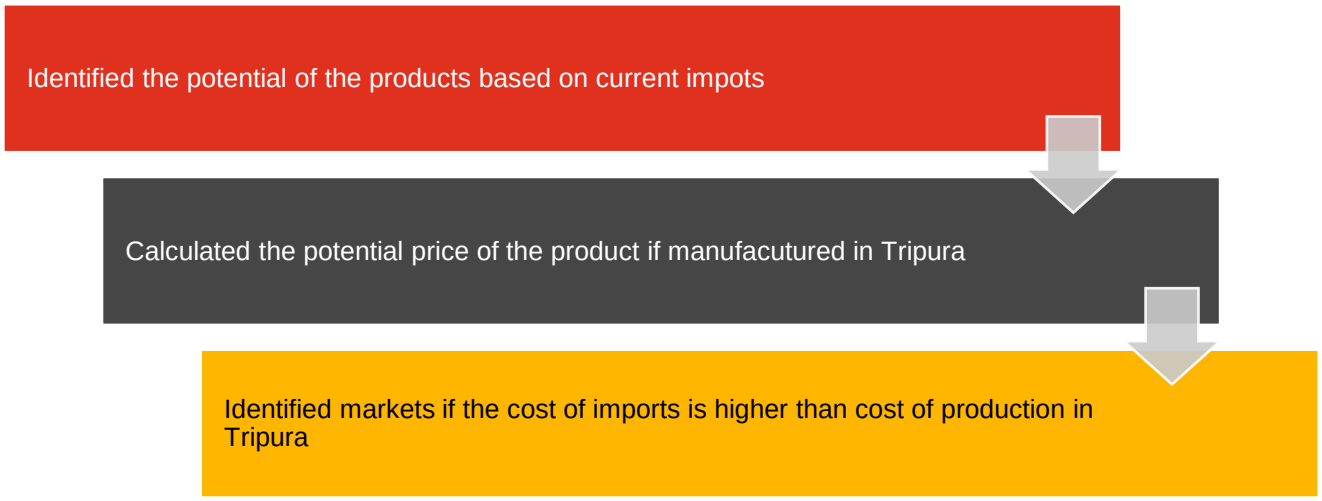
f. Existing trade route of respective product: India must already export similar products to these markets.

g. Established trade routes: Direct and already established routes to target market.

h. Competitive pricing: The selling price of the existing products in the target market must be competitive with the projected products.

Analysis of each product was undertaken individually. The framework given has been used to conduct competitiveness analysis:

Figure 13: Framework adopted to conduct O-D analysis



1. Surgical Gloves:

Surgical gloves have been shortlisted as one of the priority products as more than 90% of raw material used to manufacture it is the latex concentrate. Natural rubber has sufficient production locally.

The imports of surgical gloves have surged up to 23.84% from 2016-17 to 2020-21. Surgical gloves are getting imported in India at a large quantity from many South Asian countries like Malaysia, Vietnam etc. The usage of surgical gloves is not limited to healthcare industry but also have wide range of applications in the masses like food stalls, industries etc.

Manufacturers in Tripura can get a cost advantage of almost 30% due to locally available raw material.

- The cost of importing a single unit of glove is estimated at INR ~3.8
- Cost of domestically manufactured glove is in the range of INR ~2.6 per unit.

Major target markets for surgical gloves

Apart from rest of India where the gloves can be supplied at a competitive price, it has been observed from the export's data that neighbouring countries like Bangladesh, Bhutan, Nepal, Sri Lanka, and Myanmar (BBNSM) could also be targeted due to their proximity to Tripura.

Table 19: List of target markets for gloves

Target Market	Price in Target Market (INR)
Bangladesh	13.0
Sri Lanka	7.5
Nepal	7.0
Myanmar	5.0

Sources: https://www.daraz.com.bd/tag/medical-hand-gloves/; https://www.daraz.lk/products/latex-powdered-sugical-glove-i119907433-s1034500949.html?spm=a2a0e.searchlistcategory.list.29.33d4f3c951EEwn&search=1; https://www.daraz.com.np/products/powdered-latex-examination-gloves-i107331142-s1028724667.html?spm=a2a0e.searchlistcategory.list.22.1a9c727aWN7S2V&search=1; https://www.shop.com.mm/products/latex-powdered-examination-gloves100pcs-1box-i103760068-s1028396894.html?spm=a2a0e.searchlistcategory.list.72.7f8678a0KgSgTL&search=1. Month Accessed: August 2020

The selling price of surgical gloves in these countries is around INR ~8 per piece, much higher than the cost price for manufacturing in Tripura. Hence the regional markets provide ample opportunity for the products.

2. Rubber Contraceptive (Males/ Females):

Major raw material required to manufacture rubber sheath contraceptives is latex concentrate. In FY 2020-21, the total imported quantity of sheath contraceptives for males stood at ~218.29 Crore pieces worth INR ~5.5 Crore, and for female contraceptives ~1.2 Crore pieces were imported worth INR ~8.74 lakh.

Further India also exports this product. In FY 2020-21, India has exported rubber contraceptives (males) worth of INR ~367.77 Cr and INR ~59.22 Cr of female contraceptives. India exported contraceptives to Brazil, the People's Republic of China, Nepal, Poland, Bangladesh etc.

Based on primary consultations, the cost of manufacturing is ~INR 1.7.

Major target markets for rubber sheath contraceptives (M/F)

The selling price per unit in the target market is highlighted in the table below.

Table 20: List of target market for contraceptives

Target Market	Price in Target Market (INR)*
Bangladesh	8.5
Sri Lanka	16.0
Nepal	20.0
Myanmar	50.0

Sources: https://www.daraz.lk/products/romantic-condom-assorted-aroma-i162737049-s1103430010.html?spm=a2a0e.searchlist.list.17.6e7a6b03xFFVxH&search=1; https://www.daraz.com.np/catalog/?from=filter&q=condom; https://www.daraz.com.bd/products/sensation-dotted-coffee-condom-single-pack-3x-i167616119-s1101396248.html?spm=a2a0e.searchlist.list.7.43263633I9cjVZ&search=1; https://www.shop.com.mm/products/durex-performa-last-longer-condom-i103284017-s1027887147.html?spm=a2a0e.searchlistcategory.list.20.14ce69aasA9hNQ&search=1. Month Accessed: August 2020

It can be observed that manufacturers in Tripura will be cost competitive and hence this product could be targeted to be manufactured in Tripura.

3. Tubes for bicycle, motorcycles, cycle rickshaw, cars, and trucks:

Vehicular tubes are dependent on the two industries they are tyre industry and automobile industry. Growth of these two industries leads the growth of the tube industry. As per ICRA, Tyre industry is expected to grow 7-9% in next 5 years. Also, automobile industry is expected to reach USD 250-288 by FY 2026.

Currently India is dependent on Imports to meet its demand. Import numbers of different types of tubes are shown below

- In FY 2020-21, India imported **bicycle tubes** of worth INR ~3.3 Cr for 3.9 lakh units,
- For **motorcycle tubes** value of import stood at INR ~3.3 Cr for purchasing ~2.3 lakh units
- Import of 6.5K units of **rickshaw tubes** for an import value of INR ~7.83 lakh.
- For **Cars** value of import stood at INR ~3.7 lacs for purchasing ~90 lakh units
- Import of ~20K units of **rickshaw tubes** for an import value of INR ~2.94 Cr.

Based on primary consultations cost of manufacturing a bicycle tube is INR ~75, motorcycle tube is INR 120, cycle rickshaw tube is INR ~80 and car tube is INR 200. These domestically manufactured products are cheaper compared to current import cost. Hence manufactures in Tripura could target supplying tubes to other parts of the country.

Further, Tubes are also exported in regional market. Given below is the table in which value wise export and import for all types of tubes are showcased.

Table 21: value wise export and import for all types of tubes

S. No.	Product	Export (Value INR Lacs) (FY 2020-21)	Import (Value INR Lacs) (FY 2020-21)
1.	Tubes for bicycle	17656.30	330.83
2.	Tubes for motorcycle	2989.75	331.58
3.	Tubes for cycle rickshaw	787.06	7.83

S. No.	Product	Export (Value INR Lacs) (FY 2020-21)	Import (Value INR Lacs) (FY 2020-21)
4.	Tubes for cars	4215.82	3.70
5.	Tubes for truck and bus	15807.66	294.82

Source: https://tradestat.commerce.gov.in/eidb/Icomcnt.asp

Considering the cost advantages of manufacturing in Tripura and connectivity to Chattogram Port, manufactures can target exports.

4. Tyres for bicycles, motorcycles, scooter, auto, car, truck, and bus:

About 68% of natural rubber consumption in India is by the automotive tyre industry. Almost 50% of raw material required to make tyres is rubber of which 30% is natural rubber and remaining is synthetic rubber to increase its strength. Vehicular tyres are export oriented products, though the market share of Indian exported tyres is very minimal in global market, but this may be increased by tapping the potential of Tripura in manufacturing and exporting the tyres to South Asian nations.

India is dependent on imports for various type of tyres. The table below highlights the cost of import and compares the same with cost of domestically manufactured tyres.

Table 22: Details of imports (value, quantity and cost) and costs of manufacturing locally for tyres

Product	Import Value (INR)	Import Quantity (Nos)	Cost per unit (Imports)	Cost per unit (domestic production)
Tyre Motorcycle	62.22 Cr	356360	1746.11	500
Tyre Scooter	19.05 Lakh	1670	1140.72	450
Tyre other than bike/ scooter	84.95 Lakh	5760	1474.83	400
Radial Tyre Cars	357.25 Cr	1359620	2627.60	2580
Tyre for Bicycle	3.17 Cr	168980	188.08	150
Tyres for Truck and Bus	151.27 Cr	166240	9099.89	7000

Source: Tradestat, Primary research, Study Team Analysis

Domestically produced tyres have an edge over imported one in terms of costing. Hence tyre manufacturing can be explored in Tripura.

Major target markets

Apart from meeting the demand from rest of India, neighbouring nations like Bangladesh, Bhutan, Nepal, Sri Lanka etc can also be targeted by manufacturers in Tripura.

3.4. Bamboo and bamboo products in India

Bamboo is one of the fastest-growing types of woody grass in the world. It belongs to the Gramineae family and can survive even in stressed climatic and edaphic conditions. It can grow in different soil conditions, varying from organically poor to mineral rich, and from adequately watered to drought-affected soil. India is the second-largest bamboo producer in the world. It has the largest area under bamboo cultivation at nearly 16 million

hectares out of the 31.5 million hectares of the global cultivated area[81]. Despite accounting for about 50% of the world's cultivation area, India accounts for only a 5% global share by market value of bamboo products. Low yields of the existing bamboo plantations and lack of commercial utilization of bamboo resources are considered the possible reasons for India's low market share.

With over 1,500 species within 87 genera, bamboo lends itself to over 1,200 end uses. All parts of bamboo can be used in the production of varied products. Table below presents the different uses of bamboo:

Table 23: Different uses of bamboo

Part of bamboo plant	Use
Leaves	Fodder, medicine, manure
Twigs	Brooms
Top	Chopsticks, scaffolding, furniture
Middle Upper	Blinds, mats, carpets, handicrafts
Middle Lower	Flooring, laminated furniture
Base	Charcoal, pulp
Shoots	Vegetables
Sheath and rhizome	Handicrafts
Leftovers and processing wastes	Charcoal, pulp, fuel

Sources: Government of Assam. 2003. Draft Assam Bamboo and Rattan Policy, 2003. Guwahati.

The global bamboo market is projected to grow at a compound annual growth rate (CAGR) of about 5% from $68.8 billion in 2019 to $98.3 billion in 2022. While India's global bamboo market share is a mere 5%, the People's Republic of China occupies more than 75% of the market despite having only about 15% of the global cultivation area. With the market growing at such a great pace, India may strive to hold a larger share of the global market by capitalizing on its untapped bamboo resources. As of 2017, the domestic demand for bamboo was around 28 million metric tons (MMT). Due to the unavailability of forest bamboo for commercial utilization, the lack of commercial production, low yield, and many other contributing factors, domestic demand is not fully met by home-grown bamboo. This implies that a large portion of bamboo consumed in India, 15 MMT or about 54% of bamboo consumption, is imported from other countries. This presents a market opportunity for domestic bamboo producers to replace the imports of bamboo and bamboo products amounting to around INR4.6 billion[82]. The commercial planting of bamboo, planting in degraded and riverine areas, and introducing high-yield varieties of bamboo can significantly reduce the import dependency of a commodity, which Indians take pride in having in abundance.

3.4.1. Bamboo output and processing in Tripura

Topographically Tripura consists of a number of hill ranges, hillocks and hilly terrains interspersed with fields. Tripura is one of the major bamboo producing states in India. Bamboo grows all across the state of Tripura covering over nearly 16-18 different species. Tripura bamboo handicrafts are considered to be among its best in the country for the exquisite designs, wide range of products and artistic appeal.

Tripura being a small North East state, bamboo activity is spread over all the four districts of the state. However, it is thickly concentrated in South and West Tripura. Many species of bamboo are available in Tripura

[81] Forest Survey of India, Ministry for Environment, Forests and Climate Change. 2019. *India State of Forest Report 2019*. Dehradun.

[82] Department of Commerce, Government of India. Data from Financial Year 2019–2020.

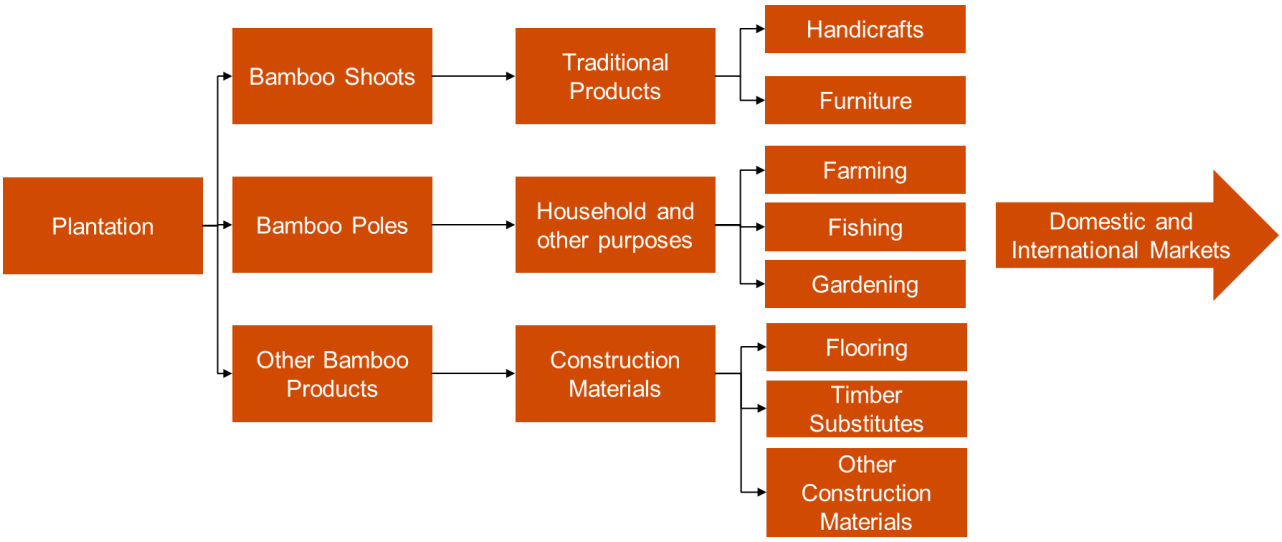
for diversified utilization. The table below highlights the various uses of bamboo as shown in table below. Almost all species of bamboo are used by the artisans for craft/handicraft making in the study areas and other places of Tripura except Bambusa balcooa and Melocana baccifera. Melocana baccifera is a dominant species with over 80 % coverage. It is primarily used for incense stick and domestic needs such as gate, fencing and construction.

Table 24: Bamboo species used for arts and crafts

Local Name	Botanical Name	Jewelry	Craft	Mats	Furniture	Incense Stick
Kanakaich	Thyrsostachs oliveri		✓		✓	
Barak	Bambusa Balcooa				✓	✓
Bom	Bambusa Cucharensis		✓	✓	✓	
Mal/ Makhla	Bambusa Pallida		✓	✓		
Paura	Bambusa Polymorpha		✓			
Mirtinga	Bambusa Tulda	✓	✓	✓		
Barji/ Jai	Bambusa Vulgaris	✓	✓		✓	
Rupai	Dendrocalamus longispathus	✓	✓	✓	✓	
Lathi Baans	Dendrocalamus strictus		✓		✓	
Muli	Melocana baccifera			✓		✓
Dolu	Schizostachyum dullooa		✓			
Pencha Baans	Dendrocalamus hamitonii		✓		✓	

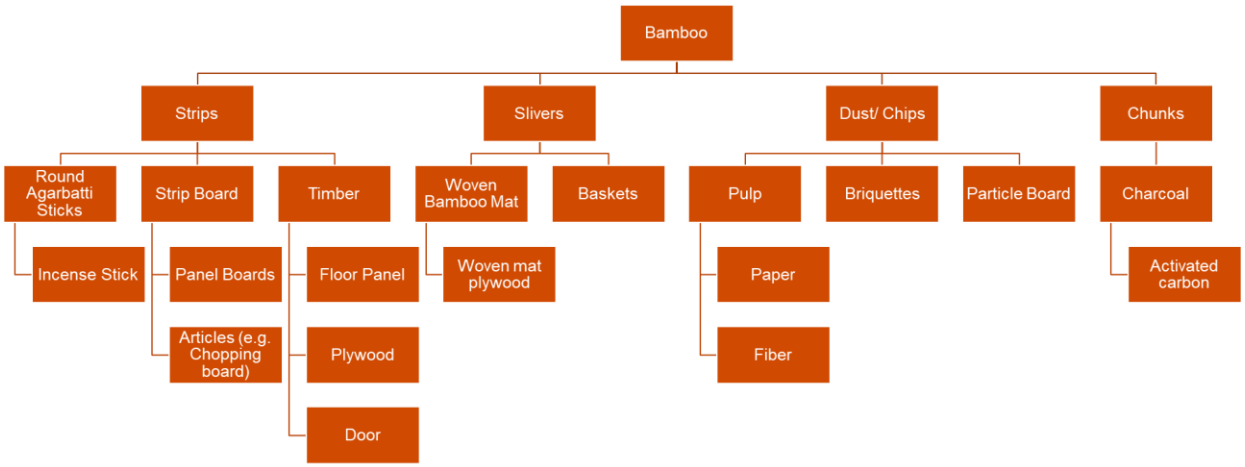
Source: https://www.ijcmas.com/9-6-2020/Animesh%20Sil,%20et%20al.pdf

Figure 14: Given below is the value chain of the bamboo industry:



As per the NEEC report, more than 1,200 end uses for bamboo were identified. The picture below highlights the various finished and unfinished products of bamboo.

Figure 15: Finished and unfinished products from bamboo



Source: Study Team Analysis

The possible products that can be produced using the species found in NER, as listed in Table 8.4, have been compared based on the parameters described below:

- **Readiness of market**. Readiness is the availability of demand for the product in the region.
- **Size of opportunity**. Opportunity size relates to the monetary value of the product.
- **Suitability of raw material**. Suitability is determined by whether the available species can be used as feedstock.
- **Availability of skill and technology**. Availability refers to whether a technology has been developed and/or if the local people are skilled in using it.
- **Scalability and scope of mechanization**. This refers to whether the product can be manufactured in a large integrated setup.

Based on these parameters, a list of priority products has been proposed and is given in Table below.

Figure 16: Comparison of various bamboo products

Product	Readiness of Market	Size of Opportunity	Suitability of raw material	Availability of skill and technology	Scalability	Scope of mechanisation
Biofuels	Yes	Huge	Any	Yes	High	Yes: High
Bioplastics	Yes	Huge	Any	Yes	Medium	Yes: High
Briquettes and activated charcoal	Yes	Huge	Any	Yes	Medium	Yes: High
Timber Substitute	Yes	Medium	Any	Yes	Medium	Yes: High
Agarbatti Sticks	Yes	Medium	Specific	Yes	High	Yes: High
Pulp and paper	Yes	Medium	Specific	Yes	Medium	Yes: High
Panels and flooring	Yes	Medium	Specific	Yes	Medium	Yes: High
Handicraft	Yes	Medium	Specific	Yes	Medium	Yes: High
Bamboo Shoots	Yes	Medium	Specific	Yes	High	Yes: Medium
Bamboo Fiber	Yes	Medium	Specific	Still developing	Currently low	Yes: High
Woven Products	Yes	Low	Specific	Yes	Low	Yes: Low
Scaffolding	Yes	Low	Specific	Yes	Low	Yes: Low

Source: Study team analysis

Based on the abovementioned parameters, the priority products identified are:

- Timber substitutes
- Agarbatti sticks
- Panels and flooring

Apart from its own bamboo resources, the bamboo sector in Tripura could also access raw material from neighboring states as bamboo is found across the NER.

Among Tripura's neighbors is Mizoram's bamboo rich Mamit district. The district can become a viable source of raw material not only because it has the highest area under bamboo (52.8% of its total area)[83] in Mizoram but also because it has the second highest growing stock of bamboo in the state, at 4164.17 T.[84] Further, located only ~116 km away from the bamboo focused Dharmanagar industrial estate in North Tripura, it is easily accessible by road via NH 108.

There is an abundant bamboo resource base in Assam. However, the Barak valley, the region with which Tripura shares a border, may not be a potential source of raw material. This is because a large number of bamboo processing units already exist in the lower Assam region, including the Cachar Paper Mills in Hailakandi, a unit of M/S Hindustan Paper Corporation Limited, which is the largest user of bamboo resources in the state. [85] Further, the Teliakhalepur bamboo processing cluster is also located in Karimganj district in the Barak valley[86]. As Assam's own demand for bamboo is high, Tripura's bamboo industry may not be able to tap into the former's raw material base.

Product Competitive Analysis

Timber Substitutes

Bamboo is a sustainable building material and can be used as a substitute for timber. Lately, India has been facing widespread scarcity of timber resources, and this has resulted in the need to shift to more environmentally friendly, renewable, and largely available building material. As a result of this, bamboo products like bamboo plywood and veneer board are being used to meet the housing needs of the people, especially in rural areas. They can be further used to produce finished goods like blinds and wooden floors or can be used by other industries as inputs[87].

Among the various uses of bamboo products listed above as wood substitutes, bamboo mat plywood has a ready market in India. Bamboo products like bamboo boards, bamboo veneers, bamboo mats, and corrugated roofing sheets are gaining widespread attention with opportunities in emerging markets due to their physical and mechanical performance in terms of stability, strength, and hardness.

Bamboo mat plywood is equal in quality and price to waterproof, exterior grade plywood. It is manufactured in Tripura and supplied in various states across India to both private customers and government sector buyers. As per NEEC ADB study the premium plywood market was estimated in size at INR30 billion in 2018 indicating an opportunity of INR3 billion for bamboo mat plywood.

Agarbatti

The agarbatti (incense stick) industry in India is a labor-intensive cottage industry. The process of agarbatti manufacturing in India was first started in Thanjavur of Tamil Nadu and from there it has gradually expanded to other parts of the neighboring states. This industry now reigns in Karnataka, Andhra Pradesh, Kerala, Odisha, Tamil Nadu, Gujarat, Dadra and Nagar Haveli, Bihar, Tripura, and Assam. The raw materials for this industry are available in and around Cuttack, Bhubaneswar, and Kolkata.

[83] Bamboos of Mizoram, EF&CC Department, Govt. of Mizoram

[84] Bamboos of Mizoram, EF&CC Department, Govt. of Mizoram

[85] Bamboos in India, ENVIS Centre on Forestry, Forest Research Institute (2015).

[86] Ministry of Textiles, GoI (http://www.craftclustersofindia.in/site/index.aspx?mu_id=3&Clid=290).

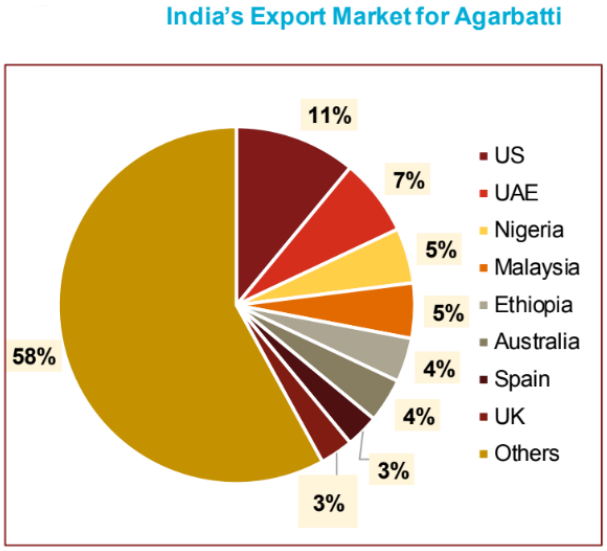
[87] A. Hazra. 2008. Industrialization of the Bamboo Sector. CII: Study on Technological Upgradation of the Bamboo Sector in India. https://www.semanticscholar.org/paper/Industrialization-of-the-Bamboo-sector-Hazra/9d23c3a980b2fc614e462b46cd3cbacff792c82d.

This industry is presently expanding in NER, wherein the raw materials like bamboo sticks and binder materials required for the manufacture of agarbattis, as well as labor are sufficiently available.

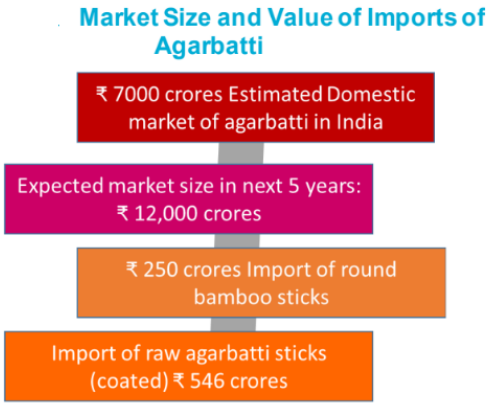
In the recent past, Tripura used to supply about 60% of bamboo sticks utilized by the Indian incense stick industry.[274] However, there was a drastic change in this situation as the stock of Muli bamboo, which is used to make incense sticks, declined steeply due to gregarious flowering in 2003–2009. The scarcity of this particular species of bamboo has adversely affected the agarbatti industry. In 2011, there was a drastic reduction in the import duty on bamboo sticks from 30% to 10%, which encouraged imports from the PRC and Viet Nam. The imported bamboo sticks were better in terms of uniformity of dimensions and quality because of large-scale mechanized production, compared with Indian bamboo sticks, which were made manually. In the case of Tripura, almost the entire production of bamboo sticks was made manually.

In India, agarbattis are considered to be a staple feature of devotional activities. It is now branching out as products associated with aromatherapy, meditation, and yoga. The major products in focus are agarbatti round sticks and raw incense sticks since their manufacture contains only bamboo as raw material.

Figure 17: Agarbatti: India's Import and Export



UAE = United Arab Emirates, UK = United Kingdom, US = United States.
Source: ADB study team analysis.



Sources: Industry sources; A. Vishnoi. 2019. Government in Huddle as Fragrance of Chinese agarbattis Spreads Far and Wide. *The Economic Times*. New Delhi.

The agarbatti round sticks that are made in NER cost about INR55 to INR94 per kg in the wholesale market in NER, while those imported from the PRC and Viet Nam cost from INR60 to INR90 at the port of landing. The major ports for import of agarbatti are Nava Sheva in Mumbai, Mundra in Gujarat, and Kolkata. Since the supply chain of bamboo is not well developed in the NER, the short-term focus must be on targeting the export market, with tie-ups with large players such as ITC and Cycle agarbatti. In the medium term, NER can build its supply chain to reduce wastage and target the domestic cities such as Guwahati, Patna, and Kolkata.

Floor panels

The global market for bamboo flooring is expected to reach INR100 billion in 2024. The bamboo flooring manufacturing sector is currently dominated by Chinese firms in the export market. This is also the case in the domestic market in India due to the lack of quality domestic products. Bamboo flooring is in high demand in markets in Japan, North America, and the European Union (EU). Almost 95% of bamboo floors sold in the EU each year comes from the PRC.276

The bamboo flooring manufacturing industry has huge scope for development in NER as the use of bamboo flooring is seen in the states like Assam and Mizoram where houses are built on elevated land and mountain valley slopes.

The use of bamboo flooring is among the highest value-added applications of bamboo. The bamboo flooring is a quality product that has a wide range of uses and a large, global consumer market. It has certain advantages

over hardwood floors due to its smoothness, brightness, stability, high resistance to termite and water damage, insulation qualities, and flexibility.

There is increasing demand for responsibly sourced, sustainable materials including wood, and bamboo fulfills the brief. Also, bamboo flooring does not require specific species for manufacturing. Hence, forest bamboo available in NER can be utilized for bamboo floor manufacturing. Further, being a premium product, the transportation cost, which is on a higher side for NER, can be absorbed.

Major target markets for floor panels

The EU, Malaysia, and Australia were the major importers of bamboo flooring in 2014, comprising about 60% of global imports, with the PRC alone contributing 91% of the total export market. In India, Tier 1 cities such as Bangalore, Mumbai, and Ahmedabad are adopting wooden flooring for domestic and commercial furnishings. The domestic market for wooden flooring in India is estimated at INR 15 billion. Capturing 5% of the domestic market for wooden flooring would translate into an opportunity of INR750 million. Once the industry has an established supply chain and has achieved economies of scale, the export market can be targeted.

Bamboo floor panels manufactured in India cost from INR150 to INR200 per square foot, while imported panels cost INR100 to INR180 per square foot. However, as per industry sources there is an acceptance of domestically manufactured products in the domestic market due to better quality and hence the higher price may be absorbed.

Bamboo Waste-Based Products: Various value-added products can be manufactured by processing the bamboo waste generated as a by-product of the manufacturing of the bamboo products identified in the preceding discussion.

Adopting a “zero-waste approach” can help Tripura achieve environmental sustainability by boosting the utilization of the whole bamboo and reducing wastage, and can help in achieving broader socio-economic goals as well. Waste generated after the production of Agarbatti sticks, for instance, can be used for the production of smaller bamboo-wood items like toothbrushes, toothpicks, clips, and boards. Further, the dust from bamboo processing can be used as biomass for papermaking as well as for making briquettes. Such waste parts can also be used to produce bio-CNG. Some possible uses of bamboo waste have been discussed below.

- **Briquettes:** Bamboo dust from the production of bamboo flooring and panels can be used to make briquettes. Further, waste from the manufacture of Agarbatti sticks too can be used for this as well.

  The briquettes produced from the densification or briquetting process can be used to cater to the fuel needs of MSMEs in the states. They can be used as an alternative to more expensive coal briquettes. Additionally, as briquettes are a useful source of fuel for the food processing industry which requires fuels with lower heat content, the production of bamboo waste-based briquettes could be especially beneficial for Tripura as one of the state’s priority sectors is food processing.

  Currently, in the NER, briquettes are made using rice husk and sawdust.[88] In order to increase production and optimize bamboo usage, waste from bamboo processing across the NER can also be utilized for briquette manufacture. In the production of bamboo handicrafts, for instance, only some specific parts of the plant are used. The waste generated as a byproduct of the primary processing of bamboo can be used for other purposes while the shavings from handicraft production can be utilized for briquette making.

  Bamboo wastes can either be used as the sole raw material or can be used in combination with other biomass such as rice husk and sawdust. Several brownfield industrial parks in the state have sawmills whose byproducts can be sourced for this. Briquette making MSMEs can be set up near bamboo processing parks to keep transportation costs low and to make such units lucrative.

  Apart from use within the state, bamboo briquettes can also be considered for export in regional markets like Bangladesh, Bhutan, and Nepal— all countries that already import briquettes from India. Tripura’s locational advantages can make the state a viable exporter. The table below provides an overview of briquettes exported to the identified countries.

[88] NEEC Report

Table 25: Export of Briquettes from India (2021-22)

Country	2017–2018	2018–2019
Bangladesh	32,143.96	19,500.30
Bhutan	5,153.21	3,374.18
Nepal	51,039.91	62,928.78
Total	**88,987.69**	**95,004.74**

Source: Study team analysis

Briquettes manufactured in the NER fall in the price range of INR 4.5 to INR 7 per kg, while in the rest of India the price ranges from INR 5 to INR 6 per kg. However, the use of abundantly available bamboo wastes can make briquettes produced in Tripura more competitive, suitable for domestic markets as well.

- **Bamboo charcoal and gas:** Bamboo can be converted into bamboo charcoal and gas using a process called **pyrolysis**. Waste generated during the primary processing of bamboo can be used for this. Gasifiers using bamboo waste as a source of fuel can be used for thermal applications, replacing traditional fuels. Apart from primary processing waste, this gasification can be done using low-quality bamboo as well.

  Gasification is a thermo-chemical conversion which is carried out through process of oxidation and reduction with limited air supply. Apart from energy, it can produce a range of valuable byproducts. The process generates a combustible gas called **producer gas** while **active charcoal** is a useful by-product. The gas can be used in thermal application or in mechanical/electrical power generation. It is eco-friendly as it provides smokeless combustion. Further, gasification of bamboo as a whole has lower operating cost than other methods of power generation.

  Besides this, **bamboo waste charcoal** can be produced by heating bamboo waste with a controlled supply of air. For this too, waste generated after primary processing and during the production of Agarbatti sticks can be used for carbonization in kilns. This process produces uniform quality charcoal. It has good outputs and requires minimum investment. The charcoal can not only serve to fulfil the heating needs of rural communities but can also reduce the burden on forest ecosystems by reducing felling of trees for firewood. Bamboo charcoal has much higher calorific value than wood, making it a viable alternative to the timber. Bamboo vinegar is a byproduct of the charcoal making process. It is made by condensing the gases coming out of bamboo charcoal.

  Demand for activated charcoal from India already exists in Bhutan, Nepal, Sri Lanka, the Netherlands, Qatar, Turkey, Kuwait, France, Germany, Bulgaria, Slovakia, and Ethiopia. It is used primarily for the purification of gold, water, and air. Currently, most of the activated charcoal exported from India is made using coconut shell. However, as was discussed above, bamboo can also be used in the manufacture of charcoal. The raw material used in the production of activated carbons is mostly waste generated from industrial or agricultural production. The biomass generated from bamboo, like culms, leaves, and roots, is suitable for the production of activated carbon because of the following properties:

  - low content of inorganic ash-forming components
  - high content of carbon
  - potential extent for activation
  - low degradation in storage
  - high density and sufficiently volatile content
  - stability of supply in the producing country

- inexpensive materials.

Activated charcoal can be made from waste bamboo chunks, culms (stalks), branches, and roots or bamboo residue (for briquette charcoal). Different grades of activated charcoal can be produced for varied applications. Tripura can target the domestic food and pharma manufacturers for food- and pharma-grade activated charcoal.

For export, the state is better positioned than current bamboo charcoal exporting states like Tamil Nadu, Kerala, and Maharashtra, to cater to demand in both Bhutan and Nepal. Within the domestic market, efforts need to be made to encourage manufacturers of food and pharma products to use activated bamboo charcoal.

- **Bamboo-based bioethanol:** Biofuels are fuels derived from organic materials including plant materials and animal wastes. They include ethanol that can be used to blend with gasoline and are seen as a viable option to address energy security concerns in India.

  Bioethanol production through enzymatic saccharification requires waste from the bamboo industry as the feedstock. The production of bioethanol can therefore help strengthen bamboo waste processing infrastructure and capability. Bamboo-based bioethanol is a 2G biofuel, or an advanced biofuel, as it uses nonedible cellulosic biomass. Bamboo is suitable for biofuel production as it has the advantage of having higher heating values and lower moisture content than other commonly used feedstocks.

  Based on the analysis in the NEEC report, the most prolific bamboo species in the NER like Dendrocalamus Hamiltonii, Bambusa Tulda, Bambusa Balcooa, and Bambusa Pallida, are all species that are suitable for bioethanol production owing to high glucose and ethanol yield. This is because bamboo belongs to the grass family, and its cell wall is primarily composed of cellulose, hemicellulose, and lignin. Pretreatment is used to separate the cellulose from lignin and hemicellulose, and the cellulose is then fermented to bioethanol. The hemicellulose may be converted to various chemicals like acetic acid and furfural.

  It is expected that the demand for bioethanol will rise in the coming years in Tripura as well as the other NER states since the product is blended with gasoline, which has a proven market. The conversion of bamboo to bioethanol also produces other value-added products like acetic acid and furfural, which have their own markets. The table below gives an overview of the expected demand in Tripura and the NER.

Table 26: Predicted Ethanol Demand in NER ('000 MT)

Year	Tripura	NER Total
2025	17	200
2026	18	212
2027	20	224
2028	21	237
2029	22	250
2030	24	265
2031	25	280
2032	27	296
2033	29	313
2034	31	331
2035	33	350

Source: Study team analysis

The projected demand for bioethanol in Tripura is expected to grow over the coming years. Using bamboo waste to produce bioethanol will help the state meet this demand in a sustainable way.

- **Bamboo waste-based particleboards**: Non-conventional building materials, produced from agro-industrial waste, have been gaining popularity in recent years. Primary processing bamboo waste, including tops, bases and small diameter stems, can be used to manufacture high performance structural panels of bamboo particulates.[89]

  As it has been found that the strength of bamboo particleboards are similar to those made of wood, use of bamboo waste for production is sustainable not only as it allows for the reuse of waste but also because the growth of rate of bamboo is higher than traditional sources of timber, making it a more environmentally friendly choice.

  The manufacturing process itself is simple, requiring minimal infrastructural intervention— the bamboo waste is first sorted according to particle size. It is then treated in a kiln to reduce its starch content, for which it is submerged in heated water. This treated waste is dried. Once dried, it is mixed with adhesive and is finally placed in molds for pressing.[90]

  As Tripura will have abundant access to bamboo waste, such particleboards can be manufactured in the state, especially with projections predicting that the Indian particleboard market is expected to register a CAGR of over 12% during between 2022 and 2027[91]. Within the state, these particleboards can potentially help increase the overall competitiveness of particleboard furniture by lowering the cost of acquiring the same.

[89] Bamboo Particulate Waste – Production Of High-Performance Structural Panels, Cortez-Barbosa Juliana et al, in Non-Conventional Building Materials Based On Agro-Industrial Wastes, Tiliform (2015).

[90] Bamboo Particulate Waste – Production Of High-Performance Structural Panels, Cortez-Barbosa Juliana et al, in Non-Conventional Building Materials Based On Agro-Industrial Wastes, Tiliform (2015).

[91] India Particle Board Market - Growth, Trends, Forecast (2022 - 2027), Mordor Intelligence (https://www.mordorintelligence.com/industry-reports/india-particle-board-market#:~:text=The%20Indian%20particle%20board%20market,tables%20(finished%20with%20HPL).).

Thus, bamboo waste can be used in a number of ways in Tripura. The Kumarghat, Dharmanagar, and Kathalia industrial parks have been identified as being suitable for bamboo-based industries. These parks can take steps to increase the processing of bamboo waste. Additionally, the Dharmanagar park already has functional sawmills. Here, waste from the sawmills can also be used in the production of briquettes.

In keeping with the green industrial framework proposed for the state, the processing of bamboo waste will help the adoption of green procurement practices and sustainable finance by increasing the reuse of raw materials.

In order to further optimize usage of bamboo resources and minimise wastage, **bamboo treatment** practices must be encouraged. After harvesting, it is important to treat bamboo which, in general, is not durable. Unlike durable timbers, it does not contain "toxic extractives to impart natural durability"[92], "making it highly prone to attack by biological organisms"[93].

"Brown-rot fungi such as Oligoporus placenta and white-rot fungi such as Trametes versicolor, as well as bacteria and subterranean termites, deteriorate bamboo culms in storage."[94] The service life of bamboo is also dependent on its end-use. Studies also find that untreated bamboo has a service life of only two to five years.

Although bamboo, requires treatment, it can be challenging to treat it owing to its anatomical structure— unlike wood, bamboo has ununiformly distributed vascular bundles (vessels and thick-walled fibres). The number and nature of bundles in the inner and outer parts of the culm vary. Thus, the outer periphery is largely fibrous while and the inner part has parenchyma and vessels.

Further, while bamboo have no ray cells that can transport preservatives across the culm wall, the outer wall is siliceous and hard, making it less permeable than the inner layer. As a result, the treatability of bamboo varies along the culm's height and across the culm's thickness.

Preservatives with good diffusive properties to facilitate diffusion from the vessels into the surrounding fibres and parenchyma tissues need to be used to ensure successful treatment. While this can be done for harvested green bamboo, it is more challenging to treat dried bamboo as entrapped air in the latter increases the interfacial tension, this restricts the flow of preservative fluids. However, the treatability of bamboo can be significantly improved by ponding.

Treatment methods for green bamboo include the **butt treatment method** where freshly felled culms are kept standing in a preservative solution; the **modified boucherie method** where the bamboo sap is displaced by preservative chemicals using gravity; steeping freshly cut culms in **preservative solutions** through complete submergence; and the **steaming and quenching method** that involves first steaming green bamboo at about 100°C and then "quenching" it in water-borne preservative solutions. Similarly, the methods for treating dry bamboo include **steeping**; the **hot and cold method** which involves keeping the bamboo in a tank heated at about 90°C and filled with creosote-fuel oil mixture for about 3-6 hours and then cooling the preservative; and the **vacuum pressure method**.[95]

Popular alternatives to chemical-based treatment methods include **water leaching** where bamboo culms are submerged in running or stagnant water to aid the washing out/fermenting of starch, carbohydrates, and other water-soluble substances; **smoking** where bamboo is fumigated at an air temperature of 50 to 60 °C (using its own branches and leaves) for a long period to reduce water-soluble constituents which makes it inedible for insects; use of **botanical extract-based preservatives** like neem, cedar or eucalyptus oil, or camphor-based extracts to delay rot and prevent insect/fungal attacks; and use of organic acids including acetic acid, formic acid, and propionic acid to preserve bamboo, or of citric acid, formic acid, propionic acid, and sorbic acid to inhibit mold growth on bamboo species.

Currently, in Tripura, bamboo is treated with boric acid borax and seasoned.[96] To facilitate wider adoption of bamboo treatment across bamboo-focused industrial estates, warehouses and common treatment facilities can be developed. Vats for submerging and treatment can be developed at the proposed treatment facilities. Further, to facilitate the adoption of alternative treatment methods like fumigation and water leaching, furnaces and tanks could also be considered for development.

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[92] Preservative Treatment Methods For Bamboo: A Review, Kerala Forest Research Institute (2000).

[93] Preservative Treatment Methods For Bamboo: A Review, Kerala Forest Research Institute (2000).

[94] Eco-Friendly Preservation Of Bamboo Species: Traditional To Modern Techniques, Kaur, P. J Et Al, BioRes 11(4), 2016.

[95] Eco-Friendly Preservation of Bamboo Species: Traditional To Modern Techniques, Kaur P. J. et al, BioRes 11(4), 2016.

[96] Tripura Forest Development and Plantation Corporation Limited (2022).

The development of such treatment facilities is important to meet the state's demand for treated bamboo. This will allow for further development of the existing bamboo-based industries in the state.

3.5. Food processing sector

3.5.1. Food processing industry in India

Agriculture is one of the major contributors to Indian economy contributing to ~20% of India's GDP and generates ~38% of the total employment. India has solidified affirmed its position globally in agricultural produce market standing ranking second in the quantity production of rice, wheat and many fruits and ranks ranking third in production of milk, ghee, pulses, ginger, banana, papaya, etc. With abundance of raw materials present in India, the country is rapidly expanding its presence in the food processing industry, which aims to address the issues of food security, food inflation and providing nutritious food to the people.

The food processing industry plays a huge role in India's economy as is seen in the table below.

Table 27: Comparison between industries basis certain criteria

Parameters						
Rank	**Total No. of Factories**	**No. of factories in operation**	**Fixed Capital**	**Employment generated**	**Output**	**Gross value added**
1.	Food Products (15.82%)	Food Products (16.50%)	Basic Metals (18.69%)	Food Products (11.22%)	Food Products (12.83%)	Coke & Refined Petroleum Products (10.40%)
2.	Other Non-Metallic Mineral Products (12. 09%)	Other Non-Metallic Mineral Products (12.29%)	Other Industries (14.74%)	Textiles (10.28%)	Basic Metals (14.00%)	Basic Metals (11.00%)
3.	Textiles (7.30%)	Textiles (7. 02%)	Coke & Refined Petroleum Products (13.04%)	Wearing Apparel (7.35%)	Coke & Refined Petroleum Products (12.22%)	Pharmaceuticals, Medicinal chemical and Botanical Products (7.67%)
4.	Fabricated Metal Products (6.68%)	Fabricated Metal Products (6.16%)	Chemicals & Chemical Products (8.75%)	Basic Metals (7. 06%)	Chemicals & Chemical Products (8.85%)	Food Products (7.35%)
5.	Rubber & Plastic Products (6.02%)	Rubber & Plastic Products (5.97%)	Food Products (6.40%)	Motor Vehicles, Trailers & Semi Trailers (6.73%)	Motor Vehicles, Trailers & Semi-Trailers (7.68%)	Motor Vehicles, Trailers & Semi-Trailers (8.22%)

Source: Annual Report 2021-22, Ministry of Food Processing Industries, GoI.

It is seen that food products industry, compared to various other industries, has both the largest number of factories and the highest number of factories in operation. It also provides the largest employment. According to the latest ASI data, the total number of persons engaged in registered food processing sector was 20.05 lakhs. The unregistered food processing sector employed 51.11 lakh workers as per the 73rd Round of the NSSO and constituted 14.18% of employment in the unregistered manufacturing sector. Further, the industry also figures among the top five sectors with respect to fixed capital, gross value addition and output as can be seen from the table above.

With the exception of parameters such as fixed capital and gross value added, the sector has a pre-eminent position in most indicators of industrial contribution. Notable parameters include 16% of the factories generating 11% of the total employment.

3.5.2. Food processing industry in Tripura

Tripura being an agrarian state can focus on perishable food-based products like oranges, pineapple, jackfruit, etc. which are currently grown in the state. Many agrarian products are produced in surplus and are disposed/spoil due to improper storage infrastructure. [97]

Table 28: Crop Production in Tripura

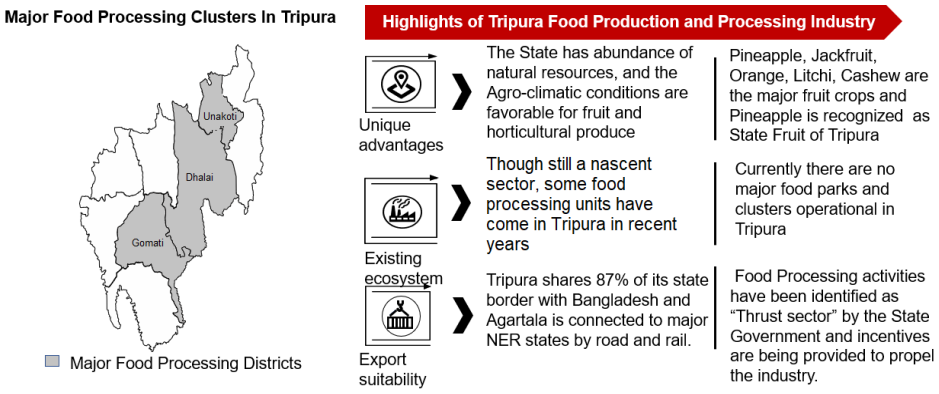
Product	Production in NER ('000 tonnes)	Consumption (%)	Marketable Surplus (%)
Rice	6,755	94.6	5.4
Banana	1,208	20.2	79.8
Potato	1,113	82.4	17.6
Cabbage	912	25.8	74.2
Pineapple	**777**	**5.0**	**95.0**
Orange	**590**	**14.7**	**85.3**
Tomato	517	32.3	67.7
Jackfruit	**493**	**16.7**	**83.3**
Cauliflower	479	30.7	69.3
Brinjal	398	79.0	21.0

Source: APEDA (2015–2016), Department of Agriculture Cooperation and Farmers Welfare, Study team analysis.

The Tripura government can aim to develop the food processing industry to further process the current market surplus into primary, secondary, and tertiary products to earn higher profits and also increase the shelf life. Tripura has a pilot project focusing on the food processing industries pertaining to pineapple, orange, and jackfruit wherein the state is among the top three producers of the fruit. It should also be noted that the finished goods can now be sold in local and international markets. Tripura already has food processing ecosystem setup in the form of a Mega Food Park in Agartala and has an edge in exports as it shares 87% of its borders with Bangladesh through which it can access the Chattogram port.

[97] APEDA, Agri exchange

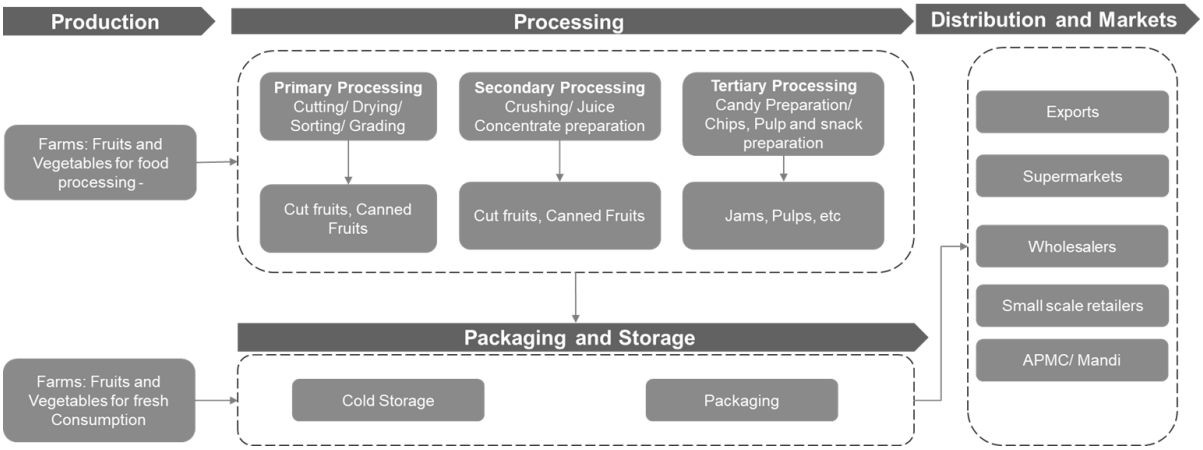
Figure 18: Major food processing cluster in Tripura



3.5.3. Value chain of the food processing industry

The three main products identified for food processing are pineapple, jackfruit, and orange. Gomati, Dhalai and Unakoti districts are major fruit cultivation pockets in the state.

Figure 19: Value chain of food processing industry



To identify the various products and markets that can be targeted, the following methodology was used.

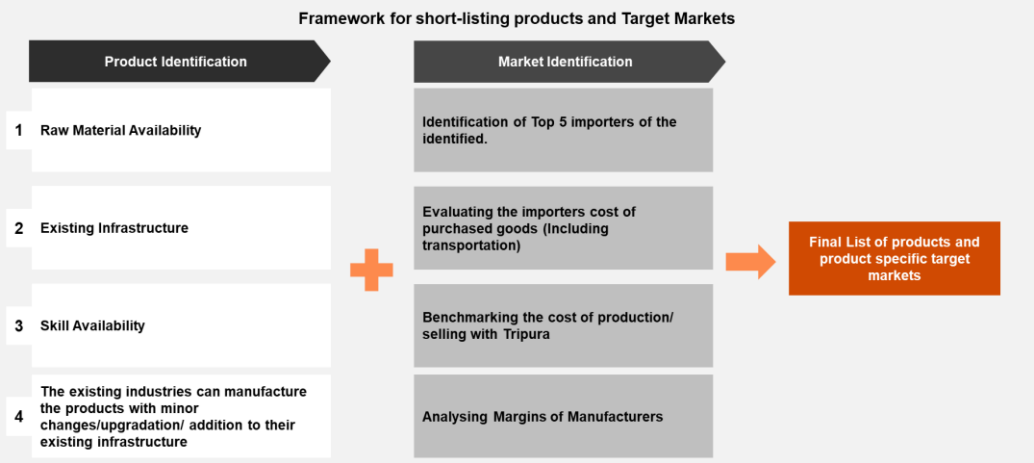
Product identification

For identifying the right products, the parameters of raw material availability, existing infrastructure such as prior existing factories and their product lines, skill availability and further prioritizing products which can be produced with little to no modification of the infrastructure have been identified.

Market identification

Market identification involves identifying the top five importers of the identified products and benchmarking the cost of goods including shipping and identifying the potential markets where goods produced in Tripura are profitable.

Figure 20: Framework for shortlisting products and target markets



Besides jackfruit, pineapple, and orange, **areca nut** can also be suitable for processing in Tripura.

Areca nut, or the Areca catechu, is a tropical plant found extensively in South East Asia. It is a species of palm. The fruit is called the betel nut, or supari in India. It is an important commercial plantation crop and has masticatory uses. It is also used during various religious, social and cultural functions in India. In many regions, the nut is also used by locals as human and veterinary medicine.

India ranks first in terms of both area under cultivation (58%) and production of areca nut (53%). Karnataka, Kerala, Assam, Meghalaya, Tamil Nadu, and West Bengal are among the largest areca but producing regions in the country.

Within the NER, five states (including Assam) produce areca nut. An overview of the region's production is given in the table below.

Table 29: Areca Nut Production In India (2017-18)

Areca Nut Production in NER (2017-18)[98]		
State	**Area under cultivation ('000 Ha)**	**Output ('000 MT)**
Assam	80.81	77.90
Meghalaya	16.93	24.99
Mizoram	11.86	7.27
Nagaland	0.39	2.30
Tripura	5.99	20.41

Tripura has the third highest output of areca nut. The climatic conditions in the state are conducive to its cultivation. It is popular among farmers as it offers the possibility of intercropping, particularly with perennial crops like banana, pepper vines, cacao and cardamom, when it is young. This helps generate income during the long gestation period of the crop. Due to this widespread availability of areca nut, the crop can be

[98] Handbook Of Processing Of Areca nut, Indian Institute of Food Processing Technology Ministry of Food Processing Industries, Tamil Nadu (2021).

considered as suitable for food processing in Tripura. The **Gomati, Dhalai,** and **South Tripura districts** are all areca producing belts.

To increase existing output, research finds that Tripura can benefit from the use of modern agricultural inputs such as fertilizer, pesticide, hybrid seeds, and irrigation[99]. Here, encouraging organic matter recycling can also be beneficial for areca nut cultivation in Tripura— on average, 5.5 to 6.0 tonnes of waste is generated per ha of areca plantations annually, which can be used as an organic source of nutrients for areca palms after composting. Government interventions in the form of subsidies and access to institutional finance for smallholders can also boost areca nut cultivation, which can in turn bolster the growth of areca nut processing.

Apart from this, Tripura can be a suitable site for areca nut processing owing to its location. The state has access to some of India's important areca nut markets, including Bangladesh and Myanmar. These two nations accounted for ~27% of India's total areca nut exports in 2021-22.[100] Last year, India's areca nut exports to Bangladesh and Myanmar amounted to USD 0.99 million and USD 1.22 million, respectively.[101] The states currently exporting to these countries are Gujarat, and Maharashtra and Tamil Nadu, respectively.

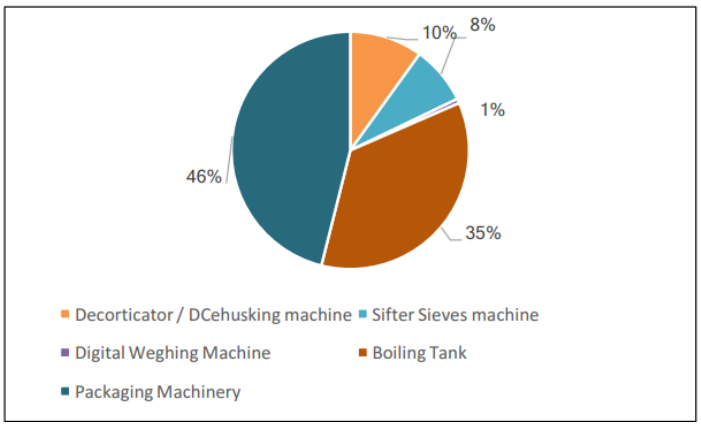
Owing to its relative proximity to both Bangladesh and Myanmar, Tripura is more advantageously located to cater to both these markets. The development of a proposed border haat at Dhalai's Kamalpur will further enable the state to cater to Bangladesh's markets. The subsequent reduction in transportation and logistics costs can make areca nut exports from Tripura more competitive.

Within India, the state already has an established market in Assam and to a lesser extent in Mizoram as well.[102] Traders from Assam's Karimganj are among the primary buyers of areca nut from the state.

The processing of areca nuts into special-grade dried areca nuts, whole areca nuts, split areca nuts, and unroasted and sliced areca nuts, requires minimal infrastructure, thus making it suitable for Tripura's current industrial ecosystem. The main steps involved in the processing of areca nuts include bunch harvesting at 6-7 months, de-husking, peeling, splitting, boiling, coating, and drying.

According to the estimations of the Indian Institute of Food Processing Technology (IIFPT), MoPFI, the share of expenses for various processing stages is as follows:

Figure 21: Cost of Areca Nut Processing



[99] Livelihood Option through Arecanut Cultivation in Tripura: A Case Study of Noagang and its Neighbouring Villages, Kuki, Vanlalrema et al, International Research Journal of Social Sciences, 5(1), 2016. (http://www.isca.in/IJSS/Archive/v5/i1/10.ISCA-IRJSS-2015-298.pdf)

[100] Directorate General of Commercial Intelligence and Statistics, 2021.

[101] Directorate General of Commercial Intelligence and Statistics, 2021.

[102] Livelihood Option through Arecanut Cultivation in Tripura: A Case Study of Noagang and its Neighbouring Villages, Kuki, Vanlalrema et al, International Research Journal of Social Sciences, 5(1), 2016. (http://www.isca.in/IJSS/Archive/v5/i1/10.ISCA-IRJSS-2015-298.pdf)

Source: Ministry Of Food Processing Industries, GoI.

The possible value-added products that can be produced from areca nut in Tripura include:

i. **Dried ripe nuts**: this is the most popular traded form of areca nut. Fully ripe, nine-month-old fruits that are yellowish-orange or red are the best suited for this. Here, ripe fruits are dried in the sun for 35 to 40 days on dry levelled ground.

   For drying and de-husking, the fruits can sometimes be cut longitudinally into halves and sundried for about 10 days after which the kernels are scooped out and given a final drying.

ii. **Kalipak**: another form of processed areca nut, it is made from 6- to 7-month-old nuts with a dark green colour. The nuts are de-husked, cut into pieces, and boiled in extracts from previous boiling (kali) that are diluted with water. The nuts are then coated in kali (the concentrated extract obtained from boiling 3 to 4 batches of Kalipak) and dried.

iii. **Scented suparis:** many varieties of such scented suparis can also be produced using areca nut. For this, dried areca nuts broken into bits, blended with flavour mixtures and packed. Rose essence as well as menthol are common flavoring agents.

   At times, saccharin is used for sweetening. Additives like colour and flavour are added.

All three of the products discussed above can be produced in Tripura owing to abundant access to raw material and relative ease of processing. Apart from these, the production of areca nut extracts for medicinal use can also be considered for markets within the NER. The nut is known to help in preventing oral cavities, dry mouth, gum infection and swelling; improving digestion; reducing inflammation; relieving asthma; and improving wound healing, digestion, and metabolism. It is also known to have anti-diabetic and antioxidant properties.[103]

Further, tannins, a by-product of the processing of immature nuts, can be used for dyeing clothes, tanning leather, and as a food colour. The nuts themselves also contain 8-12% of fat, which can be extracted and used for confectionery purposes. This refined fat is harder than cocoa butter and can be used for blending.

As **Gomati, Dhalai,** and **South Tripura** are among the major areca nut growing regions, areca processing can be undertaken in the Lalchari, Sonamukhi, and Jalefa industrial estates.

3.6. Interventions needed to attract investments to Tripura's priority sectors

To promote industrial development, while it is important to identify sectors with a high growth potential, it is equally important to take steps to support these specific sectors. This can be done through a variety of infrastructural and policy-level interventions.

The Tripura government has undertaken various projects focused on improving industrial infrastructure. As industrial parks can play a key role in catalysing industrial growth, the state government has developed 11 such parks, namely the Bodhjungnagar Park, the R.K Nagar Park, the Sarasima IIDC, the Dharmanagar IIDC, the A.D Nagar Park, the Santirbazar IIDC, the Kumarghat Park, the Dewanpasa IIDC, the Dukli Park, and the Badarghat Park. It is currently also working to develop six greenfield parks. These are the Jalefa and Lalchhari IIDCs and the Sonamukhi, Nagicherra, Kathalia, and Bijoypur Industrial Areas. Apart from this, the road, rail, air, and telecom infrastructure in the state is being improved as well.

However, through an infrastructure assessment it has been found that the existing critical infrastructure in the industrial estates of the state can be improved. Among the basic infrastructure that can be further developed are boundary walls and CCTVs, which are important in ensuring the security of the estates, internal road networks that will ensure the smooth transportation of raw materials into, and finished goods out of the parks, and stable water, power, and gas supply networks. These are among the basic requirements for industrial activity. Adequate supply of water, for instance, is necessary for the smooth operation of both food processing and rubber-based units. Since these are among the identified priority sectors in Tripura, it is essential to

[103] Areca nut Processing, Ministry Of Food Processing Industries, GoI. (http://www.niftem-t.ac.in/pmfme/dpr-arecanut.pdf)

prioritise the development and/or improvement of water supply to industrial parks housing food processing and rubber units.

Further, drainage systems and waste disposal systems, like ETPs and STPs, can be improved where necessary in order to comply with prevalent environmental legislations and to maintain cleanliness in the parks. Sewage, for instance, needs to be treated to acceptable standards before discharge into inland water bodies after disinfection or reuse.

Other required additional infrastructure, or '**good-to-have**' infrastructure, that ease operations of the businesses located on park premises include warehousing units, truck terminals and common facilities centres. While warehousing and cold storage units are required for the storage of raw materials and finished goods, common facilities centres can provide significant support to MSMEs by broadening their access to key enabling infrastructure. It is critical to develop truck terminals too to ensure the smooth flow of raw materials and finished goods to and from the parks.

Once the critical industrial infrastructure discussed above has been developed, the state can consider developing additional enabling infrastructure to cater to the specific needs of the identified priority sectors. These include–

Infrastructure	Description
Cold Chains	• An efficient cold chain is required to provide end to end solutions such as pre-cooling, reefer vans etc. Precooling centres can be set up major districts and production centre to protect food from degradation.
Quality and FPO Labs	• Quality labs are needed to ensure standardization of food making processes by standardizing raw materials, finished goods etc. The FPO labs would aid in getting food certifications, providing a one stop solution for all testing compliances.
Food Processing Training Centres	• Having a food processing training centre within parks will help find relevant work force in a more efficient manner. It can also provide hands-on experience and skilling on post-harvest handling, preservation, and processing activities.
Testing Facilities for Rubber Products	• Testing facilities (for both chemical and physical testing) for all rubber /polymer products and facilities for their certification to any international standards are needed.
Common Infrastructure for Bamboo Processing	• Infrastructure for bamboo processing, including bamboo stick-making facilities, Bamboo Plastic Composite (BPC) facilities, strand woven bamboo block units, vacuum pressure treatment plants, resin/glue plants, and bamboo charcoal plant, could be developed.
Common Facility Buildings	• Common infrastructure required for business facilitation include canteens, meeting halls, business centres, infirmaries, bank/bank extension counters, couriers, freight forwarders, and packing material suppliers.

Finally, after fulfilling all the outlined primary infrastructural needs of the prioritized sectors, interventions to develop existing parks into '**smart industrial parks'** could be considered. Such parks aim to attract investors by improving operational efficiency which lowers operating costs. Possible interventions for the creation of smart parks include the development of ICT facilities and utility corridors, common facilitation centers, and use of improved operating and monitoring systems like SCADA.

Other Investment-Boosting Interventions: Beyond the provision of infrastructure, investment-seeking locations also must take steps to create a business environment attractive to investors. This is because investors consider a range of factors while making investment decisions, only one among which is infrastructural support. Another important factor is "the quality of the enabling environment"[104]. To create such

[104] Investment Incentives And FDI In Selected ASEAN Countries, OECD (2004).

an environment, host locations often roll out policies that incentivize investments by reducing upfront investment costs, lowering risks, and easing the establishment and operation of businesses.

In Tripura's case, to offset locational disadvantages, the state can consider examining its industrial policy practices. Some possible policy interventions aimed at improving the state's current industrial policy have been discussed in detail in the following sections.

3.6.1. Product and market identification

Further analysis based on stakeholder consultation indicates that Tripura currently produces pineapple and jackfruit and faces similar issues of wastage. Major growth pockets of the each of the products production have been identified as below. [105]

Table 30: Major growth pockets of shortlisted products

Product	State	Major Growth Pockets
Pineapple	Tripura	Dharmanagar, Unakoti, Fatikrai, Kumarghat, Vanghmuri, Phuldurgsai, Sakhan.
		Khowal, Sidhai, Kalyanpur, Ranirbazaar, Jambal, Bisalgarh, Barjula, Sonamura, Kathalia, Khowal, Teliamura.
		Kamalpur, Halhari, Salema, Kanchanpur, Bahudurpura, Sakhn, Rabiraipara.
Jack Fruit	Tripura	South Tripura, North Tripura, Gomati and Dhalai
Orange	Tripura	North district, Dhalai, Gomati district, West district

Source: TIDC, Study team analysis

With limited food processing infrastructure, there is little possiblility for value addition. As a consequence much of the pineapples produce gets wasted due to the perishable nature of the fruit.

Some of these value added products of pineapple, which can be produced with minimal additional trianing and equiment are:

Table 31: Value added products

Pineapple	Jack Fruit	Orange
Canned pineapple	Canned jack fruit bulbs	Orange juice, frozen, not fermented or spirited
Pineapple squash	Dried jack fruit slices	Orange juice, not frozen, of a Brix value not greater than 20
Pineaplle concentrates	Preserves/ Jams	Orange juice, not fermented, spirited, or frozen
Frozed pineapple snacks	Fruit snacks	Essential oils of orange
Pineapple pulp	-	-

Source: Study team analysis

[105] APEDA

Apart from diversification of products, the food processing companies can also diversify their target markets in terms of export based on margins and profitability.

Product competitive analysis

Considering the cost of raw material, manufacturing cost and logistics cost, competitive analysis of major products is shown in table below

Market diversification as cost analysis

HS Code	Product	Country	Pricing Rs/kg	Pricing in Tripura (Rs/kg)	Transport cost (Shipping Freight)	Total Cost	Margin for Tripura exporters
200820	17. Ready to serve beverages/ squashes, 18. Candied pineapple pieces, 19. Canned pineapples tidbits, 20. Pineapple Pulp 21. Freeze dried pineapple snacks,	USA	99	79	26	105	-6
		Germany	97	79	19	98	-1
		Spain	112	79	19	98	14
		Russia	80	79	20	98	-18
		UK	112	79	20	99	14
081090	22. Canned jack fruit bulbs 23. Dried jack fruit slices 24. Preserves/ Jams 25. Fruit Snacks	People's Republic of China	80	128	2	130	-50
		Netherlands	240	128	19	147	94
		USA	71	128	26	154	-84
		Saudi Arabia	46	128	4	132	-86
		Germany	182	128	19	147	35
80430	Fresh or Dried Pineapple	USA	48	25	26	51	-4
		Netherlands	58	25	19	44	15
		People's Republic of China	60	25	2	27	33
		Japan	59	25	2	27	32
		Spain	59	25	19	44	15
200941	Pineapple juice, unfermented, Brix value <= 20 at 20°C	France	62	43	19	62	1
		Netherlands	43	43	19	61	-19
		USA	52	43	26	69	-17

HS Code	Product	Country	Pricing Rs/kg	Pricing in Tripura (Rs/kg)	Transport cost (Shipping Freight)	Total Cost	Margin for Tripura exporters
		Germany	48	43	19	61	-14
		Belgium	47	43	19	61	-14
200949	Pineapple juice, unfermented, Brix value > 20 at 20°C	Netherlands	98	43	19	61	36
		USA	31	43	26	69	-38
		Spain	110	43	19	62	48
		Japan	120	43	2	45	76
		Italy	99	43	19	62	37
200911	Orange juice, frozen, not fermented or spirited	USA	30	38	26	64	-34
		Germany	108	38	19	57	52
		Japan	153	38	2	40	113
		People's Republic of China	110	38	2	40	70
		France	73	38	19	57	17
200912	Orange juice, not frozen, of a Brix value not greater than 20,	France	57	38	19	57	0
		Belgium	34	38	19	57	-23
		UK	65	38	20	58	7
		Netherlands	41	38	19	57	-16
		Germany	50	38	19	57	-6
200919	Orange juice, not fermented, spirited, or frozen	Belgium	113	38	19	57	56
		UK	103	38	19	57	46
		Germany	126	38	19	57	69
		France	59	38	19	57	2
		Poland	108	38	19	57	51
330112	Essential oils of orange	USA	386	426	26	453	-67
		Germany	432	426	19	445	-13
		Japan	245	426	2	428	-183

HS Code	Product	Country	Pricing Rs/kg	Pricing in Tripura (Rs/kg)	Transport cost (Shipping Freight)	Total Cost	Margin for Tripura exporters
		People's Republic of China	819	426	2	428	390
		UK	401	426	20	446	-45
081090	Canned jack fruit bulbs, Dried jack fruit slices, Preserves/ Jams, Fruit Snacks	People's Republic of China	80	128	2	130	-50
		Netherlands	240	128	19	147	94
		USA	71	128	26	154	-84
		Saudi Arabia	46	128	4	132	-86
		Germany	182	128	19	147	35

Source: Tradestat, Primary research, Study Team Analysis

Based on the above analysis, it can be seen that exporting food products to Europe is generally more profitable. Hence the products and markets to be targeted by manufacurers in Tripura are summarised in the table below.

Table 32: Identified markets for shortlisted products

HS Code	Product	Identified Markets for export
200820	26. Ready to serve beverages/ squashes, 27. Candied pineapple pieces 28. Canned pineapples tidbits 29. Pineapple Pulp 30. Freeze dried pineapple snacks	Spain, UK
081090	31. Canned jack fruit bulbs 32. Dried jack fruit slices 33. Preserves/ Jams 34. Fruit Snacks	Netherlands,Germany
80430	Fresh or Dried Pineapple	Netherlands, People's Republic of China, Japan, Spain
200941	Pineapple juice, unfermented, Brix value <= 20 at 20°C	France
200949	Pineapple juice, unfermented, Brix value > 20 at 20°C	Netherlands, Spain, Japan, Italy
200911	Orange juice, frozen, not fermented or spirited	Germany, Japan, People's Republic of China, France

HS Code	Product	Identified Markets for export
200912	Orange juice, not frozen, of a Brix value not greater than 20	France, UK
200919	Orange juice, not fermented, spirited, or frozen	Belgium, UK, Germany, France, Poland
330112	Essential oils of orange	People's Republic of China
081090	Canned jack fruit bulbs, Dried jack fruit slices, Preserves/ Jams, Fruit Snacks	Germany, Netherlands

Source: Tradestat, Primary research, Study Team Analysis

In order to produce proccessed foods, Tripura can focus on attracting existing food processing companies. Some existing producers of the identified food products are listed in the table below.

Table 33: Existing Food Processing Units

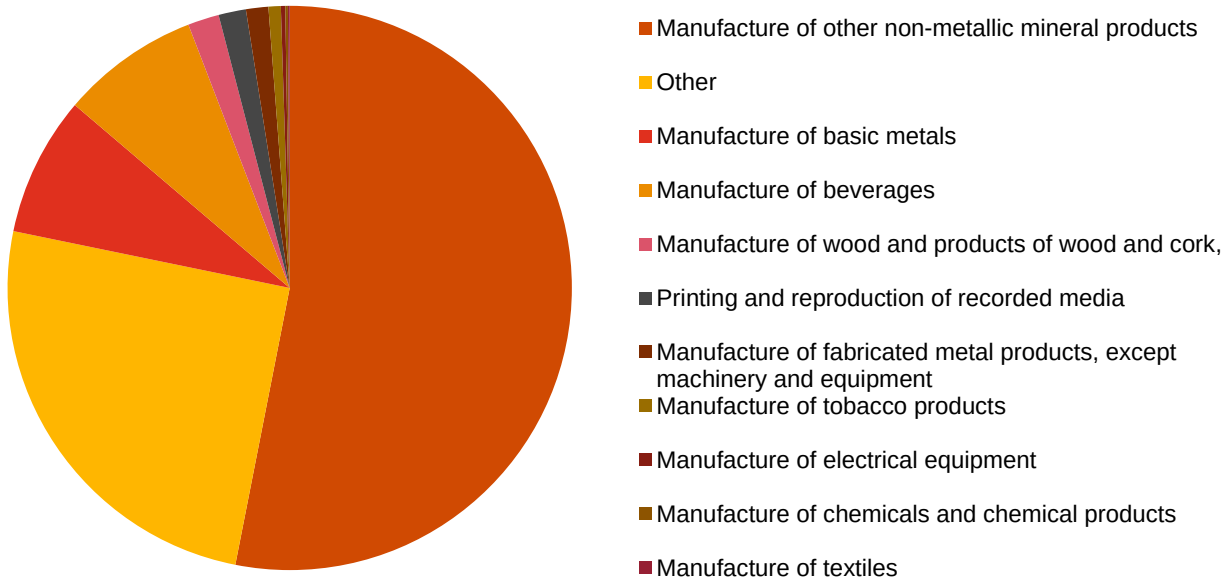
Crop	Product	Company	Location
Jackfruit	Canned ripe jackfruit bulbs	Kollur Food Products	Goregaon, Maharashtra
	Dried jackfruit slices	Kerala Naturals	Kottayam, Kerala
	Raw jackfruit chunks in brine	Pahari Roots	Mumbai, Maharashtra
	Jackfruit Chips	Pristine Tropical Fruits and Agro	Malappuram, Kerala
Pineapple	Pineapple Slices	Bhutan Fruit Products Pvt Ltd	Samtse, Bhutan
		Welsell Foods	Chennai, Tamil Nadu
		Miltop Exports	Jamnagar, Gujarat
	Pineapple Pulp	Mala's	Panchgani, Maharashtra
	Pineapple Preserve/Jam	Nature Land Organics	Ganganagar, Rajasthan
		Bhutan Fruit Products Pvt Ltd	Samtse, Bhutan
		Himsrot	Dehradun, Uttarakhand
	Ready to serve pineapple beverage	Ganesh Products Private Limited	Kolkata, West Bengal
		Shree Guruji	Indore, Madhya Pradesh

	Candied Pineapple	Brill International	Delhi
		Qualinut Organic	Bangalore, Karnataka
		Ghasitaram Sweets & Gifts	Goregaon, Maharashtra

3.7. Other Sectors

Apart from the identified sectors Tripura's economy shows a healthy growth rate. The focus sectors contribute ~49 – 51% of the states manufacturing output according to the ASI Data. Among the other sectors Manufacture of other non-metallic mineral products, Manufacture of basic metals contribute ~30%, Manufacturing of other miscellaneous products together contribute to ~86% of Non-priority sector's manufacturing output.

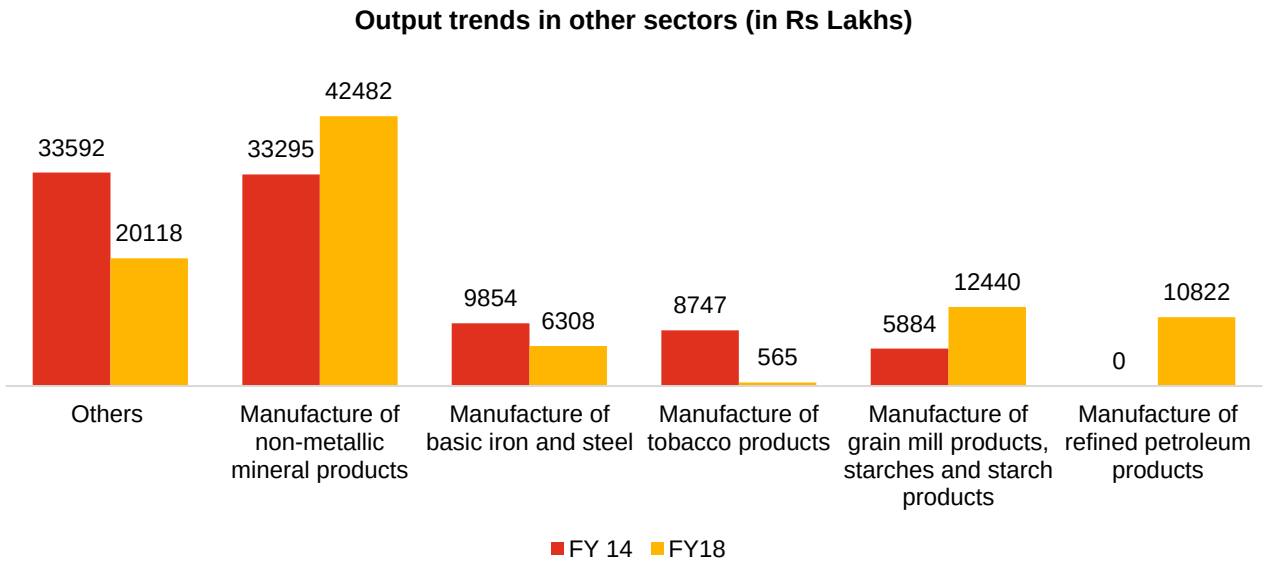
Figure 22: Manufacturing output of other sectors



Source: ASI

These other sectors are currently growing at a rate of 2.28% as per the ASI Data. These industries are expected to grow at a similar pace and generate further land demand and economic growth.

Figure 23: Sectoral contribution within other sectors



Source: ASI

From FY14 to FY 18 the petroleum products emerged as new sector and sectors such as nonmetallic mineral products and grains mill products and starch products have seen a growth. On the other hand sectors such as iron & steel, tobacco products and other miscellaneous products have seen declining growth trend.

Of the other sectors the petroleum-based sectors benefit from a favourable resource position, however the growth depends on the extraction and development of fields in the state. The initiatives in this sector are largely in the domain of central agencies such as ONGC.

Other possible focus sectors: Apart from the sectors discussed above, some other sectors that could be developed in Tripura include **medical tourism**, and the manufacture of **medical equipment**, **rubber wood**, **products** and **automobile spares**. These have been selected based on the state's locational advantages and access to raw materials. They are:

1. **Medical Tourism:** The phenomenon of "consumers electing to travel across international borders with the intention of receiving some form of medical treatment"[106] is described as medical tourism. While the treatment sought may span the full range of medical services, the most commonly sought treatment includes "dental care, cosmetic surgery, elective surgery, and fertility treatment".

   Treatment
   The medical tourism value chain comprises three components:

   - **pre-procedure stage**: here, the medical tourist searches, identifies, and finalizes the process of reaching the destination for treatment. Tourists concerns at this stage include quality and cost of treatment, connectivity, ease of access, and ease of purchase. Important enablers at this stage then include brand perception, pretreatment consultation services, ease of connectivity and visa procedures, concierge services, cultural match, and insurance coverage availability.

   - **procedure stage**: this is the central stage of the value chain where the tourist is treated. It begins when the medical tourist is picked up at the airport and continues through the treatment process, ending with the patient's discharge. The important enablers at this stage include expertise of medical staff, accreditation of facilities, and standards of living arrangements (hotel or apartment).

[106] Medical Tourism: Treatments, Markets and Health System Implications: A scoping review, OECD (2011).

- **post-procedure stage**: the convalescence period following the medical procedure. It comprises two important components, namely **post-operative care** and **follow-up care**.

Currently, in India, the medical tourism market is a growing one, with both medical tourist arrivals (MTAs) and market size showing growth. The sector, valued at USD 2.4 billion in 2018, is expected to increase to USD 8.3 billion by 2025. Bangladesh, Bhutan, Nepal, and Myanmar account for more than 50% of India's MTAs. This creates a unique opportunity for Tripura to emerge as a regional medical tourism hub, especially with regard to Bangladesh.

The state shares a long border with Bangladesh. Besides enjoying a locational advantage, Tripura also fares well in terms of cultural affinity with the country due to civilizational ties, similarity in food and culture, and the absence of language barriers. Apart from allopathic healthcare facilities, Tripura also has a large number of homeopathic and ayurvedic facilities, which can enable it to attract patients seeking alternatives to allopathic treatments. The state capital Agartala, due to its accessibility and existing medical infrastructure, has the potential to leverage its proximity to international borders. In 2017, the city attracted ~3,100 Bangladeshi MTAs, about 51% of the NER's total Bangladeshi MTAs.

Agartala is a suitable location for the development of the sector as it is the most industrialised region in the state. It also houses an international airport, facilitating patients' access to healthcare facilities.

However, in order to realise the benefits of its locational advantages and cultural ties, it is crucial to first improve Tripura's current medical services ecosystem and increase private sector participation. In order for the state to emerge as a medical tourism hub, its medical ecosystem needs to be able to satisfy the patient concerns outlined at each stage of the value chain above.

Currently, there is a need for the state to develop and strengthen both **pretreatment consultation facilities** as well as **upstream linkages with hospitals** in target markets like Bangladesh. Similarly, a network of partners for **customer engagement** and **facilitation of travel logistics in source countries** can be developed.
While there are six state hospitals— Agartala Government Medical College and G.B. Pant Hospital, the Atal Bihari Vajpayee Regional Cancer Centre, Indira Gandhi Memorial Hospital, the Netaji Subhash State Homeopathic Hospital, the State Ayurvedic Hospital at Agartala, and the Modern Psychiatric Hospital at Narsinghar, six district hospitals, and 12 sub-divisional hospitals in Tripura, none of these are NABH- or JCI-accredited. Facilitating **NABH- and JCI-accreditation** of hospitals in the state will help build Tripura's image as a viable medical tourism location. Co-ordination between hospitals and hotels in Agartala can be further strengthened as well, and hotels in the city need to be equipped to cater to patient needs.

Transportation and access
Agartala is easily accessible from Bangladesh by road. The approximately 128-km-long route between Dhaka and Tripura can be covered in about four and a half hours. Since the country is Tripura's primary target market for medical tourism, it is essential to continue to develop **road transport linkages**.

The existent Agartala-Dhaka-Kolkata 'Maitri' (friendship) bus service, for instance, could be further strengthened to provide an affordable mass transit option to medical tourists. Additionally, the required regulatory facilities to ease the entry of such tourists can be developed at the ICP Agartala, located at the Agartala-Akhaura border point along the border between the state and Bangladesh.

Additionally, it is important to continue to develop road transport linkages to the rest of India as well. Costs of consumables as well as maintenance costs are higher because of higher logistics costs associated with the transport of goods from the rest of India to Tripura. Developing all-weather roads to quicken delivery of goods can be one way to lower logistics costs.

Once the medical tourism ecosystem develops further, the issue of limited **air connectivity**, an impediment to the arrival of medical tourists from potential target markets including Bhutan, Nepal, and Myanmar can be addressed as well.

Currently, the Guwahati airport is the only international airport in the NER to have direct air links with potential international markets, especially Bangladesh and Bhutan. While the Agartala Airport is

connected to Delhi, Kolkata, and Bengaluru, which all have better connectivity to target markets, these cities themselves are major medical tourism hubs. Thus, it is important for Tripura to strengthen air linkages with the target markets in order to emerge as a competitive destination.

Although air connectivity is already being enhanced[107], connectivity of air ambulances from Tripura to neighboring international markets also needs to be developed. These only offer domestic services to places such as Chennai and Kolkata.

Availability of medical professionals
Besides government hospitals, there are also several well-known private hospitals in the state, including the Dr. B. R. Ambedkar Memorial Teaching Hospital, the Institute of Laparoscopic Surgery Hospital, and Apollo clinics. Additionally, in 2021-22, various specialists, including a consultant for cardiothoracic vascular surgery, a neurosurgeon, an assistant anesthetist, and two surgical oncologists,[108] were engaged in hospitals in the state. Despite this, the **per capita availability of doctors** in Agartala is low compared with the rest of India. The availability of market-relevant **skilled manpower** is a key hindrance to Agartala's development as a medical tourism hub. It would be beneficial to take steps to provide adequate livelihood opportunities to nurses, doctors and other medical personnel trained in Tripura to curb outmigration of skilled personnel. Further, offering educational opportunities for super-specialised branches of medicine can also help develop a skilled workforce.

Market development
Further, it is important for hospitals in Agartala to **collaborate with hospitals** in target countries to establish itself as a key regional destination for medical tourism. Many healthcare providers in India already do this in a number of ways, including inviting foreign medical graduates to observe the different medical treatment procedures. This helps them get patient referrals through the visiting graduates. Further, hospitals also organize medical camps in other countries, and develop ties with health ministries of various nations in order to establish themselves as suitable locations for medical tourists.

Hospitals in the state capital need to **develop strong pretreatment consultation facilities** as well. This can be done through the use of online platforms— posting testimonials of treated patients on hospital websites and providing a chat room for initial discussions with prospective patients can be beneficial. Besides this, hospitals need to form **upstream linkages with hospitals in target markets to improve patient outreach**. Creating a network of partners for both **customer engagement and travel logistics facilitation** in source countries too will be beneficial. Coordinating with travel agencies in source countries can ease logistical burdens on international patients. For this, hospitals can consider steps like partnering with airlines to enable special processing on flight tickets for patients undergoing medical treatments.

Developing **stronger coordination between hospitals and hotels**, or the provision of concierge services to international patients and accommodation facilities, to ensure patients' smooth stay helps satisfy a key patient need. Linkages between healthcare providers and hotels need to be developed for this. Further, hotels must be given institutional support to equip them to cater to patient needs. Here, collaboration with the state's Tourism Department may also be beneficial in developing cost-friendly accommodation facilities for patients.

On the regulatory front, India provides **medical e-visas** for patients and their attendants from various countries. However, the benefits of such visas are not extended to patients from Bangladesh, who account for a majority of MTAs in India, for treatment in Guwahati and Agartala. If not addressed, this can hinder the growth of Tripura as a medical tourism hub.

2. **Medical supplies**: While the potential of Tripura in becoming a hub of medical tourism has been identified, one of the major challenges to this is the state's reliance on other states for medical supplies.

[107] Tripura formally approved a proposal to start international flights to Bangladesh in August 2022. (https://indianexpress.com/article/north-east-india/tripura/tripura-nod-operate-flights-bangladesh-year-8107591/)

[108] Health and Family Welfare Department, Government Of Tripura (https://health.tripura.gov.in/?q=dhs#:~:text=i)%20There%20are%20six%20State,Modern%20Psychiatric%20Hospital%20at%20Narsinghar.).

The consequent increase in cost of treatment can be addressed if certain medical supplies are produced in Tripura itself.

Due to the availability of rubber, the manufacture of **surgical gloves** and **contraceptives** in the state has been identified as being viable. Besides this, medical disposables like **disposable syringes**, **blood bags,** and **bamboo fiber gauze** can also be manufactured in Tripura. This is because the manufacturing processes for these are not overly complex. They require minimal infrastructural intervention, which makes them suitable considering the current state of Tripura's industrial ecosystem

The raw materials of the products too are relatively easy to source. Disposable syringes, for instance, require polypropylene (a synthetic resin built up by the polymerization of propylene), needles, and packing material.[109] As polypropylene is widely produced across India, it can be sourced easily for syringe manufacture. The approval of the implementation of a petrochemical project at the Numaligarh Refinery Limited (NRL) in May 2022 can further ease access to essential raw materials— after its development, linkages with the NRL-based plant can reduce the costs of sourcing polypropylene.

Similarly, the major raw material needed for bamboo fiber gauze is bamboo pulp. Considering the state's abundant bamboo resources, bamboo gauze can be manufactured in Tripura. Cotton-based sutures, bandages, and linen are typically suitable for manufacture in cotton producing areas. This makes them unsuitable for competitive production in Tripura as the cost of transporting raw material will increase the cost of production significantly. Production of bamboo fiber gauze, on the other hand, has the potential of reducing the use of cotton gauze which has to be sourced from other states. Additionally, as bamboo fibre possesses a unique antibacterial agent, "bamboo Kun", which imparts both antibacterial and deodorizing properties to bamboo, bamboo gauze does need any artificial synthesized antimicrobial agent. Therefore, bamboo gauze can enjoy a competitive advantage in the market owing to lower production cost.

Further, apart from fulfilling demand for such equipment within the state, they can also be produced for export as India already has established markets for syringes, blood transfusion bags, and dressing articles (bamboo-based gauze can be exported as a viable alternative to traditional cotton-based dressing articles due to its cost advantages and antibiotic properties). The table below provides an overview of some suitable export markets.

Table 34: Value of Export of Selected Medical Equipment Exports (2021-22)

S. no	Product	Current exporters	Importing Countries	Value of Imports (Million USD)
1	Syringes	Haryana, Gujarat, Maharashtra, Uttarakhand, and Uttar Pradesh	Nepal	1.82
			Bangladesh	1.32
			Myanmar	0.14
			Bhutan	0.15
2	Blood transfusion bags	Kerala, Haryana, Gujarat, Tamil Nadu, Maharashtra, and Delhi	Nepal	0.26
			Bangladesh	0.54
			Myanmar	0.04
			Bhutan	0.01
3			Nepal	2.63

[109] Disposable Syringe, Ministry Of Micro, Small & Medium Enterprises, GoI (http://www.dcmsme.gov.in/old/publications/pmryprof/chemical/ch11.pdf).

	Medical gauze	Tamil Nadu, Maharashtra, Haryana, Gujarat, Karnataka, Goa, Uttar Pradesh, Kerala	Bangladesh	0.81
			Myanmar	0.05
			Bhutan	0.08

Source: EXIM databank

Tripura's location positions the state to serve the target markets better than some of the current exporting states. Its relative closeness to the target markets will result in reduced transportation costs, making the selected medical equipment produced in the state more competitive.

3. **Rubber wood**: Natural rubber is one of the most important cash crops of Tripura, where ~86,892 hectares of land is under rubber cultivation. Rubber trees reach maturity at approximately 7-9 years, which is when latex extraction begins. After 25-30 years of tapping, the trees no longer produce latex and can be harvested for low-cost, light wood. The successful utilization of mature rubber trees can boost the profitability of rubber plantations as the long gestation period of the trees is marked by a period of expenses without any substantial returns. This can also be beneficial to smaller landholders, apprehensive of the initial cost of raising rubber trees.

   Rubber wood can be used in a number of ways including for making furniture, furniture parts, flooring, ceiling, paneling, molded components, internal door and window shutters, utility products, balusters, laminated and finger jointed panel boards, interior décor items, wood carvings, veneer plywood, fiber boards, block boards, flush doors, pulp and paper, bent wood articles, and packing cases. Apart from being an inexpensive source of wood, it is also easier to process rubber wood— operations like sawing, cross cutting, and machining are smoother and easier.[110]

   Rubber wood has the potential to fetch about INR 4.5 Lakh per hectare at the terminal stage of the life of the plantation (on the completion of 25-30 years of the trees).[111] Due to the existence of vast rubber plantations in the state, increasing the efficiency of utilization of rubber wood in Tripura can decrease dependence on other sources of wood and increase the overall sustainability of the rubber sector as well. The state's Tripura Forest Development and Plantation Corporation (TFDPC), a profit-making PSU, already runs a Rubber Wood Factory, a Timber Treatment Plant, a carpentry unit called Unakoti Crafts and Furniture, and a rubber wood door factory called Pilak Door Factory. The factory is equipped with the machinery needed for the manufacture of not only doors but also windows and kitchen shutters.[112] The factory has been manufacturing rubber wood products since 2012. The plant's current capacity is 2000 cum per annum.[113] The furniture manufacturing facility produces both high end furniture and utility furniture for schools on a fairly large scale.
   The table below provides an overview of the TFDPC's output:

Table 35: Production of Rubber Wood Items in Tripura

Rubber Wood Production (INR Lakh)		
Product	2019-20	2020-21
Rubber wood (sawn)	220.12	193.71
Production of furniture	666.78	500.90

[110] Rubber Wood, The Rubber Board Of India (http://www.indiannaturalrubber.com/advantages.aspx).
[111] Political Economy of Natural Rubber Cultivation in Tripura, S. Mohanakumar, Social Scientist, 4(11/12), 2016.
[112] Use of Rubber Wood in Tripura, Tripura Farmers Portal and Kisan Call Center, Government of Tripura (mofpi.gov.in/PLISFPI/incentives-sales-investment).
[113] Plantations in Tripura (https://slbctripura.pnbindia.in/pdf/Plantations_Tripura.pdf).

Production of doors and other items	79.87	36.49

Source: Tripura Forest Development and Patriation Corporation (TFDPC) Ltd, 2021.

With projections predicting that the global wooden furniture market is expected to reach USD 309.99 billion by 2028, growing at a CAGR of 4.73% during 2021-2028[114], it may be beneficial for Tripura to strengthen its rubber wood production and processing industries. The TFDPC's rubber wood factory indicates the existence of rubber wood processing capability. Further skilling could be undertaken in collaboration with the corporation to create a relevantly skilled labour pool. Additionally, the Rubber Department at the Tripura University may also consider offering trainings relevant to rubber wood processing and treatment to broaden access to skilling opportunities.

In recent years, the PRC, Vietnam, Malaysia and Thailand have been important sources of sawn wood, often rubber wood.[115] Further, one of the wooden products imported by India is plywood. Between 2021-22, India imported plywood worth USD 103.64 Million. Effective rubber wood utilization can help drive down imports of both sawn wood and rubber wood-based products. Tripura could play an important part in meeting domestic demand for rubber wood and its products.

Within India, there is an annual requirement of 40 million cubic meters of timber against domestic availability of 29.25 million cubic meters.[116] Here, again, Tripura's rubber wood has the potential to fulfil domestic demand while also reducing the burden on rain forests and other sources of timber.

West Tripura and **South Tripura** districts are both major rubber-producing districts— in terms of area under natural rubber cultivation in the state, West Tripura accounts for 40%. The promotion of the rubber wood sector in these districts will allow for forward integration, where aged rubber trees that cannot be tapped can be processed to make furniture. Besides these districts, plantations can also be found in North Tripura and Dhalai. The State Forest Department had introduced rubber trees in the state as early as 1963 in trial plantations in localities like Patichhari and Manu, and since 1980, private plantations too have increased in number.

Like the TFDPC, the Tripura Rehabilitation Plantation Corporation (TRPC) is also actively engaged in raising rubber plantations in fourteen subdivisions of the state. Secondary research shows that maintaining a density of ~600 trees per hectare appears to be most suitable for the NER.[117] Thus, as land under rubber cultivation in Tripura is ~86,892, it is being estimated that the number of trees in the state's plantations is trees, at various stages of their lifecycles is ~5,21,00,000.

The potential to extract rubber wood from these existing trees depends on the variety of rubber being grown in the plantations. According to one study[118], rubber wood yield in plantations varies between 140 to 200 m3/ha. The table below provides the potential rubber wood availability of various rubber cultivars grown in India.

[114] Global Wooden Furniture Market Is Expected To Reach USD 309.99 Billion By 2028 : Fior Markets, GlobeNewsWire (2021). (https://www.globenewswire.com/news-release/2021/02/19/2178607/0/en/global-wooden-furniture-market-is-expected-to-reach-usd-309-99-billion-by-2028-fior-markets.html)

[115] Forest Products Annual Market Review 2020-2021, United Nations And The Food And Agriculture Organization Of The United Nations (2021).

[116] Status And Utilization Of Rubberwood (Hevea Brasiliensis Mull.Arg.) In India, Sunny, P.P et al (2017).

[117] High density planting - an option for higher productivity of rubber (Hevea brasiliensis) in north eastern region of India, Dey, S.K et al, Journal of Plantation Crops (India) 41(3) (2013).

[118] Asia-Pacific Forestry Sector Outlook Study: The Utilization, processing and demand for Rubberwood as a source of wood supply, Food and Agriculture Organization (https://www.fao.org/3/Y0153E/Y0153E04.htm#P362_31211).

Table 36: Potential Rubber Wood Yield Before Felling

Available trunk volume/ha	
Variety of rubber	Available trunk (m^3/Ha)
PB-86	130
TIJR 1	109
GT 1	124
RRIM 600	67

Source: Food and Agriculture Organization

Apart from rubber plantations, rubber trees are also found in recorded forest areas (RFAs). The diameter class distribution of these trees is as follows:

Table 37: Diameter Class Distribution of Rubber Trees

Diameter Class Distribution of Rubber Trees (in '000)		
10-30 cm	30-60 cm	>60 cm
39,996	2963	0

Source: Forest and Trees Resources in States and Union Territories, Forest Survey of India (2021)

Mature trees on rubber plantations are commonly 20-30 meters tall with a relatively slim trunk of up to 30 cm diameter at breast height. Thus, trees with diameters of more than 30 cm can be assumed to be older trees, close to the end of their lifecycles. These, then, can be assumed to be viable sources of rubber wood over the next few years.

Here, it is important to point out that while raising rubber trees for both latex and rubber wood has a large number of benefits, the growth of trees is affected by tapping, and can limit their rubber wood output.

As has been seen in the preceding discussion, **sawn rubber wood, rubber wood furniture,** and **rubber wood doors** are already being produced in Tripura. These existing rubber wood factories indicate rubber wood processing capacity in the state. Skill development measures may be beneficial in further increasing this capacity.

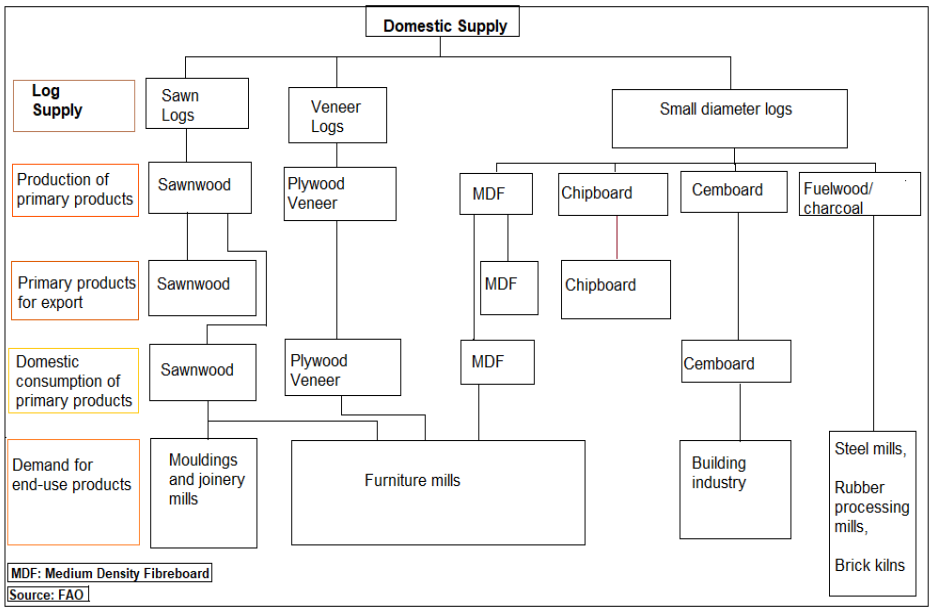
Further, **rubber wood-based plywood** is a popular product that can also be manufactured in Tripura. This plywood can be used for both construction and decorative end uses. Besides this, **medium density fibre boards (MDFs)** and **particleboards** may also be considered for manufacture. Manufacturing these will enable the use of sawmill waste as well.

Rubber wood in the form of small logs, off-cuts, edges, slabs and branches is used for **particleboard** manufacture. Some particleboards are laminated with overlays of a wide range of colors and patterns. This product is sought after by the furniture manufacturers for making wardrobes, cabinets, tables, chairs, partitions and kitchen cabinets. However, in transporting logs to sawmills for processing, long distances will need to be avoided as untreated rubber wood is vulnerable to insect and fungal attacks. Alternatively, sawing will need to be accompanied by chemical treatment, immediately after harvest. Sawmills integrated with drying facilities can also produce sawn wood for export or to meet domestic demand for furniture wood.

After primary processing, secondary level processing can be undertaken to make value added finished products—rubber wood's "qualities for machining, acceptable durability, light natural color and adaptability in accepting paints and other finishes, makes it an ideal wood for furniture", for instance.

The figure below outlines the possible flow of rubber wood logs.

Figure 24: Flow of Rubber Wood Logs



Apart from the various possible uses outlined above, good quality rubber wood charcoal and briquettes can also be derived from rubber wood waste. Charcoal kilns can be used to produce charcoal. Other than this, unprocessed rubberwood can be sold in local markets for household use, as an alternative to other wood-based fuels.

4. **Automobile spares**: Besides focusing on the priority sectors that have been identified as suitable for Tripura, the state can also consider focusing on automobile spares manufacturing. India is a major exporter of automotive spare parts. The country exported car spares worth USD 6265.71 million in 2021 alone.[119] Out of this, exports to Bangladesh accounted for USD 65.88 million.[120]

   Tripura's location can facilitate easy access to Bangladesh's markets, enabling manufacturers located in the state to export spares at more competitive prices than manufacturers based out of the current exporting nubs, namely Maharashtra, Tamil Nadu, Karnataka, West Bengal, the National Capital Region, Gujarat, Uttar Pradesh, and Haryana. These regions do not enjoy the geographical proximity to Bangladesh, which Tripura does.

   States like Tamil Nadu and Gujarat are already established hubs for the manufacturing of spares for OEMs and have automobile component manufacturing clusters. Thus, it is recommended that Tripura focus on attracting MSMEs to cater to the aftersales market in Bangladesh instead. The state can also cater to the demand of the aftersales market in other states within the NER.

   An examination of the spares exported by India, demand in regional markets, the current level of industrial development in Tripura, and the existing industrial ecosystem, it has been found that **bicycle spares, including rims and chains, and automotive nuts and bolts** may be suitable for manufacture in the state.

[119] Directorate General of Commercial Intelligence and Statistics, 2021.
[120] Directorate General of Commercial Intelligence and Statistics, 2021.

The table below shows the value of exports of the identified spares to Bangladesh in 2021-22.

Table 38: Export of Automobile Spares to Bangladesh (2021-22)

Product	Value of Exports in 2021-22 (USD/Million)
Bicycle Rims	0.88
Bicycle Chains	2.92
Nuts and Bolts	10.56

Source: Directorate General of Commercial Intelligence and Statistics, 2021.

It may be viable to focus on bicycle spares as the use of bicycles in Bangladesh is substantial— data shows that the country's market demands nearly 1.5 million bicycles a year and sees an annual growth of 30%.[121]

Further, both these products as well as automotive nuts and bolts have relatively simple manufacturing processes. They can thus be manufactured in Tripura, keeping in mind the state's current level of industrial development.

The presence of several large steel manufacturers in neighboring Assam will aid access to the required raw materials as well. Tripura is linked by both road and rail to the state, which will facilitate the transportation of steel. For the manufacture of bolts, for instance, the primary raw material required is mild steel round bars. This can be sourced from existing steel producers in Assam. The manufacture of nuts also involves procuring hexagonal steel rods.[122] Apart from this, the state being a power surplus one also makes it a suitable location for such manufactures, which require uninterrupted and stable power supply.

Besides catering to the market in Bangladesh, such manufactures from Tripura can also aim to meet domestic demand— in the last year, India imported nuts and bolts worth USD 856.87 million.[123] Thus Tripura could cater to the demand for such products in the aftersales markets in other states within the NER. Though West Bengal is already a major producer of automobile spares in the eastern region, Tripura's closeness to other NER states makes it better positioned to meet their demands.

Owing to ease of both raw material and market access, Tripura can, then, be an attractive location for spare parts manufacturing MSMEs.

Summary of products and target markets for Tripura

Based on the above analysis the identified products and their target markets have been summarized below.

Table 39: Shortlisted priority products to be manufactured in Tripura

S. No.	Sector	Products	Target market
35.	**Rubber**	Surgical Gloves	Domestic market in India and Regional Markets

[121] Bicycle Industry in Bangladesh: Pedalling into Global Market, DataBD (2020). (https://databd.co/bicycle-industry-in-bangladesh-pedalling-into-global-market/#ref_1)

[122] Action Plan for Project Profile "Nuts and Bolts" Under Public Procurement Policy, Ministry of MSME, Govt. of India (2021). (http://dcmsme.gov.in/Nuts%20and%20Bolts.pdf)

[123] Directorate General of Commercial Intelligence and Statistics, 2021.

S. No.	Sector	Products	Target market
36.		Rubber Contra (M)	Domestic market in India and Regional Markets
37.		Rubber Contra (F)	Domestic market in India and Regional Markets
38.		Tyres for Truck and Bus	Domestic market in India and Regional Markets
39.		Tubes for Cars	Domestic market in India and Regional Markets
40.		Tubes for Truck and Bus	Domestic market in India and Regional Markets
41.		Tubes for bicycle	Domestic market in India and Regional Markets
42.		Tubes for motorcycle	Domestic market in India and Regional Markets
43.		Tubes for cycle rickshaw/ powered rickshaw	Domestic market in India and Regional Markets
44.		Floor Covering and Mats	Domestic market in India and Regional Markets
45.		Tyre Motorcycle	Domestic market in India and Regional Markets
46.		Tyre Scooter	Domestic market in India and Regional Markets
47.		Tyre other than bike/ scooter	Domestic market in India and Regional Markets
48.		Radial Tyre Cars	Domestic market in India and Regional Markets
49.		Tyre for Bicycle	Domestic market in India and Regional Markets
50.	**Bamboo**	Timber Substitute	Domestic market in India and Regional Markets
51.		Agarbatti	Domestic market in India and Regional Markets
52.		Floor Panels	Domestic market in India and Regional Markets
53.	**Food Processing**	Canned pineapple	Spain, UK
54.		Pineapple squash	Spain, UK

S. No.	Sector	Products	Target market
55.		Pineapple concentrates	Spain, UK
56.		Frozen pineapple snacks	Spain, UK
57.		Pineapple pulp	Spain, UK
58.		Canned jack fruit bulbs	Netherlands,Germany
59.		Dried jack fruit slices	Netherlands,Germany
60.		Preserves/ Jams	Netherlands,Germany
61.		Fruit snacks	Netherlands,Germany
62.		Orange juice, frozen, not fermented or spirited	Germany, Japan, People's Republic of China, France
63.		Orange juice, not frozen, of a Brix value not greater than 20	France, UK
64.		Orange juice, not fermented, spirited, or frozen	Belgium, UK, Germany, France, Poland
65.		Essential oils of orange	People's Republic of China

Based on the above assessment, 31 products have been identified across 3 major sectors of rubber, bamboo and food processing which can be prioritised for manufacture in Tripura. Rubber and bamboo products will be primarily focused on catering to the domestic market and the surrounding regional economy, while the food processing sector should focus on tapping the European markets. Hence, the connectivity of Tripura to rest of India and to Europe through Bangladesh shall play a key role in the development of these sectors in the region.

3.8. Interventions needed to attract investments to Tripura's priority sectors

To promote industrial development, while it is important to identify sectors with a high growth potential, it is equally important to take steps to support these sectors. Such steps can include infrastructural and policy-level interventions.

The Tripura government has undertaken various projects focused on improving industrial infrastructure. industrial parks in catalysing industrial growth, the state government has developed 11 such parks, namely the Bodhjungnagar Park, the RK Nagar Park, the Sarasima IIDC, the Dharmanagar IIDC, the AD Nagar Park, the Santirbazar IIDC, the Kumarghat Park, the Dewanpasa IIDC, the Dukli Park, and the Badarghat Park. It is currently also working to develop six greenfield parks. These are the Jalefa and Lalchhari IIDC and the Sonamukhi, Nagicherra, Kathalia, and Bijoypur Industrial Areas. Apart from this, the road, rail, air, and telecom infrastructure in the state is being improved as well.

However, the existing critical infrastructure in the industrial estates of the state can be improved. Among the basic infrastructure that can be further developed are boundary walls and CCTVs which are important in ensuring the security of the estates. iroad networks will ensure the smooth transportation of raw materials into, and finished goods out of the parks.table water, power, and gas supply networks are among the basic requirements for industrial activity. Adequate supply of water, for instance, is necessary for the smooth operation of both food processing and rubber-based units. Since these are among the identified priority sectors in Tripura, it is essential to prioritise the development and/or improvement of water supply to industrial parks housing food processing and rubber .

Further, drainage systems and waste disposal systems, like ETPs and STPs, can be improved where necessary in order to comply with prevalent environmental legislations and to maintain cleanliness in the parks. Sewage, for instance, needs to be treated to acceptable standards before discharge into inland water bodies after disinfection or reuse.

Other required additional infrastructure, or '**good-to-have**' infrastructure, warehousing units, truck terminals and common facilities centres. It is critical to develop truck terminals ensure efficient transportation of both raw materials and finished goods.

Once the critical industrial infrastructure discussed above has been developed, the state can consider developing additional enabling infrastructure to the specific needs of the identified priority sectors. These include–

Infrastructure	Description
Cold Chains	• An efficient cold chain is required to provide end to end solutions such as pre-cooling, reefer vans etc. Precooling centres can be set up major districts and production centre to protect food from degradation.
Quality and FPO Labs	• Quality labs are needed to ensure standardization of food making processes by standardizing raw materials, finished goods etc. The FPO labs would aid in getting food certifications, providing a one stop solution for all testing compliances.
Food Processing Training Centre	• Having a food processing training centre within parks will help find relevant work force in a more efficient manner. It can also provide hands-on experience and skilling on post-harvest handling, preservation, and processing activities.
Testing Facilities for Rubber Products	• Testing facilities (for both chemical and physical testing) for all rubber /polymer products and facilities for their certification to any international standards are needed.
Common Infrastructure for Bamboo Processing	• Infrastructure for bamboo processing, including bamboo stick-making facilities, Bamboo Plastic Composite (BPC) facilities, strand woven bamboo block units, vacuum pressure treatment plants, resin/glue plants, and bamboo charcoal plant, could be developed.
Common Facility Buildings	• Common infrastructure required for business facilitation include canteens, meeting halls, business centres, infirmaries, bank/bank extension counters, couriers, freight forwarders, and packing material suppliers.

Finally, after fulfilling all the outlined primary infrastructural needs of the prioritized sectors, interventions to develop existing parks into '**smart industrial parks'** could be considered. Such parks aim to attract investors by improving operational efficiencylowers operating costs. Possible interventions for the creation of smart parks include the development of ICT facilities and utility corridors, common facilitation centers, and use of improved operating and monitoring systems like SCADA.Beyond the provision of infrastructure, investment-seeking locations also must take steps to create a business environment attractive to investors. This is because investors consider a range of factors while making investment decisions, only one among which is infrastructural support. Another important factor is "the quality of the enabling environment"[124]. To create such an environment, host locations often roll out policies that incentivize investments by reducing upfront investment costs, reduce risks, and ease the establishment and operation of businesses.
In Tripura's case, to offset locational disadvantages, the state can consider examining its industrial policy practices. Some possible policy interventions aimed at improving the state's current industrial policy have been discussed in detail in the following sectionsor Industrial Growth

4. Investment Enablers for Industrial Growth

4. Investment Enablers for Industrial Growth

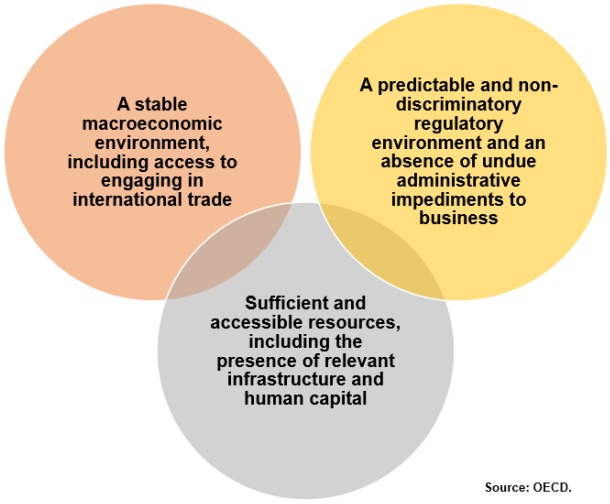
The previous section identifies the priority sectors on which Tripura should focus. It is important to devise an industrial policy that can help support and catalyse the growth of the identified target sectors. This section will focus on recommending such a policy with actionable interventions.

The Need for an Industrial Policy

To achieve its goal of facilitating industrial growth in the state, the Tripura government has undertaken various infrastructure projects. It has developed 11 industrial parks and is currently also working to develop six greenfield parks. Apart from this, the road, rail, air, and telecom infrastructure in the state is being improved as well.

However, availability of adequate infrastructure is only one among many parameters that affect investment decisions.[125] Apart from undertaking infrastructure development measures, it is important for industrial development agencies to take steps to create an environment attractive to investors. Investors also favour locations with some key enabling factors including a stable macroeconomic environment, a predictable and non-discriminatory regulatory environment, and sufficient and accessible resources. Further, "market size, openness to foreign trade, the quality of the enabling environment and the availability of domestic competencies"[126] are crucial 'secondary investor concerns.'

Figure 25: Primary Investor Concerns



Source: OECD.

This is reinforced by the popularity of investment-boosting policy measures being implemented by governments across the world. Most countries, irrespective of their stage of development, employ a wide variety of incentives to realise their inward investment objectives.[127] Some countries have, for instance, focused on tax-based incentives while others have used strategies like "preferential tariff regimes, removal of regulatory hurdles, (and) stepped-up investment in infrastructure and educational measures."[128] Thus, alongside infrastructural support, host locations must also strive to address various other kinds investor concerns, including the ones listed above.

Within Asia, many nations have focused on taking steps to bring down relative costs of investment and the risks of investing. In Southeast Asia, most widely available are tax incentives as well as reduced duties on capital

[125] Guiding Principles for Policies Toward Attracting Foreign Direct Investment, OECD (2003).
[126] Investment Incentives And FDI In Selected ASEAN Countries, OECD (2004).
[127] Determinants of Foreign Direct Investment: A Sectoral and Institutional Approach, IMF (2010).
[128] Checklist for Foreign Direct Investment Incentive Policies, OECD (2003).

goods and raw materials used in export-oriented production.[129] Further, all the countries in the region have set up designated zones where investors can enjoy benefits like special tax regimes, quality infrastructure and streamlined administrative procedures. Singapore, Malaysia, and Thailand are among the countries that attract large investment inflows, partly owing to their provision of comprehensive investment incentives.

In India, the Special Economic Zones Act, 2005, was introduced with similar objectives— of the generation of additional economic activity, promotion of the export of goods and services, promotion of investment from domestic and foreign sources, and the development of infrastructure facilities, through the setting up of SEZs. Industrial incentives provided by the GoI often take the form of tax-based incentives. Earlier this year, for instance, the GoI extended the concessional corporate tax rate of 15% provided to new manufacturing enterprises which was introduced in 2019, to March 2024.

The policy environment of the country's fast-growing states underscores further the criticality of implementing measures that, beyond providing infrastructural support, address other investor needs and expectations including development of business facilitation services, recruitment support, etc. For instance, while states like Andhra Pradesh and Maharashtra provide high-quality industrial infrastructure to support industrial activity, both states have taken various other steps to attract investors as well. Their industrial policies comprise comprehensive fiscal incentive schemes and measures to increase ease of doing business. They provide concessions on power, water, land etc.

These central and state-level policy measures have been discussed in detailed in section 5.1.1

Initiatives to address key investor concerns

Investment decisions are based on considerations regarding the overall industrial and business environment of a location. Some of the initiatives to address key investor concerns include:

A. **A predictable and non-discriminatory regulatory environment and an absence of undue administrative impediments to business**: The World Bank, in a 2018 paper, found that among the constraints faced by investors, the most commonly cited was regulatory constraints.[130] This refers to excessive or poorly designed regulations, such as cumbersome procedures for obtaining necessary licenses and clearances.

   To meet investor expectations of a business environment free of such administrative impediments, governments of investment-seeking destinations implement policies that ensure ease of doing business (EoDB). This involves taking steps to aid the simplification and rationalization of regulatory processes.

   The World Bank devised an Ease of Doing Business ranking system, the results of which are among the key drivers of regulatory reform. It ranks 190 economies after examining the steps taken by them to ease the process of running businesses— from the cradle to the grave stages of business' lifecycles. The ranking system considers the efficiency of the following processes:

   i. Starting a business
   ii. Registering property
   iii. Dealing with construction permits
   iv. Getting electricity access
   v. Access to credit
   vi. Process of paying taxes
   vii. Trading across borders
   viii. Protection of minority investors
   ix. Labour Market Regulation
   x. Enforcing contracts
   xi. Resolving insolvency

[129] Sustainable Development Impacts of Investment Incentives in Southeast Asia, International Institute for Sustainable Development (2009).

[130] Creating an Enabling Environment, UNCTAD; World Bank (2018).

xii. Contracting with the government.

Host locations across the globe strive to roll out measures that streamline the processes listed above. The importance of high EoDB is reflected in this widespread focus on implementing such policies. India, for instance, undertook institutional reforms in 2014 to create a business environment that could evoke investors' confidence. The decision to do so was taken as a result of "poor Foreign Direct Investment numbers"[131] which were seen as an "indication of investors' unfavorable view of India as a business location".[132]

The key reformative steps taken to increase the country's EoDB were a detailed gap assessment of the business ecosystem, the "spring cleaning" of regulations, concerted efforts to bridge the digital divide and the collection of regular stakeholder feedback to actively gauge reform implementation at the ground level.

Among the many steps taken to simplify regulations, the process of incorporating a business has been made simple. This can be done through the SPICE+ (Simplified Proforma for Incorporating Company Electronically (Plus)) portal where businesses can apply for several different kinds of clearances. These include name reservation for new companies; DIN allotment; mandatory issue of PAN, TAN, EPFO registration and ESIC registration; registration of Profession Tax (for Maharashtra); mandatory opening of a bank account for the company, and allotment of GSTIN.

The GoI has taken measures to ease the process of setting up businesses in India, by addressing various aspects of the pre- and post-establishment regulatory procedures. These include streamlining the acquisition of construction permits and of registering property, easing trade across borders in order to widen market access, broadening access to credit, and simplifying the tax payment and insolvency resolution processes[133]. Certain related measures that are currently underway are:

i. Increased usage of a fast-track Corporate Insolvency Resolution Process (CIRP).
ii. The faster resolution of commercial disputes through dedicated commercial courts.
iii. Digitization of land records and maps to bring transparency on encumbrances and ease the process of registering property.
iv. A campaign to improve regulatory and process frameworks in the power sector has been initiated to enable a reduction in entry barriers in the distribution industry and make it license-free.
v. New companies registered through the Agile platform of the Ministry Of Corporate Affairs are also facilitated to register under the Employees State Insurance Act, through a common transaction.
vi. The Central public work department (CPWD) has introduced 49 new and emerging technologies to enhance the speed of work. These will ensure transparency and increase efficiency.

These efforts have resulted in a vast improvement in the country's EoDB, reflected in the change in its rank in the World Bank's Doing Business reports— from 142 in 2014 to 63 in 2020.

Similar support measures have been introduced across Indian states as well. In Assam, the Ease of Doing Business Act was introduced in June 2016. The state launched a single window portal which now manages all proposals that require clearances, approvals and so on. It also implemented a state-wide Reforms Action Plan and streamlined the approval process for investors. As per the latest national rankings, Assam ranks 20th in EoDB. Like Assam, Maharashtra too has launched the Maharashtra Single Window System (MAITRI) to increase the efficiency of clearance processes.

In Tripura too, several such measures have been taken to increase ease of doing business, and to create an efficient and transparent regulatory environment without undue administrative

[131] Ease of Doing Business, Ministry of Commerce and Industry, GoI (2020).
[132] Ease of Doing Business, Ministry of Commerce and Industry, GoI (2020).
[133] https://www.makeinindia.com/eodb

impediments to business. In the GoI's Business Reforms Action Plan (BRAP) report 2020, the state was recognized as one of the 'Emerging Business Ecosystems' of the country. While EoDB boosting measures introduced by Tripura have been examined in detail in the following sections, some examples of these are provided below:

a. The state established the "Single Window Approval by All Government Agencies in Tripura (SWAAGAT)" portal in August 2020. As a result, no hard copies of applications are required.
b. The state implemented a system of the auto-renewal of licences/registrations, and merged the fees for all clearance-related transactions into one single payment.
c. A maximum limit of 30 days has been set for the issuance of licences and NOCs.

B. **Provisions that reduce business risk and upfront investment burdens, especially for potential greenfield investors**: When investing, entrepreneurs consider the risks of project failure, leading them to also consider the availability of policies that reduce both business risk and upfront investment burdens. This is especially true of those looking to invest in greenfield sectors. In such cases, the provision of **fiscal incentives** has been seen to be a popular way to address these concerns.

While among the 'secondary considerations' of investors, incentive provision remains an important policy variable in strategies to attract investments.[134] In Japan, for instance, the Development Bank of Japan finances private companies working in the renewable energy sector or on energy-saving projects at a low interest rate to mobilise investments into the sector. By reducing the investment burden, therefore, the loans reduce investment risks as well.

Within India, too, there are several incentives offered to industries at both the central and state levels. The GoI's **production-linked incentive schemes**, for instance, provide fiscal benefits to 14 sectors and encourage increased production in these sectors.

Similarly, at the state level, high-growth states like Maharashtra, Andhra Pradesh and Gujarat all have comprehensive incentive schemes that help reduce investors' financial burdens. These incentives often include subsidies for capital investment, industrial and export promotion, and power charges.

Investors in Tripura, too, can benefit from various fiscal incentives provided under both central and state-level schemes. The Tripura Industrial Investment Promotion Incentives Scheme is one such state level scheme under which investors receive various fiscal benefits. These include capital investment subsidies, investment promotion subsidies, and partial reimbursements of interest on term loans.

The incentives policies of the GoI, other Indian states, and Tripura have been examined in detail in section 5.1.

Another important way to reduce business risks is by implementing a **sound land allotment policy**. While the security of land rights is not only an important component of a location's ease of doing business, it acts to protect the interest of investors as well.

Many Indian states have clear land allotment policies that safeguard land use rights of allotees in several ways. Both Andhra Pradesh and Goa have implemented similar allotment regulations. These regulations include provisions for cancellations wherein penalties for non-performing investors are pardoned if reasons for this non-performance are extraneous. Further, provisions for targeted differential land pricing help reduce investment burdens. These are further explored in the benchmarking of land allotment policies in section 5.3.

Since Tripura does not currently have a land allotment policy aimed at easing the allotment of land parcels in its industrial estates, the report has proposed provisions Tripura could incorporate as part of land allotment policy.

[134] Tax Incentives and Foreign Direct Investment, UNCTAD (2000)

C. **Policies for preferential tax treatment**: also called tax incentives, can be defined as any incentives that reduce the tax burden of enterprises in order to induce them to invest in particular locations. Exceptions to the general tax regime, tax incentives could include reduced tax rates on profits, tax holidays, accounting rules allowing for accelerated depreciation and loss carry forwards for tax purposes and reduced tariffs on imported equipment, components, and raw materials, or increased tariffs to protect the domestic market for import substituting investment projects.

Reductions in the standard rates of corporate income tax and tax holidays are the most widely used incentives. These are followed by exemptions from import duties on capital equipment, raw materials and semi-finished components, duty drawbacks, accelerated depreciation, specific deductions from gross earnings for income-tax purposes, investment and reinvestment allowances and deductions from social security contributions.[135]

Many countries, developed and developing alike, offer various tax incentives as a strategy to attract investors, fostering economic growth.[136] Within Asia, Vietnam is one among the countries that have a comprehensive set of tax incentives. It provides three of types of incentives. The first is preferential tax rates which enable companies to pay corporate income tax at a rate lower than the standard 20% rate, at 10%, 15% or 17%.[137] These rates may be applicable either for the entire lifecycle of a project or for a pre-defined period. Besides this, businesses are also given tax holidays, and exemption from customs duty. In the case of tax holidays, companies are exempt from paying corporate income tax for a pre-defined period, generally four years. In some cases, after the completion of the initial tax holiday period, companies may get a partial tax holiday, allowing them to pay 50% of the tax. In some cases, companies can enjoy the benefits of a tax holiday and preferential tax rates at the same time. Finally, companies meeting a set of eligibility criteria are also exempt from paying customs duties. The incentives are used to support specific sectors, including industries that the government wants to incentivise, facilitate investments for, or those beneficial for society.[138]

The GoI, too, has provisions for similar incentives. For instance, it provides a tax exemption under section 80 IAC of the Income Tax Act. Eligible start-ups can avail a tax holiday for three consecutive financial years out of their first ten years since incorporation. Further, under the Software Technology Parks of India (STPI) scheme, the government provides various tax and duty exemptions to promote software exports. Similarly, units within SEZs are given a variety of tax and duty exemptions as well.
Besides these, several other tax incentives for manufacturers have been implemented. Created under the Make in India program and the Goods and Services Tax (GST), the incentives are designed to attract investors to the Indian manufacturing sector while creating jobs and improving the Indian economy. They can be categorised into tax holidays and credits, rebates, and investment allowances.
The Activity Incentives, for instance, provide a 150% deduction for on-premises research and development (R&D), and on funding the import of any materials needed for R&D activities, to eligible manufacturers and producers. Eligible manufacturers and producers also qualify for an exemption from customs duty and are given exportation incentives and industry tax incentives as well.

Among the Indian states, such incentives tend to vary significantly. The NER states give a set of tax incentives to manufacturers based on the available industries, region size, investment potential, and the products produced, among other considerations. These incentives may include exemptions on property taxes and waivers on duties and tariffs related to utilities, or subsidies on equipment related to manufacturing. In Tripura too, similar tax-based benefits, like GST reimbursements and the reimbursement of interest on working capital loans, are used to attract investments. A benchmarking of fiscal incentives, that explores these measures in greater detail, is provided in section 5.1.1.

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[135] Tax Incentives and Foreign Direct Investment, UNCTAD (2000).

[136] Tax And Development, OECD.

[137] Tax Incentives in Vietnam: A Fact Sheet, Centre for Budget and Governance Accountability (2019).

[138] Tax Incentives in Vietnam: A Fact Sheet, Centre for Budget and Governance Accountability (2019).

D. **Institutional quality**: Institutional quality is one of the determinants of investment as investors link good governance with higher economic growth while weaker institutions are linked to added investment costs and reduced profits.[139] Further, poor institutional support mechanisms often prolong clearances and licensing processes, which can dampen investment inflows. Efficient and transparent institutions, on the other hand, help address another investor need that is, **administrative simplification**. Therefore, a necessary area of policy action should be the creation of high-quality institutions that are able to support investors. Transparent and efficient institutions can play a key role in helping achieve industrial and economic objectives.

   Many countries, therefore, form institutions to provide various kinds of support to investors. In Malaysia, for instance, the government has established a number of Development Financial Institutions (DFIs), which are specialised financial institutions tasked with promoting strategically important sectors that will help realise the overall socio-economic development objectives of the country. These sectors include agriculture, SMEs, infrastructure, maritime, export-oriented sectors as well as capital-intensive and high-technology industries. DFIs provide a range of specialised financial products and services to suit sector-specific needs as well as ancillary services like consultation and advisory. They complement banking institutions while acting to bridge the gaps in the supply of financial products and services to strategic sectors to support long-term economic development.

   In India, a similarly important institution is the State Industrial Development Corporation (SIDC). The SIDC of each state plays a central role in supporting investors and catalysing industrial development. The Maharashtra Industrial Development Corporation (MIDC), for instance, is the nodal investment promotion agency under the Maharashtra government. It provides businesses with infrastructure such as land, roads, water supply and drainage facilities, and oversees the establishment and subsequent management of industrial parks and estates. Every state has a similar body that is designed to facilitate investments. Such bodies fulfil various functions, some among which are-

   i. Preparing an action plan highlighting the key industrial policy priorities for the year and the activities to be undertaken to implement various support schemes effectively

   ii. Conducting surveys such as industry potential, labour and gender surveys to identify sunrise sectors, growth engines, labour concerns and gender mainstreaming challenges

   iii. Ensuring that various approvals/clearances are processed efficiently

   iv. Facilitating prospective entrepreneurs in starting and sustaining industrial enterprises and providing a variety of services to them like, identification of viable activities, preparation of project profiles, obtaining financial assistance from various banks/financial institutions and statutory clearances from government departments

   v. Sanctioning and disbursing eligible subsidies under various schemes, and facilitating in obtaining payments in case of delays

   vi. Organising training programs for entrepreneurs and assisting other institutions imparting training to entrepreneurs

   vii. Enabling access to library services where entrepreneurs can access useful literature including project profiles, books related to taxation, technical data, and journals

   viii. Conducting regular meetings with MSMEs in the state to resolve their challenges and issues

   ix. Acting as a convergence body for industrial clusters to support ease of doing business

[139] Determinants of Foreign Direct Investment: A Sectoral and Institutional Approach, IMF (2010).

x. Partnering with reputed academic institutions, and industry and sectoral/technical experts to perform its role efficiently and effectively

xi. At the district level, the District Industrial Centres in each state carry out similar functions, acting as important bridges between the government and businesses.

In Tripura, the Tripura Industrial Development Corporation is the nodal body responsible for the promotion and development of industries and the creation of industrial infrastructure in order to support economic development in the state. Its roles include:

a. Creating an enabling environment to ensure maximum value addition to the state's natural resource base.

b. Diversifying its lending activities and to maintain the corporation as a profit-making organization with sufficient reserves & surplus.

c. Ensuring quality financing and big investments with a target of disbursement of INR 5 Crore per year, and the reduction of Non-Performing Assets to 10%.

d. Ensuring proper infrastructure development in all the districts of Tripura by next 5 years to eliminate regional imbalances. As part of this, it plans to renovate the Dukli Industrial Area to make it a more attractive destination for investors and promote the Bodhjungnagar industrial estate as a model destination for investment.

e. Developing railway connectivity from Jirania Station in West Tripura to the Bodhjungnagar Industrial Area.

f. Creating a corpus fund for infrastructure development.

g. Completing its restructuring process and having a full-fledged efficient set up and computerization of all activities.

h. Improving infrastructure by facilitating investment in industrial infrastructure by the private sector.

The state's DICs, on the other hand, are responsible for providing investor support and catalysing industrial development at the district level.

An analysis of the existing investor support institutions in Tripura and benchmarking of institutions is provided in section 5.2.

E. **Green Industrial Policy Measures:** Apart from the usual investor concerns addressed above, the growing global emphasis on the need to mitigate the ecological ill impacts of industrial activity has resulted in many investors assessing a host location's green industrial policy before making an investment decision.

After the 2015 Paris Agreement, many nations have intensified climate action and have committed to reach net zero emissions by 2050. However, developing countries need to expand their industrial sector to alleviate poverty, deliver goods and services, create jobs, and improve standards of living. In doing so, they often face severe environmental degradation and resource depletion, which threaten opportunities for sustainable economic growth. A **green industrial policy** can be useful in addressing these concerns. Such policies typically promote sustainable patterns of production and consumption that are resource and energy efficient, low-carbon and low waste, and non-polluting and safe.[140] Thus, such a policy can be understood as 'an industrial policy that is meant to trigger and facilitate structural changes as required to respond to environmental

[140] UNIDO Green Industry: Policies for supporting Green Industry, United Nations Industrial Development Organization (2011).

conditions or situations, and to develop a green, circular economy'.[141]

Research finds that the greening of industries has become "a core determinant of economic competitiveness and sustainable growth".[142] Apart from gaining a competitive edge, investor interest in green industrial policies stems from the fact that "investments in resource productivity, such as building energy efficiency, have a higher economic multiplier than general expenditure as, in addition to improving productivity, resource efficiency investments provide a tangible financial return on investment."[143] Another reason investors seek to set up businesses in locations with greening measures and policies is because of increased "external scrutiny" from both the public and NGOs[144]. The internet and social media have made obtaining information about firms' entire supply chains and raising awareness about the environmental impact of corporate production decisions easy. Firms now fear being publicly targeted because this can damage corporate reputations and lead to loss of customers and investors.[145]

Further, "cross-sectoral econometric studies support the hypothesis that foreign firms are, on average, cleaner than domestic firms",[146] often as a result of the pressure of home country regulation. Since "multinational enterprises are subject to higher environmental standards in their home countries"[147], they are likely to invest in locations that have clearly laid down green industrial policies. Research also finds that large firms, in general, tend to pay greater attention to environmental effects.[148] Thus, the implementation of green industrial policy measures can help attract big foreign investors, stimulating faster economic and industrial growth in a sustainable manner.

For governments, on the other hand, these policies can be beneficial as "investments in improving resource efficiency and recycling help reduce the demand for energy, water and virgin resources, reducing the need for large investments in new energy and water supply infrastructure, and new extractive industries."[149] Greening of industries also creates jobs and alleviates poverty, resulting, in the long term, in growth and development of a territory. Besides, "green technologies are becoming increasingly viable in commercial terms, making them bigger and better targets for investment promotion".[150] It is thus evident that implementing industrial greening policies not only helps attract private investment but also has several other socio-economic benefits.

Germany's experience with a green industrial development agenda shows how such measures can have a significant economic role— in 2013-14, the market volume for environmental technologies and resource efficiency accounted for 13% of the country's GDP and it is expected that in 2025, their share will grow to more than 20%.[151] This success is the result of German policy, most notably by the Energiewende (energy transition). One of the central aims of Energiewende is competitiveness in providing environmental goods and services which it achieves through preferential tariffs, various loan programmes for renewable energy, and research and development

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[141] Practitioner's Guide To Strategic Green Industrial Policy, UNIDO (2016).
[142] Practitioner's Guide To Strategic Green Industrial Policy, UNIDO (2016).
[143] Practitioner's Guide To Strategic Green Industrial Policy, UNIDO (2016).
[144] Growing Green Business Investments In Asia And The Pacific Trends And Opportunities, ADB Sustainable Development Working Paper Series (2020).
[145] Growing Green Business Investments In Asia And The Pacific Trends And Opportunities, ADB Sustainable Development Working Paper Series (2020).
[146] Defining And Measuring Green FDI: An Exploratory Review Of Existing Work And Evidence, OECD Working Papers on International Investment (2011).
[147] Defining And Measuring Green FDI: An Exploratory Review Of Existing Work And Evidence, OECD Working Papers on International Investment (2011).
[148] Defining And Measuring Green FDI: An Exploratory Review Of Existing Work And Evidence, OECD Working Papers on International Investment (2011).
[149] Defining And Measuring Green FDI: An Exploratory Review Of Existing Work And Evidence, OECD Working Papers on International Investment (2011).
[150] Defining and Measuring Green FDI: An Exploratory Review of Existing Work and Evidence, OECD Working Papers on International Investment (2011).
[151] Defining And Measuring Green FDI: An Exploratory Review Of Existing Work And Evidence, OECD Working Papers on International Investment (2011).

support.[152] The policy has allowed Germany to become one of the leading global players in wind energy. The country's world market share has been around 30% for the past ten years,[153] highlighting the economic impact that a green industrial policy can have on an economy.

In the Republic of Korea, the Ulsan Industrial District hosts 15 industrial parks on just over 1,000 square kilometers of land. Due to the concentration of economic activity in the region, there was a need to plan and monitor the environmental impact of industry to enable waste management and pollution control. To achieve this, in 2005, the Ministry of Trade, Industry and Energy introduced the Eco-Industrial Park Initiative for the transition of industrial complexes into eco-industrial parks. Following this, the Ulsan EIP Center, established to implement the Ulsan EIP project, "explored symbiotic relationships and shared facilities among individual companies that would contribute to clusters achieving collective efficiencies that cut costs and increase eco-friendliness".[154] The project not only helped the industrial district move towards achieving more sustainable growth but also to become more attractive to investors— by the end of 2014, projects involving 31 companies were operational and these "generated annual cost savings of USD 74 million, new revenue of USD 45 million".[155] As a result of this success, today the Ulsan park brings new investments from companies for whom the symbiotic aspect of the park is an important driving factor.[156]

Having a green industrial policy not only helps a country/region achieve its environmental targets but can also serve to attract investors.

Formulating an industrial policy for Tripura: The discussion above shows illustrates why Tripura should adopt policy measures aimed at creating a conducive investment climate. This will help the state attract a sustained stream of investments and could influence potential investors to consider the state a viable investment site over other similar locations lacking similar investment enablers. Based on the investor concerns examined above, Tripura can consider policy interventions in the following areas:

a. Industrial policy
b. Institutional support capacity
c. Land allotment policy
d. Green Industrial Policy

Each of these four areas are discussed in detail below.

4.1. Industrial Policy

The significant role of promotional policies in the development of both industrial and newly industrializing economies shows the importance of creating an enabling investment climate.[157] A holistic and clearly conceptualized industrial policy can play a significant role in achieving this. Even before the current global popularity of investment enabling industrial policies[158], historically too, many early development economists focused on a '**missing factor'**– capital, technology, entrepreneurship– which was unlikely to emerge from market forces alone.[159] This necessitated the implementation of policies which would "elicit these missing ingredients for growth".[160]

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[152] Green Industrial Policy - Concept, Policies, Country Experiences, UN Environment; Deutsches Institut für Entwicklungspolitk (2017).
[153] Green Industrial Policy - Concept, Policies, Country Experiences, UN Environment; Deutsches Institut für Entwicklungspolitk (2017).
[154] Promoting Green FDI: Practices And Lessons From The Field, UNCTAD (2016).
[155] Promoting Green FDI: Practices And Lessons From The Field, UNCTAD (2016).
[156] Promoting Green FDI: Practices And Lessons From The Field, UNCTAD (2016).
[157] Rethinking Industrial Policy, UNCTAD (2007).
[158] World Investment Report, UNCTAD (2018).
[159] Industrial Policy and Growth, United Nations DESA (2007).
[160] Industrial Policy and Growth, United Nations DESA (2007).

Popular provisions across industrial policies of different regions have been fiscal incentives and investment promoting tools.[161] **Incentives** refer to policy actions that incite or tend to incite action, in this case, attracting investments. Simply put, incentives include all legislative measures aimed at stimulating investments. Such benefits attract investors as they often act to reduce investment risks. These can typically be categorized into two groups- fiscal and non-fiscal.

As incentives continue to play an important role in shaping investment decisions, various Indian states have rolled out incentive schemes– while at the national level, investors can avail themselves of incentives through policies like the Production Linked Incentives scheme, they can reduce upfront investment burdens through state-level concessions as well.

Looking at the practices of fast-growing states like Andhra Pradesh, too, they provide many lucrative incentives to industries including subsidies for capital investment, concessions on water and power tariffs, and so on. They offer incentives for expansion, or loan reimbursements. Andhra Pradesh also ensures that all the key interventions required to unlock the potential of its thrust sectors are factored in through comprehensive sector-specific provisions. For instance, it provides targeted incentives to the food processing sector, including subsidies for technology upgradation, for the development of Primary Processing Centres (PPCs) and Primary Collection Centres (PPCs), and for setting up of cold chains for agriculture/ horticulture/ dairy/ meat produce.

Similarly, the government of Maharashtra too offers a 'Package Scheme for Incentives' as part of its industrial policy to attract investors and support the growth of industry. Under this, apart from providing a set of common incentives to industrial units, the government provides customized incentives packages on a case-to-case basis to projects categorized as 'Projects of Special Importance'. These include large, mega, or ultra-mega projects. A specialized committee, under the chairmanship of the state's Chief Secretary, recommends a customized package for any such project to the Cabinet Sub-Committee for approval. This targeted provision of incentives aids the state in attracting large investors which helps in ensuring continued industrial growth.

It is therefore important for Tripura to roll out a well-developed set of incentives to gain a competitive edge over other competing investment locations.

Incentives can be of two types- fiscal and non-fiscal:

4.1.1. Fiscal Incentives

Fiscal incentives refer to instruments such as tax reductions, incentives, grants, and subsidies given by governments to support industries. These reduce the risk of starting new enterprises and improve competitiveness, encouraging business creation and expansion projects across the state. There are many kinds of fiscal incentives provided by various national and state agencies to promote investments.

At the central level, the GoI, under its SEZ policy, provides various incentives and facilities[162] to the units in SEZs. These include:

1. Duty free import/domestic procurement of goods for development, operation and maintenance of SEZ units
2. 100% Income Tax exemption on export income for SEZ units under Section 10AA of the Income Tax Act for first 5 years, 50% for the next 5 years thereafter and 50% of the ploughed back export profit for the subsequent 5 years.
3. Exemption from Central Sales Tax, Exemption from Service Tax and Exemption from State sales tax. These have now subsumed into GST and supplies to SEZs are zero rated under IGST Act, 2017.
4. Single window clearance for Central and State level approvals.
5. Supplies to SEZ are zero rated under IGST Act, 2017.

Further, a credit linked capital subsidy, with the aim of facilitating technology upgradation in MSMEs with state-of-the-art technology, has also been implemented. Under this, MSMEs, both new and expanding, receive an upfront capital subsidy of 15% (on institutional finance of up to INR 1 crore availed by them). Additionally, another fiscal support measure is the provision of collateral-free loans (of up to INR 1 Crore) to individual MSEs by the Credit Guarantee Trust Fund for Micro and Small Enterprises.

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[161] Review of Investment Incentives: Best Practice in Attracting Investment, IGC (2012).

[162] Ministry of Commerce & Industry, Department of Commerce, GoI.

Under the North East Industrial Development Scheme, the following incentives are provided to eligible industrial units on a reimbursement basis:

a. Central Capital Investment Incentive for Access to Credit: 30% of investment in plant and machinery with an upper limit of INR 5 Crore per unit.

b. Central Interest Incentive: 3% on working capital credit advanced by eligible banks/financial institutions for the first 5 years from the date of commencement of commercial production of a unit.

c. Central Comprehensive Insurance Incentive (CCII): Reimbursement of 100% insurance premium on insurance of building and plant and machinery for 5 years from the date of commencement of commercial production of a unit.

d. Goods and Service Tax (GST) Reimbursement: Reimbursement up to the extent of the Central Government's share of CGST and IGST for 5 years from the date of commencement of commercial production of a unit.

e. Income Tax Reimbursement: Reimbursement of the Centre's share of income tax for the first 5 years, including the year of commencement of commercial production of a unit.

f. Transport Incentive (TI): The following are the subsidies provided under this-

    a. 20% of the cost of transportation including the subsidy currently provided by the Railways/ Railway PSU for movement of finished goods by rail.

    b. 20% of the cost of transportation for finished goods, for movement through inland waterways.

    c. 33% of the cost of transportation of air freight on perishable goods (as defined by the International Air Transport Association) from the airport nearest to the place of production to any airport within the country

g. Employment Incentive (EI): The Centre pays 3.67% of the employer's contribution to the Employees Provident Fund (EPF) in addition to Government bearing 8.33% Employee Pension Scheme (EPS) contribution of the employer in the Pradhan Mantri Rojgar Protsahan Yojana (PMRPY).

Increasingly, Indian states too are adopting incentive policies to mosbilise investments. Under these policies, the incentives provided vary from state to state. In Karnataka, for instance, under its Industrial Policy (2020-2025), the state government provides several subsidies to industries. These include subsidies for investment promotion, registration charges, technology up-gradation, electricity charges, power tariff, quality certification, ETP development, and adoption of rainwater harvesting and waste water recycling practices. Further, they also get exemption from stamp duty, reimbursement of land conversion fees, and skill development and R&D support. Beyond these incentives, each of the state's identified thrust sectors also get sector-specific incentives.

Similarly, the government of Maharashtra's Industrial Policy 2019 has various fiscal incentives provisions aimed at augmenting the manufacturing ecosystem of the state. Some of the fiscal incentives provided by the state include:

a. Investment Promotion Subsidy: reimbursement of SGST

b. Interest subsidy for term loan taken for setting up industrial project

c. Exemption from payment of electricity duty

d. Green Industrialization Assistance for undertaking measures to conserve water, energy and environment

Besides the incentives listed above, the government also provides support to increase quality competitiveness, and R&D activities and technology up-gradation, installation of water and energy systems and the adoption of cleaner production measures. Further, like Karnataka, Maharashtra too has in place various sector-specific incentives, aimed at supporting the growth of its thrust sectors.

For an overview of the best state-level incentives programs, the incentives policies of several states were examined. The table below compares the policies of two such states with those of Tripura's.

Table 40: Fiscal Incentives

Incentive	Policy Description	Andhra Pradesh	Maharashtra	Tripura
Interest Subsidy	Subsidy granted for eligible industries and entrepreneurs on their term loan.	✓	✓	✓
Fixed Capital Cost Subsidy	Subsidy on fixed capital cost during the initial stages of development. It should be noted that some states include/exclude land in this category.	✓	✓	✓
GST Subsidy	Reimbursement of Net SGST paid during the initial incubation period of the industry to improve margins and help them scale.	✓	✓	✓
Electricity Duty exemption/ subsidy	The industry is exempt from payment of the whole or part of the electricity duty for prior decided term and upper limit mentioned in the industrial policy	✓	✓	✓
Stamp Duty Exemption	Stamp Duty and other expenses which are related to direct transfer and purchase of land are exempted.	✓	✓	✓
Mandi Tax Exemption	All industries in food processing and other Agro related sectors will be exempted from mandi tax imposed on the agricultural produce. This may include state mandis, direct producing farmers and mandis outside the state too, with a predefined upper	✓	✗	✗

Incentive	Policy Description	Andhra Pradesh	Maharashtra	Tripura
	limit as per industrial policy.			
Diversion/ Conversion of Land Use exemption	All industries and entrepreneurs can be exempted from land conversion charges (on having industrial purpose)	✓	✓	✓
Quality Certification Subsidy	Certification plays a key role in export and hence export units and other eligible units can avail quality certification exemptions for various national and international certifications	✓	✓	✓
Technology Patent Subsidy	To promote innovation the state can pursue to exempt industries from obtaining patents based on original work/ research post successful registration and sanction of the patent	✓	✓	✓
Transport/ Freightsubsidy	Transport subsidy is generally given to export oriented units on Transportation of finished goods to nearest seaport/airport	✓	✓	✓
Skill Development Incentive	Here, reimbursements are given for the cost incurred in skill upgradation and training.	✓	✗	✗
Technology upgradation incentives	These incentives are given to promote quality competitiveness through technology upgradation.	✓	✓	✗

Incentive	Policy Description	Andhra Pradesh	Maharashtra	Tripura
Special Incentives for Mega Industries	These are aimed at attracting mega industries that can fast track industrial growth.	✓	✓	✗

Source: Industrial policies of states

It is important for governments to have a set of comprehensive incentives, especially as this has been found to be a strong policy measure in attracting investors. The United Nations Conference on Trade and Development (UNCTAD) finds that over the past 10 years, there has been a widespread adoption of formal industrial development strategies globally that entail the use of detailed investment policy tools,[163] especially **fiscal incentives and investment promotion and facilitation measures**. Further, in the past decade, incentives remained the most commonly used tool to boost industrial growth— the global trend of using these industrial policy measures indicates the effectiveness of incentive-based policies. The use of these measures is also suited for lower-skill manufacturing[164], which is an important starting point for industrial development, and can therefore be said to be well suited for Tripura.

Besides, in a study[165] conducted to assess the impact of fiscal incentives on the performance of MSMEs in Gujarat, interview-cum-discussions with 216 MSMEs business owners/managers revealed that all the respondents viewed the fiscal incentives being provided to them positively and as a "very supportive tool" that had aided their business performance in one or other way. Further, a majority stated that the incentives could even enable the MSMEs to compete not only with local big firms but also at global level. Among the various impacts of incentives, most respondents reported that reduced cost of capital, and a resultant increase in working capital, had been one of the most visible impacts of the incentives.

Currently, as is shown in Table 31, Tripura already offers an assortment of fiscal incentives to investors. Using schemes like the Tripura Industrial Investment Promotion Incentive Scheme (TIIPIS), which was first launched in 2017, it aims to use industrial incentives to lower investors' concerns surrounding investment burdens and risks. The recently launched TIIPIS 2022 remains a central pillar of the state's industrial policy. Under this scheme, investors can avail themselves of a variety of incentives including:

Table 41: Fiscal Incentives Provided by Tripura

Incentive	Benefits	Special Provisions for Thrust Sectors[166]
Capital Investment Subsidy	30% on fixed capital investment subject to a ceiling of INR 100 Lakh per enterprise.	For thrust sector industries subsidy rate is 40% and the ceiling is INR 125 Lakh per enterprise
Procurement Preference	15% on all purchases through tenders by State Government Agencies on products manufactured by eligible enterprises	-

[163] World Investment Report, UNCTAD (2018).

[164] World Investment Report, UNCTAD (2018).

[165] Impact of Fiscal Incentives on MSMEs' Performance in Gujarat, Joshi, Y.C et al, Journal of Entrepreneurship and Management (February, 2015).

[166] The state has identified the following as its thrust sectors: **(I) Manufacturing Sector**: Industrial units which are using bamboo, rubber, agriculture and horticultural produce and natural gas as their major raw materials during production; Tea manufacturing; agar oil extraction industry; rubber wood processing industry; industrial units using plastic waste/e-waste as major raw material during production; Municipal Waste Processing; packaging material manufacturing activity; agricultural waste processing industry; industries manufacturing/using bio-degradable plastics; industries making cutlery items using areca nut leaves or bamboo, and **(II) Service Sector**: tourism promoting activities (water sports, ropeways, adventure and leisure sports, and floating restaurants) with a minimum investment of INR 3 Crore (excluding cost of land); hospitals/nursing homes with minimum investment of INR 3 Crore (excluding cost of land) with a minimum capacity of 25 beds.

Incentive	Benefits	Special Provisions for Thrust Sectors[166]
Industrial Promotion Subsidy	Subsidy equal to the net amount of the "Goods and Services Tax" actually paid by an enterprise. Subject to an overall ceiling of INR 80 Lakh per annum. The aggregating limit of entitlement of an enterprise for 5 years cannot exceed 150% value of investment made in plant and machinery.	The annual upper ceiling of the subsidy is INR 125 Lakh per enterprise.
Export Promotion Subsidy	Paid to industrial enterprises on exporting goods through the Land Custom Stations in the state at a rate of 10% on value of export. Subject to an upper ceiling of INR 50 Lakh per annum. Only for the items manufactured in Tripura, provided an enterprise achieves at least 20% value addition within the state.	-
Power charges	Provided to all eligible industrial units with connected load of above 20 HP at a rate of INR 5.00 per unit without any upper ceiling. Industrial units with connected load up to 20 HP will be provided partial reimbursement of power charges at 25% of power charges actually paid by the enterprise, subject to a maximum amount of INR 15.00 Lakh per enterprise per annum.	Annual upper ceiling is INR 25 Lakh per enterprise per annum.
Partial Reimbursement of Interest on Term Loans	4% of the interest on term loan availed by the enterprise. Subject to an upper ceiling of INR 5.00 Lakh per enterprise per annum.	Rate of 5% with an upper ceiling to INR 12 Lakh per enterprise per annum.
100% Reimbursement of Standard Certification charges/ fees/ expenses	One-time payment for standard certifications in 12 selected areas issued by national and international bodies. Also applicable for reimbursement of fees/ charges on account of yearly renewal of standard certifications. One-time full reimbursement of fees payable for acquiring Technical Know-how/ Technology Transfer from any recognized national/ international research laboratories/ technical institutes/ universities.	-
100% Exemption from the payment of Earnest Money and Bid Security Deposits	For all eligible local enterprises on tenders floated by State Government Agencies.	-

Incentive	Benefits	Special Provisions for Thrust Sectors[166]
Employment Cost Subsidy	-	Full reimbursed to eligible Micro, Small and Medium Enterprise belonging to the thrust sector on contribution made towards EPF and ESI Scheme. Subject to employment of 20 or more skilled and semi-skilled workers who are domicile of Tripura.
Subsidy on fees paid for Credit Guarantee of loans	Paid to micro and small enterprises on loans granted by Banks/ NBFCs.	-
Subsidy for participation in fares and exhibitions	-	To be reimbursed at a rate of 50% of the expenditure incurred for travelling expenses of one person and transportation of goods. Subject to an upper ceiling of INR 1.00 Lakh for each participation. This is further subject to two maximum participations a year per unit.
State Transport Subsidy	50% of transportation cost incurred for transportation of secondary raw materials by rail from the railway station nearest to the location of the seller to the Railway Station nearest to the location of the buyer as per Railway Standard Parcel Rate	-
Operational Subsidy to industrial units	New eligible industrial units availing fixed capital investment subsidy from any subsidy scheme of the State/ Central Government to be provided all operational subsidies	-
Special Incentives to Industrial Enterprises that continue to operate for five (5) years a. Industrial Promotion Subsidy b. Power Charge Subsidy c. Employment Cost Subsidy	a. Industrial Promotion Subsidy: provided to enterprises at 25% of Goods and Services Tax actually paid after 5 years of operation with the condition that the aggregating subsidy amount paid since commissioning of the project shall not exceed the 150% of investment in plant and machinery b. Power charges will be provided to all eligible industrial units with connected load of above 20HP at a rate of INR 5.00 per unit without any upper ceiling. The industrial units with connected load up to 20 HP will be provided partial reimbursement of power charges at 25%	a. - b. the annual upper ceiling is INR 25 Lakh per enterprise. c. -

Incentive	Benefits	Special Provisions for Thrust Sectors[166]
	of the power charges actually paid by the enterprise, subject to a maximum amount of INR 15.00 Lakh per enterprise per annum. c. Employment cost subsidy for MSMEs employing 20 or more persons domiciled in Tripura at a rate of 50% of employer contribution paid towards EPF and ESI after 5 years of operation.	

Source: Tripura Industrial Investment Promotion Incentive Scheme (TIIPIS), 2022, Government of Tripura.

As can be seen, Tripura does provide a wide range of incentives to investors and also pays special attention to its thrust sectors. The TIIPIS provides support in both private and co-operative sector units, self-help-groups, joint sector enterprises as well as companies owned or managed by the Tripura government. It will remain in force for a period of five years which will end in March 2027.

While the scheme's aim is to enable industrial growth across sectors in Tripura, it also includes special provisions for thrust sectors. These include the following industrial enterprises:

i. **Manufacturing Sector**

Industrial units which are using bamboo, rubber, agriculture and horticultural produce and natural gas as their major raw materials during production.

1. Tea manufacturing.
2. Agar oil extraction
3. Rubber wood processing
4. Industrial units using plastic waste/ e-waste as major raw material during production.
5. Municipal Waste Processing
6. Packaging material manufacturing
7. Agricultural waste processing industries
8. Industries manufacturing/using bio-degradable plastics
9. Industries making cutlery items using areca nut leaves or bamboo

ii. **Service Sector**

a. Tourism promoting activities (Water Sports, Ropeways, Adventure & Leisure Sports, Floating Restaurant) with a minimum investment of Rs.3 Crores (excluding cost of land)

b. Hospitals/ Nursing Homes with minimum investment of Rs.3 Crores (excluding cost of land) with a minimum capacity of 25 beds.

The revised scheme also hopes to aid economic recovery following the slowdown induced by the Covid-19 pandemic.

Some other kinds of fiscal incentives are listed below. Keeping in mind these measures, the incentives provided by Tripura currently have been examined further and compared with those provided by some other states in India.

1. **Capacity Based Incentives** - Based on the size and production capacity, special customized packages can be provided to Mega and Ultra Mega projects in the state on a case-to-case basis to make sure there is maximum vision – investor fit.

   Benchmarking -Tamil Nadu provides structured incentives for mega and ultra-mega industries based on industry locations and investment size as per their Industrial Policy 2021. The incentives include a tailored investment promotion subsidy, standard incentives, training subsidy, electricity tax incentive, land cost incentive, stamp duty incentive, green industry incentive, SGST refund on capital goods, quality certification incentive, and intellectual property creation incentive.

   Further, Maharashtra too provides incentives to industries based on their fixed capital investment levels or the direct employment they generate. These include stamp duty exemption, electricity duty exemption, and some sector-specific benefits.

   Similarly, Andhra Pradesh provides size-based project cost subsidies for the food processing sector. While integrated food parks get aid equal to 50% of the project cost, with a ceiling of INR 20 Crore, mega food parks can also get aid equal to 50% of the project cost, with a higher upper limit of INR 50 Crore.

   Current Scenario and Recommendations – Tripura does not currently provide capacity-based incentives in their investment promotion policy. Introducing such incentives will help the state attract investors from mega and ultra-mega industries. Examining the practices of Maharashtra and Andhra Pradesh in this regard can lead to positive outcomes as the states have introduced many specific incentives for the food processing sector, a sector that Tripura too has identified as a thrust sector.

2. **Early Bird Incentives –** Early bird incentives aim to kickstart production and investment across specific sectors. These initial investments further attract other industries and ancillary units, spurring growth in the selected sectors.

   Benchmarking – The government of Punjab, under its 'Invest Punjab' initiative, considers the first five MSMEs and large-scale industries to come into early bird production and give them 100% reimbursement of Net GST for a period of 12 years, subject to 125% of the fixed capital investment for five early bird MSME units and five large units each.

   Besides this, like many states in India, Tamil Nadu too has implemented an early bird incentive for EV industry players to encourage both EV manufacturing and marketing. Further, the government also took steps to support the sector using demand-side interventions.

   Current Scenario and Recommendations – As discussed above, early bird incentives help in attracting initial investors into growing sectors. To realise the benefits of this, Tripura can adopt the practices of other states in the NER such as Assam, which has recently introduced incentives for EV manufacturing. It can incentivize its identified priority sectors to fast-track their growth.

3. **Incentives for Continuing Investments –** It is important for states to not only attract new investments but to also provide incentives to older investors who have played a key role in catalysing growth and employment in the region. Incentives for continuing investments are important to ensure long-term growth. They motivate businesses to continue to operate in a region even after benefitting from any initial incentives they may have received.

   Benchmarking – The Assam state government provides incentives to existing industrial undertakings. It reimburses the SGST paid by MSEs for a period of 15 years. This encourages existing enterprises to continue to operate in the state.

   Current Scenarios and Recommendations – Tripura already provides special incentives to industrial enterprises which have continued to operate in the state for five years. It also incentivizes the expansion of existing units. These benefits are available in the form of a capital investment subsidy, an industrial promotion subsidy, partial reimbursement of power charges, an employment cost subsidy, and a wage

subsidy among other things. Alongside these, introducing sector-specific incentives, to ensure continued investments can help achieve long-term growth across the targeted sectors.

4. **Special Incentive for Sunrise and Thrust Sectors –** With an abundance of natural resources, Tripura can provide special incentives to thrust sectors, like rubber, bamboo, and food processing, to expedite their integration into the global value chain.

   Benchmarking – In order to propel its sunrise sectors, Tamil Nadu has included a special package of incentives in its new industrial policy. Under its Research and Technology Adoption Fund, the state will encourage and support the adoption of innovative technologies in focus and sunrise sectors.

   West Bengal too has identified Iron and Steel, Engineering, Leather, Agro, and IT/ITes as its thrust sectors and has provided them with sector-specific infrastructure as incentives.

   Similarly, the policies of Punjab government to support thrust sectors include, among other measures, the provision of an investment subsidy, an electricity duty exemption, a decade-long property tax exemption and 100% stamp duty reimbursement on purchase or lease of land and building.

As part of priority sector identification in Tripura, the report has identified food processing, rubber and bamboo as priority sectors. The following section benchmarks the sector specific policies of identified priority sectors in Tripura with other successful policies to identify incentives which can be considered to be provided for investors in Tripura.

1. **Bamboo sector**: Recognizing the importance of bamboo-based livelihoods in many Indian states, the GoI has taken various steps to extend support to the sector. The primary implementing agency of such measures is the National Bamboo Mission. The mission takes a multi-pronged approach to support the bamboo sector. It works to promote and facilitate bamboo cultivation, support the development of necessary infrastructure like primary processing facilities, increase value addition through product development support, promote a waste-to wealth approach, provide market infrastructure and support skill development, and provide credit-linked back ended subsidies. Additional assistance of 10% is given to the private sector of the states in the NER. Apart from the financial assistance provided by the NBM, the primary processing and marketing of bamboo has been made eligible for financial assistance under the Agricultural Infrastructure Fund (AIF).

Incentives (provided as credit linked back-ended subsidy) provided under the NBM include:

a. **Propagation and cultivation**: subsidy for creation of hi-tech, big and small nurseries up to 100%, if developed on government land and 50% if created on private land. Further, INR 1 lakh/hectare is provided for boundary and block plantation.
b. **Promotion of bamboo treatment and preservation**:50% subsidy, up to a maximum ceiling for establishment of bamboo treatment and seasoning plants, and bamboo carbonisation plants. In the case of government sectors, the subsidy is 100%. For establishment of livelihood business incubators, the subsidy is 100% for government sectors and 60% for private sectors.
c. **Product development and processing**: 100% subsidy to the government sector and 60% to the private sector for establishment of processing units for value addition to bamboo, management of bamboo waste in primary processing, and establishment of micro/medium processing units.
d. **Promotion and development of infrastructure for bamboo markets**: 100% subsidy to the government sector and 33% to the private sector for the establishment of bamboo depots and godowns, and the promotion of bamboo mandis, rural haats, bamboo bazaars, etc.
e. **Development of tools, equipment and machinery**: 100% grant to government institutions for technological enhancements of tools, equipment/machineries, import of technologically superior tools, equipment and machinery in the common facility centres.
f. **Incentives for skill development**, awareness campaigns, and research and development are also provided.

Among the states with high bamboo production and processing capacities, Assam is similar to Tripura in terms of location and geography. Thus, a benchmarking analysis has been done to identify possible targeted support measures implemented by Assam government that could be adopted by Tripura. Assam has a set of

comprehensive incentives to support the growth of the state's bamboo sector.[167] These include:

a. **Capital investment subsidy**: a 50% Capital Investment Subsidy on eligible plant and machinery and internal electrical installations, subject to a ceiling limit of INR 5 Crore.
b. **Promotion of startups**: for bamboo and cane sector startups, a grant of up to INR 5 Lakh is provided for innovative ideas.
c. **Distribution of tools and machineries**: Under the "Distribution of Tools and Machineries for the artisans in Bamboo and Cane sector" scheme, manual and power tools for bamboo and cane furniture making, incense stick making, and bamboo mats and handicrafts making are distributed by the state bamboo development authority to beneficiaries. The costs of these are 100% covered by grants provided by the state.
d. **Incentives for skill development**: 100% sponsorship of training in industrial training institutions and skill development centres.
e. **Fixed capital investment subsidy**: subsidy of INR 5 Lakh or at the rate of 50% (whichever is lower) on fixed capital investment (including civil works for establishment of souvenir shops for bamboo and cane products in places of tourist interest).
f. **Subsidy for the development of online portals**: 50% subsidy on the cost of development of online portals for marketing of bamboo and cane products, with a maximum ceiling of INR 5 Lakh.
g. **Free sapling distribution:** for plantation in lands of less than 0.5 Ha.

It is recommended that Tripura also provide similar sector specific benefits for the growth of its bamboo sector as well.

2. **Rubber sector**: At the central level, policies to support the rubber sector can be split in two – support to traditional rubber-growing regions (Kerala & Tamil Nadu) and support to non-traditional ones (including North East India and any other place beyond Kerala and Tamil Nadu). These are implemented by Rubber Board. These policy actions focus on increasing raw material production.

- **Assistance to non-traditional regions:**
    - **Financial assistance** to Rubber Producers Societies (RPSs) and SHGs of rubber producers for procurement of equipment
    - **Plantation development and extension programmes** aimed at productivity enhancement and quality upgradation.
    - The **Rubber Development in North East (RDNE)** scheme, which focuses on new plantation of rubber in North East region.
- **Assistance to traditional regions:**
    - For Kerala, Tamil Nadu and non-traditional regions other than North East (mainly Karnataka, Maharashtra, Andhra Pradesh, Goa, Odisha and West Bengal), a Rubber Plantation Development (RPD) scheme provides financial support for planting of new rubber plants and technical assistance through a planting subsidy, planting material assistance, and provision of high yield varieties for planting.

Further, under the GoI's Rubber Policy, several non-fiscal concerns of the stakeholders in the sector such as security of land and assets owned by rubber plantation companies, restrictions on felling rubber trees, and transit rules have been addressed.

At the state level, schemes similar to that of Kerala's Rubber Production Incentive Scheme (RPIS) could be implemented to increase raw material availability while also supporting rubber growers and tappers. Under the scheme, the Kerala government buys a maximum of 150 kg rubber per Ha from a grower per month, at a price of INR 150/kg which is higher than current prices and the difference is paid as subsidy. This scheme can not only support the growth of the rubber sector but would also help achieve larger social objectives.

For Tripura, it is important to implement policies to improve rubber output. Besides this, measures to support rubber-sector MSMEs also need to be implemented, similar to the measures recommended for the promotion

[167] State Bamboo Development Agency, Government of Assam (https://sbda.assam.gov.in/portlets/policy-incentives).

of other priority sectors. These could take the form of specific tax breaks for MSMEs manufacturing rubber products in the state for pre-defined periods. For instance, the practice of giving rubber processing units an income tax exemption of 70% for a period of 5 years and tax allowances on capital investments, as Malaysia does, can be considered. The development of common processing facilities can also be undertaken.

3. **Food Processing sector**: The food processing sector has immense potential for growth not only in Tripura but in various other states as well. The GoI has implemented various fiscal incentives through which to strengthen the sector. These include:

a. **Goods and Services Tax (GST) benefits**: 60% of food products are in 0% and 5% slabs. Further, no GST is levied on milk, milk products, meat, fish, vegetables, and nuts and fruits. However, condensed milk is taxed at 12% GST and ultra-heat treatment milk is taxed at 5% GST. No GST levied on services of pre-conditioning, pre-cooling, ripening, waxing, retail packing, labeling of fruits and vegetables which do not change or alter the essential characteristics of fruits and vegetables.

b. **Income Tax Incentives**: 100% exemption to food processing units on profit for the first 5 years and 25% (30% in case of companies) for the next 5 years. 100% deduction is permitted on capital expenditure for cold chain or warehouses.

c. **Access to credit**: Loans to food and agro-based processing units and cold chains have been classified under the agriculture activities for Priority Sector Lending (PSL) and capital investment in the creation of modern storage capacity has been made eligible for viability gap funding schemes of the Finance Ministry, GoI. Cold chain and post-harvest storage have been recognized as an infrastructure sub-sector. Further, a special **food processing fund** of INR 2,000 Crore has been set up under the NABARD for providing affordable credit to mega food parks (MFPs) and units to be set up under MFPs and designated food parks.

Some states, namely Andhra Pradesh, Tamil Nadu, and Maharashtra, have adopted comprehensive targeted incentive policies to fast-track growth in the sector. The table below summarizes the incentives provided by each.

Parameter	Andhra Pradesh	Tamil Nadu	Maharashtra
Name of Policy	Andhra Pradesh Food Processing Policy (2020 – 2025)	—	Maharashtra State Food Processing Policy (2017) (extended till 2023-24)
Nodal Agency	Andhra Pradesh Food Processing Society (APFPS)	—	Maharashtra Agro Industries Development Corporation Limited (MAIDC)
Single window clearance system	Available	Available	Available
Power and electricity subsidy	**Micro and small enterprise**: Rate of INR 1 per unit for 5 years; **Farmer Producers Organizations (FPOs)**: Rate of INR 1.25 per unit for 5 years; **BC/Minority communities:** INR 1.25 per unit for 5 years; **SC/ST entrepreneurs**: INR 1.50 per unit for 5 years	20% on power consumption charges for 36 months from date of commencement of production or date of power connection, whichever is later.	Subsidy to the tune of INR 1 per unit for units in Vidarbha, Marathwada, North Maharashtra and the districts of Raigad, Ratnagiri and Sindhudurg and INR 0.50 per unit for units in other areas of the state for 3

			years from date of commencement of commercial production, for the energy consumed and paid for.
Capital subsidy	**Micro and small enterprise**: 15%, up to INR 20 Lakh **FPOs**: 35%, up to INR 50 Lakh **BC/Minority** **communities**: 35%, up to INR 50 Lakh **SC/ST Entrepreneurs:** 45%, up to INR 1 Crore; up to Rs. 10 lakhs for MSES, FPOs, BC / Minority Communities (Women) and SC/ST Entrepreneurs 50% rebate in land cost up to Rs. 20 lakhs for FPOS, BC / Minority Communities (Women) and SC/ST Entrepreneurs; **Rebate in land cost** up to INR 20 Lakh for FPOS, BC/ Women and SC/ST Entrepreneurs	Subsidy ranging from INR 30 Lakh to INR 2.25 Crore; 50% **additional subsidy** for industries set up in SIPCOT[168] Industrial Parks; **Land allocation** at 50% of cost in existing and new industrial parks; **25% additional back-ended subsidy** linked to investment and employment; **subsidy of INR 30 Lakh or 25% of capital cost** whichever is less; Additional subsidies for industries adopting greening measures; **5% capital subsidy** on value of eligible plant and machinery, subject to ceiling of INR 3.75 Lakh.	**Capital subsidy of 30%** of the cost of project comprising of technical civil work and plant and machinery, storage structure, with a ceiling of INR 50 Lakh; 100% export-oriented units allowed to sell up to 50% of produce in domestic market and export earnings are exempted from corporate taxes; **Investment-linked tax incentive** of 100% deduction of capital expenditure for setting up and operating cold chain facilities, and for setting up and operating warehousing facilities.
Interest subsidy	**Micro and Small Enterprises**: 3% for 5 years **FPOs**: 3% for 5 years **BC/ Minority** **Communities (Women)**: 3% for 5 years **SC/ST Entrepreneurs**: Up to 9% over and above 3% for 5 years	**Capital subsidy** in the form of interest subvention of 3% per annum on term loans for food processing units and cold chain infrastructure, primary processing centres, primary collection centres, etc.	All new eligible MSMEs in areas other than Group 'A' areas are eligible for interest subsidy, payable only on the interest actually paid to the banks and public financial institutions on term loans for acquisition of fixed capital assets.
VAT/CST/SGST/Tax Exemption/Reimbursement	100% reimbursement of stamp duty and transfer duty for purchase of land for MSES, FPOs, BC/Minority Communities (Women) and SC/ST Entrepreneurs; 100% net SGST reimbursement for 5 years for Micro and Small enterprises, 50% for Large and 75% for Medium enterprises; Land conversion subsidy.	Exemptions on market fee**;** electricity tax exemption for up to 5 years; and stamp duty exemption of 100% exemption in case of units in SIPCOT parks.	**Stamp duty waiver** to new and expand/diversifying units in specific in specific locations

[168] State Industries Promotion Corporation of Tamil Nadu

<table>
<tr><td rowspan="4">Employment Generation</td><td>Employees</td><td>SGST reimbursement</td><td rowspan="4">15% of project cost as subsidy to MSMEs under Unemployed Youth Employment
Generation Programme</td><td rowspan="4">—</td></tr>
<tr><td><1000</td><td>50%</td></tr>
<tr><td>1000 to 2000</td><td>75%</td></tr>
<tr><td>2000+</td><td>100%</td></tr>
<tr><td>Freight/Transport Subsidy</td><td colspan="2">—</td><td>—</td><td>—</td></tr>
<tr><td>Others</td><td colspan="2">Quality Certification / Patent Registration subsidies;
Seed capital
Assistance for SC/ST Entrepreneur, SHGs, FPOs;
Other Common Initiatives – reservation of plots for SC/ST
Entrepreneurs in industrial parks;
Grant-in-aid at the rate of 35%
of eligible projects' costs up to INR 10 Crore;
Formalization of micro food processing units;
Credit-linked capital subsidy of 35% of the eligible project cost with a
maximum ceiling of INR 10 Lakh per unit to individual micro food processing units;
Brand Building
and Marketing support at the rate of 50%, up to INR 10 Lakh;
Support for common infrastructure.</td><td>—</td><td>Subsidies on capital equipment for
technology upgradation, expenses of quality certification, patent registration, and capital equipment for cleaner production measures;
Incentives for credit rating of
MSMEs;
Subsidy on cost of capital equipment to conserve/ recycle water, and for improving energy efficiency.</td></tr>
</table>

Current Scenario and Recommendations – In Tripura, industries using bamboo, rubber, agricultural and horticultural produce, or using tea and gas as their major raw materials during production and have been identified as thrust sectors. The state gives a 40% capital subsidy to these sectors on fixed capital investments.

Currently, Tripura gives individual micro food processing units credit-linked capital subsidy at the rate of 35% of the eligible project cost with a maximum ceiling of INR 10 Lakh per unit. However, based on the benchmarking above, it has been found that Tripura could tailor fiscal incentive packages further, to support the growth of the food processing sector more effectively. Examples of such sector specific subsidies are listed below.

a. Technology upgradation support: 25% of the cost of new/upgraded equipment (limited to INR 1 Crore)

b. 50% of the cost of setting up primary processing centres and primary collection centres (limited to INR 2.5 Crore)

c. 35% of the cost of setting up of cold chain infrastructure for agriculture/horticulture/dairy/meat produce (up to INR 5 Crore).

d. Reimbursement of power consumption charges at a rate of INR 1.50 per unit for 5 years

e. Reimbursement of Non-Agriculture Land Assessment (NALA) tax for the produce purchased directly from farmers.

f. Marketing cess waiver for produce purchased direct from farmers

g. Subsidy of 50% of the cost of reefer vehicles, with an upper ceiling of INR 10 Lakh for each vehicle

h. Subsidy for setting up/upgrading testing labs.

Further, the provision of differential power tariff subsidies, based on the energy consumption of different equipment (for instance, ripening units or cold storages), can also be a possible incentive.

The tailored incentives highlighted for each thrust sector have the potential to help Tripura attract a sustained stream of investments.

5. **Expansion based incentives-** The state of Tripura, while catering to new investments in the region, should also encourage its existing industrial players to expand their capacities or product mixes. Here, expansion-based incentives will revitalize the investment intentions of existing investors.

   Benchmarking – Telangana provides special incentives in its IT policy for existing IT/ ITES/ BPO companies with a minimum strength of 1,000 workers for a sustained two-year-period**.**

   Maharashtra too provides fiscal incentives to industrial units for expansion as well for diversification of product mix, though the amount of each of the subsidies is equivalent to 80% of the incentives provided to new units.

   Current Scenario and Recommendations – Tripura extends support to industrial units which have been operating in the state for a minimum of five years with various expansion incentives.

   Adopting a sector-specific approach and lowering the timeline of the provision of such incentives can be considered. Tripura can also consider employment generation parameters for the provision of the incentives.

Benchmarking with neighboring states: Similar benchmarking with the incentive schemes of two neighboring states, Assam, and Meghalaya, was also carried out. This was done to understand the competitiveness of Tripura's incentive polices within the NER.

The table below provides an overview of the incentives provided by the two states.

Name of state	Policy	Incentives provided
Assam	Industrial and Investment Policy of Assam, 2019	• Power/Electricity Subsidy • Interest Subsidy • VAT/CST/SGST/TAX Exemption/Reimbursement • Stamp duty reimbursement • Freight/Transport Subsidy • Subsidies for Technology Transfer and Quality Certification, ZED Certification • Financial assistance to MSMEs listed in Stock Exchange • Assistance for Environmental Compliance • Incentives to Private Sector Infrastructure developer

Meghalaya	Meghalaya Industrial and Investment Promotion Policy, 2012	• Capital Investment Subsidy • Subsidy on the cost incurred for Feasibility Study and Project Reports • Development Subsidy for charges payable to statutory bodies for any permission or registration, and for the procurement of know–how • Interest Subsidy • Power Subsidy • Subsidy on cost incurred on Quality Control Measures • Reimbursement of Stamps Duty & Registration Fees • Sales Tax/VAT Remission • Refund of Central Sales Tax • Subsidy on Pollution Control Measures • Special Incentives for Food Processing Industries

This examination reveals that while Tripura does already provide some incentives provided by these two states, like capital investment subsidies and power subsidies, it could consider offering some others as well. These include **subsidies on pollution control measures, subsidies on the cost incurred for feasibility study and project reports, and subsidies for technology transfers**.

Thus, it is recommended that the additional incentives provided by the states examined above be adopted in Tripura as well to make the state's current incentives packages more comprehensive, in order to attract investments.

In order to improve its existing policy environment and broaden its incentives policies, Tripura can consider adopting the incentives policies of other states like AP and Maharashtra. Having provisions for sector-specific incentives similar to the ones examined above will lead to faster growth of the targeted sectors. It is important to improve incentive schemes because this can help the state to offset locational disadvantages or market imperfections. Addressing these can give the state a competitive edge from the perspective of investors who are considering investing in other states providing similar incentives.

4.1.2. Non-Fiscal Incentives

While fiscal incentives provide financial handholding, non-fiscal ones are aimed at improving investor experience. As a result, these are primarily policy measures that improve ease of doing business (EoDB) in a particular geographical area. Improving EoDB usually involves the provision of transparent governance, timely regulatory clearances, and responsive post-investment facilitation services.

4.1.2.1. Ease of Doing Business

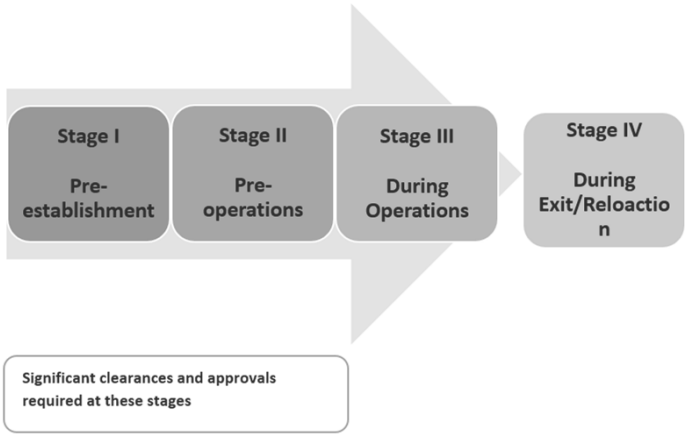
Ease of Doing Business (EoDB) initiatives are rolled out to ensure the fast-tracking of regulatory clearances and investment facilitation services. Such practices ensure fast and transparent governance and can be the cornerstone to improving business environment and investor trust. It is crucial to fast-track clearance processes, especially in the pre-establishment and pre-operations stages as investors are required to acquire many clearances at these points of a business's lifecycle. As investors play a critical role in improving the economy, it is essential to create a policy environment where EoDB measures simplify the process of setting up

a business.

The World Bank had created an EoDB index which was a ranking system where ‘higher rankings’ (a lower numerical value) indicated better, usually simpler regulations for businesses and stronger protections of property rights.

Focusing on strengthening EoDB practices helps identify required regulatory reforms that can make it easier to do business in a particular location. It is important to focus on these also because competing locations may look more attractive to potential investors if their respective EoDB policies are more beneficial and holistic.

Figure 26: Lifecycle of industries



In India, Tripura is one of the few states which has completed the EoDB reforms as directed by the Department of Expenditure for which the state was allotted INR 148 Crore. Tripura currently ranks 29th in Ease of Doing Business in India, which suggests that improvements can be made to the business environment in the state, especially as states with similar business interests rank comparatively higher.

Since investors play a critical role in the improvement of the economy, it is important to create a conducive business environment, which includes a policy environment where EoDB measures simplify the process of setting up a business.

Current scenario in Tripura

As part of its initiative to strengthen increase EoDB in the state, the Tripura government established the “Single Window Approval by All Government Agencies in Tripura (SWAAGAT)" portal in August 2020. This approval system allows investors to acquire all the required clearances from the government on one portal. The following table lists the pre-establishment clearances and licenses that can be acquired through the SWAAGAT portal.

Table 42: Pre-Establishment Clearances

S. No.	Description of Clearance (Consent for Establishment)
1	New Factory Plan Drawing Approval
2	Principal employer registration under Contract Labour Act
3	Principal employer registration under ISMW Act
4	Principal employer registration under Building & Other Construction Workers Act
5	Licence under Beedi & Cigar
6	Registration under Plantation Labour Act

S. No.	Description of Clearance (Consent for Establishment)
7	Building Plan Drawing Approval
8	Application for Feasibility & Estimation of Water Connection
9	Application for Water Connection
10	Application for Excise LOI
11	Application for NOC for Establishment
12	Application for Building Plan Approval
13	Application for Provisional NOC
14	Application for building approval from ULB
15	Application for Estimation of Connectivity
16	Application for Temporary Power Connection
17	Application for Permanent Power Connection

Further, various pre-operation clearances can also be applied for and acquired using the same portal. These are described in the table below.

Table 43: Pre-Operation Clearances

S. No.	Description of Clearance (Consent for Operation)
1	Application for Licence as manufacturer of weights and measures
2	Application for the grant of a licence to manufacture for Sale of drugs
3	Application for Grant of Licence to Manufacture for Sale and Distribution of Class A or Class B medical device
4	Application for NOC from Electrical Inspectorate
5	Application for Approval of License
6	Application for License
7	Registration and Grant or Renewal of Factory License
8	Occupancy Certificate/No objection Certificate
9	Application for NOC for Operation

Besides the services listed above, some other services offered on the SWAAGAT portal include:

Table 44: Other services on SWAAGAT Portal

S. No.	Other Services
1	Application for retails license
2	Industrial estate land allotment
3	Factory license amendment
4	Approval for revised plan drawing of existing factories
5	Applications for dealer and repairer licenses
6	Registrations for importers of packaged commodities of partnership firms and of co-operative societies

It is important to streamline the clearance process in the pre-establishment and pre-operations stages as investors are required to acquire a large number of clearances at these points of a business's lifecycle. It is important to ensure this as doing so can give a location a competitive advantage over locations likely to attract similar investments and industries.

Besides the services listed above, retails license, industrial estate land allotment, factory license amendment, approval for revised plan drawing of existing factories, applications for dealer and repairer licenses and registrations as importers of packaged commodities of partnership firms and of co-operative societies can also be procured through the SWAAGAT portal.

Best Practices –

A benchmarking analysis reveals that Assam and Kerala have also taken various steps that have helped the two states to improve their EoDB practices.

1. The neighboring state of **Assam** introduced the Ease of Doing Business Act, in June 2016. The single window portal of Assam now manages all proposals that require clearances, approvals and so on, as part of the state's exercise to increase EoDB. As per the last rankings, Assam ranks 20th in EoDB.

   Listed below are the main steps taken by the state to achieve this:

- Single window clearance system set up.
- State Reforms Action Plan implemented.
- Approval process for investors streamlined.
- Venture capital investment encouraged.

2. **Kerala** also has a single window clearance system. It aims to provide investors a better environment for business-related activities. To achieve this, it plans to take the following steps -

- Certificate validation of all clearances / approvals provided on web portal.
- For all the clearances required, a common web portal will be launched which will be linked to all the relevant license/clearance issuing departments/agencies.
- Clearances will be provided within a maximum of 30 working days.
- As a deemed approval for starting a business, third party certification for industries is accepted.

A comparative analysis of EoDB policies in use in Tripura and in four other states, namely Andhra Pradesh, Assam, Haryana, and Gujarat, was conducted to identify Tripura's strengths as well as areas of improvement. The results of the analysis are provided below –

Table 45: Benchmarking of EoDB Initiatives with Other States

Department Responsible	Clearances/Approvals required	Andhra Pradesh	Assam	Haryana	Gujarat	Tripura
DISCOM-Department of Energy	Power Feasibility certificate/sanction of power supply	7 days		10-100 Days	7 days / 15 days	15 days
	Power Connection	To be based on the length of the HT line	15 Days	3-7 Days		
Chief Electrical Inspectorate-Department of Energy	Electrical Inspectorate statutory approval for drawings	7 days	--	--	30 Days	7 Days
Department of Municipal Administration & Urban Development	Building /Site Permission /Approval/License from Municipality/ UDA/ DT&CP	7 days		45 Days	45 Days	
Department of Panchayati Raj & Rural Development	Building /Site Permission from Gram Panchayat	15 days / Deemed		Not Applicable	Not Applicable	Not Applicable
Department of Municipal Administration & Urban Department	Approval for water supply from ULBs-MA & UD Department	7 days	--	45 Days	60 Days	28 Days
	Water Connection	21 days	14 Days (Non-Domestic)			
Irrigation & CAD Department	Permission to draw water from river/public tanks, Irrigation & CAD Department Permission to dig new wells from Ground Water Department	15 days	--	--	--	
Directorate of Factories-Department of Labour Employment Training and Factories	Factory Plan Approval	7 days	90 Days	45 Days	15 Days	21 Days
Directorate of Fire Services-	Fire-No Objection Certificate	15 days	--	45 Days	7 Days	14 Days

Department Responsible	Clearances/Approvals required	Andhra Pradesh	Assam	Haryana	Gujarat	Tripura
Department of Home						
Commercial Tax-Department of Revenue	Registration for VAT, CST	3 days		45 Days (Included in Pre operation Stage)	1 Day	
Pollution board	Consent for Establishment			45 Days	120 Days	
	a) Green Category	7 days	30 Days	Not Available	30 Days	10 Days
	b) Orange Category	15 days	40 Days	Not Available	60 Days	15 Days
	c) Red Category	21 days	70 - 120 Days	Not Available	90 Days	21 Days
Land Administration-Department of Revenue	Approval of change of land use for Industrial purpose	If in Master Plan - 10 days If not in Master Plan – 21 days		45 Days	90 Days	Not applicable
Registration & Stamps-Department of Revenue	Registration of Partnership Firms	3 days	--	45 Days	Pre-requisite	
Drug Control Administration-Department of Health, Medical & Family Welfare	License for manufacture of bulk drugs / formulations / cosmetics	15 days	60 Days	45 Days	60 Days	30 Days
AYUSH-Department of Health, Medical & Family Welfare	License for manufacture of ayurvedic, homeo, siddha, unani	15 days	60 Days	45 Days	60 Days	

- AMBER denotes that based on the timeline according to approval/clearance, Tripura lags behind in terms of number of days behind the best performing state
- RED denotes that for the parameters against which there are values missing in the Comparative Analysis, the same needs to be quantified with respect to the time expended for the said activities and currently no measure is available for the State
- GREEN denotes that based on the timeline according to approval/clearance, Tripura is one of the best performing states in terms of number of days expended to complete the same.

An analysis of the table provided above follows. It reveals which of the clearances processes can be streamlined in Tripura.

1. **Power Feasibility certificate/sanction of power supply:** The process of the sanctioning of power supply in Tripura takes 15 days. After the online application is made, the same is sent to the Electrical Inspectorate for scrutiny.

   Best Practice: Andhra Pradesh's DISCOM takes a week to 14 days (7 days for 150 KVA where no ROW is required; 15 days for 150 KVA where ROW is required) to provide power feasibility certificates.

2. **Power Connection:** While investors can apply for power connections on the SWAAGAT portal itself, the time needed for the provision of the same has not been highlighted on the portal.

   Best Practice: In Haryana, the process of securing a power connection clearance takes between three to seven days. Further, the release of temporary connections takes a week.

3. **Building /Site Permission /Approval/License from Municipality/ UDA/ DT&CP**: In Tripura, the timeline for the acquisition of building licenses is not stated on the SWAAGAT portal.

   Best Practice: The building permits required for industries are given by the Department of Municipal Administration and Urban Development. In Andhra Pradesh, the process takes a week.

4. **Approval for water supply from ULBs-MAUD Department and Water Connection**: The Department of Municipal Administration & Urban Department is responsible for handling this. For Tripura, the time needed for the clearance process is 28 days.

   Best Practice: In Andhra Pradesh, the processes to procure approvals for water supply from ULBs and to get a water connection takes seven and 21 days respectively.

5. **Permission to draw water from river/public tanks, Irrigation & CAD Department Permission to dig new wells from Ground Water Department:** The Irrigation and CAD Department is the issuing authority. In the case of Tripura, the exact time required for the completion of the process has not been stated on the SWAAGAT portal.

   Best Practice: In Andhra Pradesh, it takes businesses 15 days to procure water use permissions from the Irrigation and CAD Department.

6. **Factory Plan Approval**: The approval process for factory plans takes 21 days in Tripura.

   Best Practice: In Andhra Pradesh, the Directorate of Factories (a regulatory department headed by the state's Director of Factories, functioning under the administrative control of the Principal Secretary to the Government, Labour, Employment, Training, and Factories Department) is responsible for approving plans. This process takes seven days.

7. **Fire No Objection Certificate (NoC)**: The Department of Home's Directorate of Fire Services provides this particular certificate. In Tripura, this takes 14 days.

   Best Practice: In Gujarat, a Fire -No Objection Certificate is issued in seven days. Three grades of Fire Safety Officers (General, Advance & Specialist) have been enrolled in the state's Directorate of Fire Prevention Services in different categories of buildings/premises. Each category can inspect/ and renew different types of Fire Safety Certificates. The categorization of buildings/premises depend on the type/category of building/premise and fire hazards inherent in them.

8. **Registration for VAT, CST**: The registration process for VAT and CST is carried out by the relevant state's Department of Revenue. In Tripura, the time taken for the completion of this process is not known.

   Best Practice: While in Andhra Pradesh, the process takes three days, in Gujarat it takes one day.

9. **Consent for Establishment**: The relevant State Pollution Control Board provides a consent for establishment to any institution proposing to undertake business activities that generate, collect, dispose, or handle any kind of industrial, commercial, or individual waste. In Tripura, the time taken to issue such a consent is not currently known.

Best Practice: In Haryana, the process to acquire a CTE takes 45 days.

CTE (Green Category): Industries with a pollution index score of 21 to 40 are considered “green category” industries. For such industries, Tripura provides CTEs in 10 days.

Best Practice: In Andhra Pradesh, the green category CTE is issued in a week.

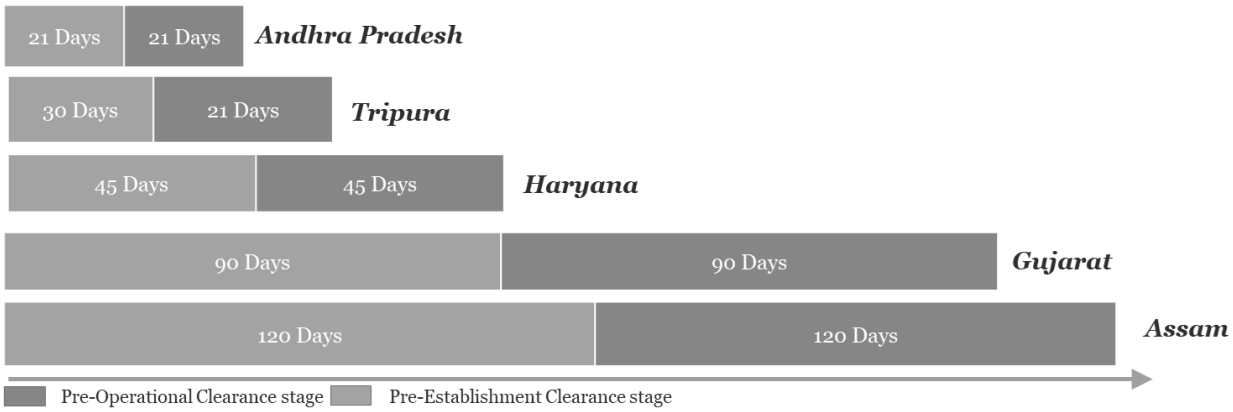
10. **Approval of change of land use for industrial purpose**: the Department of Revenue needs to approve proposed changes in land use patterns (proposing to use agricultural land for industrial purposes, for instance). Investors in Tripura are not required to acquire approvals for change in land use as the state government provides industrial land .
11. **Registration of Partnership Firms**: The Department of Revenue is responsible for the registration of partnership firms. In Tripura, the time taken for the completion of the registration is not yet known.

    Best Practice: In Andhra Pradesh, the registration of partnership firms takes three days.
12. License for manufacture of bulk drugs/ formulations/ cosmetics: In Tripura, this license is issued in 30 days.

    Best Practice: In Andhra Pradesh, the license issuing process takes 15 days. Drug inspectors from the state’s Drug Controlling Authority (under the Department of Health, Medical & Family Welfare) are responsible for this.
13. **License for manufacture of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy**: In Tripura, the timeline for the granting of licenses for the manufacture of non-allopathic drugs is not known.

    Best Practice: Andhra Pradesh’s Department of Health, Medical and Family Welfare takes 15 days to issue licenses for the manufacture of non-allopathic drugs.

Figure 27: Benchmarking of EoDB with various states



The Tripura government's focus on expanding the manufacturing sector of the state has resulted in a strong push towards rolling out EoDB policies. In the GoI's 2020 BRAP report, the state was recognized as one of the 'Emerging Business Ecosystems' of the country. Further, it ranks just behind Andhra Pradesh in terms of the total number of days taken for the granting of pre-establishment and pre-operational clearances— while the entire clearance process takes 42 days in AP, it takes 51 days in Tripura.

While this shows that the state has been able to put in place efficient processes for the provision of certain clearances, being one among the best performing states in terms of the time required by industries in acquiring these clearances (marked in **green** in Table 36), there are some clearance/licensing processes which can be further streamlined. This can be done to ensure that the number of days for their completion matches those of the best performing states. These, indicated in **yellow** in Table 36, are listed below.

While it takes 14 days in Andhra Pradesh for the sanctioning of power supply, in Tripura it takes 15 days. Similarly, the processes to acquire approval for water supply from ULBs and a water connection takes 28 days in Tripura. The state performs better than both Haryana, where approval takes 45 days each, and Gujarat, where it takes 60 days. However, it lags behind Andhra Pradesh where the same approval is granted in seven days.

Factory plan approvals are granted in 21 days in Tripura. The state outperforms both Assam and Haryana, where this takes 90 and 45 days, respectively. However, it can still strive to streamline the process further to match Andhra Pradesh where it takes seven days to acquire approval.

Fire NoCs are another important clearance required by industries. In Tripura, this is issued in 14 days, as opposed to Haryana's 45-day timeline and Andhra Pradesh's 15-day one. It is only Gujarat that completes the process in seven days.

Unlike the 'Consent for Establishment' clearances for orange and red category industries, the time taken for the issuing of the same for green category industries in Tripura is 10 days, only three more days than Andhra Pradesh's 7-day timeline. The state's consent granting process is more time efficient than both Assam's and Gujarat's where the same process takes 30 days each. The license granting procedure for the manufacture of bulk drugs /formulations/cosmetics takes 30 days in Tripura. While it lags behind Andhra Pradesh, where the license is granted in 15 days, the state outperforms Assam (60 days), Haryana (45 days), and Gujarat (60 days).

Finally, there are some clearance/approval procedures for which the exact timelines are not available on the SWAAGAT portal. These are indicated in **red** in Table 36. It is important for Tripura to attract investors and evoke their confidence by adapting the institutional practices of Andhra Pradesh as the latter is the best performing state in terms of time efficiency in processing 11 of the 14 required clearances listed in Table 36.

These include building /site permission from municipality/ UDA/ DT&CP and Gram Panchayats; permission to draw water from river/public tanks and to dig new wells; change of land use for industrial purposes; registration of partnership firms; and licenses for the manufacture of non-allopathic (ayurvedic, homeopathic, siddha, unani) medicines.

For instance, power supply clearances are processed in 7 days in Andhra Pradesh and power connections are granted in 7-10 days in Haryana. While Tripura's Department of Power has taken steps to increase efficiency in its functioning and has received awards including a Smart Meters (Pilot) award and a SAUBHAGYA (100% Electrification) award, the state can now adopt the practices of the two best performing states of Andhra Pradesh and Haryana in processing power supply clearances and granting power connections. Further, in Gujarat, VAT and CST registration takes one day. Tripura too should aim to streamline registration processes to lower the time taken for these.

In order to suggest reforms to further speed up clearance processes in Tripura, the organisational structures of some IDCs have been examined below in section 5.2. These are aimed at improving the overall functioning of the TIDC. Being the nodal agency for investor support in the state, improvements to the TIDC will help improve EoDB in Tripura.

Besides this, other EoDB that can also be adopted by Tripura include:

a. Creation of portals to centralize specific steps of necessary regulatory process: these include portals that ease processes like licence renewals and inspections. AP, for instance, has brought all industrial inspections under one **Central Inspection Portal**, enabling centralized scheduling, inspector allocation and monitoring to minimize interruptions to businesses.

b. Identification and repealing of any unnecessary or antiquated regulatory clearance procedures and requirements: this can have a significant effect on reducing regulatory burdens on investors. In Tamil Nadu, for instance, 165 redundant Acts have been repealed and 300+ compliances have been done away with. Besides this, the state has increased factory license validity from 10 to 15 years as well.

c. Creating a dedicated **project facilitation team**: Such a body can help ensure the timely disposal of all Single Window Applications filed by investors and provide handholding services for establishment of businesses.

d. Development of effective online help desks and support cells to address investors' queries and grievances. This could include:

    i. development of a dedicated **industrial grievance helpdesk** to help lower the time taken for investor issue resolution. Tamil Nadu, for instance, has developed the Biz-Buddy, an online wizard for redressing grievances of investors/industries in a transparent, time-bound and hassle-free manner. It connects investors to 20+ departments,100+ agencies, and 150+ officers to facilitate speedy resolution of industry related grievances of any kind. The portal also has an inbuilt escalation matrix, up to the Chief Ministerial level. This has resulted in an 80% reduction in investor issue resolution time.

    ii. setting up a virtual conferencing facility for investors to schedule and resolve their queries with the relevant state agencies/ departments

e. Development of a dedicated nodal agency for investment promotion: this agency, similar to Tamil Nadu's **Guidance Tamil Nadu**[169]**,** should aim to provide industrial approvals assistance, business support services, policy formulation support, support for expansion, an investor helpdesk, and location assessment services. Beyond easing investments through a single-window system, like Tripura's existing SWAAGAT portal, this agency will provide round-the-clock advice and counsel to investors, throughout the investment cycle.

    An examination of Guidance TN, for instance, shows it has a specialised '**digital accelerator**' programme. This was set up in collaboration with the American Tamil Entrepreneurs Association (ATEA), that works to attract start-ups from the US and in India to start businesses in Tamil Nadu. The programme supports start-ups by providing mentoring assistance, facilitating access to funding, and easing the overall investment process.Tripura, too, can appraise the benefits of setting up similar cells for investment promotion in order to achieve its objective of holistic industrial growth.

[169] https://investingintamilnadu.com/DIGIGOV/

Apart from the ease of doing business for pre-operational clearances and pre-establishment clearances, there is a need for policy interventions to enable cross border trade and access to target market. In the demand assessment Bangladesh has been identified as one of the key priority markets for identified rubber products.

Hence the reports recommends interventions from the central and state governments needed to enable effective access to markets in Bangladesh and the efficient trading of goods include

a. Updating the list of goods allowed for trade through border haats and ICPs with Bangladesh to include the identified priority products

b. Development of border haats and LCSs: Considering the locational advantages enjoyed by Tripura, it is important to develop border markets and ICPs to facilitate land trade between the state and Bangladesh.
In order to identify the required infrastructure, the amenities at Petrapole ICP, West Bengal, the largest land port in South Asia, have been examined. Petrapole ICP was chosen as nearly 30%of land-based trade between India and Bangladesh takes place through it. The examination revealed that the infrastructure needed at land ports includes passenger terminal building, public utilities block, cafeteria, cargo terminal building, electric sub-station and pump house, dormitory building, import inspection-cum-warehouse, a parking area for vehicles, adequate office space for stakeholder and operating agencies, inspection cum warehouse export, rummaging sheds, web based automated operation systems, electronic data interchange facilities, weigh bridges, CCTV surveillance, quarantine building/ block, bank extension counter, fumigation shed, public health office, money exchange counter, accommodation for security personnel, driver restrooms, a watch tower, and boundary wall and entrance gates. The development of such facilities will enable the smooth flow of goods between Tripura and Bangladesh.

c. Ease of movement of goods: the customs operations at land ports must be streamlined to cut down on time needed for the processing of exports.

d. Development of road linkages between industrial parks and land ports/border haats: the road linkages between industrial parks and land ports need to be enhanced to enable the smooth and timely transporting of goods. Further, roads links from industrial estates to the Maitri Setu must be enhanced as well. Other solutions to speed up transportation, like drive-through checkpoints, may also be developed.

e. Policy harmonization with Bangladesh: the bilateral agreements between India and Bangladesh regarding cross border trade need to be reshaped. For instance, currently, trucks are not allowed to cross borders. Thus, cargo must be transloaded, adding to transport and trade costs. In order to fully realise the benefits of Tripura's access to Bangladesh's markets, therefore, it is important to implement an enabling policy environment. As part of this, developing a sound regulatory framework with clearly articulated tariff and rate regulations is also essential.

4.1.3. Additional Aspects of Industrial Policy

Other aspects of industrial policy: Apart from the provision of incentives, a sound industrial policy also needs to address various other stakeholders' concerns. These are highlighted below.

A. **Measures to increase women's participation in the work force:** It is recommended that Tripura take steps to include gender-responsive features in its industrial policy, to increase women's participation in the workforce. In 2019, less than half of Tripura's workforce comprised women, with women accounting for only 24.2% of the workforce.[170] A few policy-level interventions to broaden access of workspaces to women include:

a. Provision of flexible worktime arrangements: An OECD study[171] finds that female participation is significantly affected by the **flexibility of working-time arrangements**. Inadequate measures to ensure flexible working hours, therefore, negatively affect women's ability to work. To address this, provisions for systems that allow women to balance

[170] Annual Report: Periodic Labour Force Survey (PLFS), Ministry of Statistics and Programme Implementation, GoI (2020).
[171] Policies To Increase Labour-Force Participation Of Women And Older Workers, OECD (2004).

domestic caregiving responsibilities with paid work can be implemented.

b. Implementation of measures to provide childcare support: Providing support to families with young children, in the form of **parental leaves** (up to a duration of 20 weeks), or through **childcare subsidies** and the provision of childcare facilities like creches at the workplace have been seen as helping to raise female participation. Tripura too can take similar steps. The provision of childcare facilities at the workplace, in particular, is something that can be considered.

c. Supporting female entrepreneurship: Another way to increase female labor force participation is by supporting female-led enterprises**.** "Female entrepreneurs not only create jobs for themselves but may also generate employment opportunities for other women. Female entrepreneurs are less likely than male entrepreneurs to discriminate against women and more likely to hire them."[172] Thus, support measures for such enterprises can help increase women's participation in the workforce. To achieve this, **tailored fiscal incentives** to support female-led businesses are required. Considering this, it is recommended that Tripura provide special incentives for women entrepreneurs.

d. Easing access to skill development and vocational education opportunities: Women face various social constraints in accessing workplace and training opportunities. Thus, access to such opportunities needs to be broadened. As part of this, it is essential to take measures to increase the enrolment of girls/women in industrial training institutes. To achieve this, **targeted subsidies** can be provided by the state. Further, as the constraints faced by men and women in accessing workplace opportunities are vastly different, **gender inclusive training centres** can be developed with the following gender responsive features:

    a. Ensuring provision of separate male/female toilets
    b. Providing childcare facilities (like creches) for working mothers
    c. Developing gender-segregated training spaces
    d. Offering training sessions with flexible timings of to help women accommodate the sessions into their schedules
    e. Improving accessibility by providing safe transport to and from the training location as this has been seen to be a significant barrier to the uptake of training programmes among women.[173]

e. Interventions to provide safe modes of transportation: Transportation facilities to and from workplaces also play a key role in helping women access workplace opportunities. **Gender inclusive transportation** can reduce travel time, increase opportunity access, and alleviate personal safety concerns. To develop such inclusive transportation facilities, some practices that Tripura can consider adopting, adopted from the gender inclusive transportation plan of the National Industrial Corridor Development Programme (NICDC), include-

    a. Clean and hygienic public toilets should be planned with female token/ticketing personnel at toilets on the travel routes of women.
    b. Proper lighting of streets to make streets safer to travel during night.
    c. Taking into consideration the time poverty faced by women land use planning should ensure that skilling centres are not too far from residential areas.
    d. During the planning phase, it may be ensured that the embarkation and disembarkation points of public transport routes are located away from establishments such as liquor stores, bars, and pubs.

[172] Encouraging women's labor force participation in transition countries, Norberto Pignatti, IZA World of Labor (2016). (10.15185/izawol.264)

[173] Gender and skills development, UNESCO (2012).

e. Travel routes of women should be planned to keep in mind easy accessibility to police stations.

f. Encouraging commercial on street activities like fast food shops and other vendors/retail shops to make the feel safer for women at night.

Some other measures to make public transport facilities more suited to addressing the needs of women travelers include-

a. Developing dedicated waiting spaces for women on platforms, bus stations

b. Providing women-only carriages.

B. **Adopting technology-based solutions to attract investors:** Keeping in mind the growing popularity of 'smart industrial parks' as a means for improving "operational efficiency in areas such as energy, logistics, environment, security, and business activities"[174], it is being proposed that Tripura too develop **smart industrial infrastructure** in its industrial parks. These parks facilitate business activities in a number of ways and as a result, investors are attracted to smart industrial parks— operating costs are lowered as a result of increased efficiency in management of various business activities.

For Tripura, it is recommended that **ICT support** (through optical fibre networks) and **climate resilient infrastructure** through the development of utility corridors with lines for water distribution, sewerage, telecommunication, and electricity be developed. ICT infrastructure enables businesses to communicate "faster and better so they reduce production costs and improve productivity"[175], and allows access to new markets and wider pools of human capital. Thus, it is recommended that the state actively promote the development of such infrastructure to bolster industrial growth. On the other hand, utility corridors can reduce costs of disruptions to services like internet connectivity caused by the physical impact of climate events.

Further, the adoption of **SCADA (Supervisory Control and Data Acquisition) systems** for better management, operation, and maintenance of industrial parks is also recommended. Such a system will enable the identification of the root cause of equipment failures, for instance, and will help speed up the responses to equipment issues.

C. **Labor policy:** Labour regulations are needed to safeguard workers' and organisations' legal rights. They help address issues relating to discrimination, working conditions, and occupational health and safety concerns, typically covering:

a. Industrial relations – certification of unions, labour-management relations, collective bargaining and unfair labour practices;
b. Workplace health and safety;
c. Employment standards, including general holidays, annual leave, working hours, unfair dismissals, minimum wage, layoff procedures and severance pay.

Further, labour legislation that is adapted to the economic and social challenges of the modern world of work fulfils three crucial roles[176]:

a. it establishes a legal system that facilitates productive individual and collective employment relationships, and therefore a productive economy;
b. by providing a framework within which employers, workers and their representatives can interact with regard to work-related issues, it serves as an important vehicle for achieving harmonious industrial relations based on workplace democracy;
c. it provides a clear and constant reminder and guarantee of fundamental principles and rights at work which have received broad social acceptance and establishes the processes through which these principles and rights can be implemented and enforced.

Thus, it is important to have a clearly articulated set of labour regulations in order to set minimum standards over issues such as working hours, health and safety, and pay, limiting potential workplace exploitation.

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[174] 'Smart industrial estate … uplifting economic and social fundamentals?', SCB Economic Intelligence Centre (2019).

[175] Impact of Information and Communication Technology Infrastructure on Economic Growth: An Empirical Assessment for the EU Countries, Toader et al, Sustainability (2018).

[176] Labour Laws In India, National Crime Investigation Bureau (https://ncib.in/pdf/ncib_pdf/Labour%20Act.pdf).

In developing economies, labour regulation policies and laws can also enable the creation of employment of the "right quality" and "decent conditions of work" to foster inclusive economic growth.[177]

For instance, although it has been recognized that MSMEs often play a key role in stimulating economic growth and providing livelihoods and employment, research finds that job quality within the micro and small enterprises are often far lower than the formal sector[178]— "incomes are generally much lower and workers generally receive no health benefits, no work-related child care, no sick leave and no pensions."[179]

In the context of India, labour regulations are important in supporting MSMEs as they are an integral part of the economy. The Indian Constitution, in its chapters III (Articles 16, 19, 23 & 24) and IV (Articles 39, 41, 42, 43, 43A & 54), highlights the relevance of the dignity of human labour and the need for protecting and safeguarding the interest of labour. The legislations enacted by the GoI cover employees' insurances and provident funds; rights of contract labour; the safety and welfare of dock workers, miners, ore workers, construction workers, plantation labour; the prohibition of child labour; the right to equal remuneration; compensation and emergency provisions for workers' personal injuries; employers' liabilities and responsibilities; wages and holidays; compulsory notification of vacancies; trade and industrial disputes; and abolition of bonded labour, among others.

Some important labour laws enacted in India include the Minimum Wages Act (1948) which requires companies to pay the minimum wage set by the government alongside limiting working weeks to 40 hours (9 hours a day including an hour of break); the Payment of Wages Act (1936) which mandates the payment of wages on time on the last working day of every month via bank transfer or postal service; the Factories Act (1948) and the Shops and Establishment Act (1960) which mandate 15 working days of fully paid vacation leave each year to each employee with an additional 7 fully paid sick days; the Maternity Benefit (Amendment) Act (2017) which gives female employees of every company the right to take 6 months' worth of fully paid maternity leave and also provides for 6 weeks' worth of paid leaves in case of miscarriage or medical termination of pregnancy; and the Employees' Provident Fund Organisation and the Employees' State Insurance, governed by statutory acts, which provide workers with necessary social security for retirement benefits and medical and unemployment benefits respectively.

Apart from these, the overall labour policy in India aims to promote the welfare of labour. To do so, it takes various measures including:

a. Creative measures to attract public and private investment
b. Creating new jobs
c. New Social security schemes for workers in the unorganized sector
d. Social security cards for workers
e. Unified and beneficial management of funds of Welfare Boards
f. Reprioritization of allocation of funds to benefit vulnerable workers
g. Popularize model employee-employer relationships
h. Creation of Industrial Relations committees in more sectors.
i. Regular Labour Law reforms in tune with the times with an empowered body of experts to suggest required changes
j. Statutory amendments for expediting and streamlining the mechanism of Labour Judiciary
k. Ensuring efficient functioning of the Labour Department
l. Including more labour sectors under the Minimum Wages Act
m. Aggressive enforcement of the child labour act
n. Provision of modern medical facilities for workers
o. Rehabilitation packages for displaced workers
p. Revamping of curriculum and course content in industrial training institutes.

According to the provisions of the Constitution, labour rules relating to the regulation of labour and safety in mines and oil fields, industrial disputes concerning Union employees, Union agencies and institutions for "... vocational ... training ..." fall under the purview of the GoI. Rules relating to trade unions, industrial and labour disputes, social security and insurance, employment and unemployment, and welfare of labour including

[177] Employment Perspective and Labour Policy, NITI Aayog (https://niti.gov.in/planningcommission.gov.in/docs/plans/planrel/fiveyr/11th/11_v1/11v1_ch4.pdf).

[178] Decent Employment through Small Enterprises: A Progress Report on SEED activities , ILO (2004).

[179] Labour Law And Development: Creating An Enabling Regulatory Environment And Encouraging Formalisation, ILO (2009).

conditions of work, provident funds, employers' invalidity and old-age pension and maternity benefits, however, fall under the purview of both the GoI and the state governments.

At the state level, state governments across India are responsible for implementing the labour rules enacted at the central level and for both introducing and implementing their own state-specific labour regulations.

In Tripura, the following are the significant state-level labour rules enacted by the state:

a. Tripura State Building and Other Construction Workers (Regulation of Employment and Conditions of Service) (Ninth Amendment) Rules, 2022
b. Tripura Code on Social Security Rules, 2021
c. Tripura Shops and Establishments (fifth amendment) Act, 2021
d. Tripura Inter - State Migrant Workmen (Regulation of Employment and Conditions of Service) (Fourth Amendment) Rules, 2020
e. Tripura Contract Labour (Regulation & Abolition)(Fourth Amendment) Rules, 2020
f. Tripura Industrial Disputes (2nd amendment) Ordinance, 2020
g. Tripura Rationalization of Forms and Reports under certain Labour Laws Rules, 2019
h. Tripura Ease of Compliance to Maintain Registers under various Labour Laws Rules, 2019
i. Tripura Employees State Insurance [Medical Benefits] [Amendment) Rules, 2018
j. Tripura State Building & Other Construction Workers(RE&CS) (Eight Amendment) Rules, 2018
k. Tripura Contract Labour(Regulation & Abolition) Rules 1978\
l. Tripura Child Labour (Prohibition and Regulation) (Amendment) Rules, 2018
m. Tripura Plantation Labour (Amendment) Rules, 2017
n. Tripura Payment of Gratuity Rules, 1975
o. Tripura Trade Union Regulations, 1952
p. Tripura Payment of Wages (Procedure) Rules, 1960
q. Tripura State Unorganised Workers Social Security Rules, 2010.

Apart from the provisions included in the legislations above, specific measures may be implemented in Tripura to order to support the growth of industry and the identified priority sectors while also safeguarding the rights and interests of employees. Considering that labour policy can supplement measures to usher in equity and social security, the following measures could be implemented in the state, alongside the existing measures and laws:

a. Streamlining of dispute settlement mechanisms between labour and employers
b. Introduction of employee benefit legislations specifically targeted towards supporting MSME employees
c. Introduction of comprehensive measures to ensure inclusive hiring processes in line with Articles 14 and 16 of the Constitution[180]
d. Mechanisms to ensure worker well-being and livelihood security amidst disruptions like pandemics etc.
e. Strengthening skilling measures to ensure creation of relevantly skilled labour as well as increasing employability in the state
f. Devising provisions to increase the participation of communities marginalized on the basis of gender, orientation, physical disability, caste, creed etc. in the workforce, and proactively prohibiting biases in workplaces
g. Creating platforms for collaboration with entrepreneurs to increase compliance with existing and future labour regulations, and to decide on employee benefit schemes that will not significantly raise business expenses and dampen hiring plans and future increments
h. Mandate biennial organisational reviews across workplaces to measure impact of labour regulations in meeting planned outcomes
i. Provide support to businesses to implement central-level measures and codes (2021) like for the digitization of compliance and enforcement records
j. Create mechanisms that enable the revision of the minimum standards (for wages, benefit schemes etc.) set by regulations for social protection and rights at work on a regular basis
k. Facilitate the creation of a centre of expertise in the field of labour law, employment and labour market policies to direct future labour practice in the state
l. Support the development of healthcare facilities for workers as mandated in central legislations
m. Implement methods to improve awareness on issues of labour law and legislation.

[180] In 2021, Karnataka, for instance, became the first state in India to reserve 1% jobs in public employment in favour of transgender persons. Such measures can be implemented by Tripura too.

The objectives of Tripura's labour policies and practices should be to achieve the International labour Organisation's four pillars of the Decent Work Agenda – employment creation, social protection, rights at work and social dialogue.

4.2. Efficient organisational structure

In order to create an investor-friendly business environment, it essential to have supporting institutions and organisations that can support investors effectively and can implement industrial policies efficiently. For this, such bodies must have clearly defined organisational structures and all personnel must have clearly delineated roles and responsibilities. In the section that follows, the structure of such bodies in Tripura has been examined and compared to other similar bodies in other states.

Tripura Industrial Development Corporation Ltd (TIDC): Tripura currently has one state-level organisation, a state industrial development corporation (SIDC) called the TIDC. This corporation aims to act as a catalyst in the process of the promotion and development of industries in the state, and to create industrial infrastructure in order to support economic development.

It is run by a Board of Directors. The body currently focuses on providing infrastructural support and financial assistance, and on managing a food testing laboratory.

a. **Financial assistance**: the TIDC works to provide financial assistance for the promotion of industries that use local resources and those that are operating within the service sector. So far, the industrial development of the state has been restricted to the growth of its MSME sector. There are a few medium-scale units already in operation in the state's various industrial parks while a few others are in the implementation stage. These units include fruit processing, sawmill, wooden furniture making, bamboo handicrafts/agarbatti stick making, rubber processing, brick making, and rice milling ones. Service sector units include hotels, printing presses, automobile repair, servicing, tyre re-treading, nursing homes/diagnostic centers, and cold storages.

   So far, the TIDC has sanctioned about INR 50.31 Crore to 17 units up to the 2016-17 FY. The total disbursement has been about INR 35.09 Crore.

b. **Infrastructural support**: To promote Tripura as an attractive destination for industrial investments and to create enabling an environment in order to ensure maximum value addition to the abundant locally available resources, the state government has created high-quality infrastructure at Bodhjungnagar, which is about 12 km from Agartala. The Bodhjungnagar Industrial Complex has been developed over an area of 535.73 acres and is equipped with various types of industrial infrastructure. Adjacent to it is the R.K Nagar Industrial Area which is spread across 226.16 acres.

   The TIDC is the nodal agency for the implementation of various industrial infrastructure projects like the ones mentioned above. It has already invested substantial amounts on such projects including a growth centre (INR 40.27crores), a food park (INR 12.95 Crore), an Export Promotion Industrial Park (INR 21.31 Crore), and a Rubber Park (INR 25.52 Crore), all in Bodhjungnagar. About INR 100 Crore have been invested in the creation of infrastructure. Additional investments, to the tune of another INR 100 Crore, have been proposed for further industrial development.

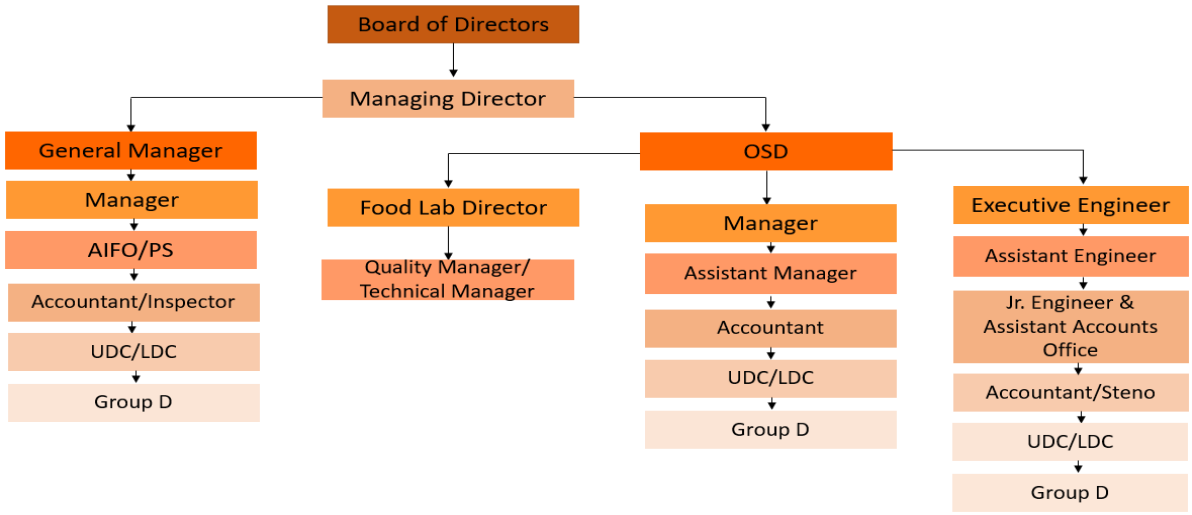
c. **Food testing laboratory**: The TIDC established a Food Testing Laboratory in the Food Park at the Bodhjungnagar Industrial Complex. This laboratory has been accredited by the National Accreditation Board for Testing and Calibration Laboratories (NABL), an autonomous body under the Department of Science and Technology, GoI, in October 2015.This is the first NABL-accredited testing lab of its kind in the NER. The laboratory is significant since food processing has been identified as one of Tripura's priority or sunrise sectors. Its establishment will play an important role in strengthening the food processing sector in the state.

Benchmarking Analysis

In order to identify any required improvements and changes in the TIDC, a bench marking analysis has been carried out where the organization has been compared to the SIDCs of four other Indian states, namely the Andhra Pradesh Industrial Infrastructure Corporation (APIIC), the Gujarat Industrial Development Corporation

(GIDC), the Maharashtra Industrial Development Corporation (MIDC), the Tamil Nadu Industrial Development Corporation (TIDCO), and the Assam Industrial Development Corporation (AIDC). These particular SIDCs have been chosen as they have been successful in mobilising investments into the respective states' industrial sectors.

Figure 28: Organisational Structure of TIDC



The TIDC with its ~32 employees has a fairly simple organisational structure.

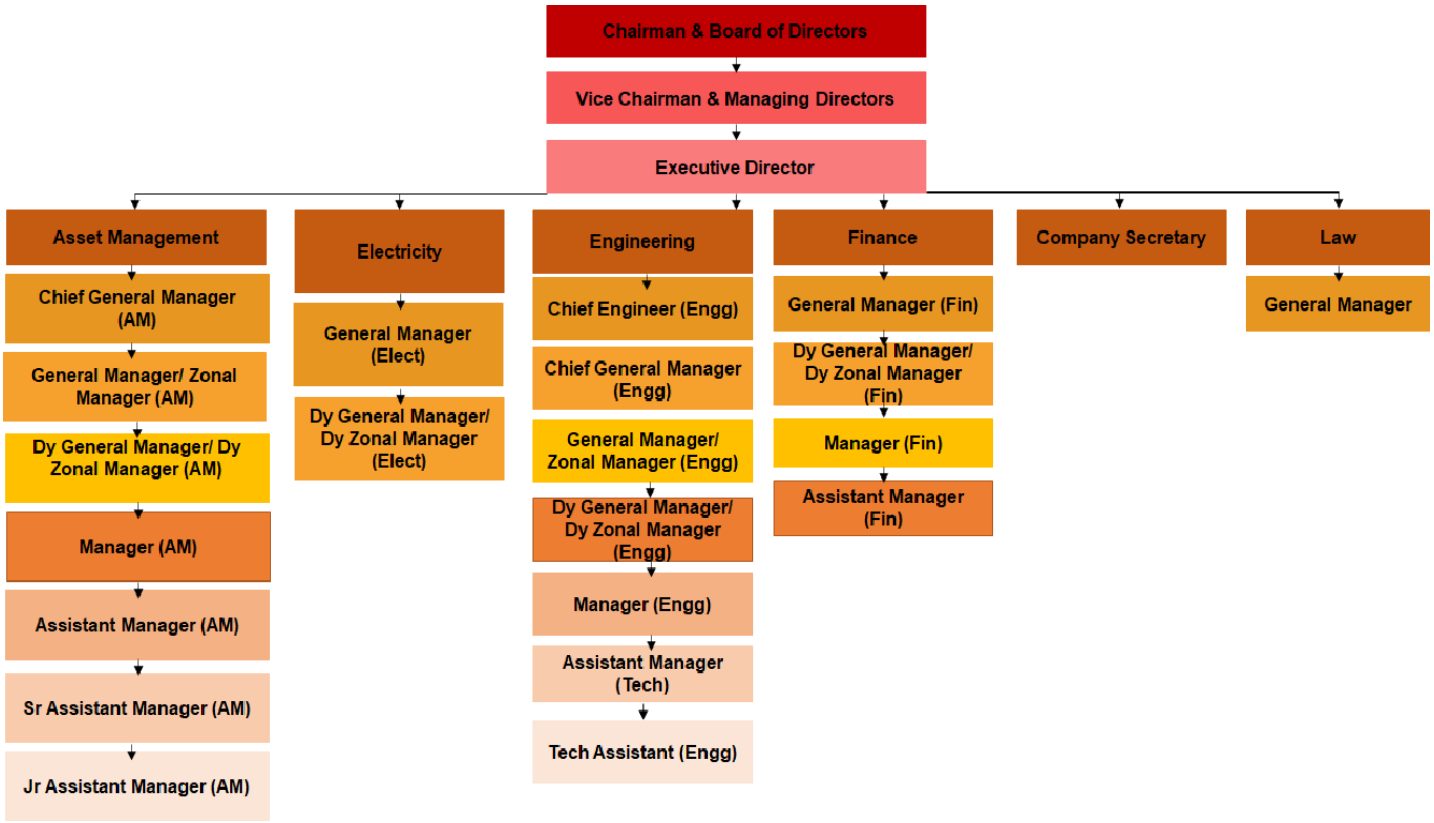
The APIIC, on the other hand, has more layers and specialised departments within. The existence of specific departments allows for better handling of various investor support and industrial development needs. The dedicated engineering, electricity and asset management departments are examples of such specialised departments that are missing within the TIDC.

Like the TIDC, the APIIC also aims is to provide industrial infrastructure through the development of industrial areas. It has so far developed more than 300 industrial parks spread out over about 1,21,655 acres (including allotted area). Besides this, the corporation is also developing sector-focused parks like apparel park/food processing parks/leather parks, and SEZs.

The APIIC, while being responsible for the maintenance of civic services in the state's Industrial Areas (IAs), also performs certain roles that were earlier carried out by the state's gram panchayats and municipal corporations. Therefore, the body has the **statutory powers** and carries out certain functions of local bodies across 287 Industrial Areas, housing complexes, mini-industrial estates, and commercial complexes falling under the purview of municipalities, municipal corporations, and gram panchayats in the state. Such measures can facilitate the simplification of regulatory procedures and can help streamline various processes relating to industrial development as well. The resultant increase in overall EoDB can act to mobilise investments by reducing undue administrative burdens on investors.

To promote local self-governance within Industrial Areas, the APIIC has also evolved the concept of **Industrial Areas Service Societies**. This enables the IAs to function more effectively in a decentralized administrative setup where the APIIC serves to act as a facilitator. Such a setup can allow for greater efficiency as it streamlines the management and operation of industrial estates on a day-to-day basis. Keeping in mind the difference in the scale of development and in the number of industrial estates between the two states, the TIDC too could consider establishing similar bodies albeit at a smaller scale.

Figure 29: Organisational Structure of the APIIC



Similarly, the GIDC also has well-defined hierarchies within its head office, its administrative wing (field office), and its engineering wing. Again, this allows for better delegation and enables the body to carry out more varied roles.

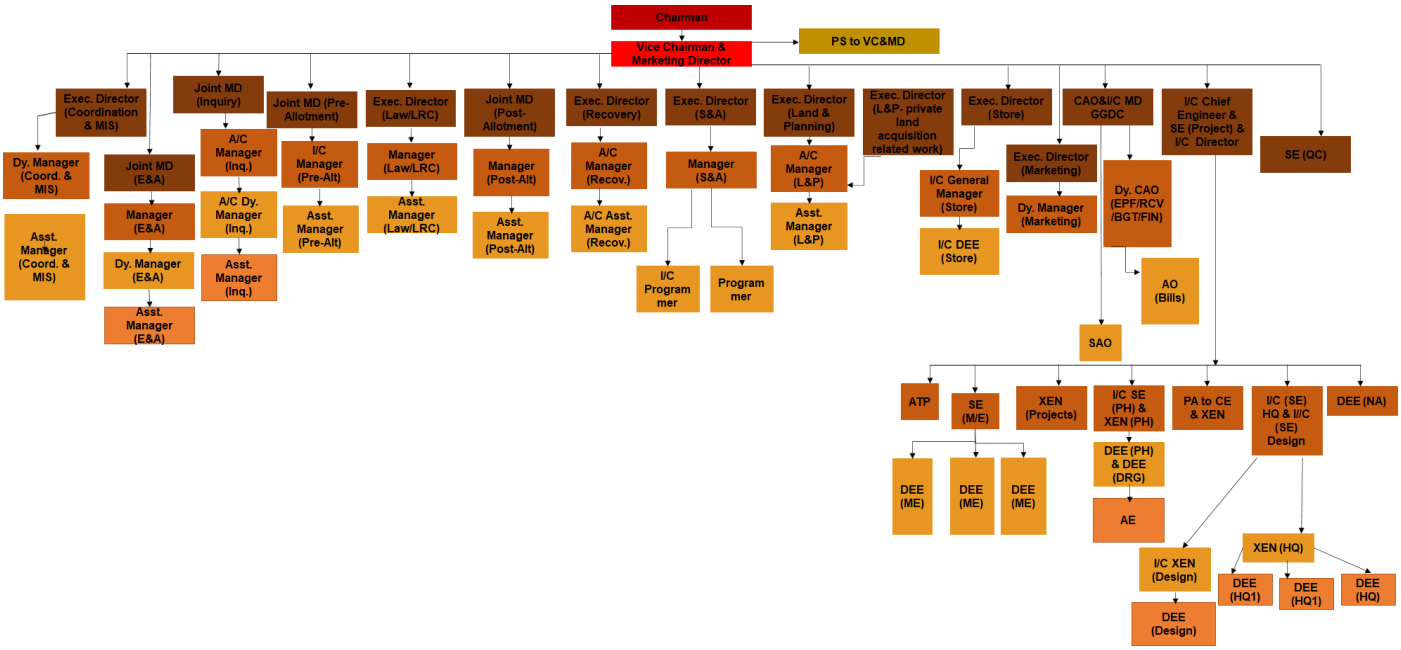
In order to develop Special Investment Regions (SIRs) in the state and turn them into global hubs of economic activity supported by world class infrastructure, the GIDC has a **four-tiered administrative mechanism** for the establishment, operations, regulation, and management of SIRs. Tripura too could appraise the benefits of outlining such targeted objectives and roles for each tier within the TIDC in order to enable the body to support industrial development pursuits more effectively.

Further, the GIDC also has specialised '**Pre-Allotment**', '**Post-Allotment**' and '**Land and Planning'** departments. While the first two enable the body to better deal with investor needs both during establishment and after, fulfilling a key investor need, the second facilitates better planning of land use and allocation.

The TIDC does not currently have such departments. This can hinder the overall efficiency of the body, negatively impacting overall investor experience in Tripura. Thus, it could be useful for Tripura to appraise the benefits of creating similar departments within the TIDC.

The organisational structure of the GIDC is as follows-

Figure 30: Organisational Structure of the GIDC



In Maharashtra, industrial development policies are implemented by the MIDC.

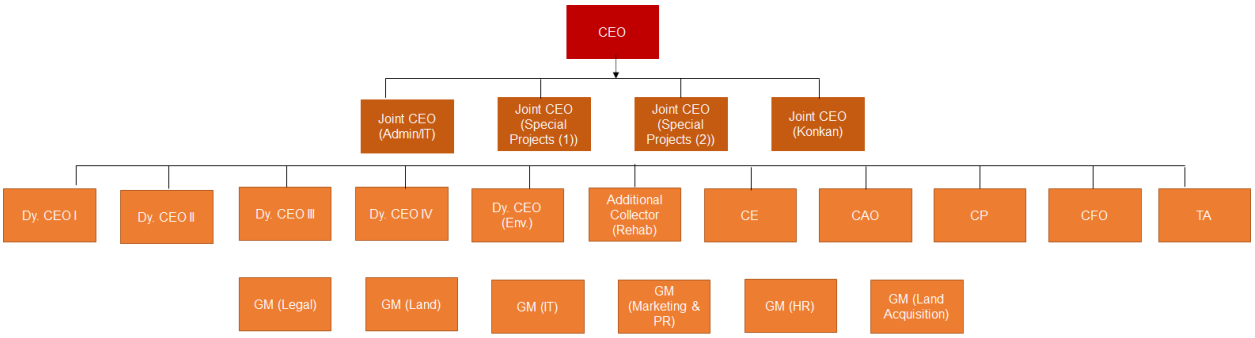
It focuses developing on twelve key sectors. These are aerospace and defence, automobiles, chemicals, electronics, food processing, food processing, gems and jewelry, IT, leather and footwear, oil and gas, pharmaceuticals, textiles, and toys. It has taken several steps to attract investors to the state. Its organisational structure contains within it more departments than the TIDC. It has, for example, a specialised '**Town Planning**' department that undertakes development planning of industrial areas and is involved in preparing proper layouts for IAs. This makes the process of establishment of IAs more efficient.

Further, the MIDC also has an '**Environment**' department that is responsible for disseminating information about environmental regulations among industrial units, and for providing advice on the environmental implications of any town planning activities and new policies. In Tripura's case, having such a department will not only help attract environmentally conscious investors but will also ensure sustainable industrial expansion. This is important as the state falls across two ecological hotspots and is home to a wide variety of flora and fauna.

Similar to the GIDC, the MIDC also has a dedicated **Fire** department. As the procuring of a fire safety NoC is a crucial pre-establishment requirement for industries, having a specialised department for the provision of the same again allows the body to increase EoDB in the state.

Overall, the MIDC's organisational structure, though less intricate than the APIIC's or the GIDC's, is more detailed than that of the TIDC. The TIDC could, within its existing structure, create the similar specialised departments.

Figure 31: Organisational Structure of the MIDC



Tamil Nadu's TIDCO too facilitates industrial and infrastructure projects that involve large investments and have huge employment potential, focusing on the energy, transport, agriculture, urban infrastructure, human development, and industrial and commercial sectors.

It is a partner in several joint venture projects across various sectors such as chemicals, fertilizers, pharmaceuticals, textiles, iron and steel, auto components, food & agro-processing, floriculture, engineering, petroleum and petrochemicals, infrastructure projects like IT/ITeS parks, bio-tech parks, Special Economic Zones (SEZs), road development projects, and agri-export zones.

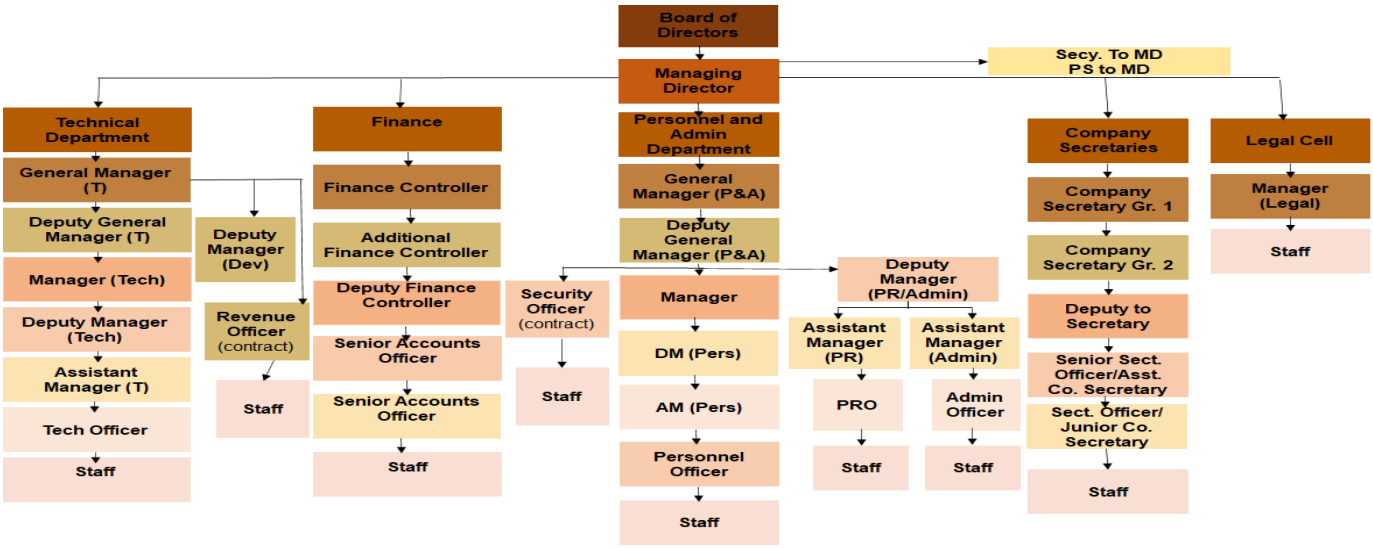
The TIDCO is run by a **board of directors**, comprising a Chairman; a Managing Director (MD); an Executive Director; two independent Directors; the Additional Chief Secretaries to of the Industries Investment, Promotion and Commerce Department and the Finance Department, the Principal Secretary/ the Chairman and Managing Director of the Tamil Nadu Electricity Board; the Principal Secretary of the Highways and Minor Ports Department; the Additional Secretary of the Industries Investment, Promotion and Commerce Department; the MD and CEO of Guidance Tamil Nadu; and the Managing Director of the State Industries Promotion Corporation of Tamil Nadu.

A set of **project officers** are responsible for the day-to-day operations of the TIDCO and overseeing projects. Having a General Manager to specifically deal with project facilitation, for instance, enhances the body's capability to provide investor support. Having similarly clearly delineated positions can help the TIDC's personnel perform their duties more effectively.

Finally, in neighboring Assam, the AIDC is responsible for the implementation of important industrial policies like the GoI's Cluster Development Programme, and the Integrated Infrastructure Development Centre Scheme.

Further, to support new investors and enterprises, the AIDC implements the Industrial and Investment Policy of Assam (IIPA). It has a dedicated wing, the **Udyog Sahayak Department**, which processes all applications of eligible Industrial units under the IIPA. Further, it also deals with the implementation of the state's industrial policy for medium- and large-scale industries, and the processing of applications for granting of 'Mega Project' status to industrial units. Having a separate department, such as the Udyog Sahayak wing, to provide critical pre-establishment services is useful in cutting down the overall regulatory burden on investors and making the clearance process more efficient. The TIDC could also benefit from the creation of a similar department.

Figure 32: Organisational Structure of the AIDC



Thus, the benchmarking analysis proves that to further improve its functioning, the organisational structure of the TIDC can be refined to empower it to carry out specific investor support functions more effectively and efficiently.

The comparison also reveals that the current structure of the TIDC can be remolded to increase efficiency. The creation of departments/wings to address specific investor and development needs, for instance, will raise the efficiency of the body. Some departments that could be created within the TIDC are Engineering, Electricity, Land Planning, Town Planning, Environment and Asset Management departments.

Proposed Specialised Bodies for the TIDC: An important body that could be developed within the TIDC is the Price Fixation Committee (PFC) which will be responsible for setting prices for allocation of land parcels in the state's industrial estates. It will also play a key role in carrying out various allotment-related tasks. The functions and roles of this proposed body have been explored in detail in section 5.3.

Besides the PFC, a department or committee could also be developed within the TIDC to provide industrial development support through a **Project Development Mechanism** (PDM). A PDM refers to a mechanism that allows for the prioritization of projects to be taken up in industrial estates and allows for advance preparation for them. This enables effective allocation of scarce public resources based on the projects' criticality. Here, the proposed projects' role in the success of the concerned industrial parks is assessed. This is important because even though industrial parks present economic opportunity, they also present a number of risks, including those associated with their operation.[181] Ranking projects based on their expected role in ensuring the success of an industrial park thus becomes crucial in ensuring its sustained operation.

The objectives of a PDM can, therefore, include:

A) enhancing the readiness of projects in industrial parks by taking advance actions to prepare for the projects: it can enhance an investment location's readiness to execute proposed projects through advance actions. It also has provisions wherein information of proposed projects' specific needs can be recorded, allowing for advanced planning out of industrial infrastructure development across industrial estates. A committee or wing within the TIDC can be developed in order to carry out the process of identifying critical projects and enlisting them under the 'Eligible Projects' list based on certain pre-set criteria. It can also be responsible for maintaining a panel of consultants for relevant tasks including carrying out feasibility studies, and engineering design of projects.

[181] International Guidelines For Industrial Parks, UNIDO (2019).

B) achieving broader socio-economic goals: the prioritization of proposed projects can be based not only on their economic potential but also in a way that helps fulfil broader social objectives. In Andhra Pradesh, for instance, the government works to encourage increased participation of the SC/ST/ BC and minority communities, with a special focus on women entrepreneurs. In Tripura, the proposed PDM wing could carry out the task of facilitating increased participation from various minorities.

Such a body within the TIDC would not only fast-track the growth of industrial parks by prioritising projects with the best prospects, but also would ensure efficient and optimal allocation of scarce resources like land, help plan infrastructural development, and in achieving wider socio-economic goals.

Apart from reforming organisational structure, a clear organisational framework outlining the functions, roles, and responsibilities of the TIDC, should be developed. Institutional development and human resources improvements can be focused on as well. These reforms should cover both individual (personnel) and organizational capacity building needs.
The table below summarises the recommendations for further development of the TIDC:

Proposed Intervention	Description
Creation of various specialised departments	a. While the TIDC may still continue to have a lean structure, it is important to create departments to address specific investor and institutional needs. Some departments that could be added to include Engineering, Electricity, Land Planning, Town Planning, and Asset Management departments. b. an Environment department: Such a department, similar to the MIDC's Environment department, is necessary for disseminating information about environmental regulations among industrial units and providing advice on environmental implications of town planning activities and new policies. This is a critical addition to the TIDC as Tripura lies across key ecological hotspots.
Improvement of investor support services	Having dedicated Pre-Allotment and Post-Allotment departments to ease the process of securing and managing allotments will help ease regulatory burdens considerably on investors. Further, the addition of a department akin to AIDC's Udyog Sahayak Department, dedicated to processing applications of eligible units under the state's industrial policy, can also be considered.
Transfer of certain statutory powers of local bodies like municipal corporations	A transfer of such powers to the TIDC will help facilitate the simplification of regulatory processes in the management of industrial estates.
Creation of specialised bodies	a. A Price Fixation Committee: for the implementation of land allotment regulations b. A body to implement the Project Development Mechanism: to help prioritise the most suitable projects and take advance actions to prepare for the same

District Industries Centers (DICs): At the district level, the District Industries Centres of the state carry out functions similar to those of the TIDC. Tripura has eight DICs, one in each district. They help in the implementation of the TIIPIS by supporting MSMEs acquire the benefits under the scheme. The General Managers of the DICs have are issuing authority for 'Incentives Eligibility Certificate' to industries wishing to claim benefits under the TIIPIS. These bodies aim to serve as focal points for the development of small-scale

and cottage industries. They are required because they serve to bring industrial growth to states at the district level

A benchmarking analysis has shown that the responsibilities of DICs in other states include helping prospective entrepreneurs in starting and sustaining industrial enterprises and providing a variety of escort services to them, such as identification of viable activities, preparation of project profiles, obtaining financial assistance from various banks/financial institutions and statutory clearances from government departments, sanctioning and disbursing eligible subsidies under various programs and facilitating payment of benefits in delayed cases. Key functions of typical DICs, based on the benchmarking of Andhra Pradesh's DICs, include-

a. Preparing 'District Action Plans' at the start of the year that highlight the key priorities for the DIC for the upcoming year and the activities to be undertaken to implement various schemes effectively
b. Conducting district level surveys such as industry potential, labour and gender surveys to identify sunrise sectors, growth engines, labour concerns and gender mainstreaming challenges, among other issues
c. Ensuring various approvals/ clearances in due time as per the Andhra Pradesh Single Desk Policy.
d. Highlighting the gaps/issues if any in the District Industries Promotion Committee (DIPC) meeting which is chaired by the District Commissioner/Collector
e. Assisting MSMEs in processes like registration, supply of raw materials, procurement of machinery, and marketing and training
f. Facilitating prospective entrepreneurs in obtaining financial assistance from various banks/financial institutions and statutory clearances from the relevant government departments
g. Sanctioning and disbursing eligible subsidies under various schemes, and facilitating in obtaining payments in delayed cases
h. Identifying new entrepreneurs by conducting entrepreneurship development and motivation programs throughout the district. Organizing training programs for entrepreneurs (incl. women) and also assisting other institutions imparting training to entrepreneurs
i. Inspiring and facilitating MSME units to participate in various fairs and exhibitions which are organized by the state government, industry associations and other organizations to give publicity to industrial products
j. Providing for an 'entrepreneurship guidance cell' through which information of project ideas, infrastructural facilities, source of raw materials, machinery suppliers and information on technology sources, among others, to be provided to the entrepreneurs for setting up of industrial units in the state by technically qualified officials at the DIC
k. Enabling access to library services where project profiles, books related to taxation, technical data, journals and other useful literature is available for the entrepreneurs
l. Conducting regular meetings with MSMEs to resolve their challenges and issues
m. Recommending the industrial units for Central and State Government awards
n. Acting as a convergence body for industrial clusters to support ease of doing business
o. Acting as a District Program Management Unit (DPMU) which will identify development opportunities, for instance, water treatment plant or sewage treatment plant, and coordinate with concerned state department/agency for converting opportunities into action
p. Demarcating the district in different zones based on pollution intensive industries, green industries (pollution free), port-based industries, industrial park, cluster development, economic zones, among others to be able to provide its services in a targeted manner
q. Partnering with reputed academic institutions, industry, and sectoral/technical experts in order to perform its role efficiently and effectively.

Thus, the DICs in Andhra Pradesh not only provide financial handholding but also focus on developing a skilled workforce.

The DICs in Maharashtra also provide all the services and support needed by small and village entrepreneurs. Besides that, they offer the following benefits schemes to industries:

a. Seed Money Scheme
b. DIC Loan Scheme
c. Entrepreneurship Development Training Program
d. District Award Schemes

Assam also has 27 DICs. Like the DICs in Andhra Pradesh and Maharashtra, they act the focal point of the industrialization of the district. Further, the DICs carry out various functions including the ones listed below:

a. providing opportunity guidance to entrepreneurs.
b. keeping records of information about local sources of raw materials and their availability.
c. disseminating information about various government schemes, subsidies, grants and assistance available from the other corporations set up for promotion of industries.
d. advising entrepreneurs on investments.
e. serving as the link between entrepreneurs and financial institutions in the district.
f. implementing government sponsored schemes to reduce unemployment among educated persons like PMEGP, SAROTHI, and SVAYEM
g. organize exhibitions and trade fairs to provide marketing exposure to first generation entrepreneurs.

Besides the many functions listed above, it is also critical to recognize that DICs serve as the primary government interface meant to ease processes for MSMEs and facilitate skill development and financial inclusion at the district level. They need to, as a result, be empowered to carry out these functions.

In order to further increase the effectiveness of the DICs in supporting district-level industrial growth in Tripura, they can adopt some of the best practices followed by Japan's Kohsetsushi Centres, UK's Manufacturing Advisory Services(MAS), and Germany's Fraunhofer Institutes. These include:

a. Promoting echnology adoption among SMEs
b. Providing audit of SME lean manufacturing and processes
c. Providing business advisory services to improve manufacturing
d. Supporting technology transfer and commercialization
e. Promoting tech/knowledge from universities
f. Teaching innovation and new product development skills
g. Promoting energy efficient manufacturing skills.

Further, Japan's Kohsetsushi Centres also collaborate directly and undertake R&D activities in partnerships with SMEs and provide access to research labs/prototyping facilities. Tripura too can consider developing its DICs in a manner that allows them to perform a similarly comprehensive set of functions.

Enumerated below is a list of proposed functions that Tripura's DICs can carry out to better enable them to support district-level industrial development in the state. These recommendations are based on the national and international benchmarks discussed in the preceding section:

a. carrying out district level surveys to better provide opportunity guidance to MSMEs, and to identify challenges to industrial growth
b. ensuring the timely granting of various approvals/clearances
c. facilitating credit access for MSMEs
d. organising trade fairs, expos etc. to broaden market access
e. creating an **entrepreneurship guidance cell** in collaboration with reputed academic institutions, industry, and sectoral/technical experts to guide industries and provide business advisory services to improve manufacturing
f. maintaining records of project profiles, technical data, and other useful literature for entrepreneurs

g. conducting regular meetings with MSMEs to resolve their issues
h. implementing district-level loan schemes
i. ensuring timely disbursal of subsidies under various state and central level schemes
j. providing skilling support
k. promoting technology adoption among MSMEs, and supporting technology transfer and commercialization
l. support in innovation and new product development skills
m. promoting energy efficient manufacturing skills.

The performance of state level developmental bodies like DICs, however, can be hindered by several factors such as resource constraints (capital, manpower), complex organisational structure, inefficient processes, limited training and capacity building, lack of innovation, inadequate and outdated physical infrastructure, and limited planning and accountability. In such a scenario, these bodies are unable to provide the required support for industrial development at the district level. Also, any mismatch between the functional roles assigned to the staff of such bodies and the actual roles they perform can hinder the completion of the tasks and the fulfilment of the industrial and organisational objectives. In order to enjoy continued industrial growth, therefore, it must be ensured that investor support institutions like the TIDC and the DICs do not face similar hindrances. Though a single-desk approach has already been adopted by the state, it still remains important to further streamline its industrial support bodies to effectively create an environment conducive to the growth of industry. This can be achieved through institutional reforms like the ones listed below:

a. initiating capacity building measures at the organisational and personnel levels that can equip the TIDC and the DICs and their employees to support investors better
b. undertaking institutional reform measures
c. doing away with redundant regulatory processes to increase efficiency of the functioning of the TIDC and DICs
d. facilitating adoption of IT infrastructure to improve procedural efficiency
e. ensuring the clear articulation of roles and responsibilities of both bodies, and each department and personnel within them
f. facilitating regular stakeholder feedback to gauge any gaps in the functioning of the TIDC and DICs and taking steps to address the same.

Draft institutional and capacity development plan: The key recommendations for the institutional and capacity development of the TIDC and the DICs are highlighted below:

A. **Capacity development**:

i. Regular training sessions should be conducted ensure that personnel have the latest required skills needed to effectively carry out their roles.
ii. Roles and performance expectations need to be clearly defined, and all personnel should be given the relevant support, in the form of regular feedback and training, to enable them to perform their roles adequately.
iii. All personnel should be regularly informed of good practice and specifically on how to adopt the same.
iv. Personnel should also be trained to relate to other people and communicate effectively with them as a key part of their roles will involve interacting with, and supporting investors
v. Regular feedback should be provided to enable personnel to improve in their roles
vi. Digital literacy and skilling sessions should be organized regularly to train personnel in using the latest enabling technology to do their work more efficiently
vii. Personnel should be equipped to organize events for trade and investment facilitation
viii. All personnel should be provided with a basic understanding of key investor concerns and be familiarized with the process of addressing the same. They should be able trained to assist investors with all the relevant applications to various state and central agencies.
ix. Leadership training programs should be organized to equip the senior management team of the TIDC and the DICs to enable them to guide other personnel to perform their roles better.

B. **Institutional Reform**:

i. Regular **institutional capacity assessments** should be carried out to identify any need for improvement in the functioning of the TIDC and the DICs.
ii. The **creation of departments** or roles that can act to increase both efficiency and effectiveness of the TIDC and the DICs should be undertaken. In the case of the TIDC, these include Engineering,

Electricity, Land Planning, Town Planning, Asset Management, and Environment departments, a Price Fixation Committee for the implementation of land allotment regulations, and a body to carry out the functions of the proposed Project Development Mechanism.

iii. The **adoption of IT infrastructure** to improve procedural efficiency should be facilitated.
iv. Virtual and telephonic **helplines** should be made available to investors by the TIDC and the DIC.
v. Measures to aid **collaboration** with reputed academic institutions, industry, and sectoral/technical experts should be taken so that both the TIDC and the DICs are better positioned to guide industries and provide business advisory services.
vi. Checks and balances devised to foster **accountability** from personnel should be implemented.
vii. The functions, roles, and vision of the TIDC and the DICs should be in alignment with those of similar bodies at the national level.
viii. A concise plan must be evolved to create a corpus fund for infrastructure development in the state.
ix. The **computerization** of all activities must be ensured within a specific time period.

At the district level, each DIC should set up entrepreneurship guidance cells to improve investor support services.

4.3. Land Allotment Policy

As part of any sound industrial policy, it is important to have a clearly defined land allotment policy. A comprehensive land allotment mechanism is a basic parameter used by many investors to choose an ideal investment location. It streamlines land resource allocation to industries and investors and can contribute significantly to improving investor experience by implementing a simple and transparent allotment procedure.

Beyond being a central EoDB component, allotment policies safeguard the interests of all stakeholders, increase lease security and land rights of allotees, and can de-risk investments by creating safeguards against penalties and losses caused by extraneous factors.

From the perspective of state governments, they enable the recovery of land acquisition and development costs of industrial parks by setting adequate allotment prices. They also lay out the framework for addressing the issue of non-performing industrial units, thereby taking steps to ensure continued industrial growth.

In its role as a critical policy tool, there are various important aspects of industrial land allotment that a specialized allotment policy regulates. Firstly, it determines the price of land parcels to be allotted. This is a complex process as the decided cost needs to cover the cost of the land acquisition and that of the infrastructure being provided as well. However, this only helps arrive at an average price. It is then important to devise a system of differential pricing in order to both target different kinds of investors and to recover the costs incurred by the government in procuring and developing the land. This needs to be done by considering the specific needs of investors as well as the overall policy objectives as set out in an industrial policy.

Decisions such as using an early bird incentive scheme with lowered plot prices to attract investors to sunrise or growing sectors need to be shaped by a land allotment policy, for instance. Further, discretionary pricing decisions and processes, for instance that of deciding to price certain plots at higher rates after categorizing them as premium ones on the basis of locational advantages, proximity to ancillary industries, or other similar factors is defined in the allotment policy.

Access to land is of crucial importance for economic development and is the bedrock of industrial activity. Thus, setting down a well-defined land allotment policy is a critical part of ushering in industrial growth. It defines the legal rights and conditions of access to this important resource and regulates its distribution among multiple stakeholders. Beyond this, land allotment policies shape land use and land management as well.

It is the land allotment policy that will help in achieving the desired outcomes of setting up industrial parks and ensuring the continued accrual of benefits from these parks. It is pertinent also to mention here that such a policy ensures the protection of investors' property rights and secures ownership.

Land allotment policies of other regions, like Andhra Pradesh and Goa, have been examined to identify the concerns typically addressed by such frameworks. Andhra Pradesh's allotment policy outlines the rules for land allotment in industrial estates specify the methods of price fixation, outline the process of the allotment, rules for allottees (including those for switch over of premises, payment methods etc.). The rules also include provisions

that act to protect land use rights of the allottees. For instance, it is mandatory for all industrial layouts to provide space for waste disposal/waste management.

Similarly, Goa has a specific policy for land allotment in its electronics manufacturing cluster.[182] The policy includes a clearly laid out eligibility criteria for allottees, and lists the amenities to be provided within the cluster, the procedure of land allotment, pricing of plots and land premium, rules of lease tenure and rent, rules utilization of plots, and rules of transfer of plots.

Currently, Tripura does not have a specific policy of this kind. Investors have to apply for plots online after which they are allotted plots on a lease basis. There are, as a result, no clear regulations governing the process. The process for lease cancellations, for instance, is not regulated. As the discussion above highlights, having such a policy can have an enabling effect on industrial activities by attracting investors with differential pricing and streamlined allotment processes. This policy can act to improve the use of land resources and the conditions of property rights under which investors in the state function. It can also ensure economic and environmental sustainability.

Based on the aforementioned examination of the land allotment policy of Andhra Pradesh, the basic issues of land allotment typically addressed by such policies that have been identified have been explained below -

a. Creation of a price fixation committee (PFC): which is a body is responsible for carrying out complex land valuation processes and determining the level of infrastructure to be provided in industrial parks. It can monitor the progress of construction of infrastructure as well as carry out project monitoring in an industrial park. Such a committee may be constituted by the TIDC.

   Then, a PFC is required because it carries out the important function of setting the land allotment price. It needs to settle on a price that covers the costs involved in the acquisition and development of the allottable land.

   It considers the various objectives of the industrial policy and devises ways to achieve those while also setting land prices that enable investments. Various considerations, including the stage of industrial development, and the type and size of the proposed industry, need to be kept in mind. Thus, the implementation of a differential pricing system also needs to be done by the PFC.A PFC is thus an important constituent of the implementation of a land allotment policy. It plays a critical role in ensuring both economic sustainability of a park as well as incentivizing investments in the state.

   In the case of the land allotment policy of the APIIC, the following costs are included in setting the price of allotting land parcels to investors-

   i. **Land Cost:** This includes cost of raw land as fixed in the land acquisition award by the Andhra Pradesh government, and the costs incurred towards land acquisition proceedings. It also includes rehabilitation and resettlement costs, if any; establishment charges, if any, of the land acquisition unit; enhanced land compensation claims awarded by the courts; any conversion and administration charges; any other charges incurred during acquisition/alienation including legal and other relevant expenses; cost of money spent for land acquisition as determined by the APIIC periodically; administrative charges at applicable rate as periodically set by the APIIC; the value of undeveloped land for some projects on an ‘as is’ basis can be worked out separately considering estimated deductions for open spaces, approach roads, wastages and market value and other relevant factors.

      Further, the APIIC can consider a year-on-year escalation of 9% on the cost of raw land, if the land is acquired from private landowners. However, APIIC will ensure that the cost of undeveloped land being offered to entrepreneurs will not exceed more than 20% of the cost of industrial land outside the industrial park.

   ii. **Infrastructure Development Cost:** This includes layout approval charges/land use conversion charges/development cost or any other such statutory charges including NALA charges which are payable as levied by the statutory agencies; estimated cost of civil works like compound wall, approach and internal access roads, communication facilities, water supply, power supply, rain water harvesting, sewage and drainage lines, storm water drainage, effluent treatment, disposal facilities, landscaping and tree plantation, administrative buildings, environment management plan, fibre optics and other

[182] Electronics Manufacturing Cluster Land Allotment Policy, 2021 (https://www.goa.gov.in/wp-content/uploads/2021/08/Land-Allotment-Policy-2021.pdf).

facilities; estimated cost of the environment management plan at the applicable rate as set by the APIIC periodically; and, viability gap fund for common effluent treatment plants etc.

The TIDC too can set up a similar PFC that will undertake, among others, the task of setting land allotment prices for the industrial parks in Tripura.

b. Defining the role and responsibility of PFC: After having examined the need for the establishment of PFCs in the preceding section, the roles and responsibilities of the committees can include-

- reviewing and recommending land costs in industrial parks periodically
- recommending the allotment prices of plots in industrial parks
- determining the value of advance payments
- ascertaining premiums to certain land parcels within an industrial park based on location, accessibility, demand, and other similar parameters (identification of such premium plots can be done during the planning of industrial parks while allotment can happen through e-auctions or other similar processes)
- recommending the level of infrastructure facilities to be provided for in an industrial park and the rate of administrative charges
- making provisions for the environment management plan and interest periodically.

c. Implementing policies related to land for large and mega projects and allotment of land in phases: This is an important function as allotment prices needed to be set in a way that not only helps the state government recover the costs of acquiring and developing the land parcels, but also to attract large investments.

Beyond offering early bird incentives to initial investors and providing incentives to MSMEs, it is important, after the development of an industrial ecosystem, to focus on attracting larger industrial units. For this, the size of the proposed industrial project needs to be considered.

Land allotment policies, therefore, should have provisions to allot land parcels at subsidized rates to mega and ultra-mega industries. These industries will bring in large investments and will catalyse industrial growth by stimulating the development of various other ancillary or associated industries.

The larger objective of a land allotment policy is to act to manage the allotment process in a way that helps attract investors who will undertake growth-inducing industrial activities. The focus on large and mega projects will ensure this.

Various states' land allotment policies already have such provisions. The MIDC, for instance, prioritizes applications from industries which are categorized as mega projects by the Maharashtra government. Land allotment incentives are also given to investors with large scale investments who aim to start production as early as possible, and which provides large scale employment; industries bringing in FDI; and industries that fall under the Fortune Global- 500/ Economic Times-200 listings wishing to operate in the state's A and B industrial zones.

Since one of the TIDC's primary objectives is to bring about industrial growth in the state, it would be beneficial to formulate a land allotment policy that has similar provisions.

d. Scrutinising and categorizing applications: the applications of potential investors need to be carefully scrutinized to check for investors' credit worthiness, land requirement, proposed land use etc., and to review investors' detailed project reports to aid the decision-making process regarding allotment. This will act as a way to check the suitability of investors to whom land is being allotted.

Review of DPRs, for instance, will help examine the following aspects of proposed project-

i. Investor's financial credibility

ii. Degree of innovation in projects

iii. Investor's industrial background and experience

iv. Nature of industry/production, whether export-oriented or not

v. FSI consumption

vi. Ability of proposed project to generate employment

Examining the DPR will ascertain the suitability of a particular project as it will reveal the overall impact that the project will have on the industrial activity and growth of a region.

In AP, the State level Scrutiny Committee (SLSC) headed by Director of Industries initially receives and reviews the applications for plots. These are then sent to the State Land Allotment Committee (SLAC) for issuing final allotments. Further, the land allotment policy of the APIIC also has different scrutiny processes based on a proposed project's land requirement, with projects requiring parcels of more than 50 acres undergoing the most stringent review process. Further, another check put in place in Andhra Pradesh is that only those allottees who have utilized the allotted land, not less than 50% of the allotted parcel with a minimum utilization of 1/6th of the built-up area out of the allotted premises and subject to the utilization mentioned in the DPR are eligible to seek Date of Commercial Production (DCP) certificates.

The TIDC too could formulate similar review and scrutiny processes in order to select the most suitable projects and investors for Tripura's industrial parks to maximise the profitability and viability of the parks.

e. Defining rules for switch over of premises/alternate plots: investors can make requests for switching to different plots than those originally allotted to them. The process for this needs to be clearly defined in order to regulate such requests as the granting of alternate plots is subject to availability. Further, if every request is entertained, it can lead to considerable costs for the park. Thus, having a process that requires investors to justify their request (based on pre-determined factors such as closeness to ancillary units or raw materials) can help lower the bulk of switching demands.

   The APIIC's land allotment policy for instance only entertains switching requests once, per industry. Further, if investors seek a plot in a different park, they will have to pay the difference in allotment costs, if any. If they seek an alternate plot, they will have to make a fresh application for the same. In neither case will the request be treated as a priority.

   Having similar provisions will help the TIDC in dealing with switching requests in an efficient manner that also safeguards the interests of the investors as well as that of the park.

f. Determining method of allocation (auctions etc.): this involve setting up a system for the allotment of plots based on size. One possible way to categorize the plots could be size. Allotment of plots up to 5 acres, more than 5 acres and up to 50 acres, and more than 50 acres could involve different processes.

   Depending on the stage of industrial development in the park, too, could be a parameter for determining the process of allotment. Once initial investors have been attracted through penetrative pricing, and a well-developed industrial ecosystem already exists, land demand will go up. In this scenario, higher prices can be charged for parcels, and the method for allotment can be different as well.

   In the case of the MIDC, the industrial areas where more than 80% plots/plottable land is allotted, the remaining plots are be allotted by way of auction. In the remaining plottable land, plots are also carved-out by the Planning Department. These new plots are also allotted through auctions.

   Another method used by the MIDC is the 'direct procedure of allotment'. In parks where less than 80% plots/plottable land has been allotted, the remaining plots and plots carved out from the plottable land are allotted directly. Potential investors can find information about these plots through newspaper adverts.

   The TIDC can examine the practices of the APIIC and the MIDC in order to determine the most suitable allotment processes, depending on the stage of industrial development in order to best recover land acquisition and development costs.

g. Outlining process and documentation required for execution of agreement to lease and for physical possession: Investors have to be informed clearly of the application process as this will increase the time efficiency and ease of the allotment process. This is an important aspect also of increasing EoDB for investors.

In order to streamline the process then, the land allotment policy needs clearly outline the application process and to provide information on the documents required for the application.

The MIDC's land allotment policy, for instance, outlines the following application process:

1. Applicants need to fill up the application information online and select the desired plot for allotment. 2. They should then submit the documents along with the online application. These include a DPR, details of the constitution of the applicant (partnership/sole proprietor), the details of utilization of the plot applied for in the online application, and the Block Plan of the proposed construction, the phase-wise development plan of the project etc.

In the case of UP, the land allotment policy clearly states that each applicant must register their application on the prescribed application form along with the following documents:

2. Processing fee of Rs. 10,000/- in the form of demand draft (money non-refundable & non-adjustable).
3. Registration fee payable in the form of DD/bank draft for the relevant amount:
    a. For plots of up to 4000 sq. mtr.: INR 1 Lakh
    b. For plots of above 4000 to 8000 sq. mtrs: INR 2 Lakh
    c. For plots of above 8000 sq. mtrs: 2% of the total premium of the plot applied for.
4. Project report: consisting of the promoters' background, product details and its market potential, land area applied for and its break-up of uses of possible tentative, layout, construction schedule, product process flow-chart, projected cash-flow statements, total project cost, total investment including investment in building, plant and machinery, and means of finance.
5. Financial/technical support paper: Balance sheets for the last three years of the applicant company/promoters with necessary resolutions, IT returns and papers concerning financial/ technical support.

h. Defining rules for implementation of projects: these rules will serve as necessary checks and balances in order to ensure an industrial unit's compliance with its DPR. An important aspect of these rules is monitoring the stipulated time period for project implementation. Such checks ensure long-term commercial growth.

    In AP, the allottee needs to, within nine months of taking possession of the plot, take the steps required for project implementation. Further, the allotee needs to comply with the project's parameters as envisaged in the DPR for the same. To monitor compliance and progress, the allotee also needs to submit quarterly reports communicating the progress of the project. If, upon inspection, it is found that the project implementation has not been completed within the stipulated time period, a fine or penalty can be levied on the allotee.

    Thus, clear rules for the implementation of allotees' projects is required in order to fulfil the most rudimentary objective of the land allotment policy— achieving the objectives of the relevant industrial policy, which involves spurring industrial growth. While formulating a similar allotment policy, the TIDC too should define implementation rules in a similar fashion. Specific application processes can be defined for land parcels in different types of parks, whether industrial estates or SEZs, for instance.

i. Defining rules relating to non-industrial land use: Land parcels in industrial parks are not only used by industries. Various non-industrial activities also need to be undertaken on parks' premises to support the industries. These include training and skilling activities, ancillary services like logistics, testing centres, and storage and warehousing facilities. Other such uses are dictated by the specific type of industrial activity the park is suited for. Various investors will be interested in acquiring land parcels to provide these services.

    The land allotment policy should have clearly defined provisions for land allotment to such investors as well as long as the overall objective of catalysing industrial growth is being met by the proposed non-industrial activities. The APIIC leases lands for such purposes on a case-by-case basis. Certain common facilities it provides land for include-

    i. Post office subject to a maximum of 500 sq. mts
    ii. Fire station subject to a maximum of 1,000 sq. mts

iii. Police station subject to maximum of 1,000 sq. mts

iv. Government Employees' State Insurance Corporation Dispensaries subject to a maximum of 1,000 sq. mts

v. Andhra Pradesh Power Transmission Corporation (or its subsidiaries), provided the land is used for putting up a dedicated substation for the respective industrial park

vi. Andhra Pradesh State Road Transport Corporation for providing dedicated transport terminal/bus depot

vii. Water supply boards/similar agencies

viii. Industrial dormitories/hostels run by private parties

ix. common effluent treatment plant, wastewater treatment plant, sewage treatment plants, solid waste management facilities

x. Truck terminals

xi. Gas dispensing systems

xii. Security services and other common services for the units within industrial park

xiii. Scheduled Banks

xiv. Hospitals or Dispensaries run by private individuals/ corporate bodies

xv. Any other commercial purpose compatible with industrial or allied services like canteens, weigh bridges, warehouses, petrol retail outlets etc.

xvi. Any hotels, restaurants, shopping centers, convention centers, office centers, flatter factories etc.

xvii. Any telecom service provider

The non-industrial uses listed above are all necessary to support industrial activities. Thus, in designing its land allotment policy, the TIDC too should make similar provisions for investors proposing to use plots for non-industrial uses. This is especially important for sectors like food processing, which is one of Tripura's priority sectors.

j. Cancellation, and withdrawal of allotment: cancellation procedures must be clear and well-defined in land allotment policies in order to protect the interests of all stakeholders without acrimony. Cancellations due to non-compliance or failures to meet industrial growth objectives specified by investors in their DPRs can be facilitated through this. If, on the other hand, a project is unable to meet these objectives due to external reasons, such procedures can allow them to cancel their lease without penalty.

In the case of UP, allotted plots can be cancelled for the reasons given below:

i. Non-payment of two consecutive installments required to be paid with interest within the prescribed due date.

ii. Non-execution of the lease deed even after an extension period.

iii. Not making the unit functional even on expiry of an extension period.

iv. After cancellation, due to any of the above-stated reasons, a maximum of 20% of the total premium is deducted and the balance deposited premium amount is refunded without interest. If 20% of the total premium amount is not deposited, the entire deposited amount is forfeited.

v. In case of a cancellation made due to the submission of wrong/false information for acquiring the allotment and/or violation of any of the conditions of lease-deed conditions, the entire deposited amount is forfeited.

The APIIC has a specific provision also for the protection of investors' interests— No penalty, cancellation of allotment or resumption of land for each unit which have suffered due to delays in the provision of infrastructure is levied.

In devising a land allotment policy, the TIDC can examine the provisions made for cancellation of allotments by other states such as UP and AP. It currently has no such provisions, which can result in lengthy legal battles and hinder industrial activity in parks.

k. Outlining the process for transfer of allotment: Transfer of allotment means transfer of land allotment from original allottee to 3rd party and dilution of ownership by more than 49% by an original allottee. The procedure for must be defined clearly in order to ensure that such transfers do not hamper industrial activity and growth in industrial parks.

   The APIIC approves proposals for transfer of allotments only after the implementation of the project in full and after commencement of regular production of the unit as evidenced by the DCP, except in cases of transfer by hereditary process to the legal heir. A process fee for transfer at the rate of 5% on the value of the land prevailing on the date of issue of the approval subject to a maximum of INR 8 Lakh plus applicable taxes.

l. Process for acquiring permission for sub-letting of premises: subletting can allow for a non-performing investor to seek the additional support needed by them from another industrial unit. In case an allotee is unable to comply with the projected commencement targets outlined in the DPR submitted by them, it can help to allow for subletting to the required third party. Again, the land allotment policy needs to align with the overall objectives of the industrial policy and ensure the commencement of sustainable industrial activity. Outlining a process and making provisions for the same is therefore required.

   The APIIC only accepts proposals for subletting of park premises only after the full implementation of the project and after commencement of commercial production/service of the unit and the approval of the PFC. A fee of 2% per year on the prevailing allotment price on the date of issue of the approval of the subletting by the APIIC is levied. The sub-letting fees is collected in advance.

m. Devising innovative land allotment models: various different kinds of land allotment models can be devised for specific types of land parcels based on their location, the infrastructural support available to them, and other similar parameters. Further, models that speed up the allotment process can also be designed with the larger aim of improving investor experience. Focusing on providing this kind of non-fiscal incentive, in terms of EoDB, plays a central role in attracting investors.

   Having targeted models of land allotment, whether auction-based or otherwise, can act to also accelerate the recovery of the costs of land acquisition and development while still allowing for investment-enabling allotment pricing.

   The MIDC for instance uses both auction-based and direct allotment processes depending on the stage of development of an industrial park. The industrial areas where more than 80% plots/plottable land is allotted, the remaining plots are be allotted by way of auction. In the remaining plottable land, plots are also carved-out by the Planning Department. These new plots are also allotted through auctions.

   Another method used by the MIDC is the ‘direct procedure of allotment’. In parks where less than 80% plots/plottable land has been allotted, the remaining plots and plots carved out from the plottable land are allotted directly. Potential investors can find information about these plots through newspaper adverts. Here, it is important to price land parcels at lower prices than those fueled by high demand.

   In developing a land allotment policy, the TIDC too can consider the use of a variety of innovative land allotment processes.

n. Practicing differential pricing of land: land allotment policies, as part of deciding prices for land parcels, need to have provisions for differential pricing. This is because such an approach will help target different types of investors, based on proposed project size, type of industry and so on. Such an approach is required as it can help provide incentives while still allowing for recovery of costs of land acquisition and development by attracting large investors. Further, such differentiation is critical to cater to different stages of the growth of an industrial park, or the overall industrial sector. In the nascent stages of industrial development, small-scale industries must be focused on with the provision of early bird land price incentives. However, in the later stages of industrial development, it is critically important to attract larger units who will ensure continued growth. To attract such industries, land parcels must be subsidized in order to make them more attractive than in other similar locations.

   Different type of industries can be targeted using differential pricing as well. Penetrative pricing for thrust and sunrise sector industries are required to fast track growth while this is not as important for ancillary ones.

Such an approach can be seen in UP's land allotment policy, in terms of the registration fee payable by different sized industries:

i. For plots of up to 4000 sq mtr: INR 1 Lakh

ii. For plots of above 4000 to 8000 sq mtr: INR 2 Lakh

iii. For plots of above 8000 sq mtr: 2% of the total premium of the plot applied for.

The need for differential pricing thus becomes apparent from the discussion presented above. The TIDC will also benefit from including such provisions in a land allotment policy.

o. Developing an online portal for information on land availability: it is important to develop an online database, whether in the form of a new website or on existing portals, to help investors easily access information on the availability of land parcels across Tripura's industrial estates.

Benchmarking of similar provisions in Tamil Nadu shows that both the TIDCO and the Tamil Nadu Small Industries Development Corporation websites have comprehensive records on such vacancies. Apart from providing vacancy charts for each industrial estate, investors also have the option of using a search facility to help them find plots suiting their particular needs. The searches can be customized to help find land based on the type of industrial activity, preferred location, and land parcel type (plot/shed etc.). Besides these services, Tamil Nadu also has a Comprehensive Land Information Portal (CLIP), a single integrated portal that allows investors to access various important data relating to land— this helps investors get complete information pertaining to land ownership, encumbrances, property tax dues, water dues, electricity dues, and commercial and legal disputes.

Currently, information about Tripura's industrial estates is available online. However, it is limited and requires updating. Further, while the allotment rates for each industrial estate are available, data on the availability of plots across these estates needs to be provided.

Similar to Tamil Nadu's CLIP, Tripura too has a portal[183] providing integrated land records as well. It provides real-time land ownership records, an online mutation service, information on market value, e-linkages to credit facilities, information about eligibility for government programs, issuance of land passbooks, and various other services. In order to facilitate the dissemination of important information regarding the availability of land parcels, the required platforms/webpages can be developed on the existing website itself. As such a portal will facilitate the process of land allotment, its development can be included in the land allotment policy.

The section above highlights the need for a well-defined land allotment policy that regulates and streamlines the process of plot allocation to investors. It allows for the efficient distribution of a scarce resource. Tripura should examine the land allotment policies of other states, like Andhra Pradesh and UP, to adopt the best provisions of these policies. This will help increase the security of land rights and increase the overall EoDB in the state, which, in turn, may lead to increased interest from investors.

A list of the provisions that can be included in the proposed land allotment policy of Tripura are listed below:

a. Constituting a Price Fixation Committee and a description of its roles and responsibilities

b. Outlining guidelines for fixation of allotment prices, special, concessional and targeted pricing (to incentivise investments), and the payment scheme and modes

c. Listing processes of allotment of land, including auctions

d. Outlining guidelines for provisional allotments

e. Listing rules for allotment of premises for necessary non-industrial activities

[183] https://jami.tripura.gov.in/site/index_eng.htm

f. Laying out rules for allottees, including for switch over of premises/alternate plots, transfer of allotments, and permissions for sub-letting of premises

g. Outlining timeline of projects

h. Setting out the monitoring, cancellation and withdrawal of allotments

i. Providing a grievance redressal mechanism for all stakeholders

j. Developing an online portal for information on land availability in industrial parks

4.4. Green Industrial Policy

As concerns about the environmental impacts of industrial activity continue to grow, a host location's green industrial policy too has begun to become a consideration that sways investment decisions. Further, it has been seen that while markets are important in shaping production and consumption patterns, they have not been able to solve many of the environmental challenges the world is facing. This has necessitated the need for government intervention in the area. A green industrial policy, with various economic, social, and environmental benefits, can be a strong tool to address this concern. Further, it can "accelerate the shift of carbon-intensive economic and industrial sectors onto greener trajectories, advancing the transition towards a green, more resilient global economy".[184]

Such a policy refers to state-driven structural changes that promote industrial growth while also focusing on achieving broader social and environmental goals. A green industrial policy can "provide an instrument to facilitate structural change and accelerate a country's transition towards an Inclusive Green Economy".[185] Simply put, a green industrial policy is one "aimed at aligning the structure of a(n)…economy with the needs of sustainable development within established planetary boundaries".[186] However, it is "not merely a repetition of industrial policy approaches. It has a wider set of objectives and it relies on a wider set of policy instruments, including environmental policies. At the heart of green industrial policy is the need to integrate different objectives, including productivity, growth inclusiveness and environmental protection, through a wide set of policies capable of decoupling growth from social and environmental degradation."[187]

Looking at Asia, while the global environmental market is a fast-growing one, Asia's is "growing faster than other regions, both in terms of actual value and as a share of global trade".[188] The region has been witnessing swiftly expanding green revenues and exports and deployment of climate change mitigation technologies. There is also a "growing trend among firms to become more environmentally responsible with the adoption of environmental management systems and approaches for pollution prevention and resource use efficiency, as well as participation in programs to reduce the environmental impact of their production processes".

Owing to a variety of factors, many companies are seeking green certification and participating in green business networks with established codes of conduct and responsible environmental management practices.

Many investors seek to set up businesses in locations with greening measures and policies because of increased "external scrutiny" from both the public and NGOs[189]. The internet makes it easy to obtain information about a firm's entire supply chain and raise awareness about the environmental impact of corporate production decisions. As a result, firms now fear being publicly targeted because this can damage corporate reputations and lead to loss of customers and investors.[190] The fear of damage to reputation and loss of customers therefore prods investors to pick investment locations with greening policies. Besides this, since "multinational enterprises are subject to higher environmental standards in their home countries", they are likely to invest in locations that have a clearly laid down green industrial policy. In general, large firms, seem to pay

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[184] Green Industrial Policy, UN Environment Program.

[185] Green Industrial Policy and Trade: A Tool-Box, UN Environment and UNIDO under the Partnership for Action on Green Economy (PAGE) (2017).

[186] Green Industrial Policy: Managing Transformation under Uncertainty, German Development Institute (2014).

[187] Green Industrial Policy and Trade: A Tool-Box, UN Environment and UNIDO under the Partnership for Action on Green Economy (PAGE) (2017).

[188] Growing Green Business Investments In Asia And The Pacific Trends And Opportunities, ADB Sustainable Development Working Paper Series (2020).

[189] Promoting Green FDI: Practices And Lessons From The Field, UNCTAD (2016).

[190] Promoting Green FDI: Practices And Lessons From The Field, UNCTAD (2016).

greater attention to environmental effects[191] as an emphasis on reducing the environmental impacts of industrial activity continues to grow globally.

Governments seeking to mobilise private sector investments should consider looking into the implementation of a green industrial policy, which, as seen in the discussion above, plays a significant role in impacting investment decisions and promotes long-term sustainable industrial growth.

It is important also to examine the other socio-economic benefits that green industrial policy measures can bring— these policies can be beneficial as "investments in improving resource efficiency and recycling help reduce the demand for energy, water and virgin resources, thus reducing the need for large investments in new energy and water supply infrastructure and new extractive industries."[192] Further, they help in meeting broader social objectives too. The greening of industries creates jobs and alleviates poverty bringing both growth and development.

"Green technologies are becoming increasingly viable in commercial terms, making them bigger and better targets for investment promotion".[193] The experiences of many Asian nations reiterate how industrial policy and greening policies can work in tandem to stimulate industrial growth. The Republic of Korea, for instance, was able to reap economic benefits by setting up an Environmental Park Initiative in the Ulsan Industrial District. Under the initiative, shared facilities among individual companies that would contribute to clusters achieving collective efficiencies that cut costs and increase eco-friendliness have been set up.[194] This not only helped the industrial district move towards achieving more sustainable growth but also to become more attractive to investors— by the end of 2014, projects involving 31 companies "generated annual cost savings of USD 74 million, new revenue of USD 45 million".[195]

It is thus evident that implementing industrial greening policies can not only help attract private investment but can help realise several other socio-economic goals. The implementation of a green industrial policy will help host regions meet the UN-prescribed Sustainable Development Goals, including "No Poverty" (Goal 1), "Decent Work and Economic Growth" (Goal 8), "Industry, Innovation and Infrastructure" (Goal 9), "Sustainable Cities and Communities" (Goal 11), and Sustainable Consumption and Production (Goal 12), as well.

A **green industrial park framework** that could ensure the minimisation of environmental costs of developmental projects should aim to create green and inclusive hubs for manufacturing, that accelerate economic growth and also provide environmental and social protection. This will be achieved by developing low-carbon resilient infrastructure, creating inclusive economic opportunities, ensuring optimal use of resource and good governance. The core objectives of such a framework can be:

a. Reduction of the impact of industrial activity through discharge/ emission on the environment

b. Improving resource efficiency (energy, water, material)

c. Reduction of climate change impacts

d. Promoting a circular economy of 'Reduce, Recycle and Reuse'

e. Create a green transport network

f. Ensure green and sustainable procurement

g. Work towards sustainable finance and responsible investment

The framework, needed to hold up green industrial policy objectives, could also require the integration of environmental safeguards at every stage of a project. All projects then need to have concrete plans to prevent pollution in a cost-effective manner using commercially available skills and resources. The framework can then not only check legal compliance of industries but can also strive to inculcate global best practices in them.

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[191] Promoting Green FDI: Practices And Lessons From The Field, UNCTAD (2016).

[192] Promoting Green FDI: Practices And Lessons From The Field, UNCTAD (2016).

[193] Defining and Measuring Green FDI: An Exploratory Review of Existing Work and Evidence, OECD Working Papers on International Investment (2011).

[194] Promoting Green FDI: Practices And Lessons From The Field, UNCTAD (2016).

[195] Promoting Green FDI: Practices And Lessons From The Field, UNCTAD (2016).

Further, it can stimulate improvement of environmental compliance by incentivizing good performance.

The overall aim of the policy should be to manage and reduce the overall footprint of each industrial project. Tripura too can reap the economic, environmental, and social benefits outlined above by devising a policy with a similar framework.

In the case of Tripura, it is especially important to implement such a policy as the state is part of one of the two ecological "hot spots" of India among 18 such regions in the world. The state is home to 1463 of the 17,000 species, 8.6% of Angiosperms (flowering plants), known in India. 15 rare or threatened varieties of flora are found in Tripura as well.[196]

In terms of faunal diversity, 129 species of fish from 32 families and 11 orders have been recorded in Tripura, and fishes include 11 vulnerable species, 3 endangered species, and 3 rare species.[197] Besides this, 32 amphibian species (including 3 species of freshwater turtles and tortoises and 3 species of water snakes, at least 13 species of lizards including 2 species of monitor lizards, both endangered) are found in the state.[198] Excluding water snakes, at least 13 other species of snakes can also be found here while the invertebrate fauna includes 27 species of Protozoans, 30 species of Crustaceans, 10 species of Rotifers, 2 species of annelids, 14 species of insects, and 6 species of Mollusca.[199] The state's freshwater ecosystem harbors a wide variety of fauna.

90 species of mammalian fauna, more than 33% of India's total known mammalian fauna, have been recorded in Tripura as well.[200] Of the 15 primate species of India, 7 species and avian fauna in the state comprises 341 species of which 77 species are migratory winter birds.[201] Though it accounts for only 0.4% of the total geographical area of India, Tripura exhibits more than 25% of the avian species diversity of the country. Species facing population decline include the common Tree Shrew, the Indian Bison, the Chinese Pangolin, the Hoolock Gibbon, Indian Elephant, and the Jackal.

Keeping in mind the wide variety of floral and faunal diversity found in Tripura, and the potential threats posed to their sensitive habitats by industrial activity, it is imperative that the state implement a green industrial policy in order to achieve long-term sustainable growth while also improving the quality of the environment, plugging resource wastage, benefitting from the socio-economic gains of green industry, and attracting big investors who are necessary to induce industrial growth.

Various steps to address environmental concerns have already been taken in Tripura. According to the state's Action Plan on Climate Change (2017)[202], its high dependence on power (electricity) generated through gas thermal route is a major source of pollution. To combat this, the state's Solar Mission aims at promoting the development and use of solar energy for power generation and other uses, as well as to render solar energy competitive with fossil-based energy options in urban areas, industry, and commercial establishments. Further, its State Water Mission Action Plan aims to increase water use efficiency, promote river conservation through sewerage management, and aid reclamation and conservation of large wetlands like Rudra Sagar and Hurijala, among other things. A green industrial policy will help supplement these measures by managing the impact of industrial activities.

For this, the development of sound **common effluent and sewage treatment plants** in the state's industrial parks has been proposed. They will broaden access of such technology for small-scale industries. Further, as these will enable the removal of toxic and non-toxic contaminants from water and making it usable for various industrial purposes, this infrastructure will help in meeting the following green objectives—

i. Reducing the impact of industrial activity through discharge/ emission on the environment
ii. Promoting efficient reuse of water

Beyond this, a green industrial policy in Tripura could become a potent instrument to achieve other objectives including the reduction of environmental impact of industrial activity, the improvement of resource efficiency, the

[196] Bio-Diversity, ENVIS Centre: Tripura State Pollution Control Board (http://trpenvis.nic.in/test/biodiversity.html).
[197] Bio-Diversity, ENVIS Centre: Tripura State Pollution Control Board (http://trpenvis.nic.in/test/biodiversity.html).
[198] Bio-Diversity, ENVIS Centre: Tripura State Pollution Control Board (http://trpenvis.nic.in/test/biodiversity.html).
[199] Bio-Diversity, ENVIS Centre: Tripura State Pollution Control Board (http://trpenvis.nic.in/test/biodiversity.html).
[200] Bio-Diversity, ENVIS Centre: Tripura State Pollution Control Board (http://trpenvis.nic.in/test/biodiversity.html).
[201] Bio-Diversity, ENVIS Centre: Tripura State Pollution Control Board (http://trpenvis.nic.in/test/biodiversity.html).
[202] State Action Plan on Climate Change 2017: Tripura (https://moef.gov.in/wp-content/uploads/2017/09/TRIPURA.pdf).

reduction of climate change impacts, the promotion of a green transport network, the creation of a green circular economy, and the practice of green procurement and sustainable finance. To achieve these objectives, measures similar to those suggested in the greening plan for the Visakhapatnam–Chennai Industrial Corridor could be included in the proposed policy. Some of these measures include:

a. Reduction of environmental impact of industrial activity: by building CETPs for effluents with similar characteristics and kinetics with zero discharge, developing green belt along all the roads of project areas; using Power Purchase Agreements (PPA) to buy renewable energy for all companies; buildings/ townships with “Green Building” certifications in industrial areas; and using organic waste in Waste to Energy plants to generate electricity.

b. Improvement of resource efficiency: by using alternative aggregate material like fly ash, steel slag in roads and buildings; adopting resource, energy and water efficient technologies; using waste heat to produce electricity or transferring waste heat to other processes; developing infrastructure for inter-modal transport system; rainwater harvesting; and reusing treated waste-water/effluent.

c. Promoting a green transport network: by developing inter-modal and co-modal transport systems; constructing dedicated heavy movement traffic lanes; developing traffic management tools and efficient public transportation with good connectivity; and switching to e-vehicles.

d. Creating a green circular economy: by developing guidelines to imbed the concept of a circular economy in the state; and setting up authorized recyclers for e-waste, hazardous waste, rare metals, ferrous material to promote industrial reuse of industries to use recycled waste.

e. Practicing green procurement and sustainable finance: by increasing the reuse of raw materials; producing and procuring green products with eco-labelling; adopting better standards like ISO 14000, 140001, 9000 etc.; providing differential subsidy schemes under MSME; providing electricity, financial loans in favor of companies adhering to environmental legislations; and creating a platform where MSMEs can get finance from international financial instruments for greening measures.

Further, to encourage the adoption of greening measures across industrial units in the state, fiscal incentives similar to those offered by Tamil Nadu under its Green Industry Incentive, part of its Industrial Policy 2021, can be provided by Tripura too. These include:

1. Special Incentive for green industries in the sunrise sectors: incentives of up to INR 1 Crore

2. Special Incentives for Industrial Parks: Green industries can be given a 25% subsidy on cost of capital of setting up of such undertakings. The subsidy amount can have an upper limit of INR 5 Crore.

3. Special incentives for R&D projects: a 25% subsidy on cost of capital of setting up of such undertakings for 5 years, subject to a ceiling of up to INR 1 Crore

4. Special Incentives for Foreign Direct Investment: a 25% subsidy on cost of capital of setting up of such undertakings for 5 years, subject to a ceiling of up to INR 1 Crore

5. Special incentives for Sub-Large Projects: a 25% subsidy on cost of capital of setting up of such undertakings, with a ceiling of INR 1 Crore, can be given to projects for setting up environmental protection infrastructure. This could include the cost of setting up such infrastructure for safety and energy efficiency solutions, water conservation solutions greening solutions and pollution control solutions.

5. Policy Based Loan

5. Policy-Based Loan

Policy-based loans, or PBLs, are a form of a budgetary support provided by the ADB to state governments in order to facilitate the governments to undertake policy reforms and/or institutional changes in a particular sector or subsector. The PBLs provide flexible, liquid funding. The following sections highlight the various policy areas which will benefit from reform and intervention, and act to make Tripura more investment attractive. As part of this project readiness financing, ADB might consider financing the infrastructural and institutional reforms identified below.

Table 46: Policy initiatives for PBL

Policy Areas/Objectives	Description	Proposed action plan
Capacity building	Improvement of land allotment policy	Revise the current land allotment policy to address issues such as cancellation of allotment, mandatory documents required during allotment etc.
	Capacity building of TIDC	Organizational structure and business plan that should include, among others, streamlined decision-making, and strategy for industrial growth
	Capacity building of DIC	Organization structure, functions, roles and responsibilities of DIC staff
Ease of doing business	New industrial and sector-specific policies	Revised industrial policy with classification of industries based on size of investment, sectoral policies to attract investments in priority sectors
	State-wide single desk policy operationalized	It aims to create a one stop shop to provide all necessary clearances/ renewals for starting and operating an industry
	Development of an e-portal for doing business	e- Portal has been established under the Single Desk Policy for online applications for doing business and related government incentives.
	Availability of Computerized database of lands for industrial nodes	A computerized database on lands is available.
Industrial development support	Establishment of a Project development mechanism	The roadmap identifies the objective of the Project Development Mechanism is to enhance readiness of projects in the industrial park by taking advance actions to prepare the projects. It also lays out the Project Mechanism, its management, for planning and preparing infrastructure projects in industrial parks. This can be developed as an organ within the TIDC.
Ecological protection	Development of a green industrial policy and framework	The aim is to identify environmentally suitable location for industries and necessary policy decisions to ensure minimum impact on environment keeping in mind the upcoming development and environmental challenges from this project.

Out of the various areas that have been identified as needing policy-level interventions, **capacity building** is the first. This refers to improving existing infrastructure in order to better equip Tripura to attract investors.

To begin with, it is important to improve the state's land allotment policy. This involves revising the existing policy in order to address various issues, especially the procedure of cancellation of allotments, and the norms relating to the mandatory documents required while applying for allotments. Having a clearly laid out allotment policy is an important way to reduce business risks— the security of land rights is not only an important component of a location's ease of doing business but can protect the interest of the host location's government as well.

Besides this, the state could invest in improving the organizational structure of the TIDC and ensuring the streamlining of decision-making. Currently, the organisational structure of the TIDC as compared to similar bodies in other Indian states, is relatively ambiguous. A clear organisational framework outlining the functions, roles, and responsibilities of the TIDC, should be developed. The organisational structure of similar bodies like the Andhra Pradesh Industrial Infrastructure Corporation or the Maharashtra Industrial Development Corporation could be examined for this. Also, institutional development and human resources improvements can be focused on. These reforms should cover both individual (personnel) and organizational capacity building needs. Similar capacity building can be undertaken for the DICs too.

The second area needing policy intervention is the state's **Ease of Doing Business** measures. To improve EoDB, it is important to roll out a new industrial policy that focuses on specific sectors, especially the state's identified priority sectors. This revised policy can include on reexamining classification of industries as well.

The EoDB bench-marking analysis shows that though Tripura performs well overall, it can still adopt the practices of states like Andhra Pradesh and Haryana to make increase EoDB within the state as various clearance processes remain time consuming. Streamlining these would help in further improving investor experience and lead to better outcomes in terms of attracting investments.

Another important need is operationalizing a state-wide single desk policy which aims to create a 'one stop shop' providing all the necessary clearances/renewals for starting and operating an industry. The existing SWAAGAT portal may also be improved. Additionally, an important resource to increase EoDB is a computerized database of lands available for industrial nodes. This can be made available on the SWAAGAT portal itself. The MIDC, for instance, already provides an online service that provides information on both allotted and available industrial land.

Finally, various policy changes aimed at improving **industrial development support** should be considered. As part of this, the first requirement is the setting up of a project development mechanism, which involves the creation of a mechanism or system that will enhance readiness of the state to execute proposed projects through advance actions. It will also contain information of the projects' specific needs which will help plan out infrastructure across Tripura's industrial parks. The framework should be used to identify priority projects, based on their ability to bolster the growth of industry. This will help fast-track the growth of industrial parks as projects with the best prospects will be prioritised, and will also ensure efficient and optimal allocation of scarce resources like land.

There is also a need to develop a **green industrial policy** and framework whose objective will be to identify environmentally suitable location for industries, and to devise the necessary policy actions to minimise the environmental impact of upcoming developmental pursuits.

The table below provides a tentative phasing plan for the implementation of the interventions:

Table 47: Intervention Phasing Plan

Policy Areas/Objectives	Description	Year 1	Years 2-3
Capacity building	Improvement of land allotment policy	Preparation and Approval of policy.	Implementation of new policy; proof of

Policy Areas/Objectives	Description	Year 1	Years 2-3
			implementation of policy.
	Capacity building of TIDC	Creation of relevant new departments; computerization of all operations.	Undertake capacity development of personnel, Creation of Price Fixation Committee.
	Capacity building of DIC	Focus on institutional reforms; computerization of all operations.	Undertake capacity development of personnel, development of entrepreneurship guidance cell.
Ease of doing business	New industrial and sector-specific policies	Preparation and approval of sector specific policies	Approval to at least 3 industries for the incentives as per the new policy
	State-wide single desk policy	DOI report on single desk policy	Approval for at least 5 industries
	Development of an e-portal for doing business	Operational e-portal system	DOI report on e-portal operations
	Availability of Computerized database of lands for industrial nodes	Survey reports on the website	Computerised database on website
Industrial development support	Establishment of a Project development mechanism	PDM established to enhance readiness of infrastructure projects in the state.	Operationalisation of PDM.
Ecological protection	Development of a green industrial policy and framework	Approval of green industrial policy	Implementation of new policy; proof of implementation of policy.

Undertaking these reforms, coupled with a conducive policy environment, will help make Tripura an attractive investment site for industries.

6. Conclusion

6. Conclusion

In conclusion, in this document, the priority sectors important to Tripura's economic growth and policy measures that will lead to positive outcomes for industrial development in the state have been outlined. This will help the state attract investments and spur industrial expansion, helping it achieve its growth objective under the Lakshya 2047 plan and support India's 5-Trillion-economy plan.

Owing to its rich natural resource base, and geographic proximity as well as its language and cultural linkages with neighboring countries, Tripura has the potential to attract investments in the food processing, rubber, and bamboo sectors.

Food processing has the potential for exports, specifically pineapple and jackfruit. The rubber and bamboo industries have easy access to raw material in the region and are supported by domestic and regional demand. 31 products have been identified across the three sectors which can be manufactured in Tripura.

The TIDC has set up 17 Industrial Parks in the state so far in order to help the growth of the industrial sector in the state, with special focus on the aforementioned sectors. While some of these are currently being developed, 11 are already operational, namely the Bodhjungnagar Park, the RK Nagar Park, the Sarasima IIDC, the Dharmanagar IIDC, the AD Nagar Park, the Santirbazar IIDC, the Kumarghat Park, the Dewanpasa IIDC, the Dukli Park, and the Badarghat Park.

Although the parks have been able to attract investors already owing to the infrastructural support they provide, it is important to formulate an industrial policy that moves beyond the provision of infrastructural support to industry and takes steps to provide benefits that make investing in a particular location attractive and viable. Benefits of this kind can be broadly categorized as fiscal and non-fiscal.

Four specific policy areas needing intervention have been identified. The policy areas and the recommendations for each have been summarized below:-

A. **Incentives**: refer to policy actions that incite or tend to incite action, in this case attracting investments. These can be fiscal or non-fiscal in nature. While fiscal incentives involve the provision of financial support to investors, non-fiscal ones are aimed at improving investor experience in a particular location. These usually involve the rolling out of Ease of Doing Business policies.

   Tripura has already announced various **fiscal incentives** to attract investments as part of its Industrial Policy. However, a benchmarking analysis indicates that other states in India provide more comprehensive incentives. On examining the policies of states like Andhra Pradesh, Gujarat, Haryana or neighbouring Assam, it is recommended that the state provide a more comprehensive set of incentives to its investors. These could include:

   a. Capacity-based incentives
   b. Tailored incentives for mega industries
   c. Early bird incentives (for greenfield/sunrise sectors)
   d. Technology upgradation incentives
   e. Skill development subsidies
   f. Sector-specific incentives to thrust sectors
   g. Assistance for environmental compliance
   h. Incentives for private sector infrastructure developers
   i. Subsidies on costs incurred during feasibility studies and project reports
   j. Subsidies on costs incurred for quality control measures

   As for non-fiscal incentives, aimed at improving overall EoDB and investor experience, the Tripura government has already established the "Single Window Approval by All Government Agencies in Tripura (**SWAAGAT**)" portal, which allows investors to acquire all the required clearances from the government on a single portal. Here, again, a benchmarking analysis shows that Tripura can adopt the practices and procedures of the states that rank higher than it in terms of ease of doing business in order to further streamline its clearance processes. Besides that, Tripura could also implement the following EoDB measures:

a. Creation of portals to centralize specific steps of the clearance process, like AP's inspection portal.
b. Development of effective online help desks and support cells to address investors' queries and grievances.
c. Identification and repealing of any unnecessary or antiquated regulatory clearance procedures and requirements.

B. **Efficient organisational structure**: in order to create an investor-friendly business environment, it is of critical import to have supporting institutions and organisations. These must be streamlined and efficient in order to effectively support investors. Tripura currently has a state-level organisation, the Tripura Industrial Development Corporation Ltd, which aims to act as a catalyst in the process of the promotion and the development of industries in the state, and to create industrial infrastructure in order to support economic development. At the district level, a similar function is carried out by the District Industries Centers of the state which serve as focal points for the development of small-scale and cottage industries. In order to equip the TIDC to serve as a sound investor support body, the following measures have been recommended:

Proposed Intervention	Description
Creation of various specialised departments	a. While the TIDC may still continue to have a lean structure, it is important to create departments to address specific investor and institutional needs. Some departments that could be added to include Engineering, Electricity, Land Planning, Town Planning, and Asset Management departments. b. an Environment department: Such a department, similar to the MIDC's Environment department, is necessary for disseminating information about environmental regulations among industrial units and providing advice on environmental implications of town planning activities and new policies. This is a critical addition to the TIDC as Tripura lies on ecological hotspots.
Creation of Industrial Areas Service Societies	Such societies can promote local self-governance within industrial areas. This decentralized administrative setup with the TIDC as facilitator can increase efficiency of the day to day running of industrial areas.
Improvement of investor support services	Having dedicated Pre-Allotment and Post-Allotment departments to ease the process of securing and managing allotments will help ease regulatory burdens considerably on investors. Further, the addition of a department akin to AIDC's Udyog Sahayak Department, dedicated to processing applications of eligible units under the state's industrial policy, can also be considered.
Transfer of certain statutory powers of local bodies like municipal corporations	Such a transfer of powers to the TIDC will help facilitate the simplification of regulatory processes in the management of industrial estates.
Creation of specialised bodies	a. A Price Fixation Committee: for the implementation of land allotment regulations b. A body to implement the Project Development Mechanism: to help prioritise the most suitable projects and take advance actions to prepare for the same

The following measures can be taken to improve the institutional quality of the DICs:

a. carrying out district level surveys to better provide opportunity guidance to MSMEs, and to identify challenges to industrial growth
b. ensuring the timely granting of various approvals/clearances
c. facilitating credit access for MSMEs
d. organising trade fairs, expos etc. to broaden market access
e. creating an entrepreneurship guidance cell in collaboration with reputed academic institutions, industry, and sectoral/technical experts to guide industries and providing business advisory services to improve manufacturing
f. maintaining records of project profiles, technical data, and other useful literature for entrepreneurs
g. conducting regular meetings with MSMEs to resolve their issues
h. implementing district-level loan schemes
i. ensuring timely disbursal of subsidies under various state and central level schemes
j. providing skilling support
k. promoting technology adoption among MSMEs, and supporting technology transfer and commercialization
l. teaching innovation and new product development skills
m. promoting energy efficient manufacturing skills.

The performance of state level developmental bodies and DICs, however, can be hindered by several factors. In such a scenario, these bodies are unable to provide the required support for industrial development at the district level. Also, any mismatch between the functional roles assigned to the staff of such bodies and the actual roles they perform can hinder the completion of the tasks and the fulfilment of the industrial and organisational objectives. Tripura must ensure that investor support institutions like the TIDC and the DICs do not face similar hindrances. This can be achieved through institutional reforms like the ones listed below:

a. initiating capacity building measures at the organisational and personnel levels that can equip the TIDC and the DICs to support investors better
b. undertaking institutional reform measures
c. doing away with redundant regulatory processes to increase efficiency of the functioning of the TIDC and DICs
d. facilitating adoption of IT infrastructure to improve procedural efficiency
e. ensuring the clear articulation of roles and responsibilities of both bodies, and each department and personnel within them
f. facilitating regular stakeholder feedback to gauge any gaps in the functioning of the TIDC and DICs and taking steps to address the same.

C. **Sound land allotment policy**: an efficient and comprehensive land allotment mechanism is a basic component of any industrial policy as it streamlines the allocation of land resources to industries and investors.

In Tripura, currently, investors can apply for land which is then leased to them for a specific period. However, there is still a need for a clearly formulated land allotment policy as no such policy exists. Based on the examination of the land allotment policies of states like Andhra Pradesh, the provisions that could be included in the proposed land allotment policy of Tripura have been selected. These are listed below:

a. Constituting a Price Fixation Committee and a description of its roles and responsibilities
b. Outlining guidelines for fixation of allotment prices, special, concessional and targeted pricing (to incentivise investments), and the payment scheme and modes
c. Listing processes of allotment of land, including auctions
d. Outlining guidelines for provisional allotments
e. Listing rules for allotment of premises for necessary non-industrial activities
f. Laying out rules for allottees, including for switch over of premises/alternate plots, transfer of allotments, and permissions for sub-letting of premises
g. Outlining timeline of projects

h. Setting out the processes for monitoring, cancellation and withdrawal of allotments
i. Providing a grievance redressal mechanism for all stakeholders.
j. Developing an online portal for information on land availability in industrial parks

This will help clarify important procedures lease cancellation and act to protect the interests of all stakeholders— the allotting body as well as the allottees.

D. **Green Industrial Policy:** It is important for Tripura to implement a green industrial policy to safeguard its diverse ecological capital and the environment while also pursuing sustainable and inclusive growth. From the discussion above, it emerges that the presence of such greening policy measures is important to investors when making investment decisions. This is especially true for large foreign firms. In order to both attract such firms to aid industrial growth in the state and to enjoy the socio-economic benefits of long-term sustainable growth, therefore, Tripura should consider rolling out such a policy.

The proposed provisions, based on an examination of the measures suggested in the greening plan for the Visakhapatnam–Chennai Industrial Corridor, for this policy include:

a. a. the development of sound common effluent and sewage treatment plants in the state's industrial parks has been proposed. Such common plants will broaden access of such technology for small-scale industries. Further, as these will enable the removal of toxic and non-toxic contaminants from water and making it usable for various industrial purposes, this infrastructure will help in meeting the following green objectives—

    i. Reducing the impact of industrial activity through discharge/ emission on the environment

    ii. Promoting efficient reuse of water

b. Reduction of environmental impact of industrial activity: by building CETPs for effluents with similar characteristics and kinetics with zero discharge, developing green belt along all the roads of project areas; using Power Purchase Agreements (PPA) to buy renewable energy for all companies; buildings/ townships with "Green Building" certifications in industrial areas; and using organic waste in Waste to Energy plants to generate electricity.

c. Improvement of resource efficiency: by using alternative aggregate material like fly ash, steel slag in roads and buildings; adopting resource, energy and water efficient technologies; using waste heat to produce electricity or transferring waste heat to other processes; developing infrastructure for inter-modal transport system; rainwater harvesting; and reusing treated waste-water/effluent.

d. Promoting a green transport network: by developing inter-modal and co-modal transport systems; constructing dedicated heavy movement traffic lanes; developing traffic management tools and efficient public transportation with good connectivity; and switching to e-vehicles.

e. Creating a green circular economy: by developing guidelines to imbed the concept of a circular economy in the state; and setting up authorized recyclers for e-waste, hazardous waste, rare metals, ferrous material to promote industrial reuse of industries to use recycled waste.

f. Practicing green procurement and sustainable finance: by increasing the reuse of raw materials; producing and procuring green products with eco-labelling; adopting better standards like ISO 14000, 140001, 9000 etc.; providing differential subsidy schemes under

MSME; providing electricity, financial loans in favor of companies adhering to environmental legislations; and creating a platform where MSMEs can get finance from international financial instruments for greening measures.

g. Incentives to support greening measures: The measures rolled out by Tamil Nadu under its Industrial Policy 2021, have been suggested for Tripura as well. These include:

i. Special Incentive for green industries in the sunrise sectors: incentives of up to INR 1 Crore

ii. Special Incentives for Industrial Parks: Green industries can be given a 25% subsidy on cost of capital of setting up of such undertakings. The subsidy amount can have an upper limit of INR 5 Crore.

iii. Special incentives for R&D projects: a 25% subsidy on cost of capital of setting up of such undertakings for 5 years, subject to a ceiling of up to INR 1 Crore

iv. Special Incentives for Foreign Direct Investment: a 25% subsidy on cost of capital of setting up of such undertakings for 5 years, subject to a ceiling of up to INR 1 Crore

v. Special incentives for Sub-Large Projects: a 25% subsidy on cost of capital of setting up of such undertakings, with a ceiling of INR 1 Crore, can be given to projects for setting up environmental protection infrastructure. This could include the cost of setting up such infrastructure for safety and energy efficiency solutions, water conservation solutions greening solutions and pollution control solutions.

Therefore, it is important for Tripura to undertake the policy interventions discussed above to gain a competitive edge over other potential investment sites and to offset any locational disadvantages. Such interventions will help increase investment inflow into the state and will catalyse growth and development in the region.

The way forward: A summary of all the recommendations provided below outlines the key elements needed for devising an effective industrial policy for Tripura.

S. no	Area of policy intervention	Proposed interventions
1.	Industrial policy framework: developing a policy that addresses various investor needs.	Fiscal Incentives: a. Capacity-based incentives b. Tailored incentives for mega industries c. Early bird incentives (for greenfield/sunrise sectors) d. Technology upgradation incentives e. Skill development subsidies f. Sector-specific incentives to thrust sectors g. Assistance for environmental compliance h. Incentives for private sector infrastructure developers i. Subsidies on costs incurred during feasibility studies and project reports j. Subsidies on costs incurred for quality control measures
		Non-fiscal incentives: a. Creation of portals to centralize specific steps of the clearance process, like AP's inspection portal. b. Development of effective online help desks and support cells to address investors' queries and grievances. c. Identification and repealing of any unnecessary or antiquated

	regulatory clearance procedures and requirements. d. streamlining the process of acquiring clearances/licences/NOCs e. creation of a specialised investment promotion agency
	Sector specific incentives: 1. **Bamboo**: subsidies for propagation and cultivation, development of bamboo treatment and seasoning plants, and bamboo carbonisation plants b. subsidies for the establishment of processing units for value addition to bamboo c. promotion and development of infrastructure for bamboo depots and godowns d. promotion of bamboo mandis, rural haats, and bamboo bazaars, e. upgradation of tools, equipment and machinery in common facility centres f. skill development and research and development support measures g. grants for innovative startups in the bamboo and cane sector. 2. **Rubber**: a. schemes for procurement of rubber from growers and tappers at standardized profitable rates b. ensuring security of land and assets owned by rubber plantation companies c. restricting felling of rubber trees, d. specific tax breaks to MSMEs manufacturing rubber products for pre-defined periods e. tax allowances on capital investments for rubber processing incentives. 3. **Food Processing:** a. Technology upgradation support for acquiring new/upgraded equipment b. subsidies on cost of setting up primary processing centres and primary collection centres c. subsidies on cost of setting up of cold chain infrastructure for agriculture/horticulture d. Reimbursement of power consumption charges e. Reimbursement of Non-Agriculture Land Assessment (NALA) tax for the produce purchased directly from farmers. f. Marketing cess waiver for produce purchased direct from farmers g. Subsidy on the cost of reefer vehicles h. Subsidy for setting up/upgrading testing labs. i. differential power tariff subsidies based on the energy consumption of different equipment
	Gender-responsive policy measures: a. arrangements for flexible working-times b. provision of childcare facilities like creches at the workplace c. measures to support female entrepreneurship d. developing gender inclusive skilling centres e. developing gender inclusive transportation
	Technology based solutions: a. developing ‘smart industrial park’ infrastructure like ICT support (through optical fibre networks), climate resilient infrastructure like utility corridors b. adoption of SCADA systems c. Digitization of all operations of TIDC, DICs

2.	Efficient organisational structure: developing transparent, effective investor support bodies	1. TIDC: a. creation of various specialised departments b. creation of Industrial Areas Service Societies c. improvement of investor support services d. Transfer of certain statutory powers of local bodies like municipal corporations e. creation of specialised bodies 2. DICs: a. providing opportunity guidance to entrepreneurs. b. keeping records of information about local sources of raw materials and their availability. c. disseminating information about various government schemes, subsidies, grants and assistance available from the other corporations set up for promotion of industries. d. advising entrepreneurs on investments. e. serving as the link between entrepreneurs and financial institutions in the district. f. implementing government sponsored schemes for educated unemployed persons like PMEGP, SAROTHI , and SVAYEM g. organize exhibitions and trade fairs to provide marketing exposure to first generation entrepreneurs. 3. Overall capacity and institutional development
3.	Land allotment policy	The proposed policy should include the following provisions: a. Constituting a Price Fixation Committee and a description of its roles and responsibilities b. Outlining guidelines for fixation of allotment prices, special, concessional and targeted pricing (to incentivise investments), and the payment scheme and modes c. Listing processes of allotment of land, including auctions d. Outlining guidelines for provisional allotments e. Listing rules for allotment of premises for necessary non-industrial activities f. Laying out rules for allottees, including for switch over of premises/alternate plots, transfer of allotments, and permissions for sub-letting of premises g. Outlining timeline of projects h. Setting out the monitoring, cancellation and withdrawal of allotments i. Providing a grievance redressal mechanism for all stakeholders j. Developing an online portal for information on land availability in industrial parks
4.	Green industrial policy framework	The proposed policy should aim to: a. development of common effluent and sewage treatment plants in the state's industrial parks b. provide incentives for industries implementing greening measures c. reduce environmental impact of industrial activity d. improving resource efficiency e. developing a green transport network f. creating a green circular economy g. practicing green procurement and sustainable finance
5.	Policy measures to increase market access: this is not only important to support the growth of	a. developing port terminal infrastructure b. setting up a network of primary processing and collection centres c. measures to link primary processing and collection centres to processing units for secondary and tertiary level processing d. developing road transport links from food processing hubs to Maitri

	the thrust sector, but also in addressing a key investor concern (scope of market access)	Setu e. developing access roads to Maitri Setu from rubber processing units f. steps to develop border haats and integrated check posts (ICPs) g. developing a sound regulatory framework with clearly articulated tariff and rate regulations h. ensuring policy harmonization with Bangladesh i. measures to speed up transportation (like drive-through checkpoints)
6.	Sector-specific incentives: to support thrust sectors	a. providing tailored fiscal and non-fiscal incentives for each sector b. developing sector-specific infrastructure c. planning measures for relevant skill development

7. Annexures

Existing national and state-level incentives:

Existing Incentives/Policies	
GoI Incentives	Special Economic Zones Act
	Incentives under the Income Tax Act
	Credit Guarantee Trust Fund for MSMEs
NER-specific Incentives	North East Industrial Development Scheme
	North East Special Infrastructure Development Scheme
	North-Eastern Development Finance Corporation (NEDFi)
	North East Venture Fund
State-level Incentives Scheme	Tripura Industrial Investment Promotion Incentive Scheme (TIIPIS), 2022

Thank you