



Unlocking Economic Synergy: Analyzing Collaborative Opportunities Between Adani Vizhinjam Port And Industries Within 250 Km

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KEYWORDS

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ABSTRACT:

Purpose: Explore synergies between Adani Vizhinjam Port and local industries within 250 km radius, aiming to transform it into India's primary transshipment hub.

Theoretical framework: Regional economic integration, strategic alliances, port logistics, supply chain management, economic geography, and industrial clusters inform collaboration for mutual benefit.

Design/methodology/approach: Integrating qualitative (interviews, case studies) and quantitative (data analysis, SWOT, scenario planning) methods to assess regional industries.

Findings: Findings unveil regional industries, status, collaboration potential with Adani Vizhinjam Port, identifying synergies, mutual benefits, and challenges/opportunities in transshipment.

Research, Practical & Social implications: Practical implications include actionable recommendations for collaborative efforts, potentially boosting economic activities, job creation, and infrastructure, benefiting both the port and the local community.

Originality/value: This research uniquely explores synergies between Adani Vizhinjam Port and local industries, offering strategic insights for transforming transshipment dynamics in India.

1. Introduction

The outbreak of globalization, began centuries ago. Colonization and discovery voyages supplemented this process Yan and Chen (2023). Globalization as seen today was encouraged by the invention of shipping containers Steger (2023). The spatial separation of production from the consumption with added services to the overall supply chain function at cheaper locations owing to containerization, has led to the evolution of a complex maritime based logistical system and the emergence of ports as a crucial element in the form of a gateway for trade Winter (2017). The continual growth in world trade has not only transformed shipping but also ports Heilig et al. (2017). The increasing competition to meet the global market demands has intensified inter-port competition, changing the function of ports and accelerating the evolution process Parola et al. (2017). Evolution ports to hubs of trade, has developed an intricate system intervened with accessibility and centrality Peng et al. (2019).

These hubs are characterized with strong links between cities with long standing maritime infrastructure supplement by a system of railways and canals Conventz and Thierstein (2016). There is also an emergence of economic zones around major ports highlighting a shift from colonial to a modern economy-based change Crowther et al. (2016).

With a coastline extending over 7,517km, the Indian peninsula lies strategically close to two major shipping routes, namely, east-west route and the Suez Canal route. Being one of the fastest developing economies in the world, the need for India to enter the global shipping industry is strategically important for the country to accelerate the economic growth of the country Dixit et al. (2022). According to the Ministry of Shipping, around 95% of India's trading by volume and 70% by value is done through maritime transport Dasgupta (2018). The problem in question which is to be studied is to explore the industries at



a radius of 250km from the Vizhinjam port and how the Vizhinjam port can be used by these industries whether to source their raw materials or to export their final products. The present study is stated as “An analysis on industries situated within 250km from Adani Vizhinjam Port in Kerala”

The research objectives of the study include the following:

- To find and analyse the industries within a radius of 250 km from Adani Vizhinjam Port.
- To find how these industries can associate with Adani Vizhinjam Port either to collect their raw materials or to import their finished products. The remaining part of the paper is arranged as follows. Methodology in Section 2, Data Analysis and Interpretation in Section 3 and Conclusion and future scope of the work in Section 4

2. Data And Methodology

2.1 Data Collection

The data used in this study is secondary data, which have already been collected by some other persons for their purpose and published. Secondary data are usually in the shape of finished products.

Two types of secondary data were collected for the preparation of the project work:

- Internal Data was generated from the company’s brochures, manuals, and annual
- External Data, on the other hand, was generated from magazines, research books, and the internet (websites).

2.2 Instruments used Simple statistical tool like percentages were used to analyses the collected data. Statistical diagrams like bar diagram, pie chart etc. were also used to present the collected data.

3. Results And Discussion

Kerala is a consumer state and is dependent on other states for the majority of its needs, even though we have some industries which contribute to our economy greatly. The major industries within 250 km of Vizhinjam Port in Kerala and hence can benefit from the port services are given below:

- Cashew Industry
- Marine products Industry
- Coir Industry
- Spice Industry
- Tea Industry

3.1 Cashew industry

The cashew industry is a major traditional agro-based industry in Kerala. It is estimated that

Table 1 – Export of cashew kernels, Kerala and India, 2014-15 to 2019-20 in Rs. crore

Year	Kerala		India		Share of Kerala (%)	
	Quantity (MT)	Value (Rs. crore)	Quantity (MT)	Value (Rs. crore)	Quantity (MT)	Value
1	2	3	4	5	6	7
2014-15	68150	3098.8	118952	5432.9	57.3	57.0
2015-16	50652	2579.5	96346	4952.1	52.6	52.1
2016-17	38054	2415.3	82302	5168.8	46.2	46.7
2017-18	36930	2580.4	84352	5871.0	43.8	44.0
2018-19	29062	1892.6	66693	4434.0	43.6	42.7
2019-20	30478	1742.5	67647	3867.2	45.1	45.1

the sector employs about 3,00,000 workers and 90 percent of them are women. There are two public institutions engaged in the cashew processing industry in Kerala, namely Kerala State Cashew Workers Apex Industrial Co-operative Society Ltd. (CAPEX) and Kerala State Cashew Development Corporation (KSCDC).

In the last decade in Kerala, there has been a continuous and considerable decline in both area and production of cashew. The production which stood at 34.75 thousand metric tonnes in 2010-11 declined to 19.44 thousand metric tonnes in 2019- 20, with a

decline in the area from 43.85 thousand ha to 39.89 thousand ha during the same period. Productivity of the crop which was around 793 kg per ha in the year 2010-11 also showed a decline to 487 kg per ha in 2019-20 seriously affecting the prospects of the crop. Even though the cashew kernel exports from India in 2019-20 indicated an increase of 954 tonnes at 67,647 tonnes.

The value realization witnessed a decline of 566.82 crores compared to 2018- 19. The total realization was 3867.17 crores. This decline in the value is due to a price war between Vietnam. According to the



Food and Agriculture Organization of the United Nations, in 2019 Vietnam produced about 2.66 million tons of cashews, including their shells, a 23% increase from the previous year. That was 3.4 times more than India, the world's second-biggest producer, making Vietnam the undisputed leader. In 2019 Vietnam exported about 370,000 tons of nuts or 14% of its total production. That also makes the country the world's top exporter by volume, according to the Vietnam Cashew Association.

India exported cashew kernels mainly to U.A.E, USA, Netherlands, Japan, Saudi Arabia, Germany, Spain, France, and Kuwait. From table 6.1, we can understand that the export of cashew kernels from Kerala increased to 30,478 MT valued at 1,742.5 crores in 2019-20 as against 29,062 MT valued 1,892.6 crores in 2018-19 registering an increase of

4.9 percent in volume and a decline of (-)7.9 percent in value. This decline in value is also due to a price war with Vietnam exporters who are selling their products at a lower price than any other cashew exporting country. Kerala's share in total export of cashew kernels from India in volume has declined from 57.3 percent in 2014-15 to 43.6 percent in 2018-19. Taking the data of import of raw cashew nuts, India imported 9,38,038 MT of raw cashew nuts valued at 8,861.6 crores in 2019-20 as against the import of 8,35,463 MT valued at 10,929.3 crores in 2018-19 recording an increase of 12.3 percent in volume and a decline of 18.9 percent in value. Out of the total import of raw cashew nuts into India, Kerala's share was 13,202 MT valued at 125.5 crores in 2019-20 as against 43,341 MT valued 622.4 crores in 2018-19.

Table 2. Comparison of transportation cost

Port	Distance from the company	Transportation cost
Vallarpadam port	149 km	8940
Vizhinjam port	91.8 km	5508

Comparison between Vallarpadam port and Vizhinjam port based on transportation cost for cashew industry

The shortest distance between the company and the Vallarpadam port (DP World Cochin) is 149 km and it can be taken to calculate the transportation cost. So the transportation cost for traveling 149 km will be 8940 for a fully loaded truck to carry goods from Alphonsa Cashew Industries warehouse to the Vallarpadam port.

The shortest distance between the company and the proposed Vizhinjam port is 91.8km and as earlier it can be taken to calculate the transportation cost as shown in Table 2. So the transportation cost for traveling 91.8 km will be 5508 for a fully loaded truck to carry goods from Alphonsa Cashew

Industries warehouse to the proposed Vizhinjam port.

On analysing the Table 2, it is understood that the cost of transportation will decrease by 38%, if the company choose the proposed Vizhinjam port for their export businesses when compared to the existing Vallarpadam port. This comparison is an approximate estimate assuming that the vehicle used will be 32FT MXL truck.

3.2 Marine products Industry

At national level about 70 per cent of the total fish production is contributed by the inland sector, however at the state level, the share of inland sector is only 33 per cent. The difference in the composition of total production in India and Kerala is brought out in Figure 1.

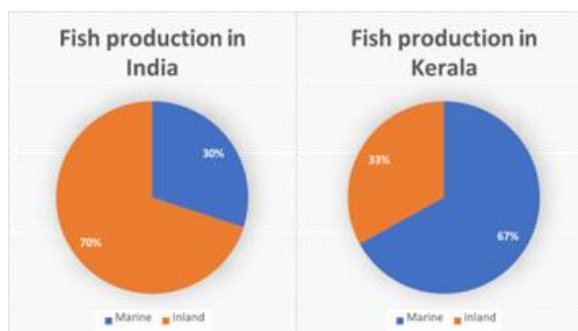


Fig. 1. Fish production in India and Kerala, share of marine and inland fishing



Year	India		Kerala		Kerala's share (%)	
	Quantity	Value	Quantity	Value	Quantity	Value
2014-15	10,51,243	33,441.6	1,66,754	5,166.1	15.9	15.5
2015-16	9,45,892	30,420.8	1,49,138	4,644.4	15.8	15.3
2016-17	11,34,948	37,870.9	1,59,141	5,008.5	14.0	13.2
2017-18	13,77,244	45,106.9	1,78,646	5,919.0	13.0	13.1
2018-19	13,92,559	46,589.4	1,83,064	6,014.7	13.1	12.9
2019-20	12,89,651	46,662.9	1,48,226	5,020.3	11.5	10.8

Fig. 2: Export of marine products in India and Kerala 2014-15 to 2019-20, quantity in MT and value in | Crore

India exported 12.9 lakh MT valued 46,662.9 crore of marine products in 2019-20 as against 13.9 lakh MT valued 46,589.4 crore in 2018-19 recording a negative growth of (-)7.2 percent in quantity and 0.2 per cent increase in value as shown in Figure 2. Export of marine products from Kerala also witnessed a decline in 2019-20. Kerala exported 1.5 lakh MT valued 5,020.3 crore of marine products in 2019-20 as against 1.8 lakh MT valued 6,014.7 crore in 2018-19 registering a negative growth of (-)16.7 per cent and (-)16.5 per cent in terms of volume and value respectively. The largest market for Kerala's marine products was European Union (46,178 MT) followed by South-East Asia (35,513 MT), China

(24,302 MT), USA (14,135 MT), Japan (8,399 MT), Middle East (6,767 MT), and other countries (12,931 MT) which is depicted in figure 3.3. Comparison between Vallarpadam port and Vizhinjam port based on Transportation cost for Marine Products Industry The shortest distance between the AEKK belt and the proposed Vizhinjam port is 198km and as earlier it can be taken to calculate the transportation cost. So the transportation cost for traveling 198 km will be 12870 for a fully loaded truck to carry goods from AEKK belt to the proposed Vizhinjam port as shown in Table 3.

Table 3. Comparison of transportation cost on Marine

Port	Distance from the company	Transportation cost
Vallarpadam port	31.2 km	2028
Vizhinjam port	198 km	12870

3.3 Coir Industry

Kerala is the home of the Indian coir industry, particularly white fiber, accounting for 61 percent of coconut production and over 85 percent of coir products. In Kerala, the Coir PSUs namely Kerala State Coir Corporation and Foam Mat-tings (India) Limited along with Coirfed are engaged in export of coir products. Export from these agencies has been increasing continuously since 2015-16: from 1,072.55 lakh in 2016-17, exports have increased to 1,425.86 lakh in 2019-20 as shown in Figure 3.3. In 2019-20, India exported 9,88,996 MT valued 2,757.9 crore of coir and coir products from India as against 9,64,046 MT valued 2,728.1 crore in 2018-19 registering a growth of 2.6 per cent in terms of quantity and 1.1 per cent in terms of value. In the same year, Kerala exported 2,23,787 MT as against 2,30,000 MT in 2018-19. In 2019-20, 111 countries imported coir and coir products from India. USA topped the importing countries with 25.3 per cent in value and 14.4 per cent in quantity.

China was the second largest importer of coir products from India with a share of 21.9 per cent in value and 35.9 per cent in quantity. The other countries, which imported substantial quantities of coir and coir products, were Netherlands, South Korea, UK, Spain, Australia, Italy, Germany, and Canada. The shortest distance between the company and the proposed Vizhinjam port is 185km and as earlier it can be taken to calculate the transportation cost. So the transportation cost for traveling 185 km will be 11100 for a fully loaded truck to carry goods from Jayasree mills warehouse to the proposed Vizhinjam port. On analysing the Table4, it is understood that there is a huge difference in the cost of transportation. 7872 is what extra money the company has to spend on transportation per truck to do their export businesses through Vizhinjam port. This is same for all the companies in this industry because all the coir processing units are in the Alappuzha district.



Fig 2. Kerala's market-wise export of marine products 2019-20, in per cent

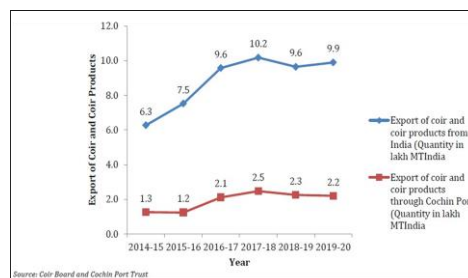


Fig.3. Export trend of coir and coir products from India and Kerala quantity in lakh MT

Table 4 – Cronbach's Alpha and KMO

Port	Distance from the company	Transportation cost
Vallarpadam port	53.8 km	3228
Vizhinjam port	185 km	11100

3.4 Spice Industry

According to the spices board annual report of 2020, despite the Covid-19 pandemic, spices from India continued their upward trend in 2019-20 and have crossed the 3 billion US \$ mark for the first time in the history of spices export. In 2019- 20, 11,83,000 MT of spices and spices products worth 21,51,540.4 lakh was exported from India as against 11,00,250 MT worth 19,50,581.2 lakh in 2018-19 registering a growth of 7.5 percent in volume and 10.3 percent in value.

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Year	Kerala		India		Kerala's share (%)	
	Quantity (in MT)	Value (₹ lakh)	Quantity (in MT)	Value (₹ lakh)	Quantity	Value
1	2	3	4	5	6	7
2014-15	81,555.3	3,28,534.0	8,93,920.0	14,89,967.5	9.1	22.1
2015-16	1,00,076.0	3,90,518.1	8,43,255.0	16,23,823.0	11.9	24.1
2016-17	84,418.8	4,27,120.1	9,47,790.0	17,81,223.6	8.9	24.0
2017-18	95,455.9	4,15,296.1	10,28,060.0	17,98,016.2	9.3	23.1
2018-19	93,036.5	3,77,427.2	11,00,250.0	19,50,581.2	8.5	19.3
2019-20	1,03,635	4,05,861.8	11,83,000	21,51,540.4	8.8	18.9

Source: Spices Board

Fig. 3. Export of spice products in India and Kerala 2014-15 to 2019-20, quantity in MT and value in lakhs.

Comparison between Vallarpadam port and Vizhinjam port based on transportation cost for spice industry:

The shortest distance between spice park and the Vizhinjam port is 235 km and it can be taken to calculate the transportation cost. So the transportation cost for traveling 235 km will be

14100 for a fully loaded 32ft MXL truck to carry goods from spice park to the proposed Vizhinjam port. On analysing the Table 5, it is understood that there is a huge difference in the cost of transportation. 5220 is what extra money the companies have to spend on transportation to do their export businesses through Vizhinjam port.

**Table 5** – Comparison of transportation cost on Spices

Port	Distance from the company	Transportation cost
Vallarpadam port	48 km	8880
Vizhinjam port	235 km	14100

3.5 Tea Industry

The domestic tea production in 2019-20 was 1360.81 million kg which is higher by 10.77 million kg of 2018-19. While North Indian production was higher, South Indian production was lower compared to 2018-19. India exported 2,41,344 MT valued 5,457.1 crore of tea in 2019-20 as against 2,54,502 MT worth 5,506.8 crore in 2018-19 registering a negative growth rate of (-)5.2 per cent in terms of quantity and (-)0.9 per cent in terms of value. Export of tea from Kerala ports also decreased from 80,683 MT worth 1,434.4 crore in 2018-19 to 76,983 MT worth 1,470.82 crore registering a negative growth of (-)4.6 per cent in terms of quantity and a growth rate of 2.5 per cent in terms of value as shown in Figure 4.

Year	Kerala		India	
	Quantity (MT)	Value (₹ in lakh)	Quantity (MT)	Value (₹ in lakh)
2014-15	69,343	94,879	1,99,077	3,82,364
2015-16	69,706	1,02,534	2,32,920	4,49,310
2016-17	67,431	1,13,935	2,27,634	4,63,250
2017-18	75,741	1,23,294	2,56,572	5,06,488
2018-19	80,683	1,43,440	2,54,502	5,50,684
2019-20	76,983	1,47,082	2,41,344	5,45,710

Source: Tea Board

Fig. 4. Export of tea from Kerala ports and India, 2014-15 to 2019-20, quantity in MT, in lakh

Comparison between Vallarpadam port and Vizhinjam port based on transportation cost for tea industry:

The shortest distance between Harrison factory and the Vallarpadam port is 137 km and it can be taken to calculate the transportation cost. So the transportation cost for traveling 37 km will be 8220

for a fully loaded 32ft MXL truck to carry goods from Harrison factory to the Vallarpadam port. On analysing the above table, we can understand that Vallarpadam port is feasible to companies in Idukki to do export businesses. 3720 is the extra money the companies have to spend on transportation to do their export businesses through Vizhinjam port.

Table 6 – Comparison of transportation cost on Tea

Port	Distance from the company	Transportation cost
Vallarpadam port	137 km	8220
Vizhinjam port	199 km	11940

Different available modes for exporting from the region of 250km from Vizhinjam port in Kerala

The different modes for exporting commodities from Kerala as of now are the following:

- Vallarpadam Port
- Cochin International Airport
- Trivandrum International Airport

These three are going to be the competitors of the proposed Vizhinjam port in the hinterland cargo business and their charges have an impact on fixing the rates for the proposed Vizhinjam port.

The rates for Vallarpadam port are fixed by TAMP or Tariff Authority for Major ports, which is a subsidiary of Ministry of Ports, Shipping and Waterways, Government of India. The rates for Cochin airport are fixed by CIAL itself and the rates for Trivandrum airport is by AAICLAS (Airport

Authority of India Cargo Logistics and Allied Services) which is a subsidiary of Airport Authority of India. The rates as of 01/04/2021 are shown in Figure 5. For Vizhinjam port, the gateway volumes will be relatively low as the Kerala market is small and it is also observed that within this 250km range three facilities are there offering gateway transportation service. Very competitive pricing and terminal facilities as well as efficient port operational services are essential to effectively capture and keep a market share for gateway container flows for the new port at Vizhinjam. According to the 2015 Ernst & Young Feasibility Report, the tariffs at Vizhinjam are to be capped at Cochin rates for gateway traffic and Colombo rates for transshipment. From the above table, the Terminal, Storage, and Processing



(TSP) charge at Vallarpadam port is 115.96, so the rates at Vizhinjam port have to be below the rates of Vallarpadam to get a competitive

advantage and can attract exporters to the Vizhinjam port.

Source	Terminal, Storage and Processing (TSP) charges	Demurrage charges
Vallarpadam Port	₹115.96	₹5.80*
Cochin International Airport	₹950	₹950 [#]
Trivandrum International Airport	₹750	₹760 ^{##}
* Rate per container after free period (it depends on the type of goods)		
[#] Rate per MT after free period. The free period for export cargo is 48 hours for examination/processing by the shippers/airlines.		
^{##} Rate per MT after free period. The free period for export cargo is 24 hours for examination/processing by the shippers/airlines.		
Demurrage charge is referred to as the charge terminals charge on shipments if it is held up at the terminal for awaiting transportation or clearing customs, etc.		

Fig. 5. different modes for exporting commodities from Kerala with charges

3.6 Findings of the study

The findings of the study are given below:

1. The major industries within 250 km from the proposed Vizhinjam port are Cashew industry, Marine industry, Coir industry, Spice industry, and Tea industry.
2. Cashew industry Currently raw cashew is imported from Tanzania like countries of Africa and these consignments reach Vallarpadam. From there they have to transport these to Kollam. At least 20,000 containers were brought annually to Kollam and the freight charges worked out to about Rs.24 crore a year. Currently they rely on feeder service to get these consignments to Kollam and for export also they are incurring an annual cost of more than Rs 8 crore in transportation only.
3. Marine industry Kollam is the largest producer of marine products in Kerala, but the district lacks processing units which is required for exporting products as frozen marine products are only exported.
4. AEKK belt which is the short form of Aroor, Ezhupunna, Kodanthuruthu & Kuthiathodu is famous for its marine exports this location is identified as "Towns of Export Excellence" by EXIM bank.
5. Coir board As per Coir board, more than 90% of factories producing coir products are situated in Alappuzha. From fig 7.1, which shows the map of coir factories in Kerala there is huge consolidation in Alappuzha.
6. Spice industry Spice industry in the study region is consolidated on high range area of Kerala and majority of the cultivation is in Idukki. Spice board

owned Spice park plays an important role in fixing prices through auctions and warehousing of the products.

7. Tea industry Tea cultivation and processing happen in Idukki. Harrison Malayalam is the largest exporter of tea in Kerala.

8. Almost all the exports of these industries are through Vallarpadam port and they all have agreements with logistics company operating from Vallarpadam port.

9. By calculating the distance from the prominent companies in every identified industries to the proposed Vizhinjam port, only cashew industry can switch from Vallarpadam to Vizhinjam for exporting activities. All other industries have to incur extra money if they have to switch to Vizhinjam.

10. Three different sources are available to companies within the study limit to export their commodities and they are Vallarpadam port, Cochin International Airport and Trivandrum International Airport. Proposed Sabarimala Airport is also comes under this study limit. Suggestions from the study are: With respect to the gateway traffic for containers there will be a tight competition from Vallarpadam port. Therefore, the actual capture potential for the new Vizhinjam port will be driven by efficient terminals and facilities offering (very) competitive rates and high service levels.

1. The Indian cashew industry is concentrated in Kollam district of Kerala State. Vizhinjam is very strategically located for export for Kollam. Nevertheless, competitive rates are needed to attract cargo flows to the new port. Also,



Vizhinjam can provide import facilities for raw cashew from Africa.

2. If Adani group through its logistics business offers attractive rates to other industries in the study limit to transport their products to the port and also provides competitive rates for cargo handling then Vizhinjam port can attract all other industries too.
3. If Adani group can provide facility for setting processing unit for marine products at their special economic zone then the marine products from Kol- lam, which is the largest producer of marine products can be processed and exported from Vizhinjam.
4. Kerala state regulations prohibit the harvesting of local forests and hence imports are needed to meet the demand. It is noted that Vallarpadam loses imports to the competing ports of New Mangalore and Tuticorin due to lack of storage space and high storage costs. If Vizhinjam port can offer storage facility at an attractive price, then the import of timber can create a good business to the Vizhinjam port.
5. Tourism has a significant contribution to the economy of Kerala as Kerala's climate and culture are very attractive. Cruise lines would therefore be an attractive market for the new Port at Vizhinjam.

4. Conclusion

The analysis of industries within the 250 km range of Adani Vizhinjam Port underscores the transformative potential of strategic collaborations. The port's unique geographical advantages position it as a game-changer in the Indian maritime sector, with the ability to redirect a significant portion of transshipment activities from international ports to India. The findings reveal specific industries in Kerala that can benefit from synergies with the port, thereby enhancing their operational efficiency and contributing to the economic growth of the region. As the port establishes itself as a key player, fostering partnerships with these industries will not only optimize business processes but also elevate the stature of the Vizhinjam Port as a crucial driver of economic development.

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