



STRATEGIC PORT-LED DEVELOPMENT AND EXPORT GROWTH: A STUDY OF MUNDRA PORT

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ABSTRACT

This paper investigates the role of Mundra Port - India's largest commercial port - as a catalyst for regional and national export growth. Drawing on secondary data from the Adani Ports and Special Economic Zone (APSEZ) Annual Reports, the Directorate General of Commercial Intelligence and Statistics (DGCI&S), the Ministry of Commerce and Industry and the Gujarat Industrial Development Corporation (GIDC), the study traces cargo traffic trends, export commodity flows, Special Economic Zone (SEZ) performance and employment generation from 2015–16 to 2023–24. The findings indicate a robust positive correlation between port infrastructure investment and export diversification, affirming that Mundra's strategic development has been instrumental in elevating Gujarat's share of India's total merchandise exports. The paper concludes with policy implications for replicating the Mundra model at other emerging port clusters.

KEYWORDS: Mundra Port, Port-Led Development, Export Diversification, Special Economic Zone (SEZ), Hinterland Connectivity

1. INTRODUCTION

Ports are the sinews of international trade. Approximately 95% of India's trade by volume and 68% by value is handled through seaports, making port efficiency and capacity a decisive determinant of export competitiveness. Among India's 212 minor and 12 major ports, Mundra Port - located on the Gulf of Kutch in Gujarat - stands as a singular exemplar of private-sector-led port development transforming a regional economy.

Mundra began as a modest fishing harbour in the early 1990s. Through successive waves of infrastructure investment under the Adani Group's stewardship, it evolved into India's highest-throughput port by 2013, a position it has maintained. Today, Mundra handles over 210 million metric tonnes (MMT) of cargo annually, operates one of South Asia's largest container terminals and anchors a sprawling Special Economic Zone that houses over 160 industrial units.

The strategic question this paper addresses is: to what extent has Mundra's port-led development model driven measurable gains in export growth, industrial diversification and regional economic integration? This question carries policy relevance at a time when India's National Infrastructure Pipeline and PM Gati Shakti initiative prioritise multi-modal port connectivity as a lever for export promotion.

2. OBJECTIVES:

1. To examine how port-led infrastructure development at Mundra Port has contributed to export growth in Gujarat from 2015–16 to 2023–24.
2. To analyse trends in cargo traffic and container throughput to understand Mundra's expanding trade role.
3. To assess the contribution of the SEZ ecosystem in attracting industrial investment and generating export

cargo.

4. To study commodity-wise export flows to identify patterns of export diversification.
5. To evaluate the role of hinterland connectivity in strengthening regional economic integration and trade efficiency.

3. LITERATURE REVIEW

The theoretical underpinning of port-led development is rooted in growth pole theory (Perroux, 1955) and export base theory (North, 1955), both of which identify spatially concentrated economic activity - anchored by infrastructure - as an engine of broader regional development. Subsequent empirical literature, particularly on East Asian experience, validated the hypothesis that purpose-built port-industrial complexes can accelerate structural transformation.

Baird (2002) demonstrated that privatisation of port management leads to measurable productivity gains, while Tongzon and Heng (2005) found that port efficiency measured by container dwell times directly correlates with a region's export competitiveness index. In the Indian context, Raghuram and Gangwar (2008) documented how Gujarat's Navlakhi and Hazira ports catalysed local industrialisation, laying conceptual groundwork for examining Mundra.

More recent scholarship by Debie and Gouvernal (2018) on 'port regionalisation' highlights how modern ports extend their developmental impact through inland logistics corridors, SEZs and value chain integration - a paradigm that Mundra explicitly embodies through its Dedicated Freight Corridor (DFC) connectivity and SEZ ecosystem. The present study builds on this framework, applying it to a granular secondary data analysis of Mundra's performance over the last decade.

4. MUNDRA PORT: INFRASTRUCTURE AND INSTITUTIONAL CONTEXT

Mundra Port is operated by Adani Ports and Special Economic Zone Limited (APSEZ), a subsidiary of the Adani Group and India's largest integrated transport utility. The port spans approximately 45 square kilometres along 20 kilometres of coastline, encompassing a container terminal, multi-cargo berths, a liquid terminal and a dry bulk terminal. Its draught of up to 18.5 metres allows it to berth among the world's largest container vessels, a critical advantage over most Indian ports.

The port's institutional architecture is equally distinctive. Mundra operates under a private-concession model sanctioned by the Gujarat Maritime Board (GMB) and benefits from Special Economic Zone status granted by the Government of India under the SEZ Act, 2005. This dual designation allows APSEZ to offer investors both world-class logistics infrastructure and significant fiscal incentives, creating a powerful agglomeration effect.

The Dedicated Freight Corridor (DFC) Western Corridor, connecting Mundra to the Delhi-Mumbai Industrial Corridor, further amplifies the port's hinterland reach, effectively extending its catchment to Rajasthan, Haryana, Punjab and Uttar Pradesh. This deep hinterland connectivity is a structural differentiator that explains why Mundra has captured cargo share from competing major ports.

5. DATA AND METHODOLOGY

This study employs a secondary data analysis methodology, synthesising quantitative data from the following institutional sources: (i) APSEZ Annual Reports (2015–16 to 2023–24) for port throughput, financial performance, and SEZ metrics; (ii) DGCI&S Export Import Data Bank for commodity-level export flows; (iii) Ministry of Commerce and Industry for national and state-level merchandise export aggregates; and (iv) Gujarat Industrial Development Corporation reports for regional investment and employment data.

Data are presented in four thematic tables covering: cargo traffic composition, Gujarat's export performance relative to national totals, APSEZ operational and financial indicators, and commodity-level export cargo through Mundra. Descriptive trend analysis and period-over-period growth calculations are used to identify structural shifts.

6. RESULTS AND DATA ANALYSIS

6.1 Cargo Traffic Growth at Mundra Port

Table 1: Mundra Port - Cargo Traffic Composition, 2015–16 to 2023–24

Year	Total Cargo (MMT)	Container (TEUs, Lakh)	Coal (MMT)	Other Cargo (MMT)
2015–16	100.6	31.2	48.3	21.1
2016–17	115.8	34.7	52.1	29.0
2017–18	131.2	38.1	56.4	36.7
2018–19	143.0	42.3	60.1	40.6
2019–20	150.4	44.8	61.7	43.9

2020–21	145.9	43.1	58.2	44.6
2021–22	168.2	50.6	66.3	51.3
2022–23	187.0	57.4	72.8	56.8
2023–24	210.3	64.1	78.5	67.7

Source: Adani Ports and Special Economic Zone Limited (APSEZ) Annual Reports, 2015–16 to 2023–24. MMT = Million Metric Tonnes; TEUs = Twenty-foot Equivalent Units.

Table 1 presents the evolution of Mundra Port's cargo throughput across major commodity categories from 2015–16 through 2023–24. Total cargo has grown from 100.6 MMT to 210.3 MMT, representing a compound annual growth rate (CAGR) of approximately 9.6%. Container volumes - the most value-sensitive cargo category - increased from 31.2 lakh TEUs to 64.1 lakh TEUs, reflecting the port's growing role in facilitating manufactured goods exports.

Notably, the COVID-19 disruption in 2020–21 resulted in a modest dip in throughput (to 145.9 MMT), but the subsequent recovery was sharp, with cargo reaching 168.2 MMT in 2021–22 and accelerating to 210.3 MMT by 2023–24. This resilience underscores the structural importance of Mundra in India's supply chain architecture.

6.2 Gujarat Export Performance

Table 2: Gujarat vs. India Merchandise Exports, 2016–17 to 2023–24

Year	India Exports (USD Bn)	Gujarat Exports (USD Bn)	Gujarat Share (%)	Growth YoY (%)
2016–17	275.8	62.4	22.6	—
2017–18	303.5	68.9	22.7	10.4
2018–19	330.1	76.8	23.3	11.5
2019–20	314.3	71.2	22.7	–7.3
2020–21	291.8	66.1	22.6	–7.2
2021–22	422.0	97.3	23.1	47.2
2022–23	447.5	104.6	23.4	7.5
2023–24	437.1	101.9	23.3	–2.6

Source: Ministry of Commerce and Industry, Export Import Data Bank; Directorate General of Commercial Intelligence and Statistics (DGCI&S), Annual Export Statistics 2016–17 to 2023–24. USD Bn = US Dollars in Billions.

Table 2 benchmarks Gujarat's merchandise export performance against national totals. Gujarat consistently accounts for approximately 22–23% of India's total merchandise exports, a share that has remained stable despite absolute export values fluctuating with global commodity cycles and demand conditions.

The 2021–22 export surge - when Gujarat's exports jumped to USD 97.3 billion - is attributable to post-pandemic trade recovery and elevated global commodity prices, particularly for petrochemicals and refined products, both of which are Mundra's dominant export categories. The subsequent moderation in 2022–23 and 2023–24 reflects global demand normalisation.

6.3 APSEZ Operational and Financial Performance

Table 3: APSEZ — Operational and Financial Indicators, 2018–19 to 2023–24

Indicator	2018–19	2020–21	2022–23	2023–24
APSEZ Revenue (INR Cr)	10,985	12,424	19,893	26,990
Port Area (Sq. Km)	43.8	44.5	45.0	45.3
SEZ Units (Active)	92	117	143	161
SEZ Investment (INR Cr)	28,400	36,700	52,100	67,200
Employment (Direct, '000)	78	91	112	130
Berths Operational	18	22	26	30

Source: APSEZ Annual Reports 2018–19, 2020–21, 2022–23, 2023–24; Gujarat Industrial Development Corporation (GIDC) SEZ Investment Reports; Mundra SEZ Unit Registry, Ministry of Commerce. INR Cr = Indian Rupees in Crores.

Table 3 captures the operational and financial trajectory of APSEZ as the institutional backbone of the Mundra ecosystem. Revenue has grown from INR 10,985 crore in 2018–19 to INR 26,990 crore in 2023–24, reflecting both volume growth and value-added services expansion. Direct employment supported by SEZ operations grew from 78,000 to 1,30,000 persons over the same period.

The growth in active SEZ units from 92 in 2018–19 to 161 in 2023–24, alongside cumulative SEZ investment rising to INR 67,200 crore, confirms the port's catalytic role in attracting industrial capital. The addition of eight new operational berths over five years signals continued capacity expansion ahead of demand.

6.4 Commodity-Level Export Cargo

Table 4: Commodity-Wise Export Cargo Handled at Mundra Port, 2017–18 to 2023–24

Commodity Sector	2017–18	2019–20	2021–22	2023–24
Chemicals & Petrochem (MMT)	9.4	11.2	16.8	22.3
Agri & Food Products (MMT)	4.1	4.8	7.3	9.6
Textiles & Apparel (MMT)	1.3	1.4	2.1	2.9
Engineering Goods (MMT)	3.6	4.1	6.2	8.4
Minerals & Ores (MMT)	5.8	6.1	8.7	11.5
Total Export Cargo (MMT)	24.2	27.6	41.1	54.7

Source: DGCI&S Port-Level Export Statistics; APSEZ Terminal Reports; Ministry of Shipping, Sagarmala Programme Annual Reports, 2017–18 to 2023–24. MMT = Million Metric Tonnes.

Table 4 disaggregates export cargo handled at Mundra by commodity sector, revealing structural diversification in the port's export basket. While chemicals and petrochemicals remain dominant - reflecting Gujarat's concentration in refining and chemical manufacturing - agri-food products, engineering

goods and textiles have grown substantially in absolute terms. Total export cargo more than doubled from 24.2 MMT (2017–18) to 54.7 MMT (2023–24). This implies a CAGR of roughly 12–13%, indicating that the port's export function expanded much faster than typical trade growth. The jump after 2019–20 (to 41.1 MMT in 2021–22) shows a sharp post-pandemic acceleration, suggesting capacity readiness and rapid demand recovery.

Chemicals & petrochemicals remain the anchor, but not the only driver. It grew from 9.4 to 22.3 MMT ($\approx 2.4\times$). This sector alone contributes $\sim 41\%$ of total export cargo in 2023–24. This reflects Gujarat's refining and chemical manufacturing strength, feeding directly into port exports. However, while dominant, its share has not crowded out other sectors-evidence of diversification rather than concentration. Fast rise of agri-food and engineering goods (diversification signal). The Agri & food sector grew 4.1 to 9.6 MMT ($\approx 2.3\times$). The Engineering goods sector grew from 3.6 to 8.4 MMT ($\approx 2.3\times$). These are higher value-added and employment-intensive categories. Their rapid growth indicates that Mundra is increasingly used by MSMEs and manufacturing exporters, not only bulk commodity shippers. This is a classic sign of export basket upgrading.

Textiles & apparel have a small base, steady scaling, which grew from 1.3 to 2.9 MMT ($\approx 2.2\times$). Though the smallest category, the consistent rise shows improved logistics access for Gujarat's textile clusters (e.g., Surat, Ahmedabad). Ports that efficiently handle containers tend to see such sectors grow due to reduced turnaround times and shipping costs. The Minerals & ores category grows in absolute terms but loses relative share compared to engineering and agri-food. That is a positive structural shift away from raw-material exports toward processed and manufactured goods.

Total export cargo through Mundra grew from 24.2 MMT in 2017–18 to 54.7 MMT in 2023–24 a CAGR of approximately 12.4%. The relatively faster growth of engineering goods (CAGR $\sim 13\%$) and agri-food (CAGR $\sim 13\%$) compared to minerals (CAGR $\sim 10.2\%$) reflects positive structural change toward higher value-added export categories, consistent with national export diversification goals.

7. DISCUSSION

The data collectively support a narrative of virtuous port-led development at Mundra. Infrastructure investment has expanded capacity, capacity has enabled cargo growth, cargo growth has attracted SEZ investment, SEZ investment has generated employment and industrial diversification and diversification has underpinned export resilience. This cyclical mechanism aligns closely with the port regionalisation model described by Debie and Gouvernal (2018).

Three specific policy instruments appear to have been pivotal. First, the private concession model allowed APSEZ to invest ahead of demand - berth additions, dredging and digital logistics systems were funded by private capital without burdening public finances. Second, SEZ designation provided

the agglomeration incentives necessary to attract industrial units that generate export cargo, creating a captive hinterland. Third, DFC connectivity resolved the perennial bottleneck of last-mile rail linkage that has hampered other Indian ports.

The study also identifies limitations in the Mundra model. The port's dominance has raised market concentration concerns, with APSEZ controlling approximately 27% of India's total port capacity. Smaller ports in Gujarat's coastline have struggled to attract investment as Mundra absorbs the lion's share of industrial cargo. Moreover, the concentration in petrochemical exports introduces vulnerability to global energy transition trends, making export diversification into high-tech manufacturing and renewable energy equipment an urgent priority.

8. CONCLUSION AND POLICY IMPLICATIONS

Mundra Port's developmental trajectory from 2015-16 to 2023-24 demonstrates that strategic, long-horizon port infrastructure investment - when paired with coherent industrial zoning, logistics connectivity, and institutional support - can generate sustained export-led growth dividends. The port's throughput CAGR of 9.6%, Gujarat's stable 22-23% share of national exports, and APSEZ's revenue quadruplication over a decade collectively constitute strong evidence for the port-led development hypothesis in the Indian context.

For policymakers, the Mundra experience offers a replicable template: identify coastal nodes with deepwater access and hinterland market potential, establish SEZ frameworks with robust environmental safeguards, build DFC or multi-modal corridor connectivity ahead of demand, and invite private operators under transparent long-term concession agreements. Ports at Vadhavan (Maharashtra), Vizhinjam (Kerala) and Paradip (Odisha) are currently at inflection points where such a strategic framework could be transformative.

Future research should pursue econometric analysis to formally estimate the export multiplier effect of port investment, and should disaggregate employment data to assess quality of work generated. Comparative studies across BRICS port clusters would further contextualise the Mundra model within the broader landscape of emerging-market port-led industrialisation.

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