

# A Study On Affected Nagapattinam Minor Port In Tamil Nadu

Dr.S.V.Murugesan<sup>1</sup>, Ms.K.Meena<sup>2</sup>

<sup>1</sup>Associate Professor and Head, Department of Commerce, Govt. Arts College for Women, Ramanathapuram.

<sup>2</sup>Ph.D Research Scholar (Full time), Department of Commerce, Annamalai University, Annamalai Nagar, 608 002

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## Abstract

Nagapattinam, in the east coast of India, was severely affected during the deadliest Indian Ocean tsunami of December 26, 2004. The tsunami caused heavy damage to life and property, and the death toll was about 3,378 in Nagapattinam Taluks. Certain villages along the coast witnessed large inundation while adjacent villages were protected from the fury of the tsunami waves. This study was carried out to examine the underlying causes for the vulnerability along Nagapattinam coast with the help of field observations, remote sensing, and geographical information system as tools. This area is one of the vulnerable sites affected by Tsunami on 26th December 2004, which caused great damages. India has a long coastline of about 7500 km including its island territories. Ports handle about 95% of India's foreign trade by weight/volume through maritime transports. Harbour environment can be divided into four components –sea surface, shoreline, ocean, floor, and the body of the ocean composed of water columns and suspended sediments. Ports and Harbour create local environmental problems Nagapattinam port is one of the minor port among 212 ports in India. In this present study shoreline changes and the sediment dynamics were analyzed using topo sheets, beach slope measurement and sample characteristics. The sediment transport directions during monsoon and post monsoon seasons were found. The results were compared with variation of monsoon.

**Key words:** Shoreline, Port, Erosion, Accretion, Sediment and Vulnerable sites.

## Introduction

The shoreline is one of the most unique features on the earth surface. India has a coastal line of around 7517 km and rational development of coastal areas, which form the habitat of 25% of the country's population, living within 60km of the shoreline. Tamil Nadu with coastal length of 980km is second largest coast in India. This state experience two monsoon periods one is active from mid-June to mid-September (Southwest monsoon) and the other is active from mid-October to mid-January (Northwest monsoon) and post monsoon, pre monsoon. A shoreline is defined as the line of contact between land and a body of water. It is easy to define but difficult to capture since the water level is always changing. The factors responsible for shoreline changes are waves, currents and tides. The major requirements of planning coastal protection work is to understand coastal processes of erosion, deposition and transport of sediments which occur due to natural processes, anthropogenic activities as well as episodic events like cyclones, storm surges, floods etc. They import cement and export edible oil and coconut cake. Now Government has sanctioned rupees fifty crores to extend the port. It plays important role for supply of diesel to Sethusamudram project.

## Vulnerability of Nagapattinam Taluks to 2004 Sumatra Tsunami

The study area covers eight villages in coastal Nagapattinam Taluks in these areas, many people were washed away, big boats/vessels were thrown violently toward the coast, extensive ground erosion occurred, and many structures suffered damage extensive damage to lifelines (road, bridges, telephone and electric poles, and railway line), port, and harbors took place. Nagapattinam beach, which is a tourist spot, was completely destroyed, and about 30 people lost their lives. Intense erosion and severe damage to Nagapattinam beach road were observed. The tsunami destroyed almost all the constructions namely, Memorial Column, Children's Park, and the auditorium on the beach. In NABIYARNAGAR, most of the houses near the shore (between 50 and 100 m) were destroyed (Narayan et al. 2005). All the huts of fishermen near the coast were washed away in Vellaipallyam village. The railway line was damaged for more than 8 km. Similarly, the tsunami caused heavy damage to the wharfs and many of the structures at Nagapattinam port. More than 100 boats were thrown up into the air, which caused heavy damage to the structures falling in their projectile path near flat-shore, which acted against the coastal town of Nagapattinam. Due to the presence of these features, the amplitude of the waves increased and resulted in unprecedented devastation.

## Profile of Nagapattinam District

Nagapattinam is a coastal district covering a total area of 2, 71,583 hectares. Out of the total area, around 1, 26,149 hectares is classified as wetland, 61,880 hectares as dry land, and the remaining 83,548 hectares as government land. Around 74% of the cultivators have less than one hectare of land, and another 15% hold between one to two hectares. The remaining 11% of the households own above two hectares of land. Though the area receives an average of 1337 mm of rainfall annually, nearly 76% occurs during the Northeast Monsoon, followed by 17.3% during the Southwest Monsoon. The soil is predominantly sandy in texture, and clayey in certain pockets, with slight salinity/alkalinity. The soil in the region belongs to Valudalakudi series dark brown to brown, deep, sandy and possessing characteristics, of mild to moderate alkalinity levels<sup>1</sup>. The area lying between Nagapattinam and Vedharanayam, dominated by sand dunes, and cultivated soils mostly sandy in texture. Paddy is the primary subsistence crop, being traditionally cultivated in different methods. More than two third of the farming community are small and marginal landholders, and paddy is the most suitable staple crop.

Groundnut, coconut, cashew, mango, vegetables like urinal, cluster bean, lady's finger etc. are cultivated using small scale irrigation. Cotton and Casuarinas are the other commercially important crops. Tamil Nadu was the worst affected in terms of damage to the transport sector of Nagapattinam on the east coast experienced damage to about 80 km of the major and other district roads. As in Kerala, the damage was primarily due to the scouring action of the waves. Tamil Nadu suffered severe damage to two bridges. As mentioned elsewhere in this paper, a 160-m-long bridge had been commissioned in 2002 to connect the villages of Melamanakudi and Kelamanakudi on opposite banks of the Pazhyar River. The bridge went missing after the tsunami. Another bridge at Akkaraipettai in the Nagapattinam district was affected by the large boats that broke their moorings in the tsunami and dashed against the bridge.

## Study Area

Nagapattinam port is situated between 10° 16 N latitude and 79° 39 E longitudes in Central East Coast of Tamilnadu and at a distance of 348 km from Coimbatore. There are two breakwaters in North and South of the port. The length of the breakwater is 200 to 400 m. Shoreline is extend 300m N and 600 m S. They importing cement and exporting edible oil and coconut cake through sea. The Government has planned to extend the port area for supply of diesel to the Sethusamudram project.

## Focus on Nagapattinam

- (1) The entire Coastline of 187.9 KMs is affected.
- (2) 73 habitations were inundated.
- (3) 6,065 persons have died.

- (4) 1, 96,184 persons have been affected.
- (5) 3,378 persons died in Nagapattinam Town alone.
- (6) 1,922 persons were injured and given treatment.
- (7) Keechankuppam, Akkaraipettai, Seruthur, Vellankanni,
- (8) Pattinacherry, Nagore, Tharangambadi, Poompuhar,
- (9) Thirumullaivasal and Pazhayar are some of the worst affected areas.

## Scope of Study

The study of shore line dynamics will provide a management tool for rapid assessment of natural hazard risk potential and it is important for such activities as economics, development, tourism, planning research, science and education etc. 12 major ports and 212 minor/ intermediate ports are situated along the coastline of India and at sea islands. Nagapattinam port is one of the minor ports in India. The port area was affected by Tsunami in December→ 2004 which caused great damages.

Now the Government has allotted Rs. 50 corers to extend the port. The study will through light on the impacts on shoreline changes, beach slope, sediment transport and analysis of water sample.

### Commodity- wise overseas Cargo Traffic Handled at Select Non- Major Ports in Tamil Nadu Nagapattinam (000, MT).

Year	Edible oil	Deference	Percentage	Total
2009-10	0.12	0	0	0.12
2010-11	0.14	-2	14	0.14
2011-12	0.18	-4	22	0.18
2012-13	0.20	-2	10	0.20
2013-14	0.22	-2	9.09	0.22
2014-15	0.40	-18	45	0.40
2015-16	0.30	-10	33.3	0.30
2016-17	0.34	-4	11.76	0.34
2017-18	0.34	0	0	0.34
2018-19	0.43	-9	20.93	<b>0.43</b>
<b>Total</b>	<b>2.67</b>			<b>40.36</b>
<b>Average</b>	<b>0.267</b>			<b>300</b>
<b>Minimum</b>	<b>0.12</b>			<b>0.12</b>

<b>Maximum</b>	<b>0.43</b>			<b>0.40</b>
<b>CAGR</b>	<b>7.49</b>			<b>8.92</b>

**Sources: Compiled by the Researcher from Minor Ports Annual Report 2018-19 and State U/T Maritime Boards.**

Indicated, the Edible oil handled by Nagapattinam Port. The performance of the Port was delta during 2009-10 to 2018-19. The edible oil performance was increased from the first year to six years, i.e., 2009-10 to 2014-15, 0.12 (000MT) to 0.40 (000MT). It was decrease to 0.30 in 2015-16. Then, it was increased trend subsequently during the study periods i.e., 2016-17 to 2018-19. The total Edible oil are handled by the Nagapattinam Minor Port was 2.67 MT. The average per year handled was 0.267 MT. During the study periods, the minimum edible oil handled was 0.12 in 2009-10 and maximum edible oil handled by the port was 0.43 MT. The researcher has found that, the edible oil prices are decreased because of increasing the import of palm oil from abroad. The socio-economic and policy charges in the causes for increasing import of edible oil.

## Findings

The researcher has found that the import of edible oil was increased. Because, of Thiruvavur district of Tamil Nadu in Nagapattinam during the 2016-17 earlier this month, the government has reduced the tariff value for the import of edible oil including palm oil a move which experts had said would help domestic prices. Tax experts had said that the reduction in tariff value could result in soften of edible oil prices in the domestic markets as customs duty payable on base import price would also come down in Nagapattinam in 0.34 MT.

## Suggestions

Hence the researcher has suggested that, the Minor Port should be function independently. If independent function the minor port has decided and fix tariff according to its environment. Nagapattinam minor port from raw material online importing custom warehousing investing the import. The government should be take the step control this or farmer should be realizing the need to edible oil.

## Conclusion

The December 2004 tsunami had a devastating effect on Nagapattinam district, notably along the coast of Nagapattinam district. However, the high variability in inundation witnessed along the coast is attributed to coastal geomorphology, land elevation, settlement pattern, infrastructure facilities, etc. Tsunami inundation into the hinterland regions is relatively high in Nagapattinam Taluks due to the presence of low-lying lands and backwater system. Using field data on inundation as the primary source of information, tsunami hazard map for coastal Nagapattinam has been generated. A detailed analysis for its variability of inundation along the coast and possible threats from other earthquake sources is being proposed for future study using numerical model, for which this information forms vital input.

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