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The changing role of small and medium-sized ports in coastal Andhra, India

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ABSTRACT

The littoral state of Andhra Pradesh is located in the South-Eastern fringe of the Indian Peninsula (12^o 37' – 19^o54'N and 76^o 46'-84^o 46'E) which has a fairly longer coastline along the Bay of Bengal (one of the marginal seas of the Indian Ocean) has flourished with a large number of small and medium-sized ports enjoying the maritime trade and commerce, since historical times. As large number of rivers debouches into the Bay of Bengal from Andhra Pradesh, the river mouths are the favourable sites for the ports to flourish. The development of spits, bars and shoals along the coastline, the progradation of the Krishna-Godavari deltas towards the sea, change in the course of the rivers etc., besides the human interference, such as development of land transport, cessation of mining activity and decline of dynasties are some of the causes for almost all the small and medium-sized ports to lose their significance with the lone exception of Visakhapatnam port being a natural one.

Key words: Ports, Krishna-Godavari deltas, Deterioration causes

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INTRODUCTION

In the absence of any major land transport system in Ancient India, due to undeveloped land routes, ships including simple logs and rafts were used for transporting men and material enabling the movement of agricultural produce including spices and troops from one place to another. Water routes served the country's strategic needs as well as trade better. Many settlements emerged over a period of time around these ports, some of which popularly called 'patnam's (meaning, the urban places), almost reached the then urban standards. The sea trade of Ancient India with her neighbouring countries was notable for its intensity, magnitude and value, and that was made possible by her ports.

The Indian Sub-continent has two marginal seas, namely the Bay of Bengal in the East and the Arabian sea in the West. The State of Andhra Pradesh (littoral state) which forms a part of the triangular Peninsular plateau of India, is located 12^o 37' to 19^o 54' N and 76^o 46' to 84^o 46' E, with a fairly long coastline (972 kms) along the Bay of Bengal (popularly called as the 'East Coast'/ 'Coromandel Coast'), and from time immemorial has encouraged a great deal of inland and foreign trade. A chain of good ports and harbours has been developed in course of time along this coast (Fig.1) and they gradually underwent changes in their functions. The present paper deals with the "Seasonal winds – An ecological threat to port development in Andhra Pradesh".

The Physical Panorama of the East Coast and the Location of Ports

Ahmed (1972), on the classification of Indian shoreline describes the East Coast of India as an 'Emergent' one. The geomorphic evolution of an emergent coastline, as outlined by Johnson (1919), applies mainly to a coastline bordered by gentle offshore slopes. Under such a condition, waves will not be able to attack a shoreline vigorously because the larger ones will break offshore (Thornbury, 1969). The emergent coasts are often characterized by the presence of offshore barriers, which include lagoons, barrier islands, spits and tidal inlets, in which the latter will be particularly opposite the mouths of major streams. Through these inlets, tides will flow and ebb, and along rivers with low gradients, their effects may be felt far enough upstream to temporarily pond the streams. Thus the lower

portion of such streams are at times essentially tidal rivers. Another significant aspect of the emergent shoreline with gently shelving waters involves the migration of its barrier islands. These may grow seaward temporarily but their main movement is landward as they retreat under the attack of the waves which are responsible for their formation. Under these circumstances the early ships including simple logs and rafts benefitted and suffered a lot and hence, most of the ancient ports were given the status of major ports or down-graded to minor level, depending on the then prevailing conditions.

Small and Medium – Sized Ports in Coastal Andhra

According to the report of the Ports (Technical) committee of 1945 published by Government of India, the distinction drawn between a 'major' and a 'minor' port is essentially mathematical. The sheltered nature of a port, its ability to serve a very large portion of the hinterland lying behind it, the facilities it has for meeting the requirements of defence and strategy, a comparatively larger volume of traffic and the possibilities of working for shipping round the year usually distinguish a major port from a medium sized or a minor port. The primary function of a minor port is to serve the needs of its hinterland. In ancient times almost all the ports of the state were situated on estuaries with funnel-shaped mouths of rivers where offshore bars provided an abundant shelter against swell, though not necessarily against heavy storms/cyclones. A few of the inland ports in the deltaic regions suffered from gradual accumulation of silting due to change in the river courses and water levels which resulted in their deterioration.

Though there were nearly 30 ports of small (minor) and medium types in ancient times only two major ports namely Kakinada (formerly Coconada) and Masulipatnam (Masula) were down-graded into important medium-sized ports and the medium-sized ports like Kalingapatnam (formerly Calingapatnam), Narsapuram, bhimilipatnam, Nizampatnam (formerly petapoli), Armegam etc., were further down-graded to minor level. The naturally well-protected minor port of Visakhapatnam alone emerged as a major one relegating all the other ports to lesser significance. The following ports which had played a significant role in the past lost their importance in course of time and went out of use due to inadequate quantum of cargo, progradation of land and drying up of water levels at the wharves. They are:

1) Srikakulam (foremerly chicocole)
2) Baruva
3) Tallarey
4) Coringa
5) Injaram
6) Bhavanapadu
7) Motupalli
8) Dantagadda
9) Ghantasala (foremerly Kantakasala)
10) Pulicat etc.
11) Prolur (no more in existence)
12) Gudur
13) Palacol
14) Divi
15) Kottapatnam
16) Odarevu
17) Odacherupalli
18) Chinnaganjam
19) Dugarajapatnam

Origin and Development of Ports in Andhra Pradesh – A Historical View

In his Indica, Megasthanes points out that the maritime trade and commerce of 'Andhras' or 'Andhradesa' dates back to 336 BC. From the recorded evidence of Ptolemy's Guide to Geography, it is evident that 'Andhradesa' in ancient times was divided into a number of small dynasties and each one wished to establish a port of its own for maritime transport. During the period of the Guptas and Satavahana kinds new water ways were opened up for maritime trade with East Asian Countries (Suvaranabhoomi) and as a result a number of new ports emerged according to their choice. With the arrival of the English the French and the Dutch during the sixteenth Century, India's maritime trade and commerce reached a new peak with the establishment of 'factories' (settlements). Consequently a number fold and abandoned ports were restored and put to use again in addition to the establishment of new ones. The English who settled in Masulipatnam restructured the port suitably and opened factories at petapoli and Injaram around 1611 AD. The Dutch held the towns of Palacol, Narasapuram and Coconda in 1650 AD. Even today a portion of the bathing place at Narasapuram is known as the 'Valandavari Renu' (which mens, port belonging to the people of Holland). The French arrived in 1679 AD and settled down in Yanam. All the places occupied by the Europeans are situated on the coastline, and therefore, provided them with easy access to the sea routes for promoting trade, both export and import. These ports flourished will under their occupation but gradually lost their importance and fell into disuse after the Europeans left the country.

Map showing coastal areas of Andhra Pradesh

Causes for Deterioration

a) Fluvial Causes

The change in the course of rivers had an adverse effect on the life of the people in general and on the port towns in particular. In the areas where the rivers changed their courses as in the case many a river along the East Coast the settlements and port towns had to be shifted either to some other river valley or to the new channel that a certain river had made. For instance the Godavari, along the course of which a number of ports are situated in close proximity is joined by sixteen tributaries with a drainage area of about 290, 400 square kilometers, and it changes its course and shifts the site of active deltaic sedimentation (Fig.2a). This has given scope to the formation of a number of channels (abandoned channels) which are locally called 'Lankas', Prolur, for example, which was a small port town on the river Godavari in the past does not exist today.

An increase in the thickness of sediment accumulation in the river bends (meanders) also cause ports to lose their importance. For example, the two prominent distributaries of course at Sakenetipalli and Gannavaram respectively. These bends seem to be the results of recent movements along micro-fractures/faults whose trends are traced in LANDSAT (band 5 and 7) and air-photos. The fault lineaments may be the cause for the increase in the thickness of sediment at the mouth of the Godavari and the delta budge in the East Coast is the result of combined sediment brought by rivers like the Krishna and the Godavari.

b) Meteorological Causes

The Andaman and Nicobar islands as the region of lowest pressure circumscribed by higher pressure are the cradle of some of the most destructive storms that have ravaged the coasts of Southern India in general and the Andhra Coast in particular. The main feature of the storms that tract the Bay of Bengal is that they originate between 8^{o} and 14^{o} North in the period from 15^{th} October to 15^{th} January and start moving in the west Northeasterly direction and frequently strike the East Coast in general and specifically the Andhra Coast which lies beyond 8 degrees North (Figs 4,5). The ports situated at the river mouths with little improved facilities not only suffer damage by the attack of the sea waves but also get blocked by the deposition of the sea sands shallowing the anchored ships. The statistical data published in Tracks of Storms and Depression in the Bay of Bengal and the Arabian Sea, 1877 to 1970 by the India Meteorological Department 1979, show that the number of depressions and cyclonic storms

formed in the Bay of Bengal are five to six times more frequent than those formed in the Arabian sea with wind speed varying from 34 knots to 64 knots. Further the funnel shape of the river mouths and the shoaling of the bottom cause high tides, seiches and internal waves of varying degree of heights and vertical oscillations. These waves measure from 6.5 to 9.5 meters high and refract when they cross the continental shelf and ultimately affect the ports. A survey of the history of storms would show that the following storms which occurred on different dates: 3rd October, 1746, 20th October 1782, 17th to 20th May, 1787, 10th December, 1807, 2nd May, 1811, 24th October, 1818, 9th October, 1820, 30th October, 1836, 25th November, 1846, 12th November, 1881, etc., had battered and destroyed the East Coast. In almost all the cases the barometer fell to 27.58 inches or so and the force of the heavy gust was computed at 57 lb. per square foot. In almost all the cases the sea had risen more than 12m above its natural level. The natives of these places referred to an occurrence about a century ago when the sea ran as high as the tallest palmyra tree (20 to 30m. atleast). The famous French, Portuguese and English ships like 'Phoenix', the 'Lys', the Mermaid', the 'Advice', the 'Aboukir' etc., were put to sea and English ships like the 'Phoenix', the 'Lys', the 'Mermaid', the 'Advice', the Aboukir' etc., were put to sea and foundered (Maclean, 1989).

c) Strategic Role of the Ports

Ports which once served exclusively as centres of transport, trade, cargo and troop movements have acquired greater prominence in view of the country's defence and strategic operations. They have acquired a new role as defenders of the nation as naval forces and air-craft carriers are detained at the major harbours. They have become centres of ship-building too to meet the ever increasing demand for vessels of various kinds. Thus a new dimension has been added to their scope and function. It is no exaggeration to state that since independence the ports in India have developed beyond expectations.

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