MARITIME ISSUES AND PROBLEMS IN SOUTH ASIA

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D E C L A R A T I O N

Certified that the dissertation entitled **"MARITIME ISSUES AND PROBLEMS IN SOUTH ASIA" submitted by Mr. MUNINDRA SARMA** in fulfilment of Nine Credits out of total requirements of Twenty-four Credits for the award of the Degree of Master of Philosophy (M.Phil) of this University, is his original work and may be placed before the examiners for evaluation. This dissertation has not been submitted for the award of any other Degree of this university or of any other university to the best of our knowledge.

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MUNINDRA SARMA

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INTRODUCTION

Often branded as a region without regionalism, South Asia, during the last decade, has come under increasing focus of the world Community, for a number of reasons. The states of the region have, not only a common heritage of great civilisations,but also the bane of poverty and underdevelopment, increasing burden of a fast growing population and certainly a common past of colonial exploitation. Its human and natural resources and the perfect geo-political setting, however, wield tremendous potentialities and promises in an age of rising aspirations.

Although bereft of any regional consciousness,the nations of the monsoon belt, have finally inched closer to each other. The early eighties saw the formation of SAARC, despite the existing differences in a number of areas. These are perhaps some of the reasons, leaving aside the strategic location of the region for the growing attention of the International Community on this region.

Much has already been written about different aspects of the South Asian region. Numerous such works, however, have failed to deal, or deals inadequately, with one important aspect i.e. the maritime issues in South Asia. A Political Geographer is more interested and perhaps better equipped to deal with this aspect, because of his better understanding of the geopolitical realities in such a region.

Hence, here in this work the author has tried to throw light on a number of maritime issues and problems in this region.

It is felt, in the light of these remarks that the present study makes a fundamental contribution to our knowledge of maritime South Asia and its multifacted dimensions.

In the first chapter of this work, an effort has been made to trace the maritime heritage of this region. This has been followed by a discussion of major issues of the yesteryears. Ever since the prehistoric period there has been a great deal of navigation in the South Asian waters. As a result there was flourishing trade within an outside this region. Evidences are aplenty. Archaeological excavations have shown. Literatures of those period, though not many, have also proved this. UNESCO has organised a voyage to trace the ancient silk and spice route which linked the great Greek and Roman, Arab, Indian and Chinese civilizations. Along with the precious cargo, ideas flowed along the trade route. The idea is to renew the dialogue between different cultures through the maritime silk route expedition. India had trade relations with the Roman World between the Ist and 4th centuries A.D. India also had cultural relationship with east and South-East Asia between 4th and 13th centuries A.D. Thus the rich maritime heritage of the South Asian countries has been highlighted in this chapter.

The second chapter of this work deals with maritime resources in the South Asian seas. An indepth analysis of the impact of the UNCLOS-II on the South Asian countries has been made. The availability and utilisation of her fishery resources, the most important living resource has been discussed. The South Asian countries mostly depend on traditional fishing techniques. Industrial fisheries has not come about yet, in the process inviting non-coastal industrial fishing countries to their EEZ. Therefore, there is growing need for South Asian solidarity to keep them away.

The non-living resources have, time and again, been divided into renewable and non-renewable categories. Petroleum, natural gas and polymetallic nodules are important among the non-renewable resources. There are numerous other minerals also. Energy potential from South Asian waters is encouraging. Therefore, concerted efforts must be made by the region, to exploit the existing resources for developing their economies.

There are many conflicting issues and problems in South Asia. Maritime boundary demarcation is one such issue. In the third chapter, a thorough analysis of this contentious issue has been attempted. India having common maritime boundary with all the South Asian coastal states, also have disputes with many of them. India - Sri Lanka and India-Maldives boundary demarcation has been completed. The most

intricate problem, however, lies with Bangladesh. With Pakistan the solution of the problem has been deferred.

Other issues which attract ones attention in the study area are that of the problems of landlocked states, viz - Nepal and Bhutan and the problem of sea - level rise and uncertain future of Maldives, Bangladesh and coastal areas of other South Asian countries. Joint Development Zones, however, hold out some ray of hope as a tentative soloution to the intricate boundary problems. This confict resolution measure has been discussed in this chapter.

As for India, need one say, that the country is central to this region. She is sorrounded by virile neighbours all around. Therefore, she has been consolidating her defence build-up. And so are other coastal neighbours of her. The final chapter has therefore been devoted to the growth of navies of the coastal states. In other words, this chapter deals with the maritime strategy for South Asian seas. However, such a discussion cannot be done in isolation. Because the question of regional security is closely interlinked to the maritime developments in the Indian Ocean as a whole. Cold War apart, the tensions in South Asia, West Asia and South-East Asia have attracted the superpowers to this region.

There can be no doubt, however, that the growth of India's naval power will curtail the freedom of action of super-power navies in the Indian Ocean. For the past four and a half centuries, the Indian Ocean has been a "Western lake" and the west has enjoyed almost unlimited ability to influence events in the region.

India's peninsular bi-section of the most important maritime latitudes of the Indian Ocean and her ability to operate her naval forces from a number of geographically dispersed ports, with unfettered access to the Ocean, makes her potentially a very dangerous maritime adversary. An Indian Navy, that can exert even partial sea-denial capability over large areas of the north Arabian Sea through aerial, surface and sub-surface means can severly restraint the freedom of action of non-littoral navies.

Many of India's neighbours have labelled her as a giant. A German proverb meaning "It is good to have the strength of a giant, but it is bad to use it like one", underscores India's basic philosophy, if at all she is one. However, India should never be compelled to use it like a giant. She looks forward to the day when there is no giant or his strength.

Nevertheless, this Indian build-up has been a matter of overriding concern for Pakistan. Therefore, she has

embarked on a modernisation programme of her Navy, precisely to match the Indian Naval build-up. she has acquired six submarines, more than adequate for her size and some of these subs have been fitted with deadly US Harpoon missiles. This has given an added momnetum to the arms race in the sub-continent, to the detriment of durable peace and stability in the region.

This has been followed by a discussion on the future of UN resolution on Indian Ocean as a Zone of Peace. And finally the prospect of developing a regional naval policy.

Regional cooperation to deal with their common political and socio-economic problems is essential. SAARC has offered a glimmer of hope, for exploring the grey areas in the region. However, it remains to be seen, whether this organisation would be able to bail out the region out of their problems, given the mutual distrust and antagonism, prevailing among the member states of the organistion.

Chapter I

MARITIME SOUTH ASIA : A HISTORICAL PERSPECTIVE

South Asia is an unique entity and maritime South Asia is even more unique an entity than its continental counterpart. The seven countries of South Asia, present the largest and the most distinct geopolitical entity in the Indian Ocean. South Asia is almost a continental whole, unlike South-West Asia and South-East Asia, which are highly fragmented. Within the South Asian region there are seven countries-viz- India, Pakistan, Bangladesh, Bhutan, Nepal, Sri Lanka and Maldives. Among them Butan and Nepal are landlocked countries. Political entities within the South Asian seas region, which contains the most densely populated country in the world, range in type and size from small atolls such as Maldives measuring 298 Km^2, to continental nations such as India, measuring 3.14 million Km^2. Afghanistan is generally considered as part of central Asia and Burma as part of South East Asia. The coastal areas of Burma form a part of the South Asian seas region. South Asian seas region includes many islands (Sri Lanka, the Maldives and India's Andaman, Nicobar and Lakshadweep) that have far more coastal zone per unit of land area than do continental areas. Sri Lanka and Maldives have common maritime boundaries with India and they all have a great bearing on maritime history. The main island in the South Asian seas region i.e. Sri Lanka, which is so close to India as to loose its insular character. Sri Lanka has at least two fine harbours, Colombo and

Trincomalee, whose importance has been recognised from the time immemorial.

The South Asian seas region also includes many deltas; some of the larger ones in terms of sediment discharge and freshwater run-off, include the Ganges-Brahmaputra-Meghna, Godavari, Indus, Irrawaddy and the Narmada, major population centres have evolved on or near deltas (e.g. Karachi and Calcutta).

The Bay of Bengal, lying to the East of India and separating Burma and malaysia from the peninsula of India is also governed by the monsoon. The Arabian sea, a vast expanse, separating the two peninsulas of India and Arabia and bounded on the north by the barren coastline of Persia is one of the vital seas of the world. As a result of the seasonal monsoon it has been for at least 3000 years a great highway of commerce and intercourse. The Indians, the Phoenicians, the Arabs - in fact all the sea-faring nations of the East have considered this to be the chief area of navigation.[1] The Bay of Bengal and Arabian sea have played an important historical role because of their deep inland penetration.[2]

One of the reasons for the historic importance of this region, is again the geographical factor. The northern

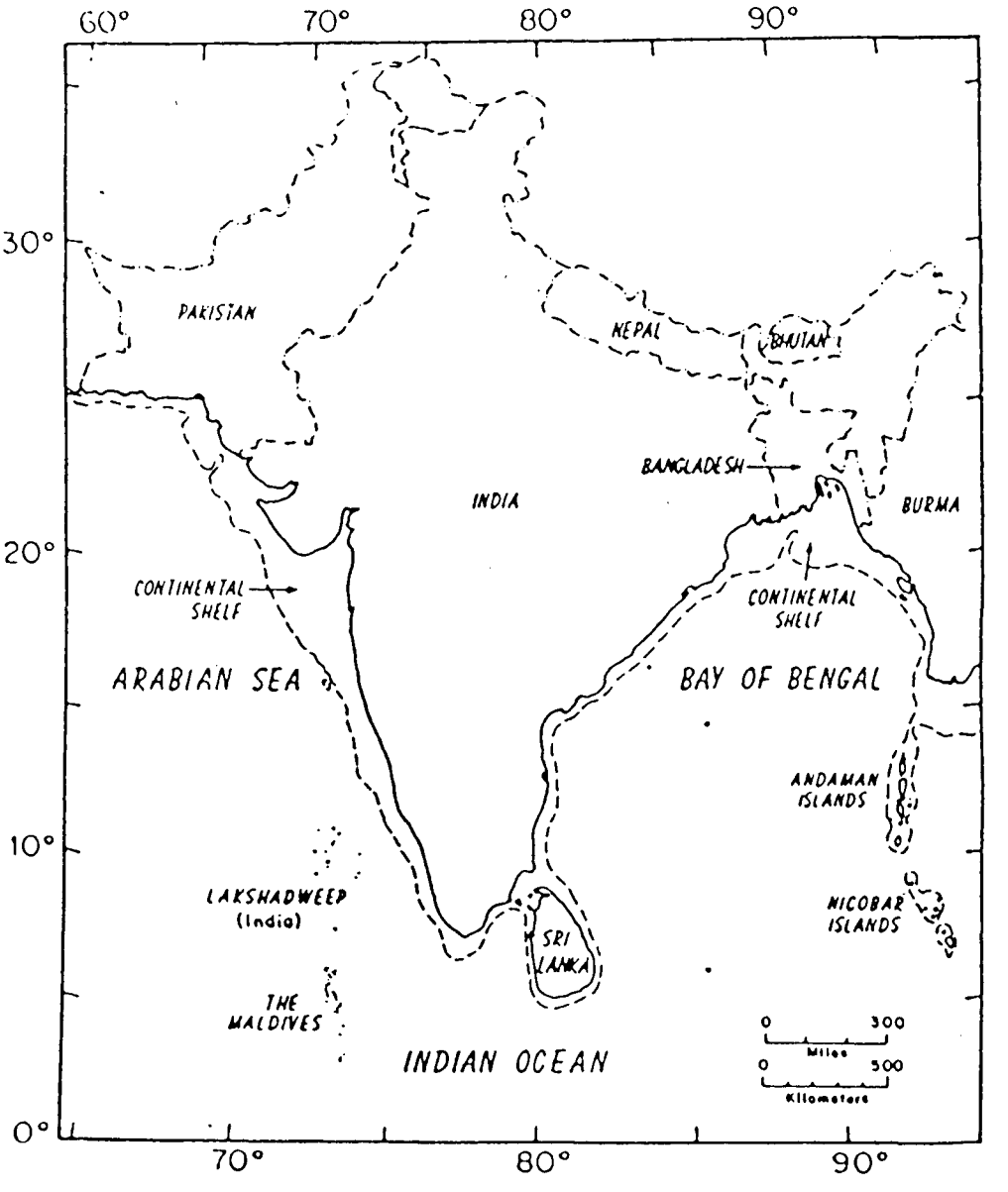


Figure 1. The South Asian Seas region. Source : Adapted and modified from A.K. Dutt and M.M. Geib. (1987), Atlas of South Asia, Westview Press, Boulder, Colorado. 231 pp.

zone of the Indian Ocean in the one affected by the monsoons, which also regulate the circulation.

So far as India is concerned, it should be remembered that the peninsular character of the country and the essential dependence of its trade on maritime traffic give the South Asian seas a preponderant influence on its destiny.[3]

The South Asian waters was part of the larger trans-oceanic communication lines and as such was one of the main highways for the movement of people and cultures. Thus this region has been the vehicle of the most varied human contacts with rich consequences, writes Charles Verlinden.[4]

Table - 1

South Asian Seas General Geographical Information

	Area (Km^2)	Coastline (Km.)	Total Popn. (000)
India*	31,36,500	7,517	8,43,930
Pakistan	8,03,000	1,046	1,02,247
Bangladesh	1,42,000	580	1,05,868
Sri Lanka	65,500	1,340	16,362
Maldives	298	644	195
Burma	6,78,600	3,060	38,410

Source : Ocean Yearbook 3, 1982 (University of Chicago Press); *Census Commission of India, 1991, Census Reports (Provisional)

MARITIME HERITAGE

Coastal South Asia has a very very rich maritime heritage. Right from the pre-historic period till the modern day the seas have played an immense role in the life of the people of these littoral states. The coastal states depended on the seas not only for food but also for many other purposes. The other important purposes for which they relied on the neighbouring seas, include transportaion and communication, trade with beighbouring as well as distant countries and of course defence. Naval defence in a very limited sense, essentially because, for these states the dangers of invasions and attacks emanated mostly from lands. Evidences of the use of the seas by the coastal people during the earliest period is of course a little hazy. Indus Valley Civilization findings, take us well beyond scepticism, as varities of shells have been discovered in the ruins. There are schools of thought which seek to establish that these aryans used to undertake voyages not only in the neighbouring seas but also on the high seas.

Vedic Literature is replete with references to boats, ships and sea voyages. Even though there is no unanimity among historians, yet a large number of them are confident of the fact that to the Rg Vedic people the sea was undoubtedly known and there was probably some amount of sea-borne trade.[5]

Rg Veda also mentions of wealthy merchants plying ships in the Oceans in search of more and more wealth. There are numerous other evidences which prove that maritime trade existed at least from the 6th century B.C. if not earlier. From the type of ships of the time and other evidences it can safely be concluded that sea voyages followed the coast of Persia, Arabia and shores of Red Sea.

ANCIENT PERIOD

As in the pre-historic period, the Indus Valley Civilization, the early Vedic period and the later Vedic period so also in the Ancient period the Northern Indian Ocean or the South Asian Seas were an arena, where active interaction of coastal communities, maritime traders, explorers and civilizations took place.

One important factor behind this rich maritime heritage is our long coastline with its convenient anchorages. This has played no mean role in the interchange of cultures, as it has kept a window open to the great civilizations of western Asia and the Mediterranean region.[6] There were several ports which served as the disseminator of Indian culture, civilization and trade. There was great deal of interaction with the Arabs as well as with the South-East Asian countries and their populace.

During this period, a vast movement of cultural colonisation was taking place from India in the eastern region of this Ocean. This era of expansion includes the Indonesia, trans-Gangetic India and the Malaysian peninsula. Greek Geographer Ptolemy and Chinese records testify this. The growth of large Hindu Kingdoms and Empires in Champa (Siam), Cambodia, Java, Sumatra, Indonesia and other areas and their Hindu and Buddhist culture for a period of at least seven hundred years from 5th to 13th centuries demonstrate beyond doubt the close relations between the mother country and the colonies based on uninterrupted sea traffic.[7] This expansion was that of the Tamil region and, at the beginning of the christian era, more so by three Dravidian maritine Kingdoms - those of the Cheras, the Pandyas and the Cholas. Chera Kingdom was spread over the south-western coast of the subcontinent from Calicut to Cape Comorin. The Kingdom of the Pandya consisted of present day Tamil Nadu. Chola Kingdom extended on the coromandel coast.[8]

As for Sri Lanka, there are several travel accounts which throw enough light on their maritime heritage. Sinhalese, says Pliny, navigated without looking at the stars. They never went too far away from the coast and whenever the winds and the current led them into the deep sea, they would release the birds they carried and follow their flight towards land. The knowledge of the monsoons belonged to the Indians.

The innumerable ports of India from Broach (Barigaza) to Quilon became great markets of trade. Broach was a great port, because spices orginated from there. Cragnanore(Mriziris) was a big port too. Hindus had already been using a magnetic compass known as Matsya Yantra for determining direction. More importantly, the Hindus had developed great skill in building Ocean going ships of great strength and durability.[9] Thus one can safely claim that the South Asian maritime heritage is of no recent origin.

MEDIEVAL PERIOD

During the early Medieval period, the South Asian seas were mainly under the control of the South Indian Empires. But then they were slowly but steadily loosing the grip to the growing onslaught of the European traders who eventually turned out to be colonial rulers. Chola dynasty, of course, was one of the most powerful dynasties which had extended its sway all over the South Asia, including Malaysia. The Muslim domination of the Arabian sea was there for a short while,particularly by the Arabs.[10]

The Mughals generally didnot care much for the sea and failed to leave any impact on the maritime history of India. The unique glory of the Mughals could not hide the fact that on the sea they were totally helpless.[11] Akbar himself had to suffer the humiliation of the trade of the Empire being

interrupted and the pilgrim traffic to Meeca harassed by the Portuguese on his coast. The Mughals with their Central Asian tradition had no recognition of the importance of the sea. The result was that during the 200 years of Mughal greatness not only was the Indian sea entirely under alien control but simultaneously with the development of Mughal power, the foundation was being laid by others for a more complete subjugation of India, than any land power at any time could have conceived.[12]

Then came the westerners. First the Portuguese, followed by the Dutch, the French and finally the Britishers Vasco da Gama arrived in Calicut in 1498. Even before him the Portuguese traders had arrived in the Indian Ocean in 1487. They slowly started controlling the coastal trading centres. In 1509 the Portuguese had anchored in Diu after they defeated the Indo-Egyptian forces in the battle off Diu. In 1601 the Dutch entered Gujarat followed by coromondel for trade. In the year 1663 they occupied Cochin. The French started regular coastal trade with India in 1601, although they arrived in the Malabar coast as early as 1527. In around 1608 Captain William Hawkins travelled to Agra to usher in the British era. Then they started building up British authority in the factory towns of Surat, Bombay, Madras and Calcutta in the form of trading settlements.

The Maratha power dominated the Indian seas for the first half of 18th century. Earlier the Portuguese maritime power had disappeared from the Indian Ocean between 1660-70 A.D. In fact till the arrival of the Portuguese at Calicut, no naval power had appeared on Indian waters.[13]

The trade with Sri Lanka during this period was in the hands of merchants from Coromandel, Vijaynagara and Gujarat. Sri Lanka exported cinnamon and some precious stones, while India supplied it with foodstuffs and clothing. In India, Debal or Dewal was the main early Arab port. The leading port of Gujarat was Cambay. Div, with a large harbour was also busy. Surat and Rander were other large ports in Gujarat. Malabar coast was studded with harbours. Calicut and Quilon were equal to the best in the world.[14] India exported spices, sandalwood, saffron, aromatics, indigo, sugar, rice, coconut and so on. India imported Arabian war-horses (the vital military material by which land-based powers could maintain their military ascendancy), gold, silver, lead, quicksilver, coral, vermilion, opium and so on. Evidence of trade between western India and the East African coast, though not plentiful, at least suggests that this commerce was well-established. During this period one may notice, a rise in trade and a growing rivalry to dominate the South Asian sea, by Western maritime powers.

MODERN PERIOD

Marathas were the last Indian power to have dominated parts of the South Asian seas for nearly fifty years. And this power was destroyed in the year 1751. After that it has been the Britishers all the way till 1941. As K.M. Panikkar has put it, British supermacy in the Indian seas was never again questioned till 1941.[15] In other words they converted the Indian Ocean into a 'British Lake'.

During this period, the creation of a small Royal Indian Navy took place, initially known as the Bombay Marine. And this slowly grew into the powerful Navy that we have today.

During the second World War with the destruction of the Pacific fleet at Pearl Harbour, a number of revolutionary changes took place in the Indian Ocean. And after a short sieze Singapore surrendered and the safety and security of the Indian Ocean, for 150 years a British lake, had vanished at one stroke.

This was a dark period for trade in the South Asian region, with the passing of trade in the more important commodities into English hands and the practical monopoly of the high seas trade by English Shipping companies. South Asian merchants and their shipping gradually disappeared from the scene. The consequence was the incorporation of South Asian

seas region into the world capitalist system in the period of industrial capitalist development in the west. The result e.g., the establishment of the India-China-Britain triangular trade, which was a phenomenon precisely of this period.

After 1941, the British hegemony over the Indian Ocean came to an end. And slowly the littoral countries started getting independence from colonial rulers. After that these countries have been fast developing in maritime trade and commerce. The result today India has a sizable fleet, with 10 million GRT. Pakistan and Sri Lanka also have impressive national tonnage considering their short coastlines.

As for defence, India has one of the most powerful navies in the world. She is the most powerful among all the South Asian countries. Pakistan has also modernised its navy, and so has Sri Lanka. Unfortunately there is no coordination among these naval forces, many a time they act at cross-purposes.

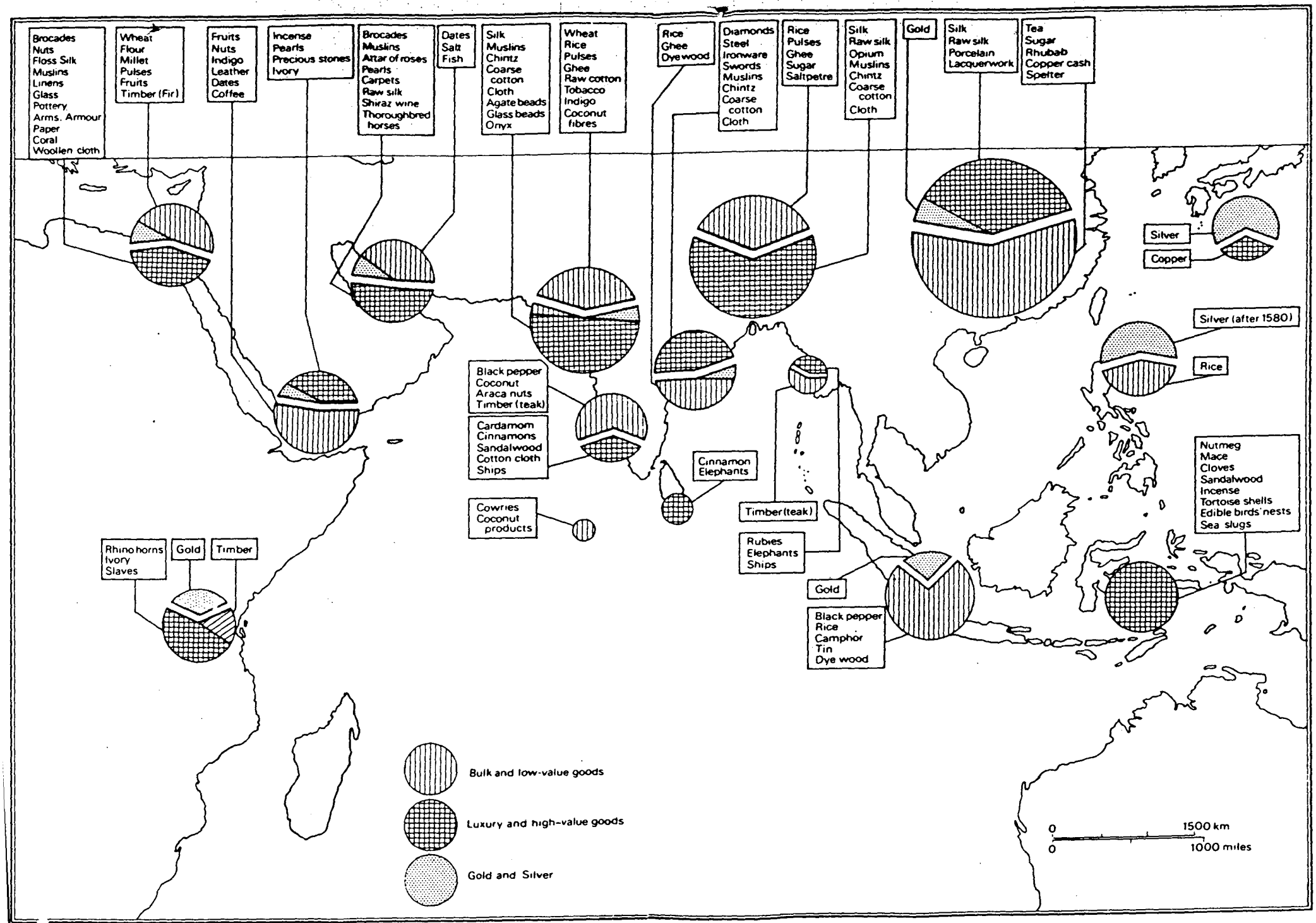
MAJOR ISSUES

Among the numerous major issues that one confronts with, the following are worth considering. Maritime Trade is one of the most important issues, followed by spread of Islam in South Asia, from Western Asia. Slave-trade, which also existed in South Asia or the Indian subcontinent, is another issue which attracts one's attention.

MARITIME TRADE

Right from the prehistoric period there has been a great deal of trade and navigation within and outside the South Asian seas region. As an ancillary to it ship-building also flourished all throughout this period. Indian Ocean has been in the thick of the trade routes. Today out of about 350 oddly recognised trade routes all around the world, about 44 such routes originate from the South Asian seas region. Sea transportation has played an important role in the development of the region. Navigation through the wide open sea is known as Ocean or sea transportation and navigation along indented or broken coastline is known as coastal shipping. Trade carriers or marchant ships are of the following five types, viz., Liners, Tramps, Cargo-liners or Carriers, Tankers andcoastal carriers. South Asian seas region has several important ports to facilitate trade. Among them Karachi, Chittagong, Colombo, Bombay, Calcutta, Cochin, Kandla, Madras, Vishakhapatnam, Marmugao, Paradip, Mangalore and Tuticorin are well known.

In the modern times 90% of the world trade moves by the sea routes. In case of India with a coastline of around 7517 kms and 150 working ports, nearly 94% of its foreign trade in terms of volume moves by the sea. India's GRT (Gross Registered Tonnage) has increased manyfold, which stands at around 10 million GRT now.



Map . Main regional exports from the Indian Ocean before 1750.

In the year 1978 out of a total general cargo of 90.48 lakh tonnes, 34.19 lakh tonnes were carried by ships. This works out to around 38.0% of the total tonnage. Crude oil accounted for the largest tonnage of 105.15 lakh tonnes. There are 53 shipping companies in the country, of which 23 are engaged exclusively in the coastal, 21 in overseas trade and the remaining nine in both coastal and overseas trade. The Shipping corporation of India and the Mogul lines are the two most important shipping lines in the country. India has regular maritime trade relations with a large number of countries amongst which the ESCAP, North America, ECE, ECLA, ECA groups of countries are most important accounting for 85% of the countries total exports and imports. USA, USSR, Japan, UK, Iran and Canada are the most important partners in India's maritime trade. Among the principal commodities of export are sugar, engineering goods, jute manufactures, tea, cotton manufactures, Iron ore, leather and spices. The important commodities which India imports include machineries, Iron and steel, petroleum crude and partly refined fertilisers, electric machinery and appliances and so on.

Sri Lanka has trade relations with a large number of countries. The principal exports are tea, rubber, coconut products, the main imports cereals and food products, textiles, machinery and fuels. The UK takes about one-quarter of Sri Lanka's exports (mainly tea) and supplies about one-sixth

of its imports. Colombo is the most important port of the country. Pakistan has extensive trade relations with a hosts of countries viz., the UK, the United States, Japan, France, Australia and Italy apart from South Asian nations. She exports mainly agricultural products, especially industrial raw materials. Her main exports are wheat, cotton, wool, hides and skin, and oilseeds, principal imports include sugar, machinery, engineering goods and mineral oil. Karachi is the key port. Bangladesh has trade relations with many countries. She exports raw jute, newsprint & paper, fresh fish, hides and skin, tea and so on. She imports fruits and nuts, cotton textiles, machinery and so on. Maritime trade takes place via Chittagong port. Maldives has very insignificant trade and so is the case with Nepal and Bhutan, both being landlocked countries.

SPREAD OF ISLAM

The spread of Islam in South Asia is the result of interaction between the Western Asian traders and the South Asian communities. Communities of Western Asian origin had been settled for many centuries along the Western Indian coast and in the South of India. Muslim communities from the Persian Guld were established in the 8th and 9th centuries in Western and Southern India. This held good in the case of Sri Lanka. Likewise Muslim outposts were established in the

Maldives and the Lakshadweep islands as well. The conversion of an ancestor of the Kolathiri royal houses of Malabar, Cheruman Perumal, to Islam during the days of the Prophet is certainly legendary. The earliest surviving mosque in Southern India, dated 1124, is found in the old palace-precinct of the Kolathiri rulers of Eli.

The expansion of Muslim maritime influence was a process independent of the encroachment on South Asia of Muslim arms, the conquest of Sind in the eighth century, the Ghaznavid raids and Kingdom of Lahore, and the great Muslim expansion of the late 12th and 13th centuries. Thus it was a continuous process of growing momentum with setbacks at times. The contrast of the peaceful spread of Islam by trade with the Muslim military conquests has been drawn by S.A.A. Rizvi.[16]

And then from India it spread to other parts of Asia. The dominant Muslim merchants of Gujarat and Indonesian settlements had very strong links between them. It was mainly from Gujarat that Muslims came to settle on the Indonesian Littoral and they played a conspicuous role in the spread of Islam in the area.

In India itself, from the 10th century onward Islam began to cross the Indus. In the 13th century the Muslims became the masters of Delhi. Along the western coast, Gujarat

always a maritime state, became a Muslim Kingdom at the end of the same century.[17] Thus we see that the spread of Islam within and outside the country has been a slow but steady affair.

SLAVE TRADE

During the medieval period maritime trade existed between Western India and the East African coast. Slave-trade was a main component of this trade. During 1451-1500 large number of African slaves were there in Bengal. There were two kinds of slaves Habashis and Zangis, i.e. slaves transported from Horn of Africa and those from Zanzibar and the adjacent east. African littoral. A. Habashi, presumably originally a slave, was the founder of a mosque in the Indian capital of the Ghaznavids, Lahore in the 12th century.

During the middle ages, merchants from the Persian Gulf were in this trade. With the Islamic conquest, this trade became more prominent in India.[18]

Later on this was persued by western traders such as the Portuguese, the Dutch, the French and the English till the 19th century. The Portuguese operated it through Swahilis, Yao, Mambari and other African tribes. By the mid-nineteenth century Britain took definite steps to, abolish the slave trade.

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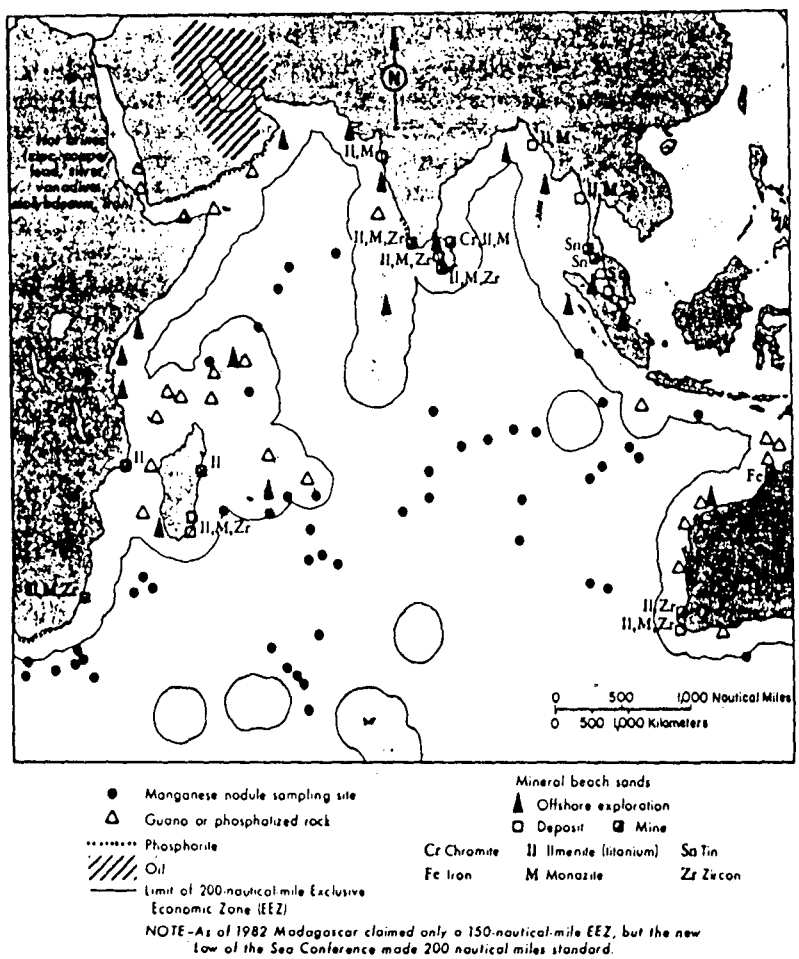
Chapter II

MARITIME RESOURCE DEVELOPMENT IN SOUTH ASIAN SEAS

South Asian countries have hardly utilised the well-established potential of the seas either for their national security, let alone regional security. This neglect of the seas is all the more deplorable as the strategically located Indian Ocean and its littoral contain two thirds of the worlds oil resources, large resources of strategic materials such as uranium, thorium and chromium and almost the entire world's production of jute, tea, tin, rubber, cashew and groundnut. This gives the region considerable 'commodity power'.

Moreover, the sea bed of the northern Indian Ocean is said to be strewn with trillions of tons of poly-metallic nodules, a 'windfall of apples' containing manganese, copper, alluminium, molybdenum and nickel. There is also a growing interest in sea-weeds and plytoplankton from the sea for extracting chemicals which are used in food, textiles and pharmaceutical as also for anti-fertility, anti-bacterial and anti-viral purposes. In addition, chemicals such as salt, bromine, calcium, gypsum, and sulphur from the sea are already commercially viable.

As of now, only one-quarter of the fishery potential of the northern Indian Ocean is harvested. Even so fish exports earn Rs. 600 crores of foreign exchange yearly and provide employment for thousands of fishermen and post-harvest workers. There is thus a strong case for a more dynamic



Source: Based on information from U.S. Central Intelligence Agency, *Indian Ocean Atlas*, Washington, 1976, pp. 16–17.

Figure 17. Indian Ocean. Natural Resources

interaction between agricultural, environmental and industrial ministries in all the South Asian states.

India has already invested nearly $1.7 billion in its offshore structures which now supply nearly 60 percent of the country's gas and 40 percent of its oil requirements, with Bombay High alone having seven rigs, 18 platforms, 32 support vessels, 10 helicopters and 600 Km of piplelines. In addition ocean energy is being harnessed from waves, temperature variants, tidal heights and conservation of ocean thermal energy. This merits the rationalisation of the various agencies concerned. Over 1,00,000 merchant vessels ply in the Indian Ocean, with India's seven million tons of shipping representing 1.33 percent of the world's total tonnage. The earnings are very substantial. Besides a large number of Indian seamen are employed on foreign shipping vessels.

The northern Indian ocean is fast becoming the dustbin for detergents, with sewage disposal and oil spillage posing separate problems. Global warming due to the 'green house effect' rising sea levels, ozone layer depletion, protection of biological diversity and prevention of desertification will be hopefully supported by a world environmental fund. These emerging relations between the sea and the state has ushered in fresh rules for managing

the sea bed, resource exploitation, environmental security, nuclear waste dumping, ocean policing and coastal management. These expanding uses of the seas are however being dealt with by widely differing agencies, such as the coast guard, the pollution boards, the island development authority and departments of environment and ocean development.

LIVING RESOURCES

Among all the marine resources, fisheries is one of the most important resource. Fishery resources usually include all economic aquatic products, mainly finfish used for food or various other products. Other fishery resources include, crustaceans, molluses, vertebrates (e.g. turtles, marine mammals) and other invertebrates (e.g. sea urchins, holothurians).

The south Asian seas region including Burma and Iran produced 2.5 million mt. of marine fisheries in the year 1981. India, Burma and Pakistan being the main producers. A programme is on to develop commercial offshore fishing, especially in Pakistan and increase production of demersal species and of schooling pelagic species and cephalopods. If fully exploited, as much as 4 to 5 million more tons may be produced annually from this area.

In India about 150 million people live along the coast and over 1.4 million people derive their subsitence

through activities related to the sea, i.e., mostly fisheries. According to 1985 National Institute of Oceanography report the total annual fish catch from sea in India 1.82 million tonnes but the potential is estimated to be about 10 million tonnes. About 1.94 million hectares of brackish water is available for acquaculture out of which 30,000 hectares is used at present. These yield about 80,000 tons of products annually.

Marine production, however, has increased slowly in the past several years. A major reason for the stagnation is that many of the most valuable stocks - including the larger demersal species, lobsters, shrimps, and the more abundant shoaling pelagic fish - are nearing or have reached full exploitation levels.[1] The diversification of fishing in India's inshore waters is one way in which production can be increased, but it does not address the problem of potential underexploitation of certain species for which there is a great and increasing demand.

Exploratory surveys indicate the existence of unexploited fish resources in offshore areas, but concentrations in commercially viable numbers are much less. In general, the perennial nature of the oxygen-minimum layer at levels of less than 1 ml/litre between depths of 100 m and 1200 m throughout the Indian Ocean north of 10°S in the Arabian Sea,

and in the Bay of Bengal limits the production of fish in commercial quantities in offshore areas.

Table - II

Annual Fishery Production in the SAS region (1971 and 1981)

Countries	Marine Fisheries (thousand metric tons)	
	1971	1981
Bangladesh	90	130
Bhutan	-	-
India	1161.0	1436.0
Maldives	-	-
Nepal	-	-
Pakistan	148.4	261.5
Sri Lanka	77.0	177.2

Source : Statistical Yearbook for Asia and the Pacific 1981 and 1982.

India's marine fisheries are essentially small scale in nature and include both traditional and mechanised types. Larger-scale industrial fishing is only just emerging, and its cotribution is at present quite limited.[2] Traditional fisheries still contribute nearly 65 percent of India's total annual catch. Improvement in catchment gear, handling and storage methods offer some possibilities for both increasing production and improving the lot of the fishermen.

The 200 mile Indian EE2 (declared by India in 1976) covers an area of neraly 2.02 sq. Km with an estimated yield potential of 4.47 million tonnes (m.t.) of this nearly 50 per cent is reported to be within the coastal area upto a depth of 50 m, about 1.71 m.t. in the off-shore areas between the 50 m and 200 m depth zones, and the balance in the oceanic areas beyond 200 m.[3] The potential and the present yield from the Indian EE2 are given below:

Table III

	YIELD (m.t.)		
	Potential	Present	%
Pelagic Fishes	1.850	0.754	40.7
Demersal Fishes	1.095	0.493	45.0
Crustaceans	0.325	0.236	72.6
Cephalopods	0.180	0.024	13.3
Oceanic fishes	0.500	Neg.	0.2
Miscellaneous	0.520	0.057	10.9
Total	4.470	1.565	35.0

Crustaceans consists of shrimps, prawns, crabs and lobsters. The harvest of penaeid shrimps is very important in many deltaic fishing grounds such as in the coastal waters of India, Pakistan, Bangladesh and many other south East Asian countries. While the shrimp resources, included in

among Crustanceans, have been well exploited, Tunas (Oceanic fishes), Squids and Cuttlefish (Cephalopods) are yet to be properly exploited. The present fishing effort is mostly confined to an area covering about 5 per cent of the EEZ (Depth range from 50 m to 60m)[4].

Except India, no South Asian country has substantial commercial fishing industries. Even today they rely mostly on artisanal fisheries. Among the non-coastal nations that fish in South Asian Maritime waters are Japan, South Korea, the USSR, the FRG and Spain, accounting alone for more than 30 per cent of the annual catch in fisheries. One of the underexploited fisheries in the Indian ocean is the tuna fishery. The potential fishery is of Skipjack around island groups and for yellowfin, begeye, southern bluefintime and albacore on the High seas. During 1985, 78 per cent of the total tuna landings of 991,000 m.t. in the Indo-Pacific Tuna Development and Management Programme (IPTP) region was captured by coastal countries and the remainder by industrial fleets of developed countries.[5] China (Taiwan), Japan and Korea are the major participants in the Industrial longline fishery in the Indian Ocean. Vessels from France and Spain are the major participants of the industrial purse-seine fishery in the Indian Ocean. The numerous varities of tuna fishery include Skipjack, Yellowfin, longtail, Kawakawa, frigate and bullet tunas apart from the ones that have been

mentioned earlier. In India, fishing grounds for adult yellowfin and begeye tuna lie within its EEZ.

There is growing need to stop the non-coastal nations from fishing in South Asian Waters. Conservation programmes also need to be undertaken. In order to conserve marine mammals in the Indian Ocean, a proposal to declare the Indian Ocean as a whale sanctuary is being considered by several concerned governments.

NON-LIVING RESOURCES

Non-living marine resources may be broadly divided into two types, viz- renewable and non-renewable. Petroleum and natural gas, Manganese nodules, phosphorites etc. are examples of non-renewable marine resources. Whereas mangroves, coral reefs etc. are examples of renewable marine resources. The ocean has been repeatedly labelled as the 'last frontier' and claims have been made that metals can be hauled from the sea at 50 - 70 per cent of the cost of land mining; the sea ores are often highly concentrated; and that shelves are rich in petroleum, natural gas, tin, phosphorite, diamonds, sulphur and iron. Manganese - rich modules have been hailed as a bonanza that would help the economy of developing nations. Although there is indeed promise in the ocean, hopes may be somewhat premature, if not excessive. Ocean mining has to cope with availability, accessiblity, advisability, and legality among other factors.

Ocean minerals are widely scattered and highly localised. They are derived mostly from continental crust, although there might be some in oceanic crust as well. Others which are not necessarily of continental origin are, however, usually found close to the continental crust.

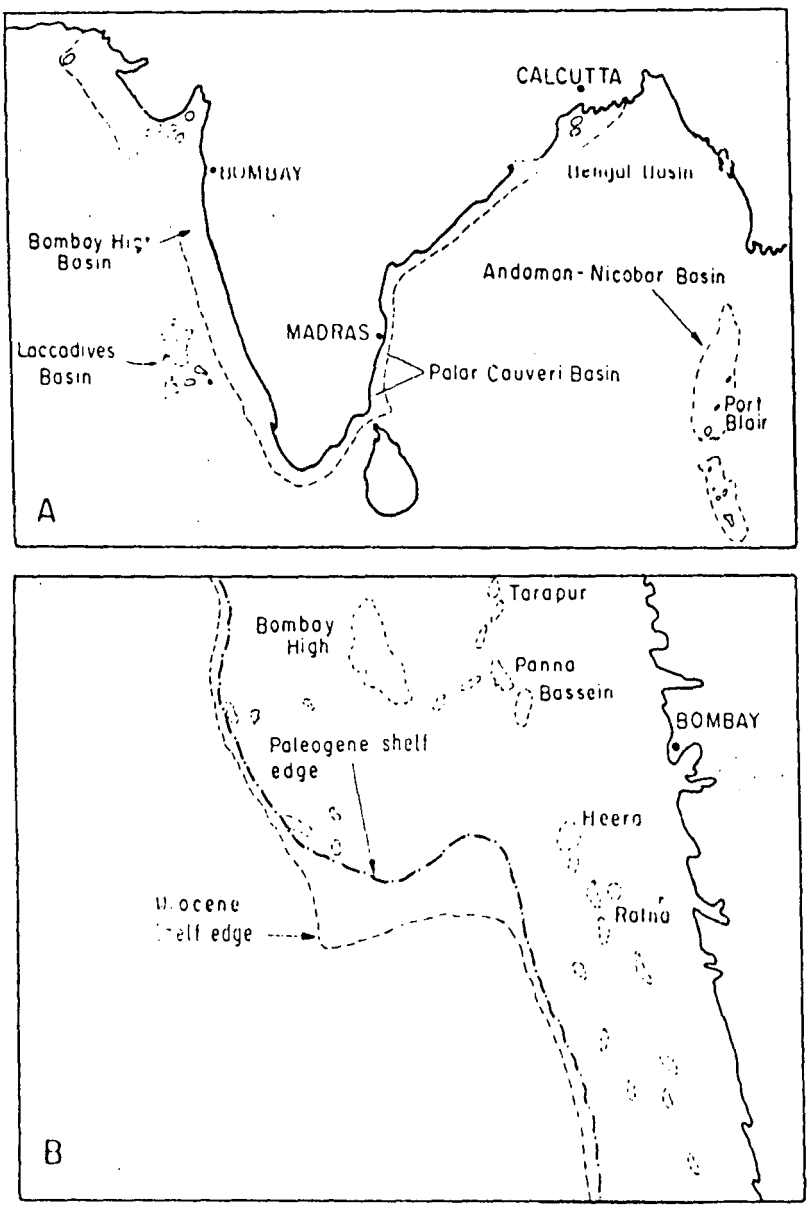
There is considerable international debate regarding who owns and who has the right to extract ocean's mineral resources. The UNCLOS - III, December 1982 made declarations regarding (i) the sovereign rights to extraction in the 200 mile EEZ by coastal states, and (ii) resources of the deep sea will be governed by International Sea Bed Authority and extraction will be based on the principle of equitable sharing and common heritage of mankind. Many developed countries did not agree with this. There are numerous mineral resources under the surface of the sea which are yet to be exploited. It is well known that hydrocarbons, by far the most valuable, are found in very substantial quantity under the bed of the sea. At present about 20 per cent of worlds petroleum products come from the sea, and may reach 50 per cent by the year 2000 A.D. Tides, waves and currents besides others like thermal difference, salinity gradient etc. could become immense source of energy. They could also be useful for the multipurpose economic development of the poor South Asian countries, and other tropical and sub-tropical countries lacking hydrocarbon deposit, provided appropriate technology is found and made available to them.

Sea floor mineral deposits include all unconsolidated sediments lying on the floor. Present commercial production comprises of sands, gravels, corals, limeshells and relatively small quantities of tin, titanium and iron. Potential sea floor mineral resources are, however, immense and comprise of both oozes and clays, phosphorites and manganese nodules, and the newly discovered polymetallic sulphides and cobalt crusts.

PETROLEUM :

The world uses about 20 billion barrels of petroleum per year, or about 5 barrels per persons per year. Of this about 4 billion barrels come from marine sources and this fraction is increasing. As mentioned in the beginning of this chapter 40 per cent of India's oil requirements come from its offshore structures. The total production of crude petroleum in India for the year 1986-87 was 30.56 million tonnes. India has a reserve of 1 billion tonnes of petroleum in its EEZ out of which only 7.5 million tonnes have been extracted. Pakistan has a reserve of 4 million tonnes of petroleum out of which only 0.4 million tonnes have been exploited. The 1982 crude oil production was 2.11 crore tonnes. In Gujarat tests have been established the oil fields in Ankleswar (Annual capacity 73 m tonnes) and Cambay basin of Piran Island, the probable reserve being around 60 million tonnes. The success achieved in 1980 in Bombay High has surely opened a new chapter in the exploration of offshore

Petroleum Occurrences and Exploration Activity



A. Offshore and onland sedimentary basins of Indian region

B. Off Bombay High

oil reserves. The potential reserves in Bombay High is supposed to be 230.95 million tonnes (1980 production being 4.5 million tonnes).

NATURAL GAS :

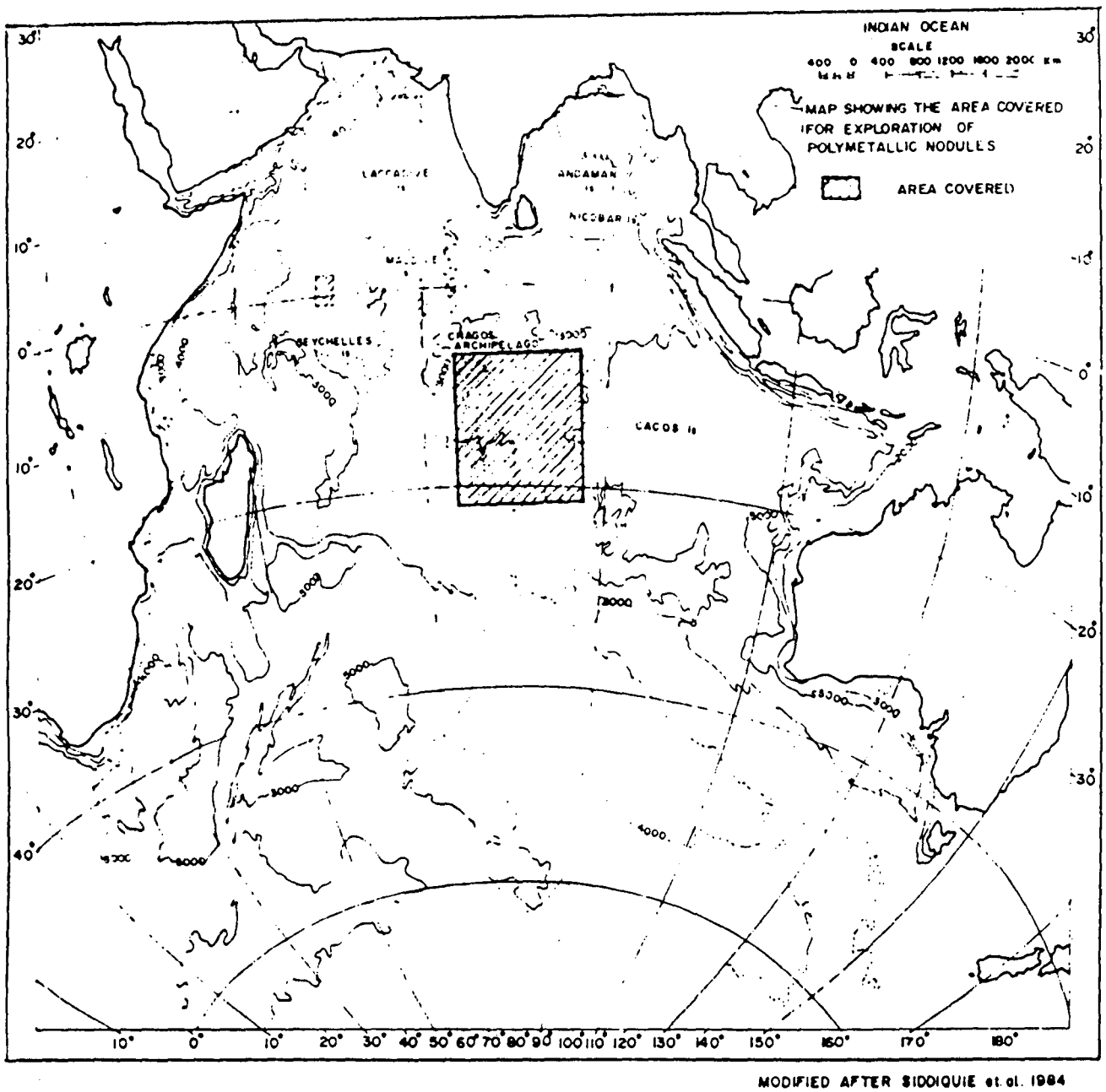
South Asia has a significant amount of natural gas reserve. Among them India has the most abundant reserve of natural gas. In India Natural gas (chiefly marsh gas with some other gaseous hydrocarbons) usually accompanied the petroleum accumulations, thus supplying the propulsive force to the later. The total reserves of natural gas in the country was estimated to be 351.91 billion cubic metres (bcm) the offshore being 270.96 bcm. Production at national level decreased by 24 per cent in 1980 i.e. 1975 mcm, 1981 and 1982 total production were 19.97 bcm and 24.12 bcm respectively. The country is fortunate to have discovered natural gas offshore at Andaman and Nicobar islands, West coast of Gulf of Cambay and Kutch and Bombay High regions. The significant discoveries of gas in 1985-86 were B-174 in offshore Bombay, Narsapur in the Krishna Godavari basin, Kaijisar in Gujarat and Kaza in Andhra Pradesh. Both oil and gas have been struck at some other locations like Panna East and B-172 in offshore Bombay, Pakhajan in Gujarat and Tatipale in the Krishna Godavari basin. The known gas reserves have increased from 68 billion cubic metres to 479 billion cubic metres. Sizable oil and gas

reserves are also expected off the coast of Pakistan, Sri Lanka and Bangladesh.

MANGANESE NODULES :

Manganese nodules, potato-shaped polymetallic concretions, are rich in manganese, nickel, cobalt, copper and chrome. Manganese Nodules (15% Mn, 15% Fe, 0.4% Ni, 0.4% Co, 0.3% Cu) greatly enriched in iron and manganese and range between 1 to 20 cm in diameter.[6] They are abundant in areas of low sedimentation rates, such as abyssal plains. The nodules of the Indian Ocean are generally characterised by having copper, nickel and cobalt below those generally considered economic. These Manganese nodules cover a large area, in the Indian Ocean, over 10 million sq. Km. Distribution maps prepared for Mn, Fe, Ni, Cu, Co and Mo indicate the large areas in the basins of the east of the central Indian Ridge contains nodules with a high percentage of Mn (71.5 per cent), Ni and Cu (70.2%) and these appear to be more promising basins. According to recent surveys the Cenral Indian Basin's nodules are associated with palae clays.[7]

Apart from these there are several other minerals in the South Asian seas region. Among them coal (India, Pakistan), Limestone (Sri Lanka), Iron ore (India), Nickel (India, Pakistan) Copper (India), Vanadium, Tin, Lead (India) Zinc (India), Uranium, Salt (India, Pakistan and Bangladesh)



Map showing the area covered for explorations of polymetallic nodules.

are worth mentioning. Sands and gravels are second in value only to petroleum, they include aragonite, placer deposits and phosphate nodules. Black sands are found in many sites along the coast of India, they usually contain, in economic quantities, ilmenite, zircon, garnet magnetite, sillimanite and Kyanite. Estimates for the Kerala coast include 17 Mt of ilmenite, 1 Mt of rutile and zircon each and 2,00,000 tons of monazite. According to the Indian Bureau of Mines, reserves of ilmenite amounted to 130 Mt in 1974, at which time production reached 76,670 tons. concentrations of heavy minerals very from 4% to 56% and the richest deposits identified so far occur at depths from 10 to 12 m over a 25 Km stretch between Neendakara and Kayamkulam. Heavy mineral placers have been found on the west coast, for example, ilmenite off Ratnagiri.

An ocean is a vast storehouse of marine energy. Energy can be extracted from waves, tides, offshore winds, currents magnetism, salinity and so on. In the same way, near shore tropical and subtropical ocean waters are best for vertical temperature gradient i.e. for the Ocean Thermal Energy Conversion (OTEC). Sea-weeds can be turned into marine biomass. South Asian seas hold out tremendous prospect for all these.

Oceans, ice caps and glaciers constitute 97.2 per cent and 2.15 per cent of worlds water supply respectively. Another comparatively different possible source of freshwater is icebergs. Thus South Asian countries can also avail fresh water facilities from the sea.

Mangroves are also largely available in South Asia particularly in Bengladesh, Pakistan and India.

Table IV

Mangrove Areas in South Asia

(in '000 hectares)

Country	Area
Bangladesh	410
India	96
Pakistan	345
Sri Lanka	4

Source: ESCAP, Management of Mangrove Ecosystems in the ESCAP Region, 1983 (Mimeographed).

Mangroves typically occupy low wave energy protected coastlines in bays, estuaries, and lagoons. Mangroves are extremely useful for several reasons.[8] They act as a buffer against destructive cyclones and lesser monsoon - driven tropical storms. They also constitute a feeding ground and

nursery exporting decomposable organic matter into adjacent coastal waters. This organic matter provides an important nutrient input and primary energy source for vertebrates, crustaceans and other organisms.

Coral reefs are composed of coral limestones, the accumulated skeletons of coral polyp colonies. They are found off the coast of India, Sri Lanka and Bangladesh. But the most notable ones are found off the coast of Maldives and Sri Lanka. In India they are found around the offshore islands of Andaman, Nicobar and the Lakshadeweep islands and the Gulf of Mannar. They are found at St. Martin island in Bangladesh. They are being widely exploited for lime and building material. In India they have been badly depleted due to mining activities but some have been preserved as marine parks.

It has already been mentioned that the Central Indian Ocean basin is rich in poly metallic nodules and phosphoritic deposits. India, already registered as "Pioneer investor" (along with France, Soviet Union, Japan and 4 international connsortia, with rights to explore an area of 1,50,000 sq.Km. in neighbouring ocean) was first to be awarded claims to 52,300 sq.kms. by the UN on August 18, 1987 to exploit polymetallic nodules from the sea bed. India's imperatives as the first pioneer investor have to be analysed in the light of its growing interest into the established

and exciting areas of deep sea mining, pelagic fisheries, sea farming, offshore engineering, underwater technology and coastal zone management.

There is considerable mineral wealth in the South Asian seas, and dissolved substances already make a valuable addition to land reserves. The energy potential is huge, but at this point it appears that only a relatively small portion can be tapped.

The key to effective resource development and management is however the availability of trained manpower which needs to be built up on the pattern of the sea grants programme of U.S.A., Norweigian Institute at Trondheim and Beijing Ocean University. In addition there is a need for a centrally located ocean data centre in south Asia linked to the world data centre. And lastly there should be selective imports of technology, relating, for instance, to marine instruments to facilitate fuller use of marine resources.

Ocean mining will be complex, difficult and costly. Yet mining of nodules still holds much promise and potential. Ocean mining does not require any major technological breakthrough, it reamins quite complicated to lift and recover nodules from depths of 5 Km. Despite these difficulties the prospect for the South Asian countries is bright, provided they cooperate among themselves and keep away the developed countries from their EEZ's.

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Chapter III

CONFLICTING ISSUES AND PROBLEMS

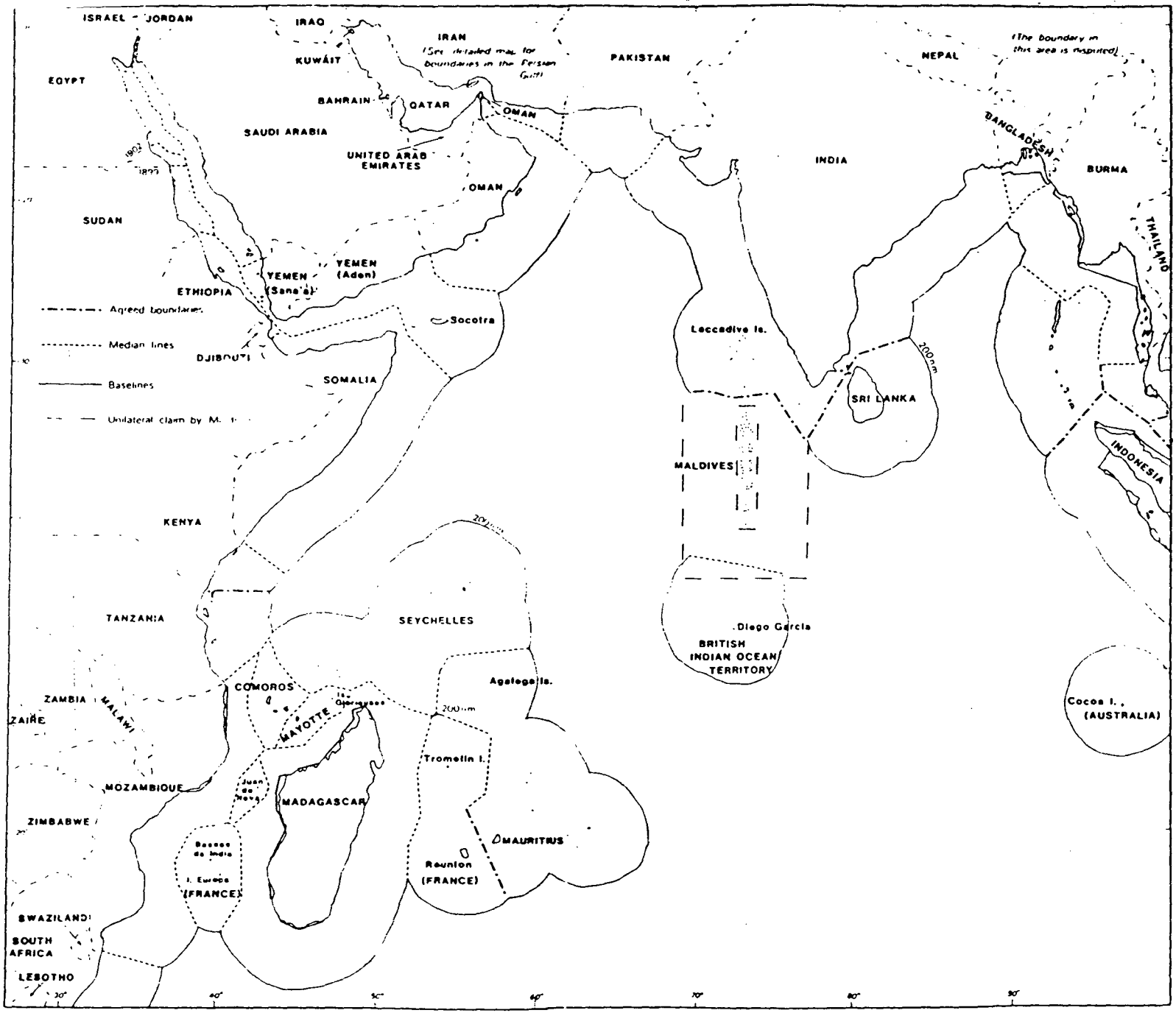
IN SOUTH ASIAN SEAS

MARITIME BOUNDARY DEMARCATION :

Maritime boundary demarcation, like demarcation of boundaries on land, has always been considered to be one of the most intricate problems facing the modern coastal states. This problem has further been aggravated by the numerous living and non-living resources, which occur in the oceanic waters and the deep se-beds and also by the presence of peninsular, islands, deltas, lagoons and narrow straits. UNCLOS-II by extending zones of national jurisdiction has increased maritime contiguity, mainly among Bangladesh, India Pakistan and Sri Lanka in South Asia. It has raised the possibilities of conflict on boundary delimitation, traditional stocks and pollution. In other words, confrontation along boundaries continues to develop because of their ineptness of allocation, delimitation, demarcation and the changes in conditions along particular boundaries, either during their evolution or since their demarcation. All these factors put together and political considerations added to them, make the issue of maritime boundary delimitations increasingly difficult to settle on amicable terms.

India - Bangladesh :

Bangladesh was liberated from Pakistan in 1971. India fought for her liberation. And today Bangladesh has soured her relations with India ostensibly for a number of reasons



Agreed and potential boundaries in the Indian Ocean (Prescott : 1985)

maritime boundaries between the two being one of the crucial ones. With a population of nearly 90 million, Bangladesh is the most densely populated country in south Asia. It is sorrounded by India in the north, west and east. To the south lies its deeply indented concave coastline in the Bay of Bengal which is said to be the "unstable, brocken and irregular".[1]

The presence of deltas and islands off the coast of Bengladesh in the Bay, due to the deposition of silt brought down by numerous rivers from the Himalayas, through Nepal and India, add further complications in the delimitation of its maritime zones.[2]

After its independence, in February 1974 Bangladesh enacted its own Territorial waters and Maritime Zones Act under which it declared, on April 12, 1976, a 12 nautical miles territorial sea, a 200 miles EEZ, and a continental shelf extending to the outer limits of the continental margin. However, serious disputes arose between Bangladesh and its neighbours, Indian and Burma, about delimitations of their overlapping maritime boundaries.

The seaward slope in the Bay of Bengal is extremely gentle due to heavy siltation. The following characteristics have resulted from the effect of the goelogical features and climatic conditions of the coastal regions of Bangladesh.

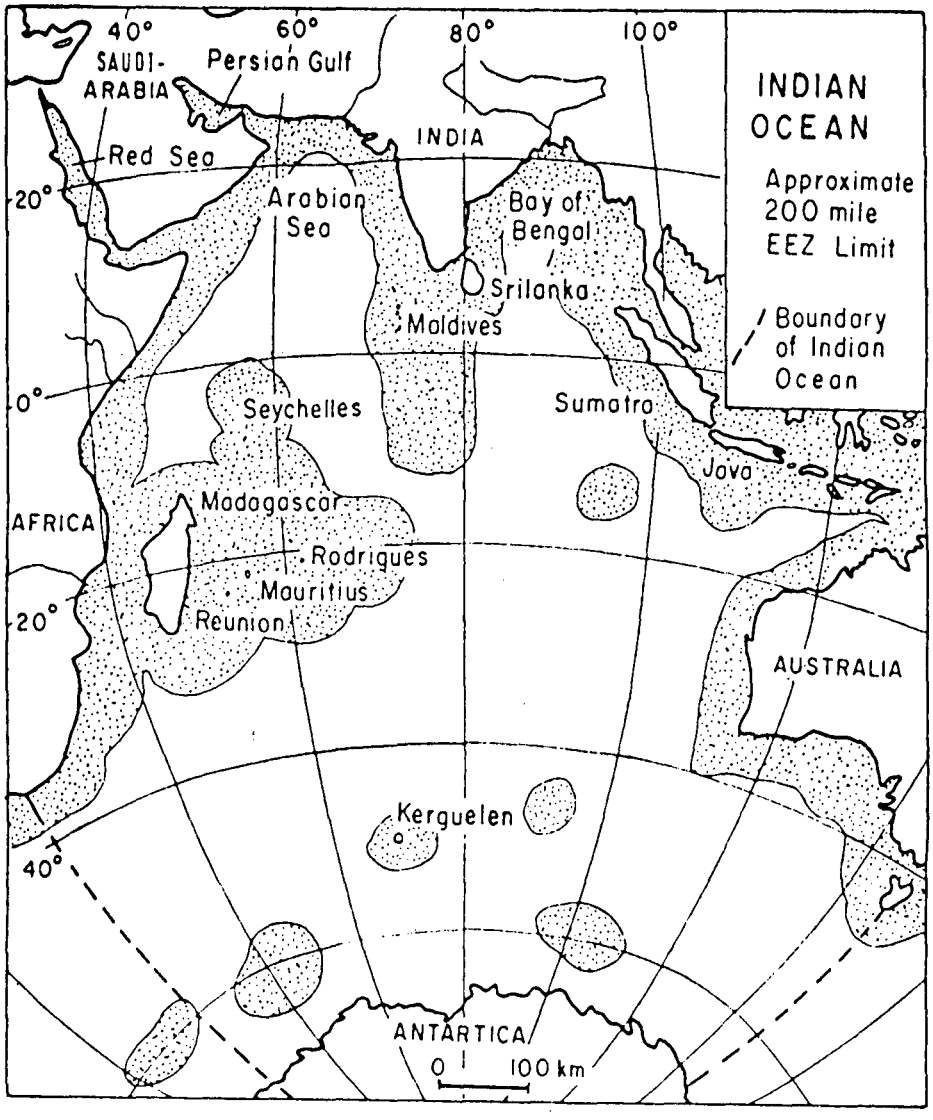


Fig. 2.8. Approximate boundary of EEZ in the Indian Ocean Region

(i) The estuary of Bangladesh is such that no stable water line or demarcation of landward and seaward area exists.

(ii) The continual process of alluvial and sedimentation forms mudbanks, and the area is so shallow as to be non-navigable by other than small boats.

(iii) The navigable channels through the afresaid banks are continuously changing their course and require soundings to establish their demarcation.

According to Bangladesh, these geomorphological conditions necessitated a "depth-method baselines" rather than "normal baselines" or "straight baselines" for delimitation of its territorial sea, as envisaged in Article 4 of the 1958 Territorial Sea convention. therefore, it suggested an amendment to article 4 of the Territorial Sea Convention which would permit delineation of baseline by the depth method i.e., geographic co-ordinates at specific depths of the coastal waters linked by straight lines to effectively demarcate the landward and seaward areas.[3]

At the Caracas sesstion of the UNCLOS III, Bangladesh proposed an amendment to Article 6(2) of the Convention. Bangladesh's proposed amendment was not accepted. However to meet specifically Bangladesh's situation, at least to some extent, Article 7 (2) of the 1982 UN convention was revised

In 1974, Bangladesh proclaimed at set of straight baseline drawn on the basis of depth method, out of disappointment because Article 7 (2) did not meet what it wanted. Measuring 221 nautical miles, the baseline joins eight fixed points at 10 fathoms depth which at some places makes the baseline as much as 50 miles from the shore. Thus although it has a coastline of only 310 miles, it has enclosed 6200 square nautical miles of coastal areas and continental shelf within its internal waters through its floating baseline.[4] As expected both India and Burma have rejected the Bangladesh claim, and it has not received the approval of any country so far except Vietnam.[5]

The Ganges-Brahmhaputra Delta is a promisng Petroleum rich area in which both Bangladesh and India are interested. The delimitation of this area is a subject of dispute between these two neighbours. While India would like the area to be divided on the basis of an equidistance line, Bangladesh because of its concave coastline, rejects the Indian claim. The dispute between them sufaced when Petro-Bangla, a government controlled corporation, signed production-sharing contracts for conducting seismic surveys and exploratory drilling with six companies in 1974, India disputed the block that was awarded to Ashland lodged formal protest against granting exploratory rights in an area which under the equidistance principle, was part of the Indian EEZ.

The discovery of New Moore Island or Purbasha in India and South Talpatty island in Bangladesh has added further complications to the dispute. The islands emerged in 1970, after a cyclonic activity, in the Bay of Bengal in the estuary of the Haribhanga river on the border between the two countries.

The islands make a U-shaped formation, with an approximate area of two square miles lying 5 nautical miles off Ganges River Delta. India claims the island on the grounds that the flow of the Haribhanga river is to the east of the island which, therefore, lies on the natural porlongation of the Indian territory. Bengladesh contests this claim and asserts that the river flows to the west of the island and cannot be said to be on the natural prolongation of the Indian territory. India has claimed the island since 1971 as lying withing its territorial sea and maintains an effective occupation by conducting frequent surveys, although it is not inhabited and has thwarted any Bangladeshi attempt to occupy it. The island is of great importance for Bangladesh since, if the island falls to India, any line of equidistance which takes account of the island would erode the area claimed by Bangladesh.[6]

India - Pakistan :

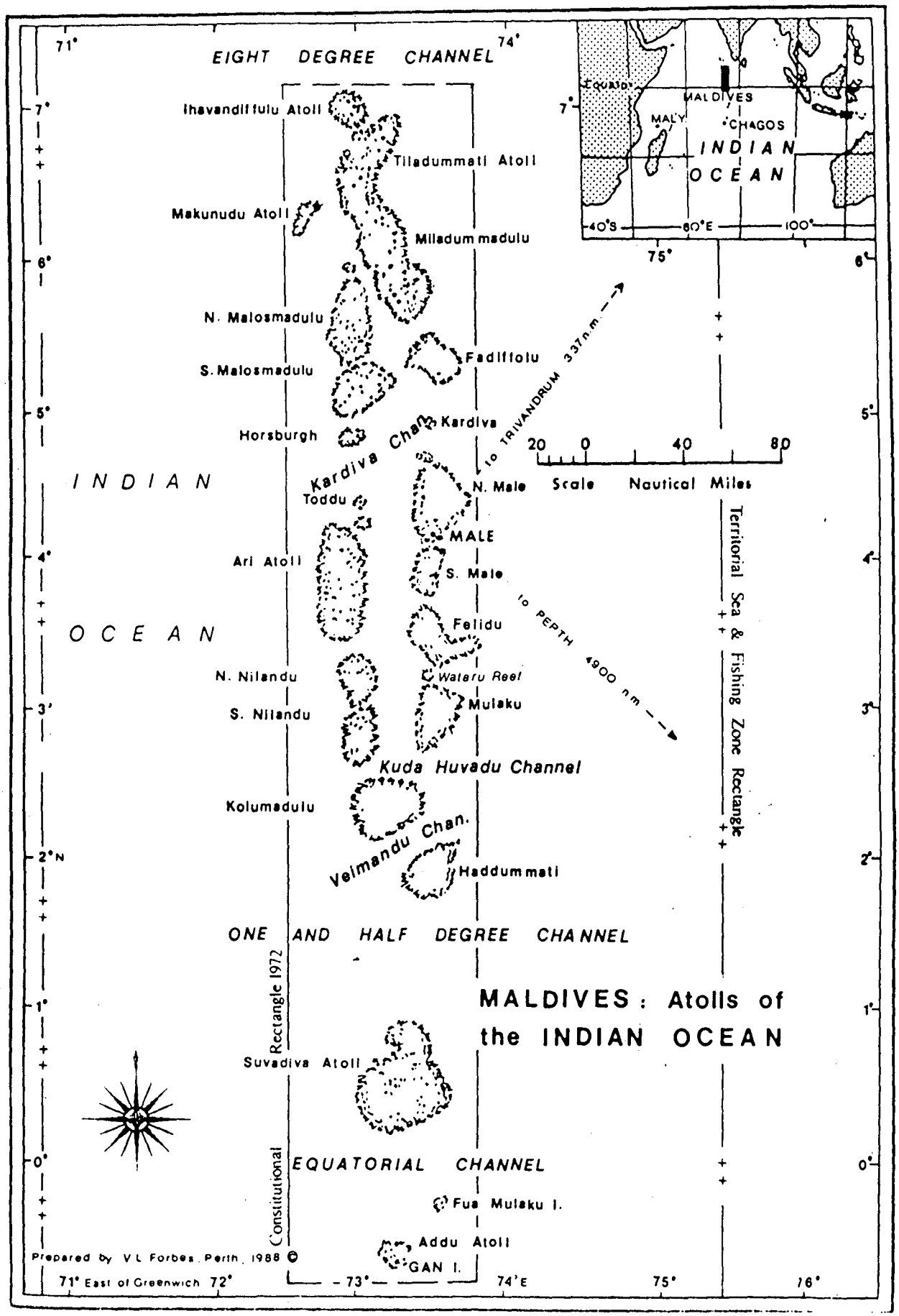
Pakistan has a small coastline of 1,046 Km. and even extension of maritime zones to include 12 miles of territorial

sea, 200 miles of EEZ, and continental shelf extending to the end of the continental margin under the 1982 convention on law of the sea and as claimed by Pakistan under its Territorial waters and Maritime zones Act of 1976, is not much compared to India.[7]

Declaring the Rann of Kutch, a marsh land between the Indian State of Gujarat and Pakistan's Sind Province and potentially an oil-rich area as a "land locked sea" or a "boundary lake" Pakistan sought to take part of the area from India in 1960s.[8] But when the use of force did not succeed in the settlement of the dispute, the matter was submitted to an international arbitration tribunal which awarded more than ninety per cent of the disputed area to India.[9] A discontented Pakistan, has not so far demarcated its maritime boundary with India. Nor, is India in a hurry to demarcate the boundary.

India - Maldives-BIOT :

The Republic of Maldives consists of about 1,196 tiny islands, mostly 0.6 to 0.8 Km. long with a total land area of of 298 square Km (or 115 square miles), out of which only some 202 islands or 20 per cent are inhabitated with a total population of about 2,00,000.[10] The island chain stretches some 820 Kms in the Indian Ocean with its centre point about 750 Kms west and a little south of Sri Lanka. Maldives has


EIGHT DEGREE CHANNEL
Ihavandiffulu Atoll
Tiladummati Atoll
Makunudu Atoll
Miladummadulu
N. Malosmadulu
S. Malosmadulu
Fadiffolu
Horsburgh
Kardiva Chan.
Kardiva
INDIAN
OCEAN
Toddu
N. Male
MALE
Ari Atoll
S. Male
Felidu
N. Nilandu
Waleru Reef
Mulaku
S. Nilandu
Kuda Huvadu Channel
Kolumadulu
Veimandu Chan.
Haddummati
ONE AND HALF DEGREE CHANNEL
Suvadiva Atoll
EQUATORIAL CHANNEL
Fua Mulaku I.
Addu Atoll
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MALY
CHAGOS
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40°S
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MALDIVES: Atolls of the INDIAN OCEAN
Prepared by V.L. Forbes, Perth, 1988 ©
71° East of Greenwich
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not claimed archipelagic status so far. By the constitution adopted in 1964, the territory of Maldives was defined as the islands, air and sea sorrounding and in between the islands contained within a rectangle formed by meridians and parallels. The rectangle was slightly amended in 1972 and is declared to be within 72°30'30" east and 73°48' east and the parallel 7°9'30" north and 0°45'15" south. At no point do these floating baselines of the constitutional rectangle touch any of the territory of Maldives though the northern and some part of the eastern boundary lie within one nautical mile of some atolls. But on the west and the east respectively, they pass 52 and 38 nautical miles from the nearest land.[11]

Maldives established its fisheries zone in 1969, territorial sea and fishing zone in 1970, and EEZ in 1976, by declaring limits which were parallel to the constitutional rectangle. While the drawing of such baseline is questionable under customary or conventional internation law, India, along with Sri Lanka, negotiated in July 1976 a boundary delimitation agreement with Maldives recognising each others maritime zones and laying down a trijunction point (T. Point) between the three countries. In December 1976 India concluded another agreeement with Maldives delimiting the maritime boundary between the two countries, in the Arabian sea. India again recognised Maldives economic zone limits by this agreement.[12]

Eventhough Maldives claim to its economic zone around its constitutional rectangle has been more or less ignored so far, in the south it impinges on the area which would fall on the economic zone of the British Indian Ocean Territory. The area involved is said to be about 21600 nautical miles.[13] Though Britain has so far ignored the infringement because it is using the Indian Ocean Territory for strategic purposes only, a different situation many arise if Mauritius regained this area as part of its territory to whom it rightfully belongs.

India - Sri Lanka

Sri Lanka is the largest island state in the South Asian seas region. It has a coastline of around 1340 Km. Eventhough it has an area of 1,50,000 square nautical miles of EEZ, its continental shelf is not very wide. In fact the average distance at which 200 metre isobath occurs off the coast of Sri Lanka is not more than 20 nautical miles. The total area within 200 metre isobath is about 7,800 square nautical miles. Sri Lanka brought it to the attention of the UNCLOS-III that in its case the foot of the continental slope and the 2,500 metre isobath were very close to its coast and a very large proportion of the sedimentary rock of the continental margin of Sri Lanka was beneath the rise. The application of the rule adopted in Article 76 of the convention, therefore, limiting the outer edge of the continental margin

according to the thickness of sedimentary rocks of 60 miles from the foot of the continental slope, according to Sri Lanka would deny it more than half of its margin which would otherwise belong to it since continental margin consisted of the shalf, slope and the rise. It, therefore, requested the conference to agree, or grounds of equity, to an exceptional method of delimitation, taking into account the special characteristics of its continental margin. The conference partially agreed to it and permitted Sri Lanka to establish the outer edge of its continental margin by straight lines, not exceeding 60 miles in length connecting fixed points, defined by latitude and longitude, at each of which the thickness of sedimentary rock was not less than one kilometer.[14] It seems that although geomorphologically, Sri Lanka has a very wide continental rise, legally its continental shelf will not extend beyond 200 miles from the baseline. A lot of exploratory activities have been started off Sri Lanka's coast.[15]

It is improtant to mention here that India and Sri Lanka have amicably completed the process of their boundary delimitation in 1977 through three separate agreements. The first agreement, signed in 1974, related to the conflicting claims of the two countries to the island of Kacchatinu, a half-coral-half-sand island, about 3.75 square miles in area, lying in the palk strait about 12 miles from the nearest Indian

coast and 10.5 miles from Sri Lanka. Used for centuries by fishermen from both the countries, the island was for the most part uninhabitated except for a chaped which was occasionally used the faithful, living both in India and Sri Lanka. Eventhough both the countries claimed the island on historical grounds, neither parties could prove actual display of state activities to the exclusion of the other. The Kacchativu island became a major obstacle in the boundary agreement and led to a climate of suspicion affecting the entire range of relations between them. By an agreement signed in June 1974, India relinquished its claim over the island but, as a concession to India, the two parties agreed to divide the Palk Strait on the basis of equidistance principle irrespective of the island. The median line was drawn in the area of the Kacchativu island about 11 miles from the island. The Indian pilgrims and fishermen were also permitted by the agreement to visit the island without visas as before.[16]

Significantly both India and Sri Lanks claim Palk Strait, Palk Bay and the Gulf of Mannar as historic waters and have included provisions to that effect in their respective Maritime Zones Acts, passed in 1976, following the conclusion of maritime boundary agreements between them. The Palk Bay and the Gulf of Mannar constitute the northern and southern sectors respectively, of the sea between the mainland of India and

Sri Lanka. They are devided by the island of Rameswaram and a continuous line of coral reefs, called Adam's Bridge, leading to the mainland of Sri Lanka. The Palk Bay is an inlet of the Bay of Bengal, measuring about 74 nautical miles along its north-south axis, and 76 nautical miles on the major east-west axis, and is bordered by the Indian peninsula on the west, Adam's Bridge on the south and island of Sri Lanka on the east. The Gulf of Mannar opens into the Indian Ocean in the south, but is otherwise almost wholly sorrounded by land. At its widest point between Point De Galle in Sri Lanka and KanyaKumari in India, the Gulf is about 200 miles. In the north the Gulf is about 17 miles, and from north to south 130 miles. pearl and Chank fisheries of the Palk Bay and the Gulf of Mannar are well known. There is ample historical authority to prove that the sovereigns of both India and Sri Lanka considered, themselves as the exclusive owners of the beds of pearl oysters and chanks in the Palk Bay and the Gulf of Mannar.

The Government of India, on January 15, 1977, notifying the limits of India's historic waters in the Palk Strait, the Palk Bay and the Gulf of Mannar referred to their status as follows :

> "The historic waters of India in the Palk Strait and the Palk Bay area of sea are internal waters of India. The historic waters of India beyond the appropriate baseline referred to in section 3(2) of the Act in the Gulf of Mannar area of Sea have the same status as the territorial waters of India."

A similar proclamation by Sri Lanka, in respect of its historic waters in Palk Strait, the Palk Bay and the Gulf of Mannar followed.[17]

The above-mentioned agreement on maritime boundaries was also accompanied by an agreement on fisheries, according to which, fishermen from Sri Lanka were allowed to continue fishing at Wadge Bank south of Cape Ca in India's EEZ for three years until 1979 and were given five years thereafter to phase out their fishing activity in the area.[18] It was agreed that for a period of five years India would provide nnualy to Sri Lanka, at their request, 2000 tons of fish of a quality and species and at a price to be mutually agreed upon by the two governments.[19]

PROBLEM OF LANDLOCKED OF STATES - NEPAL AND BHUTAN

In Paragraph 1 "a" of article 124, the UN convention on the Law of the Sea declares that the term "landlocked state" denotes a state, which has no seacoast. There are 30 such countries including Nepal and Bhutan.

Landlocked countries can reach the sea only through the territory of neighbouring coastal states, through routes called "transit passages". Prior to the World War II, several bilateral agreements were concluded. Among the Postwar bilateral agreements mention should be made of the 1950 Indo-Nepalese treaty, on transit questions. The 1982 UN convention on the law of the sea is a significant one for the fact that a compromise solution was incorporated in Part X entitled "Right of Access of Landlocked States to and from the Sea and Freedom of Transit."

Unlike the 1958 Geneva convention on the High Seas, the 1982 convention proclaims the right of transit for using not only freedom of the high seas but also the "common heritage of mankind", i.e., the resources of the International area of the seabed.[20]

Part X of the 1982 convention leaves the determination of specific terms of transit to the discretion of regional and bilateral agreements. The draft also suggested that "developing

States which are landlocked, shall enjoy the previlege of fishing in the economic zone of a neighbouring coastal state on the basis of equality with the nationals of that State. The conditions governing the enjoyment of this advantage are to be worked out by agreement between the parties concerned." Thus purely geographical considerations and not socio-economic factors began to carry increasingly great weight as far as the stand of the countries with no access to the sea was concerned. Attention to these countries interest is an integral part of the concept of "the common heritage of mankind" as defined and interpreted in the convention in relation to the Area and its resources.

The two South Asian landlocked states, viz., Nepal and Bhutan are dependent for their transit passage to use the sea and for its resources on coastal states. Unlike many other landlocked states which may have some choice to choose their transit passage through more than one country e.g. Switzerland and Austria, both Nepal and Bhutan are virtually dependent on India for the exercise of their rights in regard to the sea. Geographically Nepal is landlocked and geo-strategically, she is India locked. Though Nepal also has China as a neighbour to reach the Ocean, the physiography of the area and the hostile terrain of the Himalayas have made transit passage through China next to impossible. This overdependence on India is not appreciated by Nepal and Bhutan and many a

time it has led to tensions, especially between Nepal and India.[21]

The landlocked States have a "right to participate, on an equitable basis, in the exploitation of an appropriate part of the surplus of the living resources of the EEZ's of the coastal States of the same sub-region or region" guranteed under Article 69 of the 1982 convention on the Law of the Sea, this right can be made effective only through an agreement with the coastal States of the region. This again means virtual dependence on India. Although Bangladesh and Pakistan are in the same region, unfortunately for Nepal and Bhutan, they have only small coastlines and very limited area as compared to India's large coastline and vast EEZ area. It will also not be easy for Nepal and Bhutan to use Sri Lanka or Maldive's EEZ. Nor wonder both Nepal and Bhutan expressed their disappointment with the provisions concerning the land-locked States in the 1982 UN convention on the Law of the Sea.

JOINT DEVELOPMENT ZONES

Like the no-man's land over land boundaries, there are areas in the sea, which belong to this category. But no-man's lands could exist even along a demarcated land boundary, sometimes referred to as frontiers. These areas on the sea, are in fact, the disputed zones in the sea, where boundary delimitation and demarcation has not taken place

for some reason or the other.

In South Asia, as we have noticed earlier, there are several such areas, particularly along the Indo-Bangladesh maritime boundaries as well as Indo-Pakistan maritime boundaries. The nature of the disputes have been discussed earlier and as such there should not be any repetition of that. These disputed zones over the sea, because of conflicting claims and counter claims, become a bone of contention between the parties involved, particularly when resources, either living or non-living are discovered there. Thus these disputed zones can be developed jointly among the countries involved, instead of letting some third party intervention or exploitation of the resources of the area. Joint management of resources could enable disputed zones to be developed and joint naval patrols could be undertaken in an atmosphere of mutual understanding and trust. This would also symbolize mutual trust and cooperation among the countries involved in protecting EEZ rights at the regional level.

Eventually, in the process of developing the resources jointly, a solution to maritime boundary dispute could come out, which could also be acceptable to the parties involved, enenthough such a prospect is not very bright. Thus Joint Development Zones - is the only wayout of this morass - i.e., the disputed maritime boundaries.

SEA-LEVEL RISE - FUTURE OF MALDIVES AND BANGLADESH

Global warming has become a matter of extreme concern for the whole of humanity. The problem starts with the increasing concentration of carbon dioxide in the atmosphere due to the large scale burning of fossil fuels (coal and petroleum) in modern industry and transport systems leading to a "greenhouse effect" and the flooding of coastal areas through the warming and melting of polar ice-caps. Rise in sea-level will be accompanied by differences in storm climates, altered precipitation patterns and alteration of Ocean circulation patterns. Apart from carbon-dioxide there are other gases also which contribute to global warming. They are nitrous oxide, tropospheric ozone, chlorofluorocarbons (freon), water vapour, and methane, all of which contribute to trapping of infrared radiation.

Global warming will have an impact on sea levels as well, both through a melting of continental and alpine ice sheets. Both effects will lead to an increase in the volume of the Oceans and, in the absense of other influences, relative sea-level will rise (Gable and Aubrey, 1990). Glacial melting and thermal expansion are not the sole causes of relative sea-level change include long term changes in atmospheric pressure, temperature, currents, wind patterns, as well as land subsidence and emergence. When one talks about sea-level rise, what he essentially means is the relative sea-level rise, which is the combination of rise of the sea and movement

of the land.

Although sea-level exhibits large temporal and spatial variability, at present sea-level appears to be rising at a rate of 1-2 mm/yr. The historical trend in global sea-level rise is calculated by some to be on the order of about 10-15 cm during the past century.

The rapidly growing population of the South Asian countries is making increasing demands for the limited coastal resources and the space the natural resources occupy. These demands are both direct and indirect. Direct demands include encroachment of development on the coast, mining of sediment for aggregate construction of shore protection devices and so on. Other direct examples of man's impact on coastal South Asian seas resources include land reclamation and drainage, coral mining, and mineral and other forms of mining, particularly sand and gravel mining both on and offshore. Indirect demands include those imposed as a secondary result of human activity, a result of which is global warming and accompanying sea-level rise. These human activities have combined with natural environmental variability to cause some distressed areas within the South Asian seas region. Examples of these distressed/ afflicted areas, resulting from varying mixes of causes, are presented below.

MALDIVES

The Maldives is one of the countries most deeply concerned about global climatic changes and rising sea-levels as any change could threaten not only the islands livelihood but their very existence.

The Republic of the Maldives, an 820-Kilometre long string of 1,196 glittering islands and coral atolls stretching north to south across the southern face of the Indian Ocean, looks like paradise. Maldives has a population of about 200,000.

The total land area of Maldives comes to just 302 square Kilometres. The national territory 99 per cent of it salt water, amounts to 90,000 square kilometres, giving the Maldives one of the Worlds largest exclusive economic zones, or EEZs. There are 202 inhabited islands-each with its tall green coconut palms and unpolluted golden beaches.

No point in the archipelago is more than a metre (3.3 feet) above sea level. Extensive coral and sand mining for construction purposes aggravates the impacts of relative sea-level rise in the Maldives. Groundwater extraction around the capital Male, led to a 60% decrease in the 20-m-thick freshwater lens, which in turn led to compaction and subsidence and ultimately a relative sea-level rise.

An estimated rise of 20 to 30 centimetres in the next 20 to 40 years could be catastrophic to a majority of the islands, which are currently no more than a metre above sea-level. Among the first to be washed away will be the President's two-storey seafront office and the Foreign Affairs Ministry building on dusty and unpaved marine drive on the archipelago's chief island of Male (Peyton Johnson, 1988).

The Maldives ancient love-hate feelings about the sea were chillingly reinforced in the spring of 1987 when a tidel wave inundated the southern half of Male. The sea rose up like a great blue wall. Then it came thundering down on the populace. So, fear and love of the sea is something Maldivians have to live with. Few people in the world are so tied to the bounty, or cruelty, of the beautiful and terrible sea.

BANGLADESH

Bangladesh is the most densely populated country in the world and its also among the world's poorest. Bangladesh consists mostly of the Bengal Delta, and delta area includes most of the nations agricultural land. The Bengal Delta ranges from sea-level to about 20 m and is subject to recurrent flooding. Flooding commonly affects six million hectares of land, consequently causing damage to crops, property and human settlements conservatively estimated at

about US $ 25 million/yr. A considerable loss of delta land from increases in relative sea-level rise could potentially foster an 18% loss of habitable land by 2050 and a 34% loss by 2100 (Millman and others 1989).

Deltas shelter most of the population centres e.g. Ganges - Brahmaputra delta. These deltas already at low elevations, techtonically subside at rates ranging from 1mm to many centimeters per year adding to the problem of relative sea-level rise.

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Chapter IV

MARITIME STRATEGY FOR SOUTH ASIAN SEAS

South Asian Seas occupy a predominant position in the regional as well as international maritime strategy. This is quite natural considering the fact that it not only forms a part of the Indian Ocean but is also very close to the oil-rich Persian Gulf-region. During the cold-war period Indian Ocean virtually turned out to be a battleground of super-powers, with bases all over the littoral countries and islands. Over the years the World has changed a great deal. Soviet Union discarded much of its outdated ideology and has turned itself into a near democratic nation. Germans got re-united. Democracy swept whole of Eastern Europe. This has created a new international security order.

In this emerging uni-polar or post-bipolar world, what kind of role is South Asia going to play in the system of regional security arrangements is open to speculation. It would depend, partly on how much more changes are going to take place in the world. Without the Soviets (as super-power) how the Americans are going to conduct themselves in the months and years ahead. Thus what kind of regional security arrangements the region (i.e. South-West Asia) is going to have is still a matter of conjecture.

NAVIES OF SOUTH ASIAN COASTAL STATES

The future growth of the Navies of the South Asian countries, to a great extent, would depend on these changes and

many more to come. Thus with the future so uncertain, it would not be advisable to discuss about the future growth of South Asian Navies. Therefore in the following pages I shall briefly discuss about the existing navies of the South Asian coastal states.

INDIA

With a 7000-kilometre long constline to guard and 3.2 million sq. Kilometres of the exclusive economic zone to protect from the covetous eyes of the envious neighbours, the Indian Navy is by far the strongest in the South Asian region. The Navy keeps modernising its fleet constantly either through outright purchases on through technology transfers which are not easy to obtain. The Indian Navy has opted for both and even gone in for the third, that is, leasing a nuclear sub-marine from the Soviet Union. The launching of the first indigenously made submarine, Shalki, is the result of Indian Navy's determination not to depend too heavily on outright purchases but to potiently persue the goal of self-reliance. Shalki, in that sense, is a fruition of the German technology transfer wedded to Indian naval engineering skills.

The Indian Navy has three commands : Western, Eastern and Southern. The Western Command has its Head Quarters in Bombay and bases in Goa, Lakshadweep, and Karwar (under construction). Bombay also houses the main dockyard. Eastern

Command has its Head Quarters in Vishakhapatnam and bases at Calcutta and Port Blair. Southern command which is training and support command, has its head quarters in Cochin. Goa also has the Naval Air head quarters, while Sulemarine head quarters are located at Vishakhapatnam. The fleet is devided into two elements, Eastern and Western. Indian Navy has got a unique mix of Soviet and Western vessels.[1]

In 1989, India's well trained Naval personnel numbered 47,000 including 5,000 Naval Air Arm and 1000 marines.

The principal ships of the Indian Navy are the two light aircraft carriers, Viraat and Vikrant. The Viraat, formerly HMS Hermes, is of 29,000 tonnes and was transferred to the Indian Navy in 1987. Her normal air group is 8 to 10 Sea Harrier fighters, and 8 Sea King ASW helicopters. Vikrant, substantially smaller at 19,8000 tonnes, is the former British Hercules, transferred to India before her delayed completion as a conventional carrier in 1961.

India's premier aircraft carrier, INS Vikrant, by completing 30 years of commissioned service,has achieved another milestone, on March 13, 1991.

Capable of providing an air umbrella of upto 150 nautical miles around the fleet the Sea-Harrier Jump Jets and anti-submarine helecopters, Vikrant has provided the vital link for

the multi-dimensional role of a naval strike force capable of anti-submarine warfare, fleet air defence strike, maritime reconnaissance and even commando operations. It was recently refitted with a 9.75 degree ski-jump to facilitate faster take-off by the vertical take-off and landing jump jets with a maximum payload of weapons, fuel and flight endurance . In addition, various radars and sensors, fitted on board make the aircraft carrier more formidable.

Vikrant has been in action during the liberation of Goa in 1961, Kutch operations in 1965 and the Indo-Pak war leading to the liberation of Bangladesh in 1971. She has undergone refit to the VSTOL role and has been recommissioned with an air group similar to Viraat. The two cruisers, Delhi and Mysore, have been disposed off in 1979 and 1986 respectively.

In addition to the two carriers, India also had a leased Soviet nuclear powered missile submarine, Chakra, of the Soviet 'Charlie-II' class. The Indian Navy has returned its sole nuclear propelled Charlie-II class submarine, INS Chakra, to the Soviet Union, after the expiry of its three year lease, on January 5, 1991.

India had acquired the nuclear propelled submarine in January 1988. The submarine has rejoined the Soviet Pacific fleet at its home port of Vladivostok in Siberia.

The return of the submarine puts at rest speculation in western countries that India was going for the acquisition of more of such nuclear propelled submarine of the higher class.

At the time of its acquisition itself, the government had made it clear that the submarine was being acquired to train Indian naval personnel on the nuclear propulsion technology.

The INS Chakra with a 5000 tonne displacement was a 94 metre long vessel equipped with conventional missiles and torpedoes. During its three year lease with the Indian Navy, the submarine and its crew logged over 8000 hours of sailing including uninterrupted period of sailing for over three months, mostly in the Indian Ocean. The submarine didnot carry any nuclear weapons. Its SS-N-7 active radar homing anti-ship missiles, with a range of 64 kms, were its most potent weapons.

The country's efforts to design and build its own advanced submarine was continuing and Chakra leasing had given a fillip to the programme. The fleet also includes 6 'Kilo' and 8 'Foxtrot' Soviet-built diesel submarines and 2 smaller German-built. 5 new Soviet-built missile armed destroyers, 3 heavily modified and 6 rather less modified 'Leander' class frigates, all built in India and 13 other frigates form the main surface force. Coastal forces include 8 Soviet-built missile corvettes, 13 fast missile craft and 11 inshore patrol craft. There are 12 Soviet-built offshore minesweepers and 8 much smaller inshore vessels.

Amphibious lift for the 1000 strong marine force is provided by 1 landing ship tank and 9 medium landing ships, plus about 10 craft. Support forces include 3 tankers 1 submarine depot ship, 1 transport, 10 survey and research, 2 tugs and one training ship.

The Naval Air force, 5000 strong, operates 8 Sea Harriers, with further delivers imminent, 3I1-38 'May', 5 Tu-142M 'Bear' and 15 Britten-Norman Islander maritime patrol aircraft. The small squadron of 4 Alize ASW aircraft is now based ashore. Armed Helicopters include 10 Chetak, 5 Ka-25, 18 Ka-27 and 20 Sea King, and the enventory is completed with some 22 training and communications aircraft. The Coast Guard personnel members 2,500. It is an independent paramilitary service, which functions under Defence Ministry control, but is funded by the Revenue Department. All former frigates transferred from the Navy have now been disposed of, and the force comprises 6 offshore patrol vessels and 25 inshore patrol craft. Its 19 aircraft are of Dornier-228, Fokker F-27 and Britten Norman Islander types.[2]

Apart from these, India has also launched and commissioned some more ships and boats during 1990 and the first part of 1991. Among then the following additions are very significant, giving further boost to its warfare capability. These are part of the new expansion and modernisation programme of the Navy.

INS Kirpan, the first frontline war-ship designed indigenously by the Garden Reach Ship-building and Engineers Limited (GRESE), was commissioned on January 12, 1991.

The 1300-tonne ship is equipped with surface-to-surface and surface-to-air missiles. It has the capability of carrying and operating the ALH helicopter or any other similar helicopter in anti-ship or anti-submarine role. Its shallow water capability gives the ship immunity from submarine threats. INS Kirpan is the third corvette class worship. The first two ships of this class were commissioned in 1989 and 1990.[3]

India's largest and the most sophisticated, indigenously - built worship, INS Delhi was launched on February 2, 1991 at the Mazagaon Docks.

The ship is the first of a batch of three to be built for the Navy. It will be commissioned and handed over to the Navy by early 1995 and will be the first large ship to be propelled by gas turbines, instead of the conventional steam ones.

The ship is being built under "Project-15", which has drawn national and international attention. The ships build as part of this project will have the most advanced weapon systems, high speed, long endurance and survivability in adversity.

The diplacement of INS Delhi is in excess of 6,000 tonnes, making it twice as large as the Gadavari class of frigates.

INS Gharial, a leading ship-tank built for the Indian Navy jointly by the Hindustan Shipyard and Garden Reach ship builders was launched on April 1, 1991.

The ship can carry a helicopter and has a capacity to transport a large number of troops, material, tanks and other stores. It will add to the amphibious warfare capability of Navy. Besides, it is better equipped with modern sensors and radar than its predecessor INS Magar.

In a landmark event of worship building activity, the Mazagaon Dock Limited (MDL), Bombay launched the second missile boat of the Tarantula class on January 3, 1991. The ship has been named Vipul.

The first missile boat of Soviet design was launched by MDL last year. In another month, MDL would be launching the first frigate of "Project-15". Between the first and second launch of missile boats MDL has also delivered the second corvette class vessel in May, 1990.

"Shakti", the first indigenously built submarine launched at the Mazagaon Dock in September 1989, is presently undergoing sea acceptance trials and would be commissioned soon.

On November 23, 1990 the Indian Naval air Squadron 339, was commissioned. It is the new anti-submarine, anti-surface vessel helicopter squadron which is dedicated to the defence of offshore installations. The squadron is third in line after the 330 and 336 squadrons.

It comprises six recently-acquired Sea King 428 helicopters which are equipped with sophisticated sensors, including radars and supersearchers, and weapons, including modern torpedoes and anti-ship missiles.

The Indian Navy has acquired and inducted the latest state-of-art advanced simulators, including fleet and battleship sea war control models, for onshore advanced training to soldiers and officers in handling highly complicated warship electronic and warfare equipment. With the recent resource crunch, the Navy had severe problems as sea exercises with live ammunition was becoming very costly.[4]

The first of the most advanced sea movement control simulators was inducted in 1989 in Vishakhapatnam and another new one is ready for the western naval fleet at Bombay. These simulators are the first of their kind in Asia and the Indian Navy is the only one outside the western navies to acquire them. The simulators create a realistic environment by modelling ships, harbours, channels, buoys, navigation marks and anchorages.

hese simulators can even simulate anti-submarine, anti-air threats and various offensive battle formations.

The service procured as early as sixties a command trainer which is still being extensively used. The more advanced versions of a command trainer was installed in Bombay in mid-80's.

The introduction of the Sea-King anti-submarine helicopters brought in the Sea-Kind simulators at Cochin in late 70's and the Sea-Harrier simulator was commissioned in Goa in 1984. But, the new sea control simulators are the most state-of-art and advanced as those can simulate whole fleet and carrier group exercises.

The increasing reliance on simulators has come about due to the increasing complexity of weapons, sensors and equipment war-ranting increased duration of training and the budgetary constraints.

The biggest advantage of simulators is that it can simulate any emergency situation and check the trainers instantaneous behavioral response and record it, which otherwise cannot be done in real life.

All these acquisitions, and our own construction of war-ships, submarines, missile boats, and so on make the Indian Navy one of the most formidable Navy in the Indian Ocean region.

PAKISTAN

Pakistan Navy has 15,000 naval personnel including Naval Air Force. Their Navy has been transformed in 1988-89 by the addition through purchase or lease, of 10 frigates from the US and British navies. It is anticipated that more of the old ex-US destroyes will now be withdrawn from service. The smaller craft are mostly of Chinese origin.

The combatant fleet comprises 6 French built diesel submarines, about 6 midget submarines for swimmer delivery, 1 Uk-built 'County' class destroyer, Babur, converted to carry upto 4 Sea King ASW helicopters, 4 ex-US World War 2 virtage destroyers, 4 ex-US Brooke class guided missile frigates armed with standard SM-1 surface-to-air missiles, 6 other frigates, 8 fast missile craft, 4 hydrofoil torpedo craft, 4 coastal and 12 inshore patrol craft, and 3 coastal minesweepers. Auxiliaries include 2 fleet replenishment tankers, 1 survey ship and a salvage tug, plus a static ex-US repair ship. There are about dozen minor auxiliaries.[5]

The Air force operates 4 Atlantic and 1 Fokker F-27 Friendship for maritime patrol and transport duties, whilst the Navy operates 6 Sea King helicopters and 4 Alouette III ASW and liaison helicopters. All destroyers and frigates have helicopter decks capable of operating an Alouette.[6]

Karachi is the principal naval base and dockyard. A navy subordinated Maritime safety Agency operates 4 fast inshore patrol craft on EEZ protection duties.

BANGLADESH

The head quarters of the Bangladesh Navy an at Chittagong. Other bases an at Dhaka, Khulna and Kaptai. The manpower of the Navy in 1989 was 7,500. The fleet comprises 3 ex-British frigates (formerly HM ships Jaguar, Lynx and Llandaff), 8 new Chines built 390 tonne fast attack craft, 4 Chinese-built fast missile craft, 4 Chinese-built fast torpedo boats, 2 ex-Chinese-built 155 tonne patrol craft, 8 ex-Chinese-built 155 tonne fast gunboats, 2 ex-Indian 150 tonne patrol craft, 1 British-built 140 tonne patrol craft, 5 indigenously built 70 tonne river gunboats. Thus it is coastal Navy, with all its equipments to protect its EEZ from encroachers.[7]

SRI LANKA

Trincomalee is the head quarters of the Sri Lankan Navy. Other Naval bases include Karainagar, Colombo, Tangalla and Kalpitiya. The Naval forve comprises 3 Surveillance Command Ships (ex-mercantile), 2 locally built coastal patrol craft, 34 inshore patrol craft of varying types plus about 30 small fast patrol boats and service crafts. There are 2 mechanized landing craft of 270 tonnes full lord. Personnel in 1989 numbered 5,500 with a reserve of about 1,000.[8]

ROLE OF EXTRA-RETIONAL NAVAL POWERS

"Operation Desert Storm" - a war to liberate Kuwait from Iraq gave us an opportunity to watch a fearsome projection of western Naval might just across the Arabian Sea. The USA even arranged a naval blockade, regarded by experts as ieelgal.

US itself had at least six aircraft carriers in action. They had USS Wisconsin, which had launched more than 100 Tomahawk Cruise missiles (Sea Launched Cruise Missile has both nuclear and conventionally armed versions. This missile can be launched both from ships and submarines. Its Terrain Contour Matching system give the missile supplementary guidance to update and correct the inertial system at regular intervals. This gives the Tomahawk cruise missile awesome precision) against Iraqi positions. They had USS Missouri - a battleship which had heavily bombarded prefabricated bunkers. They also had USS Midway, USS Ranger in the Gulf. Large number of marines were there too. They had USS John F. Kennedy positioned in the Red Sea. They also had USS America and USS Theodore Roosevelt in the Mediterranean Sea and many more warships, submarines and marine assault carriers which were stationed there from before.

Diego Garcia, the horse-shoe shaped coral island played a significant role in the recent crisis. The B-52s, based in Diego Garcia, are heavy bombers of the Vietnam era, that can deliver a heavy payload that lighter aircraft cannot. It carries

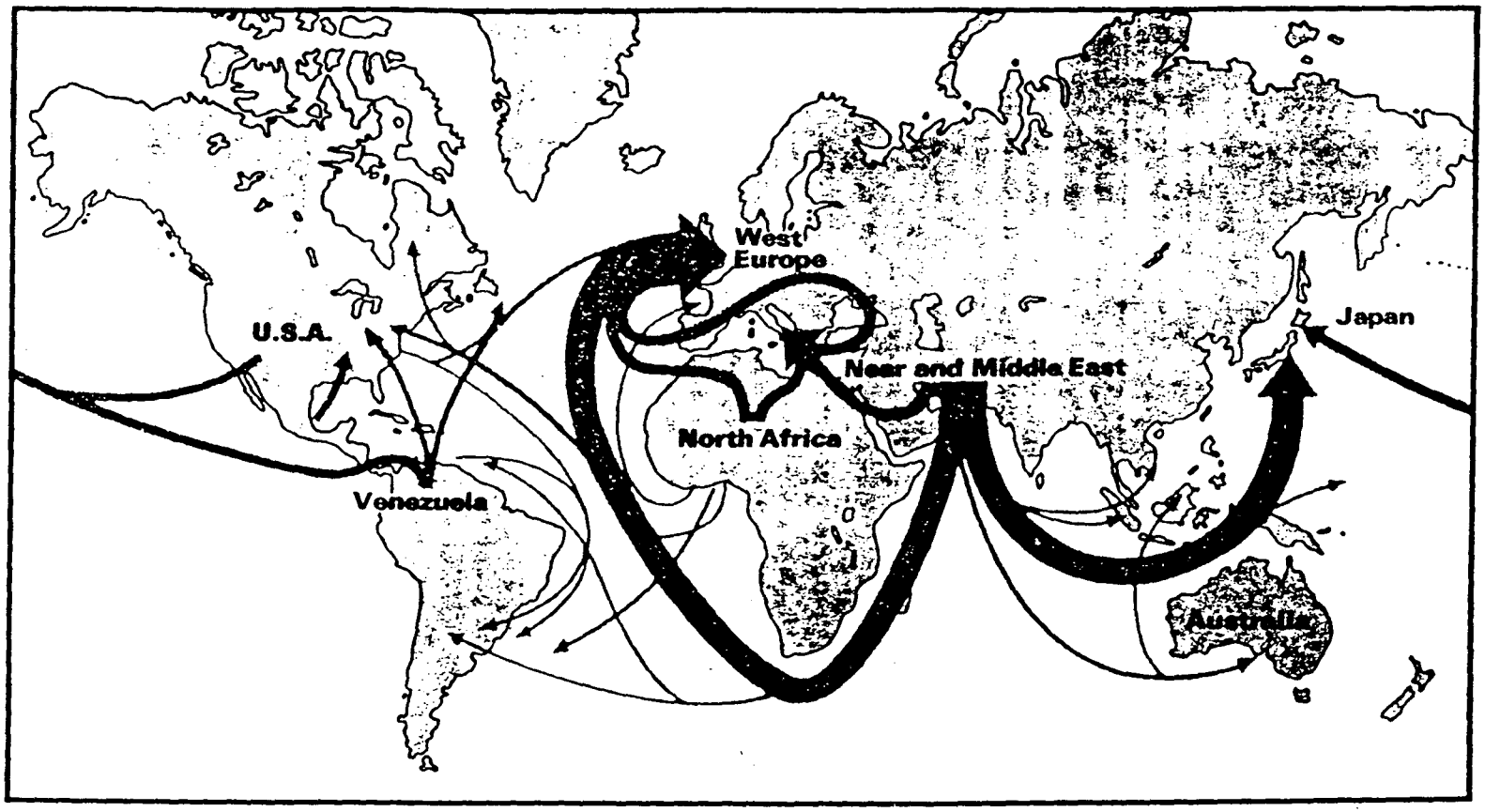

Fig. 3. Diagram of International Oil Cargo Flows

14 tonnes of conventional weapons, can drop bombs from an altitude as high as 50,000 ft.

The Gulf crisis was a good example to show that the world is far from peaceful even after the end of the Cold War and regional disputes still exist; some of them could flare up into armed confrontation. With 65 per cent of the World's total oil reserves, the West Asian region has long been viewed by major powers as a strategically vital region that must be tightly controlled. Since the interests of the Western Powers in the region are not totally identical, there have been, and will continue to be, fierce competition there. West ASia as a whole will remain a hot spot in the world in the next decade, or even longer, given the Arab - Israeli and religious disputes.[9]

South Asia is also one region which has numerous disputes. These regional disputes invite the presence of external naval powers. The USA assumed the responsibility of protecting the Western interests with Diego Garcia as its principal naval base, when the former colonial powers - Britain, France, the Netherlands and Italy - lost control over the Ocean after World War II.

US maritime presence in the Indian Ocean acquired significance in the sixties. Among other reasons, the strategic nuclear force concept of the triad, land, air and sea-based strategic nuclear weapons, necessitated the capacity to operate submarine-launched ballistic missiles (S.L.B.M's) in the Indian

Ocean and Polaris A-3 missiles were deployed. The seventies saw a competitive build-up. In the first half of 1980 a maximum of 25 US and 24 Soviet ships were maintained at any one time. The number increased subsequently and in May, 1982, the reported US naval strength was 40, including three aircraft-carriers. Soviet military intervention in Afghanistan was primarily responsible for this.[10]

The race for military bases or ports offering various facilities continued. Both the superpowers have bases there. The Soviet Union has bases or facilities in Ethiopia, on the islands of Perim and Dhalak and so on. The USA has bases or facilities in Egypt, Somalia, Kenya and so on. It has developed Diego Garcia into a full-fledged air and naval base. Never before has the Indian Ocean witnessed such a massive diplay of destructive potential as that evidenced in recent years. Petroleum in the Gulf is one of the most important reasons. With the end of the cold war, let us hope, Indian Ocean power rivalry comes to an end.[11]

IOZOP - its future

With this increased military build up - both conventional nuclear - the littoral states of the region an greatly worried about the possibility of keeping the Indian Ocean region as a peace zone.

The countries which are most affected raised the issue at the United Nations which passed a resolution in 1971 declaring the Indian Ocean as a zone of peace. The resolution is unacceptable to the major Western Powers and is hence not enforceable. The US is now the sole surviving power claiming or right to police the vast expanse south of the Suez. The Soviet Union offered in December, 1980, to start talks with the USA on turning the Indian Ocean into a zone of peace. The offer was rejected.

The scheduled U.N. meet on the Indian Ocean, originally to be held in Colombo in 1981, has been repeatedly postponed and is unlikely to be held at all. Even some members of the U.N. ad hoc committee on the Indian Ocean donot favour such a conference at this stage.[12]

South Asian countries feel helpless in the matter, though it joins various nations in the call for dismantling military bases in the region. The rapid and continuing arms build-up in the Ocean has been causing much concern to the South Asian countries. They have often accused the Western Powers of being totally insensitive to the demand of the littoral States that the Ocean be rid of Big-Power military bases and their presence. The Western Powers contended that a conference on the Indian Ocean was inopportune so long as Soviet military presence in Afghanistan continued. These Powers, based their stand on the concepts of containment and a balance of power refused even to

contemplate withdrawal from the Ocean. So the deadlock remains unresolved. However, with the end of the cold war, let us hope, that the United States finally see reason and put an end to arms race in this region by accepting the Indian Ocean as a zone of Peace.[13]

PROSPECTS FOR A REGIONAL NAVAL POLICY

With the demise of the bipolar world, following a sea-change within Soviet Union, a new world order is in the horizon. The United States has emerged as a power answerable to none other than to its own needs and ambitions. Regional organisations without US support have been weakened. Non-alignment Movement, has lost its very basis of existence. Today there is no alignment worth the 'old definition and hence no meaningful non-alignment possible. Nor are there those distinct categories of first, second and third worlds, except in a developmental sense. Today, it is perhaps all a question of how each nation comes to terms with the first world, while retaining its dignity and extracting as much economic and political advantage as it can.

Given this changing schenario in the international as well as in the South Asian seas, the least one would expect is a regional naval policy to not only develope the resources, but also for regional security and protecting their combined EEZ. But the road to cooperation is very bumpy. Regional-dissonance, mainly in the form of anti-Indianism has

distorted the regional geo-political and naval imperatives.

South Asia is inherently Indo-centric in nature. As a result no regional venture for cooperation can be taken in which India does not become central. The centrality of India has been reflected in the gropolitical and strategic thinking of the South Asian states. Pakistan suffers from an "India-Phobia".

Pakistan is sceptical of Indian naval expansion and vise versa. Thus for a regional naval policy mutual suspicion must give way to mutual trust. Existing disputes must be resolved, otherwise such a regional policy seems far-fetched. Sri Lanka and Bangladesh have more or less reasonable level of relations with India. The major hurdle is Indo-Pak relations. Thus for a regional naval policy an increased level of understanding within SAARC is a pre-condition.

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CONCLUSION

The foregoing discussion makes certain points very clear. For one that the Indian sub-continent or the South Asian region is an unique geopolitical entity unlike many other regions. India, the largest country of this region accounts for 77 per cent of the regions population which is 72 per cent of its land area. Thus India is central to this region. Unlike other regions, it is contiguous and has a very strategic location. We shall come to that later on in this chapter.

Also that this region has a very rich maritime heritage is clear from the discussion. Ever since the prehistoric period right down to the modern period, through the ancient and medieval period not only the South Asian seas, but the whole of Indian Ocean has been extensively navigated by the Indian Ocean community in general, and Indians and the Arabs in particular. Considerable evidences are there to substantiate this in the form of literature and archaeological discoveries. The later has shown that the Aryans were also good navigators. They not only navigated in the coastal areas but also ventured out to the high seas.

Maritime trade existed even before the medieval period. During the medieval period, however, this trade reached a flourishing stage. Arabs, being the neighbours, across the Arabian sea, were the dominant trade partner with the South Asian countries,

followed by the South-East Asian countries. The number of commodities exported is legion. The commodities may broadly be classified into three categories, viz. - bulk and low value goods, luxury and high value goods and finally gold and silver. Food grains apart the region exported precious etals, and of course spices.

As a result of this flourshing trade numerous port-cities started growing. Broach, Surat, Quilon, Cragnanore, Calicut are some of them. Alongwith the movement of goods, a movement of people also started during this period, often called as cultural traffic, particularly to the South-East Asian countries such as Malaysia, Indonesia, Fiji and so on. This during the period when South India was under the sway of the three legendary dynasties, viz. - Chola, Chera and Pandya.

Medieval period also saw the western maritime powers laying down foundations for their future colonial empires. Portuguese were the first to arrive in south Asian shores, followed by the Dutch, the Franch and of course the Britishers. For a start, they concentrated on trade, finally exposing their ulterior motive. However, they met with considerable amount of hostility from the Marathas. Slowly, the Britishers with the help of other local allies, managed to eliminate the other European colonial powers and dominated the Indian Ocean with full glory till the year 1941.

Another result of the trade relations with the West Asian countries is the spread of Islam in South Asia. Because of their business interests in the coastal South Asia they started settling down have. Thus the whole of South India, Sri Lanka, Maldives, Lekshadweeps, Gujarat in Western India and some other areas came under the Islamic influence. Then it started spreading within this region. Mention should also be made of the slave trade that existed in these areas during these periods.

The South Asian seas region is a veritable storehouse of resources. Resources such as fisheries, and of course lets of non-living resources both renewable and non-renewable. Fishing resources, both deversal and pelagic occur at different depths. Continental crust, however, accounts for the bulk of such resources. Fisheries have not been developed to a desirable extent even in India and Pakistan. In rest of the countries the exploitation level is deplorable and mostly rely on traditional artisanal fisheries. India, to some extent has developed her large scale commercial marine fisheries. Tune fishing is one which is really very underexploited in South Asian Seas.

Among the non-renewable resources petroleum, natural gas and maganese nodules are most important. The reserves of all these are substantial. There are numerous other minerals, also, which are awaiting to be exploited. Among them chemicals

such as salt bromine, calcium, gypsum and sulpur needs to be mentioned. Tin, Phosphorite, dimond and iron reserves are also sizable. So are the reserves of renewable resources such as mangroves and corals.

Marine energy resources of the South Asian seas also need to be harnessed. Energy can be extracted from waves, tides, offshore winds, salinity and OTEC (Ocean Thermal Energy Conversion) Drinking water can also be availed from the seas.

For these marine science and technology must be developed indigenously borrowed from the developed western countries. While exploiting these resources, care must be taken that the marine environment, which is very fragile, is not damaged. Proper coastal management techniques will home to be applied for this purpose. For this, it is imperative that there is mutual understanding and cooperation among the coastal nations, seemingly an uphill task. Cooperation will also be necessary to keep the western industrial countries, at bay, from fishing in the EEZ's of the South Asian countries.

The issue of boundary delimitation and demarcation has been one of the most contentious issues facing maritime South Asia. We all know that India shares maritime boundary with all coastal states of South Asia. India-Bangladesh maritime boundaries are most disputed. It has further been exacerbated by the unstable nature of their coasts.

Islands emerge and at times disappear due to heavy cyclonic activity. Efforts are on to sort out these disputes. India-Pakistan boundary, is also no less disputed than the India-Bangladesh maritime boundaries. Pakistan attempt to extend her maritime zone by force ended in a fiasco. Then it was referred to an international arbitration tribunal, whose verdict was not favourable to Pakistan. Eventually the boundary demarcation between the two states have been deferred. India-Maldives-Sri Lanka boundary disputes have been resolved through several agreements signed in the year 1976. India-Sri Lanka boundary disputes have been sorted out amicably through separate agreements signed in 1974 and 1977. Thus some of the outstanding maritime issues are yet to be resolved.

There are several other issues and problems which demand immediate attention of the concerned governments in particular and the South Asian Community in general. The problem of landlocked states is one which is of extreme importance. Nepal and Bhutan, being landlocked countries, have to depend on neighbours, particularly on India. Nepal has a trade and transit treaty with India. However the treaty lapsed on March 23, 1989 . And India refused to renew it because of several unfrindly acts on the part of the Nepalese against India. However the issue has emporarily been resolved. Joint Development Jones is another issue which deserves attention. The idea behind is to jointly

develop the resources of the disputed maritime boundary zones in South Asia. Sea-level rise due to global warning is an issue which has caused grave concern among the South Asian community particularly Maldives and Bangladesh. This problem would require a concerted effort by the world community. There are other areas in the world also which are equally concerned about their own existence.

South Asia is considered to be a part of the so-called "Asian arc of crisis". Its proximity to West Asia has further increased its strategic significance. The Cold War between the Super-powers led to militarisation of the Indian Ocean. The Soviet military intervention in Afghanistan drove Pakistan further closer to US, which even otherwise was known to be "America's most allied ally in Asia". Thus the build-up was complete. This led India to modernise and expand her navy. As it is the interests of India in the Indian Ocean our different from those of the other littoral countries. The other coastal states are not so entirely dependent as India on this Ocean.

Many of India's neighbours, apard from countries like Australia and other South-East Asian countries are suspicious of Indian Naval expansion and brand her as an "expansionist". They feel that India wants to have a regional hegemony in the

Indian Ocean. The nation that India has built up its defence as much because it seeks to achieve recognition as a major power as for genuine security concerns. During the early eighties, the term "regional power" began to be used in relation to India for the first time. Five events which took place during the latter part of the Eighties, bolstered India's power image further; the first was the dispatch of the IPKF to Sri Lanka, the second the acquisition of a nuclear powered submarine from the USSR, the third our quick reaction intervention in Maldives, the fourth the test firing of Agni, the long-range missile and the fifth the virtual border blockade of Nepal in 1989. Some say that these demonstrate India's determination to take an aggressive view of its security interests in South Asia as a whole, with the use of coercion figuring highly in India's eventual solutions. However it has been conceded that actions in Sri Lanka and Maldives were "at the requests of the host governments". Moreover India has withdrawn from both places despite western prognostications at the time, official and private, that it would not.

To see the "border blockade of Nepal" as a clear case of coercion is to oversimplify grossly the complexities of the dispute between India and Nepal, a dispute which has since been resolved with the clipping of the Nepalese King's wings by the peoples movement to the emergence of which his myopic and capriciously hostile policy towards India contributed not a little.

Western analysts, however, overlook Indian security concern and the new geopolitical realities in the region. India needs on strong and growing Navy to protect the long coastline, the vast exclusive economic zone (EEZ), exploitation of high seas for its mineral and fishery resources, trade, safeguarding of off-shore oil interests and the island territories. The Navy has to remain alert, whether it was to protect the country's territorial integrity or to check illegal poaching of fishing rights or to prevent economic offences. While our growth has been modest, some countries, (notably Pakistan) have been raising the bogey of an Indian naval build-up to bolster their own military build-up.

The Indian Navy, its expansion programme notwithstanding, does not follow the so-called "Indira doctrine". Indira Doctrine according to M.L. Bhargava is a figment of imagination of some American writters, who believe that through this doctrine, India is asserting a right to intervene in the affairs of neighbouring countries if internal disorder threatens its security.

The writters say that its desire to product overseas Indian communities interest has led India to adopt two complementary policies, viz., (a) broadened economic and diplomatic linkages with Indian Ocean State and (b) an enhanced maritime projection capability.

It is true that millions of people of Indian origin live in Mauritius, Seychelles, Maldvies, Fiji and other republics and territories in the Indian Ocean littoral, who look to India not for economic and technical assistance alone but also for their security. But that does not mean India has evolved an "India Doctrine" like the "Monroe Doctrine". India does not, in the real sense of the term, possess a blue-water navy. Some have also been suspecting India of developing a RDF (Rapid Deployment Force), which is far from true.

India's main concern since 1971 has been to reduce chances of seaborne (or ocean-based) intervention in South Asia. It is for this reason that it has been demanding that superpowers reduce their large surface naval flotillas in the Indian Ocean. The superpower rivalry in the Ocean, in India's view, has been posing a threat to the littoral countries, and is not condusive for durable peace and stability in the region. India being the premier littoral state has to have a Navy compatible with its maritime interests and security.

Perhaps the most pragmatic concept of India's maritime strategy has been outlined by our ex-Chief of the Naval Staff, Admiral R.L. Tahiliani in his article Maritime Strategy (USI, July-September, 1981). The salient points of his thesis as it pertains to the Navy may be summarised as follows.

He contents that even though in a world which has changed markedly, and wherein an invasion from the sea may not be a practical possiblity, the naval power is still relevant as a means of furthering one's national interests short of a war. If the country makes no effort in the naval field it should be willing to concede domination of important see areas by its adversaries.

Then he suggests five basic tacties for carrying out what is reffered to as 'Naval Diplomacy'. These are standing demonstration of India's naval power, specific operational deployment (naval power politics), naval aid, operational visits and goodwill visits (naval influence politics). He makes two very important point in his further discussion. One, that all naval deployments for naval diplomacy do not necessarily achieve their objectives and worse can even be counter-productive. Two 'gun-boat diplomacy' and present day 'aircraft-carrier diplomacy' is definitely counter-productive today.

The enlarging spectrum of maritime activities has brought in new concerns such as the security of off-shore platforms, rivalry for ocean resources, terrorism at sea, island grabbing, poaching and smuggling. The other flash-points are as a result of the movement by sea of narcotics, weapons, chemicals and fissionable material. This in turn has led to fresh norms, conventions and rules encompassing

the legal regime of the seas, maritime boundaries, naval arms control and the necessity to avoid brinkmanship on the high seas.

Hence in addition to providing a 'constable on the beat' and exploiting the EEZ, there is a requirement for 'sea-control' and 'sea-denial' during conflict which brings in their wake surface and sub-surface operations, mining, amphibious operations, electronic surveillance and maritime air reconnaisance. But peninsular Indian continues to spend only 0.5 per cent of her GNP or the Nave and invest hardly 1 per cent on the exploration and exploitation of living resources - a tragic lack of understanding of the potential of the seas for achieving a quantum jump in technology and employment.

The first step is, therefore, to define a regional maritime policy through debate and deliberation. The Key to south Asia's better utilisation of the seas will depend on its ability to marry frontier areas of technology with production and employment in order to take advantage of the EEZ which is almost double the size of South Asia'a landmass. Hence it is necessary to co-ordinate and harmonise the diverse activities which in most countries are usually vested in five to 15 ministries. In India, it extends to 18 ministeries and several autonomous agencies and diffused responsibilities and blurred linkages.

Some of the littoral states, however, see the super-power presence more as a stabilizing factor, considering the inherent instability of the littoral states. Their security threats emanate from their neighbours and other regional powers than from the extra regional powers. They even suspect the motive behind the resolution of IOZOP. They think that the idea itself is a subtle move to secure withdrawal of outside presence so that India could establish her hegemony in the Ocean. To substantiate this they refer to the massive expansion of the Indian Navy. This not only give legitimacy to the extra-regional powers claim to intervene in local affairs but created further tensions between littoral states.

South Asian littoral states are deeply concerned about the increased militarisation of the Indian Ocean. This concern led them to raise the issue in the United Nations. United Nations passed a resolution in 1971 declaring the Indian Ocean as a Zone of Peace. However, because of power bloc politics the resolution could not be enforced. Now with the new detente, things have undergone a sea-change. However, even if the Soviets decide to withdraw some of its strategic arms, the Americans are unlikely to give up their international policing role. Nonetheless, United States should see reason and should also cut down their strategic arms in the region and should come forward to accept the resolution. This might eventually pave the way for the implementation of the resolution. Thus the

Indian Ocean could well hope to be a Zone of Peace, an Ocean of Destiny, with the UN playing a distinctive role vis-a-vis the IOZOP.

We have already discussed about the uniqueness of this region. This is not to say that diversities are not there, they are there. However the commonalities difinitely outnumber the diversities. These nations and their peoples are bound together by common bonds of historical ties, religious and cultural traditions, linguistic affinities and common values and social norms. The most important hurdle has been the divergent security perceptions of the member states. Therefore, South Asian countries will have to look more carefully at stabilizing their economies and their region by concentrating on conflict resolution and forging more meaningful regional cooperation. Central to stability is building bridges of confidence between India and Pakistan. There should be no objection from any quarter to their seeking fresh avenues of trade and aid from extra-regional powers. But such extra-regional options as may be neces sary should not be at the expense of the integrity of the 'developmental regionalism'. SAARC, which was launched in 1983 can play significant role in this respect. Joint programmes will have to be undertaken for maritime issues, such as the marine environment, fisheries, marine minerals and shipping. They will have to keep the outsiders away and protect their EEZ rights. For this they will have to arrive at a common

regional naval policy. However in the few years that SAARC has been around the name of the game has been turbulence.

The biggest factor militating against regional cooperation is political volatility within and antagonism among member-states. The problems arising and of the interaction among India, Sri Lanka, Pakistan, Bangladesh, and Nepal clearly show this to be so. So long as SAARC blinds itself to the reality that good political relations have a beneficial fall-out on other areas, it will remain an irrelevant forum, whose only virtue is that every year it brings SAARC leaders together to discuss --- informally, mind you - how to resolve the political differences that keep their countries not only apart from each other but also often at each other's throats.

The new detente is causing a sea-change which will affect South Asia. It can be used to hesten the building of a viable regional system. It poses a test for the statesmanship of the leadership of all the countries in the sub-continent especially in India. Hopefully we will rise to the challenge.

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