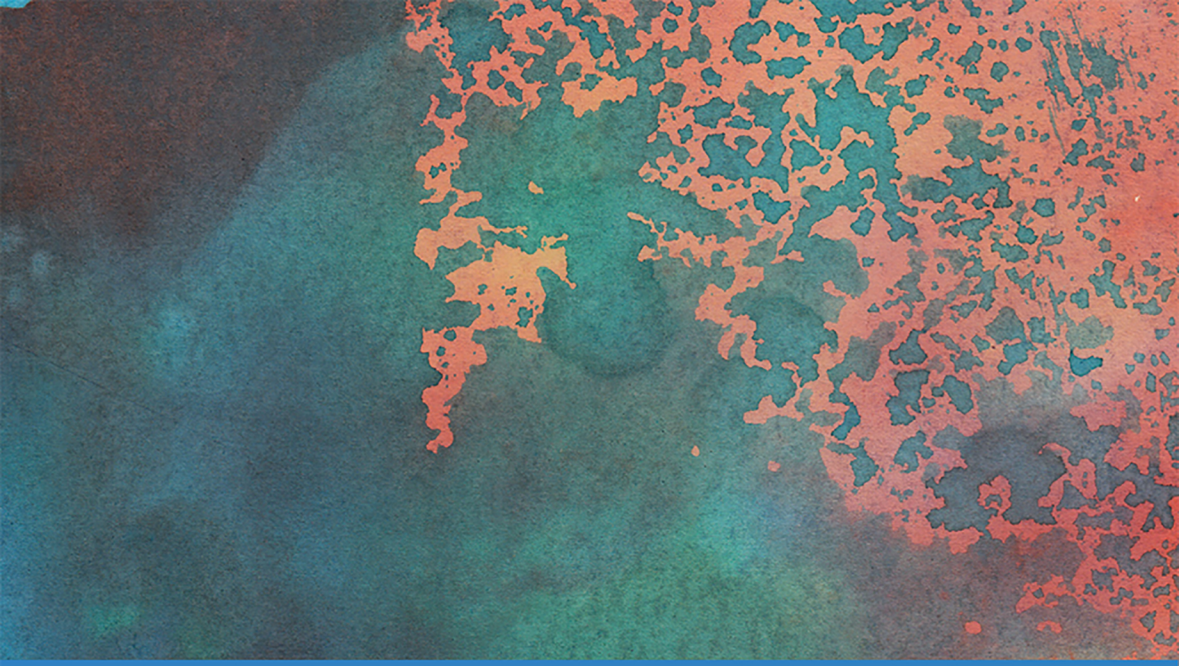

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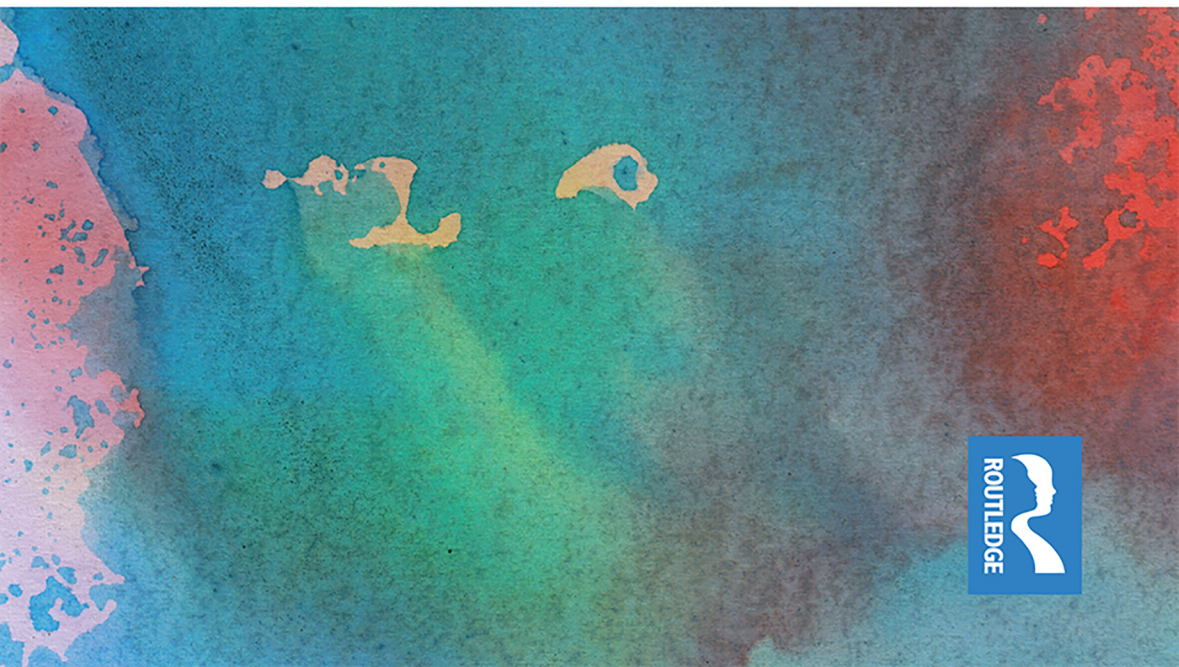

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Shishir Upadhyaya is a former Indian naval officer with a background in operations and intelligence. He is an alumnus of the Defence Services Staff College and obtained his PhD in International and Security Studies from the University of Wollongong, Australia.

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Contents

1 India's maritime environment

India's maritime environment in the Indian Ocean region is a complex interplay of several factors, predominantly, the unique geography of the region with various choke points, an abundance of strategically important natural resources, and the proliferation of non-traditional security threats that require urgent attention. These issues are compounded by a lack of adequate maritime capacity amongst many of the regional states to manage their maritime affairs. Against this backdrop, the rise of Chinese influence in the region has been the most significant geopolitical development of the twenty-first century. As an emergent superpower, China is critically dependent upon its maritime trade and economic interests spread across the Indian Ocean region. Consequently, the past few years have seen a steady expansion of Chinese maritime power in the Indian Ocean with further enhancements expected in the near future under China's ambitious maritime silk road (MSR) programme. This has far-reaching implications upon the overall India-China balance of power.

The "blurring of traditional and non-traditional lines"[1] in the maritime threat environment has given rise to India's maritime strategy dilemma of having to cope with the entire range of security threats with the available resources of a developing economy. Consequently, India, with tacit support from the United States, has sought to leverage its maritime power to create an overall secure and favourable environment for itself in the Indian Ocean region by trying to take on the role of a "net security provider," as specified in India's current maritime strategy.[2]

This book seeks to assess India's maritime strategy to critically examine its efficacy and sustainability in the context of the prevailing maritime security environment in the Indian Ocean. This examination includes an assessment of India's capacity to be the "net security provider" for the region and addresses the question whether the extant maritime strategy can help India maintain its balance of power with respect to China. It also recommends complementary actions and alternative strategic options that India could adopt to fulfil its policy goals in the Indian Ocean.

This chapter scans India's maritime environment and presents the extant strategic threats and challenges as a basis for understanding India's

maritime strategy. It begins with an examination of the geophysical attributes of the region such as the presence of choke points and the abundance of raw materials in the region that have impacted the trade flow patterns and also influenced the security environment. It then looks at India's relations with China and the Sino-Pakistan nexus that potentially poses the gravest security challenge to India in the coming years. Finally, it discusses the various non-traditional threats prevalent in the region, such as piracy, terrorism, climate change, and natural disasters.

Geographical attributes of the Indian Ocean region

The Indian Ocean is the third largest ocean on Earth, covering 68.56 million square kilometres and spanning 10,000 kilometres from the southern tip of South Africa to Australia. The geographical position of the Indian Ocean and its strategic waterways provide the shortest and most economical lines of communication to the Atlantic and the Pacific Oceans. Although, in the long term, this could potentially change with the opening up of the Arctic routes, which could lead to re-routing of some shipping between the Atlantic and Pacific Oceans, bypassing the Indian Ocean. This would particularly impact shipping traffic to and from China and Japan.

The political map of the Indian Ocean comprises 36 rim states (38 including the British and French territories in the Indian Ocean) and 20 hinterland states. For the purposes of this book, the rim states of the Indian Ocean have been categorised into the following sub-regions:

- **South Asian states**: Bangladesh, India, Maldives, Pakistan, and Sri Lanka.
- **West Asian states**: Bahrain, Iran, Iraq, Israel, Kuwait, Oman, Qatar, Saudi Arabia, the UAE, and Yemen.
- **East African states:** Comoros, Djibouti, Egypt, Eretria, France, Kenya, Madagascar, Mozambique, Somalia, South Africa, Sudan, and Tanzania.
- **Indian Ocean island countries**: Mauritius and Seychelles.
- **Southeast Asia and Australia**: Australia, Indonesia, Malaysia, Myanmar, Singapore, Thailand, and Timor Leste.[3]

Salient features of the Indian Ocean littoral states are given in Table 1.1

From Table 1.1, the combined exclusive economic zones (EEZs) of all Indian Ocean regional states accounts for nearly half of the total area of the Indian Ocean. Australia, India, and Indonesia that possess the largest EEZs in the Indian Ocean region, account for over half of the Indian Ocean EEZ and interestingly their combined gross domestic product (GDP) also accounts half of the total GDP for the region. However, India by virtue of its central location, historical context, and overall capacity stands out as the region's largest maritime power. India's geostrategic advantage, coupled

Table 1.1 Overview of Indian Ocean Region Rim States[a]

Sl.	*Country*	*Population (Millions)*	*2019 GDP (Billions Projected by IMF)*[b]	*Coastline (1,000 Kilometres)*	*EEZ (1,000 Square Kilometres)*
1.	Australia	23.63	1464.41	36.7	8,505.30 (excluding Antarctic territory)
2.	Bahrain	1.34	41.607	0.14	5.10
3.	Bangladesh	158.51	313.509	1.32	76.80
4.	Comoros	0.73	0.745	0.40	228.40
5.	Djibouti	0.88	2.392	0.35	6.20
6.	East Timor	1.15	3.412	0.71	770
7.	Egypt	83.39	298.153	1.62	173.50
8.	Eritrea	6.53	7.72	1.0	75.80
9.	India	1267.40	2957.72	9.0	2305.14
10.	Indonesia	252.81	1066.84	60.0	6159.03
11.	Iran	78.47	333.603	1.84	155.7
12.	Iraq	34.77	250.07	0.002	0.70
13.	Israel	7.82	376.127	0.23	23.30
14.	Jordan	7.50	43.988	0.002	0.70
15.	Kenya	45.55	98.264	0.45	118.0
16.	Kuwait	3.48	152.374	0.21	12.0
17.	Madagascar	23.57	13.553	4.0	1,292.0
18.	Malaysia	30.19	372.628	3.43	475.60
19.	Maldives	0.35	5.151	0.64	959.10
20.	Mauritius	1.25	14.889	0.18	1,183.0
21.	Mozambique	26.47	15.602	2.5	562.0
22.	Myanmar	53.71	73.954	2.3	509.50
23.	Oman	3.92	86.525	2.0	561.70
24.	Pakistan	185.13	298.310	1.37	318.50
25.	Qatar	2.27	204.306	0.40	24.0
26.	Saudi Arabia	29.37	795.582	2.40	186.0
27.	Seychelles	0.93	1.647	0.49	729.70
28.	Singapore	5.52	359.619	0.30	0.30
29.	Somalia	10.81	7.822	3.20	782.80
30.	South Africa	53.14	385.526	3.0	1,016.70
31.	Sri Lanka	21.45	98.041	1.70	517.40
32.	Sudan	38.76	34.373	0.95	91.60
33.	Tanzania	50.76	60.297	0.725	223.20
34.	Thailand	67.22	524.253	2.96	324.70
35.	United Arab Emirates	9.45	455.587	2.42	59.30
36.	Yemen	24.97	34.32	0.17	584.20
37.	British Indian Ocean Territories (BIOT)	No indigenous population.	–	0.70	660.20
38.	French Territories	1.11	–	0.39	2593.2
Total		2614.3	11252.919	150.19	32270.27

a Central Intelligence Agency, "World Factbook," December 2016, available at https://www.cia.gov/library/publications/the-world-factbook/html.

b International Monetary Fund, "World Economic Outlook (April 2019)," 23 April 2019, available at https://www.imf.org/external/datamapper/datasets/WEO.html.

with its naval capacity, allows it to project its maritime power over the entire Indian Ocean region, a key strategic limitation for both Australia and Indonesia.

Significantly, Mauritius and the Seychelles that appear as small dots on the map of the vast region together have a combined EEZ area almost the size of India's EEZ. Further, Djibouti with a coastline of 350 kilometres and an EEZ spanning just 6,200 square kilometres, by virtue of its location at the mouth of the Gulf of Aden, is emerging as a pivotal state in the maritime security of the Indian Ocean and a favoured location for basing of extra-regional navies. Yet, Sri Lanka which is also bestowed with a similar geostrategic advantage is relatively constrained in leveraging its maritime power by India, looming above. Clearly, the maritime geography of a state has a major influence on its future prospects.

The Indian Ocean region is inhabited by about 2.6 billion people, representing over one-third of the world's population in 2010,[4] living on one-quarter of the world's landmass, and generating over ten per cent of the global GDP.[5] By 2030, this population will likely have added another 689 million people,[6] and the Indian Ocean Rim could be poised to emerge as the world's fastest-growing region in economic terms over the next decade, according to an assessment by the Center for International Development at Harvard University.[7]

A unique and distinguishing feature of the Indian Ocean is that it is covered by the Asian continent over its entire northern extent in the form of a "roof." This makes it different from the Pacific and Atlantic oceans, which stretch from north to south without any intervening landmass. Entry to and exit from the Indian Ocean region is through strategically important choke points. Shipping traffic congregates at choke points forcing ships to navigate along fixed courses at relatively slower speeds; whilst this facilitates control of shipping, it also makes trade vulnerable. In an age of "just in time" manufacturing and distribution, security threats at choke points have widespread implications on the global supply chain and commodity pricing, particularly crude oil and gas, which are highly dependent on uninterrupted supplies. Choke points are also crucial for naval operations, such as submarine deployments, placement of mines, and even installation of seabed sensors to detect movements of warships and submarines. Therefore, states bordering various choke points have immense strategic potential and could play a key role in maritime security and overall regional stability. Obviously, for both India and China, fostering close relations with these states is crucial. The various choke points in the Indian Ocean are described in the following paragraphs.

Suez Canal

The Suez Canal is a manmade sea-level waterway cutting across the Isthmus of Suez in Egypt and connecting the Mediterranean Sea (Port Said) to the Red Sea (Port Suez). The canal is more than 193 kilometres long and

has a maximum depth of 24 metres. Whilst the Suez Canal can accommodate partially loaded very large crude carriers (VLCCs) and ultra large crude carriers (ULCCs), the largest ships cleared for transit are termed as Suezmax (a typical Suezmax ship displaces about 160,000 tons with a beam of 50 metres and draught of 20 metres). Clearly, warships of all sizes can pass through the Suez Canal and the U.S. Navy (USN) carriers have occasionally transited through the Suez. Compared to the Cape of Good Hope, the Suez Canal is the shortest East-West route. The savings in transit time reduce as one proceeds eastwards of Suez. Thus, the distance between Rotterdam and Tokyo through the Suez Canal is 23 per cent shorter compared to the Cape of Good Hope route, whilst the distance from Rotterdam to Port Said is shorter by 86 per cent compared to the Cape route. A total number of 17,550 ships transited through the Suez Canal in 2017, an average of about 48 ships daily.[8] Warship and submarine movements through the Suez Canal are uncommon since it would entail a positive giveaway of their positions.

Strait of Bab el-Mandeb

The Strait of *Bab el-Mandeb* (meaning "gate of grief" in Arabic) lies between the Saudi peninsula and Northwest Africa, flanked by Yemen on the Saudi side and Eritrea, Djibouti and Somalia on the African side. The strait is approximately 41 kilometres wide but divided into two channels by the Island of Perim (Yemen). The north coastline of Somalia forms the funnel, leading to the strait. The Bab el-Mandeb thus forms a strategic link between the Indian Ocean and the Mediterranean Sea via the Suez Canal to European ports. For this reason, Eritrea and Djibouti have emerged as favoured locations for foreign naval bases. Shipping in the strait has been targeted by Somali pirates from 2006 onwards (until around 2012) and later by Houthi rebel forces (backed by Iran) at Yemen in 2018. According to the U.S. Energy Information Administration (EIA), trade in crude oil and petroleum products through the Bab el-Mandeb in recent years has increased steadily, rising from 2.7 million barrels per day in 2010[9] to almost 4.8 million barrels per day in 2016.[10] Kuwait, the UAE, Iraq, and Iran export oil to Europe via this route, whilst Saudi Arabia mostly relies upon the Sumed pipeline and the Strait of Hormuz for oil exports to Europe.[11]

Strait of Hormuz

The Strait of Hormuz lies within the overlapping territorial waters of Iran and Oman and connects the Gulf of Oman and the Persian Gulf. The strait is about 39 kilometres wide at the narrowest point, though shipping traffic passes through a narrower traffic separation scheme (TSS) which consists of a 4-kilometre-wide channel each for inbound and outbound traffic, separated by a 4-kilometre-wide median.[12] According to the EIA, about 18.5 million billion barrels of crude per day (roughly one-third of all seaborne

traded oil) were transported through the straits in 2016;[13] more than 85 per cent of the oil was bound for Japan, India, South Korea, and China.[14] Furthermore, Qatar exports about 3.7 billion cubic feet of liquefied natural gas (LNG), accounting for 30 per cent of the global LNG supply, annually through the strait.[15]

Given the strategic importance of the Strait of Hormuz in the supply of oil globally, jurisdictional issues over the governance of the Straits and the international regime for navigation under the UN Convention on the Law of the Sea (UNCLOS), involving Iran and the United States, have created strategic complexities and uncertainties in the global oil markets. Neither the United States nor Iran is party to UNCLOS, and both disagree over the application of the treaty in the Strait of Hormuz.[16] The United States claims the right of transit passage in the strait as prescribed under UNCLOS and being reflective of customary international law.[17] Transit passage permits an unrestricted right to travel on the surface, under the water, or in over flight through international straits. Iran counters this claim by insisting that the provisions of UNCLOS may only be applicable to states that are party to it.[18] The dispute is complicated by Iran's own claim to 12-mile territorial seas, a key provision under UNCLOS. Iran argues that the 12-mile territorial seas are now part of customary law. Consequently, over the years, as tensions between Iran and the United States have escalated and diffused, so have the global oil prices "waxed and waned."

Iran has threatened to close the Strait of Hormuz for several years in response to the U.S. calls for banning oil exports by Iran. In 2012, during a period of heightened tensions, the Iranian naval commander, Admiral Habibillah Sayari, is reported to have stated to a television channel that closing the Strait of Hormuz was as easy as "drinking a glass of water."[19] By 2015, following the successful conclusion of negotiations on the Iranian nuclear issue between Iran and the P5 + 1 (the United States, the United Kingdom, Russia, China, France, and Germany) in Vienna,[20] which led to the lifting of several Western sanctions, the risk of closure of the straits has declined. However, with the re-imposition of trade and financial sanctions by the U.S. administration in 2018 under President Trump, tensions have once again escalated, and in July 2018, an Iranian Revolutionary Guards Corps (IRGC) Commander once again threatened to close the Strait of Hormuz. The IRGC – widely regarded as the masters of unconventional maritime warfare – has carried out several exercises to practice blocking the Strait of Hormuz,[21] and based on Iran's extant maritime capability, it can be easily assumed that it has adequate and multiple capacities to block the Strait of Hormuz at will. However, just as the Iranians have conducted several exercises aimed at blocking the straits, the USN has also held various minesweeping exercises and practiced scenarios involving simulated blockings of the Strait of Hormuz.

It is widely believed that whilst Iran could block the strait, it is unlikely to do so. In 2010, Admiral Mike Mullen, Chairman of the U.S. Joint Chiefs of Staff, was asked about Iranian threats to close the strait.[22] He stated, "The analysis that I have seen certainly indicates that they have capabilities which could certainly hazard the Strait of Hormuz." But, he added, "I believe that the ability to sustain that is not there." Further, General Martin Dempsey, Chairman of the U.S. Joint Chiefs of Staff, in January 2012, said, "[Iran] has invested in capabilities that could, in fact, for a period of time block the Strait of Hormuz."[23] He also added, "We've invested in capabilities to ensure that if that happens, we can defeat that." It may, therefore, be safe to assume that whilst Iran has the capacity to block the straits, it is unlikely to do so in the near future, mainly because blocking the strait is assessed to be unsustainable beyond a few days whilst the retaliation that such an act would invite from U.S. forces and the resultant debilitating impact it would have on the Iranian economy would be long term.

As a result of the threat mongering by Iran, the UAE and Saudi Arabia have invested in several pipelines, which have significantly reduced the impact of a potential closure of the Strait of Hormuz and provided alternate routes for transporting oil. These pipelines are currently capable of supplying approximately 40 per cent of the total oil carried through the Strait of Hormuz, as given in Table 1.2.

According to EIA, in 2016, India was the world's third largest consumer and importer of oil after the United States and China, having displaced Japan the previous year. About 80 per cent of India's domestic oil demand is met by imports and in 2012–13 India imported 182.5 million tonnes of crude, including 13.3 million tonnes from Iran.[24] In recent years, India's dependence on Iranian crude has reduced – as a result of international sanctions – and Iran has slipped three places to become India's sixth largest supplier after Saudi Arabia, Iraq, Venezuela, Kuwait, and the UAE. However, for India, any disruption in the Strait of Hormuz poses significant challenges as it could also hamper India's oil and gas imports not only from Iran but also from Iraq, Kuwait, Qatar, and the UAE, which pass through the straits.

Table 1.2 Pipeline Routes Bypassing the Strait of Hormuz[a]

Pipeline	*Capacity (Million Barrels Per Day)*
Abqaiq-Yanbu Pipeline	0.29
East-West Pipeline	2.5 (generally operating at 50 per cent capacity)
Tapline	0.50
Iraq Petroleum Saudi Arabia (IPSA)	1.65
Total capacity	4.94

a Komiss and Huntzinger, "The Economic Implications of Disruptions to Maritime Oil Chokepoints," p. 18.

Straits of Malacca and Singapore

The Straits of Malacca and Singapore are a narrow, 805 kilometres long waterway linking the Andaman Sea and the Indian Ocean to the South China Sea and the Pacific Ocean, thereby connecting the economies of India, China, Japan, and South Korea. An average of more than 80,000 ships carrying one-quarter of the entire world's traded goods and oil transit the straits each year, making it the world's busiest shipping channel.[25] Nearly 80 per cent of China's energy imports and 90 per cent of Japan's oil imports transit the straits.[26] Around 26 tankers, including three fully laden tankers, pass through the straits daily. However, given the shallow depths of 23 metres prevalent in the region, ships up to 200,000 dead weight tonnage (DWT) only are allowed to navigate through the straits. The only alternate pipeline route to the Straits are two parallel oil and gas pipelines between Kyaukphyu, Myanmar, and Yunan Province in China recently commissioned by China.[27] This oil pipeline is capable of carrying 440,000 barrels per day, roughly equal to the amount carried by two VLCCs.[28]

Historically, the straits have been a hub for maritime piracy and armed attacks on ships. This may be largely attributed to the geography of the coastline along the narrow strait which lends itself suitable for sneak attacks on passing ships. Thus, the pirates can launch surprise attacks on opportune targets and disappear into the cover of numerous small islands, creeks, and coves. During the eighteenth century, piracy in the region had increased, spurred by the arrival of colonial powers engaged in spice and opium trade between British India and China. Subsequently, in 1830, the British and Dutch naval forces joined hands to combat piracy in the region. By 1870, piracy in the straits had almost disappeared. Piracy re-emerged in the region towards the end of the twentieth century when the Asian financial crisis of 1997 resulted in widespread unemployment, poverty, and slow economic growth.[29] By 2004, the number of armed attacks on ships in the Straits of Malacca and Singapore had reached a record high of 157 recorded incidents.[30] Piracy has since been brought under control due to the joint efforts of the littoral states, including Malaysia, Indonesia, Singapore, and Thailand. However, concerns of maritime safety and security remain, thus requiring the constant surveillance efforts of all the littoral navies.

Lombok Strait

The Lombok Strait lies between the islands of Lombok and Bali in Indonesia connecting the Java Sea to the Indian Ocean. This strait is much wider, with a minimum width of 19 kilometres and deep, with depths greater than 150 metres. It is also less congested than the Strait of Malacca.[31] It is, therefore, the preferred route for fully laden tankers displacing more than 230,000 DWT. The strait is about 60 kilometres long and lies entirely within the Indonesian archipelago. The Lombok and the Sunda Straits seem to be

the preferred route for People's Liberation Army (PLA) Navy units, particularly submarines, to enter the Indian Ocean region evading early detection which could be more likely in the Strait of Malacca.

Sunda Strait

The Sunda Strait lies between the Indonesian islands of Java and Sumatra connecting the Java Sea to the Indian Ocean along a northeast – southwest axis. It is 81 kilometres long and its narrowest width is 24 kilometres. Whilst the strait is deep at the western end, the depths fall to about 20 metres at the eastern end. Ships with draughts in excess of 18 metres (corresponding to approximately 100,000 DWT) do not transit the strait. The strait is also known to be difficult to navigate due to sand banks, strong tidal currents, and manmade obstructions.[32]

Makassar Strait

The Makassar Strait is about 966 kilometres long and 18 kilometres wide and lies between the Indonesian islands of Borneo and Sulawesi. It connects the Celebes Sea to the north and the Java Sea to the south. Both the Lombok and Makassar Straits are used by deep draught ships not cleared to navigate through the Strait of Malacca.[33] Clearly, Indonesia, by virtue of its geographic locations straddling three strategic choke points, covering potential routes for PLA Navy ships and submarines to enter the Indian Ocean, is a very important country for India.

Cape of Good Hope

Traditionally, the route via the Cape of Good Hope was used by ships that were larger than the Suezmax. However, in recent years, this shipping route past South Africa had gained prominence due to the resurgence of piracy in the Gulf of Aden and an increase in toll charges levied by the Suez Canal authority. Whilst the Cape of Good Hope is not a choke point in the conventional sense as it is not restricted by availability of navigable waters, unfavourable currents require the ships to transit close to land.[34]

Six Degree and Nine Degree Channels

The Six Degree Channel, also known as the Great Channel, is the channel south of Indira Point on Great Nicobar Island (India's southernmost territory) and north of Aceh in Indonesia. The Great Channel is wide and easy to navigate and used by ships entering or leaving the Strait of Malacca. The Nine Degree Channel is the channel between the Lakshadweep Islands of Kalpeni and Suheli Par, and Maliku Atoll. It forms the most direct route for ships sailing from the Persian Gulf to East Asia. In 2010, at the height of

Somali piracy, ships had faced attacks from bands of Somali pirates operating in the region, which has since been under constant surveillance by both the Indian Navy and the Coast Guard. Both the Six Degree and the Nine Degree Channels lie largely within Indian waters and provide India with a unique geographic advantage in monitoring the majority of the shipping traffic transiting the Indian Ocean.

Strategic resources in the Indian Ocean region and trade flow patterns

The Indian Ocean region has significant deposits of strategic materials that are vital to the world's economy. Critical resources include bauxite, chromite, coal, copper, diamonds, gold, iron ore, natural gas, nickel, oil, phosphates, tin, titanium, tungsten, uranium, and zinc.[35] The countries in the region are also the largest producers of rubber, spices, tea, and jute.[36] Details of major sources of various raw materials and commodities are presented in Table 1.3.

A unique feature of the Indian Ocean regional trade is the fact that trade between Indian Ocean littoral states constitutes only 20 per cent of the total

Table 1.3 Sources of Raw Materials and Commodities in the Indian Ocean Region[a]

Country	*Resources*
Australia	Iron ore, coal, bauxite, alumina, grain, uranium, refined petroleum products, LNG.
Bahrain	Refined petroleum products.
Djibouti	Refined petroleum products.
Egypt	Crude oil, phosphates.
India	Iron ore, coal, bauxite, alumina, refined petroleum products.
Indonesia	Coal, crude oil, refined petroleum products, LNG.
Iran	Iron ore, crude oil, refined petroleum products.
Iraq	Crude oil.
Jordan	Phosphates.
Kuwait	Crude oil, refined petroleum products.
Madagascar	Bauxite, alumina, wood.
Malaysia	Bauxite, alumina, palm oil, crude oil, refined petroleum products, LNG.
Oman	Crude oil, LNG.
Pakistan	Refined petroleum products.
Qatar	Crude oil, LNG, refined petroleum products.
Saudi Arabia	Crude oil, refined petroleum products.
Singapore	Refined petroleum products.
Sri Lanka	Phosphates.
South Africa	Iron ore, coal, grain, phosphates, refined petroleum products.
Tanzania	Refined petroleum products.
The UAE	LNG, crude oil, refined petroleum products.
Yemen	LNG, crude oil.

a Pandya, Herbert-Burns and Kobayashi, *Maritime Commerce and Security*, pp. 10–16.

volume, whilst the remaining 80 per cent is transported outside the region.[37] This explains the strategic interests of extra-regional states in the region and the presence of their navies in the Indian Ocean. The above trade pattern is reversed in the Pacific and the Atlantic where extra-regional naval presence is uncommon. However, according to a UN Conference on Trade and Development (UNCTAD) report, recent trends indicate growing intra-region trade.[38] According to the report, global maritime trade has traditionally been dominated by three economic centres: North America, Europe, and Asia. Together, these three areas imported 88 per cent of the seven billion tons of cargo transported by sea in 2005.[39] However, the UNCTAD report forecasts that this pattern is expected to change as Africa emerges as a major source for natural resources and as their consumption levels increase in tandem with improved income levels. China has already overtaken the United States as Africa's largest trading partner. In 2011, U.S.-Africa trade was $123 billion whilst China-Africa trade stood at $133 billion.[40] Further, according to a Lloyd's Register study report, the maritime trading patterns by 2030 will change from being Western centric to Sino centric.[41]

In recent years, there has been much speculation around the feasibility of new trade routes via the Arctic, primarily including the North Sea Route (NSR) and the Northwest Passage (NWP). The opening up of the new routes could potentially connect Japan and China with the Atlantic region, transiting outside the Indian Ocean as demonstrated by the voyage of the MV *Yong Sheng* from the Chinese shipping company COSCO, in September 2013, from Dalian to Rotterdam. However, according to a study by IHS Markit, the commercial exploitation of these routes is unlikely to be a reality for some time due to the lack of adequate polar-capable ships and the costs involved.[42] In 2014, it was estimated that only about 765 container ships were classified as ice capable (out a global fleet of 5,502 container ships) with a total capacity for about 1.2 million 20-foot equivalent units (TEUs),[43] whilst the remaining fleet of 4,258 vessels accounted for about 15.9 million TEUs.[44] The above study also stated that ship operators were in no hurry to improve their numbers of ice capable ships as only 7 of 479 container vessels on order globally were ice capable and even those 7 ships were mostly small classes with none possessing over 1,000 TEU capacity. In addition to the lack of suitable vessels, the viability of the polar route is also constrained by factors such as lack of adequate ice breakers and safety concerns. Evidently, the Indian Ocean shipping lanes will continue to remain the primary trade routes in the future.

India's maritime security challenges – China and the Sino-Pakistan nexus

India faces a wide range of strategic maritime threats. The rise of China and its growing influence in the Indian Ocean region, which could potentially alter the extant Sino-Indian balance of power presents the greatest challenge

for India. The dynamics of maritime influence exerted by India and China have generated widespread interest and speculation, and it is widely predicted that as both states increasingly engage with the maritime arena in the Indian Ocean, there are chances of clashes of interest, which could lead to a conflict.[45]

Initial efforts by India under Prime Minister Nehru to build close relations with China failed as relations soured over Tibet and unresolved boundary disputes. This culminated in a brief border war in 1962 that has since left both sides deeply suspicious of each other. India claims that China is in illegal occupation of about 38,000 square kilometres of its territory in the State of Jammu & Kashmir and that in 1963 it has further acquired 5,180 square kilometres in the Shaksgam Valley of Pakistan Occupied Kashmir (POK) illegally from Pakistan and further claims about 2,000 square kilometres in the states of Himachal Pradesh and Uttarakhand.[46] Moreover, China's stated position is that "reunification" of Chinese territories is a sacred duty of the PLA. Despite several rounds of boundary talks, there is no resolution in sight for India, even though China, which shares 22,000 kilometres of land border with 14 states, has resolved its border disputes with all except India and Bhutan. It is pertinent to note that China's land boundary settled with Myanmar runs along the same McMahon Line separating India and China, which it refuses to recognise with respect to India and Bhutan.[47] With a view to maintain peace along the disputed land border, India and China signed the Border Peace and Tranquility Agreement in 1993, followed by an agreement on confidence-building measures in the military field signed in 1996. However, reportedly, the PLA has intruded repeatedly into Arunachal Pradesh and Ladakh and has raised objections to Indian road construction projects in these areas. These periodic border transgressions, including the recent stand-off at the India-Bhutan-China tri-junction at Doklam, Bhutan, ending on 28 August 2017,[48] have been widely reported and debated in the Indian press and have been discussed at length in the Indian Parliament as well.[49]

In addition to keeping India off balance across their land borders, China has made Pakistan the cornerstone of its strategy and has sought to strengthen Pakistan militarily by providing both conventional and nuclear weapons.[50] According to Raja Mohan, "the scale and scope of strategic cooperation between China and Pakistan is itself unprecedented in the annals of nuclear history."[51] Pakistan has also been referred to as "China's Israel" – that is, no matter what Pakistan chooses to do, China will back it.[52] For instance, India's efforts – backed by the United States, France, and the United Kingdom – to designate Masood Azhar, leader of the Pakistan-based terror group *Jaish-e-Muhammad* (JeM), as a global terrorist have been consistently vetoed by China at the UN Security Council Sanctions Committee. Pakistan and China are unnatural allies, but have a *de facto* alliance proclaimed by none other than the then Chinese President Hu Jintao, in November 2006, during a visit to Pakistan, as "higher than

the Himalayas, deeper than the Indian Ocean and sweeter than honey."[53] The close relations between China and Pakistan are largely framed in the context of their mutual hostility with India. Further, for Pakistan, China is also a reliable alternative to the United States in providing military assistance and support for its nuclear programme. China's defence and nuclear cooperation with Pakistan has seriously blunted India's military edge over a much smaller neighbour and Pakistan has used its nuclear capability as an "umbrella" to wage cross-border terrorism against India.

In April 2015, the Chinese President Xi Jinping announced a $46 billion investment package aimed at augmenting the China-Pakistan Economic Corridor (CPEC). This plan far exceeds not only total U.S. aid to Pakistan since 2002 but also Pakistan's paltry foreign direct investment figures.[54] CPEC is a key element of China's ambitious belt and road initiative (BRI) and seeks to develop the Chinese-constructed Port Gwadar as an alternate energy supply route via pipelines all the way to China, bypassing vulnerable choke points in the Indian Ocean. It also includes upgrading of the Karakoram Highway linking China with Pakistan. Gwadar is a potential Chinese naval base – in the popularly known "string of pearls" – though the local insurgency in the Pakistan province of Baluchistan has hampered progress in this area and Baluchistan separatists have repeatedly attacked Chinese workers. Significantly, Pakistan has raised a "special security division" comprising 15,000 troops and a naval "Task Force 88" based in Baluchistan, solely to provide security for Chinese personnel and assets.[55]

Whilst India enjoys overall conventional military superiority with respect to Pakistan, it is highly probable that in the case of a Indo-Pakistan conflict, China – a vastly superior military power – may support Pakistan militarily and open a second front with India along the disputed border.[56] To deal with such a scenario, according to Arun Prakash, "India needs to nurture the 'maritime card' to checkmate both China and Pakistan."[57] India's centrality in the Indian Ocean bestows upon it immense geostrategic heft with respect to China, and given the relative parity of forces along the Sino-Indian land border, India's maritime strategy seeks to leverage its geographic advantage to maintain an overall balance of power with China.

China's strategic interests and vulnerabilities in the Indian Ocean region

As the world's second largest economy and export country, China is well aware that its continued growth is closely linked to its ability to secure its sea lines of communication (SLOC) for supply of raw materials such as energy and mineral resources, expand its maritime trade, and maintain its access to new markets globally. In 2017, China's trade crossed $4.28 trillion[58] amassing an annual trade surplus of $421 billion, making it the second largest trade surplus economy in the world behind the United States.[59] China is the world's largest importer of petroleum products, and over 80 per cent of

China's oil imports transit the Strait of Malacca,[60] a vulnerable choke point, representing China's so-called "Malacca Dilemma," first highlighted in 2003 by the then Chinese President Hu Jintao. China receives about half of its oil from Africa and the other half from Middle East, transiting through the Strait of Hormuz, another exposed choke point in the Indian Ocean region.[61]

China has sought to mitigate its "Malacca Dilemma" by diversifying its oil import sources and establishing a network of pipelines via Myanmar, Pakistan, Russia, and the Central Asian republics to bypass the strait, with limited success.[62] Further, unlike most large trading nations, including the United States that have preferred to use the more commercially efficient system of foreign-chartered ships over state-owned ships to carry their trade, China has sought to increase its national merchant shipping fleet to carry its own cargo.[63] According to the 2018 UNCTAD report on maritime trade, China ranks third after Greece and Japan in the list of top five ship-owning countries that control more than half of the global shipping tonnage.[64] Chinese projections suggest that by 2030, China would surpass Greece and Japan to have the world's biggest merchant fleet by DWT and account for 15 per cent of the world's shipping volume.[65] China is on its way to become the world's largest tanker owner state by owner nationality in order to achieve its goal of ensuring that 85 per cent of its crude oil imports are carried by Chinese-controlled ships.[66]

In its quest for new markets and investment destinations, China has also expanded its overseas footprint in Central Asia, the Indian Ocean, Africa, and the Middle East to Europe. In 2014, China's foreign investments exceeded $116 billion,[67] a manifold increase over the less than $3 billion a decade ago.[68] These investments are now bound to increase as the execution of various projects under the BRI unfolds. In addition to these investments, China has over five million workers employed overseas, including in several trouble spots such as South Sudan, Yemen, and Pakistan.[69] In 2011, when a civil war broke out in Libya, the PLA Navy was employed to evacuate 35,800 Chinese workers and, more recently, in April 2015, the PLA Navy evacuated over 900 people from Yemen, including Chinese nationals and several foreigners.[70]

As a result of China's engagements with the Indian Ocean states, it is now susceptible to the entire range of non-traditional threats prevalent in the region. This had been highlighted in the 2015 white paper on China's military strategy, which identified the following threats to national security: "international and regional turmoil, terrorism, piracy, serious natural disasters and epidemics, and the security of overseas interests concerning energy and resources, strategic SLOCs, as well as institutions, personnel and assets abroad."[71] From a strategic perspective, China's source of economic strength, its burgeoning trade, large merchant fleet, and investments in the Indian Ocean region are also its greatest vulnerability, potentially liable for disruption by India and the United States. India's commanding position

atop China's trade routes presents a formidable challenge for China, virtually across the entire ocean and particularly at the various choke points. Manifestly, China's maritime geography – not unalike Russia – restricts its ability to project maritime power. The key focus for China has, therefore, been to alleviate its strategic vulnerability and geographic limitations, and it clearly seeking to expand its maritime power in the Indian Ocean region by establishing regional naval bases. The key factors that foretell a large-scale Chinese expansion in the Indian Ocean region in the coming years, potentially undermining India's geostrategic advantages, are discussed in the following section.

China's maritime strategy

China's defence white paper of 2015, the ninth in a series of such policy documents promulgated since 1998, was the first one to deal explicitly with China's military strategy. Its salient features were an increased focus on China's maritime domain, identified as a "critical security domain," and its protection by the "preparation for military struggle," an obvious reference to the ongoing tensions in the South China Sea.[72] Whilst underscoring the importance of the maritime domain over land, the white paper advocated development of

> …a modern maritime military force structure commensurate with its national security and development interests, safeguard its national sovereignty and maritime rights and interests, protect the security of strategic SLOCs and overseas interests, and participate in international maritime cooperation, so as to provide strategic support for building itself into a maritime power.[73]

The white paper called for an assertive posture in China's near-seas and discusses the possibility of greater PLA Navy presence in the distant oceanic spaces, quiet obviously the Indian Ocean. It called for PLA Navy actions to supplement "offshore waters defence" with "open seas protection" through naval presence and patrols in blue waters. It also stated that China needs to develop naval-related systems to support extended reach and presence, along with air capabilities, to support the "strategic requirement of building air-space capabilities and conducting offensive and defensive operations."[74] The paper highlighted an increased scope for participation by China's armed forces in international disaster rescue and humanitarian assistance.[75]

From an Indian perspective, the new Chinese military strategy has been a cause for concern as it clearly points towards a long-term and robust military posture in the Indian Ocean region for protection of China's strategic SLOCs, personnel and overseas assets, and also an increased tempo of naval diplomatic missions. These earlier pronouncements seen in the light of recent developments, such as the establishment of a PLA Navy logistics

facility in Djibouti, speak of a coherent national strategy by China to firmly establish a permanent military presence in the Indian Ocean.

Modernisation of the PLA Navy

According to a U.S. Congressional study report, since the late 1980s to early 1990s, when China's naval modernisation appears to have commenced, China has made rapid progress in phasing out older and obsolescent platforms and replacing them with modern and more capable platforms.[76] The PLA Navy modernisation has been characterised as a three-step process: the first, laying of a "solid foundation" by 2010, followed by making "major progress" by 2020 and finally being able to win "informationalised wars" by the mid-twenty-first century.[77] Evidently, this progress has continued on track, and since 2013, the PLA Navy has been commissioning 12–18 ships each year adding 80 ships and submarines to their inventory between 2013 and 2018.[78] Overall, China has commissioned more naval ships than any other country in world in the past 100 years, excluding the period of the world war.[79] According to the U.S. Congressional report, salient PLA Navy modernisation programmes include anti-ship ballistic missiles (ASBMs), anti-ship cruise missiles, submarines, aircraft carriers, surface combatants, unmanned aerial vehicles (UAVs), and state-of-the-art command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) systems. The key programmes are described in the following paragraphs.

Anti-Ship Ballistic Missiles (ASBMs): China has been developing for several years an ASBM known as the DF-21D, a theatre range ballistic missile with a manoeuvrable re-entry vehicle (MaRV) for targeting ships, particularly aircraft carriers, at sea. The DF-21D, dubbed as a "carrier killer" and widely acknowledged as a "game changer," is estimated to have a range of 810 nm[80] (1,500 kilometres) and known to have been deployed by the Second Artillery Force since 2010.[81] Reportedly, the missile components of the DF-21D have been proven through multiple tests, although China's ability to use the missile against a moving target operating in the open ocean remains unproven.[82] China is also reportedly developing a sophisticated C4ISR system, including land-based over-the-horizon surface wave backscatter radars that would provide targeting information for the DF-21D. The USN has raised serious concerns about the employment of the DF-21D, estimated beyond even the capability of its SM-2+ level anti-missile interceptors.[83]

Submarines: The PLA Navy submarine force of the 1980s has been replaced in recent years by a modern inventory of submarines capable of regional anti-surface warfare missions near major SLOCs.[84] In the mid-1990s, China acquired 12 Russian Kilo-class conventional submarines and has since added four new classes of indigenously built submarines: namely, the Jin-class (SSBN or ballistic missile capable nuclear submarine), Shang-class (SSN or nuclear attack submarine), Yuan-class (conventional), and

Song-class (conventional). The Jin-class SSBNs are capable of carrying the JL-2 submarine-launched ballistic nuclear missile with a range of 7,400 kilometres.[85] By 2020, the PLA Navy is predicted to have a force of about 63 diesel and 11 nuclear submarines.[86]

Aircraft Carriers and Carrier-Based Aircraft: In September 2012, *Liaoning,* the former uncompleted Ukrainian (Soviet) carrier *Varyag,* was commissioned into the PLA Navy as a platform that would help the service transition into a carrier-capable navy. The *Liaoning* is a 60,000 ton ski-jump conventional carrier, bigger than the carrier currently operated by the Indian Navy and those currently under construction in India. The *Liaoning* is fitted out with a full suite of weapons and combat systems and is capable of accommodating an air wing of 30 or more aircraft, including J-15 fighters, and a mix of anti-submarine/airborne early warning/search and rescue (SAR) helicopters.[87] The *Liaoning* is widely regarded as the PLA Navy's "starter" carrier to train personnel in carrier operations for manning carriers of the future.[88] A second carrier, Type 001A, was launched in April 2017. It is similar to the *Liaoning* and uses the same STOBAR (Short Take-off But Arrested Recovery) system, but it is slightly larger and has a few notable enhancements.[89] The Type 001A displaces about 70,000 tons; it is fitted with an advanced radar and is capable of carrying up to eight additional aircraft. It is currently undergoing sea trials and is expected to be commissioned in 2020.[90] A third carrier is believed to be under construction at Shanghai. This carrier is expected to be fitted with a CATOBAR (Catapult Assisted Take-off But Arrested Recovery) similar to the USN's Electromagnetic Aircraft Launch System (EMALS) fitted on the latest Gerald R Ford-class carriers.[91]

Surface Combatants: Since the 1990s, when China first procured four Sovremenny-class destroyers from Russia, it has inducted ten new classes of indigenously built destroyers and frigates into service. By 2020, the PLA Navy is expected to have nearly 150 major surface combatants.[92] These include several large amphibious ships, such as the Type 071 and Type 081.[93] It is assessed that in addition to defending and asserting China's claim in the South China sea, the amphibious ships could be used for diplomatic missions, including humanitarian assistance and disaster relief (HADR) operations and port visits in the Indian Ocean.

In trying to keep pace with the PLA Navy, the growth of the Indian Navy has surged since 2010, and the Indian Navy seems to be on track to become a 200-ship navy by 2027 as planned.[94] However, currently, the Indian Navy is less than half the size of the PLA Navy. For instance, by 2020, the PLA Navy will operate 73 attack submarines, whilst the Indian Navy would have just 17 such craft in their inventory. Furthermore, by 2020, the PLA Navy would field 30 guided missile destroyers and over 92 frigates and corvettes, whilst the Indian Navy's inventory would be limited to just 8 destroyers and about 32 frigates and corvettes.[95]

However, numbers alone don't tell the complete story, and despite PLA Navy's superiority in numbers of platforms, logistical constraints imposed by

geography and considering the inescapable requirement for concurrent deployment of the PLA Navy in the Western Pacific, China will find it hard to neutralise the extant advantage enjoyed by the India in fielding a higher concentration of naval forces in the Indian Ocean region. Evidently, China is acutely conscious of this limitation, and the establishment of a PLA naval base at Djibouti is clearly aimed at overcoming such operational constraints for the PLA Navy.

The belt and road initiative

In 2013, the Chinese President Xi Jinping announced the proposal for a Silk Road Economic Belt over land connecting western China to Europe across the Eurasian continent and a MSR stretching from the Western Pacific across the Indian Ocean up to the Mediterranean. Together, the two proposals have now come to be known as the BRI. The BRI seeks to build and augment the maritime infrastructure along the sea routes in the Indo-Pacific region to improve maritime trade in the region and boost regional economies.[96] China had invited India along with other states to participate in the new venture. Although India has objected to China's Silk Road proposal, as it passes through POK, disputed by India, its external affairs minister, Sushma Swaraj, during her visit to Beijing in 2015, stated that whilst India would not give a blanket endorsement to the MSR project, it would support the project where the synergies of the two countries meet.[97]

The BRI spans at least 68 countries with an announced investment as high as $8 trillion for a vast network of transportation, energy, and telecommunications infrastructure linking Europe, Africa, and Asia.[98] The BRI infrastructure when completed will encompass a population of 4.4 billion people with a collective GDP of $21 trillion (one-third of global wealth) and connect every participating country to three continents, linking the world's top emerging markets.[99] The BRI will be funded by the Asian Infrastructure Investment Bank (AIIB), another Chinese initiative that has attracted support from 57 countries including India.[100] When the silk route vision is fulfilled then, as noted by an analyst, "all roads will quite literally lead to Beijing."[101] A National Bureau of Asian Research special report notes that "in many ways, the belt and road initiative looks very much like an effort to replicate on a region-wide scale China's development model of the past 30 years that led to such spectacular economic results."[102]

India and some others, including the United States, do not consider the BRI as benign. In this regard, the former U.S. Secretary of Defence James N. Mattis stated:

> I think in a globalized world, there are many belts and many roads, and no one nation should put itself into a position of dictating 'One Belt, One Road…the 'One Belt, One Road' also goes through disputed territory, and I think that in itself shows the vulnerability of trying to establish that sort of a dictate.[103]