Policy Recommendations by the Quadripartite Commission on the Indian Ocean Regional Security

Towards a more stable security environment in the Indian Ocean region

Appendix

THE SASAKAWA PEACE FOUNDATION

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Appendix

The Sasakawa Peace Foundation
in cooperation with
Australian National University
Vivekananda International Foundation
Sasakawa Peace Foundation USA

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India's Role in South Asian Economic Dynamism

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Introduction

Currently, South Asian countries are attracting world attention because of their favorable economic performance. Since 1990, the Indian economy has shown an average growth rate of 6.5 percent, propelling India to become the third-largest economy in 2008, measured on a PPP basis. India has already shown faster growth than China. Recently, India and other South Asian countries have reported higher GDP growth rates than other emerging regions. Given that South Asia is the most populous region in the world, and that their population is expected to increase into the future, the future of the region depends on whether and how economic dynamism can be cultivated in the region.

India is expected to play a decisive role in uplifting the South Asian region as a world growth center. India has enjoyed services-led growth since the early 1990s, which differs from the path of economic development followed by many other countries. Currently, manufacturing is promoted under the "Make in India" initiative, with its economic growth becoming more resilient under prudent macroeconomic management. Many opportunities and challenges exist in the area of infrastructural development, where collaboration with Japan might be particularly productive. Considering the current remarkable performance of the Indian economy under a huge domestic market, there is reason to believe that India can assume a path of high economic growth that is firmly based.

Given that South Asia's integration with the remainder of the world is weak and that its interdependence within the region is quite low compared with that found in other regions, another important issue is how to enhance regional connectivity to bring about spillover effects throughout the region. This study was undertaken to assess the possibilities of Indian development into a driver of global growth in the near future and to elucidate prospects of infrastructure development for enhancing regional connectivity in and around South Asia.

I. Emerging South Asian Economy

1. Background of Favorable Economic Performance

Recently, the emerging South Asian economy has received the attention of the world. Reflecting the vigorous expansion of the Indian economy, GDP growth rates in South Asia are at the highest levels among all economically developing regions. Its GDP growth rates, which were 7.0 percent in 2015 and 6.6 percent in 2016, are forecast to rise to 7.3 percent in 2017 (Table 1.1). In addition to India, both Pakistan and Bangladesh have posted strong growth figures recently. Total foreign direct investment (FDI) inflows to South Asia increased by 22 percent to $50 billion in 2015, of which US$44 billion were allocated to India. Since the early 1990s, the Indian economy has emerged as a leading economic power, attracting world attention.

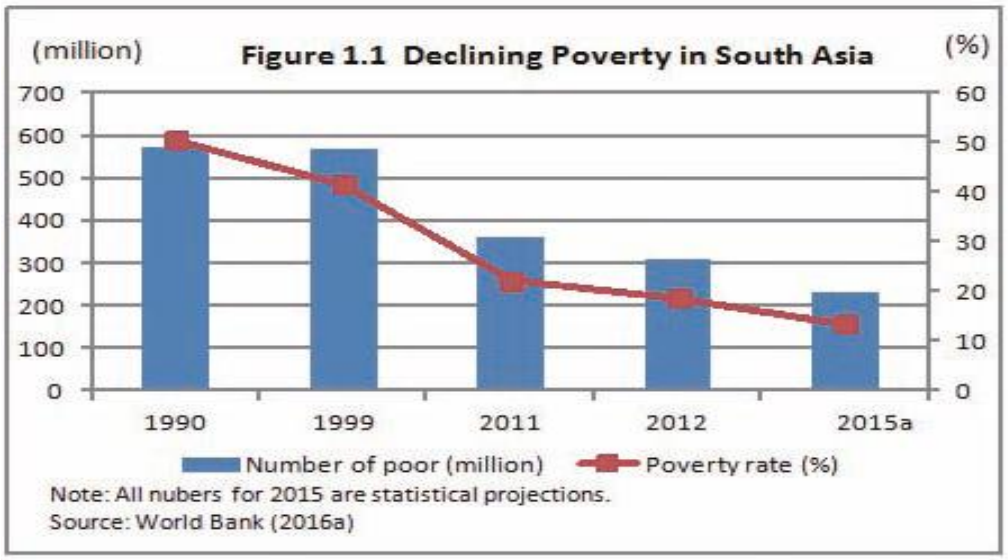
Table 1.1 GDP Growth in Developing Asia

(ADB Forecast: %)

	2015	2016	2017
Developing Asia	5.9	5.6	5.7
Central Asia	3.0	1.5	2.6
East Asia	6.1	5.8	5.6
China	6.9	6.6	6.4
South Asia	7.0	6.6	6.4
India	7.6	7.0	7.8
Southeast Asia	4.4	4.5	4.6
The Pacific	7.1	2.7	3.3

Source: ADB (2016a)

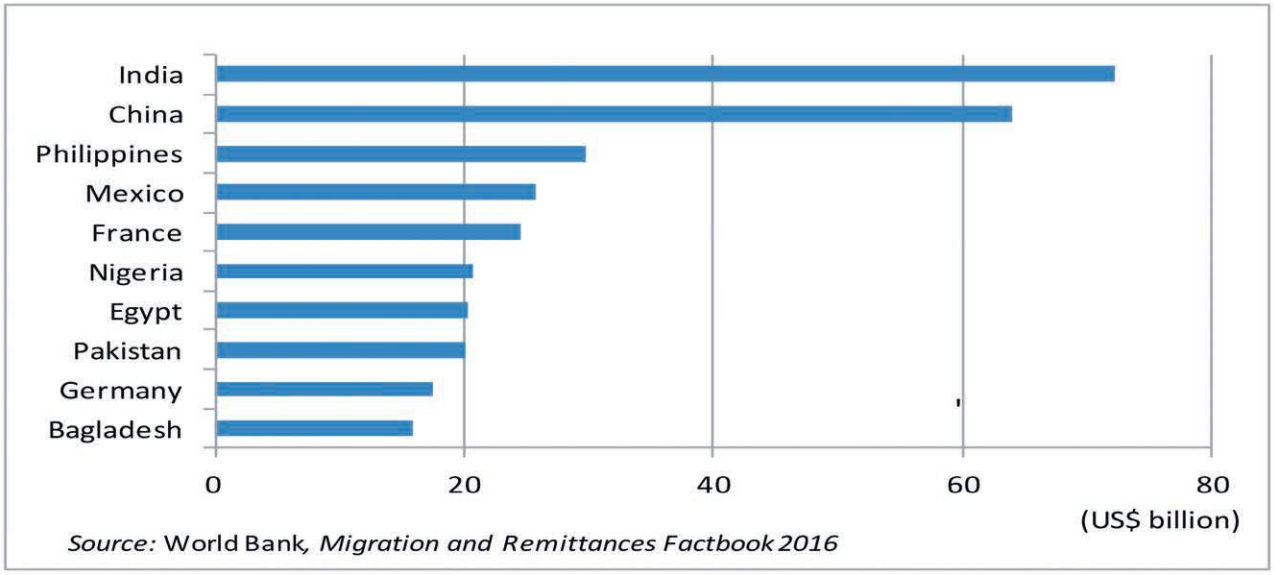
Following their high growth, poverty reduction has also been pursued in South Asia since the 1990s. Although almost half of South Asians were living below the poverty line in 1990, that figure was reduced to less than 15 percent in 2015. The absolute number of poor people declined steeply from 568 million in 1999 to 231 million in 2015 (Figure 1.1). In Bangladesh, for example, food self-sufficiency was ultimately achieved around 2000. The labor-intensive garments industry made way for that nation's high economic growth and improvement of the social and economic status of women.



International trade, migration, investment, and technology transfer are all important and interconnected facets of globalization. Above all, migration has been an important aspect of life throughout South Asia. The movement of people across national boundaries facilitates movement of goods, ideas, and capital by lowering costs, informational asymmetries, and legal barriers. Migrants not only provide a large and reliable source of external finance for the homeland. They are also a source of technical and managerial expertise that is usually scarce in the homeland. According to World Bank data, as of 2013, the global stock of migrants amounted to 247.2 million people (World Bank, 2016b). South Asia has 37.1 million emigrants. India ranks as the top

emigrant provider in the world, with 13.9 million emigrants, followed by Bangladesh with 7.6 million, and Pakistan with 6 million. Remittance inflows to South Asia amounted to US$115.5 billion in 2014, accounting for 19.5 percent of the world's total remittance flows. India is also the world's top remittance receiving country, accepting US$ 72.2 billion in 2015, whereas Pakistan and Bangladesh respectively received US$ 20.1 billion and US 15.8 billion. The main destination countries of South Asian emigrants include the United Arab Emirates (UAE), Saudi Arabia, North America, and the United Kingdom. South Asian migrants include not only low-skilled laborers but also numerous highly skilled professionals.

Figure1.2 Top10 Remittance-receiving Countries, 2015



India has a large network of overseas Indians. Currently, overseas Indians including Non-Resident Indians and Persons of Indian Origin are nearly 27 million people (Table 1.2). They are spread widely throughout the world in economically developed and emerging countries. The United States is the major host country, where as many as 4.46 million overseas Indians reside. These overseas Indians have a rising economic and social profile in regions throughout the world, contributing to the economic development of the host countries through activities in intellectual and innovative spheres. They play the role of a bridge that is important for providing knowledge, skills, and capital, and a market to the mother country. Given the cultural diversity of the country, Indians easily acquire their skills through management of cross-cultural operations, which gives them an edge in managing operations across diverse locations (Kumar, 2008). The global network of overseas Indians is itself a benefit that contributes greatly to Indian economic development.

Table 1.2 Population of Overseas Indians

(Compiled in April 2016)

Ranking	Name of Country	Non-Resident Indians	Persons of Indian Origin	Total
①	USA	1,280,000	3,180,000	4,460,000
②	Saudi Arabia	2,960,000	52	2,960,052
③	UAE	2,600,000	3,293	2,603,293
④	Malaysia	154,274	1,976,600	2,130,874
⑤	United Kingdom	325,000	1,451,862	1,776,862
⑥	Sri Lanka	14,000	1,600,000	1,614,000
⑦	South Africa	60,000	1,500,000	1,560,000
⑧	Myanmar	7,650	1,500,000	1,507,650
⑨	Canada	184,320	831,865	1,016,185
⑩	Oman	795,082	not available	795,000
	Grand Total	11,422,045	15,454,091	26,876,136

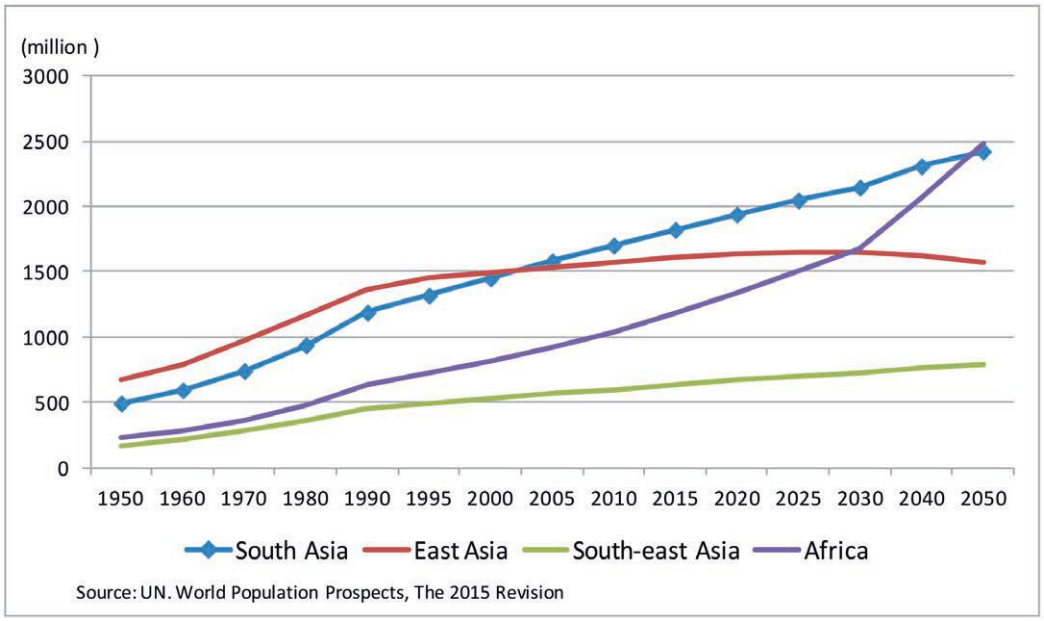
Source: Ministry of External Affairs, Government of India

Since Independence, India has established a parliamentary democracy. To date, 16 general elections have been held successfully at the central level. Elections are also held at state, municipal, and panchayat levels. The rule that government can be replaced only through election has been firmly established. Freedom of organizing political party, speech, and press is fundamentally guaranteed: that tradition differs starkly from the authoritarian regime prevailing in China, where political freedom is oppressed under one-party dictatorship of the Communist Party and where public opinion cannot be expressed through elections. In South Asia, however, even in those countries where democracy has not always been the preferred option, as was often the case in Pakistan, the vibrant civil society and the media began to be an important voice for change (Burki, 2011). In Bangladesh, non-government organizations (NGOs) have been able to play important roles, particularly in those nations where governments have remained weak.

2. Prospects for a Demographic Dividend in South Asia

Currently, South Asia has the largest population in the world: 1.823 billion in 2015, accounting for one-fourth of the world's population. It overtook the region of East Asia in 2005. It is expected to continue to increase even beyond 2050 (Figure 1.3). In fact, it is predicted to increase by 324 million by 2030–more than the population of the United States. However, the East Asian population is poised to decline after 2025. Not until 2050 will Africa catch up with South Asia's population. South Asia's population is also characterized by its higher proportion of younger people. Their populations' median ages are below 29.6 years, with the exception of Sri Lanka, where it is 32.3 years old. As of 2015, the median age was 26.6 years in India, 22.5 years in Pakistan, and 25.6 years in Bangladesh, compared with China's 37 years and Japan's 46.5 years.

Figure 1.3 Popiulation Prospects in Emerging Regions



South Asia's population continues to grow more slowly than it did in the past. The world's population showed the highest growth in 1970–75 at an annual rate of 1.96 percent, although it has slowed to 1.18 percent in 2010–15. Similarly, population in South Asia, after having shown the highest growth in 1980–85 at an annual rate of 2.4 percent, has slowed to 1.37 percent in 2010–2015. Population growth is strongly influenced by the total fertility rate (average number of child births per woman). After marking its peak of 5.02 in 1960–65, the world total fertility rate has declined gradually to 2.51 in 2010–15. In South Asia, except in Afghanistan and Pakistan, figures have tended to correspond to the world trend: The total fertility rate dropped sharply from 6.07 in 1960–65 to 2.56 in 2010–15, slightly above the world average. In East Asian countries, reflecting the one-child policy in China and declining birth rates in Japan and Korea, total fertility rates declined on average to 1.95. Population growth rates were reduced to 0.46% in 2010–15.

Economically more noteworthy is the share of working-age population, people aged 15–64, among the total population. An increase of 1 percent in the working-age share is estimated as boosting the GDP growth percentage by 1.1–2.0 per capita (World Bank, 2016a). In the past, the share of working-age population in the world decreased from 60.6 percent in 1950 to 57.1 percent in 1970. Since then, however, in accordance with the decline in all fertility rates, the share of working-age population in the world showed a long-run tendency to rise, peaking at 65.7 percent during 2010–2015.

In South Asian countries, the share of working-age population increased from 63.5 percent in 2010 to 65.0 percent in 2015. They belong to the exceptional group of countries that can enjoy a demographic bonus for a long time into the future (Figure 1.4). India is expected to have a distinct demographic advantage over China in the distant future. China's population is expected to continue to increase until 2040. However, both the number of their working-age people and its share of the population already peaked in 2015, both showing signs of shrinking process. In contrast, India's working-age people share, although still less than the Chinese level, is expected to continue to rise until 2040. Its working-age population is expected to surpass that of China by 2025, continuing to expand by 2050 (Figure 1.5). Regarding Pakistan and Bangladesh, with the

world's sixth largest and eighth largest populations, respectively, the working-age population in the former is expected to rise even after 2050, whereas that of the latter is expected to expand until 2040.

Figure 1.4 Working-age Shares in South Asia, East Asia and Africa

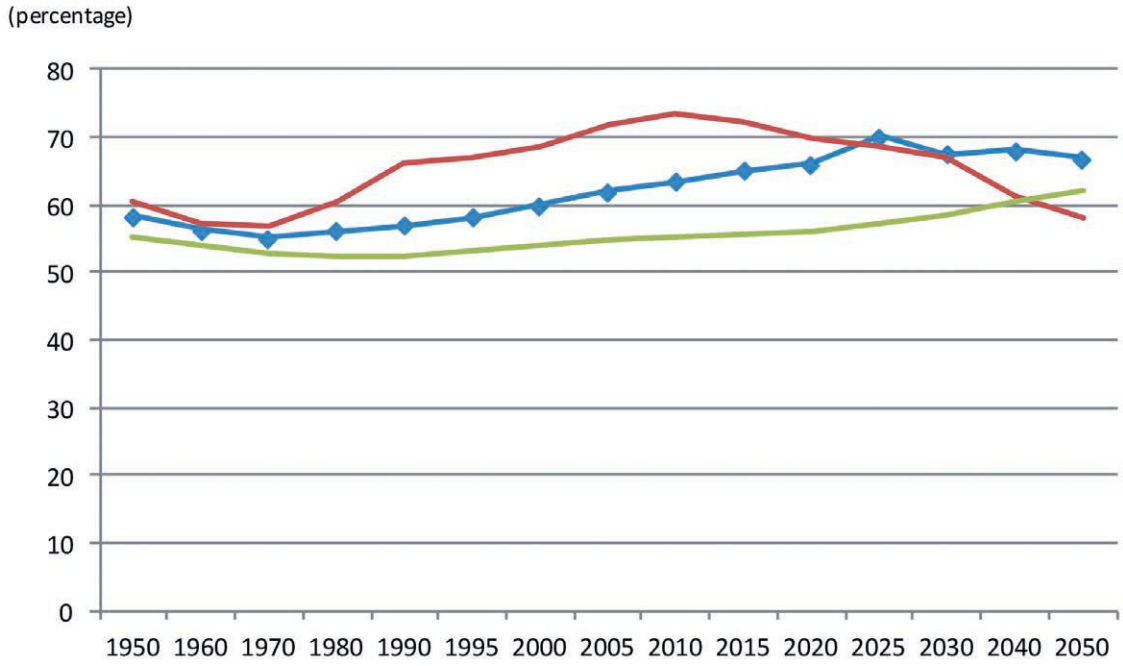
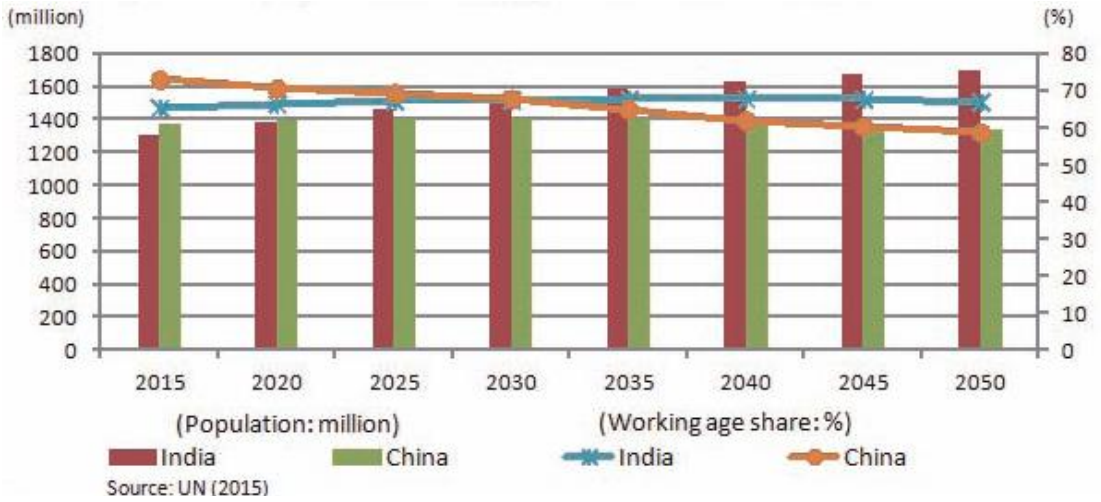


Figure 1.5 Prospect of Working Age Share in India and China



A first demographic dividend derives from the rise in the working age, with a growing labor force supporting fewer children and a dependent population. A second demographic dividend might arise as changes in the age structure engender greater investment in human and physical capital (Ronald and Mason, 2006). The World Bank classified the world into countries of four types: pre-dividend, early dividend, late dividend, and post-dividend countries.

Pre-dividend countries are mostly low-income countries, accounting for 11 percent of the world population, with fertility levels above four births per woman. Early dividend countries are mostly lower-middle countries, accounting for around 45 percent of the world population, where the working-age population share is rising

rapidly. Late-dividend countries are mostly upper-middle-income countries, including China, for which both the number of working-age people and their share of the population are expected to contract over the next few decades. Reaping the second demographic dividend becomes crucially important because demographic change is likely to reduce their contribution to future global growth. Post-dividend countries are mostly high-income countries with some of the highest shares of elderly people in the world.

All South Asian countries, with the sole exception of Sri Lanka, are in the early dividend stage. Their working-age population shares are most likely to rise in 2015–30. In ASEAN countries, as one might find in Vietnam, Thailand, and Myanmar with large populations, half of them are already late dividend countries where their working-age population shares are likely to shrink during that period. In East Asia, both Japan and Korea are post-dividend countries, with China being a late dividend country, where the working-age population share is rapidly shrinking, accompanied by aging of the population (Table 1.3).

Table 1.3 Demographic Typolpgy in Asian Countries

Member Countries	World Bank Group income crassification	Demographic type	Percentage change in working-age population share, 2015-30	Median age (years) 2015	Population (million) 2015
SAARC					
India	Lower-middle	Early-dividend	3.11	26.6	1,311.10
Pakistan	Lower-middle	Early-dividend	5.51	28.3	188.9
Bangladesh	Lower-middle	Early-dividend	6.15	25.6	161
Sri Lanka	Lower-middle	Late-dividend	-1.8	32.3	20.7
Nepal	Low	Early-dividend	1.93	23.1	28.5
Afganistan	Low	Pre-dividens	17.5	17.5	32.5
Maldives	Upper-middle	Early-dividend	3.66	26.4	0.4
Bhutan	Lower-middle	Early-dividend	4.47	26.7	0.8
ASEAN					
Indonesia	Lower-middle	Early-dividend	1.4	28.4	257.6
Philippines	Lower-middle	Early-dividend	2.4	24.2	100.7
Vietnam	Lower-middle	Late-dividend	-3.8	30.4	93.4
Thailand	Upper-middle	Late-dividend	-7.3	38	68
Myamner	Lowe-middle	Early-dividend	3.22	27.9	53.9
Cambodia	Low	Early-dividend	2.39	23.9	15.6
Sinagpore	Hgh	Post-dividend	-12	40	5.6
Lao PDR	Upper-middle	Early-dividend	-3.2	21.9	6.8
Brunei	Hgh	Late-dividend	-3.2	30.6	0.4
Middle East					
Iran	Upper-middle	Early-dividend	1.48	29.5	79.1
East Asia					
China	Upper-middle	Late-dividend	-7.1	37	1,376.00
Japan	Hgh	Post-dividend	-5.7	46.5	120.1
Korea	High	Post-dividend	-13	40.6	50.3

Source: World Bank (2016a); United Nations (2015)

Most countries of the Indian Ocean region, including 21 members of Indian Ocean Rim Association Countries, are either early dividend or late dividend countries. Looking at those large countries with more than 50 million population, including not only the three largest countries in South Asia but also Indonesia, Iran, and South Africa, all of which belong to early dividend countries with working-age population shares expected to rise at least until 2030. Indonesia, specifically, with the world's fourth largest population, has middle class consumption that is expected to also be the world's fourth largest by 2030 following India, China, and the United States. The Indian Ocean region embraces many countries that are blessed with the demographic potential to exhibit economic dynamism toward 2030.

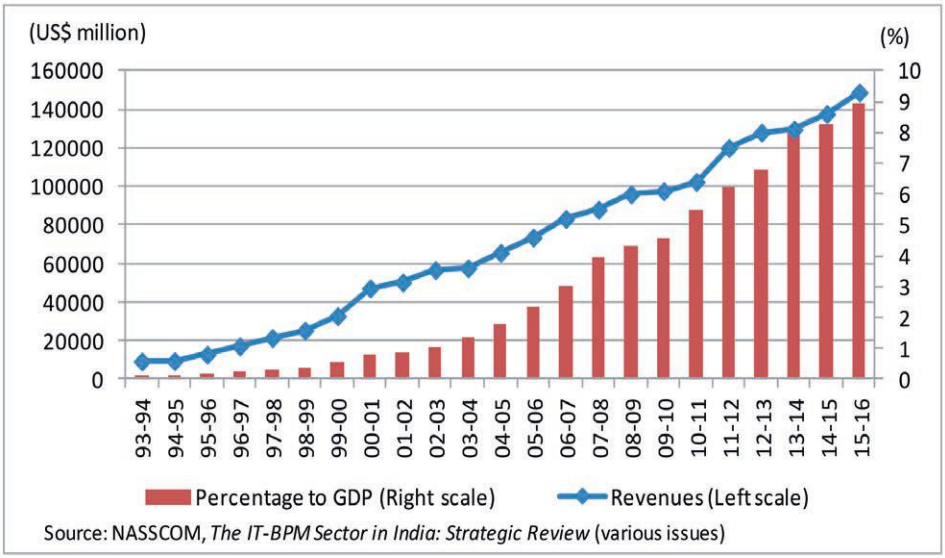
II. The Road to High Economic Growth in India

1. Indian Pattern of Development

India has enjoyed favorable growth since the early 1990s when the nation started to integrate itself increasingly into the world economy under economic reform. The average import tariff was reduced from 77.2 percent in 1991 to 30.6 percent in 1997, and then further to 9.2 percent in 2007, although import quantitative restrictions were abolished in 2001. India achieved more than five percent GDP growth rate during the 1990s. Moreover, it has shown a vigorous growth rate of an average seven percent since entering the 21st century. India's growth pattern has differed from China's and that of the remainder of Asia in its reliance on domestic demand and growth in services rather than labor-intensive manufacturing. During the periods of 1991–92 and 2014–15, the share of the services sector increased from 44.1% to 52.5% of GDP. Business services (including IT services), communications, and banking and insurance are among those services subsectors that have exhibited remarkably rapid growth.

For the services sector, the IT industry showed the most dynamic expansion in terms of both production and employment. The Indian IT industry, which was almost insignificant in the early 1990s, has expanded remarkably to US$ 14.3 billion in revenue in 2015–16, accounting for 9.3 percent of GDP, and employing more than 3.7 million, making it India's largest private sector employer (Figure 2.1). Currently, India produces 1.6 million graduate engineers every year. Taking advantage of an abundant supply of employable technical graduates with sufficient English skills, India has realized services sector-led growth after the introduction of economic reform, and has established its leading position in the global IT sourcing arena, increasing its market share to the current 55 percent in the destination of global sourcing. India has become an important global R&D center throughout the world. More than 1000 R&D labs of multinational enterprises are located in India, conducting design and development activities (Karunakaran, 2015).

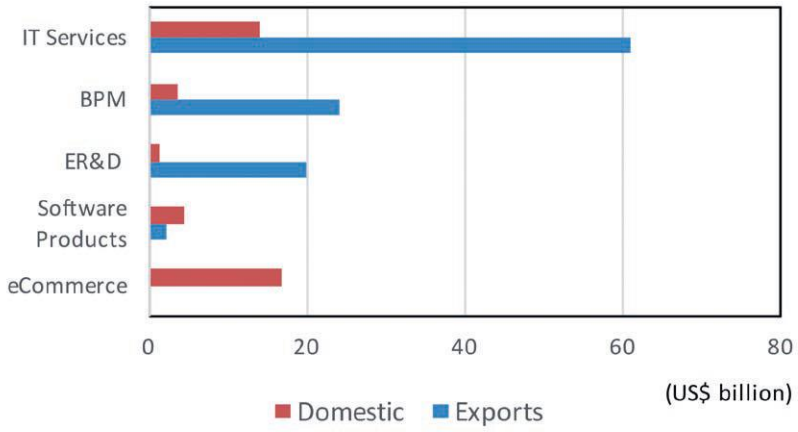
Figure 2.1 The Growth of Indian IT Industry



Source: NASSCOM, *The IT-BPM Sector in India: Strategic Review* (various issues)

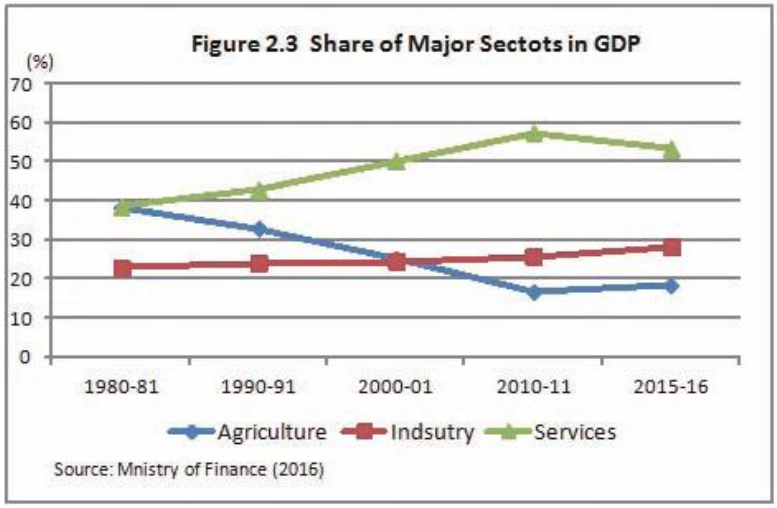
The Indian IT industry has tended to target IT services rather than hardware, and has been typically export-oriented, with the domestic market taking a backseat (Figure 2.2). The Indian IT industrial emergence demonstrates India's success in taking opportunities presented by globalization since the 1990s.

Figure 2.2 The Indian IT Industry, 2015-16



Note: ER&D=Engineering services andR&D
Source: NASSCOM (2016)

The industrial sector, in contrast, has not been a leading player in Indian economic development. Its impact on the economy as a whole has been restrained, although some subsectors exist, such as automobile and pharmaceuticals, which have shown vigorous expansion with considerable export-competitiveness. During 1990–91 through 2015–16, the industrial sector increased its share in GDP only modestly, from 24.5% to 28.2% (Figure 2.3). The share of manufacturing in GDP has stagnated around 15–16 percent since the 1980s, compared with the level of 25–34 percent in East Asian countries (Ministry of Commerce & Industry, 2011). Furthermore, the average share of registered manufacturing in GDP remained as low as 10.8 percent in 2008. The share of the industrial sector in the total employment was 24 percent in 2011–12: lower than the 27 percent of the services sector. Within the industrial sector, construction makes a more important contribution to the expansion of employment than manufacturing does. Regarding the share of average registered manufacturing in all employment, the highest level of only 6.2 percent was recorded in Tamil Nadu in 2010 (Ministry of Finance, 2015).



2. New Emphasis on Manufacturing Expansion

Taking office in May 2014, the Modi government assigned priority to manufacturing promotion, along with job creation and infrastructure development, among its main policy agenda points. The Indian government had already announced its national manufacturing policy in 2011, with the objective of enhancing manufacturing's share of GDP to 25 percent within a decade and creating 100 million jobs. The services sector alone cannot be expected to provide sufficient employment for an increasing number of laborers, including those moving incessantly from rural areas. It is imperative for India to expand manufacturing vigorously so that it can be equipped with the two growth engines of economic development. Furthermore, a huge trade deficit against China attributable to a flooded inflow of Chinese manufactured goods can only be tackled by strengthening the manufacturing basis in India. The "Make in India" initiative was launched to encourage foreign companies to come and make manufactured products in India with a view to turning India into a global manufacturing hub, which underscores that India must be connected with the international supply chain.

East Asian countries have followed a catching-up process, called the "flying geese" pattern of development[1], whereby industrial development is transmitted from a lead goose (Japan) to follower geese, ranging from Newly Industrializing Economies (NIEs) to the ASEAN 4, and more recently to China. Industrial development has been transmitted mainly through the channels of trade and FDI, which has led to the formation of East Asian regional production networks. Taiwan has been among the most important countries for investment into China, serving to connect China with the Asian supply chain. The "Make in India" initiative provides a good opportunity for them to reduce the geographical risk associated with overdependence on China.

With the "Make in India" initiative being launched, Japanese and other East Asian companies have displayed a keen interest in joining the bandwagon of FDI into India. At the Tokyo summit meeting held in December 2014, both Japan and India set a target of doubling Japanese FDI and the number of companies, with Japan expressing its intention to provide 3.5 trillion yen in public and private financing to India over the next five years. At the summit meeting with Mr. Modi held in New Delhi in September 2014, Chinese President Xi Jinping promised $20 billion in investment funds over the next five years, and expressed government intentions to establish industrial parks dedicated to Chinese companies in Gujarat and Maharashtra.

Following China, it is noteworthy that Taiwan has presented its strong intentions to invest in India. Taiwan has been a major supplier for the global IT market on an original equipment manufacturer (OEM) or original design manufacturer (ODM) basis[2]. In August 2015, the Taiwan Electrical and Electronic Manufacturers Association, which has about 3600 members, signed a memorandum of understanding (MoU) with the state governments of Uttar Pradesh, Andhra Pradesh, and Karnataka for the establishment of electronic manufacturing clusters for Taiwanese companies.

The main backdrop against which Chinese and Taiwanese companies are now ready to rush into India is the fact that the Indian domestic IT market is now providing huge demand for mobile telephones and

1 The phrase "flying geese pattern of development" was originally coined by Akamatsu Kaname in his articles published in the 1930s. Studies of the "flying geese" pattern of development were deepened and widely promulgated by Kiyoshi Kojima and Saburo Okita. See Akamatsu (1962), Kojima (2000), and Okita (1986).

2 As an example, Apple's supply chain was composed of 239 headquarters (suppliers) with 792 factories worldwide in 2013. The USA, Japan, and Taiwan were the top three countries with the largest number of headquarters for Apple's supply chain. Taiwan had 44 headquarters operating 139 factories dedicated for Apple. Of the 138 Taiwanese factories above, as many as 112 factories were located in China. Only 22 factories were in Taiwan.

smartphones, accompanied by high growth of eCommerce. The number of smartphone users reached 270 million in 2016. It is estimated to increase to 500 million in the next two to three years[3]. The eCommerce market, which expanded by 21.4 percent to US$ 17 billion in 2015–16, is estimated to exceed US$ 2 trillion by 2030 (NASSCOM, 2016). The "Make in India" initiative under a growing huge domestic IT market invites many East Asian electronics hardware vendors to come and produce products in India. The Chinese handset vendors Lenovo, Huawei, and Xiaomi have already entered the Indian market in competition with global and Indian vendors such as Samsung, Apple, and Micromax.

Here, one might note that a Taiwanese company, Foxconn (Hon Hai Precision Industry Co. Ltd.), hasembarked on setting up production units in India. As the world's largest electronics manufacturing services (EMS) player, the company employs more than a million people, engaging in contract production for brand companies in Europe, USA, Japan, and China. It has recently made headlines in acquiring the major Japanese electric appliance manufacturer Sharp. In August 2015, the company signed an MoU with the Maharashtra government to invest US$ 5 billion over the next five years to set up an electronics factory and R&D center that is expected to offer jobs directly to 50,000 people. Eventually, the company plans to invest US$ 20 billion in India.

The current vigorous Indian market is attracting investment by many East Asian companies into India. Combining software and hardware capabilities, the Indian vision is to become a world hub for electronics systems design and manufacturing (Ministry of Communications and Information Technology, 2012). With many East Asian countries investing in India, the country is becoming increasingly integrated into the East Asian supply chain, which is necessary for India to become a global IT hub.

3. India's Economic Growth Becoming More Resilient

The Indian economy has become more globalized since the turn of the century, as indicated by its export performance. The ratio of goods and services exported to GDP increased rapidly from 14 percent in 2001–01 to 24 percent in 2006–07. Correspondingly, India's GDP growth rates marked more than eight percent during 2003–04 to 2010–11, with the sole exception of 2008–09, when the GDP growth rate dropped to 3.9 percent in the aftermath of the Lehman Brothers bankruptcy. Thereafter, India's growth rates stagnated for three years at the level of 5–6 percent from 2011–12 to 2013–14. During that period, India experienced a policy standstill under the previous government because of corruption scandals.

With the current Modi government taking office in May 2014, the Indian economy has entered into a new growth phase. The global economy surrounding India had already slid into a period of low growth after 2012, with the growth rates of global economy stagnating at 3–4 percent and the global trade at 2–3 percent. Despite the surrounding adverse situation, India's GDP growth increased from 6.6 percent in 2013–14 to 7.2 percent in 2014–15 and further to 7.6 percent in 2015–16 (Figure 22.4) According to the World Bank forecasts, India's GDP growth rates are expected to be 7.7–7.9 percent during 2016–2018, ranking among the highest in the world. Recently, the domestic market has shown favorable expansion both in the fields of the services sector and manufacturing. The following two factors are regarded as having contributed a good performance of the Indian economy.

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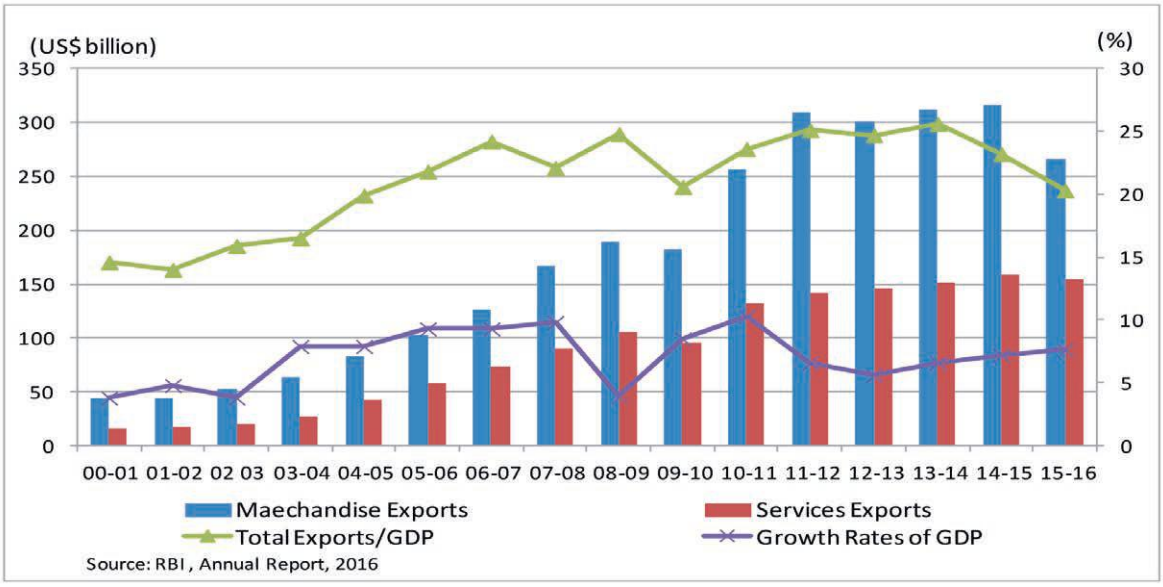
3 The remark made by Ravi Shankar Prasad, Minister for Electronics and IT, from the Economic Times, October 11, 2016.

Figure 2.4 Trend of Exports and GDP in India



First, India has maintained prudent macroeconomic management, which contributes to its firm foundation for high economic growth. The principle of fiscal discipline has been maintained, with the ratio of deficit finance to GDP having been reduced from 4.9 percent in 2012–13 to 3.9 percent in 2015–16. In the external sector, the ratio of the current account deficit to GDP has decreased from 4.8 percent to 1.1 percent during the same period, facilitated by the decline in oil prices. Inflation pressures were eased by 2014–05, which paved the way for the subsequent reduction in policy repo points by the Reserve Bank of India (Table 2.1).

Table 2.1 Key Economic Indicators in India

	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16
Real GDP at market prices (% change)	10.3	6.6	5.6	6.6	7.2	7.6
Gross Fixed Capital Formation (% of GDP)	30.9	31.8	33.4	33.0	32.3	31.2
Gross Fiscal Deficit (% of GDP)	4.8	5.7	4.9	4.4	4.0	3.9
Marchandise Trade Balance (% of GDP)	−7.4	−10.1	−10.7	−7.9	−7.1	−6.3
Current Account Balance (% of GDP)	−2.8	−4.2	−4.8	−1.7	−1.3	−1.1
FDI Flows to India (US$ million)	19,427	35,121	22,423	24,299	30,931	40,001
Consumer Price Index (average % change)	10.4	8.4	10.2	9.5	5.9	4.9
Wholesale Price Index (average % change)	9.6	8.9	7.4	6.0	2.0	−2.5

Source: RBI (2016) et al

Second, the business environment has improved under the Modi government. Under the guiding principle of "minimum government and maximum governance," the Prime Minister Office was empowered to implement faster decision making at the central government. It is said that considerable improvements have been made

for the speedy clearance of projects, including environmental and land acquisition matters. Reflecting the improved investment environment, the highest ever flows of US$40 billion FDI were recorded in 2015–16, increasing from US$30.9 billion in 2014–15. According to the World Bank business rankings, India improved its rank from 142nd place in 2014 to 130th in 2016. In addition, looking at the global competitive ranking released by the World Economic Forum, India has moved up its ranking steadily since 2014 from 71st to 55th in 2015. It jumped to 39th in 2016. Its 16-place improvement is the greatest among all 138 countries.

4. Tasks Ahead for Economic Development

The Indian government is now engaged in wide-ranging initiatives for promoting vigorous economic growth. "Skill India," intended to train over 400 million people and "Start-up/Stand-up India," aimed at encouraging the entrepreneur spirit of youth, are among those initiatives to support "Make in India." What is most important for economic reforms is to eliminate distortions both in products and in production factor markets, including labor, capital and land markets. However, it is by no means easy for the government to pass the crucially important bills for implementing such economic reforms. The Land Acquisition (Amendments) Bill, designed to make it easier for industrial projects to acquire land, was finally blocked by a "twisted Parliament" in India, in which the opposition parties have a majority in the Upper House.

A remarkably successful case was the enactment of the Goods and Services Tax (GST). The GST is a comprehensive indirect tax, replacing taxes levied by the Central government and states, which is expected to give enormous benefits to the Indian economy. By eliminating the cascading impact of taxes on production, it would reduce supply chain rigidities, cutting down transportation and transaction costs, eventually leading to the realization of a unified common market in India. It is also expected to widen the tax base and to improve tax compliance. The introduction of the GST requires the amendment of the Constitution. Then it must be passed by each House, and ratified by the legislature of not less than one-half of the states. The GST Bill was first introduced into 2011, but it had been pending since then because of the failure to form a consensus between the ruling and opposition parties. However, after rocky and lengthy deliberation between the ruling and opposition parties, it was passed in both Houses in August 2016, and was subsequently ratified by most states. The passage of the GST Bill is significant, showing that India has gained a growing political consensus for implementing economic reforms and that its democratic system is sufficiently mature to overcome the handicaps posed by a "twisted Parliament."

To attain long-run high-level economic growth, further economic reforms or deregulation are required: First, land acquisition processes must be more flexible for implementing various infrastructure projects including the construction of ambitious economic corridors. Otherwise, the implementation of such projects is expected to be greatly delayed. Second, present rigid labor regulations make it difficult for enterprises employing more than 100 workers to make smooth adjustments in their numbers of regular workers. Current labor laws must be more relaxed for the expansion of labor-intensive manufacturing industry. Third, agricultural markets are fragmented and highly regulated. Farmers are obliged to sell their products to the commission agents under the Agricultural Produce Committee (APT) Act enacted by each State Government. National common markets in agricultural goods can be created by relaxing the APT Act under the framework of cooperative federalism.

5. Prospects of India Becoming a Global Economic Driver

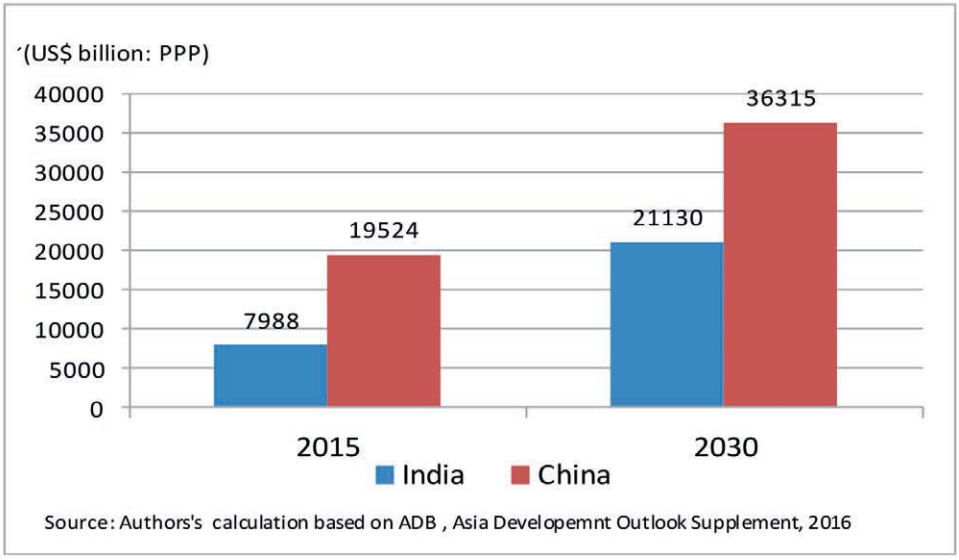
Since the early 1990s, the Indian economy has grown at an average rate of 6.5 percent per year, boosting India beyond Japan to become the third largest economy in 2008 on a purchasing power parity basis. According to a forecast by the International Energy Agency (IEA), the average annual growth in India is expected to remain at 7.5 percent until 2020, before slowing gradually to around 6.3 percent by the 2030s, contributing to 20 percent of global GDP growth during over the period (IEA, 2015). China has emerged as a driver of global growth, overtaking the USA in 2014 to become the largest economy in PPP terms. From this point on, however, it is India which is expected to grow faster than any other country in the world. Table 3.1 shows that the Indian economy is expected to grow at a higher rate than China and ASEAN countries during 2016–2030. Data for China and ASEAN countries are based on forecasts made by the Japan Center for Economic Research (JCER, 2016). India's GDP is expected to increase by 2.65 times during 2015–2030, compared to a 1.86 times increase of China's GDP. Correspondingly, the size of India's GDP relative to that of China is expected to increase from 41 percent in 2015 to 58 percent in 2030 (Figure 2.5).

Table 2.2 Prospects of GDP Groath Rates in Asian Emerging Countries

		Forecast		(%)
Country	2011–15	2016–20	2021–25	2016–30
India	6.7	7.5	6.3	6.3
China	7.8	5.4	3.8	3.1
Malaysia	5.3	4.5	3.9	3.5
Thailand	2.9	3.0	3.0	2.6
ThePhilippines	5.9	6.2	5.5	5.3
Indonesia	5.5	5.0	4.9	4.9

Source: IEA (2015); JCER (2016)

Figure 2.5 Trends of GDP in India and China, 2015 and 2030



Given that India is expected to exhibit higher growth rates than China, India's role as a global growth driver is expected to become much more important long before 2030. Any future advantageous position of India over China can be expected to be based on the following three factors.

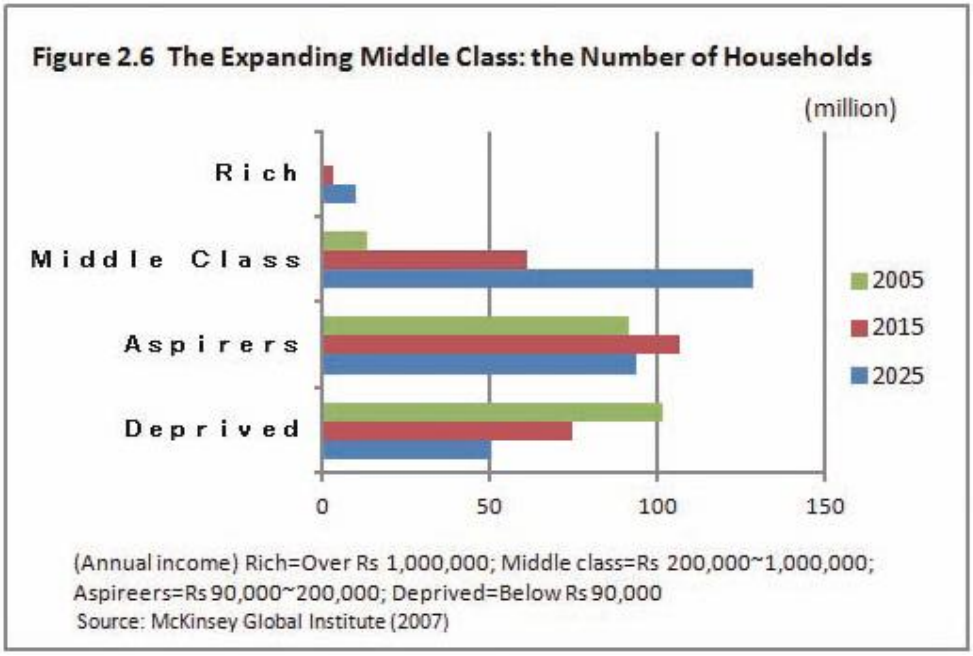
First, India can enjoy the benefit of its demographic dividend over a long period even beyond 2030, while overtaking China as the world's most populous country before 2015. China has made remarkable success, typically under manufacturing-led growth, but it has already missed the benefit of its demographic dividend. Rising labor costs and social insurance contributions imposed on employers are eroding its competitiveness in labor-intensive industries. China will be forced to struggle with the middle-income trap unless the nation can increase productivity through innovation (World Bank, 2012).

Second, India has undertaken services-led growth since the early 1990s; the IT industry has already been established as a leading sector in India. India is now consolidating its manufacturing base under the "Make in India" initiative, which might provide a strong booster for the Indian economy as another "growth engine," in addition to the services sector.

Thirdly, diversity, competition, and democracy are sources of innovation. In China, the state retains absolute control over strategic sectors, and "the state advances, the private retreats" is reinforced under the dictatorship of the Communist Party. In India, however, freedom of speech and the press are respected under a firmly established democratic system. The passage of the GST Bill in August 2016 demonstrates the resilience and maturity of India's democracy in implementing economic reforms.

Long-run Indian economic growth is expected to be strongly supported by wide expansion of the middle class. The emergence of the rapid growth of the middle class with sizable purchasing power, gives enormous impetus to consumption market expansion. The middle class might be as much a sociological designation as an economic classification, but various attempts have been made to measure it in terms of consumption levels. For example, The World Bank defines middle class as those with income per capita per day between US$10 and US$20 in purchasing power parity terms. The National Council of Applied Economic Research (NCAER) has been at the forefront of discussion on India's middle class. NCAER identifies the middle class as comprising two sub-groups: "seekers" with annual household income between Rs 200,000 and Rs. 500,000, and "strivers" with annual household income between Rs 500,000 and Rs 1 million at 2001–02 prices. According to NCAER, India's middle class increased from 10.7 million households (58 million people) in 2001–02 to 28.4 million households (153 million people) in 2009–10, under an annual growth rate of 12.9 percent during the same period (Shukla, 2010).

Using the same definition of middle class made by NCAER, McKinsey Global Institute (2007) has forecasted that the middle class population would increase to 60.6 million (share of households: 24.8 percent) by 2015 and 128 million (share of households: 45.6 percent) by 2025, assuming that India would achieve annual GDP growth rates of 7.3 percent in 2005–2025 (Figure 2.6).



In his projection of the global middle class in the long-term period, Kharas (2010 and 2011) forecasts that India will have the world's largest middle class consumer market by 2030, surpassing those of both China and the United States. He defines the global middle class as those households with daily expenditures between US$10 and US$100 per person in 2005 purchasing power parity terms, which is on similar lines with the World Bank estimate. China already had the second largest middle class in 2009, at 157 million people, which was only 12 percent of its population. China's middle class is expected to be over 70 percent of the population by 2030, consuming nearly US$10 trillion in goods and services.

However, India's middle class is expected to exhibit a more dramatic expansion. According to Kharas, India's middle class was only 5 percent of the population in 2009, but it is expected to increase by more than 1 billion people before 2039. It is estimated that India will account for 23 percent of the global middle class consumption in 2030, more than China's share of 18 percent and the United States' share of 7 percent (Table 2.3). Although income levels in India are still lower in India than in China, India's middle class consumer market will become larger than that of China because India has a more equal income distribution than China and a much higher share of household income in GDP. As a matter of fact, China's Gini coefficient fluctuated from 0.357 in 1995 to 0.421 in 2010, whereas India's Gini coefficient remained rather stable at 0.339 in 2009. Moreover, China's share of household final consumption in GDP was as low as 39.1 percent in 2015, compared with India's 57.5 percent that same year (ADB, 2016b).

Table 2.3 Middle Class Consumtion – Top 1o Countries

(billion of 2005 PPP$ and global share)

	2009			2020			2030		
1	United States	4,377	21%	China	4,468	13%	India	12,777	23%
2	Japan	1,800	8%	United States	4,270	12%	China	9,985	18%
3	Germany	1,219	6%	India	3,733	11%	United States	2,474	7%
4	France	927	4%	Japan	2,203	6%	Indoesia	2,286	4%
5	United Kingdom	889	4%	Germany	1,361	4%	Japan	1,448	4%
6	Russia	870	4%	Russia	1,189	3%	Russia	1,335	3%
7	China	859	4%	France	1,077	3%	Germany	1,239	2%
8	Italy	740	3%	Indonesia	1,020	3%	Mrxico	1,235	2%
9	Mexico	715	3%	Mexico	992	3%	Brazil	1,225	2%
10	Brazil	623	3%	United Kingdom	976	3%	France	1,119	2%

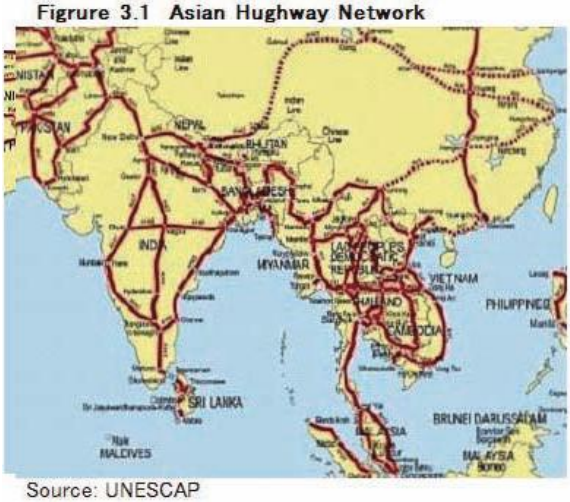
Note: The global middle class are defined as those householads with daily expenditures between US$10 and US$100 per perosn in purchasing power parity terms.
Source: Kharas (2011and 2012)

In recent years, following the middle income class, India has shown vigorous expansion of consumption even among the lower income group called "aspirers," with annual household income between Rs. 90,000 and Rs. 200,000 at 2001–02 prices. Fast-moving consumer goods (FMCG) are rapidly penetrating the lower-income group under a low-price and small package strategy. Consumer durables have become much more affordable by making the most of cost-saving frugal engineering. Lower-income consumers are becoming increasingly important in the consumer market, which contributes to vigorous expansion of India's domestic market. The potential of the Indian economic growth is expected to be strengthened and reinforced by its emerging middle class as well as by "aspirers."

III. Regional Connectivity in and around South Asia

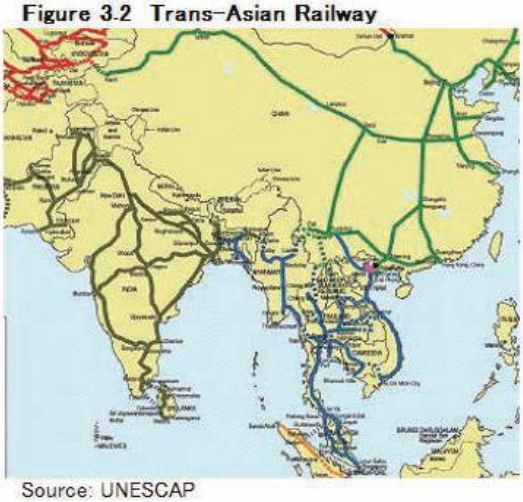
The South Asian region is located at the center of the Eurasian Continent. The Asian Highway Network and the Trans-Asian Railway Network running through the South Asian region are accredited and initiated by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) (See Figure 3.1 and Figure 3.2). In the event that the above highway and railway networks are completed, South Asia will become an important logistics hub for the world.

Figrure 3.1 Asian Hughway Network



Source: UNESCAP

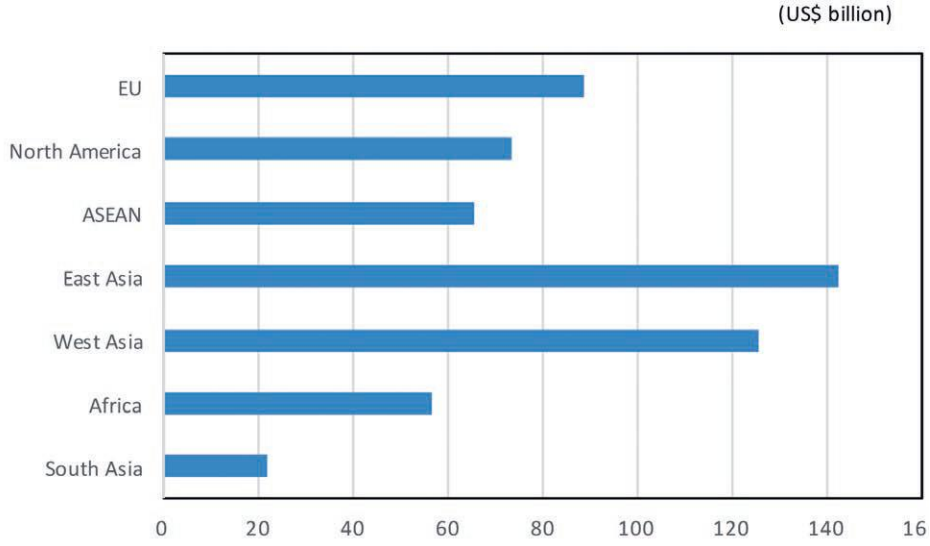
Figure 3.2 Trans-Asian Railway



Source: UNESCAP

At present, South Asia's economic integration with the remainder of the world remains low. Moreover, its integration within the region is remarkably low compared with other regions, reflecting tariff and non-tariff barriers, border barriers, poor infrastructure and a hostile business environment. The share of intra-regional trade is very low in South Asia compared with other groups showing regional cooperation. The share of intra-trade in the total exports of South Asia was only 7 percent in 2015, dwarfed by the 61.6 percent in EU, 50.4 percent in NAFTA, and 24.4 percent in ASEAN. Regarding India, which accounts for 78 percent of the total GDP of South Asia, her share of intra-trade in the total trade is only three percent (Figure 3.3). In SAARC countries, SAFTA was enforced in 2006, but it has not been effective to date in raising intra-trade. The SAFTA accord is characterized by a large negative list. Regarding bilateral trade between the two largest economies, India and Pakistan, the most promising bilateral trade items are mutually restricted. For example, India's most important export items such as automobiles and components are placed on the negative list in Pakistan, whereas Pakistan's textiles are on the sensitive list in India. Aside from the problem of tariff barriers, trade and investment within the region is heavily hampered by border barriers and poor infrastructure. Enhancing regional connectivity is the key to promoting regional integration and spillovers.

Figure 3.3 India's Total Trade by Region, 2016-17



Source: Ministry of Commerce & Industry, Export and Import Data Bank

1. National Connectivity Projects in India

(1) Bilateral Collaboration in Indian Infrastructure Development

National connectivity is reliant upon road and railway development. India has already completed the Golden Quadrilateral (5846 km) connecting Delhi, Mumbai, Chennai, and Kolkata. Regarding the North–South and East–West Corridor (7142 km), connecting Srinagar in the north to Kanyakumari in the south and Silchar in the east to Porpandar in the west, almost 91 percent had been completed as of October 2016. Under the National Highway Development Project (NHDP) Phase VI, about 1000 km of expressways connecting major commercial and industrial cities are under construction. India had long boasted the longest route length of rail networks in Asia until it was overtaken by China at the beginning of this century. The Indian railways'

contribution to national integration was unparalleled, but its share in freight movement eroded from 89 percent in 1951 to 35 percent in 2009, virtually all of which was lost to the road transport. To reverse the erosion market share to at least 50 percent, the Indian government launched the Indian Railway Vision 2020 plan to set ambitious targets for the much-needed expansion and modernization of the railway network in 2009. The formation of an efficient transportation system is indispensable for the establishment of industrial corridors, which are intended to attract investment and to promote industrial activities within a contiguous region.

In Japan, the industrial corridor called the Pacific Belt was formed in the 1960s, which spreads along the Pacific coast from the southern part of Kanto region including Tokyo to the northern region of the 'Kyushu' island. A huge economic agglomeration was formed along the Pacific Belt, with well-established highways and high-speed railway corridors as key transport arteries. The Tokaido Shinakansen, Japan's first high-speed railway corridor, between Tokyo and Osaka, was opened in 1964. The Pacific Belt has served as a center of rapid economic growth zone, accounting for two-thirds of Japan's total population and 70 percent of its total industrial production.

It is noteworthy that the Modi government is strongly committed to enhancing infrastructure for which Japan has already left a footprint. Not only was India the first recipient of Japanese ODA, which was started in 1958, India has also been the largest recipient of Japanese ODA since 2003. Japanese ODA has been instrumental in encouraging Japanese companies to invest in Indian infrastructure. The success of bilateral collaboration is exemplified by the Delhi Metro, which is credited for its punctuality and alleviating Delhi's severe traffic congestion, and also for the introduction of a new construction work culture: concepts of "safety" and the "appointed time of delivery." Japan has already been committed to ODA metro railway projects not only in Delhi, but also in Kolkata, Bangalore, and Chennai.

Both Japan and India entered into a Strategic and Global Partnership in December 2006, which was elevated further to the Special Strategic and Global Partnership in September 2014. India regards Japan as a key partner to upgrade its manufacturing and infrastructure, including the following major connectivity projects. As a mature economy with declining birth rates, Japan regards its strong partnership with India as important for its own growth scenario.

(2) Industrial Corridors

Currently, five industrial corridors are planned and constructed to drive India's growth in manufacturing and urbanization. If one connects the five industrial corridors, then they almost overlap with the highway network of the Golden Triangle. The five industrial corridors are the following.

1. Delhi–Mumbai Corridor (DMIC)
2. Chennai–Bengaluru Industrial Corridor (CBIC)
3. Amritsar–Delhi–Kolkata Corridor (ADKIC)
4. Bengaluru–Mumbai Economic Corridor (BMEC)
5. Visakhapatnam–Chennai Industrial Corridor (VCIC)

Of the five industrial corridors above, Japan has been committed to the DMIC and the CBIC, both of which have already started. The DMIC, with the Western Dedicated Freight Corridor (DFC) as its core backbone, is among the priority areas of Japanese sponsored investment into India, along with the CBIC in southern India. The vision of the DMIC is to build 24 industrial cities with world-class infrastructure across six states in Western India by 2040, developing the area as a 'Global Manufacturing and Trading Hub'. Seven of them are expected to be built for Phase 1 by 2019. The six states above are India's important commercial and industrial areas, accounting for 58 percent of total industrial production, 45 per cent of total employment, and 57 percent of total exports as on 2010. The project presents the possibility of doubling of the employment potential in seven years, tripling industrial output in nine years, and quadrupling of exports from the region in eight to nine years.

The idea of promoting the DMIC was endorsed at the Japan–India summit meeting in December 2006. It is an ambitious infrastructure project valued at US$90 billion, with financial and technical assistance from Japan. The DMIC Development Corporation (DMICDC) was established by the Indian government in January 2008 with the mission of making a selection of projects, taking charge of the master plan and detailed feasibility studies of each project, and monitoring them. At the 2008 summit meeting, Japan pledged to provide a 450 billion yen loan to the first construction Phase 1 of the Western DFC. During the summit meeting in 2011, Japan pledged a US$ 4.5 billion loan to the DMIC project, including 18 prospective projects for constructing environmentally friendly smart communities including projects for power supply, railway (metro), water supply, and IT (logistics data bank business plan). Among them, a project for water desalination and water supply to Dahej in Gujarat was finalized in January 2013.

The CBIC was initiated in 2011 by the respective governments of India and Japan. A Comprehensive Regional Plan for the CBIC, including the Master Plan and Development Plan for selected industrial nodes was submitted by the Japan International Cooperation Agency (JICA) in May 2015. The three industrial nodes of Tumkur NIMZ (Kartataka), Ponneri Industrial Area (Tamil Nadu), and Krishnapatnam Industrial Area (Andhra Pradesh) were selected for prioritized implementation. Apart from the CBIC project, Japan has already financed 13 billion yen under the Tamil Nadu Investment Promotion Program.

The ADKIC is an ambitious project aimed at developing an industrial zone spanning seven states comprising 20 cities, housing about 40 percent of the population. The Indian government gave approval for setting up of the ADKIC and AKIC Development Corporation (AKICDC) in January 2014. The ADKIC will be developed in a band of 150–200 km on either side of the Eastern DFC.

The BMEC is a proposed economic corridor between Mumbai and Bengaluru, across the states of Maharashtra and Karnataka. Indian and British governments agreed to undertake a joint feasibility study in 2013, with DMICDC and UK Trade and Investment being identified as the nodal agencies for this project.

The VCIC constitutes a key part of the planned East Coast Economic Corridor. The nearly 800 km corridor is expected to play a critical role in driving India's "Act East Policy" and "Make in India" initiative by promoting the integration of the Indian economy with the economy of ASEAN and East Asian countries. The Conceptual Development Plan was completed by the ADB, which also approved US$ 625 million finance to India for the VCIC Development Program in September 2016.

(3) Dedicated Freight Corridors

Currently, important trunk routes of the Indian railway networks are under severe capacity constraints. The Golden Quadrilateral linking of the four metros of Delhi, Mumbai, Chennai, and Kolkata (Howrah) and their respective diagonals of Delhi–Chennai and Mumbai–Howrah carry over 55 percent freight traffic. These routes are already overstretched under circumstances in which the rail-borne traffic is growing at 16 percent per annum. Specifically, the existing trunk routes of Howrah–Delhi on the East and Mumbai–Delhi on the West are highly saturated with line capacity of greater than 100 percent (Jha and Ray, 2006). Furthermore, freight traffic gets conspicuously delayed, with passengers and freight trains moving on the same tracks and preference given to the movement of passenger trains.

Dedicated Freight Corridor Corporation of India Limited (DFCCIL) was established as a 'special purpose vehicle' in October 2006, to construct and operate the two freight corridors: The Western DFC connecting the states between Haryana and Maharashtra, and the Eastern DFC connecting the states between Punjab and West Bengal. The Western DFC is financed by a soft loan provided by the Japan International Corporation Agency (JICA), whereas the Eastern DFC is constructed through funds provided by the World Bank and Public Private Partnership (PPP). The Eastern DFC covers a distance of 1,856 km with two distinct segments: an electrified double-track segment of 1409 km between Dankuni (West Bengal) and Khurja (Uttar Pradesh) and an electrified single-track segment of 447 km between Ludhiana (Punjab) and Khurja. A trial run of the goods train was made in March 2016 for 56 km on the Eastern DFC route.

The Western DFC spans a distance of 1,504 km with a double line electric track between Dadri in the National Capital Region (NCR) and Jawaharlal Nehru Port (JNPT). The DFC is expected to enhance freight transportation of bulk/heavy materials between Delhi and Mumbai to a great degree, and to reduce transportation times from three days to one day, while increasing the freight volume per train by 3.7 times. Japanese companies play the role of prime contractors for each contract package under the Special Terms for Economic Partnership (STEP) loan[4]. After a long period of preparation, civil engineering work for Phase 1 (Rewari–Vadodra: 920 km) started in September 2013. Larsen and Toubro in tie-up with the Japanese trading company of Sojitsu as the prime contractor takes charge of the construction of railways because risk-averse Japanese major construction companies unanimously showed reluctance to bid for gigantic civil works projects under the Western DFC. Contracts for each package have been almost finalized and commenced, except for the package of electric locomotives, where a leading Japanese manufacturer was strongly expected to enter into a contract. The Western DFC is scheduled to be opened partially in 2017 and entirely by 2020, but the completion of both Eastern and Western DFCs are expected to be strongly affected by the progress of land acquisition. As of March 2016, the progress of land acquisition is approximately 85 percent overall (DFCCIL, 2016).

In addition to the Eastern and Western DFCs, the following four future DFCs are also planned: (1) East–West Corridor (Kolkata–Mumbai, 2328 km), (2) North–South Corridor (Delhi–Chennai, 2327 km), (3) East

4 Conditions of STEP loans require that at least 30 percent of Japanese funding be used for the import of equipment and goods from Japan. A STEP loan offers more favorable terms of 0.1 percent interest rate with 40 year repayment including a 10 year grace period, compared with 1.4 percent interest of general terms. A STEP loan is expected to raise the visibility of Japanese ODA in both recipient countries and Japan through the best use of advanced technologies and know-how of Japanese firms.

Coast Corridor (Kharagpur–Vijayawada, 1115 km), and (4) Southern Corridor (Chennai–Goa, 890 km). The formation of a nationwide network of DFCs is expected to be indispensable for dynamic and efficient freight traffic of bulk/heavy materials including iron ore, iron and steel, coal, cement food grains, and fertilizers.

(4) High-Speed Rail Corridors

Increasingly, passenger trains must run at high speeds along separate corridors. The Ministry of Railway's Vision 2020 made a proposal to raise the speed of regular passenger trains to 160–200 km/h on segregated routes. It is noteworthy the Vision 2020 also included implementation of high-speed rail projects to provide bullet train services at 250–300 km/h. routes at the following six routes: (1) Delhi–Chandigarh–Amritsar, (2) Pune–Mumbai–Ahmedabad, (3) Hyderaba–Dornaki–Chennai, (4) Howrah–Haldia, (5) Chennai–Bangalore–Coinbatore–Ernakulam, and (6) Delhi–Patna. Of those six routes, the Mumbai–Ahmedabad route within the DMIC is the most promising in terms of marketability, reflecting its high population density across the high-income region.

Japan faces stiff competition from other countries in bidding for the project, which is reflected in the fact that a pre-feasibility study was conducted by a French company. Nevertheless, the Indian government places high confidence on the safety and punctuality of the Japan's High Speed Railway (HSR) technologies, the so-called Shinkansen system. Following the summit meeting held in May 2013 between Prime Ministers Shinzo Abe and Manmohan Singh, the Memorandum of Understanding (MOU) was signed between Indian Railway and Japan International Cooperation Agency JICA) to conduct a joint feasibility study of the Ahmadabad–Mumbai route. Finally, at the summit meeting held in Delhi in December 2015, Prime Ministers Modi and Abe confirmed that the Shinkansen system would be introduced to the HSR on the Mumbai–Ahmedabad route.

The Shinkansen system will sharply reduce the transportation time between Mumbai and Ahmedabad, reducing travel along the 509 km from eight hours to two hours. The Japanese side proposes that the total project cost for the Mumbai–Ahmedabad route be INR 790 billion, where approximately 81 percent of the total cost is expected to be covered by Japanese ODA[5]. According to the Memorandum of Cooperation signed by the Governments of Japan and India in December 2015, terms and conditions of loan are quite favorable for the Indian side: 0.1 percent interest rate with 50 year repayment including 15 year grace period. It is unusual that such favorable terms and conditions of loan as indicated above would be applied to the Japanese ODA on such a large scale. The construction of HSR on the Mumbai–Ahmedabad route will start in 2018. It is expected to be completed by the end of 2023.

Human resources development for operation, maintenance, and management of the HSR are indispensable for producing success in introducing the Shinkansen system to the Indian railway. As a matter of course, Japan is expected to play an important role in the training and uplifting of India's human resources in that area. As stipulated in the Memorandum of Cooperation described above, Japan and India will be jointly engaged in training approximately 4,000 of India's Ministry of Railway officials for HSR operations. Approximately 300 Indian officials will be sent to Japan for the study program every year. The Japanese side

5 The Japanese ODA (yen loan) will not cover import taxes, land acquisition costs, and administration costs, or other ineligible costs and fees, as mutually agreed.

is obligated to recruit around 150 professionals responsible for training Indian staff members. This time, JR East is specifically assigned to the task of training as well as the transfer of technologies of construction and manufacturing of HSR systems including rolling stock. Regarding the Shinkansen rolling stock, the Japanese side is of the opinion that considering security matters, the rolling stock shall be manufactured in Japan initially, and switched gradually to local production in India[6].

2. Enhancing India's Regional Connectivity

(1) Connectivity in Northeast India and Neighboring Countries

India's challenge is to enhance connectivity and development in northeastern states, thereby linking the region to other corridors in India and in neighboring countries. For Bangladesh, improving land route connectivity to "mainland India" in the west would enhance the import of various inputs for its labor-intensive processing industries, and extending connectivity to northeastern India and Myanmar in the east would facilitate exploration of its potential markets. Nepal and Bhutan, as landlocked countries, are heavily dependent on India for their trade. Their access to overseas markets beyond India is limited. As confirmed at summit meetings between Japanese and Indian Prime Ministers held in 2015 and 2016, Japan will be committed to cooperation for enhanced connectivity in northeastern India linking the region to other economic corridors in India and to Southeast Asia.

Improving physical infrastructure is necessary to enhance regional connectivity. In actuality, connectivity is affected not only by physical infrastructure, but also by institutional arrangement. Border management and through transportation arrangements have remained uncoordinated and inefficient in the South Asian region. For that reason, transshipment is time-consuming and costly. Recently, however, some progress has been made in border management in terms of facilitating regional connectivity, which is expected to engender economic integration.

In June 2016, Bangladesh, Bhutan, India, and Nepal (BBIN) signed the Motor Vehicle Agreement (MVA), which is expected to allow smooth passage of goods and passenger vehicles in each other's territory. It might reduce informal trade barriers among these countries (Parthapratim, 2016). In 1996, the BBIN countries formed the South Asia Growth Quadrangle (SAGQ) in 1996, with the aim of promoting sector-wise cooperation in eastern South Asia. The SAGQ was reorganized to the South Asian Subregional Economic Cooperation (SASEC) in 2001, joined by Sri Lanka and the Maldives. The primary goal of SASEC is to increase trade and economic cooperation within South Asia and to create links to East Asia and Southeast Asia, with strategic emphasis on transport connectivity, trade facilitation, and energy cooperation (ADB, 2016c).

The BBIN countries and Sri Lanka are also members of BIMSTEC, a "cross-regional institution," covering Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand. Considering the geopolitical issues surrounding India and Pakistan, cooperation in BIMSTEC is fundamentally more functional than that with SAARC.

The Japan International Cooperation Agency (JICA) for India made field studies of regional connectivity among the BBIN countries, Myanmar and Thailand (JICA, 2014). Based on data accumulated at the 43 border

6 Personal interview with a senior official of JR East, conducted on 16 June 2016.

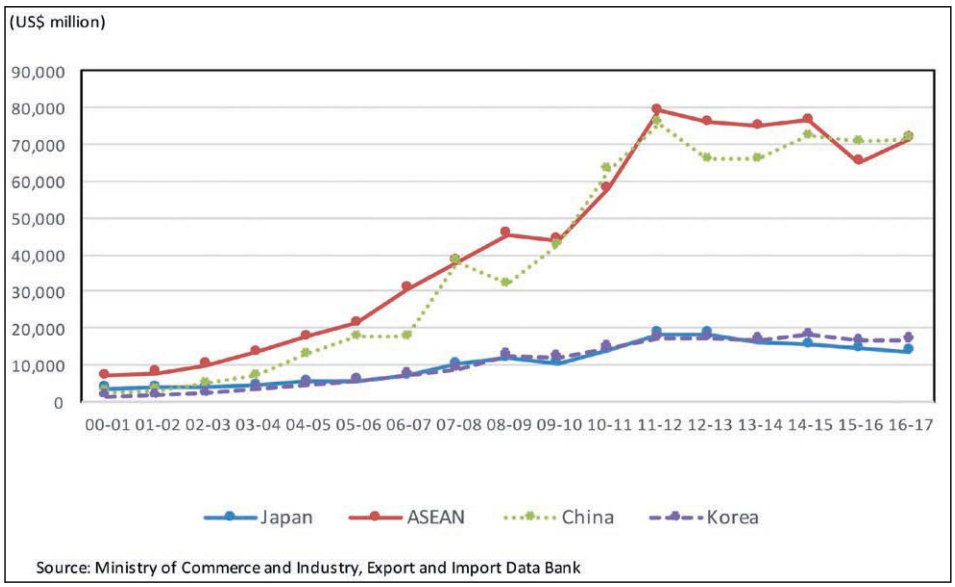
crossing points among the six countries above, JICA estimates that regional real GDP are expected to grow by 150 percent in 2013–30, whereas regional flows of goods are expected to show dramatic growth of almost 350 percent, with accompanying value chain development in the region. Enhancing regional connectivity is indispensable to realizing their trade expansion.

The Bangladesh–China–India–Myanmar (BCIM) economic corridor was endorsed by the four countries in 2013. The idea is to create a corridor between Kunming in China's province of Yunnan and Kolkata through a combination of roads, railways, waterways, and digital connectivity across Mandalay, Chittagong, and Dhaka. The BICM corridor is expected to progress step-by-step on the condition that peaceful, stable, and cooperative environments are ensured.

(2) India–ASEAN Connectivity

The "Look East" policy became a core interest in India since it was launched in 1992. The India–ASEAN Framework Agreement on Comprehensive Economic Cooperation was signed in 2003 and India's trade with ASEAN increased more than tenfold from US$ 7 billion in 2001–02 to US 79 billion in 2011–12, although it stagnated thereafter in the aftermath of the global recession (Figure 3.4). India seeks to expand its trade with ASEAN to US$ 200 billion by 2022. Current economic links between India and ASEAN are far below their potential. Looking at the composition of recent exports and imports between India and ASEAN, aside from mineral fuels and palm oil, commodities such as electric machinery and parts/components have emerged as important tradable goods, indicating that India is becoming incorporated into the East Asian production network. ASEAN has already established its position as a pillar of the East Asian production network.

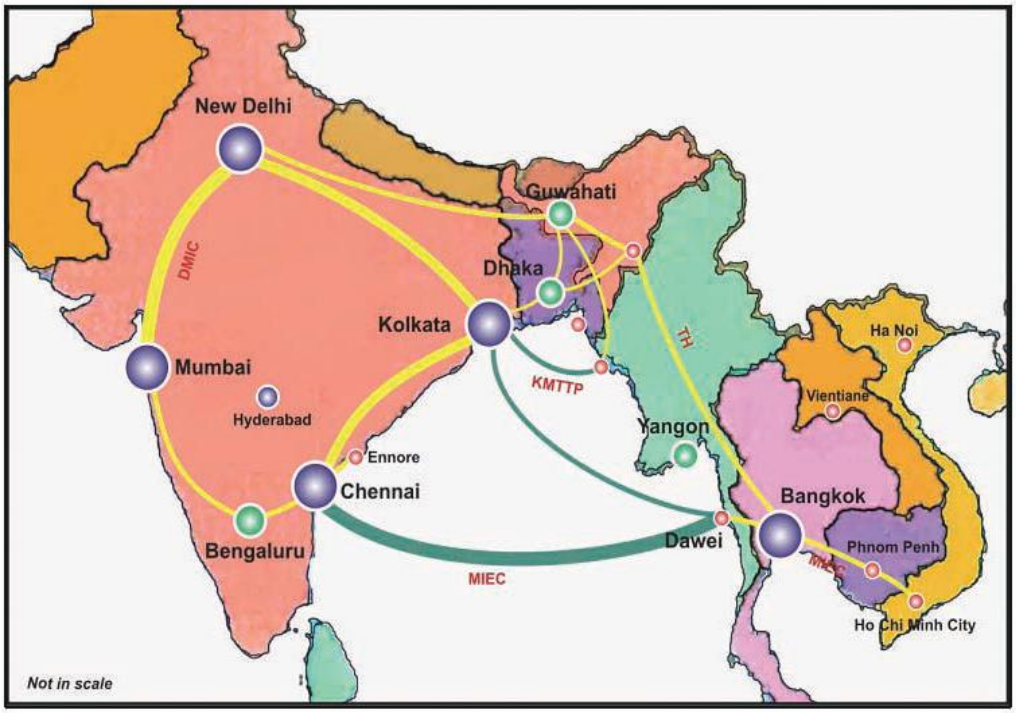
Figure 3.4 India's Trade with East Asia and ASEAN



As proposed by the Economic Research for ASEAN and East Asia (Kimura and Umezaki, 2011), the most promising for enhancing connectivity between India and ASEAN is the sea route called the Mekong–India Economic Corridor (MEIC) (Figure 3.5). The Mekong–Ganga Cooperation was already established in 2000 between India and the Mekong countries to promote trade and investment cooperation. The MEIC

aims at integrating India with the four Mekong countries: Myanmar, Thailand, Cambodia, and Vietnam. The four Mekong countries constitute the Southern Mekong Economic Corridor in the Mekong River Basin, connecting Ho Chi Minh City (Vietnam) with Dawei (Myanmar) via Bangkok (Thailand) and Phnom Penh (Cambodia). The Japanese government has shown a keen interest in realizing the MEIC because it will contribute to boosting economic development in the region, and will also broaden the base of business activities for Japanese companies.

Figure 3.5 Layout of India's Major Connectivity Projects with ASEAN



Source: De (2011), based on Research and Information System for Developing Countries

Dawei and Chennai are regarded as key ports connecting the sea route between India and the Mekong countries. The transportation time between India and ASEAN is expected to be greatly reduced by making use of the Dawei port because it will no longer be necessary to make a long way around the Malay Peninsula via the Malacca Strait. A major investment has been made for

the Dawei deep-sea port and special economic zone (SEZ), with the estimated cost of the projectbeing US$ 8.6 billion. Myanmar and Thai governments have been committed to the project since 2008. Japan has also recently expressed its intention to participate in the project. More ambitious plans are underway to upgrade the Chennai port and infrastructure in Tamil Nadu, with assistance from the Japanese government. The MEIC is expected to integrate the economies of India and ASEAN by reducing the travel distances and reducing the supply side bottleneck, enabling them to emerge collectively as a globally competitive economic region.

Other routes that are expected to enhance India–ASEAN connectivity include the India–Myanmar–Thailand Trilateral Highway and the Kaladan Multimodal Transit Transport Project (KMTTP). The Trilateral Highway links Moreh (Manipur, India) with Mae Sot (Thailand) via Bagan (Myanmar), constituting a section of the Asian Highway. Currently, upgrading of road infrastructure is underway between India and Myanmar.

The KMTTP is a project that (1) will connect the Sitwe port (Myanmar) to Kolkata by shipping, and (2) will link Sitwe to India's northeastern region by inland waterway from Sitwe to Paletwa (Myanmar) via the Karadan River and then by road from Paletwa to Lawngtlai (Mizoram, India). The project is piloted and funded by India. Construction activities started in 2010.

(3) India's Connectivity with Iran and Afghanistan

China has assumed an expansionist role in infrastructure development around the Indian Ocean region. China has already built ports in Myanmar, Sri Lanka, and Pakistan. The China–Pakistan Economic Corridor (CPEC) was announced when President Xi Jinping visited Pakistan in April 2015. The CPEC is a collection of projects linking the Pakistani Port of Gwadar to China's northwestern autonomous region of Xinjiang through the construction of highways, railways, and pipelines, including infrastructure projects in Gwadar city and various energy sector projects. The total US$46 billion corridor is expected to be completed by 2030. The CPEC has strategic importance for connecting the Silk Road Economic Belt and the 21st Century Marine Silk Road China under the "One Belt, One Road" initiative, which specifically examines creation and improvement of trade routes and business opportunities between China and the rest of Eurasia.

Avoiding the problems of transmitting Pakistan and serving as a countermeasure to the CPEC, a transport corridor is now being established, connecting India to Iran and Afghanistan. The Trilateral Agreement on Transit and Transportation was signed when Prime Minister Modi visited Iran in May 2016, enabling India to gain access to Afghanistan via the Iranian port of Chabahar located near to the Gwadar port. India also signed a series of agreements with Iran, which include India's support for the development of the Chabahar port and a 600 km railway link from Chabahar to Zahedan near the Afghan border. The link will connect the Afghan railway network located near Afghanistan and Pakistan in 2010. India expressed its intention to invest US$500 million in the expansion and operation of Chabahar port. The transport corridor through the Chabahar port is intended to expand India's trade with Iran and Afghanistan, and also to give momentum to the North–South Transport Corridor to which India and Iran are signatories along with Russia and other Central Asian countries.

Japan is also ready to be committed to the development of the Chabahar port and the construction of industrial parks with the aim of securing access to energy resources in Iran and Central Asian countries including Turkmenistan. Regarding Afghanistan, Japan has a track record of assisting its reconstruction to the extent of US$ 5.8 billion. As expressed in the bilateral summit meeting held in October 2016, Japan and India showed their intention to cooperate in promoting peace and prosperity in Iran and Afghanistan, especially in the development of infrastructure and connectivity for Chabahar through bilateral and trilateral cooperation.

Conclusion

The South Asian economy is currently showing signs of vibrant expansion, including the three most populous countries, India, Pakistan, and Bangladesh, growing faster than other economically developing regions. The population of South Asia is predicted to increase from its current 1,822 million to 2,100 million in 2030, accompanied by an increase in the share of working-age population. Population expansion is expected

to increase pressure on the environment, infrastructure, and urban congestion. Simultaneously, the South Asian countries can enjoy a demographic dividend for a long period even beyond 2030, which means that they have a good chance to make use of the "population factor" as a tail wind for their future development.

For the economic development of the Indian Ocean region, India might play a decisive role in becoming an engine of growth. Actually, India's economy is expected to grow faster than that of any nation in the world, by an average of more than seven percent by 2030, replacing China as a global economic driver.

Enhancing regional connectivity is indispensable for facilitating economic integration and spillovers in South Asia. Connectivity between South Asia and ASEAN by way of both land and maritime traffic is expected to be improved considerably by 2030. Connectivity among the BBIN countries will be boosted by completion of the India–Myanmar–Thailand trilateral highway. The proposed India–Mekong Economic Corridor is expected to enhance connectivity between India and the four Mekong countries of Vietnam, Cambodia, Thailand, and Myanmar along the sea route between Chennai and the Myanmar's port of Dawei. Domestically, India is now committed to many ambitious industrial corridor projects throughout the country, which are planned for completion by 2030. The integration of external and domestic corridors will engender the creation of a dynamic international production network linking South Asia to ASEAN and East Asia, with the center of gravity of the network gradually moving to India.

China is now aggressively extending investment for building connectivity across Asia and Africa through both land and sea routes. China's infrastructure investment is intended for expanding Chinese influence and interests. In contrast, Japanese infrastructural development with ODA is characterized by people-centered investment, devoting attention to inclusiveness, resilience, and capacity building. Given that Japan and India share the values and commitment to the ideals of democracy, tolerance, pluralism, and an open society, the possibility exists that both Japan and India can continue their mutual cooperation and enhance connectivity in and around South Asia.

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Chapter 2

Energy Security in the Indian Ocean

Chapter 2　Energy Security in the Indian Ocean

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I. Indian Ocean and Global Energy Security

Last 20 years, there has been a growing attention to the Indian Ocean. First of all, global economic power has apparently shifted from the North Atlantic region to the Asian region driven by the inexorable rise of China and India. Economic prosperity of the Asian region is highly dependent on safety of the trade routes and sea lanes of energy, food, resource and industrial products eastwards from the Persian Gulf and the Red Sea into the western Indian Ocean, through Malacca Strait past Singapore and into the South China Sea. The Indian Ocean is located in the center of these crucial routes.

In terms of international energy trade, the Indian Ocean is the world's most important route way. Almost half of global daily oil production is transported by tankers on fixed maritime routes. More than 80% of the world's seaborne trade in oil passes through three Indian Ocean choke points, namely, the Strait of Hormuz, the Strait of Malacca and Bab el-Mandab.

Figure 1 World Oil Transit Chokepoints

Source: Laura Canali, Heartland: Eurasian Review of Geopolitics

The Strait of Hormuz is the world's most crucial oil chokepoint representing almost 40% of the world's seaborne oil shipments and 20% of oil traded worldwide. More than 85% of these crude oil exports go to Asian markets, with Japan, India, South Korea and China the largest destinations. The Strait of Malacca accounts for 35% of global seaborne oil trade and is the shortest sea route between China, Japan, Korea and Middle Eastern oil producing countries. Bab el-Mandab is a strategic link between the Mediterranean and the India Ocean via the Red Sea and the Suez Canal.

The Indian Ocean energy route way is particularly crucial for Asian countries due to their heavy dependence on energy import from Middle East and Africa coming through the Indian Ocean. Currently, Middle East and Africa accounts for 63% of their total oil import and 50% of their total LNG import.

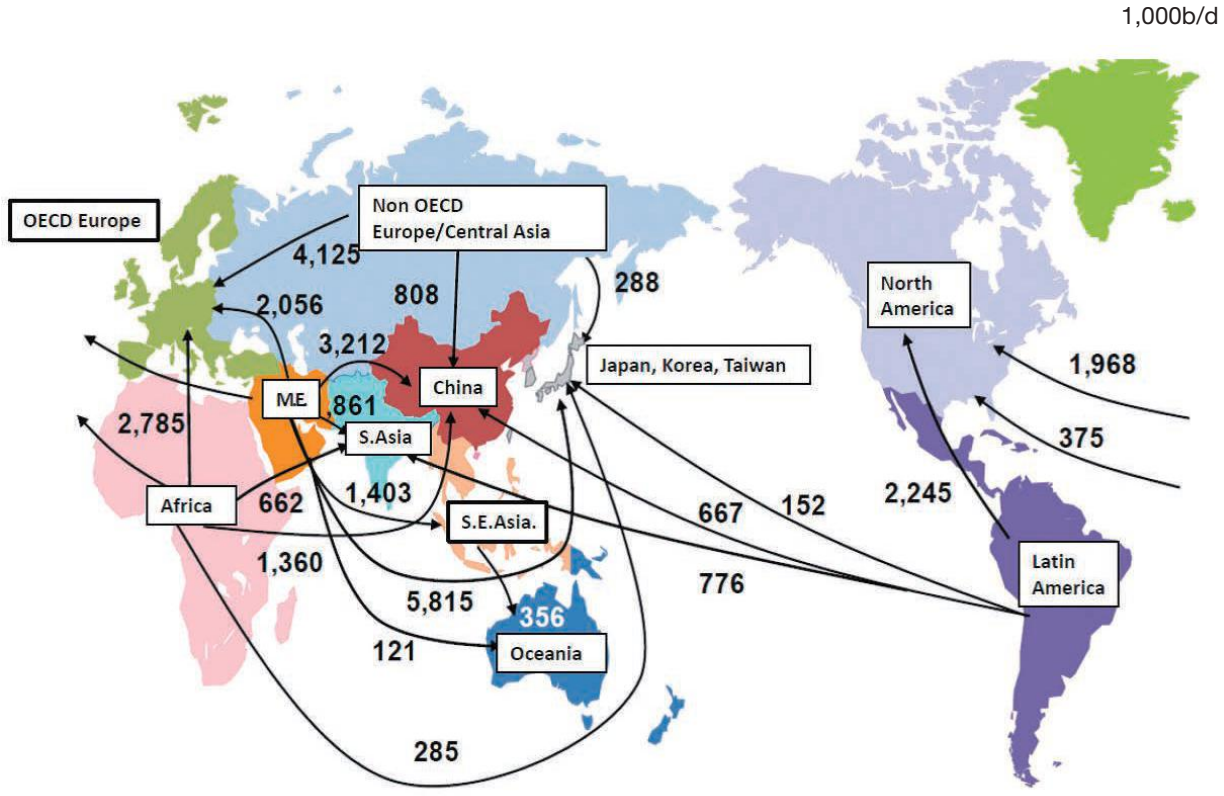


Figure 2: Global Oil Trade Flow (2014)

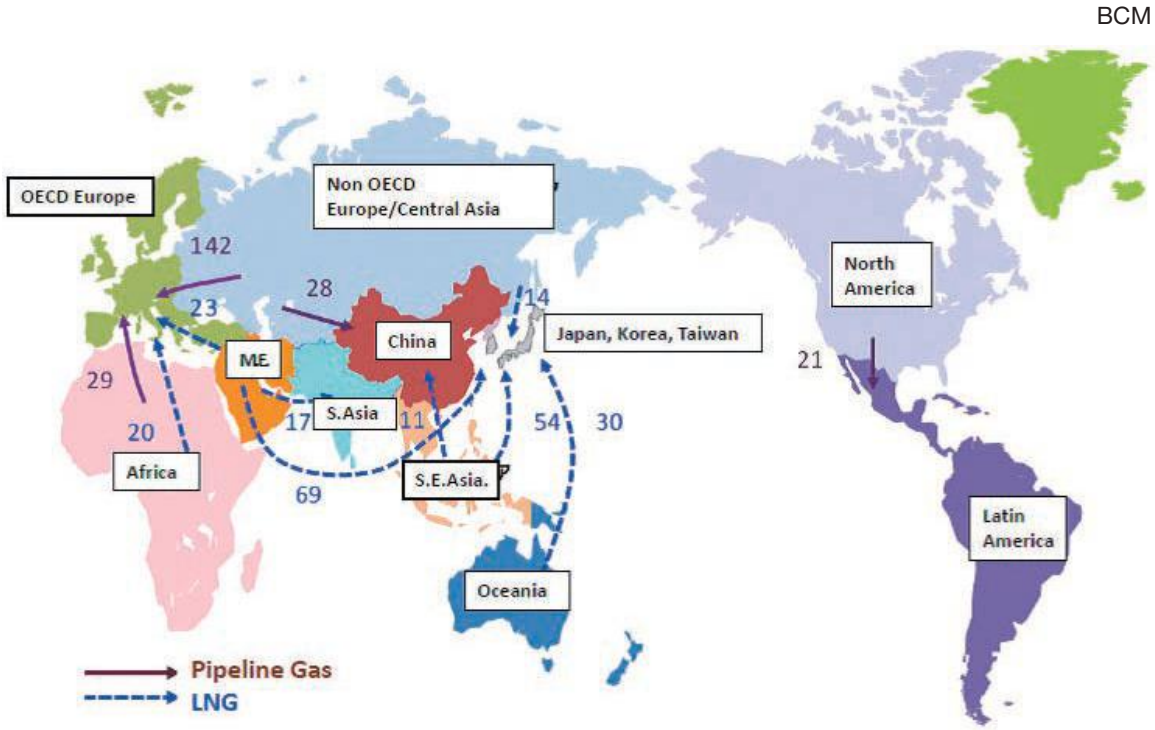


Figure 3 Global Natural Gas Flow (2014)

Source (Figure 2-3): Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

II. Asian Energy Outlook and its Energy Security/Environment Implication

1. Asian Energy Mix

The critical importance of the Indian Ocean derives from its role as the waterway from resource-rich Middle East and Africa to Asia. In other words, the strategic meaning of the Indian Ocean is subject to future energy mix of Asian countries.

Considering future energy mix and its implication to the Indian Ocean, it is not relevant to just focus on the energy mix of the Indian Ocean rim countries[1].While China is not an Indian Ocean rim country in itself, it has strong interests in the maritime security in the Indian Ocean.

Therefore, it is more relevant to consider energy mix in the Asian region, in particular, Non-OECD Asian countries which will have a decisive impact on future energy flow in the Indian Ocean. This paper also pays particular attention to India of which energy trends will be highly influential to the future Asian energy scenes.

TPES (Total Primary Energy Supply) of Non-OECD Asia will increase by 60% from 2013 to 2040, almost two times higher than the global average. This trend is more acute in oil demand growth of 66% (global average 12%) and gas demand growth of 153% (global average 46%). As a result, Non-OECD Asia accounts for 65%, 123% and 43% of global demand for primary energy, oil and natural gas between 2013 and 2040.

[1] Australia, Bangladeshi, Myanmar, Comoros, Djibouti, Kenya, India, Indonesia, Iran Madagascar, Malaysia, Maldives, Mauritius, Mozambique, Oman, Pakistan, Seychelles, Singapore, Somalia, South Africa, Sri Lanka, Tanzania, Thailand, Timor-Leste, UAE, Yemen

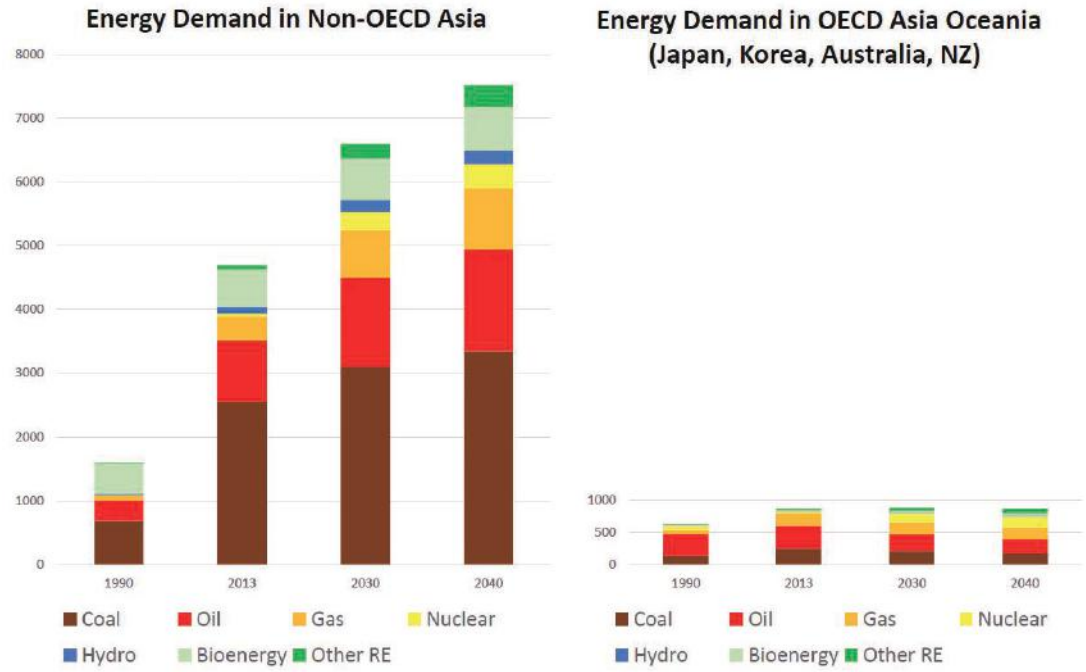


Figure 4 Energy Demand in Non-OECD Asia and OECD Asia/Oceania

Source: IEA World Energy Outlook 2015 New Policy Scenario

In the energy mix of Non-OECD Asia, while the share of natural gas, nuclear and other renewable (PV and wind) out of TPES will increase from 8% to 13%, from 1% to 5% and from 1% to 5% respectively during 2013-2040 period, the share of coal will go down from 54% to 44%. Still, coal will continue to occupy the largest portion in its energy mix and Non-OECD Asia accounts for 163% of global incremental coal demand during 2013-40 period.

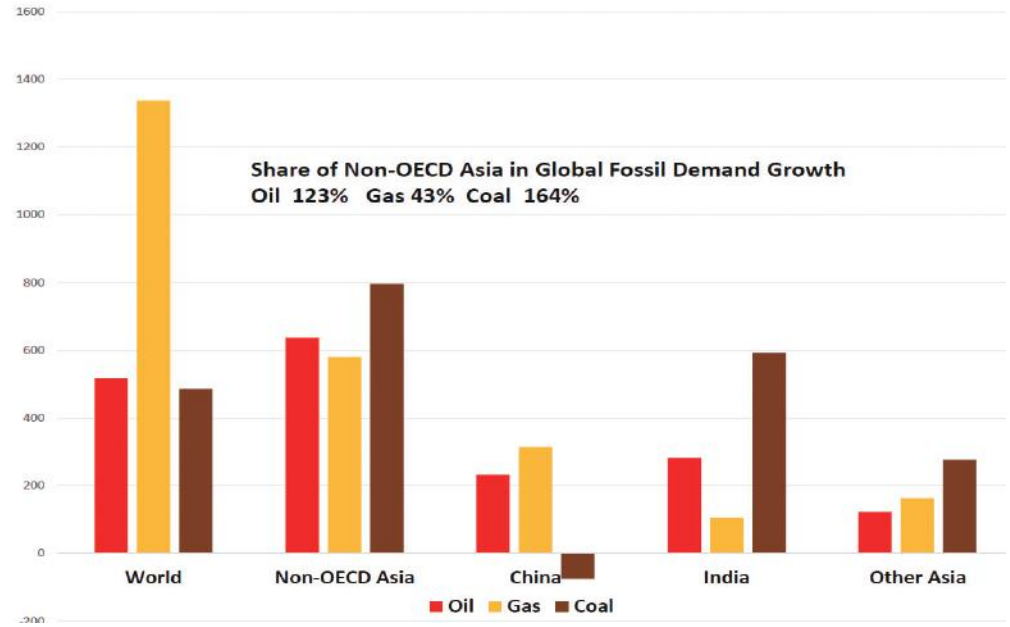


Figure 5 Incremental Fossil Fuel Demand

Source: IEA World Energy Outlook 2015 New Policy Scenario

2. Energy Outlook in India

In India, energy demand will more than double between now and 2040 driven by its economy that grows to more than five-times its current size and population growth that makes it the most populous country in the world.

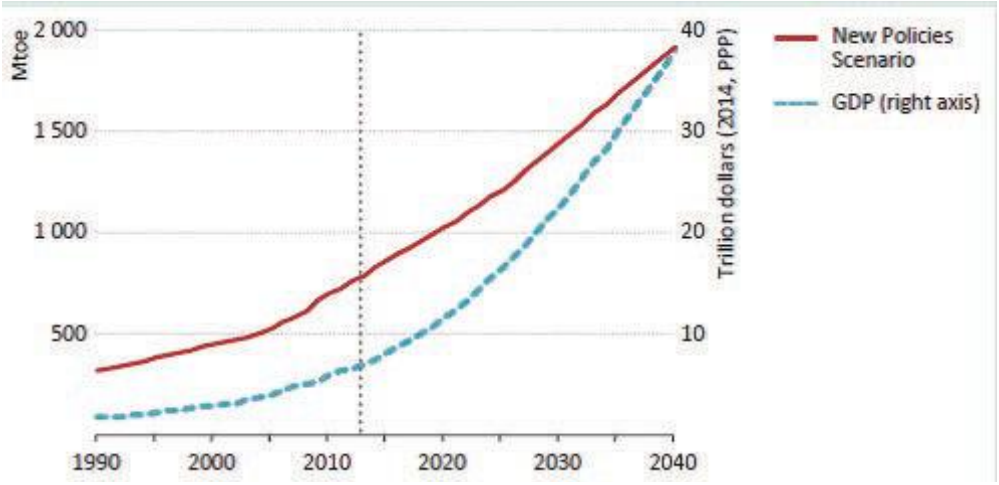


Figure 6 GDP and Primary Energy Demand Growth in India
Source: IEA World Energy Outlook 2015 New Policy Scenario

India's per capita energy consumption is still much lower than world average. In addition, around 240 million people in India lack access to electricity. Vehicle ownership in India is much lower compared with other emerging economies.

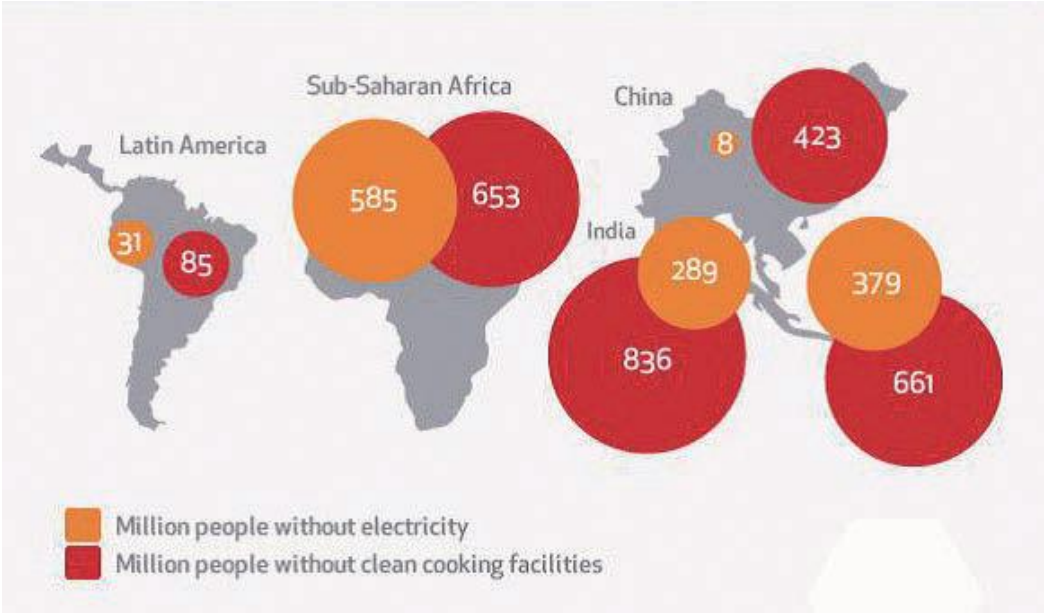


Figure 7 Global Energy Poverty

Source: IEA World Energy Outlook 2011

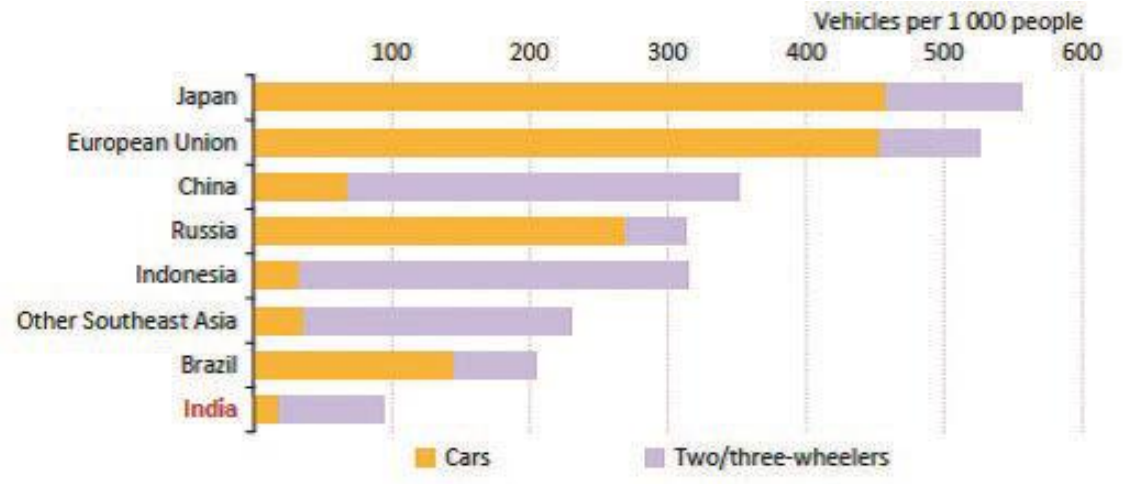


Figure 8 Vehicle Ownership in India and Selected Regions (2013)

Source: IEA World Energy Outlook 2015

Given these elements, it is not surprising that India will contribute the single largest share of growth in global energy demand between 2013 and 2040.

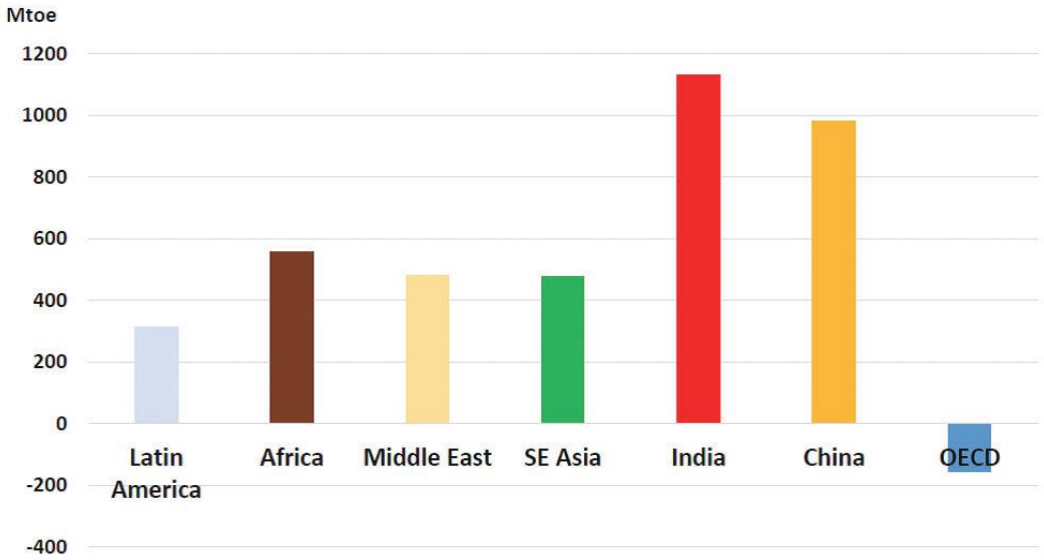


Figure 9 Global Energy Demand Increase by Region (2013-2040)

Source: IEA World Energy Outlook 2015 New Policy Scenario

India's coal consumption in 2040 is 50% more than the combined demand of all OECD countries and the second largest next to China in global terms. The projected increase in coal demand is split between additional coal fired power generation plants and industry use in such areas as iron, steel and cement. As a result, India is projected to be the largest source of additional global coal demand.

Demand for oil in India increases by more than the growth in any other country or region in the world to 2040. Transport accounts for 65% of the rise due to 260 million additional passenger cars, 185 million two and three wheelers and 30 million new trucks and vans.

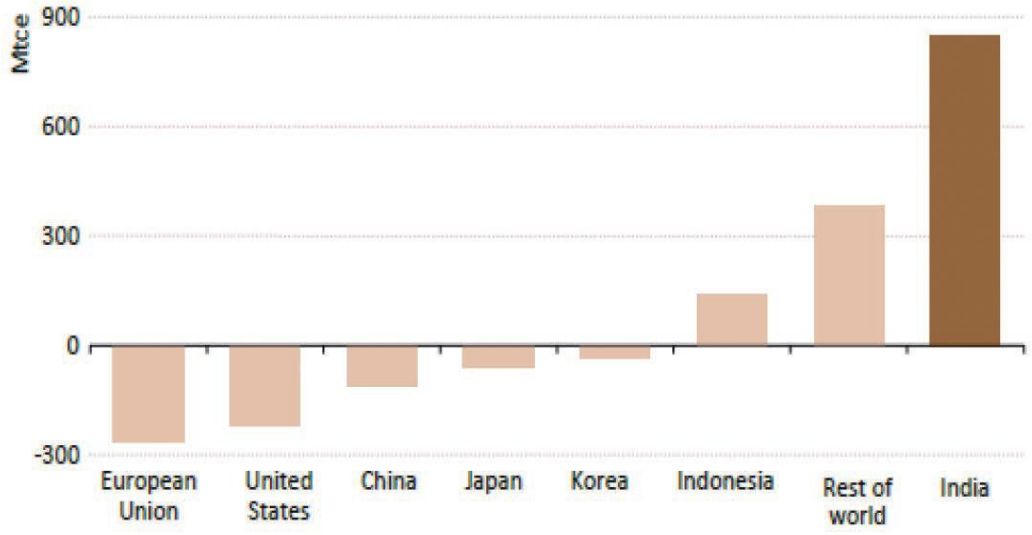


Figure 10 Change in Coal Demand by Selected Countries and Regions

Source: IEA World Energy Outlook 2015 New Policy Scenario

Figure 11 Change in Oil Demand by Selected Countries and Regions

Source: IEA World Energy Outlook 2015 New Policy Scenario

As a result, the share of coal in total energy demand in India increases from 44% in 2013 to 49% in 2040. This is peculiar since the global average, Non-OECD and Non-OECD Asia will see declining share of coal from 29% to 25%, from 37% to 31% and from 54% to 44% respectively.

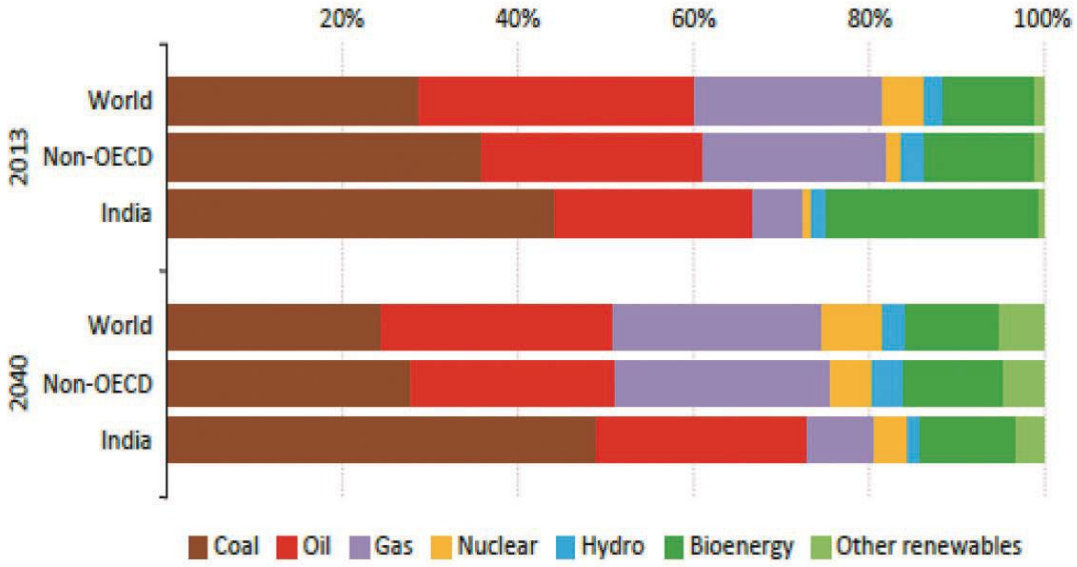


Figure 12 Primary Energy Mix in India and by Selected Regions

Source: IEA World Energy Outlook 2015 New Policy Scenario

India is indeed coming to a pivotal position in global energy scenes. In the New Policies Scenario, India accounts for almost a quarter of the rise in global energy use to 2040, exceeding China. Development of Indian energy sector will influence international energy system and India will be also be exposed to international energy markets.

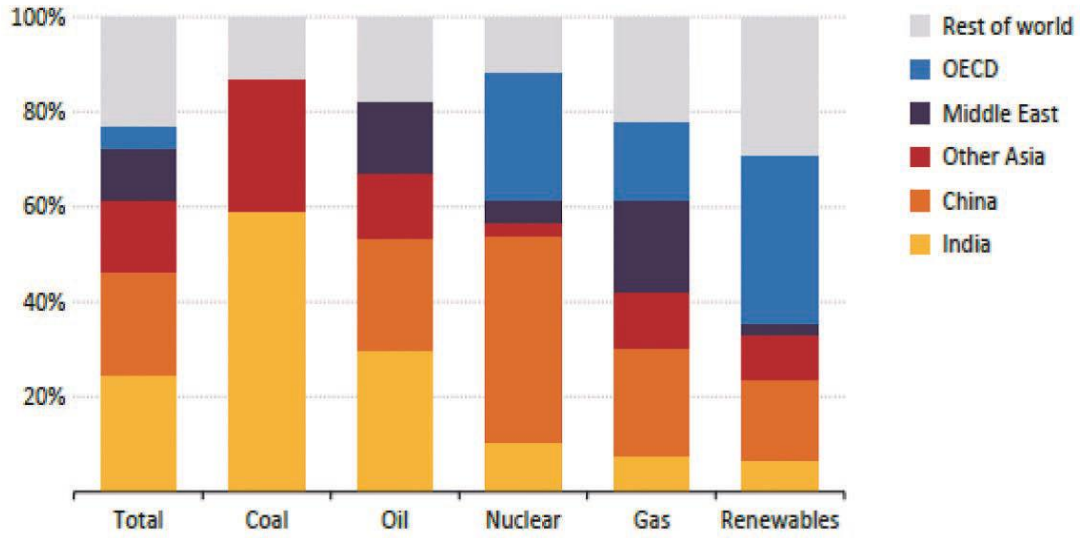


Figure 13 Share of India in World Energy Consumption Growth by Fuel 2013-2040

Source: IEA World Energy Outlook 2015 New Policy Scenario

3. Asia's Growing Oil Import Dependence on Middle East and Africa

IEA's World Energy Outlook projects that non-OPEC will play a part in meeting growing global demand up to 2020. However, from 2020s, non-OPEC production will gradually decline due to cuts in investments in response to lower revenues. Consequently, from the 2020s, OPEC countries (mainly Gulf States) will fill

continuously growing oil demand, which will make the share of OPEC countries in global oil production steadily increase over the coming decades to pre-oil crisis level. WEO 2015 projects that global dependence on OPEC (mainly Middle Eastern producers) oil will rise again to pre-oil crisis level by 2040.

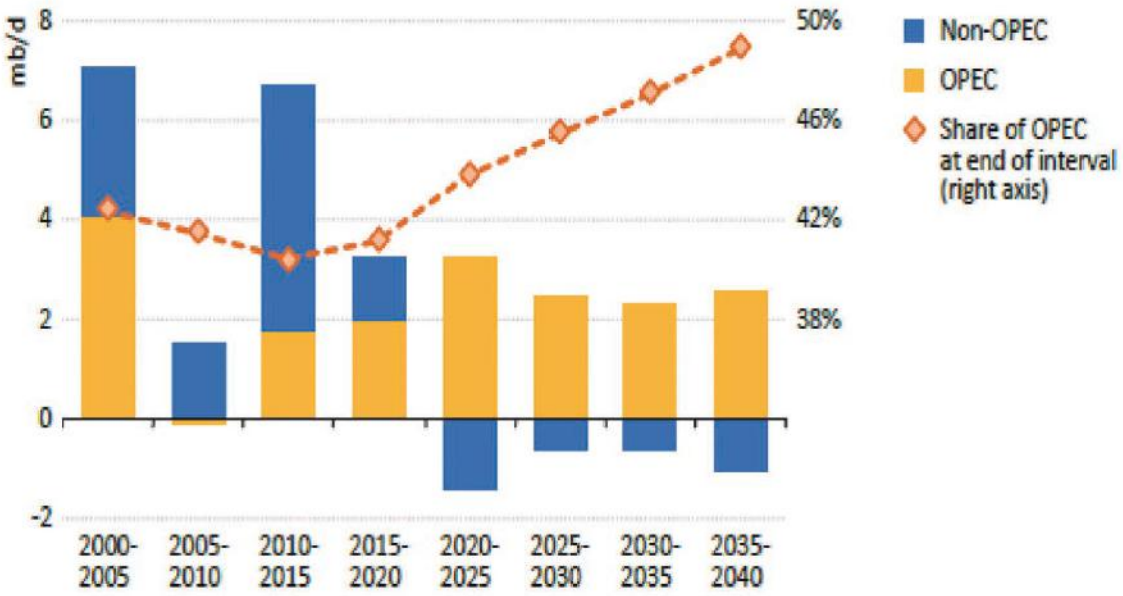


Figure 14 Change in OPEC/Non-OPEC Production

Global trade flow of oil will further expand from 38.8 Mb/d in 2014 to 44.6 Mb/d in 2040 largely driven by rapid economic growth in the Asian region. The trend of growing dependence on OPEC will be more acute in Asian region where oil demand will grow more rapidly and domestic production will further decline. Oil import dependence of the Asian region will rise from 70% to 82% during 2014-2040 period.

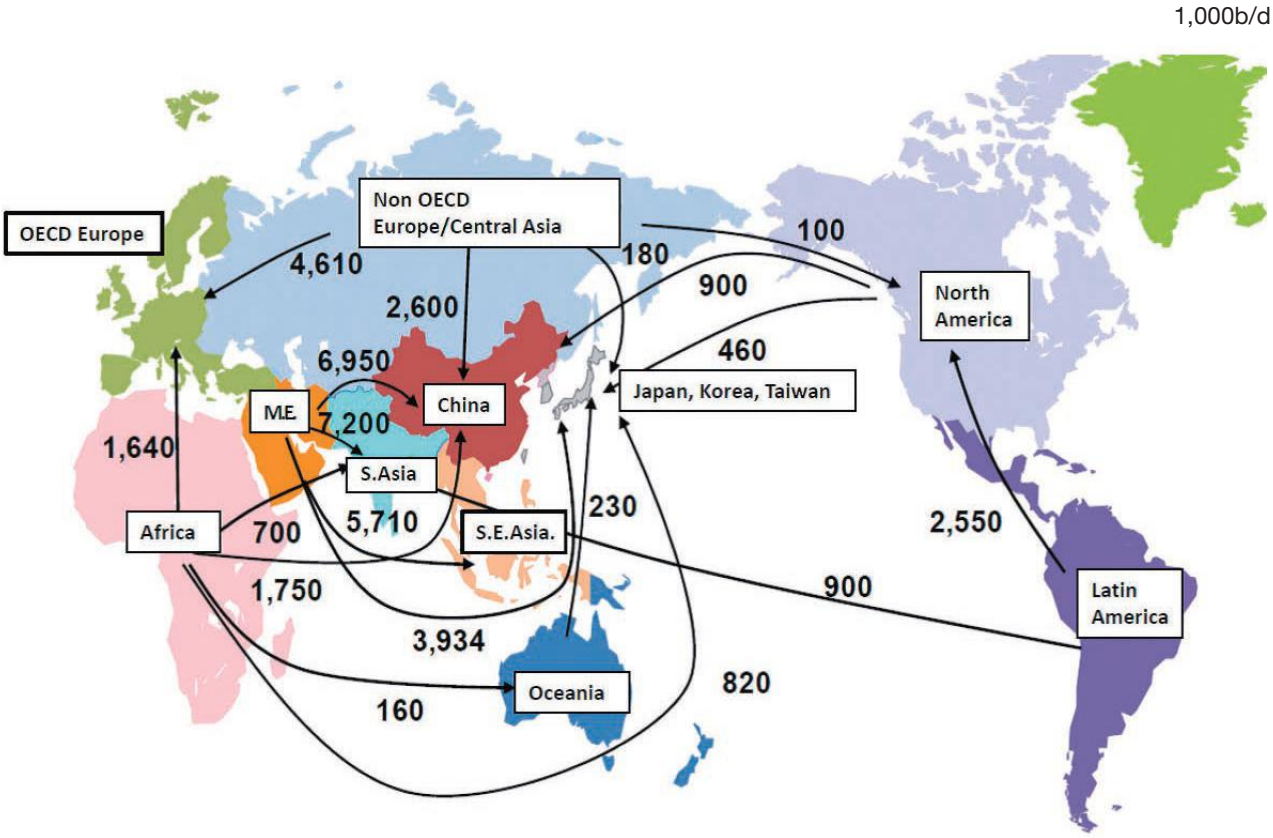


Figure 15: Global Oil Trade Flow (2040)

Source: Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

In particular, net oil import in China, India and ASEAN is projected to increase significantly from 2014 to 2040. During this period, oil export from Middle East to China, South Asia and South East Asia will record a big increase from 3.2 Mb/d to 6.95 Mb/d, from 1.9 Mb/d to 7.2 Mb/d and from 1.4 Mb/d to 5.7 Mb/d respectively. On the other hand, oil export from Middle East to Japan, Korea and Taiwan will decrease from 5.8 Mb/d to 3.9 Mb/d thanks to new import sources such as North America and Africa.

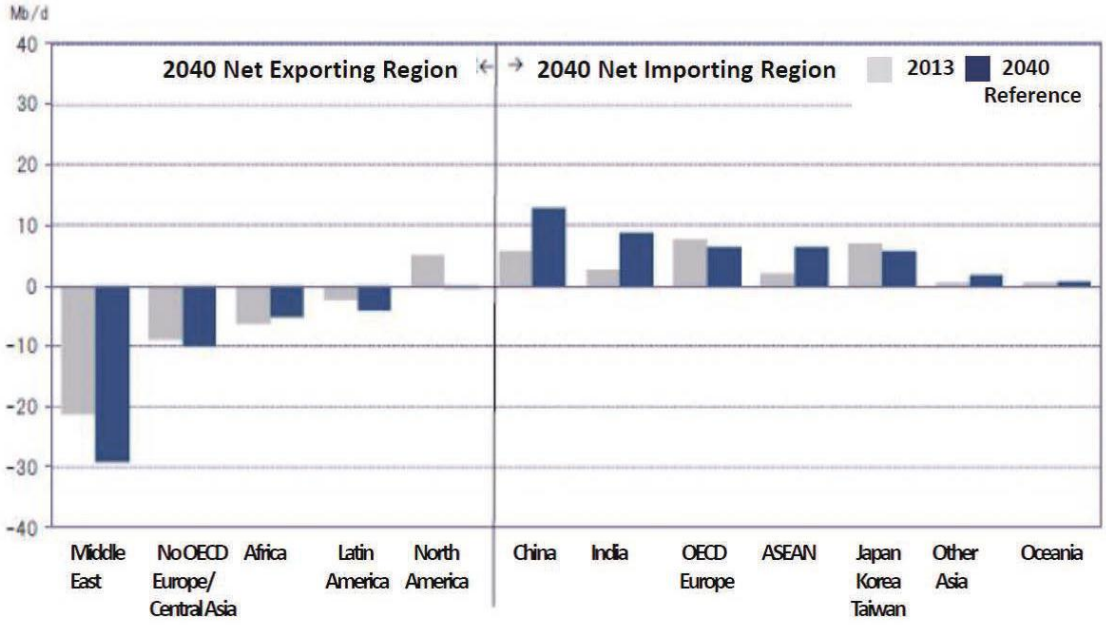


Figure 16 Net Oil Import/Export by Region

Source: Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

Asian region will come to procure oil from more diversified sources such as Russia, Africa, Latin America and North America where US oil export ban is lifted. Nevertheless, Asia's dependence on Middle Eastern and African oil import out of total import will rise from 76% in 2013 to 82% in 2040, which will make the Indian Ocean further crucial energy supply route. In particular, dependence on Middle East out of total import will rise from 50% or more in 2014 to 80% or more in 2040 in South Asia and South East Asia.

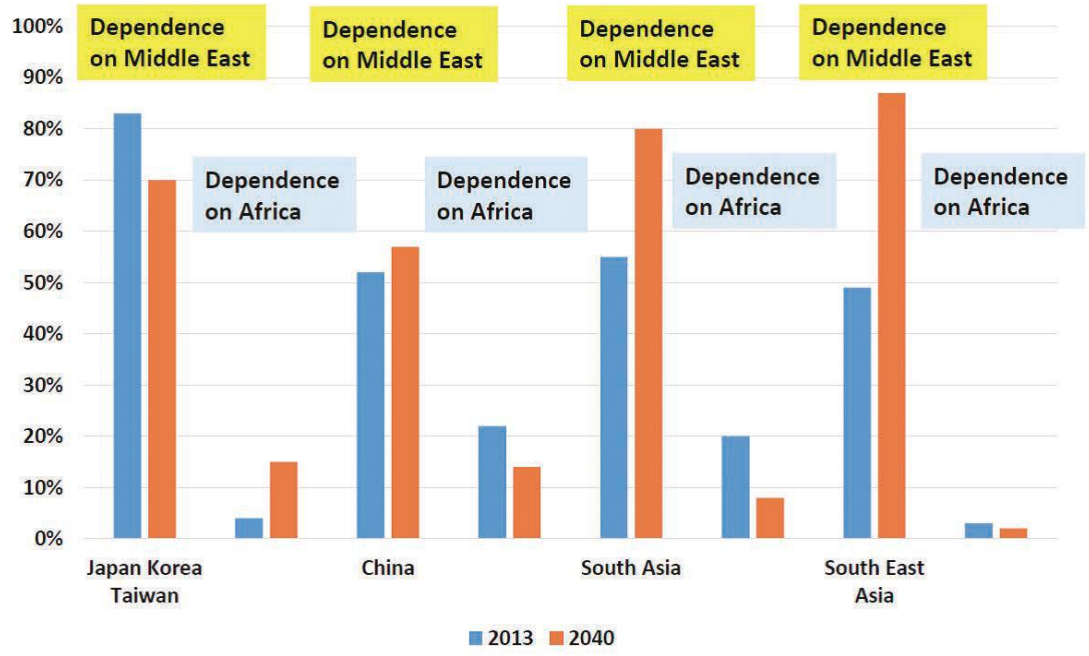


Figure 17 Asian Region's Oil Import Dependence on Middle East and Africa

Source: Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

The World Energy Outlook 2015 also projects India's crude oil import dependence from Middle East is set to rise from 57% to 63% by 2040. This makes an interesting contrast with China marking much more modest increase and Japan, Korea and Taiwan even marking decline.

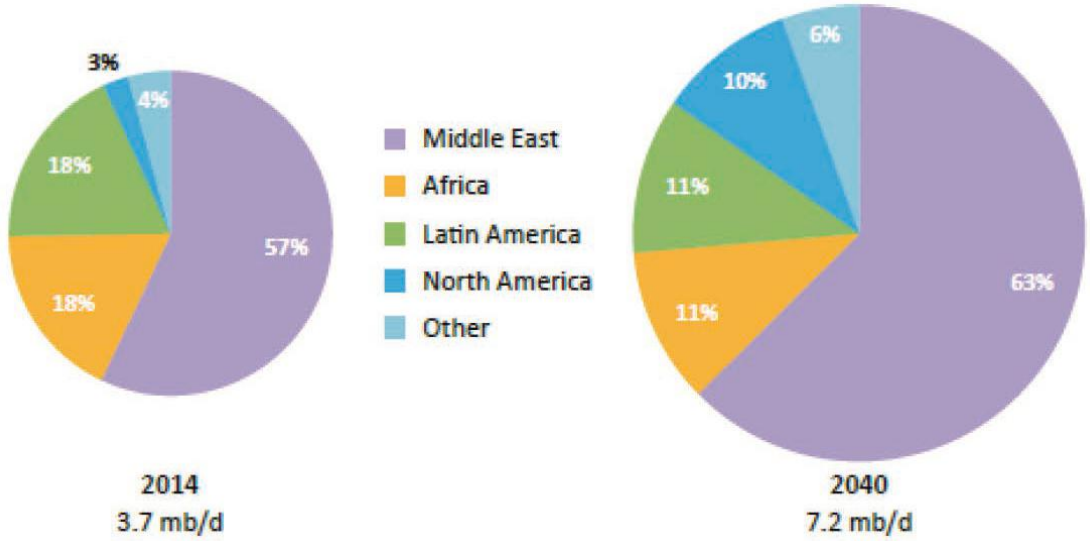


Figure 18 Crude Oil Imports by Origin in India

Source: World Energy Outlook 2015 (IEA)

At the same time, due to emerging energy independence in North America and stagnant oil demand growth in Europe, Middle East will be far more dependent on the Asian region as export destination. By 2040, almost 90% of oil export from Middle East will go to Asian region.

4. Concentration of Gas Import Growth in Asia

Inter-regional gas trade is projected to increase 70% between now and 2040. By 2040, over 1100 bcm of gas are traded between regions – some 460 bcm more than in 2014. During this period, the bulk of import demand growth is captured by LNG and the share of LNG trade in inter-regional gas trade will increase from 42% in 2014 to 53% in 2040.

As for regional gas import trends, incremental gas imports after 2020 are concentrated in Asia – China, India, Pakistan and other Asian countries. This will underpin substantial shift in trade flows away from the Atlantic Basin to the Asia Pacific region. While there are large pipeline projects come online in Asia, such as the connections between Russia and China, the reinforcement of China's connection to Turkmenistan and lines linking South Asia with gas fields in the Middle East and the Caspian region, capital intensive and politically complicated pipeline projects are more challenging amid projected market awash with LNG. As a result, the bulk of Asian gas import growth will be in the form of LNG.

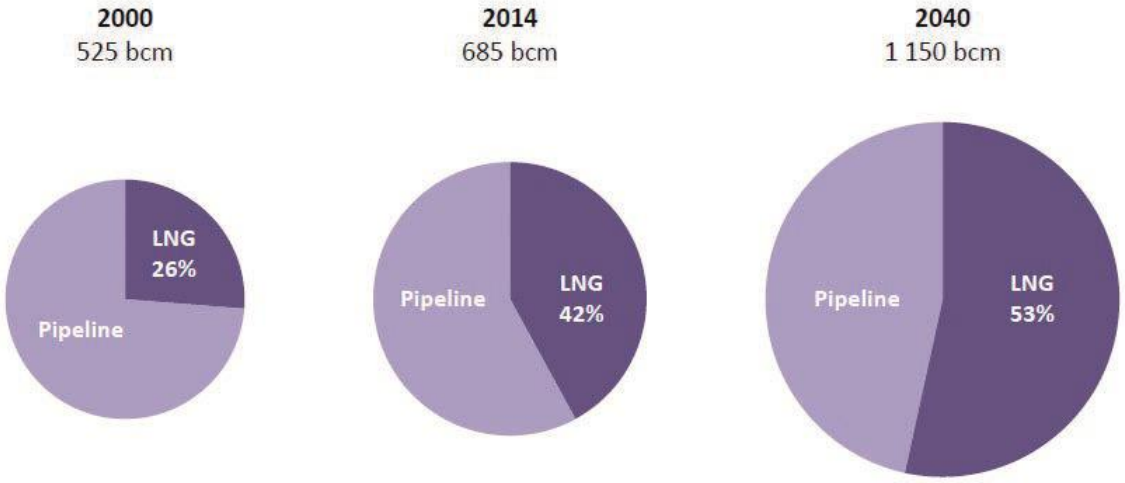


Figure 18 Share of LNG and Pipeline in Inter-regional Gas Trade

Source: World Energy Outlook 2016 (IEA)

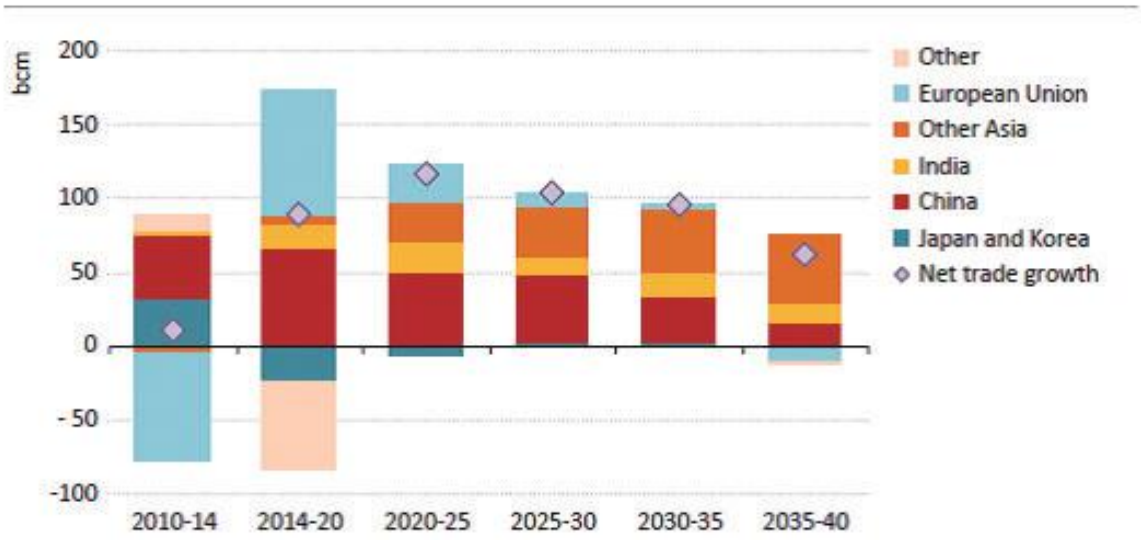


Figure 19 Change in Gas Imports by Region in the New Policy Scenario

Source: World Energy Outlook 2016 (IEA)

While Asia's gas import dependence will increase just like its oil import dependence, their situation is different. While its gas import dependence will rise from 39% in 2013 to 47% in 2040, due to more diversified supply sources of LNG such as North America, Oceania and Russia, its dependence on imported LNG from Middle East and Africa out of total gas import will be reduced from 41% to 32%.

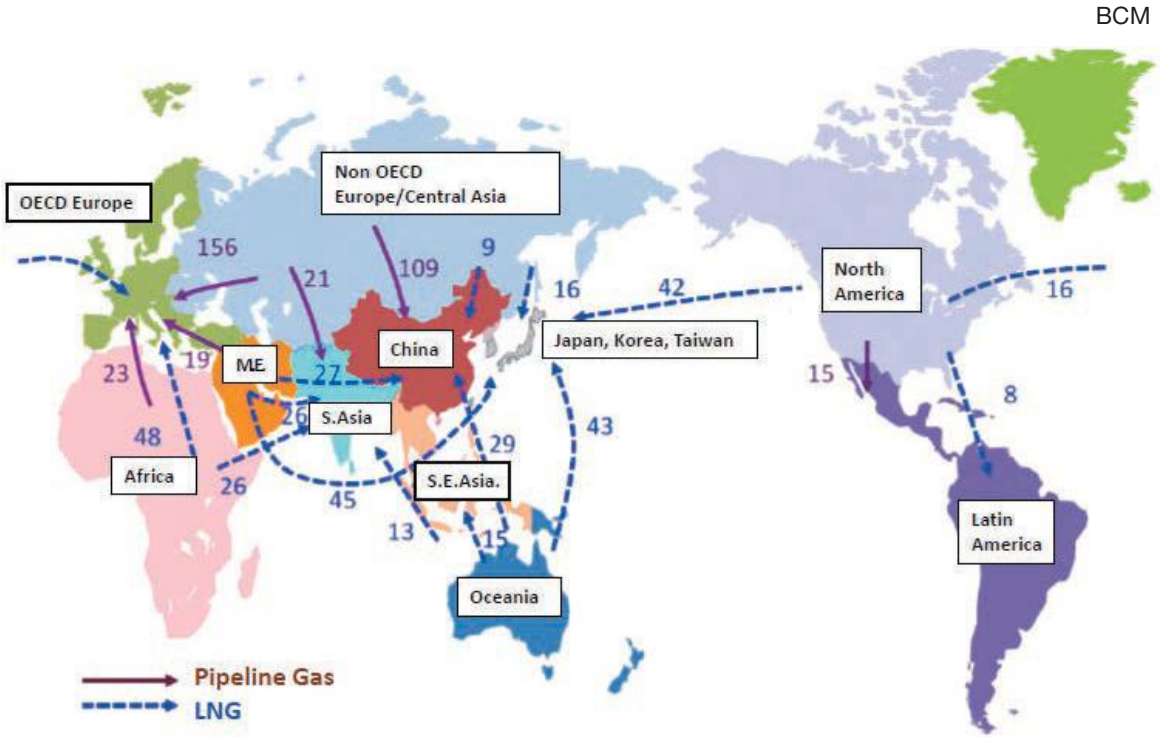


Figure 20 Global Natural Gas Trade Flow (2040)

Source: Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

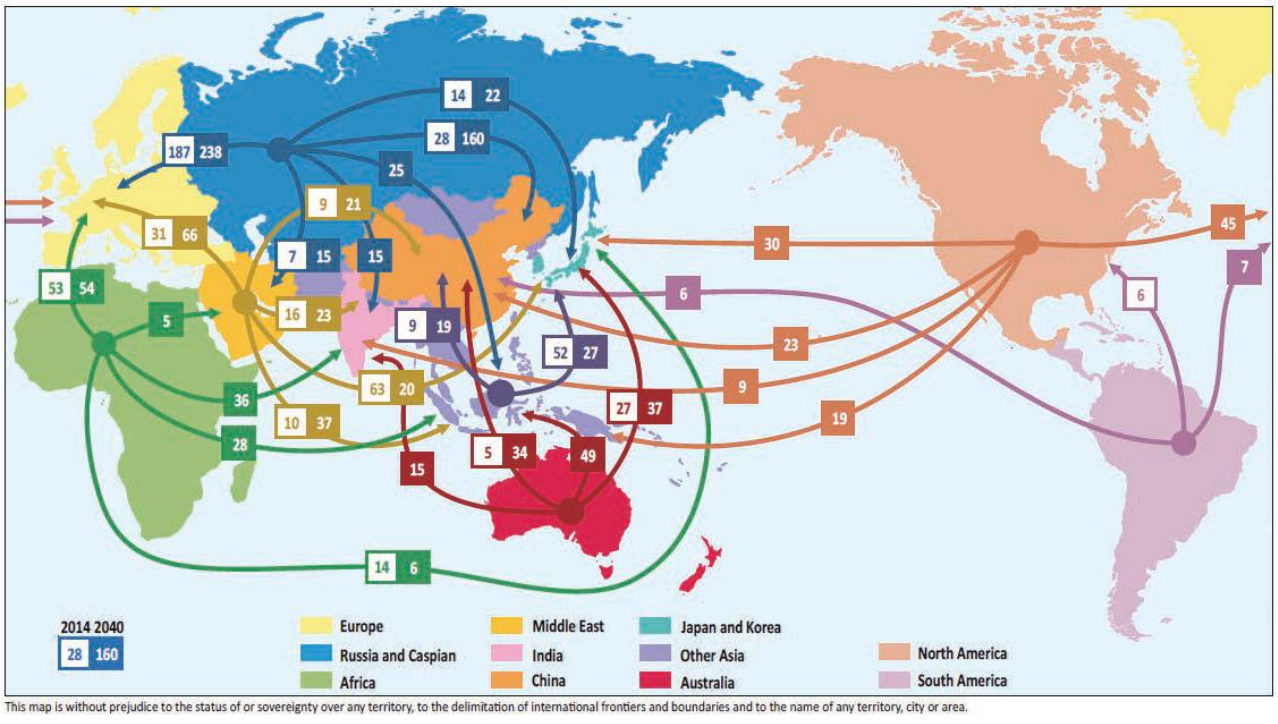


Figure 21 Global Natural Gas Trade Flow (2014 and 2040)

Source: World Energy Outlook 2016 (IEA)

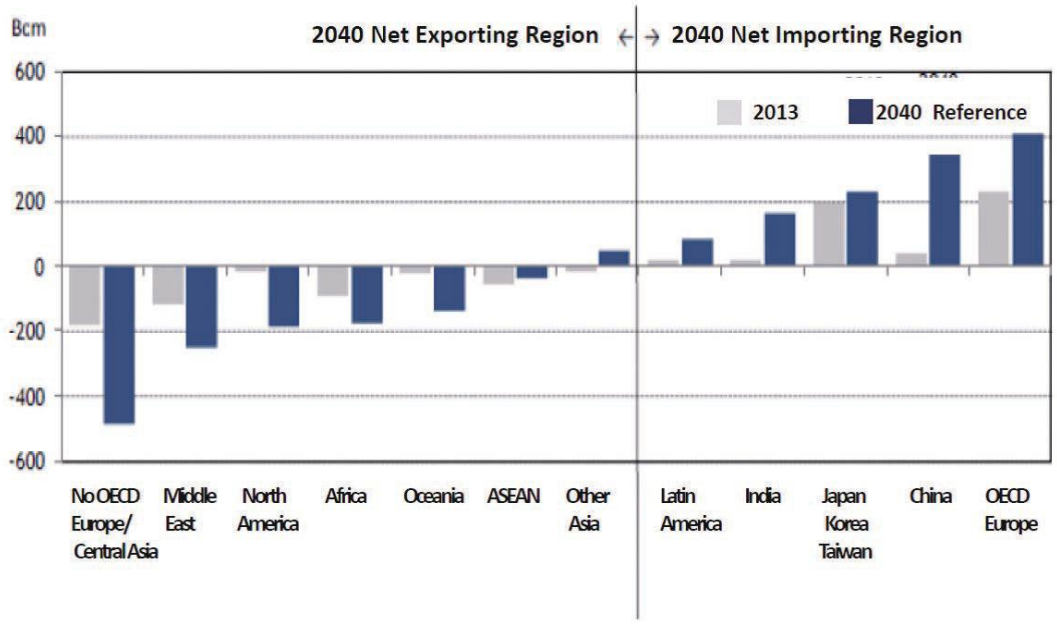


Figure 22 Net Gas Import/Export by Region

Source: Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

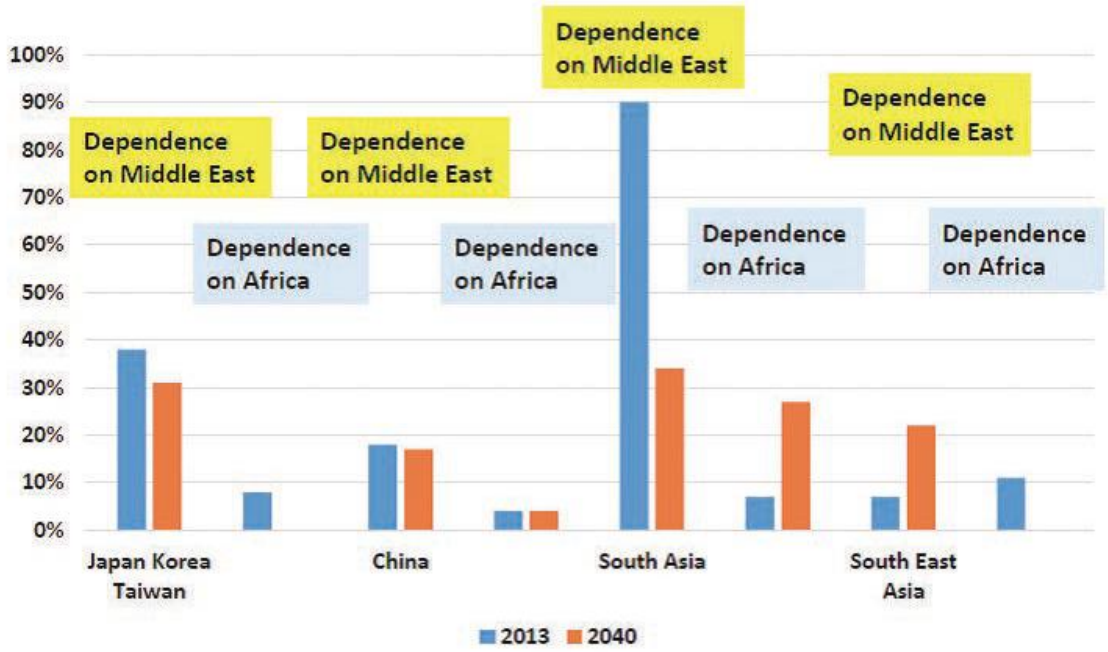


Figure 23 Asian Region's Gas Import Dependence on Middle East and Africa

Source: Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

With domestic gas production falling short of the country's needs, India is set to import increasing volume of natural gas, mainly in the form of LNG, but potentially via pipeline from Turkmenistan and Iran. Nevertheless, approximately 85% of the growing gas demand will be met by LNG.

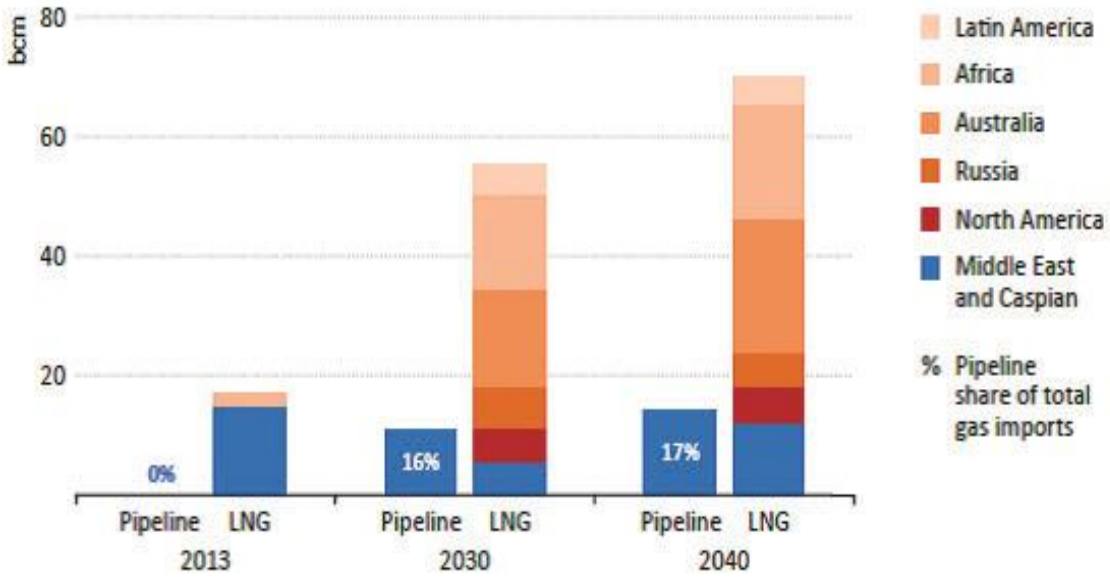


Figure 24 India's Natural Gas Procurement

Source: World Energy Outlook 2015 (IEA)

III. Energy Security and the Indian Ocean

As presented above, the economic prosperity of the Asian region is highly dependent on incessant flow of energy supply coming from Middle East and Africa and this will be increasingly the case in the coming decades. The Indian Ocean is located at the center of the crucial energy supply routes. Due to high dependence on the sea for energy access, countries in the region and those dependent on energy import going through Indian Ocean are increasingly worried about potential threats and disruptions to the sea-lanes.

A significant energy disruption somewhere in this important energy transport will give serious implication not only to the importing countries but also to the global energy market and hence the global economy.

However, the Indian Ocean is exposed to various security threats which could disrupt, block or otherwise discourage the use of waterways to transport energy. Rand Corporation categorizes sea-lane security threats in three tiers[2]:

1. Tier 1: Non-State Threats

The most basic type of non-state threat to energy flow is the disruption caused by natural events such as volcanic and seismic activity, tsunamis and cyclones, all of which are prevalent in the Indian Ocean and Southeast Asia. For example, the Bay of Bengal experiences cyclones as often as two to four times per year.

Piracy has been an endemic problem across the Indian Ocean from the coast of Somalia through the Malacca Strait. In terms of regional trends, piracy and armed activity has been shifting to shift southward

2 http://www.rand.org/pubs/technical_reports/TR1144z3.html

down the East African coast and westward into the Indian Ocean in response to heightened coalition naval patrols in the Gulf of Aden.

Another non state threat to energy security is terrorism. The Indian Ocean and contiguous waters have been witnessing several actual or attempted terrorist attacks. The rise of the Al Qaeda in the Indian Subcontinent (AQIS), the new wing of the Al Qaeda, has already raised a new threat whether Pakistan will become a haven for maritime terrorism. For example, in July 2010, a Japanese owned oil tanker was damaged in the Hormuz Strait by terrorist attack, for which a group affiliated with al-Qaeda claimed responsibility.

2. Tier II: Failed and Rogue State Threats

The existence of failed states increases the risk for piracy and terrorism. In addition rogue states may attempt to disrupt energy distribution for their own objectives. Within the region, such countries as Bangladesh, Indonesia, Cambodia and Thailand have all experienced unrest. The potential for various states to transition to rogue states cannot be ignored. Failed states can also serve as safe haves and operational bases for criminals and terrorists. Typical example is Somalia. According to the Global Peace Index 2016, Somalia, Yemen and Pakistan are classified as “very low” in terms of peace and stability.

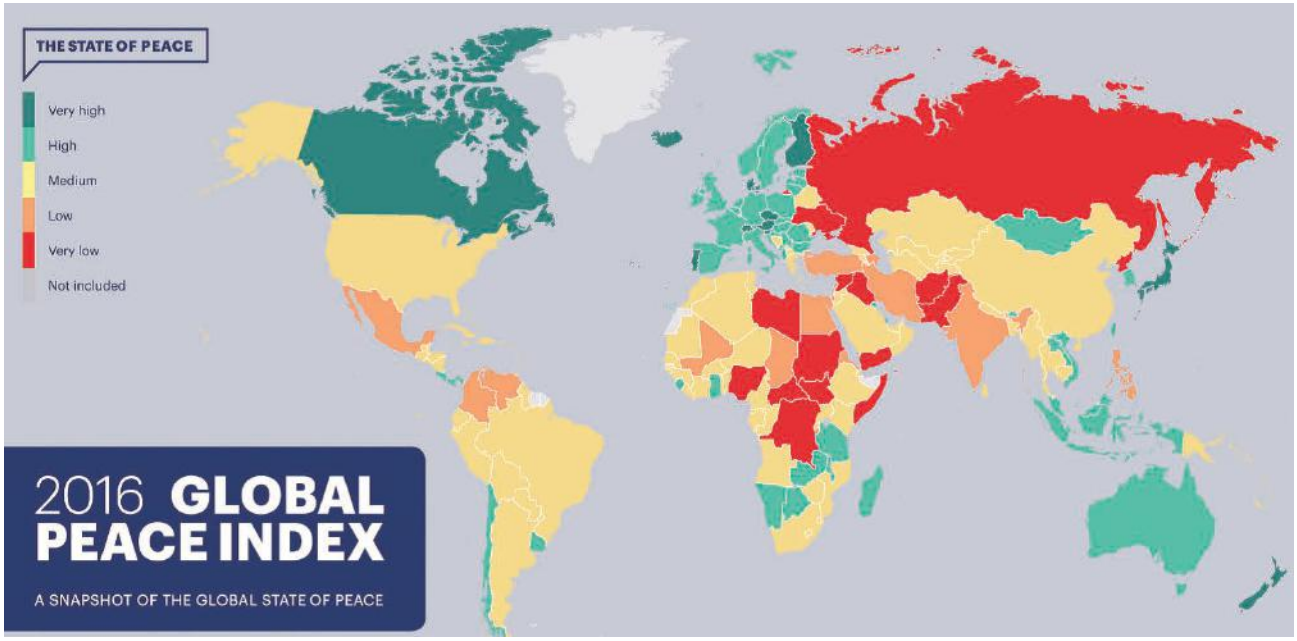


Figure 25 Global Peace Index (2016)

3. Tier III State-to-State Conflicts

National actors may use coercion or force to advance their own interests, including threats or actual use of force against energy transport means. States could deliberately disrupt the flow of energy as a form or form of coercion. In addition, conflict between states could make it dangerous for energy tankers to transit the sea lanes. In the energy sea lane from the Strait of Hormuz to the Strait of Malacca via the Indian Ocean, there are geopolitical tensions between key powers (India and Pakistan, China and India, Japan and China). These include dispute between China and Japan over Senkaku/Diaoyu islands in the East China Sea, dispute between Bangladesh and Myammar over hydrocarbon in the Bay of Bengal and dispute in the South China

Sea among China, Vietnam, Malaysia, Brunei and Philippines over claims to the Natuna, Paracel and Splatly Islands and over the sea itself. The potential for a conflict over unresolved territorial and maritime boundary disputes in the region cannot be completely ruled out.

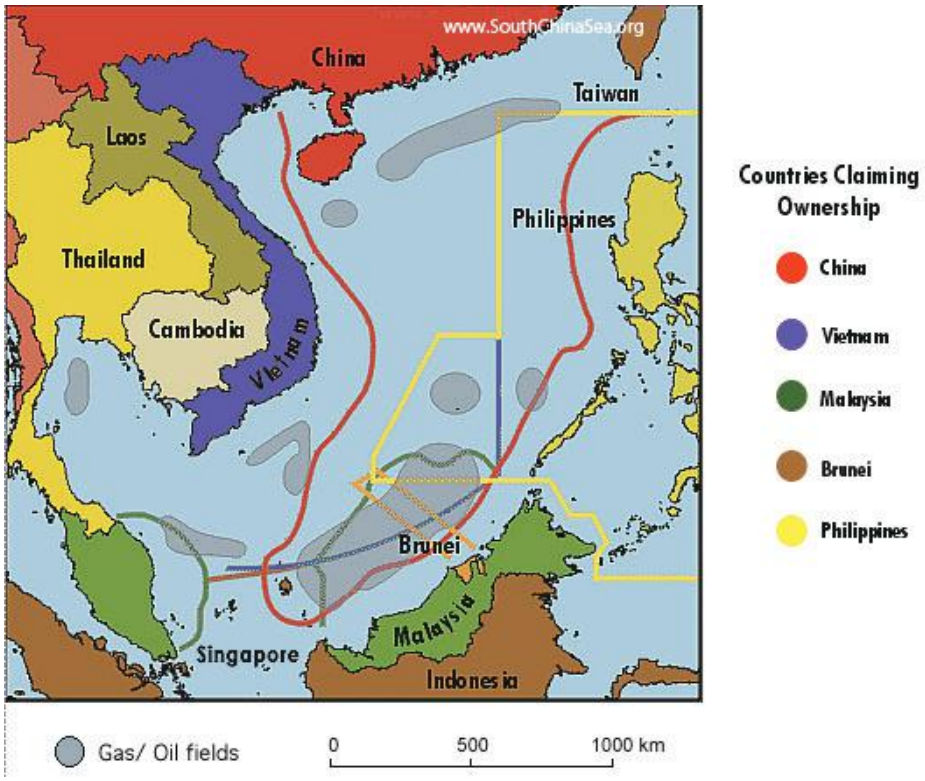


Figure 26 Overlapping Territorial Claims in the South China Sea

Source; SouthChinaSea.org

Growing energy demand in the Asian region and consequent greater needs for sea-lane energy trade inevitably makes countries in the region more vulnerable to the above risks. While these risks are potentially detrimental to the regional energy security, they cannot be directly alleviated by energy policies. Rather, they should be addressed through individual sea-lane security capabilities and regional security mechanisms such as APEC, ASEAN, Malacca Strait Petrol Network, ReCAAP and the Information Sharing Center (ISC), South Asia and Africa Regional Port Security Cooperative (SAARPSCO), Western Pacific Naval Symposium (WPNS), Indian Ocean Naval Symposium, Horn of Africa Multilateral Forces and Proliferation Security Initiative (PSI). They are not to be addressed in this paper.

Nevertheless, there are some areas which energy policies could do for minimizing or alleviating the impact of maritime security risks. They will be discussed in Section V and VI.

IV. Environmental Sustainability

It should also be emphasized that the Indian Ocean states are responsible for approximately 40% of global GHG emissions, posing significant threat to global climate system. From 2013 to 2040, Non-OECD Asia accounts for 110% of global incremental energy-related CO_2 emissions.

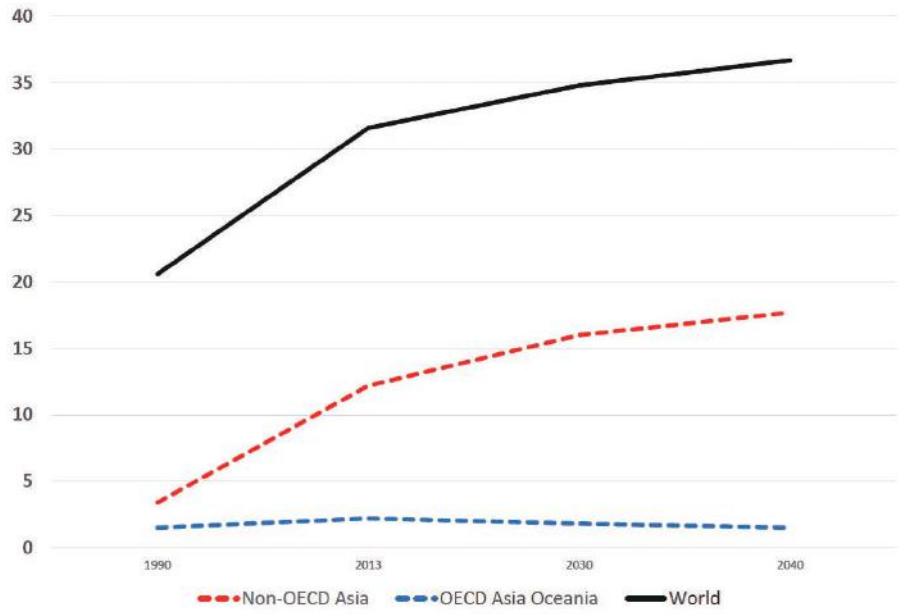


Figure 27 Energy-Related CO_2 Emissions (World and Asia)

Source: IEA World Energy Outlook 2015 New Policy Scenario

Climate change will amplify existing risks and create new risks for natural and human systems. Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development. Increasing magnitudes of warming increase the likelihood of severe, pervasive and irreversible impacts for people, species and ecosystems. Continued high emissions would lead to mostly negative impacts for biodiversity, ecosystem services and economic development and amplify risks for livelihoods and for food and human security. The Indian Ocean region is also affected by climate change impact (e.g., flood in coastal areas, risk of disappearance of small island states). Maritime security could also be damaged by increasing extreme weather.

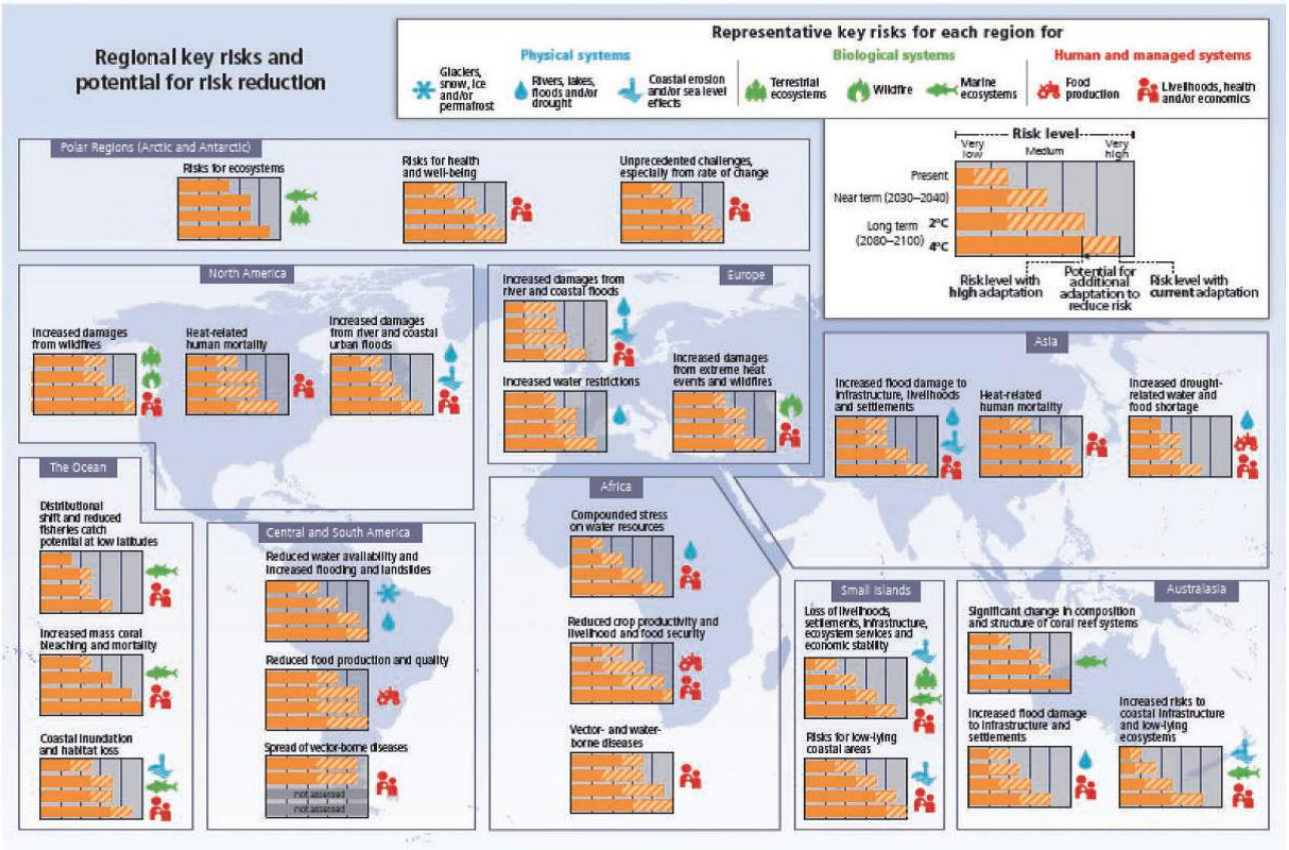


Figure 28 Climate Change Vulnerability by Region

Source: IPCC 5th Assessment Report

In the case of India, rapid economic growth and urbanization is creating a lot of pressures on communities and wider environment including air quality, land and water. Due to high volume of fossil fuel burning, only 1 out of 124 cities in India, for which data exist, meets the WHO guidelines for PM 2.5 concentrations. India has 13 of the world's 20 most-polluted cities.

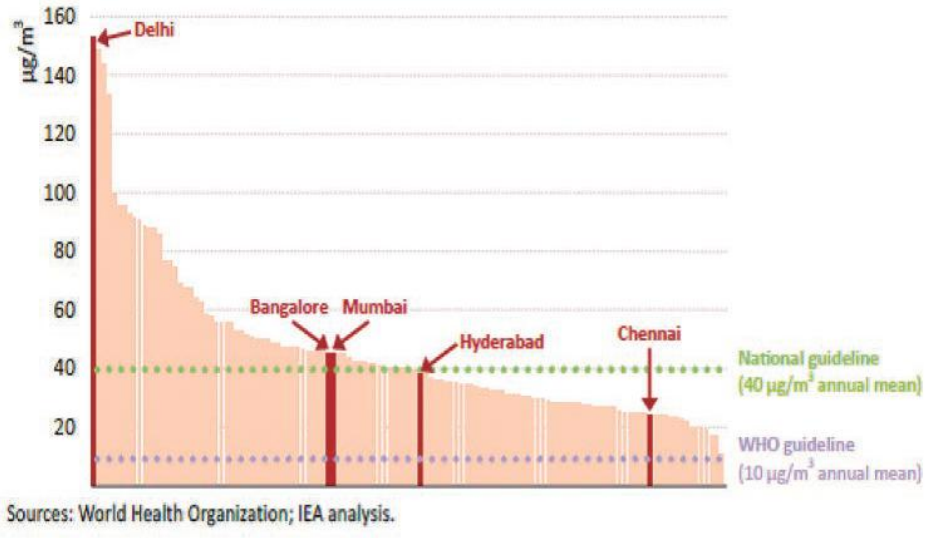


Figure 29 Average Annual Particulate Matter Concentration in India

Source: IEA World Energy Outlook 2015

In terms of climate change, India's per capita emissions are extremely low, one quarter of China's and one tenth of the level of the US. On the other hand, India's CO_2 emissions per GDP is close to the level of the US due to heavy dependence on coal for power generation and large stock of inefficient subcritical plants.

In the coming decades toward 2040, though carbon intensity of India's economy is expected to improve substantially, India's CO_2 emissions will almost double from 2013 to 2040, which will make its CO_2 emissions per capita converge towards the global average. This increase in emissions means that India is the largest single contributor to the rise in global emissions between 2013 and 2040.

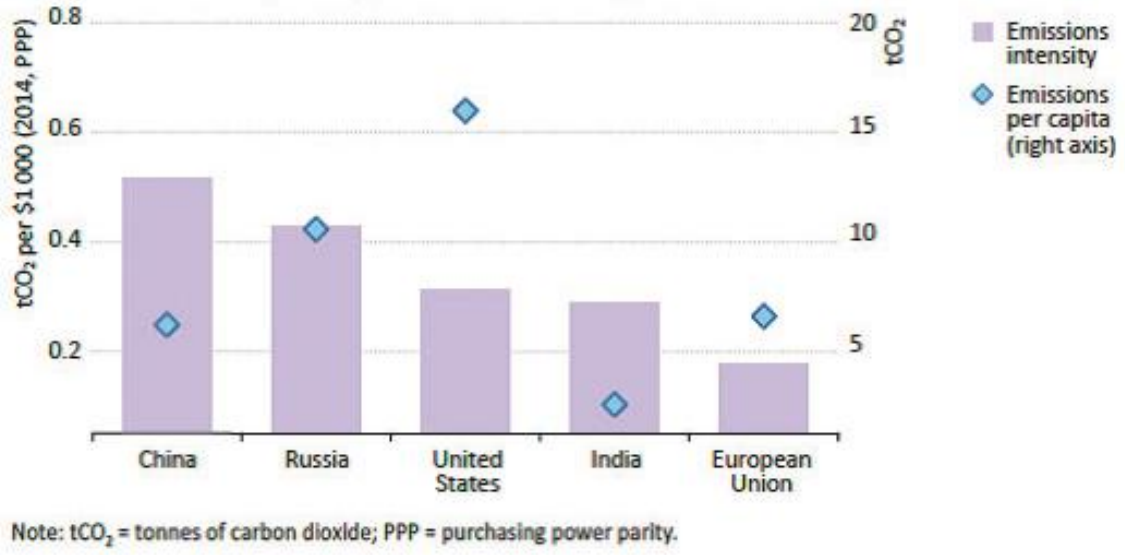


Figure 30 Carbon Intensity and Per Capita Emissions (2013)

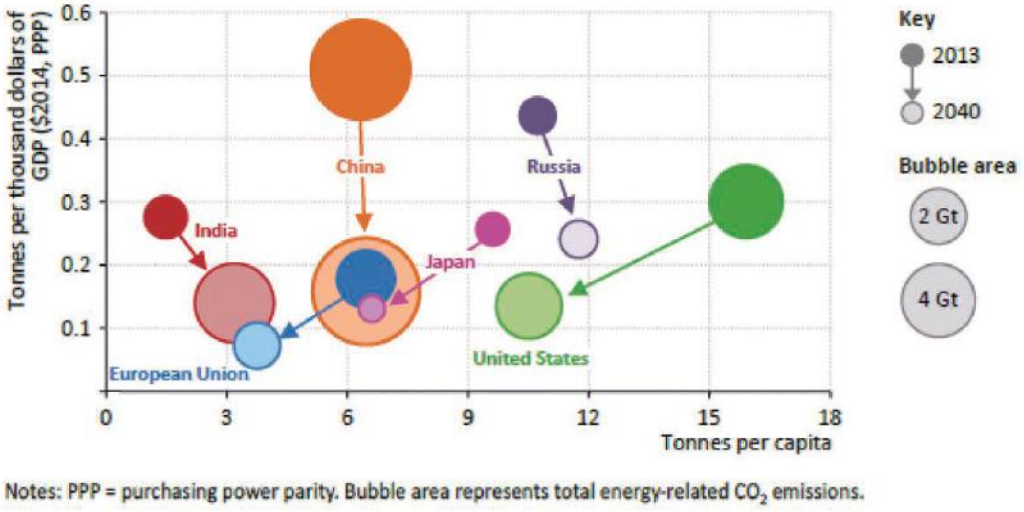


Figure 31 Energy Related CO_2 Emissions by Selected Country and Region

Source (Figure 30-31) : IEA World Energy Outlook 2015 New Policies Scenario

V. How to Improve Energy Security and Environment in the Indian Ocean?

1. Enhanced Oil Emergency Preparedness

Growing Asia's import dependence on the Middle East will put a substantial pressure on energy security and make the Asian region more vulnerable to unexpected supply disruption. Oil import dependence of Japan and Korea is almost 100% while their dependence on the Middle East will slightly decline from over 80% to 70%. Import dependence on the Middle East in China, India and ASEAN will further increase towards 2040. In particular, India, which has become the third largest oil importer, will further increase its oil import dependence on the Middle East from 55% to 80%.

These trends intensify the need of proper emergency preparedness. Japan, Korea and Australia, which are all the IEA Member countries, have more than 90 days' oil stock. In the event of supply disruption, the IEA countries will activate emergency response measures including demand restraint and joint oil stockdraw.

However, emergency preparedness of the Non-OECD Asian countries is still on development stage, not keeping pace with their rapidly growing oil demand.

China is builiding strategic oil stocks composed of government-controlled Strategic Petroleum Resreve and mandated commercial reserves in three progressive phases and aiming at 80 million $m^3$of SPR together with 33 million $m^3$of commercial reserces by 2020. This will provide approximately 90 days of consumption.

Faced with rapidly increasing oil import dependence and significance of the Malakka Strait chokepoint for oil, the ASEAN countries are intensifying their national and collective emergency preparedness. While most ASEAN countries reply on industry stockholding obligations, Myammar and Viet Nam hold a certain amount of government stocks. Thailand, Lao PDR and Indonesia are discussing the possibility of establishing government stocks. Thailand and Viet Nam have made strong commitments to achieving stock levels comparable with 90 dyas of net import level. Other ASEAN countries are planning to have stock level under 50 days of consumptin. Since 1986, ASEAN has the ASEAN Petroleum Security Agreement (APSA), a regional treaty for activating a sharing scheme for crude oil and petroleum products at the time of oil supply disruption in one or more of the ASEAN member countries. In 1999, the ASEAN agreed to revise the APSA in order to incorporate short-term response measures such as demand restraint, fuel switching and a co-ordinated emergency response measures.

India has become the third largest oil importer sitting behind China and the US. Its oil import dependence will increase from 2010 to 92% by 2035. Given its rapdily growing oil demand and increasing import dependence on the Middle East, India is particularly bulnerable to severe external supply disruption. With this in mind, India's Integreated Energy Policy (2008) recommended creating emergency oil stocks to cover 90 days of oil import. India has been completing the first phase of its Strategic Petroleum Reserve (SPR), comprising three sites with the capacity of 5.95 million m^3enough to provide 2 weeks of consumption. Petroleum stocks have been transferred from the Indian Oil Corporation to the Oil Industry Development Board (OIDB). The OIDB then created the Indian Strategic Petroleum Reserve Ltd (ISPRL) as the controlling government agency for strategic reserve. The Government of India is aiming at another 15 million cubic metres of crude reserve capacity by 2020, which will add another 28 days of supply.

2. Addressubg Gas Security Concern

While Asia's gas import dependence will grow towards 2040, its dependence on Middle East is much lower compared with the case for oil. Low natural gas prices and prospect of abundant supply of LNG over the medium term tends to give a sense of comfort over market's ability to adjust to potential demand or supply shocks without placing unaceptable stress on national/regional gas systems. However, today's oversupply cannot be regarded as a structural feature of the gas market. Gas market conditions could change unexpectedly and the global gas security structure should be resiliant to sudden shift. This is particularly true for Asia which will see concentrated growth in LNG imports.

From a security of supply standpoint, the degree of destination flexibility of existing and future supplies is an important determinant of the resilience of the gas supply system. The possibiliyt to re-direct LNG as needed according to price signals would allow for an efficient low-cost allocation of available supplies. In the event of a supply disruption or a demand shock, LNG trade flows would rapidly shift so that gas can reach the regions that need it most. Arrival of large volume of US LNG sold via open destinations will significantly increase the destination flexibility of the LNG trade. It should be born in mind that destination flexibility could provide the volume flexibility at the tame of demand/supply shocks and such flexibility would need to be backed by the demand side, production or pipeline flexibilities that different regions can offer and LNG supplies can help aggregate.

Unlike Europe and the US, most Asian gas consumers have limited or no storage capacity, in some cases, due to geological constraints. Asia's growing depdencen on long-distance LNG imports with little or no undergraound storage raises the question of the degree of operational flexibility in the LNG supply chain at the time of possible disruption of LNG flows. LNG storage could certainly offer some short-term relief. Asian region tends to have larger LNG storage capacity compared with Europe, reflecting the lack of options to respond to demand/import fluctuations. The days of import cover, namely, LNG storage capacity devided by LNG imports in 2015, vary between 53 days for Korea and 13 days for Chinese Taipei. However, actual coverage could be lower because storage tanks are not usually full and, if pipeline connections among various regasification terminals are not sufficient, available gas at one storage sight could not be useful to address demand shortages at a different locations.

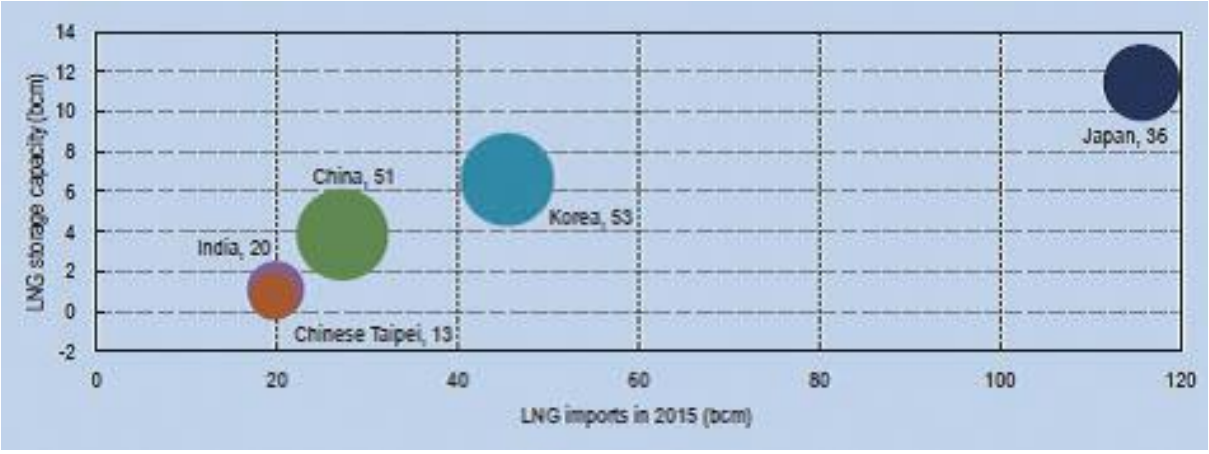


Figure 32 LNG Imports in 2015, LNG Storage Capacity and Operational Days

Source: Global Gas Security Review 2016 (IEA)

Since the bulk of growing gas demand in Asia will happen in the power sector, flexibile power systems including fuel-switching capabilities and robust demand restraint capacity is crucial for crisis managament, and more broadly, global gas security. At the time of Fukushima nuclear accident, Japan could cope with electricity supply shortage by demand restraint and fuel switching where one third of the nuclear loss was replaced by natural gas and similar amount was mobilized from oil and coal combined. It also deserves attention that Europe was the main providedr of flexible LNG volunmes to global LNG markets in the post-Fukushima period. During 2011-13, Europe accounted for 2/3 of the flexible supply released by demand-side adjustment including fuel switching from gas to coal in the power sector and arbitrage between LNG and pipeline imports.

However, fuel switching capabilities cannot be taken for granted. In Europe, for example, substantial amount of coal-fired capacity will be shut down in coming years as a result of expiration of coal plants' life time and environmental policies. In Japan, more than 60% of oil-fired generation plants which played a major role in avoidng black-outs in the post-Fukushima period are older than 40 years. In the absence of active government policies to keep them online, Japan could face a steep decomissioning profile. While age profile of power plants in emerging Asian countries is much younger than in Europe or Japan, policy makers would need to ensure reasonable level of fuel-switching capabilities in response to growing gas demand in the power sector.

3. Enhancing Domestic Production of Unconventional Oil and Gas

Increasing import dependence of the Asian region comes from increasing domestic consumption and decreasing domestic production. Development of domestic unconventional oil and gas resources could reduce import dependence and hence reduce pressure on the sea lane in the Indian Ocean. According to the most updated assessment by the US Energy Information Administration (EIA)[3] on recoverable shale oil and shale gas resources, China has substantial shale resources. While India's shale resources seem to be relatively modest, development of unconventional oil and gas resources in China will improve oil and gas security in the Asian region as a whole.

Table 1 Unproven Technically Recoverable Shale Gas and Oil Resources

	wet shale gas (trillion cubic feet)	tight oil (billion barrels)
China	1115.2	33.2
India	96.4	3.8
Indonesia	46.4	7.9
Mongolia	4.4	3.4
Pakistan	105.2	9.1
Thailand	5.4	0.0
United States	622.5	78.2

Source: US Energy Information Administration

3 https://www.eia.gov/analysis/studies/worldshalegas/

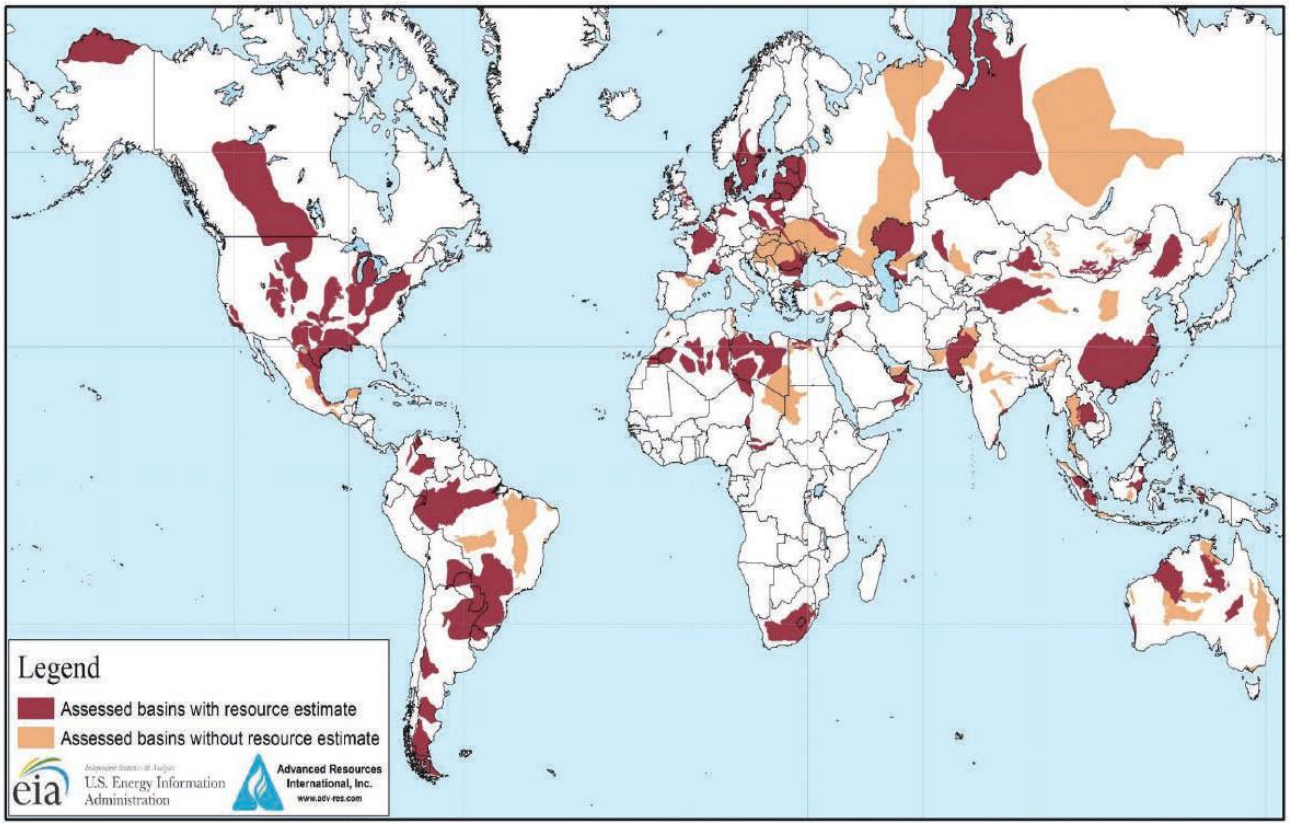


Figure 33 Assessed Shale Basin Map

Source: US Energy Information Administration

4. Diversification of Supply Routes and Sources

Increasing share of Asia's oil and LNG supplies will have to transit the Indian Ocean, Malacca Strait and the South China Sea to bring oil from the Middle East and Africa. This has raised new concerns, particularly for China, over the growing risk of major maritime supply disruptions, as well as over US control of these sea lanes. This has driven China's efforts to diversify supply lines with new on-ground pipeline routes less vulnerable to supply disruption.

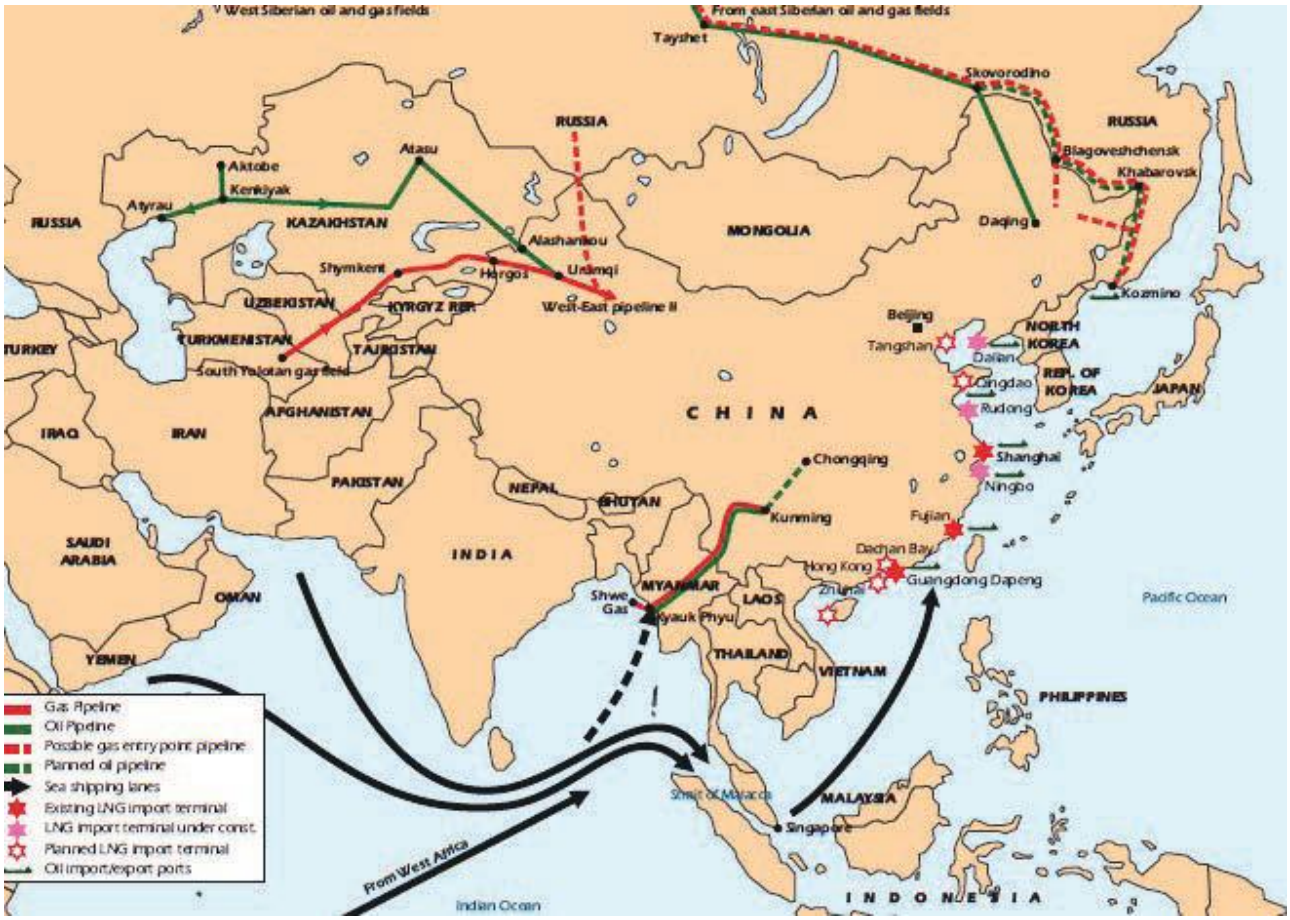


Figure 34 China's Oil and Gas Pipeline Connection

China has completed crude oil and natural gas pipelines from Central Asia (China-Kazakhstan oil pipeline, China-Turkmenistan gas pipeline). In addition, China is developing China-Myanmar oil and natural gas pipelines for reducing its dependence on the critical sea-lane in the Strait of Malacca. Furthermore, China is laying second domestic pipeline running parallel to an existing East Siberia-Pacific Ocean pipeline to allow increased Russian crude oil. China and Russia are also considering building a second natural gas pipeline from West Siberia to China over 30 years.

India is also working on simultaneous plans for constructing transnational crude oil and gas pipelines to India from Turkmenistan, Russia and Kazakhstan. In addition, the lifting of sanctions on Iran are expected to help the revival plans for a gas pipeline from Iran through Pakistan to India. The proposed pipelines projects include the Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline, the Iran-Pakistan-India (IPI) gas pipeline, and crude and gas pipeline from Russian and Kazakhstan.

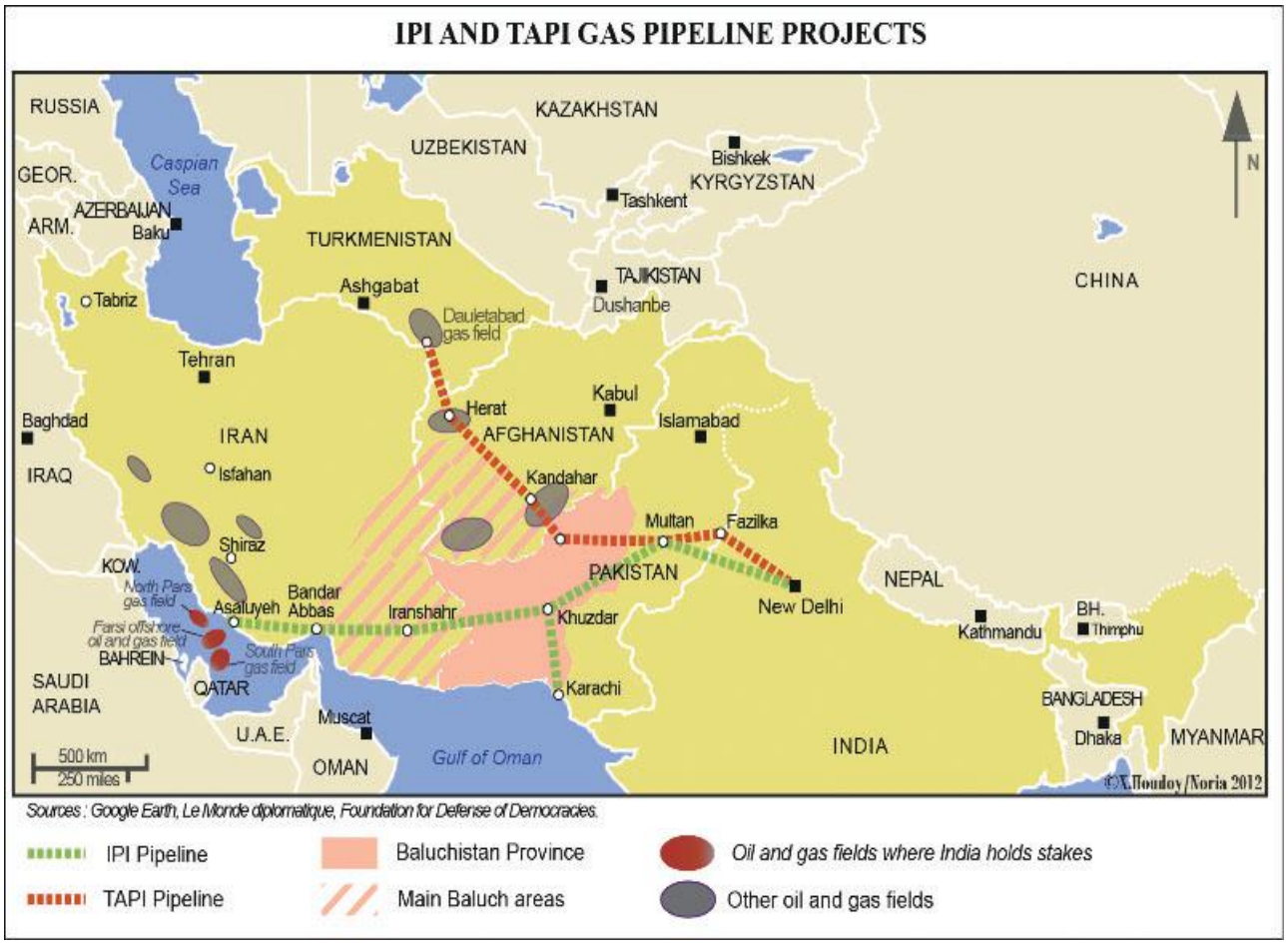


Figure 35 IPI and TAPI Gas Pipeline Projects

Naturally, pipeline projects are strongly influenced by geopolitical situation. For example, while TAPI gas pipeline project is expected to provide multiple benefits, namely, energy supply to Pakistan, Afghanistan and India, job creation in Afghanistan and a basis for "stabilizing corridor" linking neighbors together, its progress has been slow due to unstable political relation among the three countries. In addition, TAPI would run through the one of the most contested areas of Afghanistan. Taliban wants a share of the transit fees. In Pakistan, TAPI traverses the province of Balochistan, the site of a persistent revolt uprising by Baloch nationalists. While IPI has long been opposed by the US due to Iran's nuclear program, the lifting of sanctions on Iran is creating a new dynamics. Indian industries are arguing that India should transport natural gas from Iran bypassing Pakistan via subsea pipeline in the Arabian Sea.

Since the bulk of oil and gas exported to Asia go through the Indian Ocean, diversification of supply routes from sea lane to on ground pipeline as presented above could potentially reduce security risk related to the Indian Ocean sea lane. However, the story is not so simple since on ground pipelines are also affected by various geopolitical factors.

5. Addressing Mid-Long Term Energy Security and GHG Emissions Reduction

As presented above, rapidly growing energy demand in the Asian region will put a substantial pressure on energy security and environmental sustainability in the region. Growing oil demand led by India and China will make the Indian Ocean sea-lane far more crucial for energy security and economic prosperity in the region. At the same time, growing coal demand led by India will increase CO_2 emissions in the Asian region by 50% towards 2040, more than 70% of global incremental CO_2 emissions.

Enhancing emergency preparedness, promoting domestic production and diversifying supply routes will contribute to reducing pressure on energy security in the Indian Ocean. However, with a view to simultaneously achieving energy security and environmental sustainability from mid to long term perspective, Asian countries will need to explore alternative path in their energy supply/demand structure.

In its Asia/World Energy Outlook 2015[4], the Institute of Energy Economics of Japan (IEEJ) presents the Advanced Technology case as an alternative to the Reference case.

The Technology Advanced case assumes implementation of strong energy and climate policies for ensuring energy security and GHG mitigation by all countries. The Technology Advanced case envisage implementation of the following policies on demand and supply sides.

<Demand Side>

■ Industry Sector

Global dissemination of best practices and best available technologies in steel, cement, pulp & paper and petrochemical sectors based on sectoral approach

■ Transport Sector

Dissemination of clean energy vehicles (high efficiency vehicle, HV, PHV, EV and FCV)

■ Residential/Commercial Sector

Dissemination of energy efficient home appliances, HP, high efficiency air conditioner, high efficiency lighting and insulation

<Supply Side>

■ Renewable Energy

Promotion of wind, solar, solar heat, biomass and biofuel

■ Nuclear

Accelerated construction of new nuclear power plants and improvement of load factor

■ High Efficiency Thermal Power

Dissemination of USC, IGCC, IGFC and MACC

■ CCS in Power Sector and Industrial Sector

4 http://eneken.ieej.or.jp/data/6379.pdf#search=%27asia+world+energy+outlook+2015%27

6. Improving Energy Efficiency

In non-OECD Asia countries, energy intensity (TPES/GDP) is higher compared with global average (China 402, India 380, Asia average 272, global average 192 in terms of toe/GDP million $).

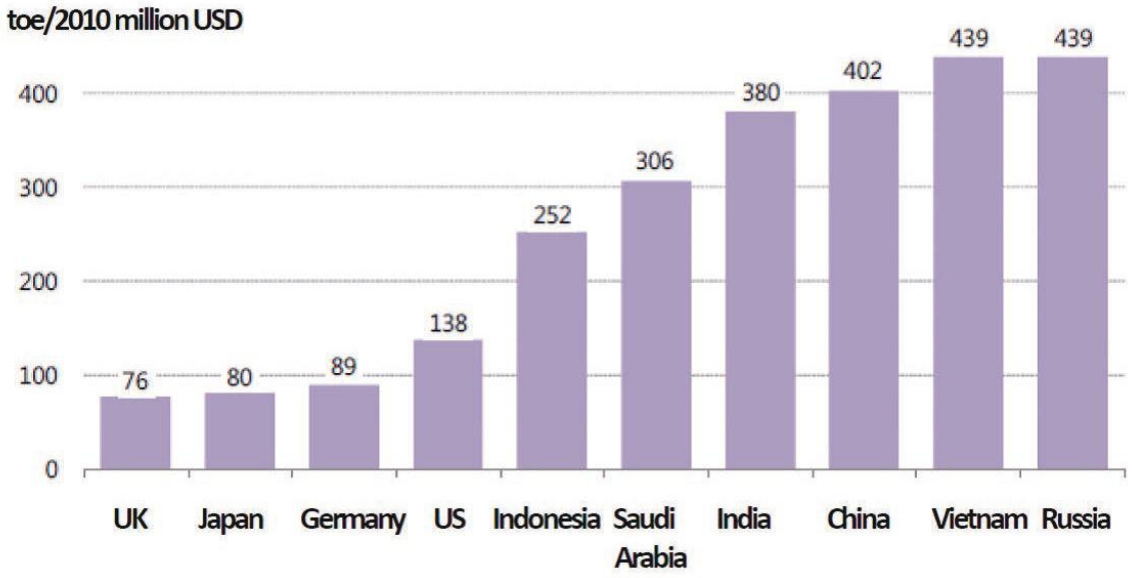


Figure 36 Energy Intensity of Major Countries (2013)

Source: Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

In the Advanced Technology case, energy demand in Asia could be 13% lower in 2040 compared with the Reference case by improving energy efficiency through such policies as more stringent energy efficiency standard. Asia accounts for 45% out of global energy saving. 60% of energy demand reduction in Asia comes from China. India also accounts for 21% of saving potential.

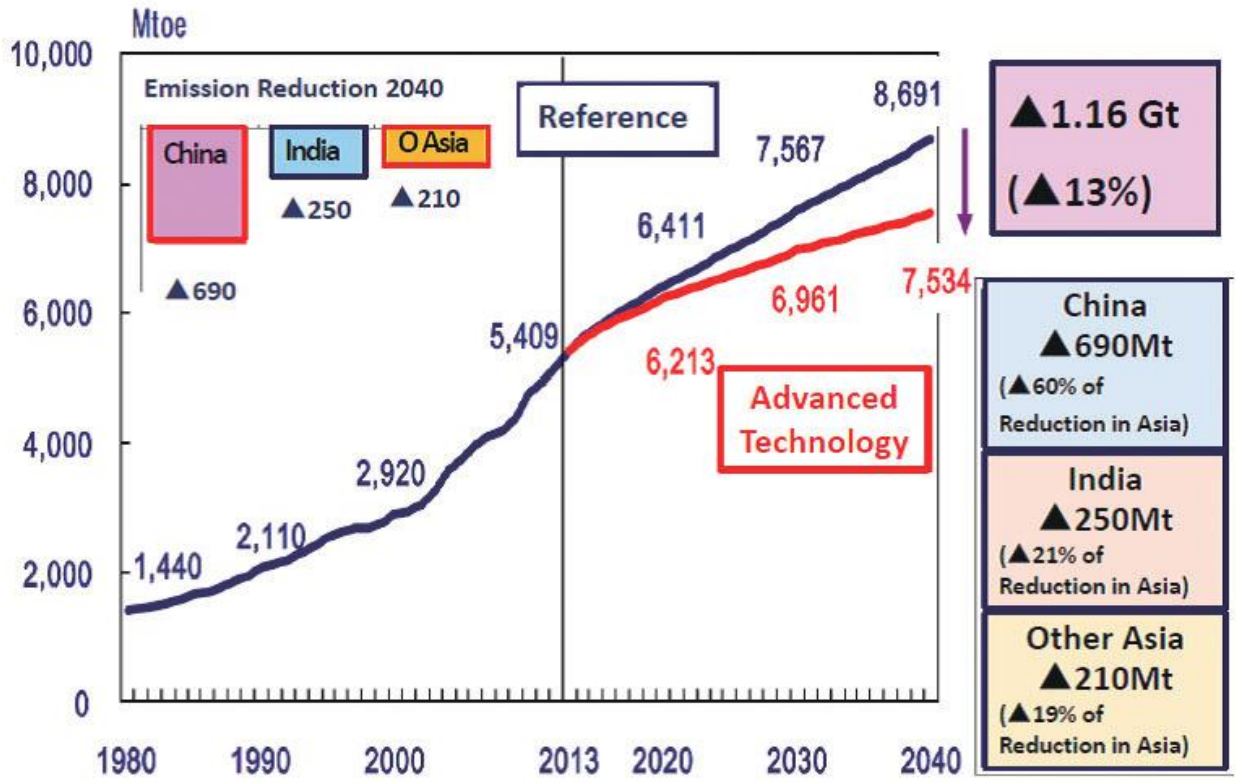


Figure 37 Energy Demand in Asia – Reference/Advanced Technology Case –

Source: Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

In the Advanced Technology case, oil demand in the Asian region could be saved by stricter fuel efficiency standard and more vigorous introduction of biofuel (biodiesel and bioethanol) by technology development and incentives/regulations.

The Advanced Technology case assumes 35% improvement of fuel efficiency for newly sold passenger vehicle and 25% improvement of average fuel efficiency for vehicle stock compared with the Reference case. The impact of fuel efficiency improvement for newly sold vehicle could be relatively limited in the Asian region since second-hand vehicles are still dominant in the market. The share of biofuels out of total oil consumption could be raised from 0.8% to 3.6% in China and from 0.3% to 2.7% in India. Asian region could account for 43% of global incremental introduction.

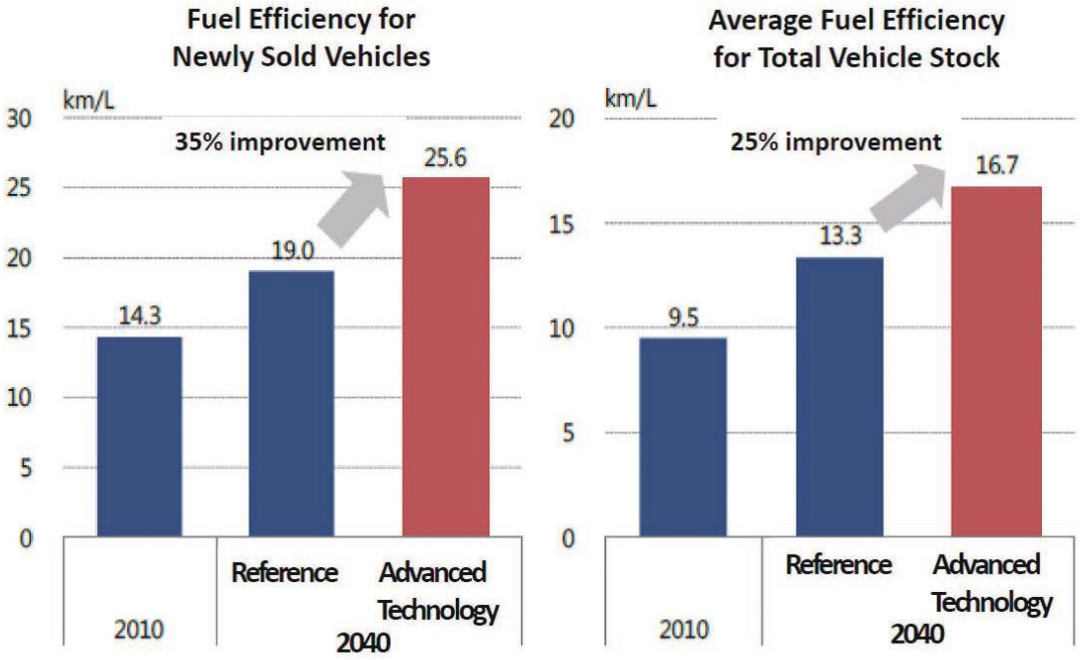


Figure 38 Improvement of Vehicle Fuel Efficiency

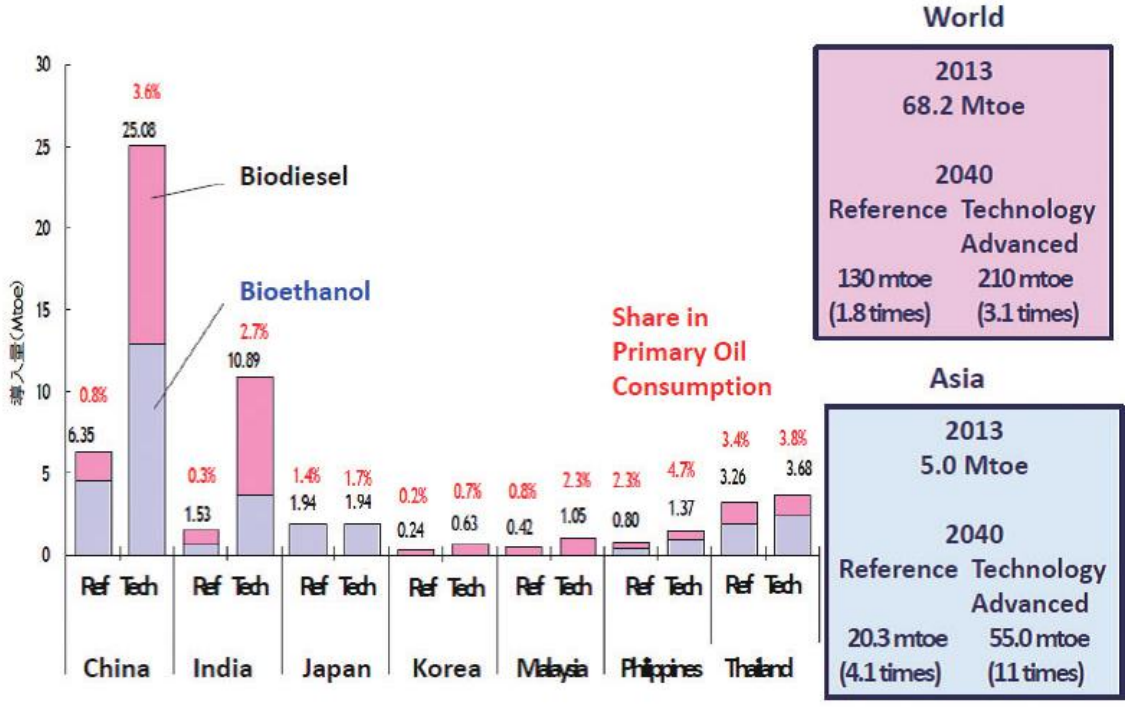


Figure 39 Biofuel Demand in Asia – Reference/Advanced Technology Case –

Source (Figure 34-25): Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

These policies could reduce oil consumption in the Asian region by 5.7 million barrel per day in 2040 compared with the Reference case. China and India accounts for 43% and 20% of total reduction in oil consumption.

Accordingly, Asia's oil import dependence in 2040 could be slightly reduced from 82% to 80%. China accounts for 64% of the total reduction of net oil import in the Asian region. On the other hand, India does not see much reduction of net oil import.

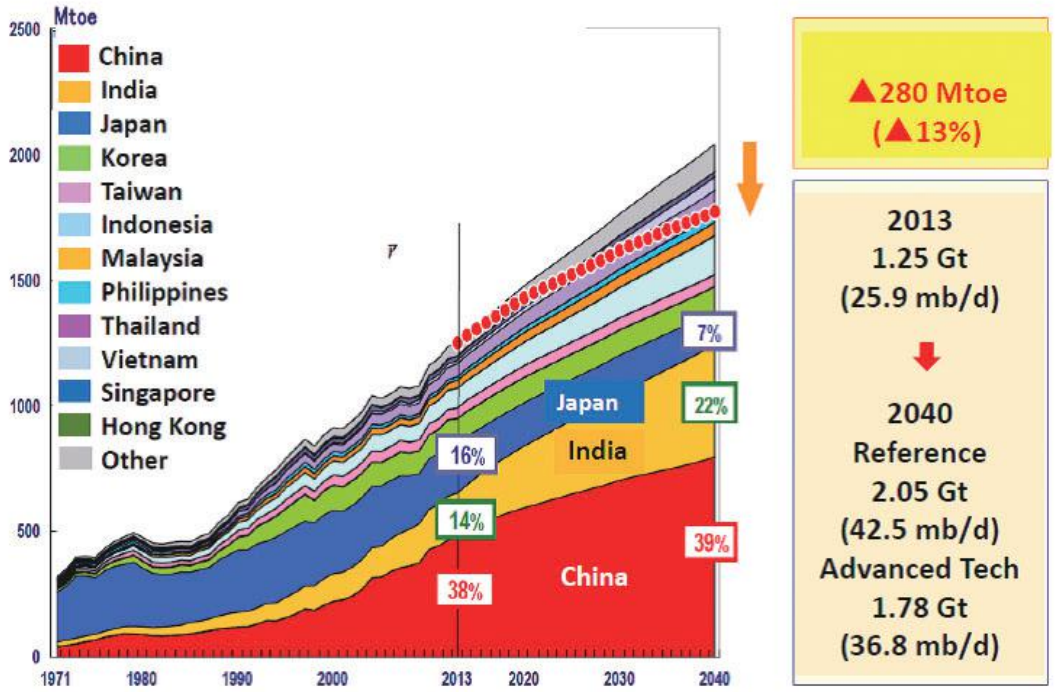


Figure 40 Oil Demand in Asia – Reference/Advanced Technology Case –

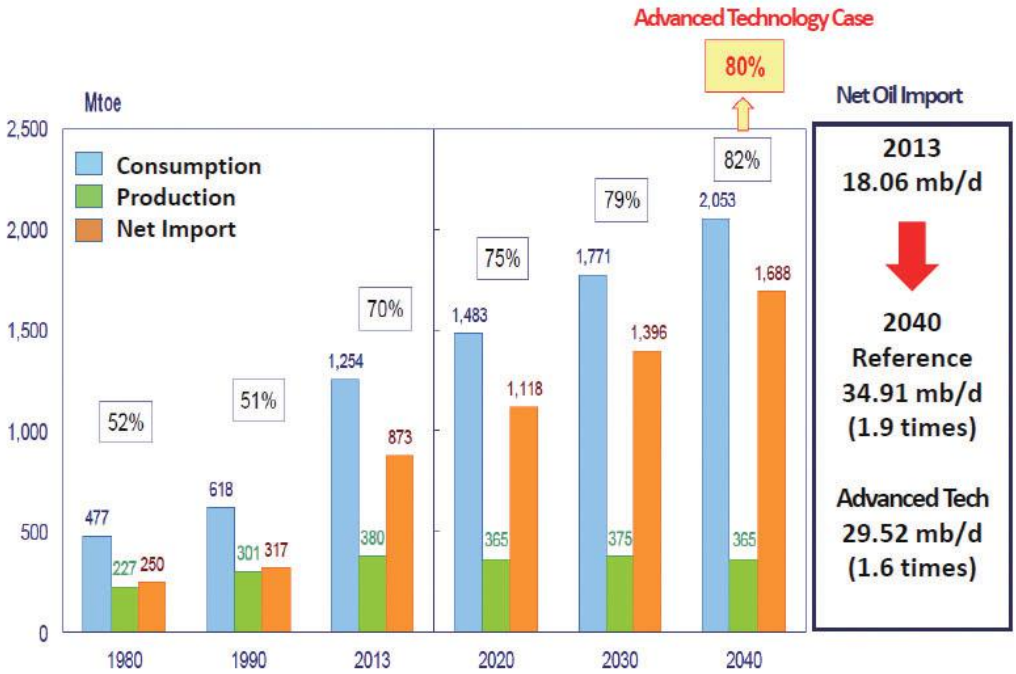


Figure 40 Oil Supply/Demand Balance in Asia – Reference/Advanced Technology Case –

Source (Figure 36-37): Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

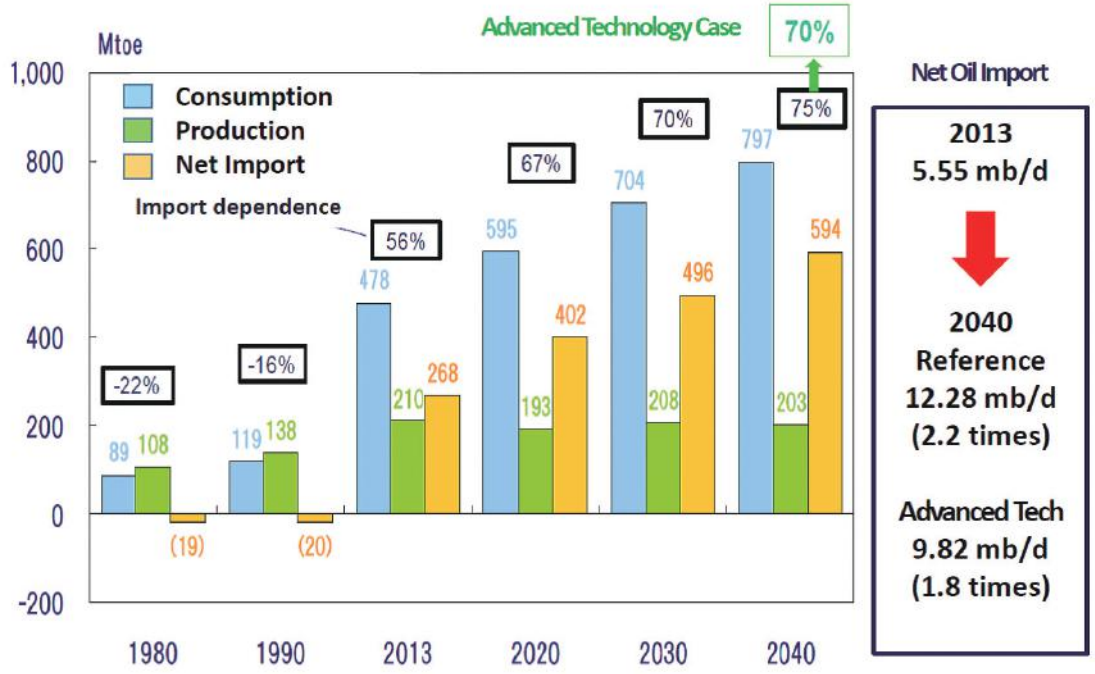


Figure 41 Oil Supply/Demand Balance in China – Reference/Advanced Technology Case –

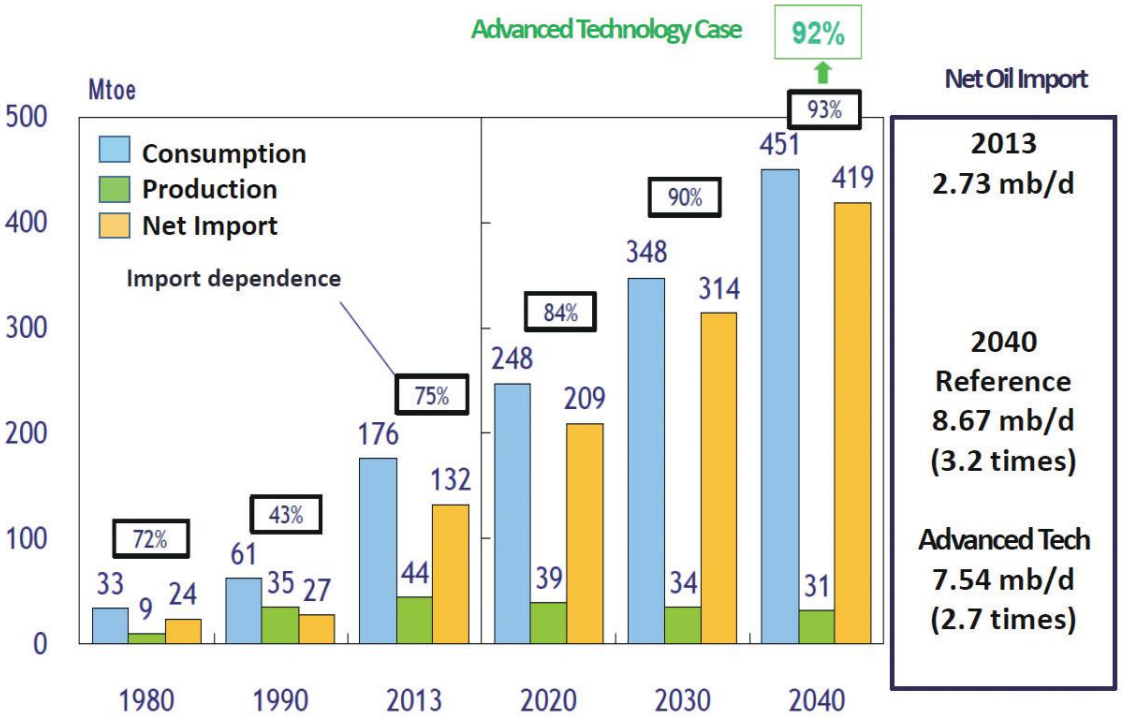


Figure 42 Oil Supply/Demand Balance in India – Reference/Advanced Technology Case –

Source (Figure 38-39): Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

7. How to Maximize Energy Efficiency Potential?

Energy efficiency improvement offers multiple benefits. It results in reduced demand and improve the security of energy systems across the four dimensions of risk: fuel availability (geological), accessibility (geopolitical), affordability (economic) and acceptability (environmental and social). Asian region, which is facing multiple challenges such as energy security and environmental sustainability due to its rapidly growing energy demand, will be the biggest beneficiary from improving energy efficiency.

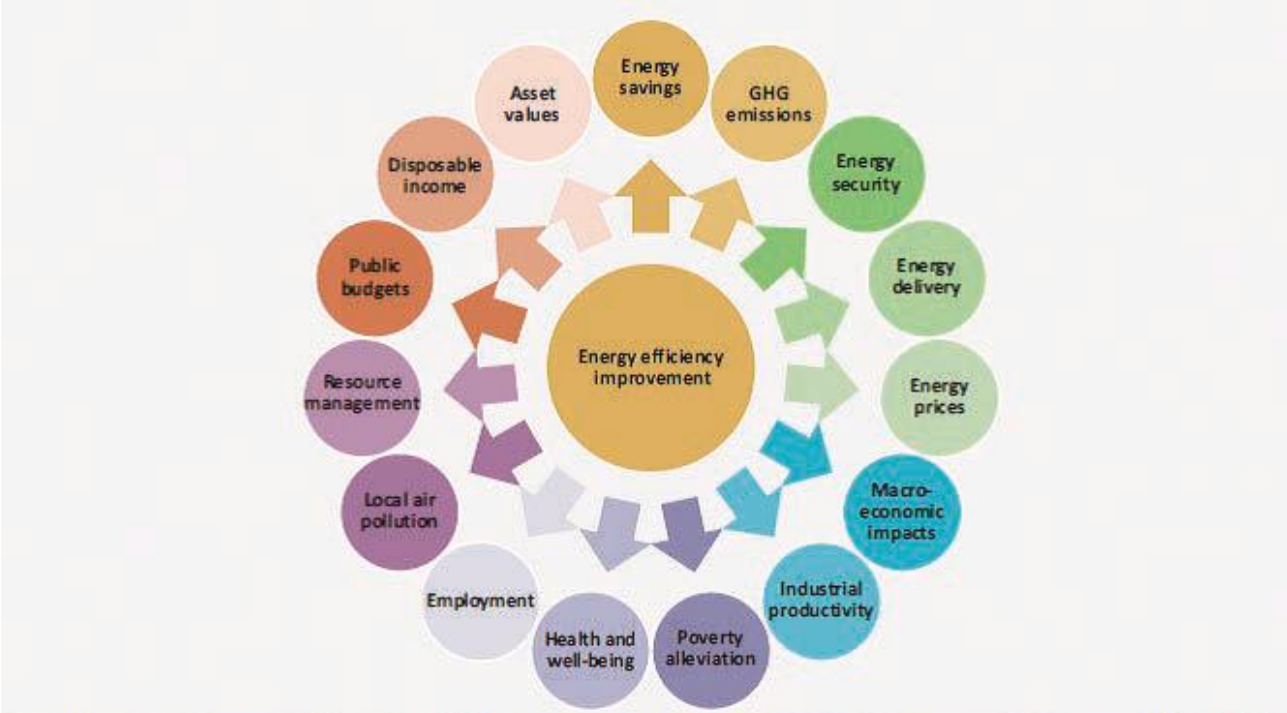


Figure 43 Multiple Benefits of Energy Efficiency

Source: IEA Multiple Benefits of Energy Efficiency (2014)

In order to capture ample energy saving potential as indicated above, five steps need to be taken.

Firstly, there should be proper understanding about the benefits, importance and impacts of energy efficiency. To this end, education, public campaign and information dissemination is crucial.

Secondly, energy consumption needs to be made visible for grasping energy efficiency potential and identifying appropriate policies. To this end, it is effective to appoint energy manager, conduct energy audit and procure ESCO services. It is the prerequisite to have appropriate energy data.

Thirdly, there should be policy actions for capturing energy efficiency potential in energy intensive sectors. These include mandating energy efficiency improvement, setting energy efficiency standards, introducing energy efficiency labeling and providing tax and financial incentives for introducing high efficiency equipment or imposing disincentives to less efficient equipment. Japan has been implementing various policies to promote energy efficiency improvement in industrial and energy sector.

Fourthly, there should also be mandatory energy efficiency standards for energy consuming appliances, automobiles and buildings. Japan's Top Runner Standard is highly successful example in this area.

Finally, innovative approaches should be explored through integration, systemization, automation and IOT for capturing broader efficiency potential beyond individual appliance/equipment.

Traditionally, Asian emerging economies have been inclined to focus on supply security to keep up with continuously growing energy demand. However, there is a growing recognition of the crucial role of demand side policies. They could benefit a lot from other countries' successful experience. For example, Japan is actively sharing its policy experience in improving energy efficiency since two oil crises with such countries as China and India.

Proper price signal is the prerequisite for capturing untapped energy efficiency potential. In this regards, widespread fossil fuel subsidies in the Asian region are serious impediments. For example, oil price subsidies occupy more than half of their fossil fuel subsidies in India and Indonesia, of which oil demand is rapidly growing. To maximize energy efficiency potential, widespread energy price subsidies should be reduced and eventually phased out. Current low oil prices offer good opportunities.

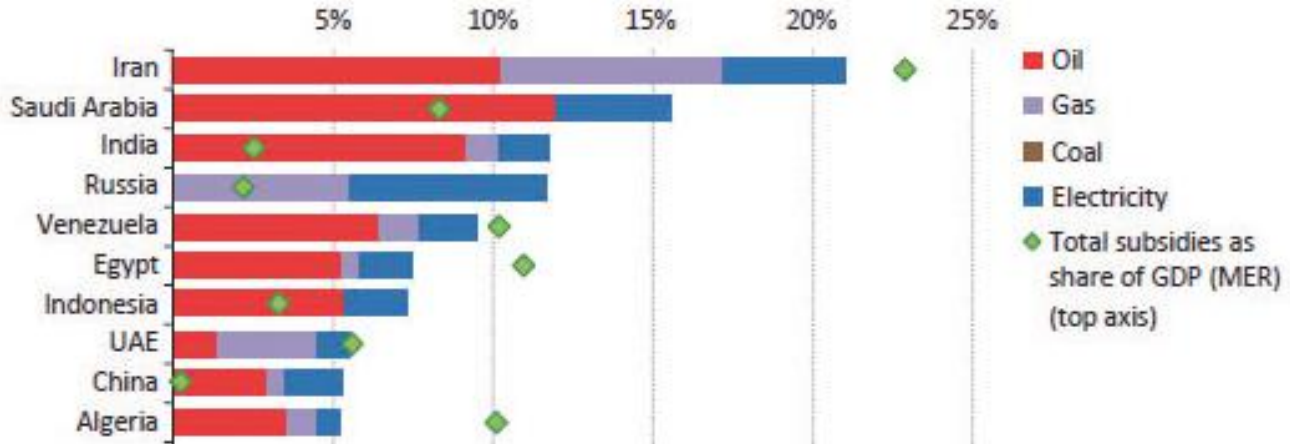


Figure 44 Economic Value of Fossil Fuel Consumption Subsidies

Source: IEA World Energy Outlook 2014

8. More Environmentally Friendly Energy Mix

The big difference between the Reference Case and the Advanced Technology Case is energy saving in power demand and power generation mix.

In the Advanced Technology Case, the total power generation in Asia will be 14.5% lower compared with the Reference Case backed by more vigorous energy efficiency policies. China and India will see 15.5% and 11.5% reduction respectively.

In addition to lower power demand, in the Advanced Technology Case, the share of coal fired power generation in 2040 will be substantially reduced from 53% to 38%. This reduction is particularly acute in China (60% ➔ 44%) and India (63% ➔ 41%). The share of natural gas will also be lowered from 19% to 14%. The share of nuclear and renewable in total power generation could instead increase from 9% to 18% and from 7% to 14% respectively. Again, these trends are more visible in China and India. As for China, the share of nuclear will increase from 9.4% to 16.6% and the share of non-hydro renewable will increase from 8.9% to 14.6%. As for India, the share of nuclear will increase from 7.3% to 15.9% and the share of non-hydro renewable will increase from 6.0% to 17.6%.

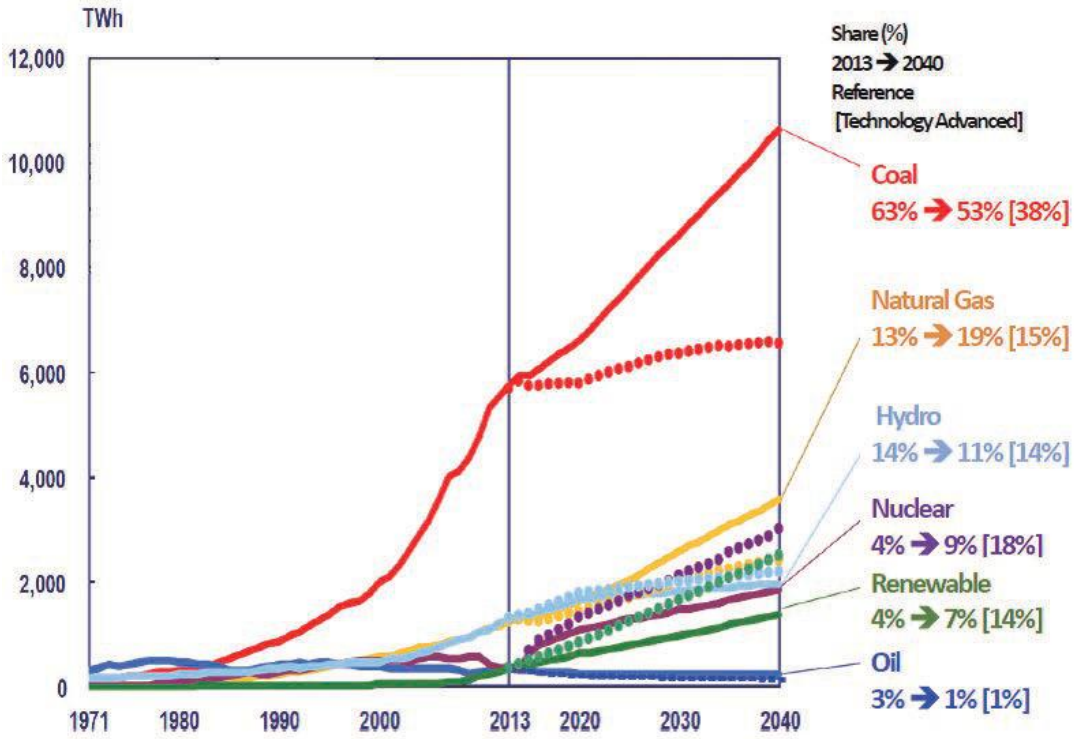


Figure 45 Power Mix in Asia – Reference/Advanced Technology Case –

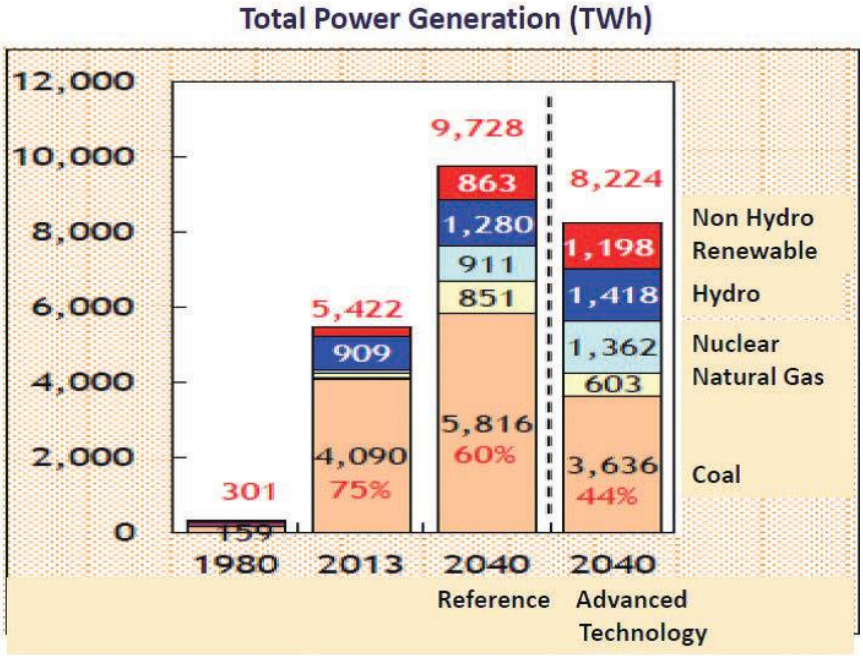


Figure 46 Power Generation Mix in China – Reference/Advanced Technology Case –

Source (Figure42-43): Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

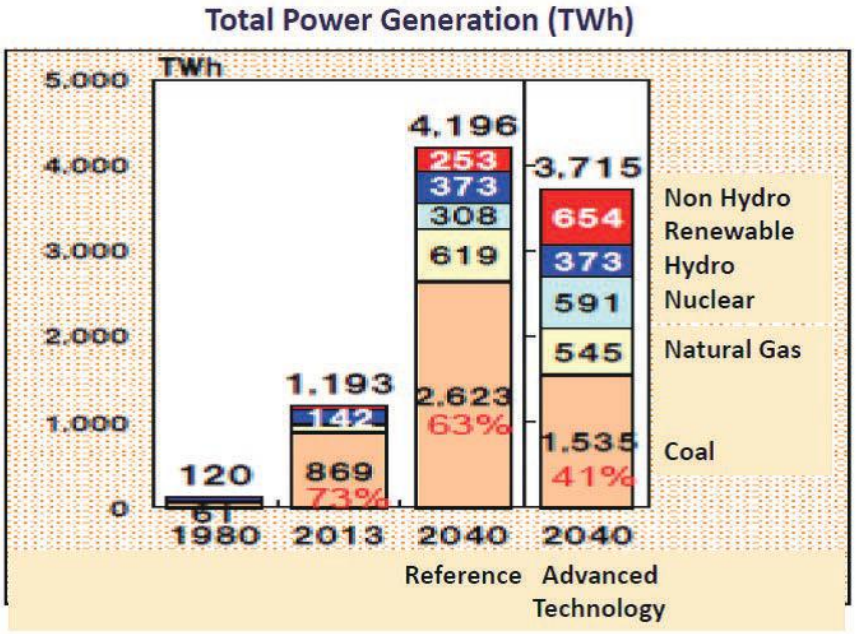


Figure 47 Power Generation Mix in India – Reference/Advanced Technology Case –

Improved energy efficiency and fuel diversification under the Advanced Technology Case will have significant impact on curbing the growth of CO_2 emissions. Energy-related CO_2 emissions in the Advanced Technology Case will be 8.6 Gt or 36% lower compared with the Reference Case in 2040. China and India accounts for 53% and 26% of the total emission reduction from the Reference Case. It should also be noted that more than half of the emissions reduction will come from energy efficiency.

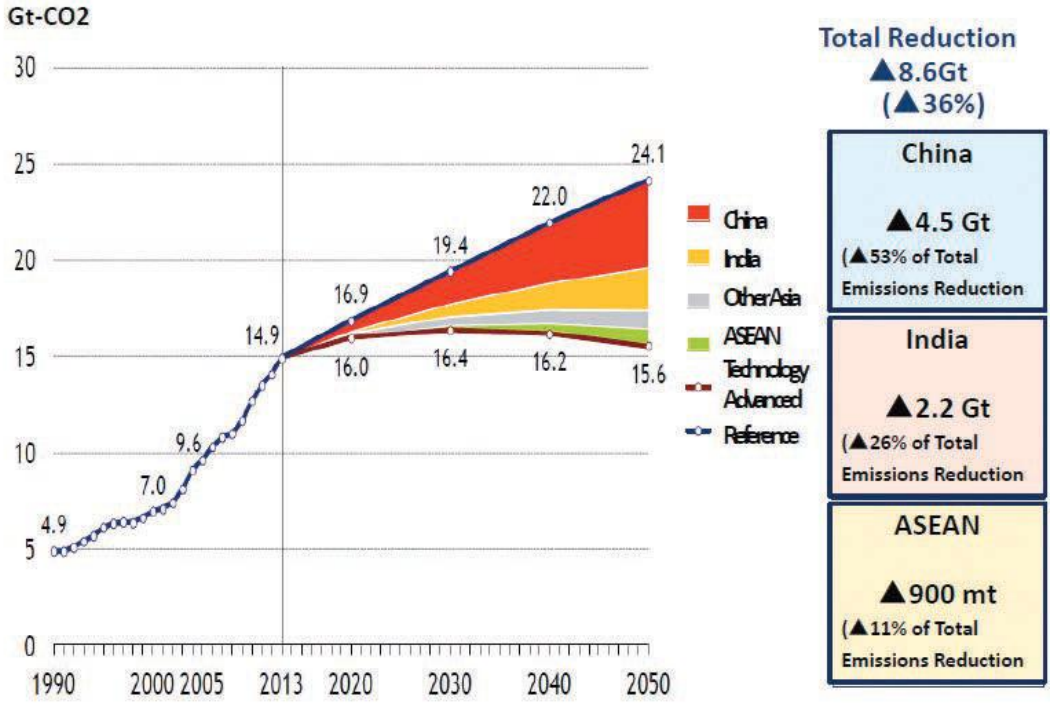


Figure 48 Mitigation Potential by Country – Reference/Advanced Technology Case –

Source (Figure44-45): Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

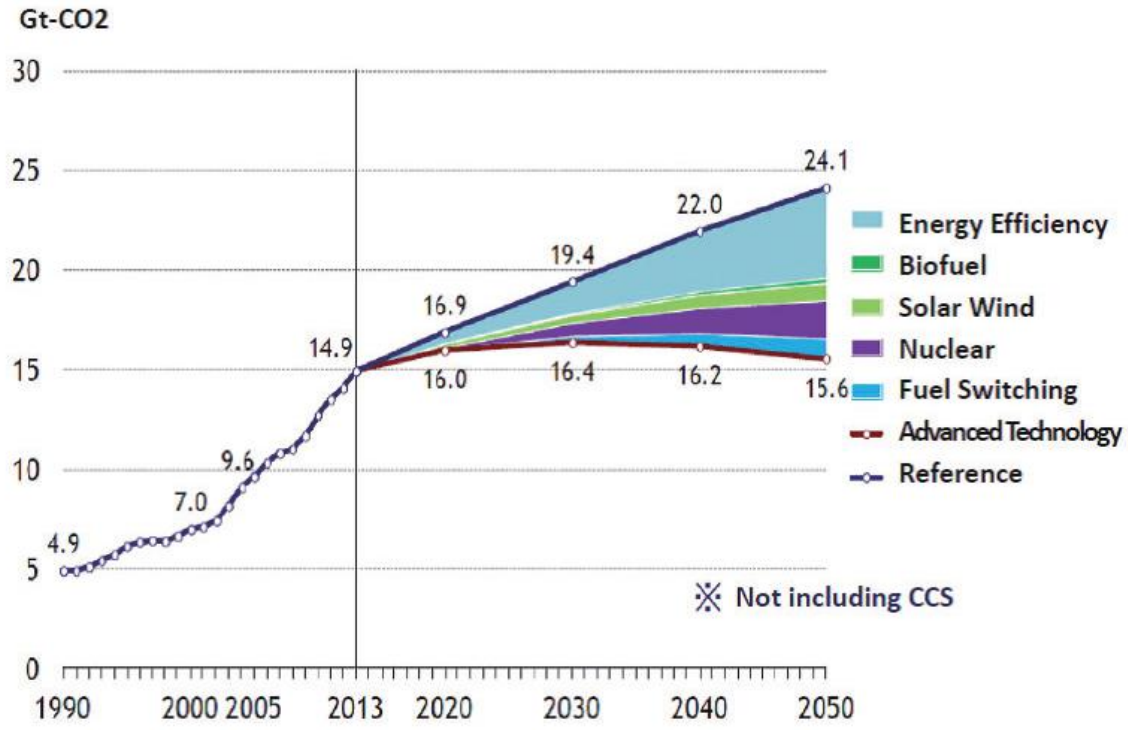


Figure 49 Mitigation Potential by Policy – Reference/Advanced Technology Case –

Source: Asia/World Energy Outlook 2015 Institute of Energy Economics of Japan

9. Nuclear in India

While India became the first developing country to use nuclear power in 1969, the current share of nuclear represents only 3% of the current power mix. India is aiming at supplying 25% of power from nuclear by 2050. This high ambition comes from policy makers' strong will to cope with India's energy policy challenges, namely, meeting rapdily growing energy needs, while managing high reliance on fossil fuel imports, including supplying over 300 million people currently without access to electricity.

New Policy Scenario of the IEA's WEO 2014 projects that global nuclear installed capacity will expand from 394 GW in 2012 to 230 GW in 2040, out of which China and India account for 73% (China: 14 GW ➔ 149GW, India: 5 GW ➔ 39 GW).

India has historically faced difficulties in expanding the use of nuclear power due to such factors as high population density, difficult land acquisition, local governance issues and country's high fiscal and current account deficit discouraging involvement of foreign capital. In addition, since India is outside the NPT due to its weapons program, it was largely excluded from trade in nuclear plants or mateials. However, in 2008, an agreement with NSG was reacged paving the way for India to trade with foreign suooluers of nuclear fuel and technologies. Since then, India has entered pacts with such countries as the US, UK, Canada, France, Russia and Korea. In Novermber 2016, India signed a civilian nuclear cooperation pact with Japan. This could allow Japan to transfer nuclear technology-related components and help build reactors in India. Nevertheless, the future of nuclear in India depends on how India could effectively overcome underlying challenges, in particular, securing finance for high upfront investment. There is a particular risk that India's nuclear liability

law could deter foreign suppliers, as they may be held liable for damages in case of nuclear accidents. Quality of power grid may constitute another bottleneck in integrating supply from large-scale nuclear power plants.

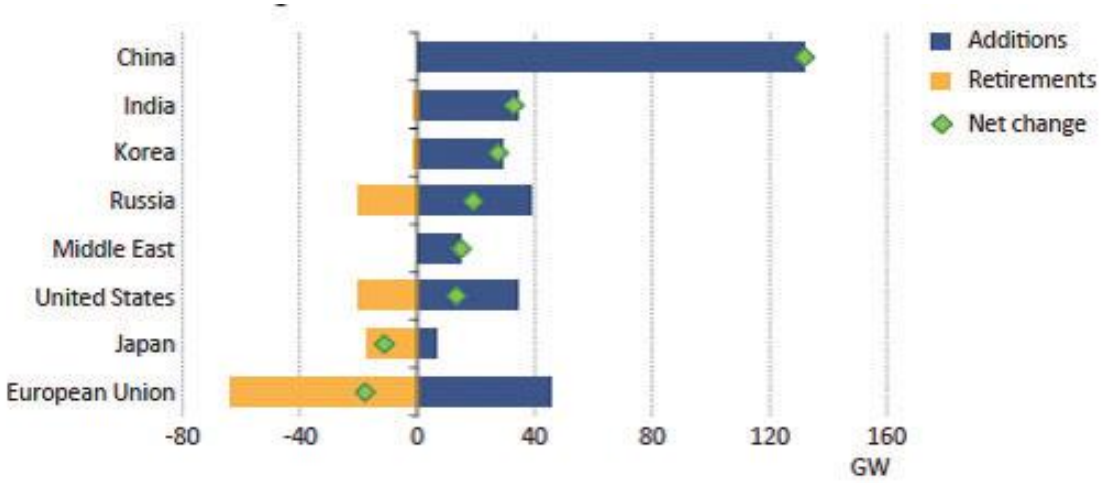


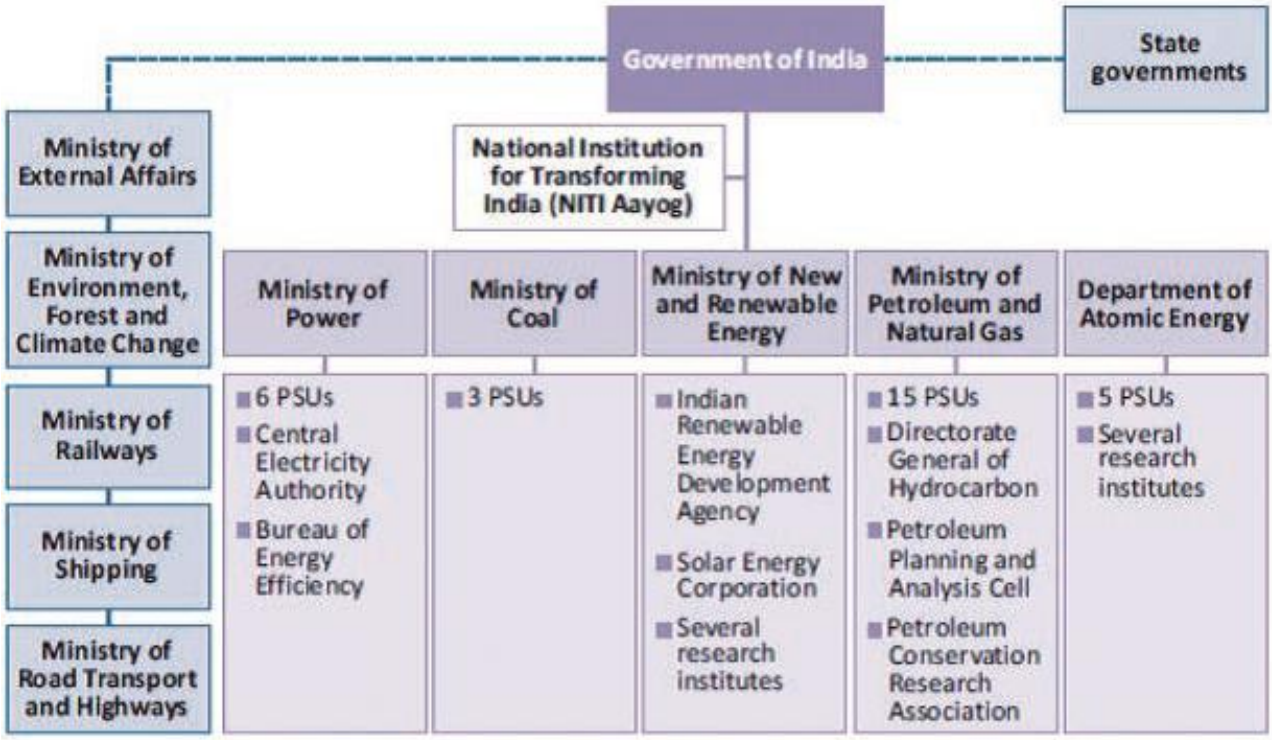
Figure 50 Nuclear Power Capacity Additions and Retirements by Key Region 2014-40

Source: IEA World Energy Outlook 2014 New Policies Scenario

10. Need of Holistic Energy Policy Planning

In order to achieve multiple policy objectives, namely, energy security, environment protection and economic growth, there needs to be a responsible authority charged with formulating and implementing a unified and holistic energy policy. For example, METI (Ministry of Economy, Trade and Industry) in Japan, NDRC (National Development and Reform Committee) in China and MOTIE (Ministry of Trade, Industry and Energy in Korea are serving for such function.

In the case of India, of which energy situation will have a big impact on the Asian energy market, the situation is more challenging since there is no such body. India has seberal ministries and other bodies, wach with partial responsibility for aspects of energy policy including power, coal, new and renewabvle energy, petroleum and natural gas and nuclear. Though effective cooperation is pursued by appointing a single Minister for Power, Coal, New and Renewable Energy, individual ministries exist as separate entities. In addition to duplication and inconsistent decision making between federal and state governments, this fragmented ministerial structure in the national level could pose challenges in formulating a consistent and effective energy policy. Furthremore, this structure is highly supply oriented. While Bureau of Energy Efficiency is in charge of energy efficiency policies, its overarching infleunce tends to be limited due to its belonging to Ministry of Power.



Notes: PSU = Public sector undertaking (state-owned enterprise). Other ministries with responsibilities relevant to the energy sector include the Ministry of Urban Development, Ministry of Water Resources, Ministry of Agriculture, Ministry of Finance and the Department of Science and Technology.

Source: Adapted from (IEA, 2012).

Figure 50 Main Institutions in India with Influence on Energy Policy

Source: IEA World Energy Outlook 2015

VI. Need of Regional Cooperation for Asian Energy Security

Asia's energy security cannot be achived only by efforts of individual countries. Given Asia's growing import dependence on the Middle East, regional cooperation for strengthening collective energy security is essential. On the other hand, there is no single organization or framework engaged in energy security with the participation of all key Asian players.

Table 2 Membership of Key International Forums

	IEA	APEC	EAS
ASEAN	×	○	○
Australia	○	○	○
China	×	○	○
India	×	×	○
Japan	○	○	○
Korea	○	○	○
Russia	×	○	○
US	○	○	○

Tom Cutler, former Director of the Office of European and Asia Pacific Affairs at the US DOE presents a side-by-side comparison of emergency response profiles for APEC, ASEAN, the IEA, the Sourth Asian Association for Regional Cooperation (SAARC) and the EU[5]. Current architecture of energy security collaboration in Asia is characterized by overlapping frameworks and diferentiated functionality.

1. Emergency Preparedness

In terms of oil supply security, the IEA has the most robust and well-elaborated mechanism, but its membership is limited to the OECD countries.

As a regional organization, the ASEAN is taking a strong initative through the APSA, but its coverage does not go beyond ASEAN region.

Since its formation in 1990, APEC Energy Working Group (EWG) has been addressing energy security as its core mission under the Energy Security Inititaive. Over the years, APEC EWG has been enhancing its interaction with the IEA driven by IEA Member countries in the APEC. APEC is in the process of enhancing its Oil and Gas Security Initiative (OGSI) including voluntary oil and gas security initiative and oil and gas security information network. This has led to APEC-IEA-ASEAN joint oil and gas emergency exercise in 2011. However, the APEC does not have India in its member while India will play a vivotal role in the world oil market in coming decades.

In terms of the membership, the East Asia Summit (EAS) offers the best potential for addressing emergency preparedness in the Asian region. However, the EAS Energy Cooperation Task Force (ECTF) is currently focusing its efforts on four work streams, namely, energy efficiency and conservation, energy market integration, biofuel and renewables. Emergency preparedness is not covered.

As presented above, each international forum has its own strength and weakness in terms of its membership, its focus on energy security and its scope of works related to oil supply security. Since it is not politically feasible or advisable to establish a completely new international forum, it is more pragmatic approach to make best use of existing forums.

Fully recognizing the need of closer cooperation with key Non-Members including China and India for maintaining its relevance to global energy security issue, the IEA has recently introduced the “Association Framework” with non-Members including oil supply emergencies in its scope. China, Indonesia and Thailand joined the Association. As the next step, participation of India in such cooperation is strongly recommended.

As presented above, the EAS has the most comprehensive coverage of key Asian players while it is not engaged in oil security. However, the Cebu Declaration (2007), based on which the ECTF was established, clearly reaffirmed “collective commitment to ensuring energy security for our region” and its intention to explore “possible modes of strategic fuel stockpiling such as individual programmes, multi-country and/or regional viluntary and commercial arrangements”. Given India’s increasingly important role in the global oil market, the ECTF could consider adding another workstream addressing oil emergency preparedness.

Alternatively, given the APEC EWG has been enhancing its emergency related work over the years, it

5 The Architecture of Asian Energy Security (2014)
http://www.nbr.org/publications/specialreport/pdf/SR46_Cutler_advance.pdf#search=%27the+architecture+of+energy+security%27

could merit consideration to engage India as an observer.

Whatever the option, it is crucial that key Asian players, most notably China and India, not only enhance their individual capability in oil emergency preparedness, but also strengthen their engagement in regional/ multinational framework for enhancing collective security.

Table 3 Oil Security Functions of Selected International Forums

	APEC	ASEAN	EAS	IEA	SAARC	EU
Regularized data collection	Monthly reporting to METI's Energy Data and Modeling Center in Japan in conjunction with the Joint Oil Data Initiative	ASEAN Centre for Energy (ACE) maintains an energy database	None, although the Economic Research Institute for ASEAN and East Asia (ERIA) issues research reports	Monthly reporting of stocks that are published by the IEA secretariat	None; the SAARC Energy Centre based in Islamabad focuses its efforts on "establishing an energy ring in South Asia" and is not focused on emergency response	Monthly reporting of stocks, published by the European Commission (EC)
Market monitoring	Asia Pacific Energy Research Centre (APERC) provides analytical support	ACE maintains an oil price database	None, but ERIA has begun collaborating with the IEA, including on joint studies	Secretariat's Statistics Division and Directorate of Energy Markets and Security; SOM and SEQ committees*	SAARC has a working group on energy but does not have a market monitoring function	EC Directorate for Energy
Dedicated energy emergency communication	Real-time emergency information sharing system run by APERC includes an Internet-based chat room and data sharing	ASEAN +3 Energy Security System, including chat room and bulletin board system	None	Yes; has also established emergency hotlines with China and India	None	Yes; has also established an early-warning system with Russia in the event of energy emergencies
Oil stock requirements	None, although members are encouraged to hold strategic stocks, including joint stocks, and to have emergency mechanisms and contingency plans in place	None, although holding stocks is encouraged	None	Crude only; 90 days of net imports	None, although the ADB recommended in 2011 that a SAARC strategic petroleum reserve be created	First mandated in 1968 and since increased (to crude/product 90 days of net imports or 61 days of consumption, whichever is higher); one-third of stocks must be held as product conforming to demand patterns; may be held by another EU member state

Source: Tom Cutler "The Architecture of Asian Energy Security" (2014)

	APEC	ASEAN	EAS	IEA	SAARC	EU
Collective action	None	Consultation on measures per the ASEAN Petroleum Security Agreement implemented through the ASEAN Council on Petroleum–led coordinated emergency response mechanism	None	Governing Board in accordance with International Energy Program agreement; emergency systems have been used and are tested every two years	None	Coordination Group chaired by the EC would coordinate stock drawdown and other emergency actions
Oil sharing	No	Yes, a 10% trigger; never used since establishment in 1977, although there have been bilateral exchanges	No	Yes, a 7% trigger; has been used three times since being established in 1974	No	No; inherently coordinated with IEA due to member overlap; EC attends IEA exercises
Legal basis	Based primarily on APEC Energy Security Initiative; no legally binding basis	Treaty-based sharing scheme also applies in periods of oversupply to ensure markets for oil exporter members of ASEAN	Has not yet addressed issues of emergency disruption and joint contingency planning	Legal basis is International Energy Program Treaty	No legal authorities for South Asian cooperation on energy security	Legal basis includes European Community treaty; conforming domestic legislation

NOTE: Market monitoring for the IEA is done in part through its Standing Group on the Oil Market (SOM) and Standing Group on Emergency Questions (SEQ).

2. Energy Efficiency Cooperation

Another area of possible regional cooperation is energy efficiency. As presented above, there is ample energy efficiency potential in the Asian region. About half of CO_2 emissions reduction potential comes from energy efficiency. In addition, energy efficiency has been taken up in various regional energy cooperation forum such as APEC EWG (EGEEC: Energy Efficiency and Conservation) and EAS ECTF (Energy Efficiency and Conservation Work Stream) as well as bilateral energy collaboration including China-Japan Energy Conservation and Environment Forum and India-Japan Energy Dialogue.

One advantage of addressing energy efficiency in regional energy collaboration is its generally positive environment. UN Climate Change negotiation is characterized with its confrontational atmosphere, discussion on energy efficiency in regional energy forum is much more constructive though energy efficiency will play a key role in CO_2 mitigation. This is the reason why a peer review process focusing on energy efficiency (PREE: Peer Review on Energy Efficiency) was established under the APEC EWG. Each PREE Peer Review focuses on the energy efficiency policies of a single volunteer APEC member economy. The work is carried out by Review Team of experts from other member economies and international institutions jointly selected by the host economy and APERC (Asia Pacific Energy Research Center). The Review Team visits the host economy and interviews a range of people knowledgeable on energy efficiency issues including government ministries, research institutions, industry associations, energy companies, electricity and gas market regulators, industry associations, local government and other relevant stakeholders. A draft report including recommendations is prepared by the Review Team and agreed to by the host economy. It is then discussed at the APEC EWG. In some cases, a "Follow-up PREE" may also be conducted to assist host economies in implementing the recommendations of the PREE review teams. Since its launch in 2009, New Zealand, Chile, Viet Nam, Thailand, Philippines, Malaysia, Indonesia, Brunei, Peru and Chinese Taipei have experienced the PREE.

It is a unique case that such OECD-type peer review is conducted in the APEC EWG. This means energy efficiency is one of the areas where emerging economies find benefit in international collaboration and deeper discussion including policy recommendations could be envisaged beyond a simple information exchange.

Such practices could also be replicated in the EAS process where India participate. Alternatively, India could be invited in the PREE initiative.

3. Interconnection among Key Asian Countries

An ultimate form of regional energy collaboration is interconnection among key players in the Asian region, like the electricity and gas interconnections in the EU region.

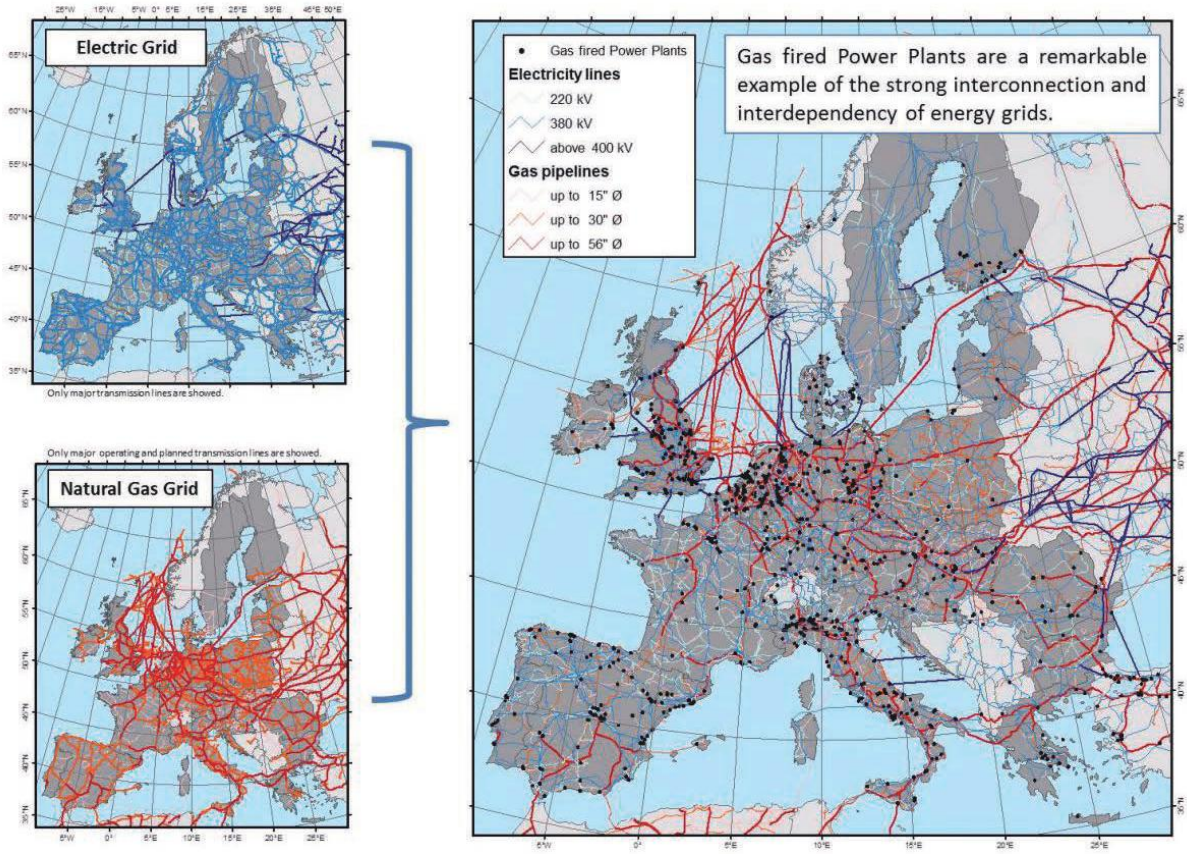


Figure 51 Energy Interconnection in the EU

Source: European Commission

Inspired by the EU example, the ASEAN is promoting TAGP (Trans ASEAN Gas Pipeline) and APG (ASEAN Power Grid).

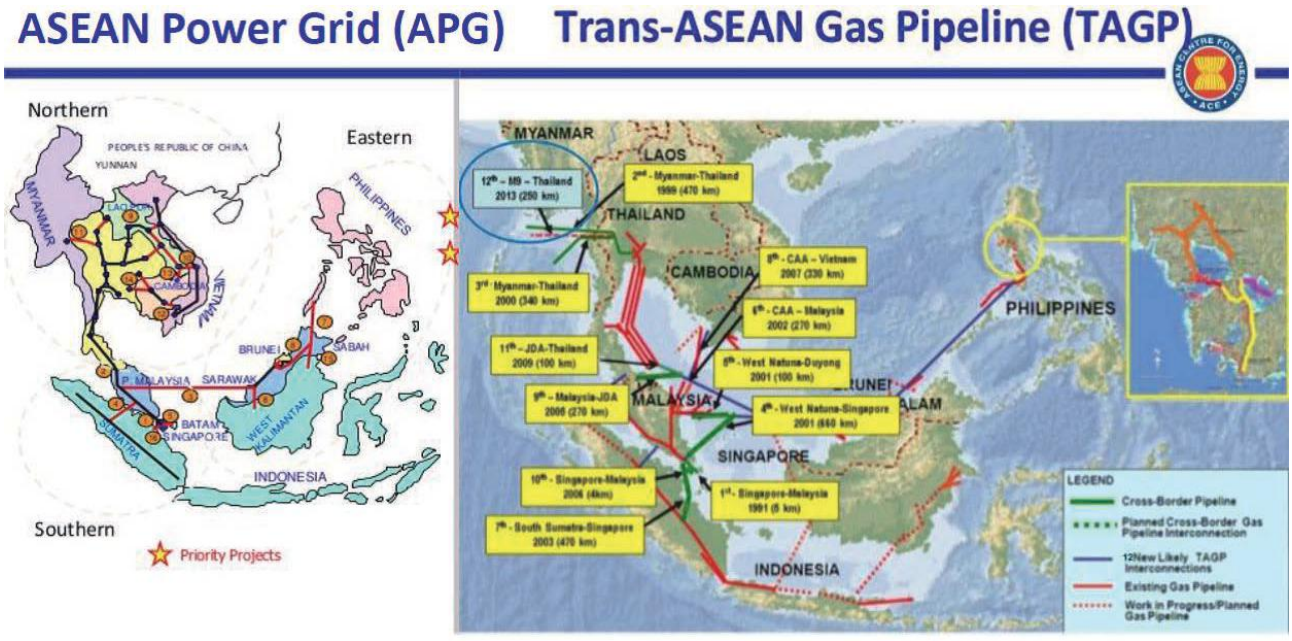


Figure 52 ASEAN Power Grid and Trans ASEAN Gas Pipeline

Source: ASEAN Secretariat

However, a collective energy arrangement in the Asian region is much more complicated than that in Europe. In the case of Europe, countries are more or less homogenous and European integration process is backed by a strong political will since the end of the World War II. In addition, the European Commission has been playing a pivotal role in promoting energy market integration through a series of Directives and enhancing electricity/gas interconnections. Europe also has established the Connecting Europe Facility (CEF), for funding priority projects in the field of energy, transport and critical digital infrastructure from 2014 to 2020. In November 2013, Parliament endorsed the deal reached with the Council on the budget for the CEF, with EUR 5.12 billion earmarked for the development of trans-European energy infrastructure projects. Above all, there has been mutual confidence among EU Member States underpinning enhancing interconnection.

On the contrary, Asian region is much less homogenous, having a mix of energy exporters and importers with different resource endowments, economic disparities and different historical background and different national political system. In addition, there are territorial disputes among key players. Last but not least, there is not yet sufficient level of mutual confidence among key players. Under such situation, apart from the ASEAN, which is aiming at the EU-type direction, it will still be far in the future to envisage an EU-type energy community sharing common destiny in the Asian region.

Having said that, there are a couple of visionary ideas about future natural gas/electricity network throughout Asia. Pan Asian Gas Pipeline (PAGP) is a gas pipeline network extended from the Trans ASEAN Gas Pipeline (TAGP) northward to China, Japan and South Korea and southward to Indonesia, East Timor and Australia. Those who advocate this concept argue that this huge gas pipeline network would span the transition from coal-fired power to less pollutant natural gas.

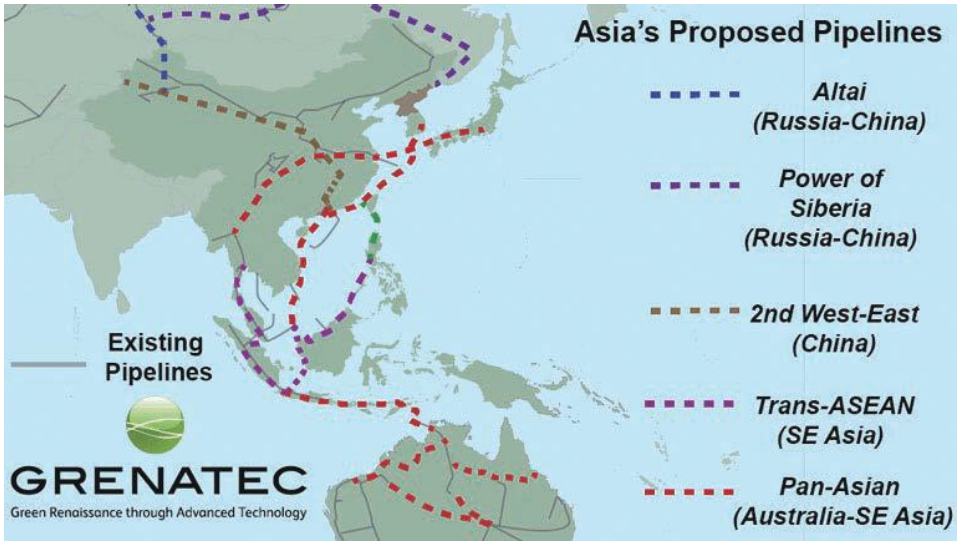


Figure 53 Pan Asian Gas Pipeline Network

Source: GRENATEC

The core idea of the Asia Super Grid (ASG) is that wind farms (and possibly solar farms as well) in the Gobi desert can be linked via high-tension transmission lines to Korea, Japan and possibly Russia; to China; and hence (more speculatively) to Taiwan, Thailand, the Philippines, and even India. In March 2016,

State Grid Corporation of China, Korean utility KEPCO, Russia's grid operator PJSC ROSSETI and Japan's Softbank, mobile provider-turned renewable energy developer signed the MOU for undertaking F/S for a grid in the Northeast Asian region as a first step.

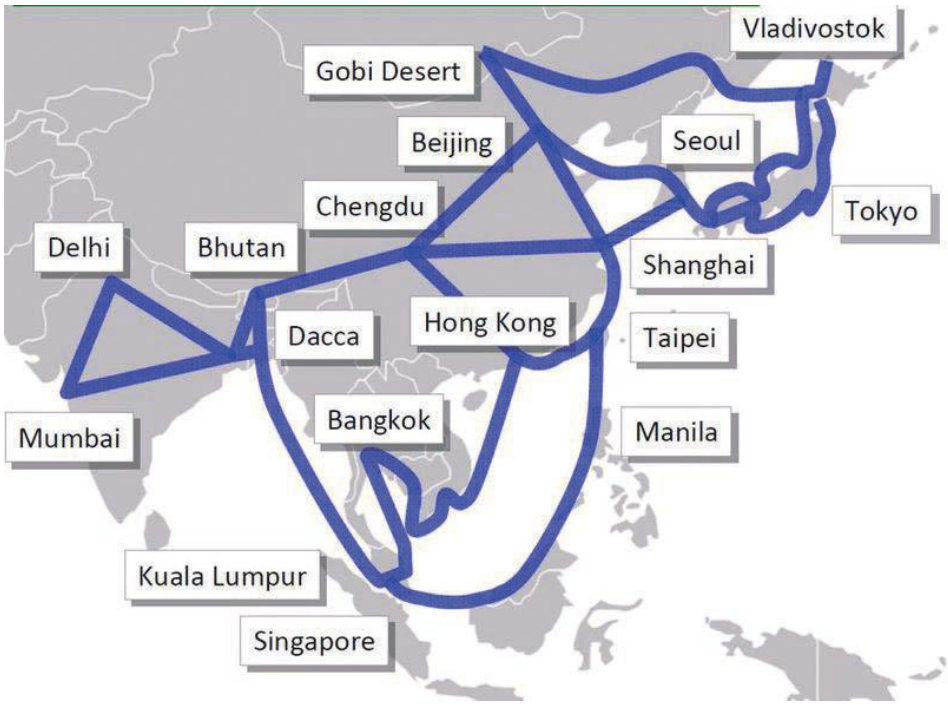


Figure 54 Asia Super Grid

Source: Renewable Energy Foundation

While these concepts are still farreaching ones, they deserve being kept on the table expecting that regional geopolitical environment warrants their pursuit.

Conclusion

With rapidly growing energy demand in the Non-OECD Asia including China and India and declining domestic energy production, energy import dependence in this region will icrease over the coming decades. India and South East Asia, of which energy demand marks particularly high growth, will be increasingly dependent on oil import from the Middle East. This will make the sea-born energy trade in the Indian Ocean further crucil for the energy security and economic prosperity of the region.

On the other hand, the Indian Ocean is exposed to multiple potential risks, including natural disaster, piracy, terrorist attack, failed or rogue states and state-to-state conflict. Disruption of energy flow in the Indian Ocean will give detrimental impact not only to the Asian economy but also the global economy as a whole.

Furthermore, Non-OECD Asia accounts for the bulk of incremental energy-related CO_2 emissions between now and 2040, which will not only damage global climate system but also give negative impact to the Indian Ocean region.

Though security risks in the Indian Ocean need to be addressed by individual defense capability and regional security arrangements, energy policy makers in the region could also take various measures for

alleviating potential negative impact in terms of energy security and environmental sustainability. These include enhancing emergency preparedness, increasing domestic production, diversifying supply route, improving energy efficiency and introduction of lower/zero carbon energy.

One challenge in this region is the lack of regional cooperation framework engaging all the key players. EAS (East Asia Summit) engaging US, Australia, Japan, Korea, China, ASEAN, India and Russia could potentially play a role. However, in the area of emergency preparedness and energy efficiency, the cooperative activities in the EAS is modest compared with the APEC and much weaker compared with the IEA. Given India will play increasingly crucial role in the world energy market in the coming decades, it is an urgent task how to effectively engage India in regional energy cooperation.

Chapter 3

Commercial Shipping in the Indian Ocean: Safety, Security and Structures

Chapter 3 Commercial Shipping in the Indian Ocean: Safety, Security and Structures

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The Indian Ocean region is a large maritime-littoral space characterized by globalization pivoting on trade and shipping. Its geo-economics significance has been one of the primary drivers to shape the contemporary discourse focusing on at least four issues; (a) trade and energy flows; (b) safety and security of sea lanes; (c) maritime infrastructure development to ensure economic vibrancy in the region; and (d) socio-economic growth of the people of the region through sustainable use of the oceans. These issues also shape a number of geo-political and geo-strategic dynamics that affect the nature and conduct of commerce both within the region and beyond.

At another level, several non-regional countries have emerged as important stakeholders in the Indian Ocean and these are driven by a number of political, economic, strategic and environmental interests which makes the region an arena for a variety of competitive and cooperative transactions. These are conducted through bilateral, trilateral and multilateral engagements among the regional countries and external stakeholders.

In the above context, this paper explores the prospect for the increase of commercial shipping in the Indian Ocean and identifies future risks and challenges. It begins by laying out a brief historical narrative of the Indian Ocean, and then highlights the physical characteristics that shape the geo-political, geo-economic and geo-strategic importance of this large sea space. Further, the paper identifies commodities and cargo flows through the region and examines regional ports and pipelines infrastructure that contribute to the flow of commerce and energy through the region. Given that sea based commerce attracts a number of security related vulnerabilities, the paper highlights the possible politico-strategic and maritime/naval engagements among Australia, India, Japan and the US and suggests a road map for future maritime cooperation.

I. Historical Context of Indian Ocean

In its historical construct, the Indian Ocean facilitated links among various trading systems of the Greeks, Romans, Egyptians, Jews, Arabs, Indians and Chinese. The monsoon winds played a pivotal role in the Indian Ocean trade with Arab navigators having carefully observed and recorded the regularity and direction of these winds resulting in a burgeoning maritime enterprise in the Indian Ocean. These trading interactions were generally benign; the legendary Chinese mariner Zheng He had undertaken expansive and extensive voyages to the Indian Ocean. The Chinese fleet called at ports to engage in trade, diplomacy as also to establish suzerainty.

The appearance of the Portuguese in the Indian Ocean heralded the arrival of an extra-regional naval

power in the Indian Ocean which established itself in Socotra, Hormuz and Malacca, the maritime gateways of the Indian Ocean. The Portuguese were followed by the Spaniards, Dutch, British, and the French who sailed into the Indian Ocean as traders, and later supported by their navies, emerged as colonial rulers for over four hundred years. The opening of the Suez Canal in 1869 resulted in Britain emerging as a dominant power in the Indian Ocean and the British Royal Navy enjoyed undisputed command over the oceanic trade routes. Decolonization in Asia and the fall of the imperial empire resulted in Britain losing power ascendency in the Indian Ocean and in 1967 it decided to withdraw its military presence east of Suez.[1] In the post-World War period, global order shifted in favour of the US and it currently enjoy a favourable maritime domination in the Indian Ocean making other powers dependent upon it.

In current times, the Indian Ocean continues to be of critical importance to the global economy. A number of western and Asian powers have made forays into the Indian Ocean in support of their economic and security interests including protection of sea based commerce and merchant shipping.

II. Geography and Geostrategic Importance

The Indian Ocean stretches over an area of about 21,400,000 square nautical miles, covers nearly 14 per cent of the earth's surface, and is the third largest body of water.[2] It features important maritime gateways - Strait of Hormuz, Straits of Malacca, and Bab-el-Mandeb Strait and the Suez Canal - which link the Indian Ocean with the Mediterranean Sea and the Pacific Ocean. These are of political, economic and strategic significance and figure prominently in the calculus of economists, politicians, strategic community and the military. The Indian Ocean is witness to intense shipping activity and the sea-lanes connecting the Pacific Ocean and the Atlantic Ocean pass through the region. The primary sea-lanes run towards the west into the Red Sea to pass through the Suez Canal, towards the south to round the Cape of Good Hope and in the east through the Straits of Malacca before joining the Pacific Ocean.

III. Mapping Trade in the Indian Ocean: Flows and Major Commodities

It is estimated that nearly 100,000 vessels transit through the Indian Ocean carrying commodities such as bulk cargo, oil and gas, grain and containers which crisscross through the ocean. Nearly 120,000 ships pass through the Straits of Malacca annually[3], and over 17,000 ships transited through the Suez Canal in 2015 and their cargo included 183 million tons of oil and related products and 27 million tons of LNG.[4] According to

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1 Tore T. Petersen, *Richard Nixon, Great Britain and the Anglo-American Alignment in the Persian* Gulf and *Arabian Peninsula* (Eastbourne : Sussex Academic Press, 2009), pp.22-27.

2 R C Sharma and P C Sinha , *Indian Ocean Policy* (New Delhi: Kamala Publishers, 1994), p.25.

3 According to Nippon Foundation, in 2014, nearly 120000 transited through the Straits of Malacca in 2014. For more details see "Large Tankers Crowd the Straits of Malacca and Singapore", http://www.nippon-foundation.or.jp/en/what/spotlight/ocean_outlook/photos/ (accessed 01 October 2016).

4 According to the Suez Canal authority, in 2015, it recorded 17,483 ship transits through the canal and these carried 822 milion tons of cargo. For details see https://www.suezcanal.gov.eg/TRstatHistory.aspx?reportId=4 (accessed 01 October 2016). included 20 per cent petroleum tankers and 5 per cent LNG tankers which carried approximately 3.2 million bbl/d.

the US Energy Information Administration, the Strait of Hormuz recorded an oil flow of 17 million barrels per day in 2013 which is nearly 30 per cent of all seaborne-traded oil.[5]

The Persian Gulf is estimated to contain significant hydrocarbons reserves i.e. 40 per cent of global oil and 35 per cent of global gas, which can potentially meet nearly 30 per cent of global demand. The estimated oil and gas reserves of the Persian Gulf countries are below:

Table 1

	Bahrain	Iraq	Iran	Kuwait	Oman	Qatar	Saudi Arabia
Oil (bbl.)	0.12	141.35	154.58	104.00	5.50	25.38	267.91
Gas (tcf)	3.25	111.52	1,187.00	63.50	30.00	890.00	287.84

Source: Administration, US Energy Information Administration; http://www.eia.gov/countries/index.cfm?view=reserves

At least six major Asian economies i.e. Australia, China, India, Japan, Singapore and South Korea, are dependent on the Persian Gulf and Africa for their energy needs. Given the geography of these sources of energy, a larger part of energy resources carried in tankers pass through the Indian Ocean. Among these, China is the second largest consumer of oil in the world. The Persian Gulf region is the primary source of China's crude oil imports - 3.2 million bbl./d (52 per cent), followed by Africa 1.4 million bbl./d (22 per cent).[6] This aspect is discussed in detail later in the paper.

The US Energy Information Administration also notes that Japan is the world's largest liquefied natural gas importer, second-largest coal importer, and third-largest net importer of crude oil and oil products. Further, it imports virtually all its fossil fuels and roughly 84% is soured from the Persian Gulf. [7] Likewise, South Korea is highly dependent on the Persian Gulf oil and in 2014 it sourced over 84 per cent of its crude oil imports totaling nearly 2.5 million b/d of crude oil and condensate, making it the fifth-largest importer in the world. [8]

Among the major Indian Ocean economies, India relies on the Persian Gulf for nearly 58 per cent of its imports.[9] According to the Australian Institute of Petroleum (AIP), nearly 85 per cent of its refined fuel is sourced from across Asia - 58 per cent of crude oil and feedstock from the Asia Pacific, 21 per cent of crude oil from Africa, and 13 per cent from the UAE.[10] Singapore is a major energy hub for refining and transshipment and it imported 174 Mtoe of energy products in 2015 and 7.2 per cent higher than the 162 Mtoe recorded in 2015. [11]

5 "World Oil Transit Chokepoints", US Energy Information Administration, available at https://www.eia.gov/beta/international/regions-topics.cfm?RegionTopicID=WOTC (accessed 01 October 216).

6 For more details see http://energy.gov/sites/prod/files/2016/04/f30/China_International_Analysis_US.pdf (accessed 30 October 2016).

7 For more details see https://www.eia.gov/beta/international/analysis.cfm?iso=JPN (accessed 30 October 2016).

8 For more details see https://www.eia.gov/beta/international/analysis.cfm?iso=KOR (accessed 30 October 2016).

9 For more details see http://www.eia.gov/todayinenergy/detail.php?id=27132 (accessed 30 October 2016).

10 For more details see http://www.abc.net.au/news/2016-02-24/fuel-imports-a-risk-amid-south-china-sea-tensions-nrma-advisor/7149648 (accessed 30 October 2016).

11 "Singapore Energy Statistics (SES)" available at https://www.ema.gov.sg/cmsmedia/Publications_and_Statistics/Publications/SES/2016/Singapore%20Energy%20Statistics%202016.pdf (accessed 21November 2016).

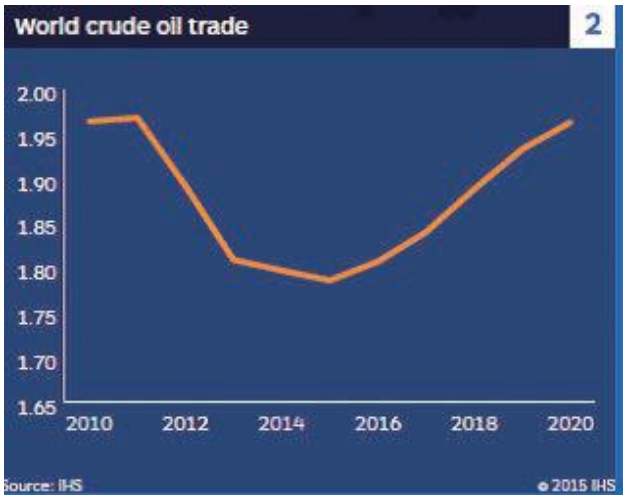

Figure 1

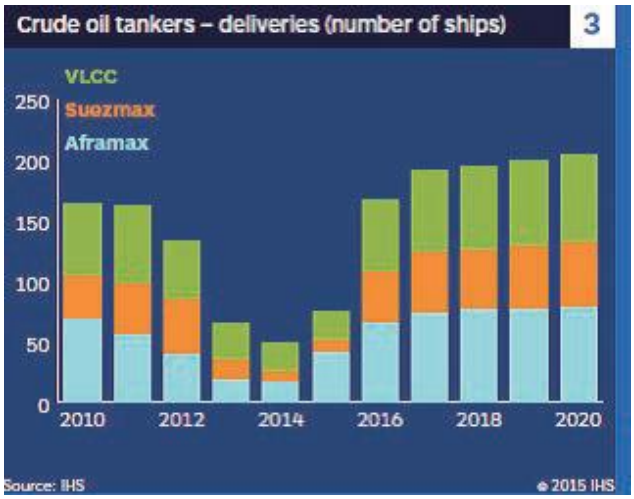

Figure 2

Source: IHS Maritime & Trade Insight: 2016 Global Trends Outlook https://www.ihs.com/pdf/2016-global-maritime-and-trade-trends-infographic_237518110915583632.pdf

IHS Maritime & Trade Insight: 2016 Global Trends Outlook points that beginning 2016 (Figure 1), the demand for crude oil is expected to incase at the global level which in turn would drive the requirement for crude tankers. The report also notes that "there is an oversupply of crude oil, there is a healthy demand (unlike coal and iron ore in dry bulk shipping) which is driven by low prices, availability of funds in developed countries and refineries throughput". The above trends indicate favorable demand for energy resources that can potentially result is increased shipping activity adding to the existing traffic in the Indian Ocean.

The revolution in cargo packaging (pellet and break bulk) and advent of shipping container (20, 40 and 60 feet referred to in terms of TEU) revolutionized the way commodities are shipped across oceans. The major container trading routes through the Indian Ocean are below:

Table 2

Route	West bound	East bound	Total
Asia-Mediterranean	4768,000	2061,000	6739,000
Asia-Middle East	3700,000	1314,000	5014,000

Source: Trade Routes, World Shipping Organization, http://www.worldshipping.org/about-the-industry/global-trade/trade-routes

Figure 3 Global Maritime Trends 2030: Container Trade

Source : http://www.nextbigfuture.com/2014/10/world-gdp-should-double-by-2030-and.html

Figure 4 & 5

Source: 2016 IHS Maritime & Trade Trends

The graphs above suggest that there will be a major growth in container shipping traffic to and from Africa, China, India, and Vietnam indicating that the Indian Ocean will witness high container traffic.

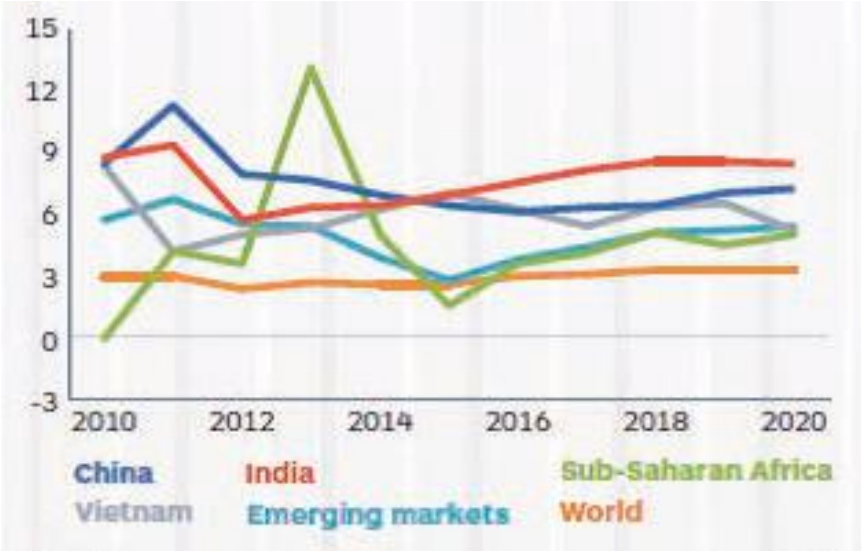

Figure 6 Emerging Market Consumption Growth % Change

IV. Major Ports in Indian Ocean

There are a number of important ports that dot the Indian Ocean littoral and among these the following can be classed as major ports[12].

Table 3

Location	Port	Capacity (mt)
East Africa	Durban (South Africa)	31.4[13]
	Maputo (Mozambique)	17.0[134]
	Djibouti (Djibouti)	05.0[15]
West Asia	Aden (Yemen)	Reopened July 2015.[16]
	Jebel Ali, Dubai	15.25 MnTEU[17]
South Asia	Karachi (Pakistan)	11.74; 1.2 Mn TEUs[18]
	Mumbai (India)	5.90[19]
	JNPT (India)	4.45 Mn TEU[20]
	Kolkata and Haldia (India)	4.13[21]
	Chennai (India)	5.10[22]
	Colombo (Sri Lanka)	4.91 Mn TEU
	Hambantota (Sri Lanka)	Under development
Australia	Port Freemantle	35.86[23]
	Melbourne Port	2.6 Mn TEU[24]

12 "Indian Ocean Trade and Transportation", https://www.britannica.com/place/Indian-Ocean/Trade-and-transportation (accessed 30 October 2016).

Although only one port (Jebel Ali, Dubai, UAE) in the Indian Ocean figures in the top 20 container ports, there are at least 10 ports which are listed in the top fifty container ports of the world.

Table 4

Rank	Port	TEU
12	Port Klang, Malaysia	10.95
18	Tanjung Pelepas, Malaysia	8.50
30	Colombo, Sri Lanka	4.91
32	JNPT, India	4.45
35	Jeddah, Saudi Arabia	4.20
36	Sharjah, UAE	4.12
41	Port Said East, Egypt	3.50
48	Tanjung Perak, Indonesia	3.13
50	Salalah, Oman	3.03

Source: World Shipping Council http://www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports (accessed 30 October 2016).

V. Landlocked Regions and Maritime Access

In 2013, the United Nations took a major step to include a chapter on the LLDCs in its annual UNCTAD's Review of Maritime Transport Report. The document makes note of the critical need to connect landlocked countries to maritime shipping services and observes that geographical constraints and lack of access to the seas is one of the several reasons for the continued low-levels of development of the LLDCs. Their share in world trade is little due to excessive transit costs. There are 32 LLDCs - 16 in Africa, 10 in Asia, 4 in Europe and 2 in Latin America- and, the United Nations has classified 17 of these as Least Developed Countries (LDC).

13 For more details see https://en.wikipedia.org/wiki/Port_of_Durban (accessed 30 October 2016).
14 For more details see http://www.portmaputo.com/the-port-of-maputo-sets-new-record-in-cargo-handling-2/ (accessed 30 October 2016).
15 For more details see http://www.portdedjibouti.com/strengthenin-djibouti-ports-strategic-position/(accessed 30 October 2016).
16 http://www.portofaden.net/ (accessed 30 October 2016).
17 For details see http://www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports (accessed 30 October 2016).
18 For more details see http://dlca.logcluster.org/display/public/DLCA/2.1.1+Pakistan+Port+of+Karachi;jsessionid=F251F3904B08450A881F36E07CF0DD10 (accessed 30 October 2016).
19 For details see https://community.data.gov.in/major-ports-in-india/ (accessed 30 October 2016).
20 For details see http://www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports (accessed 30 October 2016).
21 Ibid.
22 Ibid.
23 For details see https://www.seaoo.com/blog-en/the-largest-seaports-in-australia/ (accessed 30 October 2016).
24 Ibid.

Many of the LLDCs in Asia, Africa and Eurasia have difficulty in port access and a number of connectivity projects are under development / consideration to connect them to the oceans and seas. These include the International North South Transport Corridor (INSTC), a multinational project involving India, Iran and Russia;[25] the China Pakistan Economic Corridor (CPEC)[26]; Iran-Uzbekistan and Iran-Turkmenistan south north corridor[27]; the India-Iran-Afghanistan multimodal transport connections[28] are noteworthy. Some of these have led to the development of connectivity projects such the rail links between Singapore and Kunming and Yangon and Kunming though held in abheyance[29] and Ethiopia -Djibouti rail link.[30]

Iran and Pakistan serve as the gateway to heartland of Asia. The ports of Bandar Abbas and Chabahar in Iran and Gwadar in Pakistan are important to Russia, the Central Asian Republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan), other Eurasian countries like Azerbaijan and the landlocked Afghanistan.

In 2000, India, Iran and Russia conceptualized the International North South Transport Corridor (INSTC), a multinational project aimed at developing a seamless road, rail and sea network i.e. Bandar Abbas-Bandar Anzali- Caspian Sea- Rasht and Astara in Azerbaijan-Saint Petersburg in Russia and also to Turkey. If and when the project achieves fruition, the aforementioned countries too would be affected by the risks and vulnerabilities of the SoH.

The INSTC also finds reference in India's 'Connect Central Asia' policy unveiled in 2012. Some CAR states are keen to see the INSTC made operational and consider it as an opportunity for an access to the Indian Ocean through the Straits of Hormuz. In this context, the Iranian port of Bandar Abbas can serve as a transshipment hub. The vulnerability of Bandar Abbas for the INSTC remains questionable keeping in mind that also Iran suffers from the 'Hormuz dilemma'. As long as Iran maintains its aggressive posture, the Gulf waters will remain volatile making the SoH as a 'high risk zone' which could entail higher premiums, thereby raising the cost of transportation that may undermine the INSTC project.

SoH is also important to Afghanistan. It presently uses the port of Karachi in Pakistan for its trade and also for receiving energy supplies; but the Al Qaeda related political tensions between Kabul and Islamabad prompted Afghanistan to use the Iranian port of Bandar Abbas to trade in international markets.

In Africa, China is developing port facilities at Djibouti (at a cost of $400 million) and a rail and road project (at a cost of nearly $3-billion) has linked Addis Ababa, the capital of Ethiopia and Djibouti thus providing maritime access to Ethiopia to the Indian Ocean.[31]

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25 Sandeep Dixit, "Despite U.S. opposition, Iran to be transport hub for North-South Corridor", *The Hindu*, 31 May 2012.

26 S Akbar Zaidi, "The new game changer in Pakistan", *The Hindu*, 28 May 2016.

27 "Rouhani: Corridor of Oman, Iran, Turkmenistan, Uzbekistan to be active", http://www.irna.ir/en/News/81538069/ (accessed 02 October 2016).

28 Elizabeth Roche, "India, Iran and Afghanistan ink trade corridor pact", *Live Mint*, 24 May 2016.

29 "Kunming-Yangon rail project rumors denied", http://elevenmyanmar.com/local/kunming-yangon-rail-project-rumors-denied (accessed 30 October 2016).

30 "Chinese-built railway opens linking Ethiopia to Djibouti", http://www.france24.com/en/20161005-chinese-built-railway-opens-linking-ethiopia-djibouti (accessed 21 November2016.

31 Vijay Sakhuja, "Chinese Maritime Expansion: From Yellow Sea to Red Sea", *South Asia Defence and Strategic Review,* Vol 10 Issue 1 March - April 2016, p.23-26.

VI. Maritime Trade and Economic Growth

One of the key and compelling rationales for the Indian Ocean littorals to engage in trade is economic growth. Many of these states have invested enormous political, diplomatic, economic and strategic capital to harness the potential of the oceans as a medium of transport, sources of energy and food, and improve the livelihood of the people. In fact, Indian Ocean resonates in their economic engagements and figures prominently in their strategic calculations.

Many of the major trading nations of the Indian Ocean region have a merchant marine, shipping assets and port infrastructure to engage in trade. They also possess civilian shipbuilding capabilities and quality human resource for maritime business. In the case of Australia, ships carry 99.5 per cent of Australia's trade by volume and 74 per cent by value and the maritime industry directly employs over 50,000 persons in Australia.[32] Likewise, South Africa is highly dependent on maritime trade and nearly 90 to 95 per cent of the country's import and export trade in terms of volume or in excess of 75 per cent in terms of value is transported by sea.[33] Further, the South African also serves the economies of its landlocked neighbours through its six major ports.[34] As far as India is concerned, 90 per cent of India's trade by volume and 70 per cent by value are moved over the sea. India ranks 16th in terms of gross tonnage of merchant fleets and have 12 major ports and 200 are non-major ports.[35]

VII. Future Shipping Trends

The global seaborne trade has continued to expand since 1980s and in 2014 it grew by 3.4 per cent and totalled 9.84 billion tons of cargo, or four fifths of total world merchandise trade.[36] Another study by the International Transport Forum forecasts that the development of global freight volumes between 2010 and 2050 will witness the "intensification of global trade, maritime shipping being a central element."[37] An illustration in the study notes that freight volumes transiting through the Indian Ocean are expected to grow by nearly 400 per cent till 2050.

The graph below produced by IHS Maritime & Trade depicts predicted world sea borne trade carried in tons (green line) and world economy GDP in US$ (red line).[38]

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32 For details see https://shippingaustralia.com.au/education/ (accessed on 10 November2016).

33 See http://www.navy.mil.za/sangp100/sangp100_ch02.pdf (accessed 10 November2016).

34 "ROLE OF THE SA NAVY", http://navy.mil.za/aboutus/role/index.htm (accessed 10 November2016).

35 "ASEAN-India Maritime Connectivity Report", http://www.ris.org.in/sites/default/files/pdf/Final-Print-Martitime%20 connectivity%20report.pdf (accessed 10 November2016).

36 For details see "World Seaborne Trade :General trends in seaborne Trade", http://unctad.org/en/PublicationChapters/rmt2015ch1_ en.pdf (accessed 01 October 216).

37 For more details see http://campus.hesge.ch/commodity_trading/?p=13775#_ftn1 (accessed 10 November 2016).

38 The graph is available at http://www.icontainers.com/us/2016/10/28/friday-fun-fact-1-shipping-accounts-for-90-of-world-trade/ (accessed 15 November 2016).

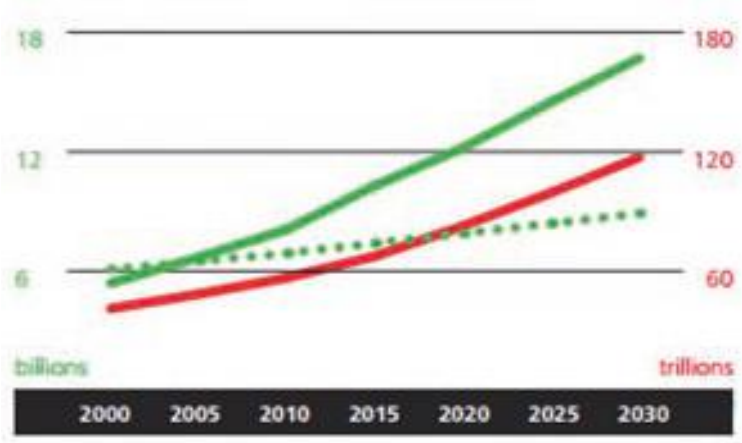

Figure 7 Predicted Increases in World Seaborne Trade, GDP and Population

Source: https://www.ihs.com/pdf/2016-global-maritime-and-trade-trends-infographic_237518110915583632.pdf

The report notes that "Economic growth and rising incomes in emerging markets translate to an increase in the demand for imported goods. Even as China's GDP growth moderates, consumer spending is increasing as a percent of GDP. Likewise, Africa, India, Vietnam, and other Asian countries… That's good news for the global seaborne container market."[39]

Further, 2016 IHS Maritime & Trade report offers some insights into future shipping and identifies four important trends.[40] First, commodity prices particularly those of coal, iron ore, and crude oil are all likely to remain low for the next few years which means that over the next 5-10 years, depressed rates for shipping, particularly that of dry bulk cargo. Further, low oil prices (currently trending between USD $ 40-50 per barrel) 'will spur more oil consumption in the short term' but 'overall global oil demand will growth at an average of 0.6 per cent annually through to 2040'[41] due to low economic growth which means less oil demand. This trend will also be supported by the use of green energy alternatives, alternatives to hydrocarbon fuels, and technological advancements to improve fuel efficiency.

Second, China's economic growth is in decline due to international economic slowdown and China's GDP will drop from 7.3 per cent in 2014 to 6.3 per cent in 2016, before a modest rebound in 2017. A number of factors including a slowdown in China's imports of iron ore and coal (China imported 70 per cent of the world's iron ore and 20 per cent of its coal) will be seen. However, Chinese container trade is expected to grow on the routes to the western United States by 8 per cent in 2016 and on the European routes by 6 per cent that will transit through the Indian Ocean.

Third, the expected lifting of sanction over Iran could contribute nearly half a million barrels of oil a day to the global supply by the end of 2016 but that may further depress already weak oil prices; inflating near-term demand for oil, gas, and petroleum products; and helping global shipping overall.

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39 See https://www.ihs.com/pdf/2016-global-maritime-and-trade-trends-infographic_237518110915583632.pdf (accessed 20 November2016).

40 "Five trends shaping the global maritime industry", https://www.ihs.com/pdf/Global-Trends-Impacting-the-Maritime-Industry_235788110915583632.pdf (accessed 01 October 2016).

41 Ibid.

Fourth, demographic changes such as increase in middle class in emerging economies of Asia, Africa, and Latin America will impact on shipping demand to carry commodities and finished goods. For instance, in India, with an expected GDP growth rate of 7.9 per cent by 2017, up from 7.3 per cent in 2014, consumer spending would account for about 60 per cent of the economy and would be the primary driver of economic growth.

Further, with inflation receding and global commodity prices low, the real purchasing power of Indian households will continue to improve. However, the transport infrastructure gaps pose significant challenges in many developing regions and infrastructure needs have been estimated at US $11 trillion over the period 2009– 2030.[42]

VIII. Infrastructure: Ports and Pipelines

There are a number of important ports that dot along the Indian Ocean littorals and service the shipping operations. For instance, the Persian Gulf is known for extensive oil and gas loading infrastructure.[43] Similarly, 10 top container ports are located in the Indian Ocean. [44]

At another level, a number of pipeline projects link oil and gas producing hubs with transhipment ports / points to overcome the threats of blocking of the maritime gateways.[45] The China-Myanmar oil pipeline[46] is useful to overcome the security related vulnerabilities through the Straits of Malacca, and the UAE's Habshan – Fujairah Pipeline[47] and Duqm port project help overcome the Shipping related threats and challenges through the Strait of Hormuz.

At another level, several landlocked countries and regions are developing plans for access to the Arabian Sea. The Chinese Maritime Silk Road (MSR) is another significant initiative which can potentially result in the development of maritime infrastructure along the route in the India Ocean. The construction of Hambantota port in Sri Lanka, plans to develop the Sonadia port in Bangladesh, develop the Kra Canal Project in Thailand, and Jask port in Iran are now being leveraged by China for the MSR which will further contribute to the growth of shipping in the Indian Ocean.

Similar developments are underway in the east coast of Africa to develop connectivity with the hinterland. East Africa plays a key role in China's Belt and Road Initiative. As Chinese economic engagement expands in Africa, it can be expected to finance many projects through the Asian Infrastructure Investment Bank, the Silk Road Fund and, specific to Africa, the Forum on China-Africa Co-operation (FOCAC) and the China-Africa Development Fund (CAD Fund). In this connection, Chinese port development project in Djibouti merits

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42 For more details see "The Trillion Dollar Question Ii: Tracking Investment Needs In Transport", http://www.wri.org/sites/default/files/The_Trillion_Dollar_Question_II_Tracking_Investment_Needs_in_Transport_0.pdf (accessed 01 October 2016).

43 For more details see "Strait of Hormuz", https://www.eia.gov/beta/international/regions-topics.cfm?RegionTopicID=WOTC (accessed 01 October 2016).

44 For more details see http://www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports (accessed 01 October 2016).

45 For more details see "Pipelines available as bypass options", https://www.eia.gov/beta/international/regions-topics.cfm?RegionTopicID=WOTC (accessed 01 October 2016).

46 Atul Aneja," New China-Myanmar oil pipeline bypasses Malacca trap", *The Hindu*, 30 January 2015.

47 "Analysis on the UAE's Habshan-Fujairah pipeline", http://www.arabianoilandgas.com/article-10748-analysis-on-the-uaes-habshan-fujairah-pipline/ (accessed 01 October 2016).

attention.

The Bangladesh, Bhutan, India and Nepal (BBIN) and the Bangladesh, China, India and Myanmar (BCIM) multi modal transport projects can be expected to facilitate some of the countries and regions to engage in global trade through ports in the Bay of Bengal - Kolkata in India, Chittagong in Bangladesh and Kyaukpyu in Myanmar, the Bay of Bengal Industrial Growth-Belt (BIG-B) Initiative - which will enhance shipping in the region.

IX. Strategic Vulnerabilities to Shipping in Indian Ocean

The security salience of the Indian Ocean emerges from a number of threats and challenges to safety and security of shipping in the region. These can be grouped into at least four categories. First, threats emerge from 'non-state actors' who have formed networks, conceptualized sophisticated strategies, developed tools and tactics and engaged in low intensity operations challenging maritime security forces. Sea piracy, particularly off the waters off Somalia and the Gulf of Aden had attracted international attention and during 2008 to 2015, the maximum number of piracy attacks on shipping were recorded in 2010 and 2011 i.e. 174 and 176 respectively.[48] A number of navies from different countries engaged in counter piracy operations in the Gulf of Aden which were able to curb the menace ad in 2015, there were no reported incidents of piracy in the Gulf of Aden.

There is worldwide concern for maritime terrorism that can potentially disrupt trade and energy flows in the Indian Ocean with serious consequences for the global economy. A number of attacks such as the Al Qaeda attacks on USS Cole and M V Limburg in the Gulf of Aden, the Mumbai terror attacks in 2009[49], the attacks on the port of Karachi perpetrated by the AQSA[50] and the recent attacks by the Houthi rebels (supported by Iran) in the waters off Bab-al Mandeb Strait on a UAE logistic support vessel[51] and two attempted shore-launched cruise missiles attacks[52] on US Navy vessels *USS Mason,* USS *Nitze* and the *USS Ponce*, an amphibious transport dock are important examples.[53] The threat to shipping in the Persian Gulf emerges from the possibility of non-state actors attacking merchant shipping demonstrated by the attack on the M. Star Japanese supertanker owned by the Mitsui O.S.K. Lines.[54]

Second, the Indian Ocean is also witness to nature driven catastrophes such as Tsunami waves generated by massive underwater earthquakes. These present major challenges to littoral communities and maritime infrastructure. In the past, there have been incidents of Tsunamis and the 1883 in the Sunda Strait and off the

48 For more details see http://eunavfor.eu/ (accessed 10 October 2016).

49 Vijay Sakhuja, "Security threats and challenges to maritime supply chains", file:///C:/Users/Vijay/Downloads/Chap1.pdf (accessed 03 Octobers 2016).

50 "Pakistan navy repels militant attack at Karachi dockyard", *BBC News*, 9 September 2014.

51 "Yemen conflict: UAE says Houthis attacked civilian ship", *BBC News*, 4 October 2016.

52 "Pentagon May Retaliate for Attack on U.S. Navy Ships", http://www.maritime-executive.com/article/pentagon-may-retaliate-for-attack-on-us-navy-ships (accessed 12 October 2017).

53 "Missile Attacks on the USS Mason: Principles to Guide a U.S. Response", http://www.washingtoninstitute.org/policy-analysis/view/missile-attacks-on-the-uss-mason-principles-to-guide-a-u.s.-response (accessed 16 October 2016.

54 "Japanese oil tanker hit by terrorist bomb, say inspectors", https://www.theguardian.com/world/2010/aug/06/japanese-oil-tanker-terrorist-explosives (accessed 10 Oct 2016).

coast of Sumatra in 1907 were severe.[55] The more recent catastrophic event took place on December 26, 2004 and Tsunami waves hit the shores of eleven Indian Ocean countries across Asia and eastern Africa as far as Somalia causing human, material and maritime infrastructure losses amounting to billions of dollars.

Third, the safety of shipping through the Indian Ocean is potentially jeopardized due to fears of blocking of critical choke points resulting in disruption of energy supplies. Frequent threats by Iran such as the one in 2012, "If they (the U.S.) do not obey international laws and the IRGC's warnings, it will have very bad consequences for them ... The IRGC's naval forces have had the ability since the (Iran-Iraq) war to completely control the Strait of Hormuz and not allow even a single drop of oil to pass through"[56] prompted the United States Navy to deploy additional minesweeping ships in the region.[57]

Fourth, maritime infrastructure (ships, ports and associated supply chains) which support sea borne commerce is vulnerable to neo-maritime security threats and challenges. Although international efforts to ensure physical safety and security of maritime infrastructure are noteworthy, cyber risks to maritime infrastructure are real and prevention and mitigation of these is an important issue for global trade. Ports (vessel traffic management system, cargo data and port operations) and shipping companies (data of cargo, ship disposition, future routing, crew management, etc.) are vulnerable to cyber-attacks. According to one report,[58] the 'online defences of 16 of the world's top 20 container carriers had serious security gaps' and ship based computers and servers (electronic charts, onboard navigation and propulsion systems, safety and security sensors, other devices and instruments) are potential targets for cyber-attacks. There are already a few documented incidents of cyber-attacks on maritime infrastructure wherein the perpetrators successfully penetrated the networked computing systems.[59]

X. China's Energy Supply Chains and India Ocean

China is an energy hungry nation and accounts for nearly 20 percent of global consumption. It imports more than half of its needs to sustain high economic growth which has averaged over 8 per cent during the last decade. According to US Energy Information Administration (EIA), China's oil import dependency has risen from 30 percent in 2000 to about 57 percent in 2014 and will account for more than 25 per cent of the global oil consumption growth in 2015.[60] It has diversified its sources of oil from across the globe and the Persian Gulf countries are a major source (52 percent), followed by Africa (22 per cent), Latin America (11 percent), and Russia (13 percent).[61] In the Persian Gulf, China's oil imports from Saudi Arabia are highest (16

55 B. K. Rastogi and R. K. Jaiswal, "A Catalogue of Tsunamis in the Indian Ocean" *Science of Tsunami Hazards*, Volume 25, No. 3, 2006, pp.128-143.

56 "Iran's Top Leader to Decide on Blocking of Strait of Hormuz: Official", http://english.alarabiya.net/articles/2012/07/15/226455.html (accessed 20 June 2015)

57 "U.S. Doubling Minesweepers in Arabian Gulf", *Defense News*, 15 March 2012.

58 "All at sea: global shipping fleet exposed to hacking threat", http://www.reuters.com/article/us-cybersecurity-shipping-idUSBREA3M20820140424 (accessed 10 October 2016).

59 For instance, smugglers hacked into the port cargo handing data and were able to locate the containers with drugs which were pilfered without detection. Interestingly, the smugglers even managed to tamper the cargo manifest and deleted the data of the shipment.

60 For details see http://energy.gov/sites/prod/files/2016/04/f30/China_International_Analysis_US.pdf (accessed 10 October 2016).

61 For details see "People's Republic of China – Oil", http://www.globalsecurity.org/military/world/china/oil.htm (accessed 10 October 2016).

percent) followed by Oman (10 percent), Iran and Iraq (9 percent), UAE (4 percent), and Kuwait (3 percent). In Africa, Angola is the highest and accounts for 13 percent of Chinese oil imports followed by Southern Sudan and Congo at 2 percent each.

The above data showcases two significant aspects of Chinese energy security strategy. First, the Persian Gulf is a major source of oil and gas for China and Beijing has assiduously nurtured a proactive diplomacy and developed robust politico-diplomatic-economic relations with several oil producing countries in the Gulf region. The Saudi–China bilateral energy relations are multifaceted and span cooperation in energy and related infrastructure. As noted earlier, Saudi Arabia is a major source of crude oil for China and it has invested in refineries in China; Chinese companies have helped Saudi Arabia develop its refineries and natural-gas fields.

Likewise, Iran is an important partner with whom Beijing continues to maintain very close relationship even at the height of Washington-Teheran confrontation over latter's suspected nuclear weapons development programme. Now that the sanctions have been lifted, it provides China an opportunity to aggressively pursue investments and technology transfer to ensure that Iran remains an important source for its energy needs. Although Iran nuclear deal has not found favour with Saudi Arabia and it has expressed concerns about Iran's "aggressively hegemonic regional ambitions"[62], yet China is favorably positioned and enjoys good relations with both Iran and Saudi Arabia to ensure sustained supply of oil and gas from the two countries.

Chinese energy security strategy emphasises on the safety and security of sea borne energy trade. The Persian Gulf has a history of risks to shipping due to wars and political tensions. The Iran–Iraq War (1980-1988) is often referred to as the 'Tanker War', and during the 1991 Gulf War, *USS Princeton* and *USS Tripoli* struck sea mines and the cost of repairs was about US $ 22 million. In 2003, during Operation Iraqi Freedom, Iraq deployed sea mines in the Persian Gulf to challenge multinational forces. In recent times, political tensions between Iran and the West (US, UK and France), the former threatened to blockade the Strait of Hormuz which further exposed the vulnerability of international shipping in the Persian Gulf. The likelihood of maritime terrorism in the Persian Gulf also remains high.

The forgoing discussions clearly illustrate that Chinese energy supply chains are vulnerable to a number of risks and these can potentially generate a highly volatile scenario in the Persian Gulf and the reverberations will be felt across the Indian Ocean.

In the past, the US and its partners have underwritten security in the Indian Ocean and guaranteed support to regional countries through partnerships, alliance arrangements, and access and basing agreements. In 1982, the US established the Central Command (CENTCOM) headquartered in Manama and the Fifth Fleet comprising of carrier battle groups is deployed in the region. Although the US announced its rebalance to Asia, it remains committed to ensure the security of its allies and has maintained force levels in the Persian Gulf region. These are complemented by France who set up military facility at Abu Dhabi, UAE in 2009 and more recently by the UK in 2014 in Bahrain.

China is 'free riding'[63] on US guarantee of safe sea lanes, appears to have endorsed 'U.S. efforts to keep

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62 Hussein Ibish, "For Gulf Countries, Iran's Regional Behavior Overshadows Nuclear Deal", http://www.agsiw.org/for-gulf-countries-irans-regional-behavior-overshadows-nuclear-deal/ (accessed 10 October 2016).

63 Andrew B. Kennedy, China and the Free-Rider Problem: Exploring the Case of Energy Security", http://onlinelibrary.wiley.com/doi/10.1002/polq.12286/full (accessed 10 October 2016).

oil flowing from the Persian Gulf, at least as long as the United States does not use the issue to initiate conflict with Iran' and is quietly supporting 'U.S. efforts to keep Hormuz open'. The Chinese leadership has often stated that it has international obligations to protect sea lanes and dispatched a number of flotillas since 2008 to the Gulf of Aden to counter piracy. The PLA Navy has escorted ships of the World Food Program, and provided security to vessels carrying chemical weapons transiting from the territorial sea of Syria.

In the future, the PLA Navy will deploy a substantial number of ships in the Indian Ocean and ensure protection of its own SLOCs as also provide security to international shipping. However, access and basing for the PLA Navy could pose major constraints given that only two ports i.e. Gwadar in Pakistan (operational for commercial activity) and Djibouti can support as logistic base while Hambantota in Sri Lanka is still under development. It is useful to mention that the PLA Navy's deployment in the Gulf of Aden for counter piracy has provided it sufficient experience to operate with international navies and has now developed more than rudimentary 'interoperability'. This has added to the confidence of the Chinese Navy to undertake distant water operations. The forays by the Chinese submarines in the Indian Ocean have caused anxiety in New Delhi and Chinese naval presence in support of SLOC protection would further add to India's concerns.

The Chinese deep water fishing (DWF) feet is another issue of concern to the Indian Ocean littorals. These vessels have engaged in excessive and indiscriminate exploitation of fishery resources and African states have complained about the unsustainable destructive fishing practices adopted by the Chinese distant water fishing companies.[64] The Greenpeace in its 2013 report noted that Chinese fishing operations in African waters had been growing steadily from 13 licenses in 1985 to 462 in 2013.[65] China's overseas fish catch was pegged at 4.6 million tons which is 12 times of what is reported to the UN. Notwithstanding fears of diplomatic fallout for Sino-Indonesian relations, Similarly, Chinese vessels were caught fishing in Indonesian waters in 2009 and in 2016[66]; these were sunk notwithstanding political-diplomatic fallouts. It is plausible that the Chinese DWF can potentially act as the eyes and ears of the PLA Navy operations in the Indian Ocean.

Conclusion

The emergent globalized maritime trading system will be the vanguard of economic development. This will be the catalyst for the growth of mercantile transportation in the India Ocean and will contribute significantly to the economic growth of the littoral countries as also those that are dependent on this waterbody for their economic prosperity. However, maritime shipping can be the Achilles heel of economic vitality due to the risks and vulnerabilities arising from natural and manmade disrutions, at sea, in the littorals and ashore. Regional states and other stakeholders would have to necessarily leverage politico-diplomatic and strategic tools to develop cooperative and competitive frameworks.

64 Charlie Campbell, "The Fight to Save the World's Seas From China's Bloated Fishing Industry", *Time*, 24 August 2016.

65 "Africa's Fisheries' Paradise At A Crossroads: Investigating Chinese Companies' Illegal Fishing Practices In West Africa", http://www.greenpeace.org/africa/Global/africa/graphics/Scam%20on%20the%20African%20Coast/AFRICA%E2%80%99S%20FISHERIES%E2%80%99%20PARADISE%20AT%20A%20CROSSROADS_FULL%20REPORT.pdf (accessed 30 September 2016).

66 "Trawling for Trouble", http://www.seaaroundus.org/the-economist-highlights-chinas-illegal-fishing-fleets/ (accessed 15 October 2016).

China's dependence on the Persian Gulf oil and gas will grow in the coming decade and it will continue to engage Pakistan and Iran through economic-technological assistance to develop energy infrastructure. Its national oil companies would continue to explore joint ventures in the Persian Gulf to support national objective of energy security. Although the PLA Navy can be expected to make frequent visits to the Indian Ocean in support of SLOC security missions, it is not yet ready to underwrite security for international commerce. It will depend on the US and its partners to underwrite the safety of its shipping.

Chapter 4

Infrastructure Development in the Indian Ocean Region: Geo-strategic Challenges and Opportunities for Cooperation

Chapter 4 Infrastructure Development in the Indian Ocean Region: Geo-strategic Challenges and Opportunities for Cooperation

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The Indian Ocean has acquired a new dimension with the shift of global economic growth to the Asia Pacific. The littoral states of the region have exhibited a new economic dynamism, witnessed by their steady growth in global and intra-regional trade. The regional share of maritime freight reveals that Asia continued to dominate as the main loading and unloading region followed by the Americas, Europe, Oceania and Africa in 2014. Asian countries continued nearly half of the loaded tonnage and slightly over half of the unloaded tonnage globally depicting the 'Shift East' trend in global merchandise trade. However, there has also been a concurrent rise in non-traditional threats that involve illegal fishing, terrorism, oil spills, natural disasters, and the impact of climate change.

Therefore, given the strategic importance of the Indian Ocean, it is inevitable that securing the sea lanes has become a priority for the maritime actors. Nevertheless, the complex nature of the regional architecture and the varied outlook of its stakeholders have often resulted in a collision of interests. The dynamics involve external powers seeking a foothold in the strategic and economic space of the region. The competitiveness has often been aggravated due to a number of regional countries being politically and economically unstable and thereby prone to outside interference. This is marked by China's growing global influence and India's economic rise that has elevated the region's strategic value. The absence of an effective regional framework, similar to ASEAN, further complicates the security environment. The region's economic integration, that can be a fulcrum of improved regional cooperation, continues to be a work in progress.

I. Geostrategic Trends and Infrastructure Drive

In an age where saving time is akin to saving money, it is critical to build infrastructure that ensures a quick turnaround for the berthing vessels. Against this backdrop, the Indian Ocean Region has witnessed a quantum leap in infrastructure development. China has been leading in the race of for infrastructure creation thus far, but others are not far behind. Japan, Indonesia and Thailand have also undertaken construction of

huge maritime projects, even as India, Sri Lanka, Maldives, Mauritius and Seychelles have expanded their investments in coastal development and the blue economy. Thus the importance of the region can be gauged from the fact that it remains a key artery of the world's commercial shipping lanes. Approximately 80 percent of the global seaborne trade in oil transits through this region while more than one lakh ships do so annually. Three of the world's largest energy consumers – China, India and Japan – are based in the region. The Ocean connects West Asia, Africa, and South Asia with the broader Asian continent to the east and

Europe to the west. The region hosts forty states and forty percent of the global population. Rich in natural resources, it also includes a number of strategic chokepoints, involving the Straits of Hormuz and Malacca that can disrupt the economic lifelines of countries dependent on maritime trade.

The most noticeable trend in recent times has been China's massive investments in capacity building in the coastal countries. It involves providing generous loans, and strengthening infrastructure projects like ports, power plants, dams, roads and railways. Countries like Sri Lanka, Maldives, Pakistan, Myanmar, Kenya and Seychelles that have large infrastructure gaps have found the Chinese offer alluring. While the projects do have a long gestation period yet the broad contours indicate a significant uptick in facilities that can position the recipient countries at the crossroads of global trade. Meanwhile, other investor countries too have unveiled their investment plans. Interestingly, the dynamics involve competing initiatives vis-à-vis China. At the forefront are India, Japan, Australia and the U.S.

More importantly, the growing maritime militarisation occurring across the Asian littorals characterised by a gradual build-up of naval forces is a significant development. The modernisation of the People's Liberation Army Navy (PLA Navy) and other navies in Southeast Asia is matched by a maritime military build-up in India, Pakistan, Iran, Saudi Arabia and other Indian Ocean states. These developments pose new opportunities and challenges for regional economic and security cooperation. The situation is further complicated by the presence of extra regional actors.

The main objective of this study is to examine existing major ports, their current status and analyse various infrastructure development projects in the Arabian Sea and the Bay of Bengal. The study would also analyse China's Belt and Road initiative with focus on the Maritime Silk Road (MSR), its aim and implications for the region and beyond. In addition, given the geo-strategic competition among the regional and extra regional players, the study will explore the possible options for cooperation to address the challenges in the region.

Part –I: Infrastructure Development in Arabian Sea and Bay of Bengal

The majority of the global trade continues to transit through the oceans and the seas. The importance of maritime transportation in international freight trade is evident with the fact that it handles about 80 percent of international trade in volume and around 60 per cent in value[1]. International maritime trade grew by a modest 3.4 per cent in 2014 (UNCTAD 2015) which is almost the same as in 2013. This stagnation can be attributed to slowdown in large emerging developing economies, lower oil price levels, new refinery capacity developments, as well as slow-moving and uneven recovery in advanced economies. This evolution of sea based commerce is a watershed development, given that trade fuels global economic growth. In a significant milestone, the United Nations Conference on Trade and Development report indicates that world seaborne trade volumes exceeded 10 billion tons in 2015 (Chart 1).[2] In this light, developing countries accounted for 60 and 62 percent of goods loaded and unloaded at seaports worldwide (Chart 2). Meanwhile, the shipments

1 "Shipping and World Trade", International Chamber of Shipping, http://www.ics-shipping.org/shipping-facts/shipping-and-world-trade Accessed on November 1,2016

2 "Seaborne Trade 2015", UNCTAD, http://unctadstat.unctad.org/Infographics/SeaborneTrade_2016_08_1200x2456.png Accessed on November 1,2016

have been increasing by a modest 2.1 percent.[3] A number of factors have been attributed to this development. They include slowdown in large emerging developing economies, lower oil prices, and slow-moving and uneven recovery in the advanced economies.[4]

In the current context, it is important to note that cargo ships and vessels are now 'supersized', quicker and carry multiple volumes than what they did even a decade ago. The sight of Ultra Large Crude Carriers (ULCCs) gliding through the maritime highways is a common sight. This evolution of sea based commerce is a watershed development, given that trade fuels global economic growth. In this light, this paper will examine the infrastructure of existing ports in the Arabian Sea and the Bay of Bengal. These include the ports of Karachi, Gwadar, Muhmmad Bin Qasim, Chittagong, Mongla , Payra, Matarbari, Yangoon, Dawei, Kyaukphyu, Colombo, Salalah, Bandar Abbas and Chabahar.

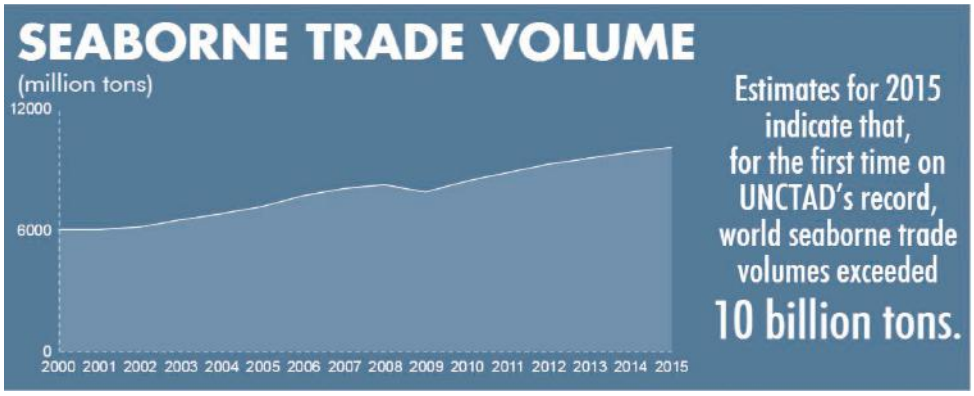

Chart 1

Source: UNCTAD
http://unctadstat.unctad.org/Infographics/SeaborneTrade_2016_08_1200x2456.png

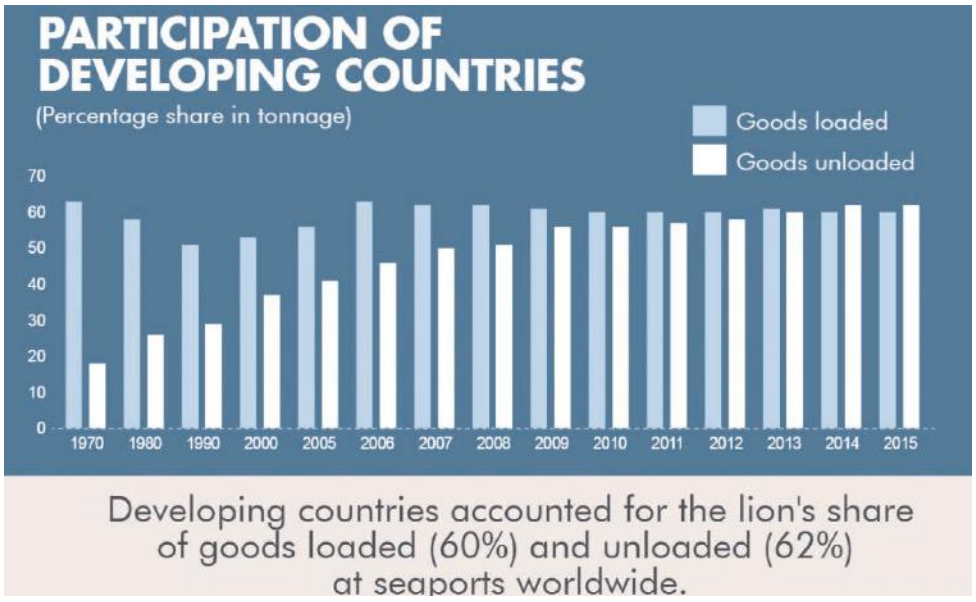

Chart 2

Source: UNCTAD
http://unctadstat.unctad.org/Infographics/SeaborneTrade_2016_08_1200x2456.png

3 Ibid.
4 Ibid.

II. Ports in the Arabian Sea and Bay of Bengal

1. India

India's long coastline of 7,517 kilometres and navigable inland waterways of 14,426 km makes it a major maritime nation. As such, its 12 major (equally divided between the eastern and western coastlines) and 200 non-major ports constitute an important pillar of the country's economy. The major ports include Kolkata (the only major riverine port), Paradip, New Mangalore, Cochin, Jawaharlal Nehru, Mumbai, Chennai, Kamarajar, Mormugao, Tuticorn, Kandla and Visakhapatnam.

It has been estimated that 95 percent of India's trade by volume and 68 percent by value move through the maritime transport.[5] This includes energy resources of coal, crude oil and natural gas. This extensive coastline is the key gateway for international trade in India, which at present ranks 17th in the world in terms of world tonnage with a share of 1.26 percent in 2015. In comparison, China was ranked 3rd with a share of 9 percent.[6] Over the last decade, India's seaborne trade has grown at twice the global growth rate of 3.3 percent.[7] Similarly, India's maritime container trade has grown at 6.5 percent, which is higher than the world average of 5.4 percent.[8] Cargo traffic at Indian ports has also doubled to 1 billion tonnes per annum and is expected to reach 1.7 billion tonnes per annum by 2022.[9]

It is likely that the importance of maritime trade will increase in the future as India continues to attract foreign investments. The recent UNCTAD report puts India as the 4th most attractive FDI destination in the world. The Indian economy is also projected to become the second largest in the world by 2050 in purchasing power parity (PPP) terms (third largest in market exchange rate terms).[10] Therefore, given the potential of inclusive economic growth, the development of maritime infrastructure becomes paramount for the economic development of the country.

(1) Cargo Handling by Indian Ports

In 2014-15, Indian maritime trade comprised a total cargo throughput of 1052.52 million tonnes, which is an increase of 4.1 percent from the previous year (as mentioned in Table 1).[11] In this light, the contribution of non-major ports in the total cargo throughput has witnessed a consistent rise, with its share now being almost at par with the major ports in 2014-15.[12]

The total throughput of all the major ports in India touched 581.34 million tonnes in 2014-15, with Kandla recording the biggest share (16 percent).[13] The largest commodities handled by the major ports involve petroleum, oil and lubricants (POL) at 32.5 percent, followed by container cargo at 21 percent (7.96

5 Ministry of Shipping, Government of India, "Annual Report 2015-16" at http://shipping.nic.in/showfile.php?lid=2266
6 Ibid
7 "Facts and Figures" Maritime India Summit 2016, http://www.maritimeinvest.in/facts-and-figures
8 Ibid
9 Ibid
10 "The World in 2050", Price Water Cooperhouse, 2015 at http://www.pwc.com/gx/en/issues/the-economy/assets/world-in-2050-february-2015.pdf
11 Shakti Sinha, Afaq Hussain, Samit Chakraborty, Riya Sinha and Akhtar Malik, 'Bridging Infrastructural Deficits at Select Trade Ports in India', Bureau of Research on Industry and Economic Fundamentals (BRIEF), March 2016.
12 Ibid
13 Ibid

million TEUs) in 2014-15.[14]

In 2015, the U.S. has been the primary destination of Indian exports through ports (13.7 percent), followed by U.A.E. (10.6 percent), Hong Kong (4.4 percent), China (3.8 percent) and Saudi Arabia (3.6 percent) (as mentioned in Table 2). Similarly, Chinese products are the biggest imports handled by Indian ports (13.5 percent), followed by Saudi Arabia (6.3 percent), UAE (5.8 percent), Switzerland (4.9 percent) and U.S. (4.8 percent).[15]

(2) Problems Faced by Major Indian Ports

Some of the major problems faced by the Indian ports involve insufficient infrastructure, poor logistics, primitive technology, cumbersome regulatory systems, and labour issues.[16] The Jawaharlal Nehru Port (JNP), which is India's biggest container port and the major hub on the western coast, faces the problem of road congestion, frequent breakdown in message exchange systems and paucity of equipment at the rail yard. JNP also suffers from insufficient draft capabilities that are essential to handle mother vessels. This has limited JNP's ability to project itself as a regional port hub.[17] As a result, Salalah Port of Oman handles the mother vessels with feeder ships being sent to JNP, thereby increasing transit time and costs. Similar infrastructural, operational and policy related problems are manifested throughout the port sector in India.

This under-utilisation of capabilities have resulted in less throughput. In this light, the traffic projections set in the Maritime Agenda 2020 (a policy for the development of the maritime sector) will test the ability of the Indian ports to handle the increase in traffic.[18] It has been estimated that key major ports will have to increase their cargo handling capacity by at least 30 percent in the immediate future, with JNPT, Marmugao and Kolkata needing to double their existing capacities.[19] Interestingly, the major ports are administered by the Union government while the non-major ports come under the purview of the respective state governments.

A comparison of Indian ports vis-à-vis their international counterparts also reveal the scale of initiatives needed to improve their competitiveness. In sheer numbers, the average turnaround time (TAT) of Indian ports in 2014-15 was 4.01 days while TAT for Singapore, Shanghai and Rotterdam was less than a day. Moreover, inadequate automation in customs clearance also increases the TAT for ships, while in Singapore and Rotterdam the majority of clearances are web based resulting in cutting down on the TAT. Similarly, most major Indian ports have a draft depth of 10-14 metres while Rotterdam has a 20 metre depth, allowing it to handling ultra large vessels. Also, coastal shipping is grossly underutilised, with the quantum of domestic traffic moved being 7 percent, including 0.5 percent through inland waterways, while the figures for China, U.S. and Japan stand at 47 percent, 12.4 percent and 34 percent respectively.[20] Notably, coastal shipping is

14 Ibid
15 Ibid
16 Ibid
17 Shakti Sinha, Afaq Hussain, Samit Chakraborty, Riya Sinha and Akhtar Malik, 'Bridging Infrastructural Deficits at Select Trade Ports in India', Bureau of Research on Industry and Economic Fundamentals (BRIEF), March 2016.
18 Ministry of Shipping, Government of India, "Maritime Agenda 2010-2020", January 13, 2011 at http://shipping.nic.in/showfile.php?lid=261
19 Ibid
20 Ministry of Shipping, Government of India, "Vision for Coastal Shipping, Tourism and Regional Development", August 2015 at http://shipmin.nic.in/showfile.php?lid=1959

60-80 percent cheaper than road or rail transport.[21]

(3) Sagarmala Project

In this light, the revival of the maritime sector in India and unlocking the country's economic potential has received an impetus under the Sagarmala Project – a 2015 initiative of the Government of India. The prime objective of this project is to 'promote port-led direct and indirect development and to provide infrastructure to transport goods to and from ports quickly, efficiently and cost-effectively'. [22] A total of 173 projects have been initially identified under four projects archetypes (port modernisation, connectivity, port led industrialisation and community development).[23] These projects, entailing an investment of US$ 11.6 billion, include:

Sl No	Project Archetype	Number of Projects
1.	Port Modernisation	53
2.	Port Connectivity	83
3.	Port Led Industrialisation	29
4.	Coastal Community Development	8

Sagarmala Vision[24]

The four pillars of Sagarmala Project can be summarised as:

- Improve Logistics
  1. Increase competitiveness of the core industry and the manufacturing sector by reducing supply chain cost and time.
  2. Increase the volume of trade via inland waterways and coastal shipping.
  3. Create an IT-enabled national multi-modal logistics system.
  4. Develop coastal roads through maritime states for inter-state port connectivity.
- Boost development through ports and shipping
  1. Develop three to four new mega ports.
  2. Develop a world-class trans-shipment port with a capacity of more than 10 million TEU.
  3. Create additional capacity of 1,200–1,500 MMTPA by strengthening existing ports.
  4. Develop maritime and manufacturing clusters around the ports
- Create world-class institutions
  1. Set up Sagarmala Development Company to enable project implementation.
  2. Set up world-class Private Partnership Programs in ports, waterways and connectivity projects.

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21 "Sagarmala project to result in savings of Rs 35,000 cr for India", Business Standard, October 25, 2016 at http://www.business-standard.com/content/b2b-manufacturing-industry/sagarmala-project-to-result-in-savings-of-rs-35-000-cr-for-india-116102500868_1.html

22 "Sagarmala: Concept and implementation towards Blue Revolution", Press Information Bureau, Government of India, March 25, 2016 at http://pib.nic.in/newsite/PrintRelease.aspx?relid=117691

23 "Sagarmala Project", Press Information Bureau, Government of India, March 25, 2016 at http://pib.nic.in/newsite/PrintRelease.aspx?relid=147470

24 Ministry of Shipping, Final Report for Sagarmala, http://shipping.gov.in/showfile.php?lid=2409

3. Develop an Indian Maritime University as a centre of excellence for maritime education.
4. Set up best-in-class maritime services clusters in India.

- Empower coastal communities
  1. Create more than 1 million jobs in maritime and related sectors.
  2. Increase GDP contribution of maritime states and sectors through a comprehensive coastal community development plan.

As part of the port led industrialisation plan, 14 coastal economic zones (CEZ) are proposed to be set up. They will embrace 12 industrial clusters across three broad sectors – energy, material and manufacturing. It is expected to not only reduce logistics costs by optimising movement of cargo, but also improve competitiveness in availability of raw materials, skills, supporting infrastructure and existing industrial agglomeration.[25] In this light, three energy clusters to meet the future power requirements of the country have been planned in the proposed Poompuhar CEZ in Tamil Nadu and North Konkan CEZ in Maharashtra, two refining clusters are proposed in Mannar CEZ in Tamil Nadu, South Konkan CEZ in Maharashtra or in Poompuhar CEZ in Tamil Nadu, and four petrochemical clusters in proposed CEZs in Gujarat, Karnataka, Odisha and Tamil Nadu.[26] A key emphasis has been laid on improving the share of coastal and inland waterways transport to 10 percent by 2019-2020.[27] The project also proposes a massive training programme for the people in the coastal regions to meet the increased requirements of skilled workforce.

The Sagarmala project is estimated to increase the cargo traffic in India by at least three times by 2020, and boost India's GDP by up-to 2 percent.[28] A saving of 35,000 to 40,000 crores is being envisaged by optimising the country's logistics modal mix.[29] It is also expected to equip the Indian ports with facilities that are comparable with the best in the world.

25 "Sagarmala Project proposes 14 coastal economic zones across India", First Post, November 29, 2016 at http://www.firstpost.com/india/sagarmala-project-proposes-14-coastal-economic-zones-across-india-3130866.html

26 Ibid

27 Ibid

28 Shakti Sinha, Afaq Hussain, Samit Chakraborty, Riya Sinha and Akhtar Malik, 'Bridging Infrastructural Deficits at Select Trade Ports in India', Bureau of Research on Industry and Economic Fundamentals (BRIEF), March 2016.

29 "Sagarmala project to result in savings of Rs 35,000 cr for India", Business Standard, October 25, 2016 at http://www.business-standard.com/content/b2b-manufacturing-industry/sagarmala-project-to-result-in-savings-of-rs-35-000-cr-for-india-116102500868_1.html

Table 1 Performance of Major Indian Ports

Sl No	Port	2014-15 (million tonnes)	2015-16 (Estimated) (million tonnes)
1.	Kolkata	15.28	12.40
2.	Haldia	31.01	24.91
3.	Paradip	71.01	55.13
4.	Visakhapatnam	58	42.24
5.	Chennai	52.54	37.42
6.	V.O. Chidambaranar	32.41	27.81
7.	Cochin	21.60	16.49
8.	New Mangalore	36.57	25.29
9.	Mormugao	14.71	13.90
10.	Jawaharlal Nehru	63.80	48.23
11.	Mumbai	61.66	46.40
12.	Kandla	92.5	73.87
13.	Kamarajar (Ennore)	30.25	22.96
	Total	581.34	447.05

Source: Ministry of Shipping, Annual Report 2015-16 at http://shipping.nic.in/showfile.php?lid=2266

Table 2 Overseas cargo handled by Indian ports during 2014-15

Type of Cargo	*Cargo Handled*					
	Indians Lines			*Foreign Lines*		*Total*
		Qty ('000 tonnes)	*% Share*	*Qty ('000 tonnes)*	*% Share*	*Qty ('000 tonnes)*
General Cargo						
	Loaded	4209	20.9	15912	79.1	20121
	Unloaded	2200	5.3	39379	94.7	41579
	Total	*6409*	*10.4*	*55291*	*89.6*	*61700*
Contained						
	Loaded	858	1.1	76814	98.9	77672
	Unloaded	919	1.1	80814	98.9	81733
	Total	*17777*	*1.1*	*157628*	*98.9*	*159405*
Dry Bulk						
	Loaded	901	2.5	34833	97.5	35734
	Unloaded	26951	8.5	288852	91.5	315803
	Total	*27852*	*7.9*	*323685*	*92.1*	*351537*
POL/Product & Other Liquids						
	Loaded	2961	4.5	62348	95.5	65309
	Unloaded	26545	11.0	215067	89.0	241612
	Total	*29506*	*9.6*	*277415*	*90.4*	*306921*
Grand Total						
	Loaded	8929	4.5	189907	95.5	198836
	Unloaded	56615	8.3	624112	91.7	680727
	Total	*65544*	*7.5*	*814019*	*92.5*	*879563*

Source: Ministry of Shipping, Annual Report 2015-16 at http://shipping.nic.in/showfile.php?lid=2266

(4) India's Maritime Cooperation with Regional Countries[30]

To address the infrastructure limitations and to enhance the regional trade and connectivity, India has initiated maritime cooperation with important regional partners like Sri Lanka, Bangladesh, Myanmar and Iran. Some of the important initiatives merit some attention in this regard:

Sri Lanka

India and Sri Lanka have been working closely in the maritime domain. Both have discussed the development of infrastructure to operationalise the ferry Service between Rameswaram and Talaimannar. In addition, the Long Range Identification Tracking (LRIT) services have been extended to Sri Lanka in terms of International Maritime Organization (IMO) guidelines with effect from October 8, 2014.

Bangladesh

In case of Bangladesh, the two countries have signed an agreement on coastal shipping through sea & inland waterways in June 2015. This will facilitate an easy movement of cargo from the east coast to North Eastern States of India, and also between the two countries through River Sea Vessels (RSV). In addition, the two countries have a protocol in place for inland water transit and trade. Under this protocol, inland vessels of one country can transit through the specified routes of the other country. Accordingly, Narayanganj, Khulna, Mongla, Sirajganj and Ashuganj in Bangladesh, and Kolkata, Haldia, Karimganj, Pandu and Silghat in India are identified as ports of call. A MoU is in place for use of Chittagong and Mongla Ports for movement of goods to and from India.

Myanmar

An India-Myanmar direct shipping service from Chennai commenced on October 2, 2014. This has witnessed 11,685 TEUs being shipped between the two countries during the period October 2014 – September 2015. India is also working towards improving the connectivity between Myanmar and the North-Eastern states of India. In this respect, the Kaladan multi-modal transport project seeks to provide an alternative connectivity of Mizoram with rest of India through Kaladan River in Myanmar. The project envisages road transport from Mizoram to Paletwa (Myanmar), thereafter from Paletwa to Sittwe (Myanmar) by IWT and from Sittwe to Haldia or any other part of India through maritime and coastal shipping.

Iran

Iran's geographical location makes it an important gateway for connecting South Asia with the Persian Gulf, Central Asia and beyond to Europe. To utilise the full potential of Iran and improve connectivity, India has been keen on investing and developing ports in Iran. In this respect, India has expressed its interest in developing the Chabahar container terminal project as well as the Chabahar-Faraj-Bam railway project. From Bam, which is on the Afghan border, goods can be taken through the Zarang-Delaram road, which is linked with the Garland highway connecting all major Afghan cities. There is also the possibility of extending this

30 Ministry of Shipping, Government of India, "Annual Report 2015-16" at http://shipping.nic.in/showfile.php?lid=2266

road to Tajikistan and Uzbekistan, which would give further impetus to regional trade and transit. In this context, Union transport minister Nitin Gadkari signed a MoU for development of the Chabahar port project during his visit to Iran in May, 2015. Development of Chabahar port will not only help create an economic corridor connecting Afghanistan and Central Asia but also help connect with Russia through International North South Transport Corridor (INSTC).

The most significant agreement on infrastructure development signed between the two countries has been the bilateral contract on Chabahar Port during Prime Minister Narendra Modi's visit to Iran in May 2016. The agreement involves port development and operations between India Ports Global Private Limited (IPGPL) and Arya Banader of Iran. This contract envisages development and operation for 10 years of two terminals and 5 berths with cargo handling capacity. The signing of trilateral agreement of transit and transportation corridor between India, Iran and Afghanistan signals the increasing effort on part of the three countries to improve regional connectivity between South-West and Central Asia.

This is a significant development for all the three partners since this will provide direct access to India bypassing Pakistan to Afghanistan and Central Asia via Iran. The MoU between Indian Railway PSU IRCON and Construction, Development of Transport and Infrastructure Company (CDTIC) of Iran will enable IRCON to provide services for the construction of Chabhar-Zahedan railway line thus connecting India-Afghanistan and Iran. India has committed to invest around US$ 1.6 billion in this project.

The Chabahar deal clearly reflects the strategic component of the evolving relations between the two countries. The importance of cooperation on Chabahar port was emphasised by both Indian and Iranian leadership. President Rouhani said that Chabahar port serves not only as a point of connectivity between the two countries but also between India and Afghanistan. In addition, "it can also play a pivotal role in Iran-India cooperation on various industries including aluminium steel, and petrochemicals". Highlighting the bilateral and regional significance, Prime Minister Modi said that "The agreement to develop Chabahar Port for which India will provide US$ 500 million is a key milestone" and opens a new chapter in India-Iran strategic partnership. Besides, the construction of the Chabahar-Zahedan-Mashhad railway line can boost bilateral economic cooperation between India and Iran as well as with other regional countries.[31] If realised, it will be a big game changer in terms of enhancing regional economic cooperation.

Trilateral Cooperation

India, Sri Lanka and Maldives have discussed a trilateral cooperation on maritime security that involves information exchange to improve maritime domain awareness, training, pollution control, joint exercises and capacity building.

31 Meena Singh Roy, "Modi's Visit to Iran: Re-Building the Strategic Partnership" May 25, 2016, http://thebricspost.com/modis-visit-to-iran-re-building-the-strategic-partnership/#.V0Vxfv5Jldh

2. Sri Lanka

The major port in Sri Lanka is the port of Colombo which is the country's international trans-shipment hub for container traffic. At present, there are four terminals in operation in this port.[32] A key terminal, the Colombo International Container Terminal (CICT), is a joint venture between China Merchants Holdings International (CMHI) and the Sri Lanka Ports Authority. CMHI holds an 85 percent share in what is one of the single largest foreign investments in the country.[33]

In 2015, the Colombo port handled 5.1 million TEUs of containerized cargo, thereby elevating it three spots to 30th in the Journal of Commerce's (JOC) ranking of global container ports.[34] The port has an annual capacity of 7.4 million TEUs. Moreover, the addition of two new planned terminals, each with annual capacities of 2.4 million TEUs will bring its capacity to 12.2 million TEUs. Another 8,00,000 TEUs of capacity will be added in 2016, when the US$ 500 million East Terminal comes online.[35]

In 2014, the Colombo port was ranked first in JOC port productivity research for South and Southeast Asia, averaging 86 gross moves per crane, per hour while a vessel is at berth. This is comparable with China's Tianjin which had 127 moves per hour. [36] The terminal receives an average of 100 ships in a month, with the 2M Alliance of Maersk Line and Mediterranean Shipping company driving the most volume.[37]

Meanwhile, Sri Lanka's other big port of Hambantota remains grossly underutilised although it attracts a fair share of car carriers from congested roll-on, roll-off facilities in Colombo and Chennai.[38]

(1) Trade Handled by the Port

The port primarily handles transhipment cargo to and from India, east Africa and Bangladesh, accounting for approximately 70 percent of the port's volume.[39] The remaining 30 percent is local traffic, comprising garment, tea and rubber exports, and consumer products, and industrial and agricultural equipment imports.[40] In this light, CICT serves Indian ports on both the east and west coast of the country. These include Tuticorin, Chennai, Kattupalli, Visakhapatnam, Kolkata, Haldia, Krishnapatnam and Cochin on the east, and Mangalore, Nhava Sheva, Pipavav, Hazira, Mundra and Kandla on the west. Colombo handles about 30 percent of the transshipment volume heading to and from India.[41] Similarly, CICT handled close to 2,20,000 TEUs moving to and from Bangladesh in 2015, up 40 percent from 2014.[42] It also has three weekly services connecting to

32 "Sri Lanka Port of Colombo", Logistics Capacity Assessments (LCAs), http://dlca.logcluster.org/display/public/DLCA/2.1.1+Sri+Lanka+Port+of+Colombo

33 "China's Sri Lankan port city is back in play", JOC, February 5, 2015 at http://www.joc.com/port-news/china%E2%80%99s-sri-lankan-port-city-back-play_20150205.html-0

34 "Colombo Port", Sri Lanka Port Authority, http://www.slpa.lk/port-colombo/about-colombo

35 "Colombo breaks through as South Asia's next big transhipment port", JOC, October 20, 2015 at http://www.joc.com/port-news/asian-ports/port-colombo/colombo-breaks-through-south-asia%E2%80%99s-next-big-transshipment-port_20151020.html

36 "Colombo Port", Sri Lanka Port Authority, http://www.slpa.lk/port-colombo/about-colombo

37 Ibid

38 "China buys majority stake in Sri Lanka's Hambantota port", JOC, December 12, 2016 at http://www.joc.com/international-trade-news/infrastructure-news/asia-infrastructure-news/china-buys-majority-stake-sri-lanka%E2%80%99s-hambantota-port_20161212.html

39 "Colombo breaks through as South Asia's next big transhipment port", JOC, October 20, 2015 at http://www.joc.com/port-news/asian-ports/port-colombo/colombo-breaks-through-south-asia%E2%80%99s-next-big-transshipment-port_20151020.html

40 Ibid

41 Ibid

42 Ibid

the ports of Dar-es-Salaam, Nacala, and Mombasa.[43]

(2) Comparative Advantage of Colombo Port vis-à-vis Indian Ports

The Colombo port enjoys a number of comparative advantages over Indian ports that has enabled it to position itself as a key transhipment hub of the region. These include:

a) India's cabotage rules which prevent foreign ships from transporting cargo between Indian ports. At present Indian cargo to the West is taken to ports such as Colombo, Singapore or Jebel Ali in feeder vessels and then shipped to final destinations in large mother vessels. This increases logistics cost by 10-20 per cent.[44]

b) Structural problems of Indian ports in the form of congestion, inadequate draft, higher container handling fees and slow turnaround have proved to be major obstacles in the docking of large ships.[45] In this light, the average ship size handled at Indian ports is of a capacity of around 5,000 boxes.[46] It has been estimated that India can recover US$ 260 billion in lost shipping trade annually if the Indian ports overcome their infrastructural, operational and policy bottlenecks.[47]

(3) China's Forays in Sri Lanka

In April 2016, Sri Lankan Prime Minister Ranil Wickremasinghe announced that the US$ 1.4 billion Colombo Port City project will be developed into a financial hub from a standalone real estate project in the Indian Ocean region.[48] Outlying the broad contours of the plan, he elaborated on a joint venture between Chinese and Sri Lankan companies as part of a 20 year framework plan, with 40 percent of the project being put up in the stock market.[49] Mr. Wickremasinghe stated that a comprehensive economic strategy between Sri Lanka and China has been defined which will be relevant for the next two decades.[50]

Meanwhile, the Sri Lankan government has decided to divest 80 percent of Hambantota deep sea port to China Merchants Holdings Company on a 99-year lease for US$ 1.1 billion.[51] The same company has previously expanded and now runs Colombo's South Container Terminal.[52] Hambantota was financed and built by Chinese companies but has been a commercial failure, with the port getting only a fraction of the ships that it can handle. It has also been reported that a plan to industrialise Hambantota is being firmed up that will involve

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43 Ibid

44 "Why Indian ports can't compete with Colombo", The Hindu, December 16, 2015 at http://www.thehindubusinessline.com/economy/logistics/why-indian-ports-cant-compete-with-colombo/article6698168.ece

45 "Ambitious India Port Bets on Policy Shift to Steal Colombo Trade", Bloomberg, August 10, 2015 at http://www.bloomberg.com/news/articles/2015-08-09/ambitious-india-port-bets-on-policy-shift-to-steal-colombo-trade

46 "Why Indian ports can't compete with Colombo", The Hindu, December 16, 2015 at http://www.thehindubusinessline.com/economy/logistics/why-indian-ports-cant-compete-with-colombo/article6698168.ece

47 Ibid

48 "China, Sri Lanka to redefine Colombo Port City project", The Hindu, April 9, 2016 at http://www.thehindu.com/news/international/china-and-sri-lanka-decide-to-make-port-city-into-a-financial-hub-as-part-of-20-year-plan/article8455509.ece

49 Ibid

50 Ibid

51 "How China-Sri Lanka Relations Are Getting New Wings", South China Morning Post, December 3, 2016 at http://www.scmp.com/week-asia/geopolitics/article/2051323/exclusive-how-china-sri-lanka-relations-are-getting-new-wings

52 "Sri Lanka's Hambantota Port And The World's Emptiest Airport Go To The Chinese", Forbes, October 28, 2016 at http://www.forbes.com/sites/wadeshepard/2016/10/28/sold-sri-lankas-hambantota-port-and-the-worlds-emptiest-airport-go-to-the-chinese/#7c51c93516d8

leasing out 50 square kilometres of land for an industrial estate for Chinese companies.[53] China has proposed a refinery, LNG and cement plant, and a dockyard.[54] Similarly, a Chinese company will take over the loss making Mattala International Airport with the objective of turning it around.[55]

These developments come against the backdrop of Sri Lanka's mounting debts and balance of payment crisis, and the need for investments.[56] Part of the debt problem lies in the massive Chinese loans worth US$ 8 billion that Sri Lanka had taken for infrastructure projects. In 2015, Sri Lanka's foreign debt touched 94 percent of its GDP.[57] It has been estimated that debt repayment comprises 95 per cent of all government revenue, with a third of all earnings estimated to be servicing Chinese debt.[58] This had resulted in Sri Lanka seeking a US$ 1.5 billion International Monetary Fund (IMF) bailout.[59] The government has declared that the disinvestment money will be used to repay foreign loans.[60]

This economic crisis has resulted in the current Sri Lankan government softening its initial anti-Chinese position. Prime Minister Wickremasinghe, during his visit to Beijing in April 2016, had offered to swap equity in Sri Lankan infrastructure projects against the loans.[61] A Joint Statement issued at the end of the visit stated, 'the two sides will use the development of the 21st Century Maritime Silk Road as an opportunity to further advance infrastructure development, the China-Sri Lanka FTA negotiations, promote joint ventures and expand cooperation in the areas of economy, culture, science and technology and people to people contacts.'[62] However, the government has tried to allay concerns of excessive Chinese dependence by arguing that Hambantota's development is open to all, and that the state will be a regulator with a provision for separate independent operators. The Sri Lankan navy is also expected to have a base in Hambantota.[63]

(4) Strategic Challenge

According to some Indian analysts, China's increasing forays in Sri Lanka is likely to have an impact on the geo-politics of the Indian Ocean region. Sri Lanka's strategic location in straddling the principal east-west sea lines of communication makes it a pillar of China's One Belt One Road strategy. In sheer closeness, the Indian naval bases of Vizag and Andaman and Nicobar islands are 1,300 kilometres away while the distance between Hambantota and Sriharikota is less than 1,500 kilometres.[64] Although China's military threat to

53 Ibid
54 Ibid
55 Ibid
56 "Sri Lanka to sell 80 percent of southern Hambantota port to Chinese firm", Reuters, October 28, 2016 at http://www.reuters.com/article/us-sri-lanka-ports-idUSKCN12S12R
57 Ibid
58 Ibid
59 "IMF agrees $1.5 billion bailout for Sri Lanka to avert balance of payments crisis", Reuters, April 29, 2016 at http://www.reuters.com/article/us-imf-sri-lanka-idUSKCN0XQ063
60 Ibid
61 "How China-Sri Lanka Relations Are Getting New Wings", South China Morning Post, December 3, 2016 at http://www.scmp.com/week-asia/geopolitics/article/2051323/exclusive-how-china-sri-lanka-relations-are-getting-new-wings
62 "China, Sri Lanka to redefine Colombo Port City project", The Hindu, April 9, 2016 at http://www.thehindu.com/news/international/china-and-sri-lanka-decide-to-make-port-city-into-a-financial-hub-as-part-of-20-year-plan/article8455509.ece
63 Ibid
64 M. K Bhadrakumar, "India's 'hush-hush' assets face a Chinese privacy invasion", Asia Times, November 1, 2016 at http://www.atimes.com/indias-hush-hush-assets-face-chinese-privacy-invasion/

Indian Naval bases from Sri Lanka is too farfetched a scenario in the present situation, given China's desire to project itself as a responsible global player wanting to enhance trade and economic cooperation through its OBOR strategy of infrastructure development. At present, Beijing is mindful of the dangers of getting involved in regional conflicts. At the same time the Government in Sri Lanka would also not like to alienate India by letting China use its port for military purpose. However, it is significant to note that China's presence in Hambantota does challenge India's strategic space which it has enjoyed all these years. In future this could complicate India's regional security environment if China pursues any military objective in Hambantota.

3. Myanmar

The main port of Myanmar is the port of Yangon that handles close to 90 percent of the country's trade.[65] It is accessible to vessels of 167 meters in length, 9 metres in draft and 15,000 dead weight tonnage (DWT).[66] The port is divided into two parts: The larger Myanmar International Terminal Thilawa (MITT) and Old Yangon port area, which covers 4 terminals and 15 wharfs [67]. The MITT is used mainly for Roll-on Roll-off (RORO) ships for transport of cars. This port is located 16 km from Yangon downtown and 16km from Yangon river bay and next to the Thilawa Special Economic Zone developed by a Japanese joint-venture company.[68] The International Terminal Thilawa consists of 2 terminals and 6 wharfs. It is Myanmar's first purpose-built, multi-purpose international container port, and is managed by Hutchison Port Holdings (HPH) since 1998. The performance of the Yangon Port in 2014 shows that it received 2.334 ships, handled trade cargo to the tune of 24,242 mt and 6,17,169 TEUs.[69] In 2015, Maersk Line and China Shipping Container Lines – two of the world's largest shipping companies - launched direct services from Shanghai to Yangon.

(1) Key Limitations of the Yangon Port

A major issue faced by the Yangon port is the logistical deficiencies that have frequently delayed the handling of cargo.[70] It has been estimated that the number of ships arriving at the port has doubled over the last decade, while the arrival of general goods and containers has doubled and risen fourfold respectively.[71] During Thingyan holidays in April 2016, cargo was stuck for more than 10 days at the mouth of Yangon River due to the inability of local container companies to handle the increased traffic. This led to additional shipping and port expenses. The Myanmar government had to resort to emergency measures, which involved 24 hour port operation and customs clearance, to overcome the backlog. Thus, the port's infrastructure has been unable to keep pace with the increased traffic.

65 "Yangon Port Information", Myanmar Port Authority, http://www.mpa.gov.mm/facts-figures/yangon-port-information

66 Ibid.

67 Ibid

68 "Port of Yangon", Logistics Capacity Assessments (LCAs), http://dlca.logcluster.org/display/public/DLCA/2.1.10+Myanmar+Port+of+Yangon Accessed on October 7, 2016

69 Ibid

70 Ministry of Information, Republic of Union of Myanmar, "Container handling delays at Yangon's ports to be addressed within three weeks: Union Minister", http://www.moi.gov.mm/moi:eng/?q=news/20/05/2016/id-7025

71 "Emergency measures passed to free up trade at Yangon ports", Myanmar Times, May 27, 2016 at http://www.mmtimes.com/index.php/business/20535-emergency-measures-passed-to-free-up-trade-at-yangon-ports.html

(2) Limitations of the Port:

Some of the limitations of the pot can be summarised under following headings:

a) Narrow harbour, congestion and space and technology constraints:

The Yangon port faces the intrinsic problem of narrow harbours for unloading containers.[72] The limited draft of the port also prevents the docking of bigger vessels. Similarly, a lack of 24-hour management of the port and inadequate infrastructure involving X-ray facilities for cargo scanning have increased the turnaround time for ships to more than three days. Inadequate container space has also contributed to the delay in handling cargo.[73]

b) Procedural Issues:

Customs inspections often take much more time than the global average, with customs offices working limited hours from 9 am to 4 pm.[74] Clearance time averages between three to seven days.[75] Moreover, the absence of a single window clearance for permits also delays the cargo handling. Also, foreign currency payments for exports that need to be routed through state-owned lenders - Myanma Foreign Trade Bank and Myanma Investment and Commercial Bank – is often time consuming. These limitations have a negative impact on market sentiments, can scare away potential investors, and thereby impede the nascent economic growth.

Government Initiatives to overcome the limitations

The Ministry of Commerce has fast tracked the formation of a Trade Facilitation Committee (TFC) designed to overcome infrastructural and procedural bottlenecks. This is part of the overall framework to boost exports. Minister of Commerce U Than Myint has said that the priority is to increase exports, and that a TFC would help with this.[76] As such, the committee 'will look to amend policies and laws to avoid unnecessary costs for traders during the loading, unloading and cargo storage processes at the port. Improving market opportunities and the documentation requirements was also a priority'.[77]

Port Development in Myanmar

As Myanmar recovers from years of international sanctions, its government has initiated an ambitious port and infrastructure development plan that seeks to triple trade within the next few years. The key projects include the Dawei deep sea and the Kyaukphyu ports.

72 http://www.portstrategy.com/news101/world/asia/myanmar-admits-to-development-challenges

73 "Commerce ministry to tackle container crisis and trade delays", Myanmar Times, May 18, 2016 at http://www.mmtimes.com/index.php/business/20358-commerce-ministry-to-tackle-container-crisis-and-trade-delays.html

74 "Emergency measures passed to free up trade at Yangon ports", Myanmar Times, may 27, 2016 at http://www.mmtimes.com/index.php/business/20535-emergency-measures-passed-to-free-up-trade-at-yangon-ports.html

75 http://theloadstar.co.uk/myanmar2/

76 "Commerce ministry to tackle container crisis and trade delays", Myanmar Times, May 18, 2016 at http://www.mmtimes.com/index.php/business/20358-commerce-ministry-to-tackle-container-crisis-and-trade-delays.html

77 Ibid

(3) Dawei Deep Sea Port

The Dawei deep sea port, in the south-west of the country, is a joint venture between Myanmar and Thailand. Approximately 196 square kilometres have been earmarked for the transformation of an obscure fishing community into this deep sea port and industrial estate, having the status of a special economic zone (SEZ).[78] Japan's involvement in the project in 2015 has added a renewed impetus to it. Dawei has the potential to become an important trade corridor linking Myanmar with Thailand, Laos, Cambodia and Vietnam. It is expected to be operational by 2020.[79] The economic corridor was first identified by the Asian Development Bank in 1998 to promote trade between the four Mekong countries.

The broad contours of the plan involve building two basins that can accommodate deep water vessels up to 16 metre draft. The first basin of approximately 3.5km length and 16m draft, will include a container terminal on one side with container gantry cranes, and a bulk cargo terminal on the other side. The secondary basin of 12.5 metre draft will have access to a large logistics hub area on one side and grain silo's and fertilizer storage on the other side.[80] Overall, the port is designed to accommodate 25 ships ranging from 20,000 to 50,000 tons, and handle 280 million tons of goods per year.[81]

Other plans, as part of the SEZ, involve building a steel mill, heavy industries, a coal fired power plant with a total capacity of 4,000 MW, a 214 megawatt hydroelectric dam and water storage reservoir.[82] Residential, recreation and commercial zones are also in the pipeline.[83] Meanwhile, a 150 kilometre road and rail link, along with oil and gas pipelines and electrical transmission lines, will connect Dawei to the east of Thailand. The overall project will require an investment of up-to US$ 58 billion.[84]

Recent reports indicate that an Italian-Thai Development (ITD) company is forming a consortium with Chinese companies to invest in the infrastructure projects in Dawei SEZ. The Chinese companies include King Trillion and China Railway Engineering Corp (CREC), which is a key player in China's OBOR project.[85] The Chinese investment is expected to be in the range of US$ 800 million.[86]

Challenges

The port has, over the years, faced several challenges. In 2012, Myanmar cancelled a 4,000 megawatts coal fired power station to be built by a Thai company stating the 'will of the people'.[87] Similarly, in 2012, ITD's key Myanmar local partner, Max Myanmar, had pulled out entirely from the project. Insufficient

78 "Massive Dawei Corridor Set to Span Four Nations", Mekong Eye, March 14, 2016 at https://www.mekongeye.com/2016/03/09/a-four-nation-corridor/

79 "Myanmar, Tanintharyi, Dawei Deep Sea", Logistics Capacity Assessments (LCAs), http://dlca.logcluster.org/display/public/DLCA/2.1.6+Myanmar%2C+Tanintharyi%2C+Dawei+Deep+Sea+Port

80 Ibid.

81 "Massive Dawei Corridor Set to Span Four Nations", Mekong Eye, March 14, 2016 at https://www.mekongeye.com/2016/03/09/a-four-nation-corridor/

82 Ibid

83 Ibid

84 Ibid

85 "Chinese firms seek part in Dawei SEZ", The Nation, March 7, 2016 at http://www.nationmultimedia.com/news/business/macroeconomics/30280903#

86 "Massive Dawei Corridor Set to Span Four Nations", Mekong Eye, March 14, 2016 at https://www.mekongeye.com/2016/03/09/a-four-nation-corridor/

87 Ibid

funds at various phases of construction had brought construction to a halt.[88] Moreover, environmental and displacement issues have proved to be a major stumbling block. In 2014 it was estimated 20-36 villages, (comprising 22,000 – 43,000 people), would be directly affected by the construction of the SEZ.[89] Local organisations and civil societies have urged the government to reconsider the SEZ project.

(4) Kyaukphyu Port

The second integrated port of Myanmar that is in the pipeline is the Kyaukphyu Port, situated in the Rakhine state that borders Bangladesh to the north and Bay of Bengal to the west. In December 2015, a consortia led by China's CITIC Group Corporation won bids to develop a special economic zone and a deep sea port.[90] CITIC's consortia include China Harbor Engineering Company Ltd., China Merchants Holdings, TEDA Investment Holding and Yunnan Construction Engineering Group. The only non-Chinese company involved is Thailand's Charoen Pokphand Group.[91]

The port project will involve building two terminals with a total of 10 berths. The port project will be constructed in three phases within 20 years. The expected annual capacity will be 7.8 million tons of bulk cargo and 4.9 million TEU containers.[92] In addition, a road and bridge connecting the Industrial Park and Deep Sea Port will also be built.[93]

The industrial park will feature labour intensive sectors such as food processing, textiles and garments, construction materials, transportation and logistics.[94] It is projected to have an annual output of US$ 3.2 billion in gross economic value and create about 1,00,000 jobs.[95]

The two projects are expected to generate US$ 10 billion in annual GDP growth for Myanmar.[96]

Challenges

The port and the SEZ projects face multiple political, environmental, displacement and security challenges. Situated in the Rakhine state that witnessed religious violence between Buddhists and Muslims in 2012 and 2013, the security situation prevalent in the region is questionable. Similarly, doubts persist about the ability of the government to ensure adequate compensation and rehabilitation of the displaced people. A lower house legislator from Kyaukphyu, Ba Shin has expressed his reservations about this project. He stated 'it is not known whose land will be seized and how they will be compensated… nothing is known about the potential developers and investors. There are growing concerns and doubts among the people due to lack of transparency'.[97]

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88 Ibid

89 Ibid

90 "China's CITIC wins projects to develop Myanmar economic zone", Reuters, December 31, 2015 at http://www.reuters.com/article/myanmar-citic-project-idUSL3N14K1D720151231

91 Ibid

92 Ibid

93 "CITIC-led consortium wins bid for implementing SEZ in Myanmar", China Daily, December 12, 2015 at http://www.chinadaily.com.cn/business/2015-12/31/content_22882073.htm

94 "Hopes high for potential of China-led investment", China Daily, April 1, 2016 at http://www.chinadailyasia.com/asiaweekly/2016-04/01/content_15409599.html

95 Ibid

96 Ibid

97 Shannon Tiezzi, "Chinese Company Wins Contract for Deep Sea Port in Myanmar", The Diplomat, January 1, 2016 at http://thediplomat.com/2016/01/chinese-company-wins-contract-for-deep-sea-port-in-myanmar/

(5) China's Footprints in Myanmar

The Kyaukphyu port and SEZ project highlight China strengthening its footprints in Myanmar. Since 1988, Beijing has invested about US$ 15.42 billion in 115 projects across the country. This amounts to 26 percent of the total foreign investment received by Myanmar at the end of 2015.[98] China is the biggest foreign investor in the country.

The Kyaukphyu project, with its close proximity to the overland links between Myanmar and southern China, will help Beijing reduce its overriding dependence on the potential choke points of the Malacca Straits. There already exists an oil and gas pipeline from Kyaukphyu to the Yunnan province.

In order to overcome its perceived negative image, the consortium has planned to provide training opportunities to local people as well as ensure anti-disaster and emergency-rescue services.[99] It also intends to set up 50 clinics and 50 schools in the region.[100] A social development fund will also be formed to support the needs of local government and residents.[101]

(6) Expansion of Thilawa Port

As part of the infrastructure expansion drive, Myanmar has earmarked the Port of Thilawa near Yangon to be developed as a key logistics hub.[102] As such, in January 2016, Japan's Toyo Construction Co. and JFE Engineering Corp. companies won a contract worth US$ 118 million to build a new container terminal at Thilawa.[103] The project will come under the ambit of Japan's official development assistance program for developing countries.

The terminal will have an annual capacity of 1,87,000 TEUs when it is completed in the autumn of 2018.[104] It will also involve the construction of an 18-hectare container yard, and two jacket-type berths with depths of 10 meters, lengths of 400 meters and width of 40 meters.[105] It will be able to receive two ships of up to 20,000 DWT at the same time.

Notably, Thilawa is Myanmar's first SEZ and is a collaboration between Myanmar and Japan. The SEZ became operation in 2015. In December 2015, Japan's largest international freight forwarder, Nippon Express Co. set up its second Myanmar subsidiary in the Thilawa SEZ. It will also build a new warehouse.

4. Pakistan

The three major ports of Pakistan that dot the country's 1,046 kilometres of coastline include the ports of Karachi, Muhmmad Bin Qasim and Gwadar.

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98 "Hopes high for potential of China-led investment", China Daily, April 1, 2016 at http://www.chinadailyasia.com/asiaweekly/2016-04/01/content_15409599.html

99 "Hopes high for potential of China-led investment", China Daily, April 1, 2016 at http://www.chinadailyasia.com/asiaweekly/2016-04/01/content_15409599.html

100 Ibid.

101 Ibid

102 ""Myanmar Thilawa port to expand", HIS JOC, January 15, 2016 at http://www.joc.com/port-news/asian-ports/myanmar-port-thilawa-expand_20160115.html

103 Ibid

104 Ibid

105 Ibid

(1) Karachi Port

The Karachi Port handles about 75 percent Pakistan's trade.[106] It is a deep natural port with an 11.5 km-long navigable channel and a 12.2 meter-deep approach channel.[107] It provides round the clock navigation to tankers, container vessels, bulk carriers, and general cargo ships that are upto 75,000 dead weight tonnage (DWT).[108]

The port has 30 dry cargo and 3 liquid cargo handling berths, including the privately operated container terminals – the Karachi International Container Terminal (KICT) and Pakistan International Container Terminal (PICT) – *Annexure 1*. In 2014, the draft of these two terminals was increased to 13 meters which allows them to handle panamax ships.

In 2014, Karachi port handled 43.42 million tons of cargo and 1.72 million container TEUs (twenty equivalent units) - *Annexures 2, 3 and 4*.[109] This includes 29.67 million tons of total dry cargo imports and exports and 13.75 million tons of liquid bulk cargo imports and exports. The total number of ships that called at the port during the same period stood at 1,732 ships.[110] This includes 790 container ships, 193 bulk cargo ships, 255 general cargo ships and 494 oil tankers – Annexure 5.

In November 2015, it was reported that Gantry cranes, one of the biggest container handling cranes in the world was deployed at the port. This will enable the handling of ships that carry up to 18,000 TEUs.[111]

Key Limitations

The Karachi ports faces a number of infrastructural and operational challenges. The principal challenge is its geographical location – within the city of Karachi – that has ensured space constraints and the resultant congestion.[112] Moreover, poor maintenance of operational craft, including tugs and pilot boats, have often led to delays in handling of cargo and increased the turnaround time for the ships.[113] Three of the five tugs remain non-functional while the remaining two fall short of the required 65 ton bollard pull capacity to tug bigger vessels.[114] Meanwhile labour problems have affected the port's functioning as well. In April 2016, employees allegedly attacked the office of Deputy Conservator. Also, cargo handling at Karachi remains one of the most expensive in South Asia.[115]

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106 "Port Statistics", Karachi Port Trust, http://kpt.gov.pk/pages/default.aspx?id=43 Accessed on August 15, 2016

107 Ibid

108 Ibid

109 Press Release, "MINISTER KAMRAN MICHAEL ANNOUNCES THE CHARTER OF DEMAND OF KPT EMPLOYEES AT KPT HEAD OFFICE", Karachi Port Trust, August 20, 2015 at http://kpt.gov.pk/kpt-news.aspx?get=pressrelease Accessed on August 15, 2016

110 Ibid

111 "World largest crane handling devices arrive at Karachi port, significantly enhancing Cargo handling capabilities.", Times of Islamabad, November 14, 2015 at https://timesofislamabad.com/world-largest-crane-handling-devices-arrive-at-karachi-port-significantly-enhancing-cargo-handling-capabilities/ Accessed on August 15, 2016

112 http://www.gwadarport.gov.pk/about%20us.html

113 "Lack of operational craft: Karachi port witnessing ship berthing problems", Business Recorder, June 3, 2016 at http://www.brecorder.com/business-and-economy/189:pakistan/52841:lack-of-operational-craft--karachi-port-witnessing-ship-berthing-problems?date=2016-06-03

114 Ibid

115 "Pakistan: Deep water port project deep in the doldrums", Hellenic Shipping News, December 22, 2016 at http://www.hellenicshippingnews.com/pakistan-deep-water-port-project-deep-in-the-doldrums/

Modernisation Plan

- As part of the design to improve the efficiency of the Karachi port, a number of initiatives have been planned. These include:
- Deepening of channels to accommodate deep draft vessels at all tides. This included dredging the navigable channel to 16.5 meters.
- Computerisation of port operations and installation of electronic aids to monitor port activity.
- Revision of port tariff.
- Setting up of an elevated port expressway, multipurpose bulk terminal, industrial park and cargo village.
- A dedicated area to provide 24-hour handling facilities.

In October 2016, it was announced that South Asia Pakistan Terminals (SAPT), the operator of the Pakistan Deep Water Container Port (PDWCP), will expedite the modernisation of the port.[116] The lease of the terminal will be for an initial period of 25 years and extendable for another 25 years. Moreover, Hutchison Port Holdings Limited (HPH), Hong Kong has been earmarked to develop the site into a modern container terminal capable of receiving and handling Super Post Panamax container ships.[117]

(2) Port Muhmmad Bin Qasim

Port Muhmmad Bin Qasim is Pakistan's second busiest port. It is located in the Indus delta region at a distance of 50 km south-east of Karachi. The port offers conventional functions of cargo handling coupled with provision of land for setting up import based and export oriented industrial and commercial undertakings within 12,000 acres of land above high water mark (Annexure 7).

The principal items of trade handled by the port include wheat, chemicals, coal, containers, crude, furnace and edible oil, iron ore, sugar, cement, rice and general cargo (Annexure 8). In 2012-13, the port received 1,057 ships and handled 24.4 million tonnes cargo (Annexure 9 and 10).

Limitations

The port's upstream location, which is more than 40 kms from the open sea, often results in a longer turnaround for visiting ships.[118] This results in cost-disadvantages for cargoes that have origins and destinations elsewhere.

Port Modernisation

The Pakistani government has sought foreign direct investment (FDI) to the tune of US$ 1.22 billion over the next five years.[119] The key projects identified involve deepening of navigation channel, construction of a 26 km long dual carriageway from National Highway T-junction, passing through PQA commercial areas (Western Industrial Zone and Eastern Industrial Zone) and ending at Sassui Bridge Ghaghar Railway Crossing, up-gradation of main access road and construction of two flyovers on build-operate-transfer (BOT)

116 "Country's biggest port set to begin trial run", Dawn, October 12, 2016 at http://www.dawn.com/news/1289658 Accessed on October 25, 2016

117 Ibid

118 "Gwadar Port", Gwadar Port Authority, http://www.gwadarport.gov.pk/about%20us.html

119 "Port Development Status", Port Qasim Authority, http://pqa.gov.pk/port_development.php

basis at an estimated cost of Rs. 6 billion.[120]

(3) Gwadar

Gwadar is located about 533 kms from Karachi and 120 kms from the Iranian border.[121] The Vision statement of Gwadar Port Authority states that the port 'is to complement Karachi Port and Port Qasim in order to stimulate economic growth of Pakistan, and in particular Balochistan, utilizing the available resources of the country, and also providing an outlet for land locked Central Asian countries, western China and Afghanistan through transit and trade, and offering trans-shipment facilities' (Annexure).[122]

In 2013, China Overseas Ports took over control of the development of Gwadar Port from Singapore's Port of Singapore Authority. According to the agreement, the Chinese company will operate the port for 43 years while Pakistan will retain the overall ownership of it.[123] The Chinese government has also acquired rights to over 2,000 acres of land adjacent to Gwadar Port for industrial development.[124] It is likely that China Overseas Ports will use the land for terminal operations, marine services, a free trade area and an airport.[125]

(4) Port Development

As a key pillar of the China-Pakistan Economic Corridor (CPEC), the following projects (under different stages of project preparation) for the Gwadar port have been approved:

S. No.	Project Title
a	Construction of East-Bay Expressway, Gwadar Port
b	Construction of Breakwaters, Gwadar Port
c	Dredging of Berthing Areas & Channels, Gwadar Port
d	Pak-China Technical & Vocational Institute
e	Infrastructure Development for Free Zone & EPZs, Gwadar
f	Necessary Facilities of Fresh Water Treatment, Water supply
g	China-Pakistan Friendship Hospital (Up-gradation of existing 50 bedded hospital)
h	Coal-based Power Plant at Gwadar
i	Construction of Gwadar International Airport

Source: Gwadar Port Authority at http://www.gwadarport.gov.pk/project.html

120 Ibid
121 Ibid
122 "Vision and Mission", Gwadar Port, http://www.gwadarport.gov.pk/vision.html Accessed on October 16, 2016
123 "China's Gwadar Port Nears Completion", The Maritime Executive, April 14, 2016 at http://www.maritime-executive.com/article/chinas-gwadar-port-nears-completion Accessed on October 16, 2016
124 Ibid
125 Ibid

Gwadar is likely being positioned as a transportation hub with the construction of a 3,000km railway linking Xinjiang with Gwadar. It is expected that oil shipments through this route will cut shipping time by 85 per cent when compared to the Malacca strait route.[126] As such, a special economic zone (SEZ) status for Gwadar is in the pipeline..[127] The Chairman of China Overseas Ports Holding Company had said that Gwadar port will see roughly one million tonnes of cargo going through it by 2017.[128] At present, the traffic at Gwadar is limited mostly to government-funded fertilizer shipments.[129]

5. Bangladesh

The two key ports of Bangladesh are the ports of Chittagong and Mongla. It is estimated that US$ 60 billion of annual trade passes through these ports.[130]

(1) Port of Chittagong

Chittagong Port is the lifeline of Bangladesh and handles 98 percent of the country's container cargo and 92 percent of the total cargo volume.[131] During 2012-2013, it handled over 43.37 million metric tons of cargo, including 1.47 million TEUs containerised cargo (Annexure12).[132] The draft of the port in within the range of 8.5-9.2 metres (Annexure 13) and it handled 2,566 ships in 2014-15 (Annexure 14). Chittagong is a deep water seaport dominated by trade in containerized manufactured products, especially garments, jute and jute goods, leather products, fertilizers, sea food and raw materials.[133] The turnaround time of the port is 6-10 days.[134]

Port Expansion

As part of the expansion of the Chittagong port, a number of projects have been identified. These include:

i. Construction of 40 Storied CPA Tower Building.
ii. Construction of Bay Terminal.
iii. Construction of Terminal at Laldia.
iv. Construction of Patenga Container Terminal (PCT).
v. Construction of Karnafully Container Terminal (KCT).
vi. Replacement of Tug Boat KANDARI-6.

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126 "Chinese firm takes control of Gwadar Port free-trade zone in Pakistan", South China Morning Post, November 11, 2015 at http://www.scmp.com/business/companies/article/1877882/chinese-firm-takes-control-gwadar-port-free-trade-zone-pakistan Accessed on October 16, 2016

127 "Special Economic Zone", Gwadar Port Authority, http://www.gwadarport.gov.pk/ecnomiczone.html Accessed on October 16, 2016

128 Ibid

129 "China's Gwadar Port Nears Completion", The Maritime Executive, April 14, 2016 at http://www.maritime-executive.com/article/chinas-gwadar-port-nears-completion

130 Wade Shepard "Bangladesh's Deep Sea Port Problem", The Diplomat, June 7, 2016 at http://thediplomat.com/2016/06/bangladeshs-deep-sea-port-problem/

131 Ibid

132 "Economic Importance Of Chittagong Port", Chittagong Port Authority, http://cpa.gov.bd/economic-importance-of-chittagong-port/ Accessed on October 16, 2016

133 "Chittagong Port", Assignment point, http://www.assignmentpoint.com/business/organizational-behavior/term-paper-on-chittagong-port.html

134 Ibid

vii. Construction of overflow yard at new-mooring colony.

viii. Replacement of Jarip-15 with modern hydrographic Survey equipment.

Source: Chittagong Port Authority
http://cpa.gov.bd/cpa-portfolio/

Limitations

A major limitation of the Chittagong port is its maximum draft of 9.2 metres which prevents the docking of larger ships. This requires cargo to be transported through smaller vessels, thereby increasing the overall costs. It is estimated that inadequate draft results in an expenditure of an additional US$ 15,000 per day.[135]

(2) Port of Mongla

Mongla port is the second largest port of Bangladesh. It's vision 2021 enumerates on the goal to handle 1,000 ships by 2021.[136] In 2014-15, it handled 406 ships and 42,137 TEUs (Annexure 15). The port can accommodate vessels with a draft of 7.50 metres. In 2014-15, it handled 4530279 mt cargo (Annexure 16).

Limitations:

The Mongla port handles a fraction of Bangladesh's total trade. Several operational problems have emerged over the years.[137] These include:

i. Leakages in bulk cargo
ii. Labour Problems (mainly with stevedores)
iii. Lack of facilities that include vacuators, silo facilities and bagging machines
iv. Obsolete equipment

Port Expansion

It appears that Bangladesh has prioritised the development of the Mongla port.[138] A 3-phased development plan has been drafted that involves increasing the draft to 9 metres, procurement of additional container and cargo handling equipment, improving the security around the port, and construction of a container yard.

(3) Port of Payra

Payra is the third commercial sea port of Bangladesh, located on the north-western coast of the Bay of Bengal. The Government of Bangladesh has adopted a short, medium and long term plan to develop the proposed port.[139] As per the plan, it is projected that operations with at least 2.5 kms terminal will begin by 2018 through an investment of 11 billion takas (Annexure 18).[140] This will involve loading cargos from mother

135 Wade Shepard, "Bangladesh's Deep Sea Port Problem", The Diplomat, June 7, 2016 at http://thediplomat.com/2016/06/bangladeshs-deep-sea-port-problem/ Accessed on October 2, 2016

136 "Mission and Vision", Mongla Port Authority, http://www.mpa.gov.bd/bn/mission Accessed on October 15, 2016

137 "Bangladesh Port of Mongla", Logistics Capacity Assessments (LCAs), http://dlca.logcluster.org/display/public/DLCA/LCA+Homepage Accessed on November 1, 2016

138 "Bangladesh Port of Mongla", Logistics Capacity Assessments (LCAs), http://dlca.logcluster.org/display/public/DLCA/2.1.2+Bangladesh+Port+of+Mongla Accessed on October 2, 2016

139 "Development of PPA", Payra Port Authority, http://ppa.gov.bd/development/ Accessed on October 16, 2016

140 "Bangladesh opens third commercial seaport at Payra", Bdnews24, August 13,2016 at http://bdnews24.com/economy/2016/08/13/payra-port-to-be-inaugurated-on-saturday

ships at outer anchorage and transporting it to the hinterlands through river routes.[141] Initially, the port will handle loading and unloading of food grains, fertiliser and cement. In the second stage, the port is expected to be fully operational by 2023 with a minimum of 10 km container and bulk terminals.[142] By 2023, Payra port is projected to handle 27 percent of the country's TEUs (Annexure 19). In the final stage of the port project, a SEZ, airport, eco-tourism and other facilities will be created and based on public-private partnership (PPP) model.[143] The Payra port is expected to boost the economy of the country's southern districts.[144]

Recently, India has expressed an interest to develop this port.[145] Around ten countries, including Chinese companies, have also expressed an interest to participate in this project, which is expected to cost US$ 15.5 billion.[146]

(4) Matarbari Port

In November 2015, the Bangladesh government cleared Japan's US$ 3.66 billion proposal to finance and build a port in Matarbari.[147] The Japanese proposal also involves building four coal-fired power plants of 600 megawatts each.[148] Japan International Cooperation Agency (JICA) has offered to finance 80 percent of the project on easy terms. Other proposals involve building electricity transmission lines, highways and rail links as part of an industrial corridor.[149] The draft of the port is expected to be 18 meters.[150]

6. Oman

(1) Port of Salalah

The Port of Salalah is a transhipment hub on the Arabian Sea. Its strategic location, at the crossroads of major trade routes of Asia, Europe and Middle East, is a key driving factor for its operations. The port authorities claim that they can serve any size or type of vessel - be it container, cargo, crude carriers or even cruise ships.[151] The presence of a 'free zone' and a U.S.-Oman Free Trade Agreement that provides zero per cent tariffs on over 80 per cent of the items between the two countries, is an added incentive.[152] The free zone is given incentives that include zero per cent corporate tax for 10 years, low OPEX costs, and 100 per cent foreign ownership.[153]

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141 Ibid

142 Ibid

143 Ibid

144 "Bangladesh opens third commercial seaport at Payra", Bdnews24, August 13,2016 at http://bdnews24.com/economy/2016/08/13/payra-port-to-be-inaugurated-on-saturday

145 "Dhaka cancels port to be built by China, India eyes another", Times of India, February 8, 2016 at http://timesofindia.indiatimes.com/india/Dhaka-cancels-port-to-be-built-by-China-India-eyes-another/articleshow/50894554.cms

146 "Bangladesh's third seaport at Payra", The Daily Star, October 30, 2015 at http://www.thedailystar.net/frontpage/third-seaport-payra-164656

147 "Exclusive: Bangladesh favours Japan for port and power plant, in blow to China", Reuters, September 10, 2015 at http://in.reuters.com/article/bangladesh-japan-china-idINKCN0RA1T620150910 Accessed on October 25, 2016

148 "Bangladesh favours US$4.6bn Japanese port plan over rival Chinese scheme, says minister", South China Morning Post, September 11, 2015 at http://www.scmp.com/news/china/diplomacy-defence/article/1857186/bangladesh-favours-us46bn-japanese-port-plan-over-rival

149 Ibid

150 "Japan Beating China in Race for Indian Ocean Deep-Sea Port", Bloomberg, June 23, 2015 at http://www.bloomberg.com/news/articles/2015-06-23/japan-beating-china-in-race-for-bangladesh-s-first-deep-sea-port Accessed on October 7, 2016

151

152 "Salah Free Zone", Port of Salah, http://www.salalahport.com/index.php?lang=en&name=Salalah%20Free%20Zone&itemid=88

153 Ibid.

The port has a container terminal with six berths of up to 18 metres draft, and a general cargo terminal of 15 berths of up to 18 metres draft.[154] During 2015, Salalah Port handled 2.57 million TEUs at its container terminal and 12.54 million tons at its general cargo terminal (Annexure 20).[155] In 2015, a new deep-water general cargo and liquid bulk terminal was also inaugurated. It has enabled the facility to handle approximately one million tonnes monthly (Annexure 21).[156]

It has been estimated that approximately 90 percent of Salalah's container traffic is transhipment cargo movement.[157] The key items traded include bulk cargo, limestone and gypsum, and are predominantly destined for the Indian sub-continent. Meanwhile, cement is exported to the Red Sea and East Africa, while wheat is imported from Australia, and liquid cargo is predominantly exported to Europe and Asia.[158]

(2) China's Forays in Oman

In May 2016, a group of Chinese investors signed an agreement to build a 1,172-hectare industrial park at Oman's southern port of Duqm.[159] This is part of the larger plan to develop the area around Duqm, which is 550 kms south of Muscat, into a major business zone as part of the plan to diversify the economy beyond oil.[160]

It is projected that the 1,172-hectare industrial park will attract US$ 10 billion of investment by 2022, including US$ 370 million from China.[161] As per the agreement, Chinese companies, who will build the infrastructure, will be allowed to lease the land to Chinese investors. The majority of the funding is likely to come from Chinese banks.[162] The other projects involve construction of an oil refinery, cement plant, factory for making pipes for the petroleum industry, automobile assembly plant, and a 1-gigawatt solar power generation facility.[163]

7. Iran

Iran is at the crossroads of international transport corridor connecting the North–South corridor, the East–West corridor (old Silk Road), the Transport Corridor Europe–Caucasus–Asia (TRACECA), the Asia Land Transportation Infrastructure Development (ALTID), and South Asia. It has many ports with the important ones being the Port of Bandar Abbas and Chabhar.

154 Ibid

155 "Port of Salah Annual Report 2015", Port of Salah, http://www.salalahport.com/pdf/annual/2015/POS-Annual-Report-2015-English.pdf Accessed on October 7, 2016

156 Ibid

157 "Port of Salalah sees 29% volume growth in H1'16", Logistics Update Africa, September 13, 2016 http://www.logupdateafrica.com/index.php/shipping-port-of-salalah-sees-29-volume-growth-in-h116/ Accessed on October 7, 2016

158 "Overview", Port of Salah, http://www.salalahport.com/index.php?lang=en&name=Overview&itemid=67 Accessed on October 7, 2016

159 "Chinese investors to build industrial park at Oman's Duqm port", Reuters, May 23, 2016 at http://www.reuters.com/article/oman-china-industry-idUSL5N18K32D Accessed on September 16, 2016

160 Ibid

161 Ibid

162 Ibid

163 Ibid

(1) Port of Bandar Abbas (Shahid Rajaee Port)

The Bandar Abbas port is the largest port in Iran. It handles almost half of the country's seaborne trade.[164] In 2014-15, the total container throughput during expanded 10.6 percent year-on-year to 2.45 million TEUs.[165] The maximum draft of this port is 13.6 metres (Annexure 21).[166] The development of a SEZ is in the pipeline. It is estimated that by 2020, Iran will add 5,70,000 TEUs capacity, 2 million of deadweight tonnage of dry bulk vessels and 1.6 million deadweight tonnage of tankers.[167]

Shahid Rajaee Port at a Glance

Area	2400 hectares
Location	North of Hormuz Strait
Cargo Throughput	70 Million Tons
Roofed Warehouses	193095 m²
Container Terminal Throughput	3 Million TEUs
Berths Dept	23 Berths with 7.31 m Length
Berth Number	Existed Railway: 23.5 km Under-Construction Railway: 16 km
Domestic Railway	32 km
Distance to Tehran	1501 km
Distance to the Province Centre (Bandar Abbas)	32 km
Distance to the Centre of Bandar Abbas	34 km
Distance to Bandar Abbas Airport	40 km
Distance to Bandar Lengeh Abbas	210 km

Source: Ministry of Roads and Urban Development, Government of Iran
http://shahidrajaeeport.pmo.ir/pso_content/media/files/2011/7/14358.pdf

(2) Chabahar Port

The Iranian port of Chabahar (previously Bandar Beheshti), directly or indirectly, is one of the most strategic transit locations. It is often referred to as the 'Golden Gate' to the landlocked Commonwealth of Independent States (CIS) countries and Afghanistan.[168] Chabahar is not only strategically located but has immense potential to connect the business growth centres in South Asia (India), the Middle East (Dubai), Central Asia and Afghanistan. It is close to the mainline shipping routes to Asia and Europe, located on the Makran coast of the Sistan and Baluchistan province of Iran and facilitates the transit of goods to northern

164 "Salalah port signs deal with Iran for boosting bilateral trade", Times of Oma, March 6, 2016 at http://timesofoman.com/article/78861/Business/Economy/Salalah-port-signs-deal-with-Iran-for-boosting-bilateral-trade Accessed on October 11, 2016

165 "Iran's container trade forecast to grow 25 percent annually", JOC, November 2, 2015 at http://www.joc.com/port-news/asian-ports/irans-container-trade-grow-25-percent-annually-analyst-says_20151102.html

166 "Iran Shahid Rajaee Port (Bandar Abbas)", Logistics Capacity Assessment, http://dlca.logcluster.org/pages/releaseview.action?pageId=853360

167 Ibid

168 Meena Singh Roy, "Iran: India's Gateway to Central Asia", Strategic Analysis, November 23, 2012 at http://www.tandfonline.com/doi/pdf/10.1080/09700161.2012.728862?needAccess=true

and southern Afghanistan and the Central Asian Republics. It is 700 km away from the capital of the province of Zahedan and 2,200 km away from Tehran. The distance from Chabahar to Milak on the Afghan border is 950 km; it is 1,595 km to Dogharoon on the Afghan border; it is 1,827 km to Sarakhs on the Turkmen border; and it is 120 km from the Pakistan border.[169] Iran plans to use this port for transhipment to Afghanistan and Central Asia and maintain the Bandar Abbas port as a major hub for trade with Russia and Europe. The Chabahar port is functional and has 2.5 million metric tons (MT) capacity per annum. Its capacity is expected to go up to 6 million MT per year in the first phase, going up to 12 and finally to 20 million MT per annum.[170] Natural gas is carried to the province through 56 pipelines which are expected to reach Chabahar in about two to three years.[171]

The Iranian government has ratified the establishment of the Chabahar Free Trade and Industrial Zone adjacent to the city of Chabahar. This zone, with an area of 140 km, is divided into nine functional zones. About 26 per cent of this Free Zone is allocated for trade and service activities, 49 per cent for industry and 25 per cent for tourism and residential purposes.[172] The necessary infrastructure is either already in place or pending completion. The Iranians have built a modern highway of 680 km from Chabahar to Zahidan in the north. Currently, desalinated water, sanitation, electricity, communication, internet, roads and port facilities are available.

The port of Chabahar offers some important incentives, which deserve some attention, and they include[173]:

- Foreign nationals can register and own companies with 100 per cent ownership, except for land, which can be leased on a long-term basis at low cost. All economic activities in the Free Zone are exempt from taxes for 20 years.
- Import of goods produced in the Free Zone into the mainland is exempt from payment of all or part customs duties to the added value thereof in the zone. Capital investment by foreign investors is guaranteed and protected by the government.
- Repatriation of net profits, initial capital and gains resulting from economic activities in the Free Zone is permitted.
- Foreign nationals are not obliged to obtain a visa in advance for direct entry into the Free Zone. Employers can employ foreign nationals accounting for up to 10 per cent of their labour force.
- Rules and regulations in the zone conform to those of the World Trade Organisation (WTO) and therefore there is no clause for foreign investors to export the goods produced in the Free Zone or any obligation to use 'local content' and also no obligation exists regarding 'balance of trade'.
- Discounts on terminal handling charges are up to 30 per cent, up to 10per cent on port operating charges and up to 50 per cent on road tolls. Availability of cold storage, open and roofed warehouses, hangars

169 Ibid

170 Ibid

171 Based on a presentation on 'Opportunities and Challenges of INSTC' by A. Bahmanzadez, Director, Transit and Border Terminal, Road Maintenance & Transportation Organization, Ministry of Road and Transportation, Iran at the international conference on 'Energy, Transportation and Economic Links in Eurasia: Emerging Partnerships', IDSA, New Delhi, 16–17 January 2012; Chabahar, the Neglected Land', no. 3

172 Meena Singh Roy, "Iran: India's Gateway to Central Asia", Strategic Analysis, November 23, 2012 at http://www.tandfonline.com/doi/pdf/10.1080/09700161.2012.728862?needAccess=true

173 Ibid

and container terminals has paved the way for economic establishments to depot their commodities for re-export and distribution purposes.

- The Iranian government, under the auspices of the board of ministers and the ministry of economic affairs, has taken certain measures for the protection and guarantee of capital investment:
  a) Investors can submit their request for guarantee to the Free Zone authorities. After processing the request, the board of ministers will issue a permit for investment. The legal rights of investors and the permission for capital investment will then be issued by the board of ministers, thus ensuring guarantee and protection.
  b) Investors can choose to have their capital investments guaranteed through the 'Foreign Investment Promotion and Protection Act' (FIPPA) and submit their request to the 'Organisation for Investment, Economic and Technical Assistance of Iran' (OIETAI) of the ministry of economic affairs.

China has already started the construction of a heavy oil refinery. A Chinese dredger is functional at Chabahar port and employed for land reclamation. The Chinese have also opened a Chinese market at Chabahar. China is all set to launch the Chinese built industrial town project as part of its commitment to develop Chabahar port city. China has already decided on a location for the project and will be developing the free-trade zone in a phased manner. [174] During Xi Jinping's visit in January 2016, China and Iran reached an agreement to develop bilateral cooperation under a 25 year strategic plan, signing 17 agreements and an MoU to establish the joint Silk Road Scientific Fund.[175] The CIS Countries (33acres) and Afghanistan (50 acers) have leased land at the Chabahar Free Zone for industrial activities. Omanis have also shown interest in the development of transit through Chabahar. Given these developments Chabahar will soon convert into commercial activity.

(3) Regional Initiatives for Infrastructure Development: Prospects and Challenges

At the regional level, countries in Asia have been working towards building connectivity through infrastructure development. In this regard, two such initiatives merit some attention - the International North South Corridor (INSTC) and the China Pakistan Economic Corridor (CPEC). The INSTC is an important initiative taken by Russia, India and Iran to promote transportation cooperation among member states and enhance their connectivity with the land locked region of Central Asia. The INSTC is an ancient route that connected South Asia with North Europe for centuries. This route was used by European, Indian, Russian and many other foreign traders. During the late 17th and early 19th centuries, Indian traders were dominant traders using this route. Under the Safavid dynasty (1501-1722), there were some 10,000 to 20,000 Indian

174 "Chabahar port to harbor Chinese industrial town," available at http://www.presstv.ir/ Detail/2016/04/27/462797/China-CMI-Iran-mega-port/ in Meena Singh Roy, ""Modi's Visit to Iran: Will it provide a New Momentum to Bilateral Relations?, Issue Brief, May 16, 2016, IDSA, pp.6

175 "Iran, China agree to establish Silk Road Scientific Fund," available at http://theiranproject.com/ blog/2016/01/24/iran-china-agree-to-establish-silk-road-scientific-fund/; "Iran's leader lauds Iran-China 25-year strategic relations agreement," available at http://theiranproject.com/blog/2016/01/25/irans-leader-lauds-iran-china-25-year-strategicrelations- agreement/ in Meena Singh Roy, "Modi's Visit to Iran: Will it provide a New Momentum to Bilateral Relations?, Issue Brief, May 16, 2016, IDSA, pp.6

traders spread across the empire.[176]The modern day INSTC is a multi-modal shortest transportation route linking India Ocean and Persian Gulf to the Caspian Sea via Iran, and St. Petersburg and North Europe via the Russian Federation. The INSTC envisages movement of goods from Mumbai to Bandar Abbas by sea, from Bandar Abbas to Bandar-e-Anzali (an Iranian port on the Caspian Sea) by road, from Bandar-e-Anzali to Astrakhan (a Caspian port in the Russian Federation) by ship across the Caspian Sea, and from Astrakhan to other regions of the Russian Federation by Russian railways.

It was on 12 September 2000 that India, Iran and Russia signed the inter-governmental agreement in St. Petersburg which was ratified by all the three signatory states and has been in force since 16 May 2002.[177] The main objective as specified in the agreement is to increase "the effectiveness of Transport ties in order to organize goods and passenger transport along the International "North –South" Transport Corridor and promote "access to the international market through rail, road, sea, river and air transport of the state parties to the agreement"; provide security of travel and safety of goods and harmonise transport policies, law and legislative basis in the field of transport for the purpose of implementing the agreement.[178] In the past, the development on this project has been slow. The Coordination Council of the INSTC has been meeting to discuss various issues pertaining to this corridor and adopting recommendations made by the Experts Groups of the INSTC. However from 2005 till 2012 not much progress was made. However, thereafter there has been greater cooperation among the countries on this.

In January 2012, a meeting on modalities for moving forward on the INSTC project was held in New Delhi.[179] During this meeting of the INSTC member countries, it was pointed out that countries like Turkmenistan, Uzbekistan, Kyrgyzstan and Turkey, who are not members of the INSTC, will extend their support to all the initiatives of INSTC member countries in order to complete the missing links in the North–South corridor. Here after the efforts by the member countries picked up and the sixth meeting of the Experts Group I and II of the Coordination Council of the INSTC project was held from 28–30 May 2012 in New Delhi followed by the 5th round of the co-ordination council meeting in Baku on 24-25 June, 2013.[180]

With an aim to understand problem areas and realise the full potential of the corridor, the dry run was conducted on Nhava Sheva – Bandar Abbas (Iran) – Baku (Azerbaijan) and Nhava Sheva – Bandar Abbas (Iran) – Amirabad (Iran) – Astrakhan (Russia) via Caspian Sea in August 2014 by the Federation of Freight Forwarders' Association in India (FFFAI).[181] After the dry run it was noted that there is an existing road network connecting Bandar Abbas and Astara for transporting Indian cargos through the INSTC route. In addition, there is an alternate route connecting Iranian transport networks with Azerbaijan and Turkey for Russian and European markets. The dry run report clearly points out that the "INSTC route via Bandar Abbas in Iran to Russia/CIS destination in transit through Iran could be the best route with optimal transit/cost for

176 Taleh Ziyadov, Strategic Assessment of Euro-Asian Trade and Transportation: Azerbaijan as a Regional Hub in Central Eurasia, Azerbaijan Diplomatic Academy Baku, Azerbaijan, June 2011, pp. 74.

177 Meena Singh Roy, "International North-South Transport Corridor: Re-energising India's Gateway to Eurasia", IDSA, August 18, 2015 at http://idsa.in/issuebrief/InternationalNorthSouthTransportCorridor_msroy_180815

178 Ibid

179 Ibid

180 Ibid

181 Ibid

the Indian exporters/importers."[182] The involvement of the stake holders definitely highlights the increasing interest of the users to explore the new opportunities to enhance the potential of the route. It is important to note that the successful activation of the corridor will help connect India to Russia within 16-21 days at competitive freight rates leading to development of trade on the INSTC.[183] In addition it is also expected to eliminate usage of reefer containers for agro commodities and support the supplies to Russia.

Subsequently, the FFFAI in cooperation with the Ministry of Commerce organised the INSTC conference in Mumbai on 12th June 2015 to create a greater awareness about the potential and opportunities in trade between the member countries using the INSTC.[184] Delegates from more than fifteen countries and wide spectrum of logistics industry from all over India including government officials and experts participated in this conference. The practical dimension of the corridor was highlighted making it easy for the stakeholders and the member countries to identify the problem areas and take advantage of the opportunities opening up in future to realise the full potential of the INSTC. The 7th meeting of Expert Groups (I&II) and 6th round of the Coordination Council (CC) meeting of INSTC was held in New Delhi, India on 19-21 August 2015.[185] The Council deliberated on the developments since the last CC meeting held in Baku in June 2013 and discussed the ways through which the corridor can be made more effective. Commerce Secretary of India and Chair of the INSTC Council meeting called for greater cooperation between member countries to address bottlenecks in the INSTC to realise the full trade potential between the member countries. It was suggested that the issues such as discount on tariff, completion of Ghazvin-Rasht-Astra rail link, improving port facilities, banking and insurance need to be resolved by the Council for effective implementation of the corridor.

Prospects

The strategic significance of this route for India is immense.[186] It offers many opportunities to enhance connectivity with Eurasian region (Map-1 highlights INSTC and other alternative routes) Following factor increase the importance of the INSTC: (a) this corridor provides viable connectivity with the Eurasian region, which has been a major impediment to enhance trade with the region. At present to transport goods to Russia India has to depend on the sea route via Rotterdam to St Petersburg and increasingly through China and then inland. To reach out to Central Asia goods have to be routed through China, Europe or Iran. (b) The routes through China and Europe are long, expensive and time consuming. Therefore, a need to have a logistic route that would be shorter, cheaper and faster. This route can reduce time and cost of container delivery by 30-40 percent. (C) The potential of this corridor will be manifolds with India, if linked with South East Asia. This will boost trade between Europe and South East Asia as well. As compared to the route through Suez Canal and the Mediterranean Sea that is currently used, INSTC is much shorter and cost effective. The Suez Canal route takes 45-60 days whereas this route takes 25-30 days. In fact, the INSTC is 40% shorter and 30%

182 Ibid

183 Ibid

184 Ibid

185 Minutes of the 7th meeting of the Expert Groups I and II and 6th INSTC Coordination Council Meeting held at New Delhi on 19-21 March 2015.

186 Meena Singh Roy, "International North-South Transport Corridor: Re-energising India's Gateway to Eurasia", IDSA, August 18, 2015 at http://idsa.in/issuebrief/InternationalNorthSouthTransportCorridor_msroy_180815

cheaper. (d) From India's point of view this corridor would not only helps India bypass Pakistan and yet reach out to Central Asia and Russia but also enables it to transport goods at cheaper cost to European markets. In addition, through this transportation route Indian exports could potentially get a competitive advantage due to lower cost and less delivery time. (e) the completion of Turkmen-Kazah section of the North South Railway line at Serhetkaya station on 11 May, 2013 provides an alternate to the main INSTC route for connecting to Kazakhstan and beyond from the Iranian port of Bandar Abbas. This route can also be used from the Chabahar port once the Chabahar-Zahedan-Mashhad line is commissioned, as the access to this route is through Mashhad and Ashgabat. With a shorter distance of 600km, this transnational project is expected to provide an impetus to the regional cooperation and economic integration of the countries in Eurasian region with Indian Ocean and Persian Gulf ports. (f) There is existing railway connectivity between Turkey-Iran and Pakistan. There are plans to further improve the connectivity with an additional route from Kars to Igdir to Dilucu on the Turkish-Azerbaijan border. This new route will reduce the travel time between Istanbul to Lahore by 12 days and between Istanbul to Mumbai by 14 days. From India's point of view this could be an additional route that can enhance commercial exchange using Iranian port to reach Turkey and beyond. In addition Turkey has offered to provide necessary information for linking up with Black Sea Economic Cooperation to INSTC. (g) The Joint Comprehensive Plan of Action between Iran and six major powers is a positive development that provides further impetus to take the INSTC project forward. Removal of sanctions on Iran will open many opportunities for investors in completing the missing links on the INSTC which in past was not possible. As mentioned earlier, development of Chabahar port will not only help create economic corridor connecting Afghanistan and Central Asia but also help connecting with Russia through INSTC.

Bottlenecks

The full potential of the INSTC cannot be realised until bottlenecks and constraints are addressed by the member states.[187] Some of these constraints are – to complete missing links on this route; unlike other International organisations the INSTC does not have strong authority who could address the operational issues on ground; problems related to customs procedure and documentation; issues related to the funding of various infrastructure projects; Low level of container trade on the INSTC. Due to the low level of trade containers come back empty increasing the cost of container movement on this route; lack of common border crossings rules among the member countries; problems related to the insurance and data exchange between the member states; gradient problem restricting speed; higher tariffs by rail vis a vis road transport for movement from Bandar Abbas to Amirabad; wagon shortage and load restrictions for transit traffic in Iran; problem of break of gauge; and finally the security fears emanating from Afghanistan are likely to further hamper the development of the India–Iran– Afghanistan–Central Asia route. The growing violence and the uncertain security environment in Afghanistan- Pakistan region are some of the critical questions which continue to pose challenges for the regional countries and their efforts of enhance connectivity.

The major challenge for the countries in the region is to sustain the momentum of progress which the member countries have achieved during last few years. Since India, Iran and Russia are three major pillars of

187 Ibid

this huge network of north south connectivity projects, major share of responsibility will have to be borne by them. The interest shown by other countries clearly highlight the growing importance of the route, thus regular enhanced cooperation among the 14 member states of the INSTC needs to be exhilarated. Also new members from the region should be encouraged to join the INSTC to make it more effective. Equally important would be to prioritise and identify the projects (both reviving old routes and building missing links) which deserve more attention from the point of their utility in enhancing the trade and economic ties between the countries. Member countries need to formulate long term strategy both at bilateral and regional level to address the bottlenecks and realise the future potential of the route. Creation of high level working groups on transport cooperation among the regional partners, setting up of joint independent study groups and organising annual meeting of the technical groups from the member countries to follow the developments in sustained manner on transport projects which are more result oriented in nature will go a long way in re-energizing the INSTC. The recent initiatives by India, Iran and Russia supported by the countries of Central Asia, Turkey, Armenia and Azerbaijan provide favourable atmosphere to re-activate and realise the full potential of the INSTC.

(4) China Pakistan Economic Corridor (CPEC) – Regional Implications

In April 2015, China Pakistan Economic Corridor (CPEC),[188] a major bilateral initiative between China and Pakistan was formally unveiled. Despite being a bilateral initiative, CPEC has generated a major discourse in the region about its security implications, particularly for India. The CPEC is part of Beijing's grand OBOR strategy, (As can be seen in Map II) couched in an argument of enhancing regional connectivity, helping to boost regional and international trade and thus increasing economic growth for all the countries who happen to be part of OBOR. A mix of strategic and domestic factors have led China to unveil its OBOR strategy. Having trillions of dollars in reserve, China is seeking to invest in infrastructure projects like CPEC and other projects as part of the OBOR strategy. This would not only enhance connectivity but also help China utilise idle capital and sustain its economic growth. It is in this context that CPEC is expected to give China overland access to the Arabian Sea through Pakistani Port of Gwadar. For China, CPEC is geostrategic leverage; it provides access to the Indian Ocean and allows to bypass Strait of Malacca to reach Africa and Middle East; and easy access to energy from the Gulf. CPEC will also help China to expand its maritime capabilities in IOR and expand its influence in South and Central Asia. For Pakistan CPEC is significant as it would help boost its economy; improve its infrastructure and help strengthen existing ties with China and substitute US aid which is expected to reduce further under new administration.

Pakistan has received massive Chinese aid and investment with major Chinese projects like the Gwadar Deep Sea Port (GDSP) and the China Pakistan Economic Corridor (CPEC). The CPEC will have $45 billion of Chinese investment, $11billion from the Chinese government and remaining $35 billion from the private companies in China. According to the recent reports, in November 2016, the first convoy of trucks laden with Chinese goods crossed the under-developed CPEC's 3,000 kilometre journey from Kashgar in China arrived

188 The CPEC is slated to originate in Kashgar in the Xinjiang Uighur Autonomous Region (XUAR). It is designed to enter Gilgit Baltistan via the Khujerab Pass before spreading out in parts of Pakistan. In Pakistan, the CPEC travels through Khyber Paktunkhwa, Punjab before culminating at the warm water deep sea port at Gwadar, situated at the southern edge of the restive Balochistan province.

at Gwadar and was further seen off in a Chinese ship from Gwadar to West Asia and Africa. [189] Gwadar port has been developed by the Chinese company with China fully funding the project. The road link from Gwadar to Karachi has also been completed. In 2013, China Overseas Ports took over control of the development of Gwadar Port from Singapore's PSA. According to the agreement, the Chinese company will operate the port for 43 years while Pakistan will retain the overall ownership of it.[190] The Chinese government has also acquired rights to over 2,000 acres of land adjacent to Gwadar Port for industrial development.[191] It is likely that China Overseas Ports will use the land for terminal operations, marine services, a free trade area and an airport.[192] But what is significant to note here is that no Pakistani can enter Gwadar, guarded by the PLA without a valid ID card. Although Pakistan is responsible for the security of the CPEC with all cost to be borne by Islamabad. Pakistan has raised additional forces to guard the CPEC. In addition, establishment of Task Force (TF) -88 for the protection of Gwadar deep-sea port was unveiled by the Pakistani Navy during the conference on CPEC held in Gwadar in December 2016.

A new dimension to the CPEC has come with Iran and Russia announcing their desire to join the project. This would change the maritime balance in South Asia. Iran wants Gwadar to be a "sister" port to Chabahar. Similarly, Turkmenistan and other Central Asian Republics (CARs) have shown interest in the Gwadar warm-water port that will be a nodal point for transiting goods through Pakistan to Kashgar in China and connecting further to CARs. Related to this has been China's efforts to make Afghanistan a nodal point for its connectivity projects to Iran. The recently held meeting in December 2016 in Afghanistan among Russians, Chinese and Pakistani officials are indicative of changes in the region than simple alignment of highways, waterways and tunnels. The CPEC is simply not a project linking Pakistan and China but is one which will connect some 64 countries. This has major regional dimension and not just bilateral cooperation of infrastructure development between Pakistan and China.[193]The much advertised argument of economic integration of the region through CPEC was highlighted during the International Maritime Conference on CPEC organised by the Pakistan Navy and the Pakistan-China Institute(PCI) on the theme of " CPEC and Gwadar Port as Harbinger of Regional Integration and Maritime Economic Development" at Gwadar on 13-14 December 2016. Officials from China and Iran participated in the conference.[194] Highlighting the regional and global reach of the CPEC a Pakistani retired Vice Admiral Iftikhar Ahmed Rao stated that Gwadar was the nucleus of all the big game 'One Belt One Road (OBOR)' and emphasised that the CPEC will be just an extension of the Karakoram Highway without Gwadar Port "as it's the sea part which makes CPEC global".

Ever since the unveiling of this project, the major focus by China and Pakistan have been on the economic and strategic imperatives, and completely ignoring the security implication and its political viability. Despite huge hype given to the CPEC, it is confronted with many challenges which are mainly – lack of security in the region, insurgency in Baluchistan, securitization and militarization in the region, within Pakistan conflict

189 Prakesh Katoch, "China-Pakistan Economic Corridor: 'Highway of Terror' turns operational at last", at http://www.firstpost.com/india/china-pakistan-economic-corridor-highway-of-terror-turns-operational-at-last-3107800.html

190 "China's Gwadar Port Nears Completion", The Maritime Executive, April 14, 2016 at http://www.maritime-executive.com/article/chinas-gwadar-port-nears-completion Accessed on October 16, 2016

191 Ibid

192 Ibid

193 "Behind Pakistan's CPEC offer", The Hindu (Delhi), December28, 2016, pp10.

194 "Gwadar CPEC termed the way forward for Pakistan", The Dawn , December 15,2016 at http://www.dawn.com/news/1302437

between the center and the region, social and political unrest/protest movement, discontent among the people because of their non-inclusion in the decision making process, land grabbing and exploitation of resources by central government, depriving the local government of any benefit from the project, and finally environmental challenges related to the project. Equally significant is that the CPEC passes through disputed territory of Gilgit-Baltistan. The territorial dispute between India-Pakistan and China-India and legal status of Gilgit - Baltistan do not augur well for future prospects of the CPEC. Some experts on the subject have argued that "Considering that the CPEC is set to traverse through Xinjiang, Gilgit Baltistan and Balochistan simmering with large-scale political discontent, there are lurking uncertainties facing the future prospects of the project, widely hailed as a harbinger of enhanced regional connectively and trade."[195] Experts like Andrew Small have argued that "CPEC was unique in a sense that it was a power settler in the region and, thus, shall be accessible to all states and one should refrains counterproductive competition."

In this context it is equally important to analyse growing Pakistan-China military/security cooperation in the context of Gwadar deep-sea port. The views of the Pakistani retired Vice Admiral Asaf Humayun, who spoke during the conference in Gwadar highlight the security dimension and much emphasised cooperation between China and Pakistan. He noted that "keeping in view the enhanced spectrum of threats due to hybrid warfare by adversaries, there was a dire need to augment the capabilities of the Pakistan Navy and Maritime Security Agency to fulfil the needs of a multilayered defence system for an effective seaward defence of CPEC and Gwadar Port." The need for greater cooperation between China and Pakistan were echoed by him "The Pakistan Navy needs to enhance interaction with the People's Liberation Army Navy. A full-fledged naval base at Gwadar is inevitable," he said. The growing naval military cooperation between the two countries can be seen in the October 2016 sale of eight Type 041 Yuan –class diesel-electric submarines to Pakistan by China Shipbuilding Industry Corporation (CSIC). The deal is reported to be worth US $4 to5 billion, which is reported to be a low-interest rate loan extended by China to Pakistan. In addition, there are ongoing naval military exercises between the two countries. The close Sino-Pak cooperation and China's involvement in developing ports in Sri Lanka, Myanmar and Bangladesh has led to growing concerns about geostrategic goals embedded in its infrastructure drive in the region. It is argued that these ports consist of dual-use facilities and in future can be used for military purpose as and when required even if the argument from Beijing is that of economic diplomacy.

From India's perspective, the CPEC is passing through a contested territory of Gilgit Baltistan which is geographically an essential part of India's extant claim. Prime Minister Modi has taken up this issue even during his visit to China in May 2015. India's reservations and concerns on the CPEC have been stressed even during bilateral discussions with China and Pakistan. In India, this corridor is seen as a potent challenge from its long term security interests. In December 2016, a senior Pakistani General suggested that India should shed its apprehensions and join the CPEC project. Chinese Foreign Ministry has called this offer a "goodwill gesture" promoting India-Pakistan cooperation. However, this looks very superficial in the light of the growing cross border tensions between India and Pakistan post the Uri terror attacks. More importantly, India does not have any political dialogue with Pakistan and its relations with China have also

[195] Priyanka Singh, CPEC: Corridor of Discontent", IDSA Issue Brief, November 23, 2016 at http://idsa.in/issuebrief/cpec-corridor-of-discontent_psingh_231116

deteriorated considerably since Beijing's objection to India's membership in Nuclear Suppliers Group (NSG) and it having blocked India's proposal to label Masood Azhar as an international terrorist by the UN. Under these circumstances, it appears unlikely that India would join the CPEC.

(5) Prognosis

The aforesaid deliberations undoubtedly indicate that there is an ongoing effort on part of countries in the Bay of Bengal and Arabian Sea to focus on the infrastructure development in their respective countries to sustain/enhance economic growth and increase their share of regional and global trade with an aim of working towards greater economic integration. In this context, the current status of infrastructure development and future initiatives taken by individual countries show a mixed picture. Looking at the trade and investment patterns in the Bay of Bengal and Arabian Sea, China has emerged as a key trading partner of the region However, the export destination of the regional countries is still US and Europe. (As can be seen from the Table 3).There also arises the possibility of greater competition between the regional and extra-regional players who are looking for greater access to the local markets. Despite fear of China's increasing influence, Beijing is viewed by the regional countries as an economic power house with capability to cooperate with governments, institutions and corporates outside China to unknot bottlenecks in global infrastructure development, which will help boost trade and investment, thus enabling a real contribution to sustainable growth for many emerging economies. As such, the infrastructure development drive across the Arabian Sea and the Bay of Bengal can push the region towards greater integration. However, the key question from a strategic point of view would be to analyse if this will provide any strategic lever to China? and how Beijing will use this lever against its adversaries? It is too early to make any negative assessment about China. However, Beijing's assertive behaviour has been noticeable particularly in the Asia Pacific region. More importantly, the new Trump administration and its future China policy does raise many uncertainties about how US- China relations are going to evolve. It is also very clear that at present China is looking at enhancing economic cooperation to address its internal economic issues and would like to avoid any military clash with the US while countering the emergence of any anti-China coalition in the region.

Despite various efforts taken by the respective countries in the region towards infrastructure drive, the future developments in the infrastructure sector will be conditioned by following factors: how various plans would be implemented and the current momentum would be sustained; how smaller countries would be able to attract greater investments from foreign companies as well as from within, particularly the private sector; how countries can offer attractive business environment to foreign companies to invest in the infrastructure sector ; how the countries are able to address the geo-political competition among the regional and extra- regional actors, the political will to work towards regional cooperation to enhance the regional infrastructure development; and finally the security situation in the region where new infrastructure development is underway like development of Gwadar in Pakistan.

Table 3 Principal Trading Partners of Countries of Arabian Sea and Bay of Bengal

I) Pakistan (2014-15)

Export Destination (to)

Sl No	Country	Value (US$ billion)
1.	U.S.	3.57
2.	China	2.77
3.	Afghanistan	2.2
4.	Germany	1.7
5.	U.K.	1.69

Imports (from)

Sl No	Country	Value (US$ billion)
1.	China	9.9
2.	U.A.E.	6.6
3.	Saudi Arabia	4.08
4.	Kuwait	2.82
5.	India	2.1

Source: OEC Country Profile http://atlas.media.mit.edu/en/profile/country/pak/

II) Sri Lanka (2014-15)

Export Destination (to)

Sl No	**Country**	**Value (US$ billion)**
1.	U.S.	2.54
2.	U.K.	1.21
3.	India	0.657
4.	Germnay	0.644
5.	Italy	0.565

Imports (from)

Sl No	**Country**	**Value (US$ billion)**
1.	India	5.89
2.	China	3.37
3.	U.A.E.	1.62
4.	Singapore	1.3
5.	Japan	0.955

Source: OEC Country Profile http://atlas.media.mit.edu/en/profile/country/lka/

III) Bangladesh (2014-15)

Export Destination (to)

Sl No	**Country**	**Value (US$ billion)**
1.	U.S.	5.23
2.	Germany	5.11
3.	U.K.	3.13
4.	France	2.24
5.	Spain	2

Imports (from)

Sl No	Country	Value (US$ billion)
1.	China	11.7
2.	India	6.22
3.	Singapore	3.13
4.	Indonesia	1.38
5.	Hong Kong	1.37

Source: OEC Country Profile http://atlas.media.mit.edu/en/profile/country/bgd/

IV) Myanmar (2014-15)

Export Destination (to)

Sl No	Country	Value (US$ billion)
1.	China	4.25
2.	Thailand	3.63
3.	India	1.1
4.	Japan	0.851
5.	South Korea	0.579

Imports (from)

Sl No	Country	Value (US$ billion)
1.	China	8.8
2.	Thailand	4.21
3.	Singapore	2.18
4.	Japan	1.16
5.	India	0.860

Source: OEC Country Profile http://atlas.media.mit.edu/en/profile/country/mmr/

V) Iran (2014-15)

Export Destination (to)

Sl No	Country	Value (US$ billion)
1.	China	24.9
2.	India	10.3
3.	Japan	5.55
4.	South Korea	4.12
5.	Turkey	1.48

Imports (from)

Sl No	Country	Value (US$ billion)
1.	China	24.1
2.	India	4.4
3.	South Korea	4.17
4.	Turkey	3.82
5.	Germany	3.07

Source: OEC Country Profile http://atlas.media.mit.edu/en/profile/country/irn/

Part –II: 21st Century Maritime Silk Road (MSR)

III. Concept, Plan and Chinese Strategic and Economic Interests

To analyse China's MSR, it is significant to understand China's growing involvement driven by its strategic, energy, trade and military interests in the Indian Ocean in the past decade. It has undertaken port infrastructure projects, gaining port access for naval platforms, conducting military exercises with the regional countries and acquiring military bases. China's heavy dependence on the Indian Ocean Region (IOR) for its trade and energy supply[196] makes this region extremely crucial for China. In this context, concept of the "String of Pearls" as explained by Booz Allen Hamilton in a report on Energy Futures for Asia in 2004 for the US Department of Defence clearly elucidates Chinese intentions in the IOR by adopting a "String of Pearls" strategy of acquiring bases and developing diplomatic ties stretching from the Middle East to southern China that included a new naval base under construction at the Pakistani port of Gwadar.[197] The concept of the "String of Pearls" generated much debate among the strategic community all over the world. Against this backdrop, the broad contours of China's Maritime strategy begun to take shape.

It was after eight years in September and October of 2013, the Chinese President Xi Jinping visited Central Asia and Southeast Asia when he announced the initiative of jointly building the Silk Road Economic Belt (SREB) and the 21st-Century Maritime Silk Road (MSR) (Can be seen in the map- II). At the China-ASEAN Expo in 2013, Chinese Premier Li Keqiang underlined the need to build the MSR oriented towards ASEAN, and to create strategic propellers for hinterland development.[198] Once again, the Chinese initiative of the Belt and Road attracted close attention from all over the world. Beijing's connectivity drive (As shown in MAP-V) can be seen in its recent strategy of One Belt One Road (OBOR).

Part of the Belt and Road initiative, the MSR envisions a maritime space of economic prosperity stretching across from eastern China to South East Asia, South Asia, the Gulf, East Africa and the Mediterranean. It proposes to weave a web of economic partnerships and calls for coordinating economic policies, setting up free trade zones, improving people to people contacts, elimination of investment bottlenecks, promoting financial integration and use of renminbi as an integral part of the region's economic engagement. It also dwells on improving peace and cooperation, openness and inclusiveness, mutual learning and mutual benefit for the member countries. The reference to promote people to people contacts highlights the attempts to create a friendly environment for the successful implementation of these initiatives. By drawing similarities with the historical role of the ancient Silk Route, China has sought to underpin the legitimacy of this new initiative. Significantly, the MSR is designed to link up with the land based SREB at different transit points that can make the project more contiguous. This is where ports like Gwadar assume significance since the maritime and land based initiatives intersect there. On paper, this ambitious plan retains the potential to

196 More than 80 % of its crude oil and almost 30 % of its natural gas imports come through the Malacca Straits.

197 'China Builds Up Strategic Sea Lanes', The Washington Times - Monday, January 17, 2005, http://www.washingtontimes.com/news/2005/jan/17/20050117-115550-1929r/, Accessed on September 15, 2016.

198 Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road, Issued by the National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of the People's Republic of China, with State Council authorization March 2015, First Edition 2015, http://en.ndrc.gov.cn/newsrelease/201503/t20150330_669367.html, Accessed on August 23, 2016.

realign the region's economic and political interests. However in practice it poses many challenges, which are difficult to achieve.

The Chinese vision documents very clearly highlights that *"Accelerating the building of the Belt and Road can help promote the economic prosperity of the countries along the Belt and Road and regional economic cooperation, strengthen exchanges and mutual learning between different civilizations, and promote world peace and development. It is a great undertaking that will benefit people around the world."*[199]

The document lays down the route and priority of the Belt and Road (See Map-II) it *"..... runs through the continents of Asia, Europe and Africa, connecting the vibrant East Asia economic circle at one end and developed European economic circle at the other, and encompassing countries with huge potential for economic development." The SREB "focuses on bringing together China, Central Asia, Russia and Europe (the Baltic); linking China with the Persian Gulf and the Mediterranean Sea through Central Asia and West Asia; and connecting China with Southeast Asia, South Asia and the Indian Ocean. The 21st-Century Maritime Silk Road is designed to go from China's coast to Europe through the South China Sea and the Indian Ocean in one route, and from China's coast through the South China Sea to the South Pacific in the other..... At sea, the Initiative will focus on jointly building smooth, secure and efficient transport routes connecting major sea ports along the Belt and Road. The China-Pakistan Economic Corridor and the Bangladesh-China-India-Myanmar Economic Corridor are closely related to the Belt and Road Initiative, and therefore require closer cooperation and greater progress."*[200]

From the Chinese view point this initiative is an ambitious economic vision aimed at "cooperation among the countries along the Belt and Road" where "countries need to work in in concert and move towards the objectives of mutual benefit and common security."[201] The vision document emphasises on the great potential and space for cooperation among the countries along the Belt and Road by promoting policy coordination, facilitating connectivity, unimpeded trade, financial integration and people-to-people bonds. These have been identified as five major goals for strengthening the cooperation. The Chinese vision aims at pushing forward port infrastructure construction, building smooth land-water transportation channels, and advancing port cooperation. In addition, increase sea routes and the number of voyages, and enhance information technology cooperation in maritime logistics. At the same time it envisions to expand and build platforms and mechanisms for comprehensive civil aviation cooperation, and quicken their pace in improving aviation infrastructure.

The Chinese vision also incorporates its ambitious plan of promoting connectivity of energy infrastructure (as shown in Map-III) with an aim of ensuring the security of oil and gas pipelines and other transport routes. It proposes to build cross-border power supply networks and power-transmission routes, and cooperate in regional power grid upgrading and transformation. More importantly, it seeks to advance jointly the construction of cross-border optical cables and other communications trunk line networks, improve international communications connectivity, and create an Information Silk Road and build bilateral cross-border

199 Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road, Issued by the National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of the People's Republic of China, with State Council authorization March 2015, First Edition 2015, http://en.ndrc.gov.cn/newsrelease/201503/t20150330_669367.html, Accessed on August 23, 2016.

200 http://en.ndrc.gov.cn/newsrelease/201503/t20150330_669367.html, Accessed on August 23, 2016.

201 http://en.ndrc.gov.cn/newsrelease/201503/t20150330_669367.html, Accessed on August 23, 2016.

optical cable networks at a quicker pace, plan transcontinental submarine optical cable projects, and improve spatial (satellite) information passageways to expand information exchanges and cooperation. [202]

In addition to geo-political factor, Chinese strategy of MSR and SREB is also driven by its economic and financial interests, this comes out very clear in the vision document. According to the document, "Investment and trade cooperation is a major task in building the Belt and Road." It is in this sectors that China strives to "improve investment and trade facilitation, and remove investment and trade barriers for the creation of a sound business environment within the region and in all related countries…… and opening free trade areas so as to unleash the potential for expanded cooperation." Using the Belt and Road initiative, China is looking at promoting trade through investment. It seeks to "speed up investment facilitation, eliminate investment barriers, and push forward negotiations on bilateral investment protection agreements and double taxation avoidance agreements to protect the lawful rights and interests of investors." What is more significant to note is Chinese design to promote its economic agenda. The vision document is not only outward looking but it is an inward looking as well welcoming "companies from all countries to invest in China, and encourage Chinese enterprises to participate in infrastructure construction in other countries along the Belt and Road, and make industrial investments there." However what is different from its usual practice in past is its commitment to support "localized operation and management of Chinese companies to boost the local economy, increase local employment, improve local livelihood, and take social responsibilities in protecting local biodiversity and eco-environment." [203]

According to the Director of the Development Research Center, Li Wei the Chinese initiative is an important tool to help escape the financial crisis and help establish stability and recovery in the global economy. Li indicated that in order to build an immense and open economic 'Noah's Ark, we need to have the following relationships: first of all the relation between long term development and effort, while remaining realistic. Secondly relations between specific interests in each country and the common needs of the region; thirdly, competition and cooperation, and finally, cooperation on a regional and extra-regional level.[204]

Financial integration is one of the major component of Chinese strategy. This is considered to be an important underpinning for implementing the Belt and Road initiative. Here China is seeking to expand the scope and scale of bilateral currency swap and settlement with other countries along the Belt and Road, open and develop the bond market in Asia; make more efforts in building a currency stability system, investment and financing system and credit information system in Asia. To achieve its goal, it has already established the Asian Infrastructure Investment Bank (AIIB) with $100 billion, the BRICS New Development Bank with $100 billion and the $40 billion Silk Road Infrastructure Fund (SRIF).[205]

Another economic interest of China along the Belt and Road initiative is to tap the natural resource like gold. Countries along the Belt and Road have combined natural gold reserve of 21, 000 tonnes, accounting for

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202 Ibid.

203 Ibid.

204 Silk Road Forum 2015 held in Madrid, October 29, 2015, at http://english.mofcom.gov.cn/article/zt_beltandroad/news/201511/20151101156446.shtml , Accessed on November 5, 2016.

205 Carolyn Dong, Peter Li, Simin Yu, " One belt one road: China's new outbond trade initative", January 18,2016, at https://www.dlapiper.com/en/hongkong/insights/publications/2016/01/chinas-new-outbound-trade-initiative/ Accessed on November4, 2016.

41.5 percent of the global gold reserve. This could offer a great opportunity to the Chinese gold industry.[206]

Meanwhile, the drivers of China's MSR strategy appear to be the need to shift the excessive overcapacity to deficit regions and respond to the U.S. led Trans-Pacific Partnership (TPP) in Asia and the Transatlantic Trade and Investment Partnership in Europe. This is likely China's response to build an alternative and a more inclusive economic space. Given the stakes involved, one can look at the dynamics not only through the lens of geo-economics but also through the lens of geo-strategy. This assumes significance given the fact that economic, security and strategic dimensions are interlinked. The funding outline indicates Beijing's attempts to build a credible financial architecture. The dedicated $40 billion Silk Road Fund, AIIB, BRICS New Development Bank and China's massive foreign exchange reserves point to this direction. These have been received positively by some governments in Asia, but many remain wary of its strategic implications. For its part, China insists that its investments in IOR maritime infrastructure are motivated by pure economics and that the benefits will accrue equally for all participating states.

IV. Activities Undertaken by the China and its Investments

China has been in the process of constructing new ports, augmenting and modernizing existing ports in many of the countries in the IOR as part of the MSR initiative. A consortium of Chinese companies has won two contracts related to a special economic zone including building a deep sea port on the Bay of Bengal in the Kyaukpyu Special Economic Zone in 38 western Myanmar's Rakhine State. The modernisation of Chittagong port by the Chinese is another significant development. China is also funding the modernisation of Mongla port. The other important Chinese initative has been the construction of Hambantota port by the China Harbor Engineering Company in collaboration with Sinohydro.

The Chinese have also helped modernise Colombo port and a Chinese company now operates Colombo's new container terminal. The Sri Lankan government has also recently cleared a proposal to develop a port city at Colombo with Chinese investment. The 2.4 million TEU deep-sea Colombo International Container Terminal (CICT) is a joint venture between China Merchants Holdings International (CMHI) and the Sri Lanka Ports Authority. CMHI holds an 85 percent share in what is the largest single foreign investment in the country.[207]

China had offered to construct Sonadia, a potential deep-water port lying on the Bay of Bengal but the Bangladesh government cancelled this project in 2016. In fact, it offered Japan International Cooperation Agency (JICA) to develop Matarbari port which is close to Sonadia in 2016. Reports have indicated that an Italian-Thai Development (ITD) is forming a consortium with Chinese companies to invest in the infrastructure projects in Dawei Special Economic Zone (DSEZ).[208] The Chinese companies include King Trillion and China Railway Engineering Corp (CREC), a key player in China's OBOR project.

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206 Belt and Road opens opportunities for Chinese gold miners, October, 2015, at http://english.mofcom.gov.cn/article/zt_beltandroad/news/201511/20151101156456.shtml, Accessed on November 6, 2016.

207 "China's Sri Lankan port city is back in play", JOC, February 5, 2015 at http://www.joc.com/port-news/china%E2%80%99s-sri-lankan-port-city-back-play_20150205.html-0

208 "Chinese firms seek part in Dawei SEZ", The Nation, March 7, 2016 at http://www.nationmultimedia.com/news/business/macroeconomics/30280903# Accessed on November 11, 2016

In December 2015, a consortia led by China's CITIC Group Corporation won bids to develop two projects in a special economic zone in Myanmar's western Rakhine State.[209] The projects involve a deep sea port on the Bay of Bengal, and an industrial area. CITIC's consortia include China Harbor Engineering Company Ltd., China Merchants Holdings, TEDA Investment Holding and Yunnan Construction Engineering Group.[210] Kyaukphyu port project lies in close proximity to the dual pipeline that transports gas and crude oil to China's Kunming region.

In May, 2016 a group of Chinese investors have signed an agreement to build an industrial park at Oman's southern port of Duqm.[211] This is part of the larger plan to develop the area around Duqm, on a stretch of barren coast 550 km (345 miles) south of the capital Muscat, into a major business zone as part of efforts to diversify the economy beyond oil. It is projected that the 1,172-hectare industrial park will attract US$ 10 billion of investment by 2022, including US$ 370 million that the Chinese company will spend on infrastructure.[212]The planned investments include an oil refinery, a cement plant, a factory making pipes for the petroleum industry, an automobile assembly plant, and a 1-gigawatt solar power generation facility.[213]

Pakistan has been the major partner of China in this connectivity drive. It has received massive Chinese aid and investment with major Chinese projects like the Gwadar Deep Sea Port (GDSP) and the CPEC. The CPEC will have $45 billion of Chinese investment, $11billion from the Chinese government and remaining $35 billion from the private companies in China. According to the recent reports, on 13 November, the first convoy of trucks laden with Chinese goods crossed the under-developed CPEC's 3,000 kilometre journey from Kashgar in China arrived at Gwadar and was further seen off in a Chinese ship from Gwarar to West Asia and Africa. [214] Gwadar port has been developed by the Chinese company with Chinese fully funding the project. The road link from Gwarar to Karachi has also been completed. In 2013, China Overseas Ports took over control of the development of Gwadar Port from Singapore's PSA. According to the agreement, the Chinese company will operate the port for 43 years while Pakistan will retain the overall ownership of it.[215] The Chinese government has also acquired rights to over 2,000 acres of land adjacent to Gwadar Port for industrial development.[216] It is likely that China Overseas Ports will use the land for terminal operations, marine services, a free trade area and an airport.[217] But what is significant to note here is that no Pakistani can enter Gwadar, guarded by the PLA without a valid ID card. Although Pakistan is responsible for the security of the CPEC with all cost to be borne by Islamabad. Pakistan has raised additional forces to guard the CEPC. Despite much hope about CEPC the major challenge for success of CEPC would be to ensure security in

209 "China's CITIC wins projects to develop Myanmar economic zone", Reuters, December 31, 2015 at http://www.reuters.com/article/myanmar-citic-project-idUSL3N14K1D720151231

210 "CITIC-led consortium wins bid for implementing SEZ in Myanmar", China Daily, December 12, 2015 at http://www.chinadaily.com.cn/business/2015-12/31/content_22882073.htm

211 "Chinese investors to build industrial park at Oman's Duqm port", Reuters, May 23, 2016 at http://www.reuters.com/article/oman-china-industry-idUSL5N18K32D Accessed on September 16, 2016

212 Ibid

213 Ibid

214 Prakesh Katoch, "China-Pakistan Economic Corridor: 'Highway of Terror' turns operational at last", at http://www.firstpost.com/india/china-pakistan-economic-corridor-highway-of-terror-turns-operational-at-last-3107800.html

215 "China's Gwadar Port Nears Completion", The Maritime Executive, April 14, 2016 at http://www.maritime-executive.com/article/chinas-gwadar-port-nears-completion Accessed on October 16, 2016

216 Ibid

217 Ibid

Balochistan. The CEPC could be considered as China's strategic highway to the Indian Ocean. In the previous section various dimensions of this corridor have been analysed. It would be sufficient to note here that CPEC would be game changer if other regional countries become part of the project.

China's big plans for the 21st Century MSR in 2016 were highlighted by the director of China's State Oceanic Administration (SOA). He said that action plan will advance the 21st Century MSR initiative in 2016, and set up a China-ASEAN maritime cooperation center and a platform to boost maritime cooperation in East Asia. In 2015, China won high-profile railway deals with both Laos and Indonesia, and officially signed another rail agreement with Thailand.

China's trade with countries along the MSR grew by an average of 18.2 percent annually over the past decade, accounting for 20 percent of the country's total foreign trade volume from the 14.6 percent ten years ago. [218] During the same time frame, Chinese companies' direct investment in these countries increased from 240 million U.S. dollars to 9.27 billion U.S. dollars, representing annual growth of 44 percent, according to figures from the State Oceanic Administration (SOA).[219] Despite some progress, development of the overland SREB has overtaken the MSR. China has found willing partners in the SREB in Pakistan, Iran, Kazakhstan, Turkmenistan and Uzbekistan. Country like Egypt have emerged as willing partner for China's MSR investments. [220]

According to Chinese government reports, its outbound foreign direct investment (ODI) has grown from virtually nothing in 2004 to around 116 billion U.S. dollars last year, making it the world's third-biggest capital exporter. Data from the Ministry of Commerce (MOC) shows that China's non-financial ODI increased 16.5 percent year on year to US $ 87.3 billion in the first three quarters of 2015 while foreign direct investment gained 9 percent. Still, the investing dynamic has shifted over the years. With the establishment of the AIIB, the New Development Bank of BRICS, and the new Silk Road Fund, China is diverging its investment into emerging economies instead of just developed countries. In the first three quarters, Chinese companies' ODI to countries along the Belt and Road jumped 66.2 percent to $12.03 billion , accounting for 15.3 percent of total non-financial outbound investment. Singapore, Kazakhstan, Laos, Indonesia, and Russia were among the most popular investment destinations, according to the MOC.[221] According to the Chinese Ministry of Commerce (MOC), Chinese companies signed 1,786 project contracts throughout countries along the Belt and Road in the first seven months of 2015, equating almost half the value of total overseas contracts. Contracts for the projects totalled $ 49.44 billion, up 39.6 percent year on year, accounting for 44.9 percent of the total during the period. [222]

218 "China's trade with Maritime Silk Road countries rises 18 pct annually" at http://news.xinhuanet.com/english/2016-02/11/c_135089988.htm , Accessed on November 7, 2016.

219 Ibid.

220 Shannon Tiezzi, "Can China Jump-Start Its Maritime Silk Road in 2016?", Feburary 12, 2016, at http://thediplomat.com/2016/02/can-china-jump-start-its-maritime-silk-road-in-2016/, Accessed on November 8, 2016

221 Belt and Road helps China become net capital exporter: report, October 22, 2015, at http://english.mofcom.gov.cn/article/zt_beltandroad/news/201511/20151101156468.shtml

222 Chinese companies harvest more contracts along Belt and Road, August, 12, 2015, at http://english.mofcom.gov.cn/article/zt_beltandroad/news/201511/20151101156431.shtml

V. Challenges and Strategic Implications for the Region

Much is expected as initiative looks very promising. If realised will be of great benefit to the region. However, future will depend on how China is able to convince and implement these ambitious projects. It still needs to explain the initiative. There is not much clarity on it. A senior Chinese Prof. Wang Jisi's (president of the IISS, Peking university) is of the opinion that this is China's grand Strategy but it does not know much about the region; has limited knowledge which becomes a major limitation for successfully implementing this strategy. Limitation is also about the tools. While China has money but doesn't know where to invest. The other limitation is about politics because countries along the Belt and Road do not know what China's strategic objectives are. Some view it as "Marshall Plan" which it is not but it is something encouraging. Much more explanation and clarity would be required on this initiative. It is argued that from China's point of view it would be good for China to focus on Central Asia and this part of the region rather than getting into confrontation with the US.[223]

Importantly, major challenge for China is to get support for its initiatives from all regional countries. There is trust deficit when it comes to the South China Sea. China is viewed both as a country offering many economic opportunities but also concerns about its aggressive policy and increasing dominance in the region. Equally important is the question of financial commitment for these grand projects in the period of global recession. It is not possible for China to implement the Silk and Belt Road initiative alone. It will need full cooperation and commitments from the regional countries which is not going to be very easy. In this context, some experts have argued that the success of these initiatives will "depend on enterprises finding the right partners and having the right support networks providing a thorough understanding of local conditions, regulators, market players and, more generally "ways of doing business" in both China and the foreign host jurisdictions. This will be essential to be able to adequately identify, quantify and overcome risks and opportunities; to achieve this, an on the ground presence and knowledge of suitable partners and relevant contacts (both for foreign parties in China;and for Chinese parties in the foreign jurisdiction) is a perquisite." [224]

From the regional perspective, although the Action plan does not refer to any military maritime aspects and remains focused on the involvement of the regional countries and the consultative approach, but the MSR has been aggressively supported by the Chinese through organising seminars and conferences, by organising symposiums in and outside China and by supporting various projects on the subject. The Chinese city of Quanzhou, a port city in Fujian Province in southeast China, hosted the first international seminar on the 21st-Century Maritime Silk Road from 11 – 12 Feb 2015 with the participation of 200 scholars from China, India, Thailand, Singapore, Myanmar, Egypt, the 35 United States and 30 other countries.[225] The Silk Road Forum 2015, was organised in Madrid in October with the participation of around 300 guests from over 30 nations and international institutions. This Forum is co-organized by the Development Research Centre of the

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223 Views expressed by Prof. during Wang Jisi, President of the Institute of International and Strategic Studies(IISS), Peking University at the IDSA roundtable on, September 23, 2016

224 Carolyn Dong, Peter Li, Simin Yu, " One belt one road: China's new outbond trade initative", January 18,2016, at https://www.dlapiper.com/en/hongkong/insights/publications/2016/01/chinas-new-outbound-trade-initiative/ Accessed on November4, 2016.

225 Maritime Silk Road seminar opens in Quanzhou', Li Shen. China.org.cn, February 11, 2015. http://www.china.org.cn/world/2015-02/11/content_34756666.htm. Accessed on 27 Jan 16.

State Council of China, the Centre for International Relations and Sustainable Development and the Chinese Embassy in Spain. This was the second Silk Road Forum, first Forum was held in Istanbul, Turkey. [226] While these initiatives reflect the economic dimension of cooperation but the security and maritime aspect do find mention in the writings of the Chinese strategists. The former Director of the State Oceanic Administration, Liu Cegui has emphasised on safety of sea lanes as the key to sustaining the development of the 21st Century MSR. He also stresses about ports along the new Maritime Silk Road to act as "sea posts" for provision of safe and convenient sea lanes. At the same time he goes on to say that these ports could be built or leased by China in other countries. The debate on such facilities especially in the military, not necessarily in the context of the MSR, has been going on in China for some time now with the need for overseas bases having been endorsed by a number of Chinese military strategists like Major Generals Qiao Liang, Zhu Chenghu and Ji Minkui as also Navy Colonel Liang Fang.[227] The hidden agenda of Chinese strategic and military interests cannot be overlooked while it tries to project the economic cooperation model through these connectivity projects. At a strategic level this could be viewed as Chinese power projection in the region. This could result in the maritime arms race in the region. At the tactical level, Chinese could use their naval presence to gather intelligence. Chinese access to various ports could be used by them in times of military confrontation. Some impact would also be on the sea lanes of communication. There is trust deficit among the China's maritime neighbours in Southeast Asia. China's aggressive conduct in the South China Sea is cause of concern for the regional countries. More importantly, the dual policy of China gets reflected in its action as well. While chief of China's State Oceanic Administration (SOA), Wang Hong has recently talked about advancing the MSR with an action plan in 2016, but SOA in fact is partially responsible for defending China's maritime territorial claims, including in the South China Sea, by making sure Chinese laws are enforced in those areas, even in disputed regions. This does not go well with its maritime neighbours who look at announcement of cooperation from Wang Hong with suspicion. As a consequence, the regional countries want to balance the Chinese influence by cooperating with countries like the US, India and other European countries. One could see greater power rivalry in the region if China's aggressive strategy grows in future. Dr. Xue Li of the Chinese Academy of Social Sciences has very aptly argued that winning the trust and support of China's neighbors will be instrumental to the success of the MSR. The future of the MSR would also depend on how China is able to convince the regional countries about its cooperative economic developmental proposals put forth through the belt and Road vision plan. After two years of the pronounced of the "Belt and Road" initiative, China is still struggling to achieve that goal.

VI. Managing the Challenges: A Way Forward

The rise of China's economic and military might is a significant development. Its growing influence in global affairs is a hard reality. China's grand strategy of the Belt and Road initiative is aimed at enhancing

[226] Silk Road Forum 2015 held in Madrid, October 29, 2015, at http://english.mofcom.gov.cn/article/zt_beltandroad/news/201511/20151101156446.shtml

[227] Gopal Suri, China's 21st Century Maritime Silk Road Old String with New Pearls?, Occasional Paper, Vivekananda International Foundation, 2016, pp. 16-17

both Beijing's strategic and economic influence. While many regional countries have come forward to support the initiative, other's still remain skeptical about China's plan. China's presence and influence in the IOR is likely to grow. In such a scenario, countries of the region would have three options: to form strategic alliances among the regional actors to reduce China's influence; cooperate with China; or balance China by cooperating with other extra-regional powers like the U.S., Japan, Korea, and Australia. In the present scenario, conflict and confrontation is not a possibility. Therefore, enhanced but cautious engagement with China based on specific sector is likely to deliver better results for regional prosperity.

From India's point of view there are serious concerns about China's MSR plan. Its military component cannot be ignored. The growing Sino-Pak nexus, as reflected in the CPEC, poses a strategic challenge to India. To address the existing challenge and secure its strategic and economic interest in the region, it will have to follow a multi-pronged strategy. This would involve cooperation with China where it has common interest, for example, in Iran INSTC and SREB have a meeting point (as can be seen in Map –IV), it is here that India can benefit from China's infrastructure development and look at limited cooperation. At other level it can balance China by cooperating with not only countries like the US, UK, Japan, Korea and Australia but at the same time building - stronger bilateral ties with the countries in the Arabian Sea and Bay of Bengal. In this respect, India has already taken an initiative to work with Japan on developing the Chabahar port. The recently signed joint statement between India and Japan during Prime Minister Modi's visit to Tokyo highlights the "prospects of cooperation between the two countries for promoting peace and prosperity in South Asia and neighbouring region, such as Iran and Afghanistan, through both bilateral and trilateral cooperation, inter-alia, in the development of infrastructure and connectivity for Chabahar".[228] This can be emulated in the case of Bangladesh, Sri Lanka and Myanmar.

At the bilateral level, India will have to build stronger bilateral strategic and economic partnerships by accommodating the interests of the smaller states. The contours of it should involve greater participation and investments in the infrastructure development and capacity building of these countries. At a strategic level, India should enhance the security and military cooperation through defense diplomacy by providing assistance in the maritime sector involving humanitarian assistance and development relief (HADR), naval exercises and training of personnel. The most viable option for India to manage China's growing economic and strategic presence is by strengthening its bilateral cooperation with the littoral states of the region.

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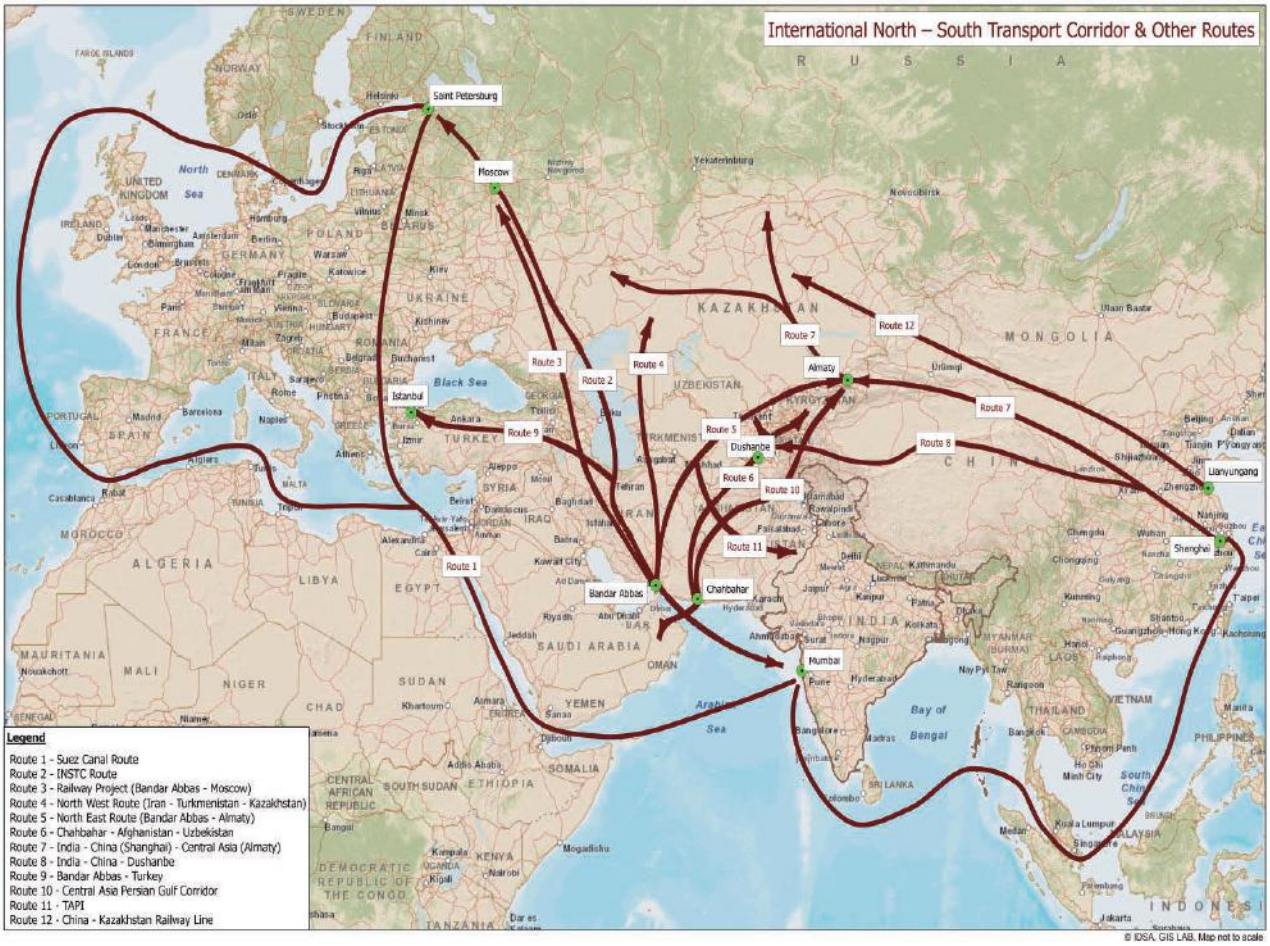
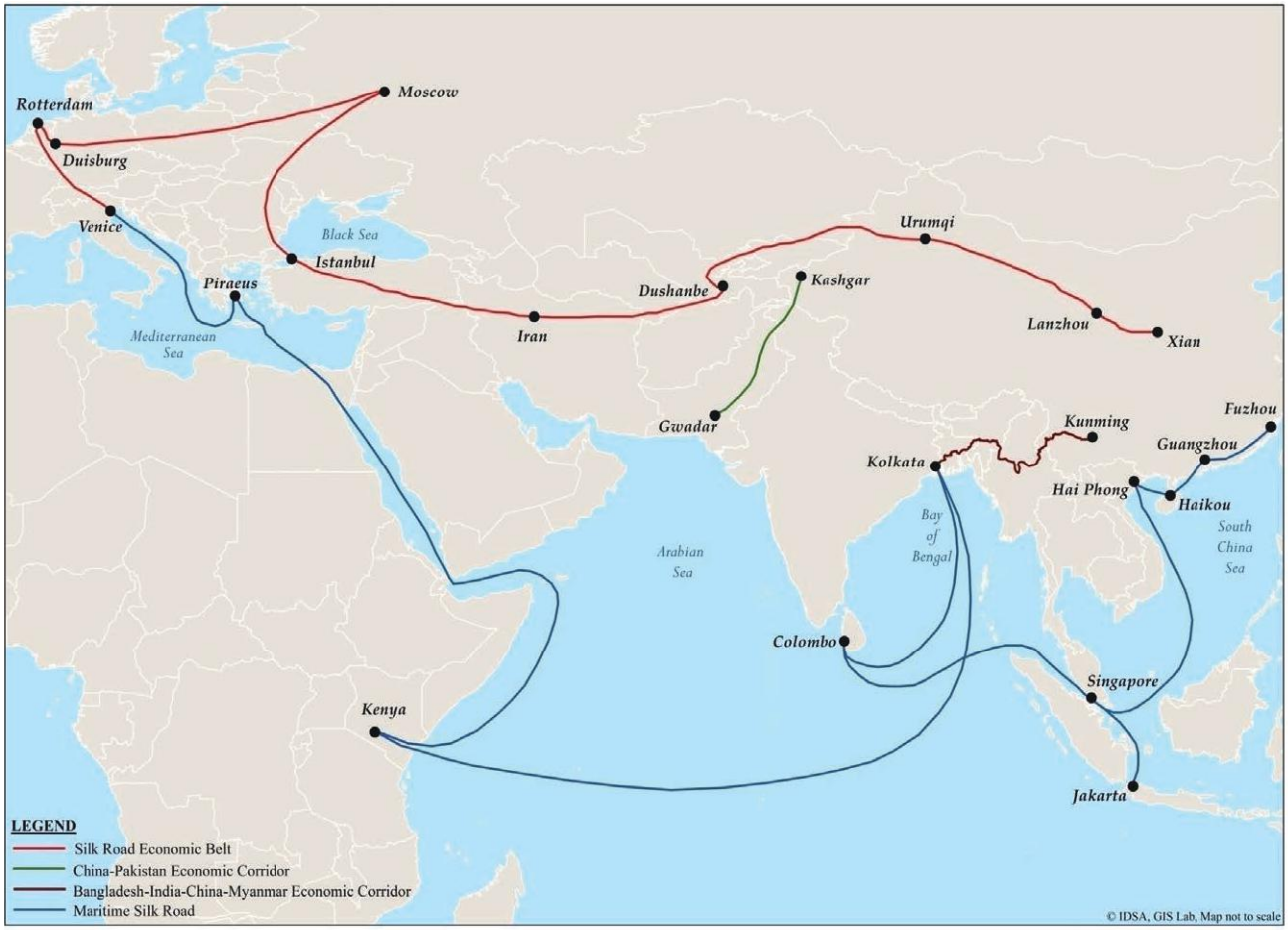
228 Ministry of External Affairs, Government of India, "India-Japan Joint Statement during the visit of Prime Minister to Japan", November 11, 2016 at https://www.mea.gov.in/bilateral-documents.htm?dtl/27599/IndiaJapan_Joint_Statement_during_the_visit_of_Prime_Minister_to_Japan



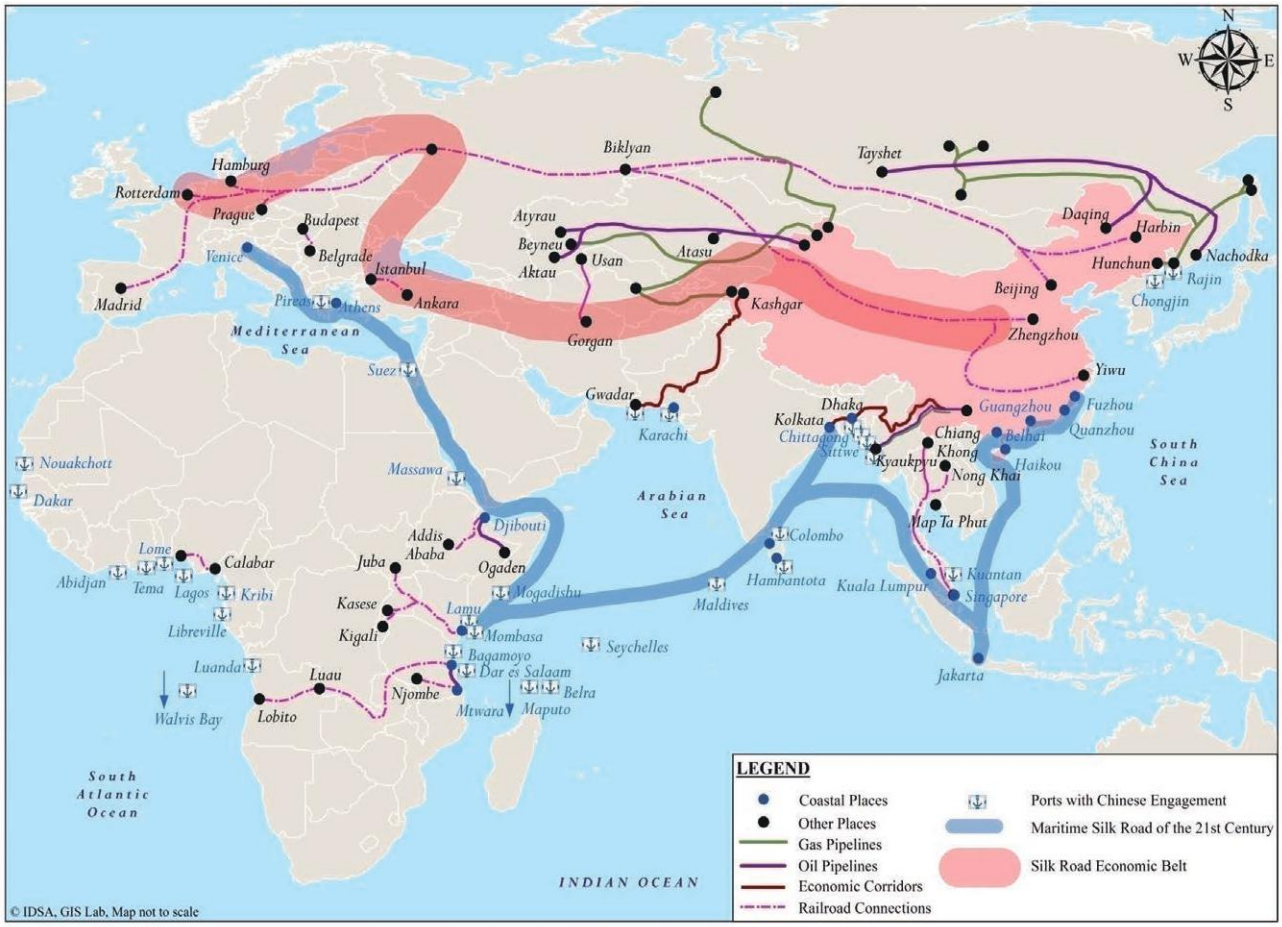
Map I INSTC and Alternative Routes

Source: Prepared by GIS LAB, Institute for Defence Studies and Analyses.



Map-II Belt and Road Initiative

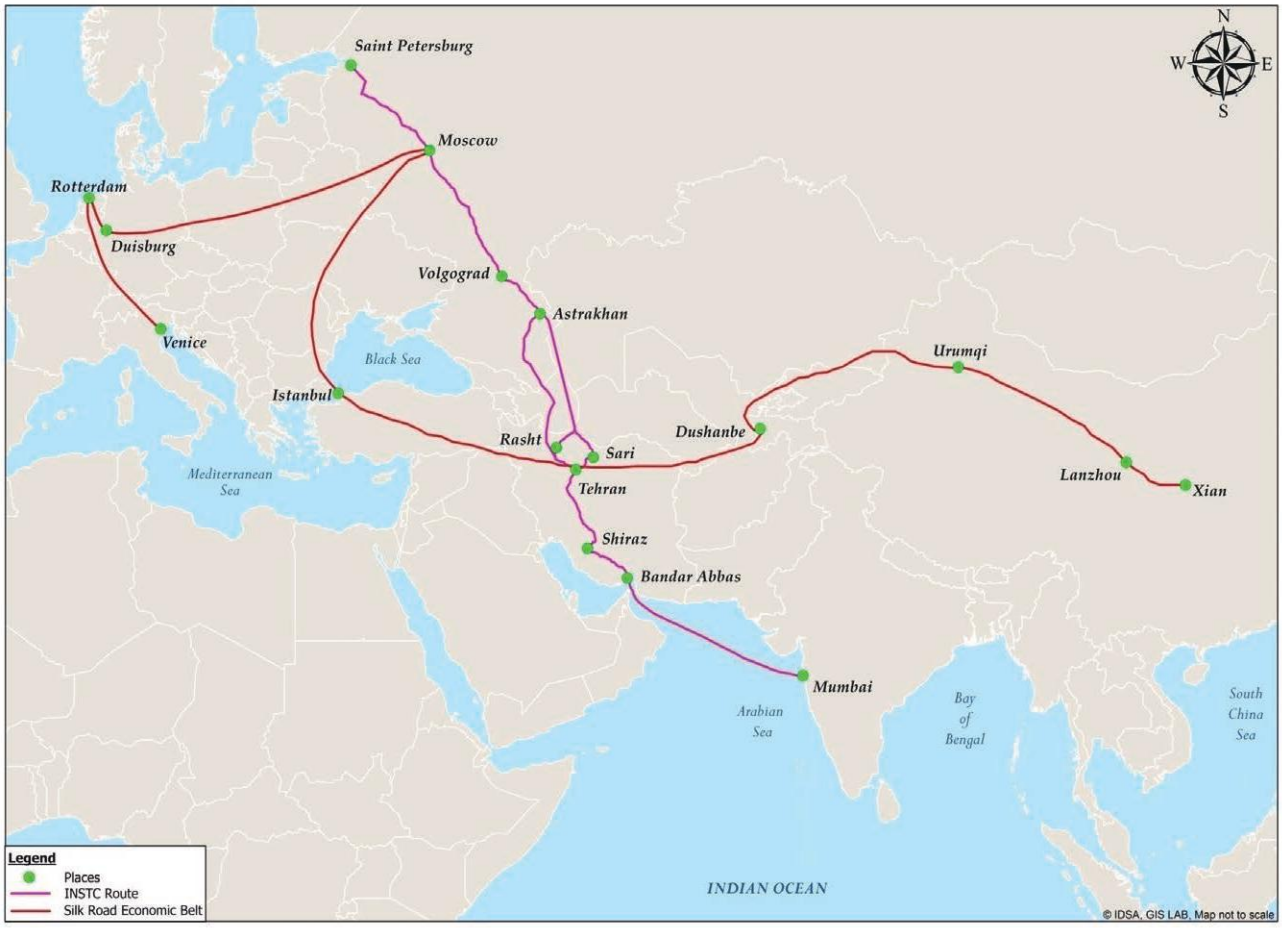
Source: Prepared by GIS LAB, Institute for Defence Studies and Analyses.



Map-III Belt and Road Initiative

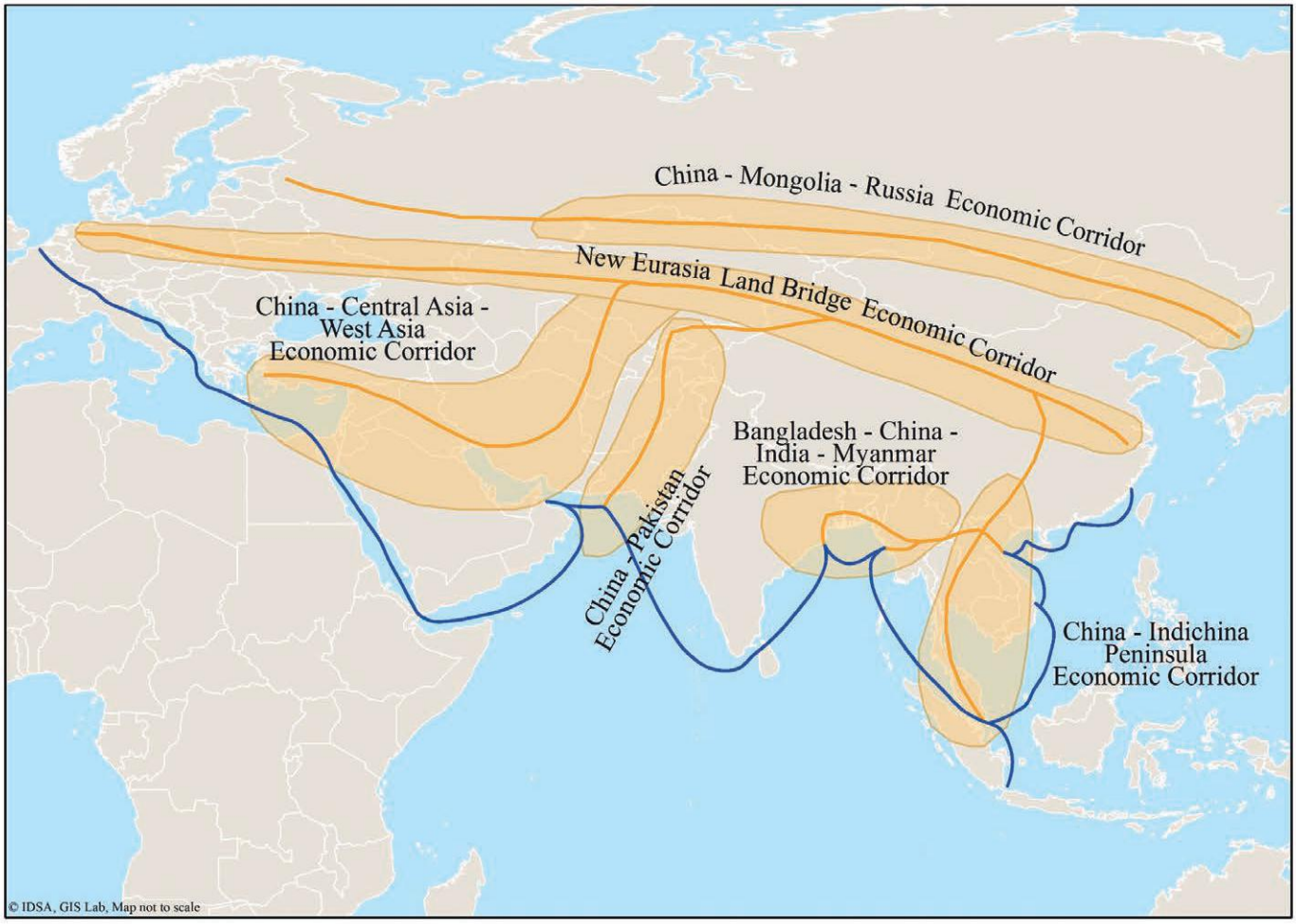
(Oil, Gas Pipelines and Ports with Chines Engagement)

Source: Prepared by GIS LAB, Institute for Defence Studies and Analyses.



Map-IV SREB and INSTC

Source: Prepared by GIS LAB, Institute for Defence Studies and Analyses.



Map-V China's Connective Drive

Source: Prepared by GIS LAB, Institute for Defence Studies and Analyses.

Annexures

Annexure 1: Overview of Pakistan International Container Terminal (PICT)

- PICT is a modern container terminal operating at berths 6-9, East Wharf.
- The design depth of berths is 13.5 meters
- Quay Wall is of 600 meters
- Backup Area is of 21 Hectares
- PICT commenced terminal operations in 2002.
- PICT is a public listed company and is the only port infrastructure project listed on the Karachi Stock Exchange
- It is the first port infrastructure project in Pakistan financed by International Finance Corporation (IFC) which is the private sector arm of the World Bank
- It is the first private sector project in Pakistan in which the OPEC Fund for International Development has participated as financiers
- Total Investment is approx. US$ 150 million

Annexure 2: Type of Cargo handled by Karachi Port

Type of Cargo Handled (Imports in Million Tons)	**2012-13**	**2013-14**	**Growth in Percentage**
Dry General cargo	11.53	12.64	+9.55
Dry Bulk Cargo	4.83	5.99	+23.89
Total Dry cargo	16.37	18.63	+13.79
Liquid Bulk Cargo	10.32	11.70	+13.43
Total	**26.70**	**30.43**	**+13.64**

Source: Logistics Capacity Assessments
http://dlca.logcluster.org/display/public/DLCA/2.1.1+Pakistan+Port+of+Karachi

Annexure 3: Exports of Cargo through Karachi Port

Exports in Million Tons	**2012-13**	**2013-14**	**Growth in Percentage**
Dry General cargo	8.84	8.59	-2.86
Dry Bulk Cargo	1.67	1.01	-36.84
Total Dry cargo	10.45	9.6	-8.09
Liquid Bulk Cargo	1.69	1.40	17.54
Total	**12.15**	**11**	**-9.41**

Source: Logistics Capacity Assessments
http://dlca.logcluster.org/display/public/DLCA/2.1.1+Pakistan+Port+of+Karachi

Annexure 4: Container Handling by Karachi Port

Container Handling (TEUs in million)	2012-13	2013-14	Growth in Percentage
No of Imports	0.76	0.81	+5.39
No of Exports	0.75	0.78	+4.55
Total TEUs	1.52	1.59	+4.55

Source: Logistics Capacity Assessments
http://dlca.logcluster.org/display/public/DLCA/2.1.1+Pakistan+Port+of+Karachi

Annexure 5: Ships Calling at Karachi Port

Ship Movement in Numbers	2012-13	2013-14	Growth in Percentage
Container Ships	785	817	+4.08
Bulk Cargo Ships	198	172	-13.13
General Cargo Ships	189	229	+21.16
Oil Tankers	424	456	+7.55
Total	**1596**	**1674**	**+4.89**

Source: Logistics Capacity Assessments
http://dlca.logcluster.org/display/public/DLCA/2.1.1+Pakistan+Port+of+Karachi

Annexure 6: Key Operating and Financial Data of Karachi Port

	December 31, 2015	December 31, 2014	December 31, 2013	Half Year December 31, 2012	June 30, 2012	June 30, 2011	June 30, 2010
(Rupees in Millions)							
Total TEUs	792,122	699,582	675,457	266,123	631,411	669,806	602,106
Profit And Loss Account							
Revenue	8,828.24	7,921.66	7,974.39	3,083.43	6,692.31	6,123.78	5,125.12
Gross Profit	4,285.16	3,507.88	4,012.57	1,384.10	2,966.43	2,599,12	2,183.05
Operating Profit	3,928.07	3,230.36	3,701.03	1,225.50	2,694.00	2,349.12	1,930.69
Profit Before Taxation	3,731.67	2,997.12	3,429.49	1,051.21	2,170.82	2,128.81	1,520.96
Profit After Taxation	2,456.58	2,086.31	2,250.78	667.65	1,410.04	1,253.86	907.81

Source: Pakistan International Container Terminal Annual Report 2015
http://www.pict.com.pk/docs/ANNUAL%20REPORT-2015.pdf

Annexure 7: Facilities of the Port Muhmmad Bin Qasim [229]

- Can accommodate vessels up to 75,000 dwt class.
- A dedicated Iron Ore & Coal Berth for exclusive use of Pakistan Steel for handling raw material imports.
- A specialized Oil Terminal offering state-of-the-art port facilities.
- Four multi-purpose berths in a linear length 800 meters extending port facilities up to 45,000 dwt class vessels , subject to permissible dimensions, equipped with two covered transit sheds each having an area of 10000 sq. meters.
- A dedicated chemical terminal to cater for liquid chemicals imports capable of accommodating vessels up to 75,000 dwt.
- A dedicated two berths container terminal catering for berthing facilities to 50,000 dwt class container vessels subject to permissible dimension.
- Two Term Storage Areas with storage capacity of 118,000 sq. meters.
- Access road to National Highway, onward link with Superhighway and connection to rail network.

Multipurpose Terminal

The multipurpose wharf presently comprises four multi-purpose berths in a linear length of 800 meters each divided into 200 meters length. Berth no 1 has a design capacity of around 2.5 million tonnes per annum. Vessels over 25000 DWT carrying edible oil, chemicals and molasses are being handled at this berth. Berths (2 to 4), with design capacity of 5 to 6 million tonnes, are capable to accommodate vessels drawing more than 35000 DWT. All bulk, break bulk and general cargo is handled at these berths. Two transit sheds each measuring 10,000 sq. meters are also located at berths 2 and 4. Berths (2-4) has a vast back up area measuring 400 x 600 meters area. The entire range of cargo handling from opening of hatch of the ship to delivery of the consignment for imports and vice versa is carried out by Cargo Handling Companies (CHC).

FOTCO Oil Terminal

The Oil terminal is a state of the art environmental friendly marine oil terminal. It was the first terminal to be developed by the private sector on BOO basis at a cost of US $ 87 million. The terminal is operational since April 1995. It is capable of handling 9 million tonnes of furnace oil per annum with a growth potential to handle more than 27 million tonnes with three additional berths. The facility mainly comprises a jetty capable of handling upto 75000 DWT vessels, product pipelines, loading arms and a 4 km long trestle that connects the jetty with the shore. The terminal has the capability to berth tankers with 63,000 tons ship-load. The terminal is designed to cater for four additional berths and four product pipelines to meet the current and future petroleum handling requirements of the country.

[229] "Port Facilities", *Port Qasim Authority, http://pqa.gov.pk/port_facilities.php* Accessed on October 25, 2016

Grain and Bulk Handling

Fauji-Akbar Portia Terminal (FAP)

Pakistan's first dry bulk cargo Terminal, FAP was completed at a cost of USD 135 million and was inaugurated by the Prime Minster of Pakistan Mr. Syed Yusuf Raza Gillani, on October 26, 2010. It was created by reclaiming 22 acres of water and has a 300 meter long jetty.

FAP is in the business of terminal operations of dry free flowing cargoes. These cargoes include but are not limited to all grains, cereals, rice, seeds (including oil seeds), pulses and all types of fertilizer & fertilizer raw materials.

FAP has a handling capacity of four million tons per annum with transit storage in silos or warehouses within the Terminal perimeter. The operations is automated with computerized management, maintenance, inventory and accounting control.

Annexure 8: Principal Imports & Exports through Port Muhmmad Bin Qasim

Wheat	Imports and Exports
Chemicals	Imports Only
Coal	Imports Only
Containers	Imports and Exports
Crude oil	Imports Only
Furnace oil	Imports Only
Edible oil	Imports Only
Iron ore	Imports Only
Rice	Export Only
General Cargo	Imports & Exports
Cement	Export
Sugar	Imports

Source: Port Qasim Authority http://pqa.gov.pk/port_performance.php

Annexure 9: Ship & Cargo Statistics of Port Muhmmad Bin Qasim

Period	**Million Tonnes**	**No. of Ships**
2008-09	25.0	1230
2009-10	25.6	1187
2010-11	26.2	1229
2011-12	24.0	1083
2012-13	24.7	1057

Source: Port Qasim Authority http://pqa.gov.pk/port_performance.php

Annexure 10: Trade Handled by Port Qasim Authority (000 Tonnes)

Commodities	**2011-12**	**2012-13**	**2013-14**
Wheat	0	0	24
Coal	0	0	0
Sugar	0	0	0
Pulses	0	0	0
Seeds	15	250	139
Fertiliser	46	0	0
Others	30	33	31
Total	91	283	490

Liquid Imports	**2011-12**	**2012-13**	**2013-14**
Chemicals	88	92	86
Edible Oil	88	243	207
Carbon Oil	0	0	0
Bitumen	10	10	0
Total	186	345	293
Dry Exports	2011-12	2012-13	2013-14
Wheat	0	0	0
Pig Iron/Coke	0	0	0
Rice	4	0	122
Fertilizer	0	0	0
Cement	611	1139	1446
General Cargo	4	26	32
Total	619	1165	1601

Liquid Exports	**2011-12**	**2012-13**	**2013-14**
Molasses	0	0	0
No of Ships	62	115	103
FOTCO	2011-12	2012-13	2013-14
Furnace Oil	5475	4893	5488
HSD	2837	2668	2231
Crude Oil (export)	0	0	30
Crude Oil (import)	120	321	68
Total	8432	7882	7817
No of Ships	144	130	112

ENGRO Terminal (IMP)	**2011-12**	**2012-13**	**2013-14**
Chemicals	1113	1142	1170
No of Ships	140	130	126
I.O.C.B (IMP)			
Raw Material Imports Paksteel	443	496	115
No of Ships	10	13	8

SSGC LPG Terminal	**2011-12**	**2012-13**	**2013-14**
LPG Imports	9	41	0
No of Ships	4	9	0
Liquid Cargo Terminal	2011-12	2012-13	2013-14
Edible Oil Imports	2000	1695	2092
No of Ships	135	113	121

Grain and Fertilizer Terminal (FAP)	**2011-12**	**2012-13**	**2013-14**
Imports			
Fertilizer	187	262	506
Wheat	25	204	431
Seeds	799	626	445
Rice	19	54	15
Exports			
Wheat	85	204	0
Rice	177	258	106
Corn	19	63	0
Total	1311	1562	1503
No of Ships	49	61	43
Total IMP	18075	12903	13040

Container Terminal	**2011-12**	**2012-13**	**2013-14**
Imports (TEUs)	355	356	420
Exports (TEUs)	377	366	434
Total	732	722	854
Weight of Containers (000 tonnes)	9820	10245	10988
Total Ships	1083	1055	1072

Source: Port Qasim Authority, Port Performance in last 5 years
http://pqa.gov.pk/port_performance.php

Annexure 11: Faculties Available at Gwadar Port

- 3 -multipurpose berths - each 200 meters long.
- 1 -RO-RO facility
- 1-100 meter service berth
- 4.7 km long approach channel dredged to 14.4 m at outer channel, 13.8 m at inner channel /turning basin and 14.5 m depth alongside berth.
- Outer channel is-206 m and inner channel width in 155m
- Turning Basin 595 m diameter
- The port, currently, has the capacity to handle 50,000 DWT bulk carriers @ 12.5 meter maximum depth.

Source: Gwadar Port Authority at http://www.gwadarport.gov.pk/portprofile.html

Annexure 12: Trade through Chittagong Port

Cargo Handling (Imports)

2010-11	39,914,145
2011-12	36,184,935
2012-13	38,312,028
2013-14	41,960,170
2014-15	48,941,406

Cargo Handling (Exports)

2010-11	4,980, 375
2011-12	4,716,374
2012-13	5,059,640
2013-14	5,338,377
2014-15	5,839,986

Cargo Handling (Including Inland and ICD in metric tonnes)

Financial Year	Import	Export	Inland	ICD	Total	Growth (%)
2012-13	38,312,028	5,059,640	6,087,947	457,559	49,917,174	3.95
2013-14	41,960,170	5,338,377	5,833,786	445,218	53,577,551	7.33
2014-15	48,941,406	5,839,986	6,469,673	474,800	61,725,865	15.21

Container Handling at Chittagong Port

Financial Year	Import in TUEs	Import in Tonnes	Export in TUEs	Export in Tonnes	Total in TUEs	Total in Tonnes
2012-13	7,43,547	9,928,300	7,25,166	4,627,834	1,468,713	14,556,134
2013-14	8,12,918	11,125,348	8,12,591	5,012,427	1,625,509	16,137,775
2014-15	9,40,827	13,132,923	9,26,235	5,535,446	1,867,062	18,668,369

Source: Chittagong Port Authority
http://cpa.gov.bd/cargo-handling-statistics/

Annexure 13: Facilities of Chittagong Port

Berthing Specifications

Type of Berth	Quantity	Length (m)	Maximum Draft (m)
Conventional Berth	8	186	8.5 – 9.2
Container Berth	11	186	8.5 – 9.2
Silo Berth	1		
Berthing Tugs	6		
Water Barges	Yes		

General Cargo Handling Berths

Cargo Type	Berth Identification
Imports – Bagged Cargo	6
Exports – Bagged Cargo	6
Imports and Exports – RoRo	6
Other Imports	6

Source: Logistics Capacity Assessment
http://dlca.logcluster.org/display/public/DLCA/2.1.1+Bangladesh+Port+of+Chittagong

Annexure 14: Vessels handled by Chittagong Port

2012-13	2,136
2013-14	2,294
2014-15	2,566

Source: Chittagong Port Authority
http://cpa.gov.bd/cargo-handling-statistics/

Annexure 15: Containers Handling by Mongla Port

Year	No of Ships	Discharge Container (TUE)	Shipment container (TUE)	Total container (TUE)
2000-2001	47	9539	9389	18928
2001-2002	69	10490	10437	20927
2002-2003	65	11730	12007	23737
2003-2004	51	13678	13470	27148
2004-2005	46	12993	12656	25649
2005-2006	44	12733	12838	25571
2006-2007	47	12553	12789	25342
2007-2008	39	10588	10297	20885
2008-2009	47	10437	10764	21201
2009-2010	33	10280	10371	20651
2010-2011	44	13699	13424	27123
2011-2012	35	15460	14585	30045
2012-2013	47	21994	21879	43873
2013-2014	72	21947	21060	43007
2014-2015	67	21036	21101	42137

Source: Mongla Port Authority
http://www.mpa.gov.bd/bn/container

Annexure 16: Ships and Cargo Handled by Mongla Port

Year	No. of Ships Called	No. of Ships Sailed	Import Cargo (M.T.)	Export Cargo (M.T.)	Total Cargo (M.T.)
2000-2001	313	315	2462420	304041	2766
2001-2002	268	266	1047384	305496	2252
2002-2003	207	211	1450248	350268	1800
2003-2004	170	170	1178544	315687	1494231
2004-2005	142	144	1254374	221798	1476172
2005-2006	131	131	1215072	315687	1482644
2006-2007	110	110	662263	267572	914375
2007-2008	95	93	518309	252112	722834
2008-2009	139	140	929714	208112	1137826
2009-2010	156	153	1502050	147233	1649283
2010-2011	272	268	2529853	166418	2696271
2011-2012	234	239	2482432	137465	2619897
2012-2013	282	275	2946222	201352	3147574
2013-2014	345	354	3402402	141547	3543949
2014-2015	416	406	266486	4429449	4530279

Source: Mongla Port Authority
http://www.mpa.gov.bd/bn/handle

Annexure 17: Mongla Port Expansion Projects

A) Approved Projects

Sl No	Name of Project	Estimated Cost (In Million Taka)	Implementation Period	Objective of the Project	Main Items of the Project
01.	Dredging at the Harbour Area in the Pussur Channel of Mongla Port	1320.00	2010-11 to 2014-15	Maintain adequate depth in the Harbour area of Pussur Channel of Mongla Port to facilitate berthing of 7.5 m. draft ships at Port Jetty and Mooring Buoy.	About 35.11 lac cum. dredging will be done.
02.	Dredging at the Outer Bar in the Pussur Channel	1786.80	2006-07 to 2015-16	Increase navigability at the Outer bar area of the Pussur Channel to facilitate easy entrance and maneuvering of more than 9 metre draft ships in the anchorage area of Mongla Port.	About 43.52 lac cum. dredging will be done.
03.	Procurement of 6 nos. Dredgers and Ancillary Crafts and Accessories for Ministry of Water Resources & Ministry of Shipping (Mongla Port-1 no., BIWTA-3nos, BWDB-2nos.)	1042.571	Aug. 2010 to June 2015	Procurement of dredger for MPA is to maintain adequate depth in the Pussur Channel.	1no. 18" Cutter Suction Dredger, 1no. Crane/Work Boat, 1no. Crew House Boat., Officer House boat 1no. will be procured.
04.	Procurement of Container and Cargo Handling Equipment	875.60	Jan. 2014 to June 2016	Procurement of container and cargo handling equipment to ensure fast and reliable service to port users improving cargo handling efficiency of Mongla Port.	1no. 100 ton capacity Tire mounted mobile carne, 1 no. 50 ton capacity mobile crane, 2nos. Rail mounted dock site crane, 1no. Heavy duty forklift truck, 2nos. Reach Stacker, 2nos Forklift with side shifter, 4nos. Forklift, 6nos. Low mast forklift truck and 3nos 40 ton capacity Straddle Carrier 3 nos. will be procured.

B) Projects under the process of approval:

Sl No	Name of Project	Estimated Cost (In Million Taka)	Implementation Period	Objective of the Project	Main Items of the Project
1.	Comprehensive Security Enhancement of Mongla Port	1170	July 2014 to June 2016	To ensure security of goods and properties, improving law and order situation in the port protected area, preventing theft, pilferage, crime and piracy.	1 Single Cabin Fire Pick Up, 1 Double Cabin Fire Pick Up, 2 Petrol cum Rescue Boat, 1 Beam Lifter, 2 Double Cabin Security Petrol Car, 6 Motor cycle, Replacement of ASI, 1 Container Scanner, 4 Archway Metal Detector, VHF Radio, 8 Day-Night Binocular will be procured. Computerized Security System will be installed and Gate, Watch Tower, Boundary Wall will be constructed.
2.	Sheet Piling at Jetty no. 5 to 9 of Mongla Port.	716	July 2014 to June 2016	Protect sliding of accumulated soil underneath the jetty; reduce siltation rate in the jetty front area of the channel and maintain adequate draft at jetty front.	Sheet Piling will be constructed in front of the Jetty no. 5 to 9.

C) Project under process of preparation:

Sl No	Name of Project	Estimated Cost (In Million Taka)	Implementation Period	Objective of the Project	Main Items of the Project
1.	Capital Dredging from Jetty No. 9 to Upstream 13 Km. of Pussur Channel	1700.00	Dec. 2014 to June 2017	Development of navigability up to 13 km. upstream in the river route to ensure smooth and safe movement of vessel bound for coal power station, Rampal, Bagerhat.	The project about 2.90 million Cum. dredging will be done.
2.	Removal of Wrecks from the Pussur Channel.	500.00	Dec. 2014 to June 2019	Safely manoeu-vring of sea-going vessels sunken wrecks in the Pussur channel will be removed	18 nos. wrecks will be removed from the Pussur Channel.
3.	Procurement of Harbour Crafts of Mongla Port	3700.00	2014-15 to 2017-18	Provide faster service project will be undertaken	1no. Berthing Tug, 1no. Buoy Laying Vessel, 1no. Fire Fighting Tug, 1no. Dispatch boat, 1no. Pilot Boat, 1no. Mother Survey Vessel, 2nos. Survey Work Boat, 2nos. Mooring Boat and 1no. Self Propelled Water Barge will be procured.
4.	Procurement of a Trailing Suction Hopper Dredger for Mongla Port	3250.00	Dec. 2014 to June 2017	Maintain adequate depth in the Pussur Channel continuous mainte-nance dredging will be done.	1no. Trailing Suction Hopper dredger, 2nos. Self Discharging Soil Carrying Barge, 1no. Tug Boat and 1no. Crane Boat will be procured.
5.	Construction of Container Yard	500.00	2015-16 to 2017-18	To enhance the container handling capacity container yard with modern equipment will be established.	1no. Container yard with modern equipment will be constructed.
6.	Construction of Multipurpose Berth with backup facilities of Mongla Port	8500.00	2015-16 to 2019-20	Reduce turn round time of sea going vessel and dwell time of container.	4nos. Rubber Tyred Gantry Crane, 2nos. Straddle Carrier, 2nos. Mobile Harbour Crane, 8 nos. Forklift, 8 nos. Trailer, 2nos. Jeeps, 2nos. Pickup & 6 nos. Motor Cycle will be procured and 1no. Multipurpose and Container Jetty, 1no. Container Terminal, Water Supply Line, Approach Road, Power Sub station, High Mast Tower, Drain & Culvert will be constructed.

Annexure 18: Payra Port's Completed, Ongoing and Future Projects

Completed Projects

- Survey of River Routes
- Channel Marking
- Radio Control Station
- Coastguard Station
- VHF Communication established
- 1000 Kva Substation
- Bank Facility
- Electric Supply
- Customs, ISPS Code, UN Locator Code, Fresh water and Fuel Supply, Ship handling Operator

Ongoing Projects

- Procurement of 02 Nos Pilot vessel
- Procurement of 2 Nos Heavy Duty Speed Boat and Gun for ensuring Security at outer anchorage
- Procurement of Tug Boat
- Procurement of Buoy Laying Vessel
- Procurement of Survey Boat
- Procurement of 2 Nos Service Pontoon for berthing port vessel/boat
- Acquisition of 6069.19 acres of land
- Construction of 5 storied Admin Building
- Construction of ware House
- Construction of Retaining Wall on 16 Acres Land
- Construction of Rajapara-Payra Port connecting Road (4-Lane) (Length – 5.60 km)

Source: Payra Port Authority – PPA Portfolio
http://ppa.gov.bd/ppa-portfolio/

Future Projects:

Component	**Investment Method**
Conservancy and Port Management	G2G preferred
Capital Dredging and ongoing Maintenance Dredging	FDI (Preferable or G2G)
Tower Harbour tugs	FDI/G2G
Core Port infrastructure	G2G
Riparian Liabilities	G2G
Housing Education and Health Facilities	CSR or G2G
Airport	G2G or FDI
Power Station 200 MW	G2G or FDI
Multipurpose Terminal- 1,000 Metres Length (to handle general cargo, bagged cargo, machinery, etc.)	G2G
Container Terminal No. 11,000 metres with options to extend by 1,000 metres	FDI
Container Terminal No.2 as Terminal No. 1	FDI
Dry Bulk Terminal on 500 acres land	FDI
As LNG Terminal for the importation of LNG by means of an FSRU or Land Base	FDI
Liquid Bulk Terminal	FDI
Internal Ferry Terminal	G2G
Ship-yard and ship repair facility	FDI or G2G
Promotion of Tourism	FDI/G2G
Exclusive Economic Zone	FDI/G2G
Railway connection from Payra Port to Dhaka	FDI
Offshore supply base	FDI or G2G

Source: Payra Port Authority – PPA Portfolio
http://ppa.gov.bd/ppa-portfolio/

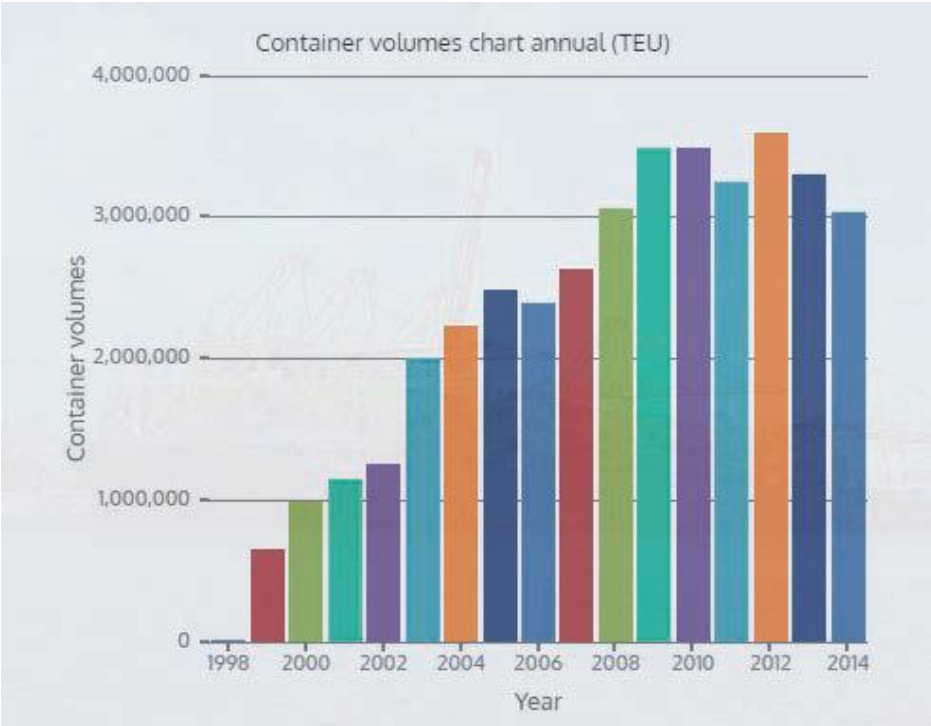
Annexure 19: Container Trade Forecast of Bangladesh

Container Trade Forecast (TEU)

Year	Mongla	Chittagong	Payra	Total	Payra %	Ctg %	Mongla %
	TEU	TEU	TEU	TEU			
2014	32,000	1711084		1743084		98%	2%
2015	33,000	1867648		1900648		98%	2%
2016	34,000	2038538		2072538		98%	2%
2017	35,000	2225064		2260064		98%	2%
2018	36,000	2428567		2464657		99%	1%
2019	37,000	2650884		2687880		99%	1%
2020	38,000	2790435	100000	2931435	3%	95%	1%
2021	39,000	2874186	250000	3163186	8%	91%	1%
2022	40,000	2873340	500000	3413340	15%	84%	1%
2023	41,000	2642364	1000000	3683364	27%	72%	1%
2024	42,000	2432843	1500000	3974843	38%	61%	1%
2025	43,000	2246487	2000000	4289487	47%	52%	1%
2026	44,000	2264357	2290000	4598357	50%	49%	1%
2027	45,000	2262498	2622050	4929548	53%	46%	1%
2028	46,000	2236431	3002247	5284678	57%	42%	1%

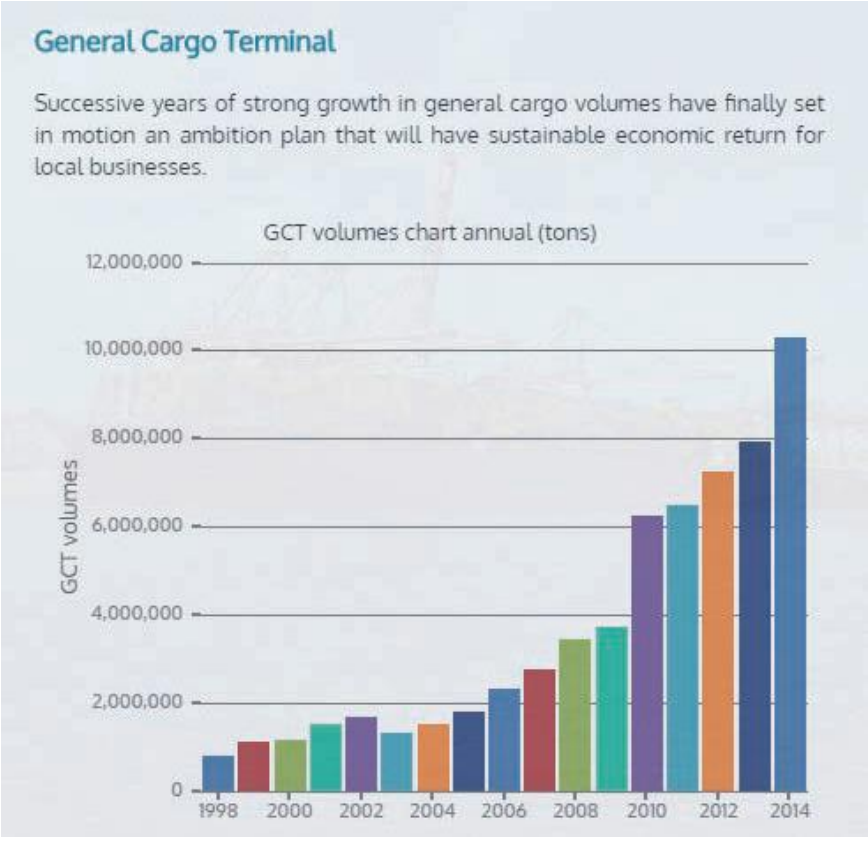
Source: Payra Port Authority
http://ppa.gov.bd/wp-content/uploads/photo-gallery/Slide33.jpg

Annexure 20: Annual Container Volumes of Salalah Port



Source: Port of Salalah
http://www.salalahport.com/index.php?lang=en&name=Container%20Terminal&itemid=63

Annual General Cargo Terminal Volumes (in tonnes) of Salalah Port



Source: Port of Salah
http://www.salalahport.com/index.php?lang=en&name=General%20Cargo%20Terminal&itemid=62

Annexure 21: Key Performance Indicators of Salalah Port

	2010	2011	2012	2013	2014	2015
Key Operational Data	5,000	5,000	5,000	5,000	5,000	5,000
Crane Capacity in TEUs ('000s)	3,484	3,201	3,634	3,343	3,034	2,569
TEUS ('000s)	6,280	6,519	7,251	7,944	10,314	12,543
Tonnes ('000s)	1,791	1,725	1,735	1,651	1,439	1,336
Container Terminal Vessel calls	2,079	1,555	1,401	1,321	1,326	1,520
Headcount	2,194	2,109	2,216	2,167	2,137	2,057
Operational Ratio Analysis						
Gross Crane Productivity	29.70	29.38	30.20	31.54	30.70	30.30
TEUs handled per employees	1,588	1,518	1,640	1,543	1,420	1,249
TEUs/meter of quay p.a	1,351	1,241	1,409	1,296	1,176	996
Cranes in operation	25	25	25	25	25	25
TEUs/quay crane p.a.	139,376	128,036	145,360	133,720	121,349	102,741
Capacity Utilization	70%	64%	73%	67%	61%	51%

Source: Port of Salah http://www.salalahport.com/pdf/annual/2015/POS-Annual-Report-2015-English.pdf

Annexure 21: Berths in Shahid Rajaee Port

There are 24 jetties at the port of Rajaee:

- Berths 1 & 2 have maximum drafts of 11.20 meters and accommodate oil tankers
- Berths 3 & 23 accommodate vegoil tankers with maximum drafts of 10.70 meters. Also, berth 24 with a maximum draft of 11.5 meters can accommodate vegoil tankers.
- Berths 4, 5, 6, 7 & 8 accommodate container ships with maximum drafts of 12.2 meters.
- Berth 9 is reserved for small vessels & barges with maximum drafts of 5 meters.
- Berths 10, 11, 12, 13 & 14 service general cargo vessels with maximum drafts of 12 meters.
- Berths 15, 16, 17 & 18 service container & bulk cargo vessels with maximum drafts of 13.6 meters.
- Berths 19, 20, 21, 22 & 24 are set aside for general cargo ships with maximum drafts of 11.5 meters.

Source: Logistics Capacity Assessments (LCAs)
http://dlca.logcluster.org/pages/releaseview.action?pageId=853360

Chapter 5

Traditional and Non-Traditional Security Issues in the Indian Ocean

Chapter 5 Traditional and Non-Traditional Security Issues in the Indian Ocean

Nilanthi Samaranayake, CNA[1]

The Indian Ocean is the lifeline of the world's economy. Half of all container traffic transits this body of water, and 30% of the world's trade flows through its ports.[2] In particular, two-thirds[3] of global oil shipments traverse the Indian Ocean, especially through the chokepoints of the Straits of Hormuz and Malacca. Illustrating the relative importance of the region to the world, 80% of Indian Ocean trade is extra-regional.4 In addition to its pivotal role in global trade, the region contains oil, natural gas, and mineral reserves. Meanwhile, it is home to roughly 40% of the world's population[5] and is prone to natural disasters as well as man-made scourges like trafficking networks. These factors combine to make the Indian Ocean a critical area of analytical inquiry, but one that has long been underexamined by Western observers, especially compared with the sizable study of strategic issues in the Pacific Ocean.[6]

The purpose of this paper is to identify the range of primary security issues in the Indian Ocean region and serve as a reference for the Sasakawa Peace Foundation USA's contribution to the Quadripartite Commission on Indian Ocean Regional Security. These issues will be divided for analysis into the categories of traditional and non-traditional security (NTS). The paper finds that traditional security threats in the Indian Ocean such as maritime boundary disputes are low compared with those in the Pacific Ocean. The potential for the territorial conflict between India and Pakistan to spill over into the Indian Ocean remains the greatest traditional security challenge. Meanwhile, NTS issues such as trafficking and illegal fishing will continue to pose challenges to the Indian Ocean region. Given the persistence of these threats, attention will need to be focused on addressing them because they generally fly under the radar compared with more widely recognized NTS challenges such as natural disasters and terrorism from Islamic extremist organizations.

I. Scope

There are varying definitions of the Indian Ocean and its outer geographic boundaries. Defined most broadly, the Indian Ocean region encompasses 36 countries, including Middle Eastern countries. With 21

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2 http://www.colombopage.com/archive_16B/Oct16_1476641677CH.php
https://issafrica.s3.amazonaws.com/site/uploads/Paper236.pdf, page 2

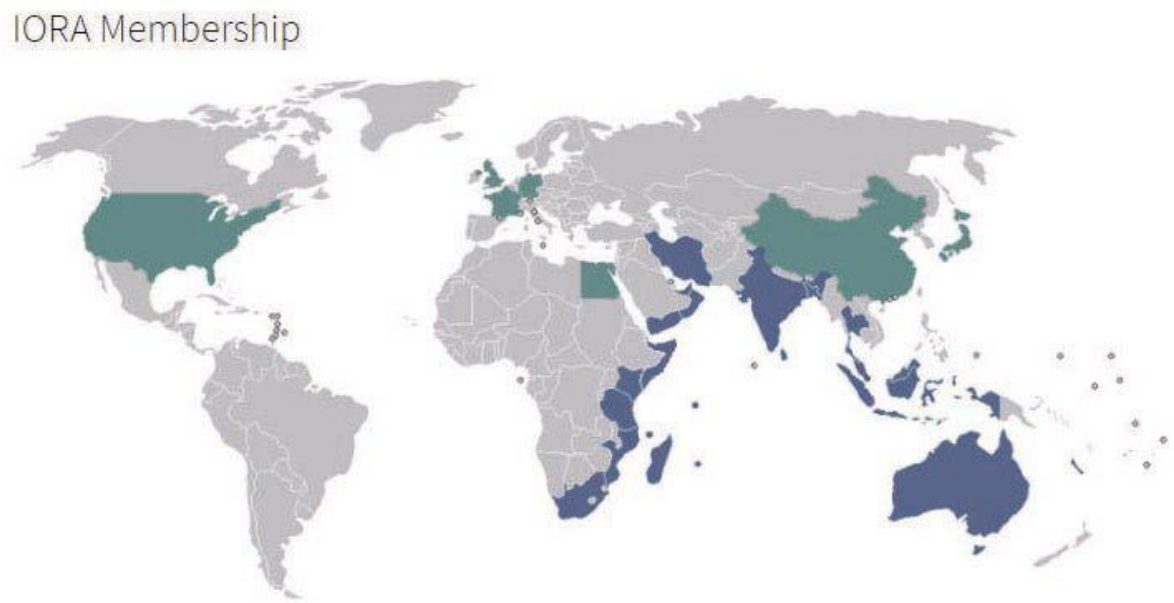
3 http://www.iora.net/about-us/background.aspx

4 German Foreign Office brochure, 2015.

5 http://www.thehindu.com/opinion/op-ed/putting-out-to-sea-a-new-vision/article5305845.ece

6 Some useful Western analyses of the Indian Ocean follow: http://www.stimson.org/content/indian-ocean-rising-maritime-security-and-policy-challenges; http://www.stimson.org/content/maritime-commerce-and-security-indian-ocean; http://www.penguinrandomhouse.com/books/89745/monsoon-by-robert-d-kaplan/9780812979206/; https://www.cna.org/CNA_files/PDF/IRP-2013-U-004654-Final.pdf

member countries plus 7 dialogue partners, the Indian Ocean Rim Association (IORA) takes a more limited interpretation of the region as depicted in the map below.[7]



For the purposes of this project, the scope of the Indian Ocean will be limited to the area approximately between Thailand and Pakistan. The eastern part of the subject area will be the Indian Ocean bordering the Southeast Asian countries and the western part will be the Indian Ocean spanning south of Pakistan. However, research dealing with neighboring areas, e.g., the South China Sea or the Gulf of Aden, will be mentioned, if necessary.

II. Traditional Security Issues

This section will examine traditional security issues in the Indian Ocean. The phrase "traditional security" is usually understood as encompassing state-centric concerns (e.g., border disputes) and conflicts between nations. In the coming years, traditional security issues between states in the Indian Ocean region will likely continue to be relatively benign, with the glaring exception of the India-Pakistan conflict.

1. Maritime Boundary Disputes

The Indian Ocean generally is not characterized by major disputes between countries over maritime boundaries. In fact, two long-standing delimitation disputes in the Bay of Bengal were recently resolved. The fact that, first, Myanmar and Bangladesh and, second, India and Bangladesh agreed to submit their maritime boundary claims to arbitration bodies of the United Nations Convention on the Law of the Sea (UNCLOS) and abide by their decisions in 2012 and 2014, respectively, is a positive sign for the utility of international law in the Indian Ocean.

Still, in the Indian Ocean area stretching from Pakistan to Thailand, two boundary controversies are

[7] Notably, three countries on the Indian Ocean coastline (Maldives, Myanmar, and Pakistan) are not members of IORA. http://dfat.gov.au/international-relations/regional-architecture/indian-ocean/iora/pages/indian-ocean-rim-association-iora.aspx

worth mentioning. First, the Sir Creek dispute between India and Pakistan persists over an estuary to the Arabian Sea between Kutch and Sindh. The dispute officially dates to the countries' independence in 1947 but has its origins during colonial rule. While the disagreement is long-standing, it is not as salient as the two countries' territorial dispute over Kashmir, which will be discussed later.

Second, regarding the British Indian Ocean Territory, Mauritius claims sovereignty over the Chagos Islands and even took the United Kingdom (UK) to the Permanent Court of Arbitration (PCA) under Annex VII of UNCLOS. While the PCA does not have jurisdiction over sovereignty disputes, the Hague body ruled in 2015 that the UK had improperly imposed a marine protection area (MPA) around the Chagos archipelago.[8] Mauritius suspected the UK pursued the MPA to prevent the right of Chagos Islanders to return to the area from where they were removed in the 1960s and 1970s. The PCA did not find this intention to be the case, but ruled that Mauritius holds legal rights to the fish in this area and to the eventual return of the Chagos Islands when the UK no longer needs the area for its joint military base with the United States on the island of Diego Garcia. Mauritius is not opposed to the base and separates this from the issue of the Chagossians' desire to return. However, in November 2016, the UK's foreign office ruled out the option for the islanders to return. Mauritius may next try to take its case to the International Court of Justice.

2. The Indian Ocean as a Theater for Fallout over Land Conflict

The highest traditional security challenge in the Indian Ocean that observers should monitor is the potential for spillover of the long-standing India-Pakistan conflict into the maritime domain. The two countries have fought four wars since their independence in 1947, three of which were over their disputed Kashmir territory. However, their 1971 war over East Pakistan (now Bangladesh) involved naval battles in the Arabian Sea (at Karachi) and Bay of Bengal (at Chittagong). During such traditional conflict, threats to shipping could materialize even though neither country has an interest in disrupting the stability of sealanes. Both India and Pakistan are acutely aware of their dependence on the maritime economy. For India, 90% by volume (and 70% by value) of its external trade is from the sea,[9] while 95% of Pakistan's trade is from the sea.[10]

The most recent impasse between India and Pakistan in the fall of 2016—with militants' cross-border killings of 20 Indian soldiers—illustrates the potential for the two countries to escalate tensions over their historic land dispute, with fallout implications in the Arabian Sea. This is especially the case if another 2008 Mumbai-style set of attacks takes place again. These attacks were conducted by terrorists using a sea route from Pakistan and killed nearly 200 people. The Narendra Modi administration would likely feel compelled to respond, unlike the previous Manmohan Singh government, which incurred criticism for exercising restraint in 2008. In comments after the government authorized retaliatory strikes against Pakistani border posts in Kashmir, Modi warned, "At times, war becomes unavoidable."[11] Having witnessed criticism of his predecessor's restraint coupled with Modi's generally tougher approach to Islamabad, Modi may be inclined to use

8 https://www.pcacases.com/web/view/11

9 https://www.indiannavy.nic.in/sites/default/files/Indian_Maritime_Security_Strategy_Document_25Jan16.pdf

10 http://galledialogue.lk/assets/files/2014/research_papers/achieving_comprehensive_maritime_security_environment_%E2%80%93_pakistan_perspective.pdf

11 http://timesofindia.indiatimes.com/india/At-times-war-becomes-unavoidable-says-PM-Narendra-Modi/articleshow/54803023.cms

military force in response to another Mumbai-style attack that emanates from Pakistan and kills hundreds of Indian citizens.

A striking dimension of the India-Pakistan conflict at sea is the growing potential for hostilities and accidents due to the development of undersea and nuclear naval forces. India is nearing completion of a long-sought nuclear triad through its ballistic missile submarine INS *Arihant*.

Furthermore, after the lease on INS *Chakra* expires in 2022, India will lease a second nuclear attack submarine from Russia through a recently signed deal. As a rising naval power, India's pursuit of this capability is natural. Yet New Delhi increasingly sees a naval threat not only from its historic foe, Pakistan, but also from China's support of Pakistan. For example, China is set to sell eight diesel-electric attack submarines to Pakistan over the coming decade, with four being built at the Karachi shipyard to help develop the indigenous industry. Meanwhile, Pakistan stood up its own Naval Strategic Force Command headquarters in 2012 to deepen its commitment to the development of its nuclear deterrent at sea.[12] Islamabad appears intent on countering New Delhi's conventional advantage through a strategy of "full-spectrum deterrence"[13] including the option of deploying tactical nuclear weapons on naval platforms.[14]

India is encountering the typical growing pains faced by navies over the maintenance of undersea platforms and has experienced a series of high-profile accidents in its submarine arm. Pakistan's ability to safeguard its military platforms and nuclear weapons is likewise worrisome, especially in the naval realm. In September 2014, the Pakistan Navy witnessed the infiltration of its personnel by Al Qaeda in the attempted seizure of the frigate PNS Zulfiqar, ostensibly to target U.S. Navy counterterrorism patrols. These policies and *potential* for unintended consequences reveal the greatest danger facing the Indian Ocean for the foreseeable future.

3. India-China Rivalry in the Indian Ocean?

In recent years, there has been much discussion among strategists about the potential for rivalry between India and China to manifest spill in the Indian Ocean. In addition to their ongoing border dispute, China has built and upgraded and is *currently* operating commercial maritime infrastructure such as port terminals and cranes in countries along the Indian Ocean littoral.[15] While these projects are not military in nature, the fact that Beijing is subsuming them under the branding of One Belt and One Road (OBOR) and the Maritime Silk Road (MSR) provokes legitimate speculation about larger strategic ambitions and the potential military application of these projects. Finally, since China began participating in counterpiracy operations in 2008, it has increasingly deployed naval and survey vessels, including submarines, to the Indian Ocean. All these developments have unsettled observers, especially policymakers in New Delhi, and carry considerable implications for Indian military planners.

While military planners must plan for the worst scenario, these developments do not necessarily portend conflict in India-China relations in the Indian Ocean. One mitigating factor is that, unlike in the Pacific, China does not have territorial claims in the Indian Ocean. Second, India's naval and air bases and support

12 https://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2067
13 http://carnegieendowment.org/2016/09/08/pakistan-challenges-for-u.s.-interests-pub-64513
14 http://carnegieendowment.org/2015/03/09/murky-waters-naval-nuclear-dynamics-in-indian-ocean-pub-59279
15 http://www.hellenicshippingnews.com/cpec-becomes-reality-as-first-chinese-ship-docks-at-gwadar-port/

facilities in all corners of the Indian Ocean give it a clear home-field advantage, whereas this theater is the far seas for China. In early 2016, China began construction of its first overseas base in Djibouti, which also hosts facilities for the United States, Japan, and France. The site will aid logistics provision to transiting People's Liberation Army (PLA) Navy ships through 2026. In the future, China may seek to set up support facilities on Pakistan's coast as it develops the China-Pakistan Economic Corridor. Yet if it ever were to seek to convert these commercial projects for military uses, this action would signal a dramatic increase in China's ambitions. By changing the nature of its ports, China would have taken meaningful steps toward developing a capability to sustain maritime power projection operations in the Indian Ocean. Nonetheless, building such infrastructure would take time and could be closely monitored if Beijing were ever to pursue this highly controversial route.[16] In fact, analysts may wish to use China's activities in the South China Sea as a model of how Beijing could go about developing naval infrastructure in the Indian Ocean.

At this point, the two countries' relations in the Indian Ocean tend to be perceived as a rivalry more on the Indian side than on the Chinese side. This is understandable given that the Indian Ocean is India's backyard, whereas China's priorities are higher in the Pacific, specifically in the East and South China Seas. Moreover, neither country wishes to disrupt commerce on the critical sealanes in the Indian Ocean. India's growing confidence in its naval capabilities—particularly on anti-submarine warfare—and increasing military arrangements in the region will likely mitigate some of New Delhi's threat perceptions. Furthermore, it remains to be seen whether India can defuse the potentially menacing aspects of OBOR and MSR initiatives and exploit to its own benefit Beijing's interest in developing Kolkata and Vizhinjam, for example, along India's coastline.

If China continues to abide by legal norms in international waters in the Indian Ocean, as it does now (e.g., seeking rights from the International Seabed Authority to conduct deep seabed mining), then the future course of India-China relations in the region will likely remain in equilibrium. If not, then India will have even greater reason to strengthen its own maritime capabilities and deepen its security relationship with the United States and other countries. This could even entail signing some U.S. defense agreements that New Delhi continues to resist, such as the Communications Compatibility and Information Security Memorandum of Agreement (COMCASA).

III. Non-Traditional Security Issues

In contrast to the potential for traditional security threats to materialize in the future, a wide range of NTS[17] issues currently confront the Indian Ocean region. Unlike traditional security threats, NTS challenges tend to involve non-state actors and as a result are transnational in their nature.[18] For example, natural disasters do not cause military conflict between nations, and terrorist attacks by non-state actors are fundamentally different from conventional combat between countries' militaries. Furthermore, an important aspect of NTS

16 http://thediplomat.com/2013/07/dont-worry-about-chinas-string-of-pearls-yet/

17 http://www.globalindiafoundation.org/nontraditionalsecurity.html

18 http://kms1.isn.ethz.ch/serviceengine/Files/ISN/120740/ichaptersection_singledocument/d959c98d-a4b6-4a7e-8b30-ca6ff594fc35/en/cefq8.2ns35-51.pdf, page 36, 38-39.

issues in the Indian Ocean is the often interconnected nature of these threats. For instance, analysts often discuss the piracy and illegal fishing nexus,[19] the link between illegal fishing and human trafficking,[20] and the opportunities that natural disasters create for human traffickers to exploit vulnerable populations.[21]

In the coming years, NTS issues will continue to remain a priority for resident Indian Ocean countries and extra-regional stakeholders. Given the sheer number of countries that depend on trade and traffic through this body of water, there is significant extra-regional desire to continue addressing these issues. Given the international community's shared interests regarding the security of sea lanes and ports and access to energy to fuel economies, the Indian Ocean is a theater where, on balance, NTS threats tend to promote cooperation rather than competition, as seen in the often zero-sum terms of traditional security.

1. Natural Disasters

While concerns are rising in the Indian Ocean about man-made disasters (namely oil spills and their impact on local economies, tourism, and the ecosystem), natural disasters pose the greatest and most immediate threats to resident nations. Across the Indian Ocean, major weather events such as cyclones and floods occur with regularity and sometimes cause widespread destruction of life and property.[22] The Asian Disaster Reduction Center finds that Asia is the top region in the world for the number of disasters, the people killed, and economic damage (44.6%, 84.6%, and 49% respectively).[23] A study of natural disasters in South Asia finds that they are becoming more frequent, especially in heavily populated countries.[24] Poor populations tend to reside along low-lying coastlines and areas vulnerable to flooding. The specter of climate change exacerbates the destructiveness of these events.[25] Of relevance to Indian Ocean countries, one study found that hydro-meteorological disasters are more frequent than geophysical ones.[26] Moreover, disasters inhibit growth in developing economies,[27] and the Intergovernmental Panel on Climate Change (IPCC)—body established by the United Nations Environment Program and the World Meteorological Organization—finds that climate change tends to "further entrench poverty."[28]

Given the shared impacts of natural disasters, countries have banded together to provide relief to affected nations in the Indian Ocean. Multinational disaster relief operations have followed prominent disasters such

19 http://oceansbeyondpiracy.org/publications/piracy-illegal-fishing-nexus-western-indian-ocean

20 http://www.ap.org/Content/Press-Release/2016/AP-wins-Pulitzer-Prize-for-Seafood-from-Slaves-investigation

21 https://publications.iom.int/books/addressing-human-trafficking-and-exploitation-times-crisis-evidence-and-recommendations-0

22 The Indian Ocean region is believed to be home to 70% of the world's natural disasters, according to Germany's Foreign Minister Frank-Walter Steinmeier: http://www.auswaertiges-amt.de/sid_BAEF2C1E7708749A6CA0CD29A47A708A/EN/Infoservice/Presse/Reden/2015/150609_IndianOceanKonferenz.html?nn=482400

23 http://www.adrc.asia/publications/databook/DB2013_e.html

24 https://crawford.anu.edu.au/acde/asarc/pdf/papers/2010/WP2010_06.pdf, page 20-21

25 CNA's Military Advisory Board finds that "climate change can act as a threat multiplier for instability." https://www.cna.org/cna_files/pdf/national%20security%20and%20the%20threat%20of%20climate%20change.pdf

26 For just the 2006 to 2008 period, South Asia counted 128 natural disaster events with 93% of these as hydro-meteorological in nature. India scored the most disasters, while Bangladesh lost the most citizens to flooding. https://practicalaction.org/docs/region_south_asia/south-asia-disaster-report-copenhagen.pdf

27 For example, the 2004 tsunami cost $7 billion in damage to the affected countries of Indonesia, Sri Lanka, Thailand, India and Maldives. Mike Goldberg and Eric Palladini, *Managing Risk and Creating Value with Microfinance*, "Chapter 7-Disaster Management: Preparing for the Worst," 2010, page 90.

28 In fact, the report identified Bangladesh as being particularly vulnerable to climate change and the potential for 27 million of its citizens to be at risk due to sea level rise by the year 2050. http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap13_FINAL.pdf, page 810.

as the 2004 tsunami, which killed 230,000 people, mostly in Indonesia, Sri Lanka, and Thailand; Cyclone Sidr which struck Bangladesh in 2007; and Cyclone Nargis which struck Myanmar in 2008.[29] The 2004 Tsunami Core Group was notable for its close policy-level and operational-level coordination between the major powers of the United States, Japan, India, and Australia. Through this grouping, all four countries were able to optimize efficiencies in their provision of disaster relief to several countries across the Indian Ocean. It is worth noting that India provided relief to Sri Lanka, Maldives, and Indonesia, while attending to its population's own internal disaster relief needs.

Beyond disaster relief operations, countries provide humanitarian assistance outside these crisis situations and use their navies for humanitarian assistance/disaster relief (HA/DR). For example, the United States conducts Pacific Partnership, annual humanitarian assistance and disaster preparedness operations, including in the Indian Ocean. In 2016, Pacific Partnership carried out medical and dental visits to Indonesia, Timor-Leste, and Malaysia through its hospital ship USNS *Mercy*. The next round of Pacific Partnership will begin in March 2017.[30] Since 2010, the PLA Navy has performed humanitarian assistance missions to various Indian Ocean countries with its hospital ship *Peace Ark*, including Bangladesh, Myanmar, Indonesia, Maldives, and even India and Australia. In terms of maritime engagement with an HA/DR focus, India conducts the biennial MILAN (Hindi for "meeting") maneuvers with Indian Ocean navies and coast guards. Also, the ASEAN Defence Ministers Meeting (ADMM) Plus framework has multiple expert working groups including for HA/DR and military medicine. In 2013 and 2016, the grouping achieved full participation or observer-status at exercises on HA/DR/military medicine and maritime security/counterterrorism.

Finally, Indian Ocean countries that have typically been recipients of disaster relief are now aiming to become providers of such assistance and increase their own disaster preparedness. Bangladesh has long been a victim of cyclones and floods. However, the country has made a concerted effort in the last two decades to reduce the impact of its frequent cyclones and floods.[31] Moreover, the Bangladesh Navy provided relief to the Philippines and Maldives after typhoon and water crises, respectively. Other Indian Ocean countries (e.g., India,[32] Sri Lanka, Pakistan, Seychelles) have tried to become more resilient by establishing their own national disaster management institutions and participating in regional initiatives. Sri Lanka—a recipient of disaster relief after the 2004 tsunami—even provided relief to Nepal after its 2015 earthquake through air force operations. Beyond national frameworks, the subregional South Asian Association for Regional Cooperation (SAARC) created the Disaster Management Center in New Delhi. However, the institution is not regarded as being particularly effective,[33] in part due to the larger challenge to progress that SAARC itself faces over the persistent India-Pakistan divide.

29 https://www.cna.org/CNA_files/PDF/DRM-2013-U-004941-Final2.pdf

30 http://navaltoday.com/2016/11/10/planning-for-pacific-partnership-2017-underway-in-singapore/

31 One metric is a steep decline in the number of fatalities in Bangladesh from cyclones in 1970 and 1991 compared with 2007 and 2009: http://www.who.int/bulletin/volumes/90/2/11-088302/en/

32 https://www.cna.org/CNA_files/PDF/DRM-2013-U-004941-Final2.pdf

33 http://reliefweb.int/report/world/critical-disconnect-role-saarc-building-disaster-risk-management-capacities-south-asian

2. Terrorist Threats from Islamic Extremist Organizations

Like natural disasters, terrorist attacks are crisis events that suddenly strike and shock the region. Drawing from a RAND analysis, the consensus view is that incidents of seaborne terrorism are low. Only 2% of all terrorist incidents over the past 30 years happened at sea.[34] However as mentioned earlier, another terrorist incident emanating from Pakistan like the devastating 2008 Mumbai attacks by Lashkar-e-Taiba has the potential to exacerbate delicate India-Pakistan relations with fallout for Indian Ocean stability. While the potential for seaborne terrorism is low, there are active Islamic extremist threats that could have direct implications for stability in the Indian Ocean. This section will examine some threats worth monitoring.

Beyond the persistent India-Pakistan conflict, terrorist attacks in general are a threat to the region. The USS *Cole* bombing by Al Qaeda in 2000 illustrated the damage that can be achieved by terrorists in the Indian Ocean. The U.S.-led Combined Maritime Forces (CMF) has a combined task force (CTF-150) that was stood up to address terrorist threats in the western Indian Ocean. More recently, the 2014 attempted hijacking of a Pakistan Navy frigate by Al Qaeda operatives revealed the continued goal of the terrorist group to target U.S. Navy counterterrorism patrols (likely through CTF-150). A 2011 attack on the Pakistan Navy's Mehran airbase by the Taliban also destroyed two P-3C surveillance aircraft. The potential for Islamic terrorism to emanate from Pakistan continues to be a risk for the western Indian Ocean.

In addition to the Islamic extremist threats discussed above, Maldives faces internal threats with potential reverberations for the region. The country is an atoll nation, and to travel within it, one must rely on maritime transit—even upon landing at the international airport island. As a result, any terrorism that takes place in Maldives is inherently a concern in the maritime realm. Officials are particularly worried about the threat of a terrorist attack and its ability to damage the country's lucrative industry of luxury tourism and inflict harm on foreign visitors. Of wider concern to regional stability, authorities are anxious about Maldivian citizens who travel to Saudi Arabia or Pakistan, return home with a radical interpretation of Islam, and may wish to carry out militant activities.[35] In fact, Maldives ranks second highest in terms of Islamic State-recruited fighters per capita, partly due to the small population of the country (less than 400,000 people)[36] and the high rate of social media penetration. One estimate finds that nearly 100 Maldivians since January 2015 are thought to have traveled to Syria.[37] Nearby in Sri Lanka, where the government defeated a nearly three-decade insurgency in 2009, officials are now concerned about the return of Maldivian fighters for the Islamic State because air travel routes to Maldives often require passengers to pass through Colombo airport first.

Finally, Bangladesh confronts terrorist activities that also have clear maritime implications in the Bay of Bengal. The July 2016 Islamic extremist attack in Dhaka that killed 20 people typified the worst of a year-long series of anti-foreigner attacks in Bangladesh. It is unclear which Islamic extremist organization planned this siege, with suspects ranging from Islamic State, Al Qaeda in the Indian Subcontinent (AQIS), and Jamaat-ul-Mujahideen Bangladesh (JMB) based in Bangladesh itself. Regardless of the culprit, the fact that this attack could take place in the well-secured Gulshan neighborhood, which is frequented by diplomats, revealed

34 Martin N. Murphy, *Contemporary Piracy and Maritime Terrorism: The Threat to International Security*, "Chapter 2: Maritime Terrorism," International Institute for Strategic Studies, 2007.

35 http://apdf-magazine.com/brig-gen-zakariyya-mansoor-shares-his-views-on-fighting-terrorism-regionally-and-in-the-maldives/

36 http://www.kellogg.northwestern.edu/faculty/benmelech/html/BenmelechPapers/ISIS_April_13_2016_Effi_final.pdf

37 https://www.theguardian.com/world/2016/oct/13/maldives-quits-commonwealth-over-alleged-rights-abuses

the threats to foreign nationals who work in Bangladesh for economic development purposes. Seven of the 20 victims were Japanese nationals working on behalf of Japan International Cooperation Agency (JICA) projects, while nine killed were Italian nationals.[38] While JICA has laudably reaffirmed its commitment to development projects in Bangladesh, one clear implication for the maritime domain is that countries may seek to conduct more naval exercises in the Bay of Bengal focused on preparing to rescue their nationals in Bangladesh through non-combatant evacuation operations (NEOs). For example, in 2016 the Bangladeshi and Chinese navies exercised emergency evacuation procedures, including on crowded port operations. NEOs may become a naval mission that implicates China and other extra-regional countries such as Japan and its Bay of Bengal Industrial Growth Belt (BIG-B) initiative in Bay of Bengal operations, given rising concerns about terrorism against their nationals and investments in Bangladesh. Such activities would disrupt the state of military operations and balance of power in the Bay of Bengal, where India dominates.

3. Piracy

Piracy provides a clear example of how NTS can advance long-term cooperation between countries in the Indian Ocean. In the first few years of the 21st century, piracy plagued the eastern end of the Indian Ocean in the Strait of Malacca area. In response, Malaysia, Singapore, and Indonesia joined together in 2004 to establish the Malacca Straits Patrols (MSP) at sea and in the air (which included Thailand). Despite the countries' historical tensions (e.g., Malaysia's conflict with Indonesia and Singapore's separation from Malaysia), they were able to combine their efforts under MSP to address this grave threat through an intra-regional initiative. Furthermore, Japan led the founding of the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP), an international organization stood up in 2006 to increase maritime domain awareness efforts on piracy and perform capacity-building for maritime forces in the region. Operating on a small budget, ReCAAP's Information Sharing Centre (ISC) is effective in compiling data about piracy incidents, categorizing their severity, and disseminating this information to its network of "Focal Points" across the Indian and Pacific Ocean member countries. ReCAAP continues to expand its membership, for example, through the United States' accession in 2014.

On the other end of the Indian Ocean, piracy in the Gulf of Aden and Horn of Africa represented a major transnational threat in the mid-2000s that affected the various multinational flagged-ships sailing through this region. In response, the Contact Group on Piracy off the Coast of Somalia was created in January 2009. Meanwhile, several naval task forces were established: the U.S.-led Combined Maritime Forces (CMF) based in Bahrain stood up Combined Task Force 151 (CTF-151) for counterpiracy, the European Union launched Naval Force (EU NAVFOR) Operation Atalanta, and NATO launched Operation Ocean Shield. It is worth mentioning that, despite the potential instability emanating from Pakistan with regard to terrorism, the Pakistan Navy has been a force for stability in CTF-151, having commanded it the most number of times (as well as a counterterrorism task force under CMF). In addition, many countries such as China, India, and Japan did not wish to participate in these coalitions and deployed naval forces independently. The use of private security contractors on board and the adoption of best-management practices by ships have also helped deter

38 One American and one Indian were killed, as well as six Bangladeshi nationals.

piracy. As a result, pirate attacks, which had been rising for years and peaked in 2011,[39] began dropping. In fact, industry shipping leaders even wrote to the Contact Group on Piracy off the Coast of Somalia in late 2015 and reduced the coordinates of the High Risk Area (HRA) in the western Indian Ocean.[40]

At present, piracy has been nearly eradicated in the western Indian Ocean, based on November 2016 data from the International Maritime Bureau (IMB) Piracy Reporting Centre.[41]

In fact, a pirate attack off the Somali coast in October 2016 marked the first incident in two and a half years. This attack demonstrates the need to be vigilant, but still put into perspective the success of sustained counterpiracy efforts. At the other end of the Indian Ocean, piracy reemerged as a problem from 2014 to 2015 after having calmed down over the preceding decade. Yet, the ReCAAP ISC reports that the number of

39 http://eunavfor.eu/mission/
40 http://www.imo.org/en/OurWork/Security/PiracyArmedRobbery/Pages/Default.aspx
41 https://www.icc-ccs.org/piracy-reporting-centre/live-piracy-map

incidents had dropped significantly by late 2016.[42]

In addition to the sweeping multinational cooperation seen in the Indian Ocean, piracy has also promoted operational coordination among countries with troubled histories and current tensions elsewhere. India and China have coordinated on convoy scheduling for their counterpiracy forces, despite tensions over their long-standing border disputes and India's suspicions about China's entry into the Indian Ocean. Meanwhile, Japan, South Korea, and China have also coordinated on escort operations in the Gulf of Aden despite their historical and current animosities in the East China Sea and Sea of Japan. Moreover, the United States and China have even conducted two bilateral counterpiracy exercises off the Horn of Africa and in the Gulf of Aden, despite the two countries' tensions in the South China Sea. While piracy is generally under control, this threat still must be monitored. At present, NATO ended Operation Ocean Shield in December 2016 while the European Union extended Operation Atalanta for two more years. As a result, the many resident and extra-regional stakeholders dependent on the Indian Ocean for trade will likely want to continue reaping the benefits of stability in the western Indian Ocean and maintain their active commitment in the coming years.

4. Trafficking

The illegal trafficking of people, narcotics, small arms,[43] and other contraband (e.g., protected wildlife) is an enduring problem faced by Indian Ocean countries. Most of this trade in the region takes place at sea between South Asia and Southeast Asia,[44] thus making such transnational crime an issue of great importance to the Indian Ocean region but one that does not attract the same level of attention as other NTS issues like natural disasters and terrorist attacks. The future outlook for trafficking in the Indian Ocean continues to remain high due to its profitability, low levels of monitoring, and corrupt officials at source and destination ports. A Stimson Center analysis distills the variables required to carry out trafficking at sea: source countries, points of export and transshipment (e.g., ports), vessels to transport contraband, sea transportation routes, and destination countries.[45] Because this transnational problem is too large for any one country to address, a combination of international legal and institutional approaches, multinational cooperation, and national commitments will be required to combat this NTS issue in the Indian Ocean.

Regarding human trafficking, the world is currently seeing the greatest period of migration due to wartime displacement since after World War II.[46] These circumstances allow human trafficking networks to exploit asylum seekers and refugees including in the Indian Ocean. Australia in particular has borne the brunt of these waves of migration and trafficking, with much of the Royal Australian Navy's and Maritime Border Command's operations concentrated on anti-smuggling from South Asian and Southeast Asian countries. In addition to migration, maritime industries such as fisheries can be linked with trafficking. For example, the Associated Press conducted an investigation that resulted in the freeing of 2,000 enslaved Southeast

42 http://www.recaap.org/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download&EntryId=461&PortalId=0&TabId=78

43 Given their use in insurgencies in the Middle East, small arms and light weapons tend to proliferate in the western Indian Ocean. Because our scope does not include this subregion, the paper will not address this topic.

44 https://www.files.ethz.ch/isn/145745/RSIS_PolicyPaperASEAN_A4_211011.pdf, page 11-12

45 https://www.stimson.org/sites/default/files/file-attachments/Book_IOR_2_1.pdf, page 29

46 http://galledialogue.lk/assets/Research_Papers/2015/pdf/10_Commodore_Peter_Laver_Royal_Australian_Navy_new.pdf

Asian fishermen of various nationalities working for Thai companies, which ship fish to the United States. As a result of media attention, President Barack Obama signed legislation in 2016 that bans the import into the United States of good produced by slave labor.[47] To monitor global human trafficking, the U.S. State Department produces an annual assessment entitled *Trafficking in Persons Report*. Its June 2016 version finds many Indian Ocean countries on the Tier 2 Watch list (e.g., Malaysia, Maldives, Pakistan, Sri Lanka, Thailand, among others)[48] as well as its Tier 2 List (India, Bangladesh, Indonesia, Singapore, Timor-Leste, among others) of countries whose governments do not meet minimum standards on trafficking. Myanmar ranked as a Tier 3 country, which is the worst category. Collecting precise data on human trafficking proves difficult due to the low levels of rigorous research on illegal networks.[49]

For drug trafficking, products derived from opium, amphetamines, and cannabis originate from the Golden Crescent region in Central Asia and the Golden Triangle region in Southeast Asia and traverse multiple sea routes across the Indian Ocean. The United Nations Office on Drugs and Crime (UNODC) finds the easiest method for drug traffickers in this region is the so-called Southern Route, stretching across the Indian Ocean from East Africa, South Asia, and Australasia. The appeal of this route is insufficient maritime enforcement on the high seas.[50] Fishing vessels often depart the Makran coast with heroin from Afghanistan and transship these goods onto smaller vessels headed for East Africa or elsewhere in South Asia. Navies and coast guards in the region that tend to operate within exclusive economic zones (EEZs) often intercept narcotics trade. For example, the Sri Lanka Navy frequently seizes Kerala cannabis from southern Indian sea routes.[51]

Drawing on its experiences in counterpiracy, the UNODC has stood up the Global Maritime Crime Programme (GMCP). The organization is headquartered in Nairobi (with offices in Tanzania, Seychelles, and Somalia) and has covered many threats in the western Indian Ocean. Following its success in reducing piracy, the GMCP is now expanding its reach across the Indian Ocean and will set up its first South Asian office in Colombo, Sri Lanka. The UNODC also has a new initiative called the Indian Ocean Forum on Maritime Crime (IOFMC). Drawing on its experience in combating piracy, the IOFMC is aiming to tackle other maritime crime, including the trafficking of drugs, people, and wildlife.

Multinational and national efforts have been launched to specifically address human trafficking, encompassing Indian Ocean countries. For example, the United Nations High Commissioner for Refugees (UNHCR) and the International Organization for Migration (IOM) produced a joint framework in 2009 establishing standard operating procedures between both agencies at the global and country levels to respond to human trafficking and smuggling[52] threats at the onset of crises.[53] Moreover, the Bali Process on People Smuggling, Trafficking in Persons and Related Transnational Crime is co-chaired by Australia and Indonesia and involves roughly 50 members, including the UNHCR, IOM, and the UNODC. The Bali Process established a Regional

47 http://www.ap.org/explore/seafood-from-slaves/Obama-bans-US-imports-of-slave-produced-goods.html
48 http://www.state.gov/documents/organization/258876.pdf, page 56
49 https://www.washingtonpost.com/news/fact-checker/wp/2015/04/24/why-you-should-be-wary-of-statistics-on-modern-slavery-and-trafficking/
50 http://galledialogue.lk/assets/Research_Papers/2015/pdf/12_Mr_Alan_Cole_UNODC.pdf
51 http://www.colombopage.com/archive_16B/Jul24_1469332259CH.php
52 https://www.unodc.org/unodc/en/human-trafficking/index.html?ref=menuside
53 http://publications.iom.int/system/files/addressing_human_trafficking_dec2015.pdf, page 29

Cooperation Framework and Regional Support Office[54] in Bangkok to encourage members to engage with each other on the practical arrangements of information sharing to reduce human smuggling and trafficking. Australia is a country that has made a strong national-level effort to deter such crime by building the maritime capacities of Indian Ocean states (e.g., through the donation of Bay-class patrol boats to Malaysia and Sri Lanka).

Clearly, there are concerted efforts to combat the problem of trafficking in the Indian Ocean. This is a positive sign, although their efficacy has not been proven. Due to limited data on this topic, it is difficult to measure to what extent international countertrafficking efforts are succeeding beyond interdiction by national maritime forces. Regarding narcotics trafficking, UNODC attributes its prevalence to lack of enforcement at sea.[55] Meanwhile, human trafficking thrives due to the highly profitable transnational trade—including local commissions—from smuggling networks. UNHCR concedes that, despite a 2016 Bali Process declaration, "no progress has been made" on coordinated search and rescue and disembarkation points.[56] As a result, more attention needs to be paid to countertrafficking efforts as well as their assessment.

5. Illegal Fishing and Overfishing

Fishing is a major NTS issue globally. The UN Food and Agricultural Organization (UNFAO) found that 90% of the world's fish stocks are "fully exploited or over-exploited."[57] Illegal, Unreported, and Unregulated (IUU) fishing costs the global economy $23 billion annually, with 18% of IUU catch in the western Indian Ocean and 32% in the eastern Indian Ocean.[58] As a result of intraregional and extra-regional demand, concern for the sustainability of fish stocks is of primary importance to resident countries. For example, it is believed that roughly 20% of the world's tuna supplies are sourced from the Indian Ocean.[59] The Indian Ocean Tuna Commission (IOTC) is a regional fisheries organization dedicated to the sustainable management of tuna and similar species of fish. Yet despite its wide-ranging members (32 countries, including many extra-regional nations), the IOTC is not regarded as being particularly effective in combating illegal fishing and overfishing.

To combat this threat to fisheries, the UNFAO created the Port State Measures Agreement to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing in 2009. It became legally binding in June 2016. The agreement seeks to expand port capacity to implement more rigorous methods for processing vessels when visiting ports. The UNFAO has held workshops gathering Indian Ocean countries (Thailand in 2012 and Sri Lanka[60] in 2015) to discuss the issue of fishing, thereby increasing awareness about the problem and potential solutions.

In recent years, the concept of the Blue Economy has gained acceptance across Indian Ocean countries. The Blue Economy incorporates national development goals with the ideals of conservation and sustainability

54 http://www.baliprocess.net/UserFiles/baliprocess/File/RSO%20Information%20Sheet%20-%20Bali%20Process%20Conclusions.pdf

55 http://galledialogue.lk/assets/images/Research_Papers/2016/pdf/ala_cole.pdf

56 http://galledialogue.lk/assets/images/Research_Papers/2016/pdf/Igor_Ivancic.pdf

57 http://commons.wmu.se/cgi/viewcontent.cgi?article=1494&context=all_dissertations, page 4

58 http://securefisheries.org/indian-ocean-fisheries-coordination

59 http://www.seychellesnewsagency.com/articles/6082/Seychelles+embarks+on+Indian+Ocean+initiative+to+monitor+and+protect+the+regions+tuna+stocks

60 It is notable that for the Sri Lanka Navy, which fought a brutal war against the Liberation Tigers of Tamil Eelam (LTTE) insurgency, its top challenge became illegal fishing after Colombo's defeat of the LTTE in 2009.

of ocean resources such as fish. Countries such as India, the Seychelles, and Mauritius have actively taken on this concept into their national development strategies and through their diplomacy. At its 2014 meeting in Australia, the regional Indian Ocean institution IORA adopted the Blue Economy as its top priority[61] for regional and sustainable development. IORA has subsequently held workshops on the idea as it relates to securing fisheries and aquaculture. Outside the region, even China and the European Union have incorporated the Blue Economy and Blue Growth ideas, respectively, into their strategies.[62]

The United States, another Indian Ocean stakeholder, has become a recent subscriber to the language of the Blue Economy, specifically with reference to IUU fishing. The State Department inaugurated the Our Ocean conference in 2014, and recently held the 2016 iteration of this event in Washington. Much of the U.S. emphasis through this conference involves attention to sustainable fisheries and marine protection areas.[63] Washington has established the Safe Ocean Network (SON), which aims to fight illegal fishing, including through the three phases of detection, enforcement, and prosecution.[64] Indian Ocean countries such as Australia, Indonesia, and Bangladesh have joined the SON as partners. Committing $65 million over the next five years to SON projects, the United States has made several efforts in the Indian Ocean. For example, it will provide $300,000 for maritime enforcement training in Southeast Asia and the Bay of Bengal (as well as in the Pacific) to be coordinated predominantly by U.S. Coast Guard personnel. The United States will also provide $300,000 to the UNODC for fisheries investigations and prosecutions in the western Indian Ocean. The U.S. Navy has indicated its support for these State Department-led efforts.[65] The emphasis on programs countering IUU fishing reaches all the way up to the White House, which created the Presidential Task Force on IUU Fishing spanning agencies throughout the U.S. government.[66]

IV. Indian Ocean Cooperation

This paper has tried to demonstrate the range of traditional and nontraditional security challenges facing the Indian Ocean. Clearly, there is a potential for traditional security issues to pose threats to the region, especially from the India-Pakistan conflict. Yet the most pressing challenges to the region involve NTS issues: natural disasters, terrorist threats from Islamic extremist organizations, piracy, trafficking, and illegal fishing and overfishing. The Indian Ocean has witnessed some success stories in counterpiracy and HA/DR. Given the successes from cooperative efforts in these areas, stakeholder countries should provide greater attention to monitoring transnational crime, including human trafficking networks, and reducing other NTS challenges such as illegal fishing.

In terms of security architecture, the Indian Ocean currently has a few regional cooperation institutions such as the Indian Ocean Naval Symposium (IONS), which emphasizes interactions between heads of navy, and the Indian Ocean Rim Association (IORA), which focuses on economic interactions and larger issues

61 http://www.iora.net/blue-economy/blue-economy.aspx
62 http://cimsec.org/blue-economy-agenda-indian-government/12996
63 Marine pollution and climate are the other two areas of focus: http://ourocean2016.org/#areas-of-focus
64 http://www.state.gov/r/pa/prs/ps/2016/09/261988.htm
65 http://www.navy.mil/submit/display.asp?story_id=96694
66 http://www.nmfs.noaa.gov/ia/iuu/noaa_taskforce_report_final.pdf

such as maritime pollution and climate change. While IORA came into existence in 1997 and IONS in 2008, the security architecture of the Indian Ocean is still developing and needs to be nurtured. For comparison, Southeast Asian security architecture took decades to evolve, and the Indian Ocean region contains an even greater cast of disparate stakeholders to try to assemble. Given the shared challenges and unanimous desire for sea-lane security, NTS issues can promote deeper cooperation between countries in the Indian Ocean. As a result, focused international activities such as the Quadripartite Commission on Indian Ocean Regional Security are worth the effort given the breadth of challenges facing this vast region.

Considering extra-regional countries' stakes in the Indian Ocean—such as those of Japan and the United States—the Quadripartite Commission countries can promote greater cooperation and stability in the region through several ways. First, they can increase their contributions to regional organizations and frameworks. As a relatively new member of ReCAAP, the United States could deepen its commitments to the ReCAAP ISC, as India, Japan, and Australia have. Second, Quadripartite Commission countries can step up their efforts to build commercial maritime infrastructure in the Indian Ocean and promote connectivity. For example, India could direct more policy attention to funding port development in the region, as Japan has. Under the banner of Modi's Security and Growth for All in the Region (SAGAR), New Delhi could work to devise public-private partnerships to execute this vision. Third, Quadripartite Commission countries can improve the capacity of smaller navies and coast guards in the region. For example, Japan could devote more effort to supplying refurbished or building new patrol boats for Indian Ocean countries.[67] India, in particular, has excelled in providing many smaller regional maritime forces with training and surface and aerial platforms.[68]

Building on the successes and lessons of multinational counterpiracy efforts, Quadripartite Commission countries could also band together to address two NTS challenges that often pass under the radar: human trafficking, and illegal fishing and overfishing. They could begin by supporting each other's efforts on the subjects, such as all participating in the U.S.-led Safe Ocean Network[69] to combat illegal fishing as well as the UN's Port State Measures Agreement.[70] Next, these countries could fund much-needed research to provide more data and better assessments of these intractable issues in the Indian Ocean. Furthermore, Track 2 and 1.5 dialogues could assemble combinations of government officials, naval and coast guard officers, and academic experts to explore ways to disincentivize participation in such criminal activities. Through Quadripartite Commission countries' leadership in their bilateral relationships with smaller Indian Ocean countries and via regional institutions, it will be possible to make meaningful progress across the region on human trafficking and illegal fishing and overfishing.

67 Japan International Cooperation Agency (JICA) has a nascent initiative in Sri Lanka to deliver two patrol boats.

68 https://www.cna.org/CNA_files/PDF/DRM-2012-U-001121-Final2.pdf

69 Australia and Japan are partners of the Safe Ocean Network, while India has not joined as a partner. http://www.state.gov/r/pa/prs/ps/2016/09/261988.htm

70 Australia and the United States are party to the UN's Port State Measures Agreement, while Japan and India are not. http://www.un.org/apps/news/story.asp?NewsID=54140#.WFS-hvkrLIV

Chapter 6

China's One Belt One Road Initiative: Its Strategic Impact on South Asia and the Indian Ocean Region

Chapter 6 China's One Belt One Road Initiative: Its Strategic Impact on South Asia and the Indian Ocean Region

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China's One Belt One Road (**OBOR**) initiative has the potential to fundamentally alter the basic geostrategic character of South Asia and the balance of power in the entire Indian Ocean region. The Eurasian hinterland has historically been largely cut off from the Indian Ocean and its littoral, helping to protect South Asia from overland invasion. This has meant that, in geostrategic terms, South Asia has functioned more like an island than as an integral part of the Eurasian continent. These geographic factors have contributed to the domination of South Asia by India and the virtual exclusion from the region of major Eurasian land powers such as China and Russia. But the OBOR initiative, which involves the construction of new overland pathways to South Asia and maritime pathways across the Indian Ocean, has the potential to change the strategic nature of this space. If implemented, the OBOR will have major implications for China's economic, political and security role in South Asia and the whole Indian Ocean region, and for China itself.

The paper is divided into four parts. It first looks at how the geography of South Asia has turned it into a virtual 'island continent' and restricted China's role in the region. Second, it looks at key elements of the OBOR initiative in the Indian Ocean region, including the proposed Bangladesh-China-India-Myanmar Economic Corridor (**BCIM-EC**), the China-Pakistan Economic Corridor (**CPEC**) and the Maritime Silk Route (**MSR**)[1] and the economic drivers behind these projects. Third, the paper examines potential geo-strategic impacts of these projects, including for China's domestic security, and for China's security role among its southern neighbours. Fourth, the paper considers responses by South Asian states to the OBOR. The paper concludes that the OBOR have the potential to closely enmesh China in the politics and security dynamics of South Asia, with significant implications for the balance of power in the region.

I. The Islnd Contient of South Asia

The particular physical geography of South Asia has long made it a virtual island continent, attached to Eurasia by the Himalayan mountain range, but in practice largely cut off from physical interaction with most of the Eurasian continent. Indeed there is an unusual scarcity of overland pathways between the Eurasian hinterland and the whole northern Indian Ocean. Mountain ranges, deserts and jungles extend right across the southern portion of the Eurasian continent, cutting off the continental hinterland from easy access to the sea. Indeed, until well into the twentieth century, there were no major transport routes – roads, railways or

[1] Although in official Chinese parlance, the China-Pakistan Economic Corridor and the Bangladesh-China-India-Myanmar Economic Corridor are "closely related" to the OBOR rather than being part of the OBOR. See "Full Text: Vision and Actions on Jointly Building Belt and Road", *CRIEnglish News,* 29 March 2015. The purpose of this distinction is not clear, and it is not a distinction that is well-understood outside of China. For the purposes of this paper all related initiatives are treated as being under the OBOR initiative.

rivers – connecting the Indian Ocean with the Eurasian hinterland. This disconnect has historically caused major Eurasian states such as China to be economically and politically oriented away from the Indian Ocean. China's virtual remoteness has severely limited its historical presence and influence in South Asia and the rest of the Indian Ocean region.

The scarcity of connections between the Eurasian hinterland and South Asia or the northern Indian Ocean means that the development of new routes into the hinterland can have a significant strategic impact on the region. The powers that have dominated the Indian Ocean region in recent centuries have several times acted to prevent continental powers from developing new overland pathways to the ocean. Imperial Britain developed a string of buffer states to limit contact between India and continental powers such as Russia and China. Lord Curzon called India's borders a 'Threefold Frontier' – which included areas in which the Government of India exercised full authority, zones claimed as Indian territory, but autonomously governed, and then independent kingdoms or protectorates that were tied by special treaties of friendship and obligation to the government of India.[2] In the last years of the nineteenth century, as part of the geopolitical jostling of the 'Great Game', Britain saw any plans by Eurasian continental powers to develop railways and ports connecting to the Indian Ocean - even as far away as the Persian Gulf - as threatening India's security. Britain stopped Russian proposals to build a railway across Persia to the port of Bandar Shahpur on the Persian Gulf[3] and severely restricted Germany's plans to build a railway that would run from Berlin through Turkey and Mesopotamia to the Persian Gulf.[4]

After 1947, the newly independent India gave priority to maintaining Nepal and Bhutan as buffer states to limit physical contact with China, especially after Beijing took control of Tibet. India's faith in the Himalayas as an impassable barrier was shaken during the 1962 War when Chinese forces quickly overran the Indian Army in what was then the North-East Frontier Agency, before withdrawing to their original positions, but this only led Delhi to give greater emphasis to maintaining the mountain barrier. In the decades after 1962, India followed a deliberate policy of not developing road infrastructure in its northern territories in the Himalayas so as not to facilitate possible Chinese invading forces. This policy has only begun to change in recent years, since Delhi began to develop limited road, rail and air infrastructure to facilitate access by Indian forces to border areas.

Delhi remains highly sensitive to any proposals for developing better physical connections between China and South Asia. Delhi views with anxiety any Chinese initiatives to develop roads and other infrastructure on either side of the Line of Actual Control. The new high-speed rail line linking Qinghai province with Lhasa and the new modern roads in forward areas is seen as strengthening the PLA's ability to project power from the Tibetan plateau into India. On the eastern flank of the Indian subcontinent, many security officials in Delhi also look suspiciously at proposals as part of the BCIM-EC project to build new overland connections between China and India's northeast states via Myanmar which, it is feared could give the PLA

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2 Ainslie T. Embree, 'Frontiers into Boundaries: The Evolution of the Modern State' in Ainslie T. Embree, *Imagining India: essays on Indian history* (New York: Oxford University Press, 1989), pp.67-84.

3 G. Kemp and R. Harkavy, *Strategic Geography and the Changing Middle East: Concepts, Definitions, and Parameters* (Washington DC: Brookings Institution 1997).

4 S. McMeekin, *The Berlin-Baghdad Express: The Ottoman Empire and Germany's Bid for World Power* (Cambridge: Harvard University Press 2010).

access to this region and turn India's northeast states into virtual economic colonies of China. On the western flank of the subcontinent, Delhi is looking with increasing alarm at Chinese plans to build connectivity from Xinjiang through Pakistan Occupied Kashmir to the Indian Ocean at Gwadar. A Chinese military presence at Gwadar would give the PLA direct access to the Indian Ocean and potentially threaten India's energy imports from the Persian Gulf.

1. Control over Maritime Access to South Asia

The nature of South Asia as a virtual island means that the vast majority of international trade with India occurs by sea, which creates a premium for the control of maritime routes to South Asia across the Indian Ocean. When Britain gained control of the Indian Ocean in the early nineteenth century it seized the key chokepoints controlling entry into the Indian Ocean at Malacca Strait, South Africa and Aden on the Red Sea. Its control over most of the Indian Ocean littoral territories and islands allowed also it to prevent rivals from establishing naval bases or major ports in the region, ensuring that the Indian Ocean could be controlled by Britain as an essentially enclosed strategic space. The vast distances across the ocean and the scarcity of ports not under British control made it difficult for any naval rivals to enter the Indian Ocean in strength. Britain was able to maintain the Indian Ocean an essentially closed strategic system until 1942, and was the predominant naval power until the late 1960s.

As India now rises as a major regional power, many Indian strategists, using geo-strategic perspectives that are very similar to those of the British Raj, aspire to create a defensive sphere of influence in the Indian Ocean as a more or less closed strategic system.[5] This includes a strategy of controlling Indian Ocean choke-points to help keep extra-regional naval powers away from the subcontinent and stopping Asian land powers from penetrating the protective Himalayan barrier to the north. KM Panikkar, often regarded as the father of Indian naval strategy, adopted British strategies to control the entire Indian Ocean through controlling the maritime chokepoints and major ports between.[6] Panikkar was the *exemplar* of strategic thinking about the Indian Ocean as a closed system, advocating that India should create a 'steel ring' through controlling the farthest reaches of the Indian Ocean.[7] The Indian Navy now gives particular focus to controlling the chokepoints at entrances to the Indian Ocean around southern Africa, the Arabian peninsular and the straits connecting the Indian and Pacific Oceans. Indian Navy's 2004 *Maritime Doctrine* called control over the chokepoints a 'useful bargaining chip',[8] a strategy that was reaffirmed in the Indian Navy's 2015 Maritime Security Strategy.[9]

5 C. R. Mohan, *Crossing the Rubicon: the Shaping of India's New Foreign Policy* (London: Palgrave Macmillan 2003); and D. Brewster, *India's Ocean: the story of India's bid for regional leadership* (London: Routledge 2014).

6 P.J. Brobst, *The Future of the Great Game: Sir Olaf Caroe, India's Independence and the Defence of Asia* (Akron: University of Akron Press 2005), p.13.

7 K.M.Panikkar, *India and the Indian Ocean: An Essay on the Influence of Sea Power on Indian History* (London: George Allen & Unwin 1945), p.95.

8 Integrated Headquarters, Ministry of Defence (Navy), *Indian Maritime Doctrine* (New Delhi: Indian Government, 2007), p. 64.

9 Integrated Headquarters, Ministry of Defence (Navy), *Ensuring Secure Seas: Indian Maritime Security Strategy* (New Delhi: Indian Government, 2015).

II. China's One Belt One Road Initiative

China's OBOR initiative involves carving a series of new pathways across the Eurasian continent, better connecting China with Russia, Central Asia, Europe and the Indian Ocean region. The oceanic portion of the OBOR, the Maritime Silk Route, involves better connecting China with the Indian Ocean region, Africa and Europe. It is apparent that Chinese thinking about the initiative is aspirational and evolving.[10] According to the Chinese Foreign Ministry, the aim of the project is to integrate 'all the existing cooperation, especially that in the field of connectivity with neighbouring and regional countries and enabling everyone to share development opportunities.'[11] The OBOR involves the re-branding of many existing Chinese regional as well as many new initiatives within the umbrella of a single coherent plan. It is an extremely costly and ambitious undertaking, with a total projected cost of perhaps US$4 trillion and its implementation will be highly dependent upon the state of China's economy. However, despite (and, perhaps, because of) concerns about the trajectory of China's economic growth, Beijing is pressing ahead with many of the projects.

The OBOR is primarily driven by economic factors, the most immediate being the need of Chinese infrastructure companies (particularly state-owned companies) to access new external markets for projects in the face of increasingly difficult domestic markets. For the state-owned companies many financial considerations that would be at the forefront of private investment decisions have less importance than the simple imperative to execute projects. This has been a factor behind several high profile white elephant projects – empty ports and airports for example - that are unlikely to achieve normal investment returns within any normal timeframe.

A longer term economic driver of the OBOR is the benefits to China from building regional connectivity. In one sense this is simply about developing physical access to new territories, or providing basic services such as electricity. This helps Chinese exporters develop and gain access to new export markets. Another reason for building connectivity, particularly with China's southern neighbours is to drive economic development in China's less developed 'landlocked' southern and western provinces to narrow the gap with China's provinces on the Pacific Ocean. Yunnan province will now become China's economic gateway to the Indian Ocean and a 'base' facing South Asia and Southeast Asia to support export processing. Similarly, Xinjiang province will be China's base facing Central Asia and Pakistan. Liu Jinxen, a major proponent of the BCIM-EC, argues that this can be seen as part of a national 'bridgehead' strategy of identifying cities or regions that occupy a strategic position on a logistical and supply chain and can control the flow of resources along international trade routes. [12]

However, the OBOR is not just about creating physical connectivity for the transit of goods and people, but about building new economic corridors that operate in conjunction with those connections. These are corridors of industrial production that function as new value or production chains. Successful economic corridors require integrated planning and close governmental coordination to facilitate the easy movement of

10 'Our bulldozers, our rules', *The Economist,* 2 July 2016.

11 J. C. K. Daly, 'China Focuses on its Maritime Silk Route', *Silk Road Report*, 17 July 2014. http://www.silkroadreporters.com/2014/07/17/china-focuses-maritime-silk-road/

12 Liu Jinxen, 'China's Bridgehead Strategy and Yunnan Province,' *East by Southeast,* 16 November 2013. http://www.eastbysoutheast.com/chinas-bridgehead-strategy-yunnan-province/#comments

goods back and forth to different production centres.[13]

Whether or not the idealized concept of 'economic corridors' can be brought the fruition in South Asian environment, possibly the greatest significance of the CPEC, BCIM-EC and MSR in economic terms is its impact on regional production – in particular, the potential for the OBOR to create of a new regional system of value or production chains that link back to China.[14] Such a system may be analogous to the 'Flying Geese' model which was used in the 1960s and 1970s to describe Japan's moves to outsource elements of production to Southeast Asia as its domestic production costs began rising. This paradigm involved an international division of labor in East Asia which would be organized in a regional hierarchy resembling geese flying in a "V" formation, with Japan as the leader. In Japan's Flying Geese model, lesser developed countries (China, Vietnam and the Philippines) would produce the least sophisticated components, more developed countries (such as South Korea, Singapore and Taiwan) would produce higher value added components, and Japanese companies would control the system.[15] China has to some extent followed this model in building production chains in Southeast Asia. But rising production costs in Southeast Asia now make South Asia increasingly attractive for lower value added production. Some researchers argue that the OBOR will involve developing the infrastructure and value chains that will allow China to develop its own system of 'Flying Geese' that includes South Asia.[16]

This section will now focus on three parts of the OBOR initiative relevant to South Asia:

- the OBOR corridors through Myanmar, including the Bangladesh-China-India-Myanmar Economic Corridor;
- the China-Pakistan Economic Corridor; and
- the Maritime Silk Route through the Indian Ocean.

1. The OBOR Corridors through Myanmar and the BCIM-EC

The OBOR corridors through Myanmar would involve several new connections from Southern China to the Indian Ocean, including the Kunming-Yangon road and river route, new overland links to the Myanmar port of Kyaukpyu, and the ambitious BCIM-EC that would link Yunnan province with India. Although some Myanmar connectivity projects were early parts of China's regional connectivity initiatives (predating the OBOR), progress on this part of the OBOR has been adversely affected by Myanmar's move towards democratisation and its partial move away from China's strategic orbit. This has led to concerns in Beijing about the dependability of the Myanmar regime in protecting Chinese interests. The level of new Chinese infrastructure projects has slowed and Myanmar is now considered to represent a greater political risk.

The Kunming-Yangon road-river route has been under development for more than a decade, and although

13 See generally, Siegfried O.Wolf, "The China-Pakistan Economic Corridor: An Assessment of its Feasibility and Impact on Regional Cooperation"*, SADF Working Paper,* June 2016.

14 Yang Minghong, "Understanding the One Belt One Road Initiative: China's Perspective" in B K Sharma and Nivedita Das Kund (eds), *China's One Belt One Road: Initiative, Challenges and Prospects* (Delhi: Vij Books, 2016.

15 See K. Akamatsu, "A historical pattern of economic growth in developing countries", *Journal of Developing Economies*, Vol.1 No. 1 (1962), pp.3–25; and S.Kasahara, "The Flying Geese Paradigm: A Critical study of Its Application to East Asian Regional Development", United Nations Conference on Trade and Development, Discussion Paper # 169, April 2004.

16 Yue Lu, "One Belt One Road: Breakthrough for China's Global Value Chain Upgrading" *IPP Review,* 23 April 2016; and Xiao Li & Yibing Ding, "From export platform to market provider: China's perspectives on its past and future role in a globalised Asian economy" *Third World Quarterly* Vol.36, Issue 11 (2015), pp.2098-2111.

the road link to China has been built, the proposed road-river route was not fully implemented after the Myanmar government stalled the construction of a necessary new intermodal port at Bhamo on the Irrawaddy River. This was essential for transhipment of goods onto riverboats to Yangon. Reportedly, the prospect of Chinese shipping penetrating deep into Myanmar on the Irrawaddy was of considerable concern and General Than Shwe, Myanmar's former leader, did 'not want to see Chinese flags on the Irrawaddy river.'[17]

China is also developing the Kyaukpyu-Yunnan route as a new connection between China's Yunnan province and the Bay of Bengal through central Myanmar. It includes the construction of a deep-water port at Kyaukpyu on the west coast of Myanmar and parallel oil and gas pipelines to Yunnan at a cost of more than $2.5 billion. The gas pipeline will carry up to 12 billion cubic metres of gas annually from the Myanmar's offshore gas fields in the Bay of Bengal. An oil pipeline, with capacity of 12 million tonnes of oil per annum, will allow China to avoid the Malacca Strait and cut shipping distances by 1200 km. However, there are questions over financial justification for the oil pipeline: one analyst has estimated that it will cost twice as much to deliver oil to Yunnan by the pipeline, as compared shipping it via China's Pacific coast.[18] It appears that the decision to build the oil pipeline was influenced by strategic considerations, including Beijing's wish to create new supply routes.[19]

But, the strategic value for China of the Kyaukpyu corridor is currently limited by the lack of road and rail links. The corridor was intended to also include a 1,200 km railway to Kunming to be built at an estimated cost of $20 billion, which has been stalled by concerns from both sides: the former Myanmar government was reportedly uneasy over strategic implications of the rail project, which the Chinese Railway agency may have had significant reservations about what is saw as a 'China-unfriendly' investment environment in Myanmar.[20] Negotiations may restart with the new democratic government in Myanmar, although there are several factors that need to be resolve first, including security concerns and compensation claims in relation to the cancelled Myitsone dam project.

The most ambitious element of the proposed Myanmar corridors is the BCIM-EC, which would involve building an economic corridor from China through Myanmar to northeast India and then through Bangladesh, back to West Bengal in India. This project has the potential to provide a direct connection between the world's two most populous countries, potentially creating new value chains that could become a major economic driver for the region, and indeed the world. However, the project, which has been under discussion for more than a decade, seems unlikely to be implemented any time soon. The process of negotiation among four fractious and distrustful neighbours will be inherently difficult and slow. India in particular has major concerns about the potential impact in its northeastern states of Chinese economic penetration and the security implications of creating new physical connections. Among other things, Delhi would prefer to open cross-border connectivity with its northeast states only very gradually to reduce the risk of its economic 'annexation' by China. Overall, India is unwilling to place the BCIM project within the conceptual parameters of China's OBOR

17 Min Zin, 'China-Burma Relations: China's Risk, Burma's Dilemma, in Lowell Dittmer (ed), Burma Or Myanmar? The Struggle for National Identity (Singapore: World Scientific 2010), p.271.

18 A. Erikson, 'Pipe Dream: China Seeks Land and Energy Security' *Janes Intelligence Review,* 21/8 (August 2009), p.55.

19 Bo Kong, 'The Geopolitics of the Myanmar-China Oil and Gas Pipelines' in M.E. Herberg (ed.), *Pipeline Politics in Asia: Energy Nationalism and Energy Markets,* NPB Special Report No.2, p.63.

20 Yun Sun, 'China, Myanmar: stop that train' *Asia Times,* 14 August 2014.

initiative.[21] Delhi also sees China's north-south BCIM-EC connectivity proposals as essentially competing with India's preferred east-west connections with other Indian Ocean littoral states such as Myanmar and Thailand. Essentially as an alternative to BCIM-EC, India has been promoting the much less ambitious Trilateral Highway project involving limited road links between India, Myanmar and Thailand – although that project has been under construction now for more than 15 years, with no completion date in sight.[22]

2. The China-Pakistan Economic Corridor

The China-Pakistan Economic Corridor has now become China's primary focus for new routes between China and South Asia and the Indian Ocean. The CPEC would involve new links between the Arabian Sea and China's Xinjiang province through Pakistan, including pipeline and road/rail links from the Chinese border to Gwadar. This initiative was given prominence during President Xi's 2015 visit to Pakistan which included reported investment commitments of some US$46 billion.[23] (Although it remains to be seen whether those commitments will materialise, as historically China has only delivered a tiny fraction of investment commitments made to Pakistan.[24]) The project includes the expansion of the Karakoram Highway (which crosses the Karakoram mountain range between China and Pakistan), the construction of a railway and petroleum pipelines, and an associated corridor of manufacturing facilities and Pakistan has announced ambitions to carry some 5% of all Chinese cargo through Pakistani ports.[25]

Geographically, the CPEC would have several different routes: the so-called *Eastern alignmen*t through central Punjab and Sindh; the *Central alignment*; and the *Western alignment* through Khyber Pakhtunkhwa province and Balochistan. All these would join into a single route in northern Pakistan to connect with the Chinese border. The allocation of investments between these different regions is becoming increasingly controversial, feeding into longstanding regional resentments against the central government and perceptions of control of Pakistan by the Punjabi ethnic group.[26] Claims by Islamabad that it is spreading the benefits of Chinese investment around the regions have only limited impact given the lack of transparency in decision-making.[27]

3. The Maritime Silk Route Initiative

The MSR is the oceanic leg of the OBOR, involving the construction of a chain of ports, logistical stations, storage facilities and free trade zones in Southeast Asia and across the northern Indian Ocean, including in Pakistan, Sri Lanka and Bangladesh. It is also proposed that China would play a role in coordinating customs,

21 P. Uberoi, 'Problems and Prospects of the BCIM Economic Corridor' (unpublished manuscript, 8 October 2015).

22 Sharmistha Mukherjee, "India-Myanmar-Thailand road: Govt to sign pact in November" *Indian Express,* 25 July 2015.

23 'Corridor of Power: Xi Jingping arrives, bearing gifts', *The Economist,* 20 April 2015.

24 According to Andrew Small, of Chinese investment commitments made between 2001 and 2011, only 6% ever eventuated. Small, *The China-Pakistan Axis*.

25 G. van Marle, 'Intermodal link could see Pakistan's ports handling 5% of China's cargo', *The Loadstar*, 19 December 2013, http://theloadstar.co.uk/chinese-link-transform-pakistans-ports/

26 See, for example, "CPEC won't pass through KP if due share denied: Khattak" *Dawn,* 3 January 2016; and Amir Wassim, "Opposition senators continue protest against corridor route change" *Dawn,* 4 March 2015.

27 Shayan Malik and Enum Naseer, "CPEC Politics" *Spearhead Analysis,* 30 April 2015. http://spearheadresearch.org/index.php/researchopinions/cpec-politics

quality supervision, e-commerce and other agencies to facilitate the scheme.[28] The MSR might be seen as a Chinese reflection of the 'Indo-Pacific' – that is, the growing strategic and economic interdependence of East Asia and Southern Asia, especially in the maritime realm.[29]

Since the turn of this century, Chinese companies have been involved in the construction, expansion or operation of numerous commercial port facilities in the northern Indian Ocean, including at Gwadar (Pakistan), Hambantota and Colombo (Sri Lanka) and Kyaukpyu (Myanmar) and several others have been proposed. These projects are part of major Chinese investment in port infrastructure as Chinese trade has grown throughout the Indian Ocean and all over the world as part of an economic vertical integration strategy.[30] In understanding the potential significance of these port developments, it is useful broadly categorise by their economic function. First, are 'service' ports that are primarily intended to service imports/exports for local markets. Second, are new 'hub' ports such as (Hambantota and Colombo in Sri Lanka) that are principally intended as regional transhipment hubs, servicing huge ships carrying more than 18,000 containers, and transhipping them onto smaller ships to connect with feeder ports. The functionality and profitability of these hubs depend on having a critical mass of throughput, just as airport hubs require sufficient passenger numbers to support frequent feeder services. Third, are 'gateway' ports (such as Gwadar in Pakistan and Kyaukpyu in Myanmar) that are primarily intended as the terminuses of new overland pathways connecting China with the Indian Ocean. The viability of these gateway ports will depend on the viability of the overland connections (road/rail/river/pipelines) that feed them.

China has been involved in two controversial hub port developments in Sri Lanka. At Hambantota in southern Sri Lanka, close to the sea lanes that round the southern tip of India, Chinese entities funded the development of a new port and an associated airport in 2010. However hopes that Hambantota would become a regional transhipment hub for southern India have not yet been realised. Chinese companies have also funded the 2013 expansion of the existing port of Colombo. Colombo already acts as a major transhipment hub to India, carrying some 13% of India's container traffic – which could potentially rise to 28% if the expanded port was operating at full capacity.[31] Another project is at Gwadar in western Pakistan, about 600 km east of the Strait of Hormuz where China has sponsored the development of a deep water port, a new airport and road connections to Karachi. The Singapore Ports Authority initially operated the but Gwadar has so far had little commercial success, and in 2012 a Chinese state-owned company took over as operator from the Singapore Ports Authority port which had tried to make it a transhipment hub.[32] It has not been able to compete with existing regional hubs in Dubai, UAE and Oman for regional transhipment trade[33] and a low-grade insurgency in the surrounding Baluchistan province makes it unattractive to most private investors. The principal justification for Gwadar is now claimed to be its future role as the gateway port for the CPEC that would give China access to the Indian Ocean through Pakistan.

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28 'China accelerates planning to re-connect Maritime Silk Route', *The Global Times*, 16 April 2014.

29 R. Medcalf, 'The Indo-Pacific: What's in a Name?' *The American Interest,* November/December 2013, p.58.

30 'The new masters and commanders,' *The Economist,* 8 June 2013, p.52.

31 'The new masters and commanders,' *The Economist*.

32 S. Fazl-e-Haider, 'China set to run Gwadar port as Singapore quits', *Asia Times,* 5 September 2012.

33 In 2012, Dubai handled some 13.3 million containers, Khor Fakkan UAE handled around 4 million containers and Salalah, Oman handled more than 3 million containers. 'The JOC Top 50 World Container Ports,' *Joc.com*. http://www.joc.com/port-news/joc-top-50-world-container-ports_20130815.html

III. The Geostrategic Consequences of the OBOR in South Asia

Although OBOR initiatives in South Asia may be principally economic, the initiative will inevitably have a significant strategic impact for China and South Asia. The OBOR would likely have considerable implications for China's land-locked provinces of Xinjiang, Tibet and Yunnan, and for China's role in Pakistan, Myanmar and Sri Lanka. Perhaps not all of these strategic implications are yet fully understood – or indeed, intended.

1. Implications of the OBOR for China's Domestic Security

As discussed above, one of Beijing's primary motivations for these new pathways is to drive development in China's less developed 'landlocked' southern and western provinces. Just as the Chinese coastal cities of Rizhao and Lianyugang were developed as bridgehead terminuses to the Pacific Ocean in the 1990s, Kunming (in Yunnan) and Kashgar (in Xinjiang) will now be bridgeheads to connect with neighbouring states. Yunnan province will now become China's economic gateway to the Indian Ocean and a 'base' facing South Asia and Southeast Asia to support export processing.[34] Similarly, Xinjiang province will be China's base facing Central Asia and Pakistan. Liu Jinxen, one of the chief architects of the trans-Myanmar route, argues that this can be seen as part of a national 'bridgehead' strategy of identifying cities or regions that occupy a strategic position on a logistical and supply chain and can control the flow of resources along international trade routes.[35]

The new overland pathways will of course operate in two directions. Not only would they give China access to its southern neighbours but they also potentially open up China's landlocked provinces to new influences and even threats. Historically, Kunming has previously experienced the impact of the opening of new rail links to the outside world, after the Kunming-Vietnam rail link, built by France in the early twentieth century, opened up the city to French influence. Indeed, even the most tenuous of links between China and the Indian Ocean can have the potential to change the strategic balance in Eurasia. Between 1941 and 1945, Burma was the only practical route for the supply of weapons from the western Allies to China, through an air bridge and the 'Burma Road' through northern Burma to Kunming. The war materials carried over these fragile routes played a crucial role in keeping the Nationalist Chinese government in the war.[36] It also turned Burma into one of the bloodiest battle grounds, with bitter fighting between Japanese, Chinese, British, Indian and US forces over control of these supply lines to southern China.

Any immediate security threats created by the new overland pathways developed as part of OBOR are likely to be less conventional. In recent years we have seen some of the effects of the building of the narrow Karakoram Highway through the Hindu Kush mountain range to Pakistan, which facilitated the creation of new networks between Pakistani and Uighur traders and new communities of Chinese-origin Uighurs in Pakistan and the Gulf. Despite attempts by Beijing to manage the security impact of these population

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34 Liu, 'China's Bridgehead Strategy and Yunnan Province.'

35 Liu Jinxen, 'China's Bridgehead Strategy and Yunnan Province,' *East by Southeast,* 16 November 2013. http://www.eastbysoutheast.com/chinas-bridgehead-strategy-yunnan-province/#comments

36 J. D. Plating, *The Hump: America's Strategy for Keeping China in World War II* (College Station: Texas A&M Press 2011).

movements in cooperation with Islamabad, these linkages are now feeding back into separatist unrest in Xinjiang and the growing presence of Uighur radicals as far away as Syria.[37] Liu Jinxen claims that Beijing will seek to channel and control the new and greatly expanded connections with Pakistan and Myanmar through relying on the 'bridgeheads' of Kashgar and Kunming as 'a foundation of protecting border security and stability' and 'as a front line in partial wars and non-traditional security issues.'[38] To what extent Beijing is able to keep control over the people and ideas that will flow through these bridgeheads remains to be seen.

2. Strategic Implications of the OBOR for South Asia

The most obvious strategic impact of the OBOR for South Asia will be to significantly enhance China's economic and political influence with its key partners in the region. The OBOR will almost inevitably make China an ever more important factor in regional dynamics in southern Asia.

But the strategic picture is complex - and not always to China's advantage. China has in the past often preferred to deal with authoritarian regimes to help facilitate decision-making but this can also make China's relationships and influence relatively fragile. Chinese relationships with authoritarian leaders was a material factor in the defeat of the Rajapaksa government in Sri Lanka in 2015 and the election of a democratic government in Myanmar that same year, both of which led to a reduction in Chinese influence in those countries. China's relationships in Pakistan are more broadly based, but its growing reliance on the Pakistan Army carries risks. Reports that Beijing has requested the Pakistan military to take control over the CPEC initiative from the civilian government, apparently due to the 'inefficiency' of civilian decision-makers, points to a new type of involvement in Pakistan's internal affairs.[39] Reports that Beijing has been seeking to develop new relationships with local political groups in Myanmar's Rhakine state, for example, point to a much greater involvement in political issues at the local level.[40]

Another major and, perhaps, unintended consequence of these overland pathways may be to give Beijing a much greater direct stake in the internal security of Indian Ocean gateway territories than has previously been the case. Arguably an important factor in Beijing's historically warm relations with the leaders of Pakistan and Myanmar, was China's 'virtual' geographic remoteness from its Indian Ocean neighbours, which allowed Beijing the luxury of being able to avoid getting its hands dirty in these politically unstable countries. This has allowed China to project itself as a benevolent partner that does not 'meddle' in internal affairs. But past policies of non-intervention (at least since the 1970s) may become more difficult to sustain as it builds these new overland corridors and, indeed, some analysts argue that these projects provide a rationale for Beijing hegemonic plans in the region.[41]

Perhaps unsurprisingly, the official view of Beijing is that state-driven economic development can have a transformative impact. Chinese Premier, Li Keqiang, reportedly characterised the Chinese projects

37 Small, *The China-Pakistan Axis*, chapter 4.

38 Liu, 'China's Bridgehead Strategy and Yunnan Province.'

39 F.Bokhari, L.Hornby and C.Shepherd, "China urges Pakistan to give army lead role in Silk Road project", *Financial Times,* 21 July 2016.

40 R. Thompson, 'China's moves to win friends and influence people in Myanmar', *Lowy Interpreter,* 6 July 2015. *http://www.lowyinterpreter.org/post/2015/07/06/Myanmar-Chinas-moves-to-win-friends-and-influence-people-in-Rakhine-State.aspx*

41 B.Chellaney, 'Japan and India key to confronting China's ambitions', *The Australian,* 26 January 2016.

in Pakistan as a means of "weaning the populace from fundamentalism."[42] The view that the CPEC may be a game-changer for Pakistan's economic development and thereby improve Pakistan's internal security may also be shared by many of Pakistan's elite. However, the experience of other developing countries in imposing 'top down' development as a means of addressing major security challenges has not necessarily always been positive.

Beijing has previously had to deploy security forces in Pakistan‑administered Kashmir to protect Chinese workers on the Karakoram highway from attacks from Islamic and tribal groups[43] and China could soon find itself called upon to secure a corridor extending across much of the length of Pakistan. Pakistan will reportedly establish a 12,000 strong special security force (including nine army battalions and six wings of the civilian security forces) to protect Chinese workers involved in the CPEC.[44] According to another report, already, an estimated 8,000 security officials have been deployed to protect more than 8,112 Chinese working on around 210 projects in Pakistan.[45] But China's previous need to deploy its own security forces in Pakistan-administered Kashmir is indicative of the limitations of Pakistani security forces, especially in the tribal territories. In October 2016, there were popular protests in Balochistan against CPEC and Pakistani security forces were unable to prevent an attack by Baloch insurgents against a Chinese convoy.[46]

China could also potentially find itself more closely involved in Myanmar's long-running civil conflicts. The Yunnan-Kyaukpyu pipeline, for example, runs through or near several aeas where there have been active insurgencies and civil conflicts, not least Rakhine state.

In summary, the development of significant direct physical connectivity between the Eurasian heartland and the Indian Ocean littoral creates the conditions, for the first time in history, for sustained direct security interaction between China and its Indian Ocean neighbours that goes beyond mere support at a political level. China will be forced to grapple with the numerous problems that arise from direct and sustained physical connections with its neighbours, many of which have considerable security problems. These include problems that may arise from substantial increases in people-to-people interactions (including between extremist groups), illegal population movements, smuggling, dangers arising from the presence of large number of Chinese citizens in politically unstable regions, and the need to protect vulnerable Chinese owned infra-structure. There will be a growing number of stakeholders in Beijing with strong interests in China extending security to neighbouring Indian Ocean states if and when there are security incidents. This may contribute to China's relationship with some of its neighbours becoming increasingly securitised. China's so-called 'Three No's' policy of non-interference[47] will become increasingly difficult to sustain.

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42 http://www.hindustantimes.com/india/govt-makes-it-clear-india-has-not-forgotten-pakistan-occupied-kashmir/story-uYgfYuruxj4eYBfpGV0H7L.html

43 S. Harrison, 'China's Discreet Hold on Pakistan's Northern Borderlands' *New York Times,* 26 August 2010. However, Chinese troops likely numbered in the hundreds and not the thousands as reported.

44 S. Shah and J.Chin 'Pakistan to Create Security Force to Protect Chinese Workers' *Wall Street Journal,* 22 April 2015.

45 Z. Gishkori, 'Economic corridor: 12,000-strong force to guard Chinese workers', *The Express Tribune,* 30 March 2015.

46 'Balochis protest in Quetta against Chinese intrusion in Balochistan,' *Times of India,* 9 October 2016; Anil Kumar, 'Baloch rebels attack convoy of Chinese explosive company' *India Today,* 21 October 2016.

47 China will not interfere in the internal affairs of other states; China does not seek to increase its so-called 'sphere of influence; and China does not strive for hegemony or dominance. *Shi Zi, "One Road & One Belt: New Thinking With Regard to Concepts and Practice", lecture at Schiller Institute, Germany, 14 October 2014.* http://newparadigm.schillerinstitute.com/media/one-road-and-one-belt-and-new-thinking-with-regard-to-concepts-and-practice/

IV. Regional Responses to the OBOR

For many states in and around South Asia, Chinese investment in connectivity and other infrastructure has the potential of being an important driver in economic development, as is the potential for major Chinese investment in local manufacturing. As a result, most South Asian states welcome Chinese investment in infrastructure and local manufacturing. Pakistan, in particular, views the CPEC as a 'game changer' for Pakistan's economic development and indeed its whole place in the international system.[48] Bangladesh also sees the BCIM-EC, if ever implemented, as potentially transformative economically, although its current government has been careful to take into account Indian sensitivities over control of key infrastructure such as ports.[49] Sri Lanka, which perceives itself as a potential economic 'hub' of the Indian Ocean would welcome Chinese investment, although as discussed below, it is paying the price for poor investment decisions undertaken under the previous government. Of all countries in the region Delhi is the most suspicious of proposed Chinese investment infrastructure as part of the OBOR.

But while Chinese-funded infrastructure development has the potential to provide significant economic benefits for all of South Asia, these projects can also be the source of real economic concerns. One concern is that greater physical connectivity with China could lead to the swamping of undeveloped local markets with cheap Chinese manufactures, inhibiting the development of local industries. This is an important factor in India's caution about the BCIM-EC initiative: that China could overwhelm Indian companies in India's undeveloped northeast states, potentially making them 'economic colonies' of China.

The form of investment and the manner in which some Chinese companies approach projects can also cause significant problems for host countries. A lack of transparency and public consultation has led to public backlashes against some projects. In Myanmar, public backlash against the Myitsone dam project had severe repercussions for Chinese projects throughout the country and indeed for the legitimacy of the military junta. In Sri Lanka, widespread perceptions of corruption connected with Chinese built projects were a major factor in the fall of the Rajapaksa government in 2015. Many of these projects are also perceived to have little benefit for local communities - the use of imported Chinese workers, for example, often creates severe resentments.

The economics of many projects are also sometimes doubtful, sometimes resulting in 'white elephant' projects carrying relatively high interest loans that must ultimately be repaid by the host state. International agencies and other non-Chinese investors declined to participate in several projects promoted by Sri Lanka's Rajapaksa government, including the Hambantota port and airport projects, on the grounds that they were uneconomic. These projects have become significant contributors to the debt crisis now being faced by Sri Lanka. According to Forbes, between 2009 and 2014, Sri Lanka's total government debt tripled and external debt doubled, as the country engaged in a several costly projects, such as "attempting to build a new, multi-billion dollar city in the middle of a jungle which includes the world's emptiest international airport

48 PTI, "China-Pakistan Economic Corridor a game changer for South Asia region: Nawaz Sharif", *Indian Express,* 29 August 2016.

49 Wade Shepard, "Bangladesh's Deep Sea Port Problem", *The Diplomat,* 7 June 2016. http://thediplomat.com/2016/06/bangladeshs-deep-sea-port-problem/

and constructing one of the most expensive highways ever made."[50] The International Monetary Fund has recently warned that Pakistan could also face problems from servicing debts it plans to incur in connection with CPEC.[51]

Overlying these concerns are strategic anxieties arising from the potential of the OBOR to fundamentally alter the geostrategic protections long enjoyed by India and South Asia generally. This has led India, in particular, to view the OBOR with considerable suspicion. As the Indian Foreign Secretary, S. Jaishankar commented, the OBOR is: 'A [Chinese] national initiative devised with national interest, it is not incumbent on others to buy it. Where we stand is that if this is something on which they want a larger buy in, then they need to have larger discussions, and those haven't happened.'[52]

For more than a decade, India has been concerned about Chinese port projects in the Indian Ocean (now rebadged as part of the Maritime Silk Route initiative), which many Indian strategists saw as a part of a Chinese 'String of Pearls', or a string of future Chinese naval bases across the Indian Ocean.[53] It is argued that ports such as Gwadar and Hambantota are potentially 'dual use' and could be made available for use by the PLA Navy to threaten India's sea lines of communication. While some of these concerns are sometimes overblown, China is certainly moving to develop a more permanent naval presence in the Indian Ocean, including its first foreign naval base at Djibouti.[54]

The CPEC has now become the greatest source of strategic concern for India. Delhi's anxieties about CPEC are not primarily about the military value per se of the Karakoram Highway (which is highly tenuous and could probably be easily cut in time of conflict), but rather reflect a bundle of related concerns. These include: that China is consolidating Pakistan's hold on Pakistan Occupied Kashmir (through creating 'facts on the ground' in a manner analogous to China's island building program in the South China Sea); that China will economically build up Pakistan to become an even greater threat to India; and the potential for a Chinese military presence in Pakistan, particularly at Gwadar. This has caused the Indian government to look for levers to disrupt the CPEC. In August 2016, in a national Independence Day speech, Indian Prime Minister Modi sent a clear message that India may begin to publicly support Balochistan's separatist insurgents. This represents a big shift for India and was directed almost as much to Beijing as to Islamabad.[55] A senior Chinese scholar has responded that China will have "to get involved" if India seeks to disrupt the CPEC.[56]

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50 Wade Shepard, Sri Lanka's Debt Crisis Is So Bad The Government Doesn't Even Know How Much Money It Owes, *Forbes,* 30 September 2016. http://www.forbes.com/sites/wadeshepard/2016/09/30/sri-lankas-debt-crisis-is-so-bad-the-government-doesnt-even-know-how-much-money-it-owes/#1aef8dca8316

51 'China corridor to spark outflows from Pak: IMF' *Times of India,* 20 October 2016.

52 C.S. Kasturi, 'Indian wrinkle on Chinese silk – Jaishankar speaks out on absence of consultations' *The Telegraph,* 21 July 2015.

53 The term was first used in a 2005 report titled 'Energy Futures in Asia' prepared for the US Secretary of Defence by the private consultants, Booz-Allen-Hamilton and has been most enthusiastically adopted by Indian analysts.

54 David Brewster, "India and China at Sea: A Contest of Status and Legitimacy in the Indian Ocean" *Asia Policy* No.22 (2016).

55 David Brewster, "India plays the Balochistan Card – with China" *Lowy Interpreter*, 22 August 2016. http://www.lowyinterpreter.org/post/2016/08/22/India-plays-the-Balochistan-card-with-China.aspx

56 "China will intervene if India creates tension in Balochistan: Chinese thinktank", *Economic Times,* 29 August 2016.

Conclusion - The Changing Geostrategic Character of South Asia

For hundreds of years, South Asia has had the strategic character of a virtual 'island', nominally connected to the Eurasian continent but shielded from invasion by the largely impenetrable wall of the Himalayas and jungles of Burma. This geography has also caused major Eurasian powers such as China and Russia to be virtually remote from South Asia and historically their role in the Indian Ocean region has been severely limited. The dominant powers on the Indian subcontinent also sought to create a safe maritime space in the northern Indian Ocean by controlling the chokepoints at the points of entry into the ocean, and all major ports in between. All these factors have facilitated India's role as the dominant power in South Asia.

But the traditional geostrategic nature of South Asia is now being fundamentally challenged by China's OBOR initiative. China is proposing to carve a series of all-weather overland routes to South Asia through the Himalayas and jungles of Myanmar. At the same time, China is developing new ports in the Indian Ocean which many in Delhi fear could give the PLA Navy a foothold in the Indian Ocean to threaten India from the sea.

Chapter 7

Chinese Capabilities in the Indian Ocean: "Seeing an Acorn, and Imagining an Oak Tree."

Chapter 7 Chinese Capabilities in the Indian Ocean: "Seeing an Acorn, and Imagining an Oak Tree."

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Introduction

On any given day, the PLA Navy (PLAN) has an average of between 4-5 warships (including on occasion a submarine) and two support vessels, organized into two independent Task Forces, operating somewhere in the Indian Ocean. One of these Task Forces of two warships and a replenishment support ship are directly involved in the UN authorized anti-piracy mission in the Northern Arabian Sea and Gulf of Aden. The other similarly organized Task Force is either underway in the northern Indian Ocean headed to the Arabian Sea to relieve the on-station anti-piracy force, or, after being relieved of its piracy patrol responsibilities, is conducting bilateral exercises or naval diplomacy missions along the Indian Ocean or Mediterranean Sea littoral before returning China. The occasional submarine that is involved in these patrols can be very troubling to many other navies in the Indian Ocean because well-operated submarines are always hard to find. When Chinese submarines are known to be underway *and are not located* this creates a great deal of uncertainty in the minds of surface ship commanders, even in peacetime, because of the possibility of embarrassing surprise encounters. No surface ship commander wants to see a newspaper photo of a recently surfaced Chinese submarine near his ship.

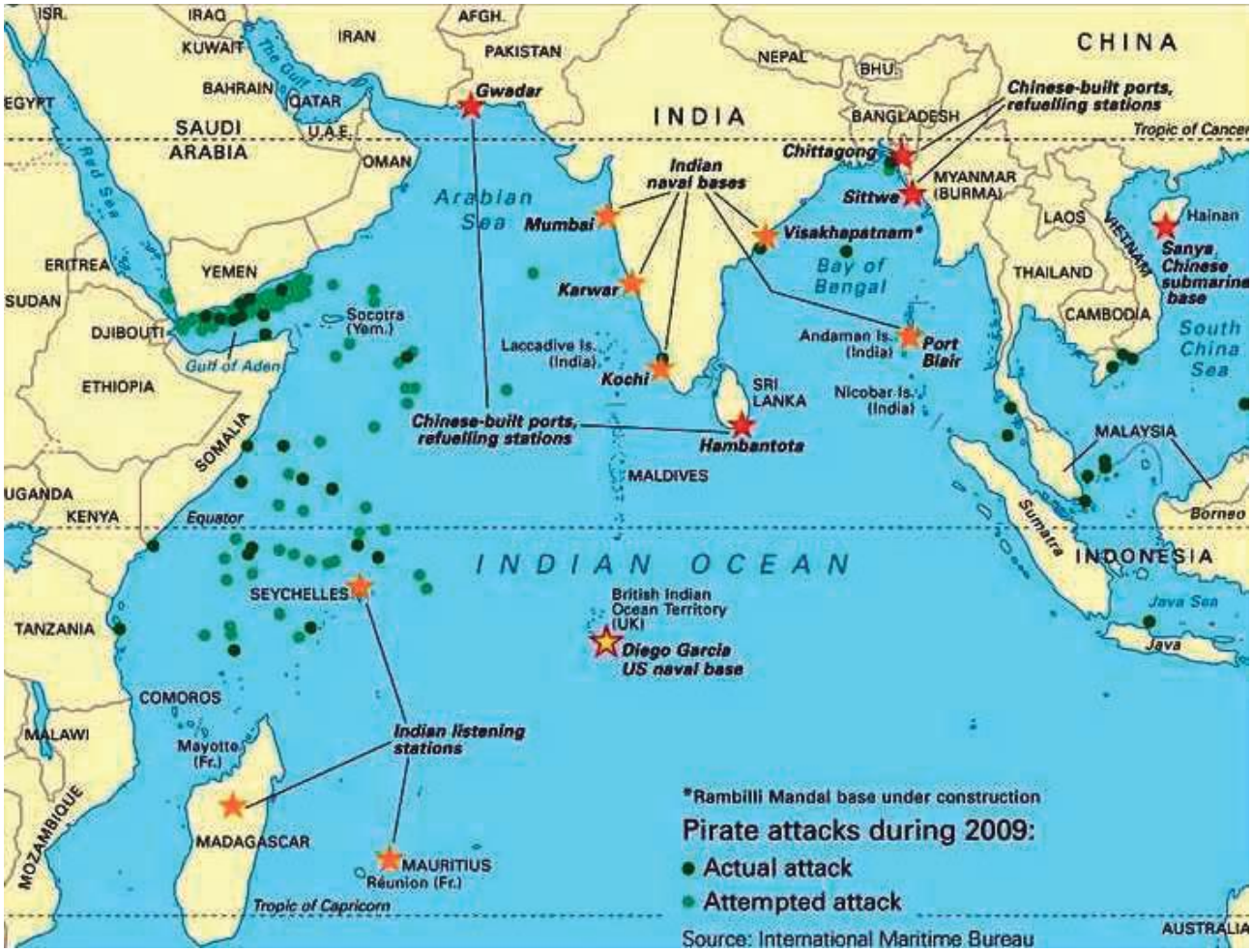
Embarrassment aside, it is obvious that the current relatively modest PLAN presence in the Indian Ocean is unthreatening. In fact, the small PLAN force in the IO today is at an extreme disadvantage. It is potentially vulnerable to both a vastly superior Indian Navy, India's land-based airpower, and to the US Fifth Fleet that operates in the Northern Arabian Sea and Persian Gulf. Accordingly, on a day to day basis, the PLAN in the Indian Ocean is operating in areas where they are outnumbered by the Indian Navy's ships and submarines and have zero air cover. PLAN operations are centered on areas where much of the air space can be controlled by the United States or India.

This is the situation today. But, this paper is not about today, it is about what today's PLAN presence foreshadows between now and 2025. It is about the growth of a significant portion of the PLAN that has, or will shortly have, the capability to operate a militarily credible number of well-designed large sea going warships with air cover, globally, including especially the Indian Ocean, and sustain them in far seas stations for months at a time. As of this writing, since 2004 China has already commissioned or launched ninety-seven ships that are demonstrably capable of sustained operations in the far western seas of the Indian Ocean.[1] (This capability will be addressed in greater detail later in this paper.) China continues to build these far seas force ships and submarines with no publicly known numerical force structure objective. In other words, we simply

[1] Specifically: 2 carriers, 1 Type 055 cruiser, 2 Type 051 DDG, 6 Type 052C DDG, 13 Type 052D DDG, 29 Type 054/54A FFG, 10 Type 903/901 AOR, 5 Type 071 LPD, 6 Type 093 SSN, 20 Type 039 AIP SS, and 4 Type 094 SSBN

do not know how large the PLAN will become because Beijing, unlike every other major naval power in the world, refuses to reveal that fact.

I. The Indian Ocean—A "Blue Water Navy" Demand Signal for China



Source: http://www.bluebird-electric.net/oceanography/indian_ocean.htm

Serious PLAN thinking about operations in the Indian Ocean dates to the end of 2004 when Hu Jintao, as the newly installed CMC Chairman, announced a new set of "Strategic Missions and Objectives" for the Chinese armed forces.[2] This document reflected a major turning point in Chinese thinking about the role of the PLAN. One of these new missions foreshadowed what the PLAN is doing today in the IO. Specifically, these new missions included a requirement for the PLA "safeguarding China's expanding national interests." It calls on all the armed forces to broaden their view of security to account for China's growing national interests, especially its growing global economic footprint, overseas investment and dramatic growth in the number Chinese civilians abroad, particularly in Africa. It also placed an emphasis on the critical importance of imported natural resources, especially oil, to feed the economy. Since the vast majority of those resources came to China by ship, sea lane of communication (SLOC) security, and maritime rights and interests shot to

2 Hu Jintao, "Understand the New Historic Missions of our Military in the New Period of the New Century," National Defense Education website of Jiangxi Province, on line, available at: http://gjjy.jiangxi.gov.cn/y1.asp?did+11349.htm

the top of security issues that are of direct relevance to China's navy.

For the first time, the PLA (and therefore the PLAN) was being assigned responsibilities well beyond China and its immediate periphery. This was official recognition that China's national interests were global and that the PLA's missions were to be based on those expanding interests, not just geography. It was also an official announcement that Chinese leaders saw China as a global actor.[3]

II. Anti-Piracy Patrols—A Blue Water Navy Laboratory

The dramatic increase in Somalia-based piracy in 2007 and 2008 provided the PLAN with an opportunity to learn about protecting sea lanes in peacetime. In retrospect, it is clear that the leadership of the PLAN saw protecting merchant ships in the Gulf of Aden and Northern Arabian Sea as an opportunity. PLAN leadership embraced the mission, publicized it widely within China, and over time has acknowledged that it has been a dramatic "accelerant" in the development of the PLAN into a genuine open ocean global naval force. To quote a telling observation:

> On a patrol operations in a water area side by side with navies from the European Union, NATO, Russia, India, Japan, the Republic of Korea and other countries, the Chinese naval fleet gained rare opportunities to learn advanced maritime experiences from their foreign counterparts….This has helped the country's navy, which has long been deployed along its own coast, gradually get used to using a variety of modern ways and means to communicate with foreign fleets, creating a new type of cooperation model.[4]

Since December 2008, the PLAN has conducted its anti-piracy mission non-stop, and over the past nine years become an expert at sustaining these small tasks forces in the far reaches of the Indian Ocean for many months at a time. (Some of these Task Force deployments have lasted as long as nine months.) This is not a trivial achievement for a navy that up until 2007 made only one or two point-to-point transits per year for overseas visits (For example, Hawaii in 2000).

Nearly a decade of continuous operations the western most areas of the Indian Ocean have provided the PLAN with the opportunity to learn what being a "distant ocean" force really entails. Most importantly it has permitted a substantial number of junior (at the time of deployment) flag officers, ship commanding officers, junior officers, and sailors to learn how to operate relatively independently thousands of miles away from China.[5] In the years since that first deployment, China has also learned to adroitly blend its shipping protection

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3 These two paragraphs are drawn from Michael McDevitt and Fredrick Vellucci, "The Evolution of the People's Liberation Army Navy: the Twin Missions of Area-Denial and Peacetime Operations," found in *Sea Power and Asia-Pacific: The Triumph of Neptune,* edited by Geoffrey Till and Patrick C. Bratten, Routledge, London and New York, 2011, p.75-92.

4 "China's Navy Still has Far to Go," www.chinadaily.com.cn/opinion/2009-08/14/content_8568918.htm

5 For a complete treatment of the first five years of PLAN antipiracy operations see, Andrew S. Erickson and Austin M. Strange, *No Substitute for Experience: Chinese Anti-Piracy Operations in the Gulf of Aden*, U.S. Naval War College: China Maritime Studies Number 10, Naval War College Press, Newport, Rhode Island, November 2013. There is a particularly useful map and accompanying legend in the frontispiece that details 33 different port calls the PLAN Task Forces made for either logistics support or naval diplomacy. Of particular interest, between February 2009 and April 2013 the TF's visited Djibouti 11 times and Salalah, Oman 16 times.

mission with traditional naval diplomacy by making certain its warships routinely conduct goodwill visits and naval exercises with most of the Indian Ocean's littoral countries.

It also worth pointing out that while a near decade of deployments has improved basic seamanship skills, such as underway replenishment, and built a knowledge base on how to logistically support ships on distant stations, PLAN exercise and training activity, while on station, have not obviously focused on medium-intensity maritime operations, such as transits through straits where coastal ASCMs are deployed, dealing with coastal submarines, or handling swarm tactics of coastal boats. It is impossible to tell whether PLAN intelligence could provide the detailed tactical knowledge necessary to support contingency planning for these types of operations and whether PLA global C2 is robust and effective enough to support them should they be necessary.

III. The Sea Lane of Communication Fixation [6]

The anti-piracy patrols seem to have heightened awareness in Beijing that its SLOC insecurity concerns are broader than the so-called "Malacca dilemma."[7] After nine years of transiting under the shadow of India and getting to know the US Navy (USN) 5th Fleet, the vulnerability of its entire Indian Ocean sea lane, especially the nexus in the Northern Arabian Sea that includes the vital straits Hormuz and the Bab al Mandeb, has become manifest. Senior-most Chinese military leaders have been very explicit about what could befall its tankers that ply the sea lanes carrying oil from West Africa (The Gulf of Guinea) and the Persian Gulf across the Indian Ocean to China, as well as the large container ships that travel nearly the same sea lanes to deliver Chinese exports to the Middle East and to Europe via the Red Sea and Suez Canal. The most recent official manifestation of this anxiety is found in the 2015 Chinese defense white paper, *China's Military Strategy.* The following are excerpts from this paper that pertain:[8]

> With the growth of China's national interests…the security of overseas interests concerning energy and resources, strategic sea lines of communication (SLOCs), as well as institutions, personnel and assets abroad, has become an imminent issue. …
>
> The seas and oceans bear on the enduring peace, lasting stability and sustainable development of China. The traditional mentality that land outweighs sea must be abandoned, and great importance must be attached to managing the seas and oceans and protecting maritime rights and interests.
>
> It is necessary for China to develop 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, to provide strategic support for building itself into a maritime power.

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6 For an official statement of China's concern about its SLOCs see, Office of the Secretary of Defense, *Annual Rep ort to Congress: Military and Security Developments Involving the People's republic of China 2017, May 15, 2017*, passim, p 5 for example. https://www.defense.gov/Portals/1/Documents/pubs/2017_China_Military_Power_Report.PDF?ver=2017-06-06-141328-770

7 Ian Storey, "China's Malacca Dilemma," *Jamestown Foundation, China Brief*, Vol6, Issue 8, April 12, 2006, https://jamestown.org/program/chinas-malacca-dilemma/

8 State Council Information Office of the People's Republic of China, *China's* Military Strategy,May 2015, China Daily full text *http://www.chinadaily.com.cn/china/2015-05/26/content_20820628.htm*

The 2013 edition of *The Science of Military Strategy* also notes that there are more than 30 key SLOCs linking China to over 1,200 ports in 150 countries and that these SLOCs are vital "lifelines" for the China's economy and social development.

IV. Why Does China Believe that Its Sea Lanes Are Threatened?

It is important to realize that the last serious attempts to protect a long distance SLOC from being cut was during the Battle of the Atlantic in World War II, when the German navy tried to stop the flow of men, resources, and material from North America to Great Britain. Germany failed in the end, but not before thousands of allied ships were sunk in a huge multi-year, resource intensive effort. Moreover, in Asia, the United States, from the first day of the war, declared 'unrestricted submarine warfare" against the Empire of Japan, and by the end of 1944 the combination of submarines and aircraft delivered mines had essentially curtailed Japanese shipping that traveled via the sea lanes that China is anxious about today.

During the Cold War, the US Navy worried that the very large Soviet submarine force would attempt to do what the German navy failed to accomplish and halt reinforcements to Europe in case the Red Army attacked across the inter German border. In 1983 for example the Soviet Navy had close to 400 submarines of all classes in commission.[9] Facing this threat, it is not surprising that roughly one third of the Cold War US Navy was composed of ships and aircraft whose primary mission was anti-submarine warfare (ASW). Japan still has not forgotten its experience with cut sea lanes in WW II and the primary mission for its Maritime Defense Force today is ASW.[10]

The question today is does it make any sense for Chinese strategists to worry about either the Indian Navy or the USN becoming involved in an effort to seriously interrupt its sea lanes? Is it credible to plan for a limited (non-nuclear) war at sea that could involve states armed with nuclear weapons but remains below the nuclear threshold? Apparently, Beijing thinks so—its entire military strategy is focused on "winning informationized local wars."[11]

There is probably a debate within the China's strategic community, as there is in America, about the credibility of an anti-China SLOC campaign. However, there seems to be a consensus that such a conflict is not very likely. Nonetheless, historic examples of these sorts of campaigns in war or examples of nations in peacetime preparing to engage in such campaigns, as during the Cold War, have obliviously caused the PLA to take a more conservative planning and resource allocation approach. Finally, any doubts that China might have had about the dependence of its economy—and, as a result, the survival of the regime—on its sea lanes, have long since been removed by western "strategists" who wrote that in time of conflict the way for the

9 Office of the Chief of Naval Operations, *Understanding Soviet Naval Developments, 5th Edition,* U.S Government printing Office, April 1985

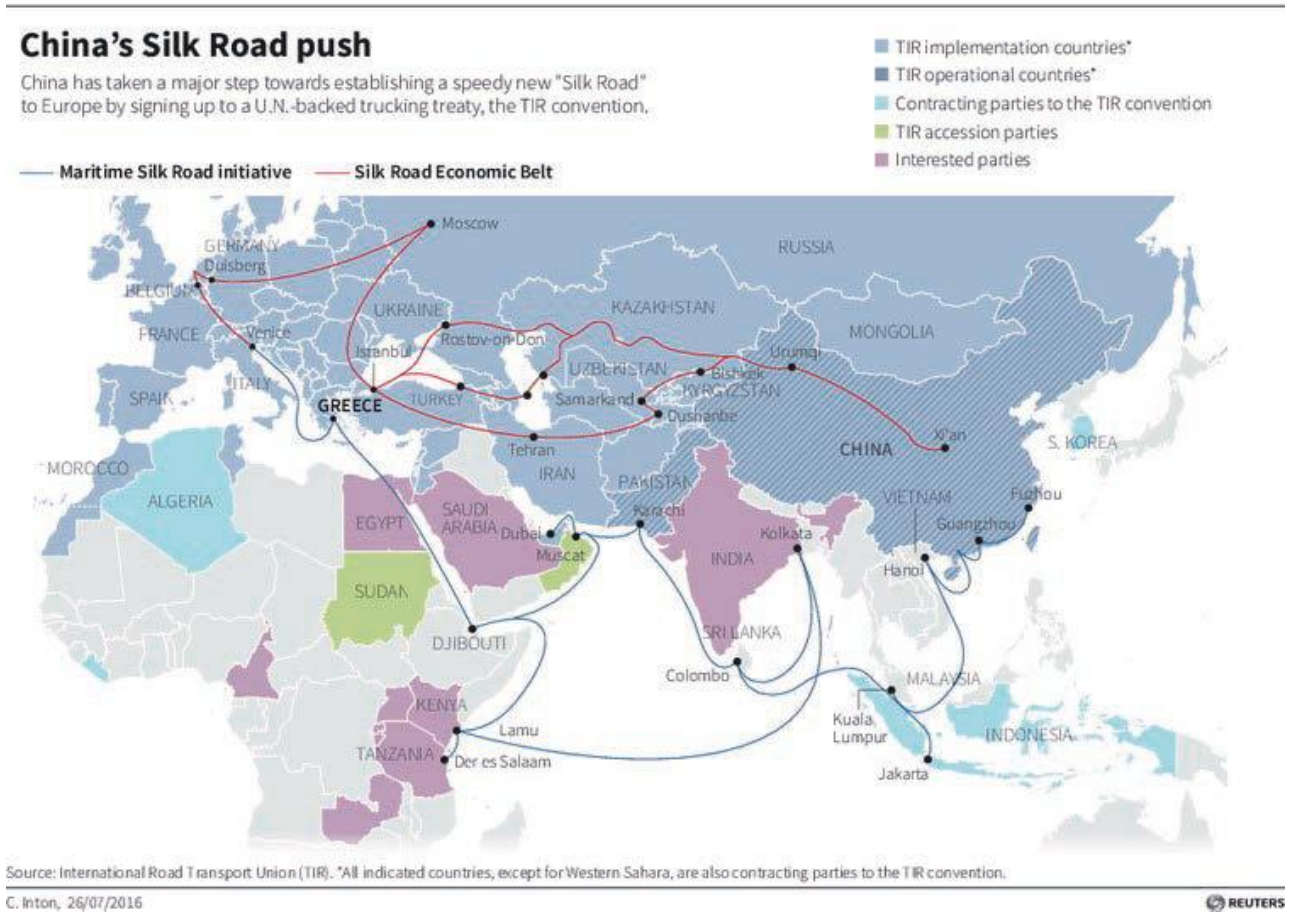
10 VADM Yoji Koda, JMSDF, "A New Carrier Race: Strategy, Force Planning, and J.S. Hyuga," *Naval War College Review*, summer 2011. This article traces the evolution of the JMSDF thinking on best to defend Japan's sea lanes with a focus on the importance of helicopters and land based maritime patrol aircraft.

11 Taylor Fravel, "China's New Military Strategy: 'Winning Informationized Local Wars,'" Jamestown Foundation, China Brief Volume: 15 Issue: 13, July 2, 2015, https://jamestown.org/program/chinas-new-military-strategy-winning-informationized-local-wars/

United States to bring China to its knees is to cut its sea lanes.[12]

V. Indian Ocean Bases and the Demand Signal Created By the Belt and Road Initiative (Bri)

For some time, there was scholarly speculation over whether China would or would not create bases along the Indian Ocean littoral to protect its sea lines of communication. Xi Jinping's much-ballyhooed "One Belt, One Road" (now known as Belt and Road Initiative (BRI)) plan to economically connect Eurasia, with all roads leading to Beijing, effectively ended that debate. To support the maritime portion of BRI, and potentially to be able to support a more substantial permanent Indian Ocean presence, it was necessary for Beijing to back away from its long-standing policy of criticizing other nations' overseas bases as a feature of hegemonic behavior. It now justifies its logistic "outposts" in the western Indian Ocean as a means of contributing to regional security and development. When asked about its base in Djibouti being a dramatic departure from China's traditional anti-base rhetoric, China's foreign minister indicated that China's intent was to fulfill international obligations to protect shipping:



Source: Reuters: http://theconversation.com/china-will-need-to-be-more-transparent-to-achieve-its-development-goals-67464

[12] See for example, Douglas C. Peifer, "China, the German Analogy, and the New Air-Sea Operational Concept," *Orbis* 55, no. 1 (Winter 2001); T.X. Hammes, "Offshore Control: A Proposed Strategy for an Unlikely Conflict," 278 (Washington, DC: NDU Press, June 2012); Geoff Dyer, *The Contest of the Century: The New Era of Competition with China and How America Can Win* (New York: Knopf, 2014), chapter 2; and Sean Mirski, "Stranglehold: Context, Conduct and Consequences of an American Blockade of China," *Journal of Strategic Studie* 36, no. 3 (2013).

> We are willing to, in accordance with objective needs, responding to the wishes of host nations and in regions where China's *interests are concentrated*, try out the construction of some infrastructure facilities and support facilities; I believe that this is not only fair and reasonable but also accords with international practice.[13] (Emphasis added)

China formally opened its Djibouti base with a flag raising ceremony *and* military parade on August 1, 2017, the 90th anniversary of the founding of the PLA, with Djibouti's defense minister in attendance.[14]

China is actively engaged in what could be characterized as a "place *and* base" approach to establish permanent and assured Indian Ocean access for its navy. It has many "places" potentially available thanks to COSCO Logistics, which has offices throughout Southeast Asia, South Asia, and the Arabian Peninsula. This entity is a subsidiary of COSCO (China Ocean Shipping Company), a very large Chinese state-owned enterprise.[15] Less vulnerable to political whim of the host country are the places where Beijing has made significant investments in port infrastructure, and in some cases also arranged for long term leases. One of those is Gwadar, Pakistan and according to the U.S. Department of Defense, Gwadar is a "place" that could become Beijing's next base.[16] In 2015, China obtained a 40-year lease to manage the port. Gwadar is the maritime terminus of the China-Pakistan Economic Corridor (CPEC), an ambitious economic project that includes highways, dams, hydropower projects, railways, and pipelines. The goal is to connect Gwadar with the Xinjiang Uyghur Autonomous Region in northwest China. This would provide western China with a route south to the sea and a connection to the 21st Century Maritime Silk Road.

The geostrageic significance of the port of Djibouti and its adjacnt port of Doraleh, located at the Bab al Mandeb chokepoint leading to the Red Sea and Suez Canel, to the martime portion of BRI is obvious, as is its importance in supporting the PLAN in missions beyond simply SLOC protection. For example, supporting Chinese UN peacekeeping forces in Africa; evacuating Chinese diplomats, businessmen and laborers from troubled African countries; and securing the location to establish a focal point for gathering, analyzing, and disseminating intelligence on the Horn of Africa region and its maritime environs.

One of Beijing's most challenging maritime issues is how to protect the burgeoning communities of Chinese expatriate workers who live overseas. According to Foreign Minister Yang Yi, some 30,000 Chinese enterprises employ millions of Chinese workers overseas. In 2014 Premier Li Keqiang was quoted as saying

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13 Ben Blanchard, "China launches charm offensive for overseas naval base," Reuters, March 23, 2016, http://www.reuters.com/article/us-china-djibouti-idUSKCN0WP300; John Lee, "China Comes to Djibouti: Why Washington Should be Worried," *Foreign Affairs Snapshot,* April 23, 2015, https://www.foreignaffairs.com/articles/east-africa/2015-04-23/china-comes-djibouti. Ben Blanchard, "China hints more bases on way after Djibouti," CANMUA Net, March 8, 2016, http://canmua.net/world/china-hints-more-bases-on-way-514571.html.

14 News Djibouti, "China opens first overseas base in Djibouti," http://www.aljazeera.com/news/2017/08/china-opens-overseas-base-djibouti-170801104040586.html

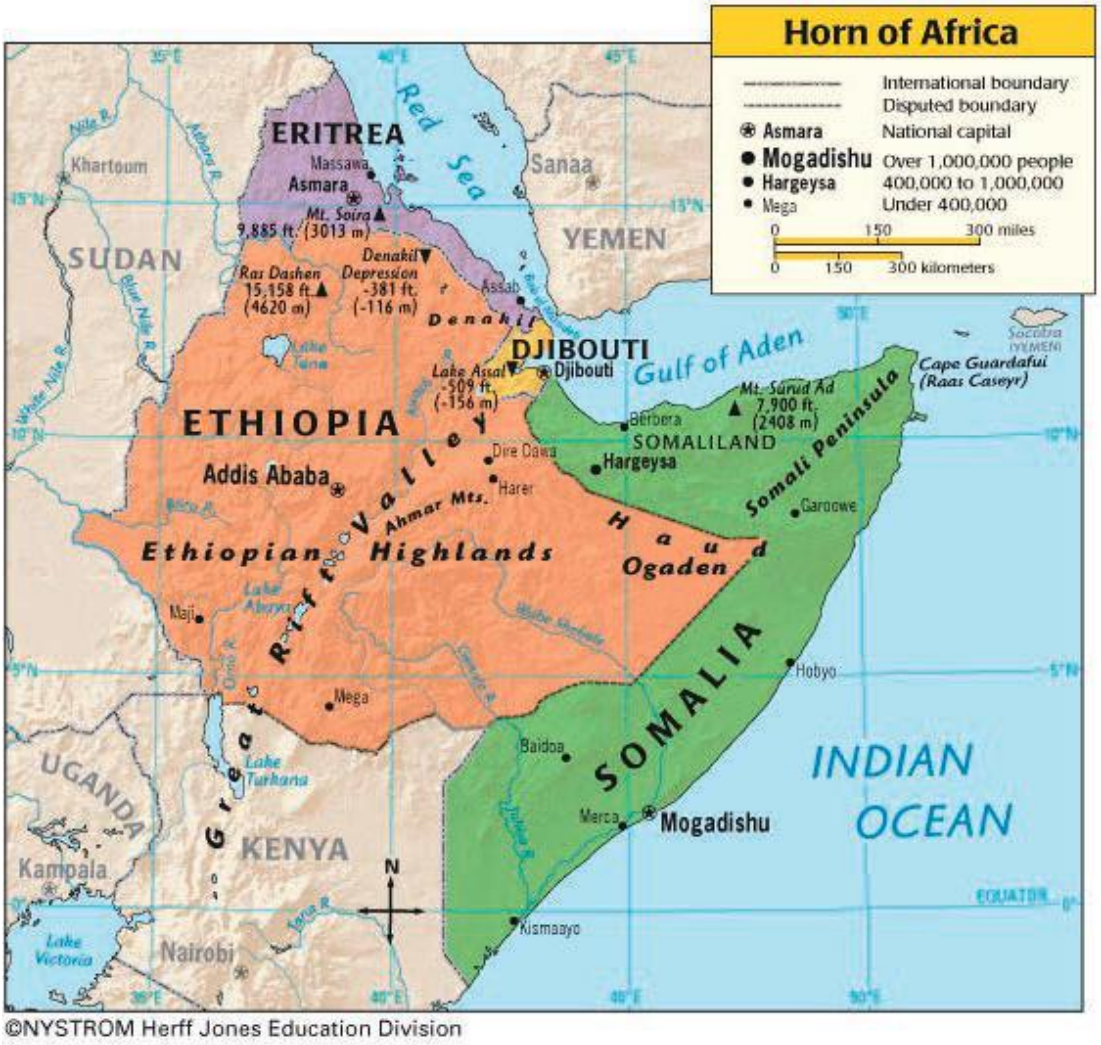
15 See https://en.wikipedia.org/wiki/COSCO and www.cosco.com./en/global_offices/staff.jsp?catId=299.

16 For a recent official discussion by the U.S. government on the topic of Chinese overseas access, see Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, Office of the Secretary of Defense, 20 May 2017, https://www.defense.gov/Portals/1/Documents/pubs/2017_China_Military_Power_Report.PDF, p. 5.

"The number of outbound Chinese is expected to exceed 100 million this year."[17] Two years later, Li said, "The job of protecting overseas citizens is a serious one." China has already had to evacuate its citizens from Libya, in 2011, and Yemen, in 2015.[18]

VI. A Broader Context for Maritime Capabilities in the Indian Ocean: the Chinese Goal of Becoming a "Strong Maritime Power"

Eight years after Hu Jintao set the PLAN on the road to becoming a "far seas" navy with his 2004 historic mission's green light, Hu again impacted the PLAN's fortunes during his waning days in office.



Source: Google https://www.google.com/search?q=horn+of+africa+map

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17 Dong Zhaohui, "China's logistic hub in Djibouti to stabilize region, protect interests," *Global Times*, March 15, 2016, http://english.chinamil.com.cn/news-channels/china-military-news/2016-03/15/content_6961515.htm; Zhao Yinan, "Li vows to protect rights of Chinese working abroad," *China Daily*, May 5, 2014, http://www.chinadaily.com.cn/world/2014livisitafrica/2014-05/10/content_17497900.htm.

18 For an extended treatment on the issue of protecting Chinese citizens and assets abroad, see Jonas Parello-Plesner and Mathieu Duchatel, *China's Strong Arm: Protecting Citizens and Assets Abroad*, The Adelphi Series, International Institute for Strategic Studies (Routledge, May 2015). The Yemen evacuation is mentioned on page 9. The Chinese themselves understood that this reflected a significant growth in China's comprehensive national power. See "Chinese naval vessels evacuate hundreds from war torn Yemen," Xinhua, April 8, 2015, news.xinhuanet.com/english/2015-04/08/c_134134406.htm.

In November 2012, his swansong report to the Chinese Communist Party's 18th Party Congress became a defining moment in China's maritime history. Hu declared that China's objective is to be a *haiyang qiangguo*—that is, a strong or great maritime power. China "should enhance our capacity for exploiting marine resources, develop the marine economy, protect the marine ecological environment, resolutely safeguard China's maritime rights and interests, and *build China into a strong maritime power*" (emphasis added).[19]

Hu's report also called for building a military (the PLA) that would be "commensurate with China's international standing." These two objectives were repeated in the 2012 PRC defense white paper, which was not released until April 2013, after Xi Jinping had assumed Party and national leadership.
According to the 2012 white paper:

> China is a major maritime as well as land country. The seas and oceans provide immense space and abundant resources for China's sustainable development, and thus are of vital importance to the people's wellbeing and China's future. It is an essential national development strategy to exploit, utilize and protect the seas and oceans, and build China into *a maritime power*. (Emphasis added.)[20]

Three years later the 2015 China's Military Strategy white paper was released. The maritime flavor on this document has already been addressed. What has not been addressed is this extraordinary passage:

> In line with the strategic requirement of offshore waters defense [the defense of China proper] and open seas protection [SLOC protection, especially in the Indian Ocean] the PLA Navy will gradually shift its *focus* from "offshore waters defense" *to the combination of "offshore waters defense" with "open seas protection*," and build a combined, multi-functional and efficient marine combat force structure. (Emphasis added.)[21]

Taken literally, the phrase "gradually shift its focus" from offshore waters defense to the combination of offshore waters defense with open seas protection suggests that for the PLAN, protecting overseas interests and sea lanes will over time become as important as defending China itself. This means the PLAN must evolve its force structure to accommodate two very different main missions. The defense of China itself (what the 2015 white paper calls "offshore waters defense") remains paramount, of course.

In practical terms, "off-shore waters defense" refers to the area between China's coastline and the second island chain—think the Philippine Sea—including, of course, the East and South China Seas—the area where US forces would encounter China's attempts to keep the United States from interfering with its offshore

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19 "Full text of Hu Jintao's Report at the 18th Party Congress," Xinhua, 17 November 2012, http://news.xinhuanet.com/english/special/18cpcnc/2012-11/17/c_131981259.htm.

20 See State Council Information Office, *The Diversified Employment of China's Armed Forces*, Beijing, April 2013, http://news.xinhuanet.com/english/china/2013-04/16/c_132312681.htm. Hereafter, this will be referred to as China's 2012 defense white paper. Also see Liu Cigui, "Striving to Realize the Historical Leap from Being a Great Maritime Country to Being a Great Maritime Power," *Jingji Ribao Online*, November 2012.

21 2015 Defense White Paper, *China's Military Strategy*, p. 8. "Open seas protection" essentially focuses on missions that would include protection of China's sea lanes that cross the Indian Ocean to or from China. But, to be clear, SLOC protection operations will be necessary in both China's near seas and far seas; it is not exclusively a far seas mission.

military operations.[22] "Offshore waters defense" is a new Chinese formulation for what has traditionally been called "active defense," or, as it has been dubbed by the Pentagon, A2/AD. It is a joint campaign that involves the PLA Navy, Air Force, and Strategic Rocket Force, and has the operational objective of keeping approaching hostile forces at bay by attacking them far from China (A2, anti-access), or, if that fails or hostile forces are already within striking range of China (as much of the U.S. 7th Fleet would likely be in case of conflict), attempt to deny them freedom of operational and tactical action (AD, area-denial). [23] The PLAN's main contribution in this joint campaign is its submarine force and land-based naval air forces.

The PLAN's surface warships are not likely to play a pivotal offensive role in such a campaign because once they venture out beyond Chinese land based air cover, perhaps 200-300 nautical miles (NM), they become vulnerable to hostile air attack, or become easier pickings for hostile submarines. This is not to say they are irrelevant to the defense operations close to China; surface warships do have a role in providing anti-submarine protection in the South China, East China and Yellow Seas, and as seaward extensions of China mainland air defenses, in the waters very near to China. The PLAN surface navy does have another important role, of course, if the conflict involves an invasion of Taiwan. It would be its job to get the PLA to Taiwan and keep it re-supplied, as well as dealing with the Taiwan navy.

On the other hand, when it comes to fulfilling the new "open seas protection" cluster of missions, especially distant SLOC protection, the PLAN surface force assumes a starring role. It is important to point out that, apart from SLOC protection, the mission set that official Chinese documents enumerate falls under the category of peacetime uses of distant naval forces. Missions such as humanitarian assistance and disaster relief, evacuating Chinese citizens, and suppressing at sea piracy and terrorism are frequently mentioned. *No mention is made of anything that could be construed as "power projection.*"

VII. "Open Seas Protection" … Capabilities that Plan Will Be Able to Deploy to the Indian Ocean

A good deal of "open seas protection" force structure is already commissioned into active service with more new ships on the way. (See footnote 1 for particulars.) China does not absolutely need a "far seas" navy to execute an offshore waters protection operation, *but it certainly does need one if* it hopes to accomplish the mission set associated with "open seas protection."[24] This requires a different mix of naval capabilities from what is needed for wartime defense of China proper. Far seas operations demand multi-product logistics support ships, amphibious ships with helicopter facilities, larger multi-mission destroyers and frigates with

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22 The maritime space to be defended is based on PLA estimates of the range of weapons carried by an attacking force, and is not determined by island-chain boundaries. For example, according to a PLA open source assessment, the refueled combat radius of an F/A-18 is 1,200 nautical miles. Whether this is accurate is not the point. What is germane is that the article gives a hint of the range at which the PLA starts to worry about an approaching aircraft carrier. Li Xinqi, Tan Shoulin, Li Hongxia (The Second Artillery Engineering College, Xian, China), "Precaution Model and Simulation Actualization on Threat of Maneuver Target Group on the Sea," August 1, 2005, in author's possession.

23 From the perspective of the approaching "blue" naval force this means in practical terms is that it will have to fight to gain the "sea control" that is essential to conducting operations, and will have to fight to sustain "sea control" if the naval campaign is envisioned as lasting longer than a hit-and-run raid.

24 Recent PLAN submarine deployments to the Indian Ocean have indicated that submarines, especially nuclear-powered attack submarines (SSNs) and modern AIP-equipped conventional submarines, also factor into PLAN calculations regarding open seas protection. For one Indian perspective, see P.K. Ghosh, "Game Changers? Chinese Submarines in the Indian Ocean," *The Diplomat,* July 6, 2015, http://thediplomat.com/2015/07/game-changers-chinese-submarines-in-the-indian-ocean/.

better endurance and reliable propulsion systems, helicopter facilities, improved anti-submarine systems, and, especially, longer-range air defenses. The newest addition to the PLAN that embodies these attributes is the recently launched Type 055 DDG. With an estimated displacement of 10,000-13,000 tons, it has apparently been classified as a cruiser by NATO.[25] It is larger than the USN's Ticonderoga class cruiser, but has the same 122 vertical launching system (VLS) cell capacity and seems destined to fulfill the same role as an air defense command ship for a carrier Task Force. The first of this class could make an appearance in the Indian Ocean by 2019.

Nuclear-powered submarines also have an important "far seas" role to play. These classes of submarines (SSNs) are well suited for far seas deployments because of their long range, high underwater speed, and ability to stay submerged for very long periods of time. But even with these advantages, as the USN has long realized, SSNs require logistic support and voyage repair when on sustained deployments thousands of miles from a traditional support base. That is why the USN maintains a forward-deploying submarine tender in either Guam or Diego Garcia. China is likely to make similar support arrangements for far-seas-deploying SSNs.

Operating thousands of miles away from its land-based air cover, a credible Chinese distant-seas navy must be able to defend itself from air attack. Destroyers and cruisers with long-range surface-to-air missiles can provide such defense where the air threat is limited, but most of China's most important SLOCs—e.g., in the Northern Arabian Sea/Gulf of Aden—face a more substantial air threat.

This was a very important (although not the only) factor in China's decision to build an aircraft carrier force.[26] Although the ski-jump take-off used on China's carrier, *Liaoning* and its new sister ship *Shandong*, imposes weight penalties on the type and amount of ordnance the aircraft can launch with, its jets can provide air cover for the PLAN's open-seas protection operations. Looking ahead, all indications are that between 2020 and 2022, the PLAN will likely operate two *Liaoning*-style aircraft carriers, plus a larger Type-02 carrier. This carrier is under construction and appears to be a transition away from ski-jump take-off to catapult launch.[27]

Why carriers? Carrier-based air power can provide peacetime presence along China's long BRI sea lane; dissuade countries along this Indo-Pacific route from being tempted to interfere with Chinese trade; provide air cover should distant power projection requirements emerge in support of China's global economic and political interests; protect or evacuate Chinese citizens abroad in dangerous locales; and so on. And, if China is to become a great maritime power, it needs carriers in its naval order of battle.

The air wing is, of course, the reason for having an aircraft carrier. Details regarding the composition of *Liaoning*'s air wing remain sketchy, probably because the PLAN itself has not made a final decision on them. Informed speculation suggests that the air wing will include twenty-four J-15 fighters, four to six ASW

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25 Blog PLA talk of 25 June 2017.https://plarealtalk.com/the-first-055-has-been-launched-heres-seven-reasons-why-it-s-a-big-deal-611de129f4f5. The ship will have 112 VLS cells, the most advanced Chinese air defense radars, and ASW suite, two helicopter hangers and flight deck. Its size permits it to be loaded with enough food, fuel and spare parts for extended deployments. Three more of this class are under construction and should be delivered by 2020.

26 Nan Li and Christopher Weuve, "China's Aircraft Carrier Ambitions: An Update," *Naval War College Review* (Winter 2010): 15. www.usnwc.edu/publications/Naval-War-College-Review/2010---Winter.aspx.

27 Dave Majundar, "China's next aircraft carrier: Everything we know (so far)," *The National Interest*, March 31, 2017, http://nationalinterest.org/blog/the-buzz/chinas-next-aircraft-carrier-everything-we-know-so-far-19965

helicopters, four helicopters dedicated to airborne early warning (putting an air-search radar in the sky), and two helicopters dedicated to pilot rescue in case of an accident during flight operations.[28]

The backbone of these "distant seas" forces will be the multi-mission *Luyang II/III* (types 052C and 052D) class destroyers (DDGs) and, as previously mentioned, the newly launched Type 055 air defense "cruiser." They are likely to form the bulk of the warship escorts for *Liaoning*, follow-on carriers, and expeditionary amphibious forces. They are also formidable warships when operating independently; they are roughly the size of the U.S. DDG-51 class, or in the case of the Type 055 considerably larger, and will have phased-array radars and a long-range SAM system which provides the PLAN with its first credible *area* air-defense capability (the ability to defend more than just oneself). Because these ships are fitted with a multi-purpose 64-cell vertical launch system, they will also be able to load land-attack cruise missiles.

On paper, these are state-of-the-art multi-mission warships; the phased-array radar, also known as active electronically scanned array (AESA), is similar in technical approach to the radar in the USN-developed AEGIS combat system. When combined with long-range surface-to-air missiles housed in vertical launch cells, this radar system provides the ship with tremendous anti-air firepower—the ability to engage multiple targets simultaneously. These types of destroyers are expensive to build; only a few navies in the world can afford them. Japan, for example, has six and will have eight by 2020—whereas China already has nineteen commissioned or launched and will likely have twenty-two by 2020.[29]

If the Type 052D is intended as the backbone, the Type 054A guided-missile frigate (FFG) has for the past nine years been the workhorse for the PLAN's far seas anti-piracy operations in the Gulf of Aden and for presence operations spanning the Indian Ocean littoral, Eastern Mediterranean, and Black Sea. At 4,100 tons, this large frigate is well-armed, with long-range ASCMs, a 32-cell VLS launcher with medium-range SAMs, and a helicopter with hangar. Its ASW is being improved with the addition of a towed array and variable-depth sonar that is already being fitted on China's Type 56 corvettes.[30] China operates twenty-seven of these FFGs today, and by 2020 is expected to have approximately twenty-four Type 54A and around six of the improved Type 054B frigates in commission.

The PLAN has mastered the logistics of sustaining small task groups on distant stations. As mentioned, the existence of a state-owned enterprise that is in the worldwide logistics services business (COSCO) enables China to enjoy ready shore-based support at virtually all the major ports along the coastlines of the Pacific and Indian Oceans. When combined with its modern multi-product replenishment ships, which have developed significant skill in at-sea support, this has become a successful approach to logistic sustainment halfway around the world from Chinese homeports. One of the main lessons the PLAN has learned from its anti-piracy deployments is the absolute importance of having enough multi-purpose replenishment ships. American experts have long opined that the most important indication of the PLAN's out-of-area ambitions would be construction of replenishment ships, which is exactly what China is doing.

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28 See https://medium.com/war-is-boring/chinas-got-an-aircraft-carrier-what-about-the-air-wing-c95283bc0279.

29 ONI, *The PLA Navy*, http://www.janes.com/article/53139/china-commissions-second-type-052d-ddg-pushes-ahead-with-frigate-corvette-launches; and Deagel.com, Type 052D, http://www.deagel.com/Destroyers-and-Cruisers/Type-052D_a001828004.aspx.

30 Andrew Tate, "China commissions' fourth ASW-capable Type 056 corvette," IHS Jane's 360, 11 May 2015, http://www.janes.com/article/51341/china-commissions-fourth-asw-capable-type-056-corvette.

The PLAN's inventory of 22,000-ton *Fuchi*-class AORs (Type 903) has increased, and by 2020 it will have as many as ten major replenishment ships—more than enough to support continuous far seas operations in addition to the counter-piracy patrols.[31] Two of these will include a recently commissioned new class of replenishment ship (Type 091). At 45,000 tons with an estimated speed of 25 kts, it is faster than and twice as large as the *Fuchi* class, and it is apparently designed to support carrier task forces.[32]

For years, PLAN amphibious shipping has been apparently earmarked for a potential invasion of Taiwan. While that contingency continues to receive the PLAN's attention (fourteen new Type 072 LSTs for example), the PLAN is also assembling an impressive "far seas" expeditionary capability. It now has four 20,000-ton amphibious ships classified as LPDs (Type 071). Each ship can embark around 800 marines or soldiers, four air-cushion landing craft, and several helicopters. Forecasts suggest that even more of these ships, as well as perhaps a larger LHA-type ship, will be built.[33]

China's large conventionally-powered submarine force has necessarily been focused on "near seas defense." As mentioned, nuclear-powered attack submarines (SSNs) are considered the most suitable type of submarine for long-range, long-endurance, out-of-area operations for any navy. The PLAN has long had a small SSN force, but in the past few years it has created the embryo of a modern SSN force with the commissioning of six *Shang*-class (Type 093/093G) boats. It is expected to introduce a new class that could result in a 2020 inventory of seven to eight SSNs—which would exceed the UK and French SSN forces, and place China third globally in operational nuclear-powered attack submarines, behind the United States and Russia.

The PLAN's most modern conventionally-powered submarine is the AIP-equipped *Yuan* class (Type 039A/B).[34] It has been in series production since 2004, and twenty are expected by 2020. Conventionally-powered submarines would not normally be associated with Chinese "open seas protection" missions, because of their important role in A2/AD; however, this large conventional submarine was sent to the Indian Ocean, calling at Karachi, Pakistan, in April 2015. This was the third submarine that the PLAN has deployed to the Indian Ocean in the past two years; the earlier deployments were by a Type 093G SSN and a *Song*-class conventional boat, much to the dismay of Indian observers.[35] These deployments, probably a proof-of-concept operation, suggest that PLAN submarines may also be earmarked for routine far seas operations, just like the Soviet Navy's submarines when they maintained a routine presence in the Northern Arabian Sea during the final decades of the Cold War.[36]

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31 Bernard D. Cole, "China's navy expands it replenishment-at-sea capability," *The Interpreter*, 26 August 2015, http://www.lowyinterpreter.org/post/2015/08/26/Chinas-Navy-Expands-Replenishment-Capability.aspx.

32 Viola Zhou, "China commissions new naval supply ship," August 1, 2017, *South China Morning Post*, http://www.scmp.com/news/china/diplomacy-defence/article/2105010/china-commissions-new-naval-supply-ship. See also Andrew Tate, 'China carrier replenishment ship begins sea trials," Janes 360, 30 December 2016, http://www.janes.com/article/66613/china-s-carrier-replenishment-ship-begins-sea-trials

33 "Type 071 Landing Platform Dock (LPD), China," Naval Technology.com, http://www.naval-technology.com/projects/type-071-landing-platform-dock-lpd; Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century,* Washington, D.C., p. 18.

34 Christopher P. Carlson, "Essay: Inside the Design of China's Yuan-class submarine," *USNI News*, August 31, 2015, http://news.usni.org/2015/08/31/essay-inside-the-design-of-chinas-yuan-class-submarine.

35 *DOD Annual Report 2015*, p. 19; and Rajat Pandit, "Chinese submarine in Karachi, India alarmed," *The Times of India*, June, 27, 2015, http://timesofindia.indiatimes.com/india/Chinese-submarine-in-Karachi-India-alarmed/articleshow/47845930.cms.

36 Based on personal experience during the 1980's I can attest to the difficulty of keeping track of Soviet submarines in the Northern Arabian Sea. An authoritative discussion of Soviet naval presence (32 ships, including submarines, in early 1978) in the Northern Arabian Sea/ Gulf of Aden region of the Indian Ocean is given by Mark A. Carolla, "The Indian Ocean Squadron," in Bruce and Susan Watson, eds., *The Soviet Navy: Strengths and Liabilities* (Boulder: Westview Press, 1986), pp. 241-46.

VIII. Looking Ahead: World's Second-Largest Blue Water Navy by 2020

To appreciate the magnitude of the PLAN's development of "open ocean protection" capabilities, it is useful to compare them to those of the other "great" navies of the world. Table 1, "A Forecast of Far Seas Navies' Major Ships ca. 2020," is a near term forecast that compares ships with the capabilities necessary to conduct sustained deployments very far from home waters. This specifically compares the PLAN's classes of ships discussed in the preceding section with ships of similar capabilities from other navies. This comparison is *not* intended to be an order-of-battle inventory where every ship of every class is counted; rather, it is an attempt to compare Chinese "far seas" warships to other nations' "far seas" warships, projected around the year 2020. Importantly, all the PLAN ships listed below can or, when delivered, will operate in the Indian Ocean for sustained periods.

Table 1 A Forecast of Far Seas Navies' Major Ships ca. 2020a

	PLA Navy	UK	France	Japan	India	Russia
Carriers	2	2	1	0	2	1
Aegis-like destroyer	20-23	6-8	2	8	5-6	0
Modern multi-mission frigate	30-32	1-2	6 (FREMM)	4	3-10	9-11
Large amphibious	6-7	6	3	3	0- 3	0
AOR (combat logistics force)	10-12	3	4	5	0-3	4 very old
SSN	6-7	7	6	0	1-2	8-9 +6 SSGN
SS (AIP)	20			22	6	9-11
SSBN	5-6	4	4	0	1-2	10-12

a. Aegis-like DDGs include China's Types 052C/D and 055, the UK Type 045 *Daring*, the French Horizon, the Japanese *Kongo* and *Atago*, and the Indian *Kolkata* and *Visakhapatnam* classes.

IX. What Are We to Make of a Plan Blue Water Force that Can Operate in the Indian Ocean?

Virtually all the PLAN ships discussed in the preceding paragraphs have been commissioned since 2004; the obvious conclusion is that China's "open ocean protection" mission will be executed by a new and modern far seas force. This force, well-balanced in capabilities and ship classes, in many ways already resembles a "mini-me" of America's navy—with the notable exception of sea-based airpower, and China is addressing that shortfall.

The question is: Will Beijing employ this microcosm of the USN in the same way that Washington uses its navy? So far, trends are moving in that direction. Like the USN, the PLAN already conducts the whole range of activities associated with what is normally characterized as "peacetime presence": naval diplomacy, emergency evacuations, disaster relief, and exercises with friendly navies. What has not been seen is traditional power projection—yet.

To speculate for a moment, China is putting into place the components of what could become a power projection capability in the Indian Ocean—carrier air, land attack cruise missiles on multi-mission destroyers, and amphibious forces—that, if assembled as a task force, would very credible in many areas along the Indian Ocean littoral. By 2020 China will have the second-largest modern amphibious capability in the world (after the United States), and potentially will be able to embark between 5,000-6,000 marines for operations anywhere in the world. When combined with modern destroyers as escorts and an aircraft carrier to provide air defense, China could have a distant-seas power-projection capability for the first time since Admiral Zheng He's last voyage (1431–33).[37]

In fact, when one counts the number and variety of warships that the PLAN is likely to have commissioned in just a few years, it is not a stretch to argue that by around 2020, China will have the second most capable "Blue Water" navy in the world. Certainly, in terms of numbers of relevant ship classes, it will be in that position. In short, the PLAN is rapidly becoming a well-rounded (balanced) and very capable far seas navy.

This forecast raises many questions. First and foremost, as any professional naval officer would ask: How good are they? Are the PLAN operators competent? Will the PLAN combat systems operate as advertised? What about China's unique consensus-based dual-command system, wherein the ship's commanding officer and political officer share coequal positions? Will it work in the stress of combat, when decisions must be made quickly?[38] This last question is particularly important since success or failure in a surface engagement has historically been dictated by who wins the "battle of the first salvo."[39] The open-source answers to these questions are based more on conjecture than on fact, but the track record of counter-piracy deployments suggests that China's ships are very reliable during peacetime operations. The PLAN has learned to be remarkably adaptable over the years that these deployments have occurred.

We also have insights into the growing sophistication of PLAN warfare-oriented training that is taking place in open ocean environments. A paper written by the former assistant naval attaché in Beijing, Captain Chris Sharman, USN, maps the growing complexity of PLAN at-sea training and makes it clear that China's navy is working hard to improve.[40]

Perhaps the biggest uncertainty is: How large will the "far seas" PLAN become? As mentioned in the introduction, we don't know. If one takes seriously the words in the 18th Party Work report— "Building strong national defense and powerful armed forces that are *commensurate with China's international standing*

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37 For the most accurate account of Zheng He's "power projection" voyages, see Edward Dreyer, *Zheng He: China and the Oceans in the Early Ming Dynasty, 1405-1433* (New York: Pearson, 2006).

38 Based on a conversation with Dennis Blasko, an acknowledged expert on PLA organizational issues, technically (by regulation) the commander and the political officer are jointly responsible for their unit. The commander oversees tactical considerations, while the political officer oversees political-related work, which can overlap with tactics. In theory, the commander should be obeyed in times of emergency/crisis/combat when he gives a tactical order without the political officer having to sign on. However, if time permits, they would prefer a group meeting to settle important matters and establish consensus. In practice, this shared responsibility concept is driven by personalities (how the commander and political officer get along), plus the influence (or lack thereof) of the ship's Party Committee (senior leaders). While naval officers raised in the western maritime tradition may be aghast at such a system, it is important to keep in mind that this is the only organization PLAN officers have known. They have learned to make it work during peacetime far seas deployments.

39 "To achieve victory, one must attack effectively first." Captain Wayne Hughes, USN (retired), *Fleet Tactics: Theory and Practice* (Annapolis: Naval Institute Press, 1986), p. 146.

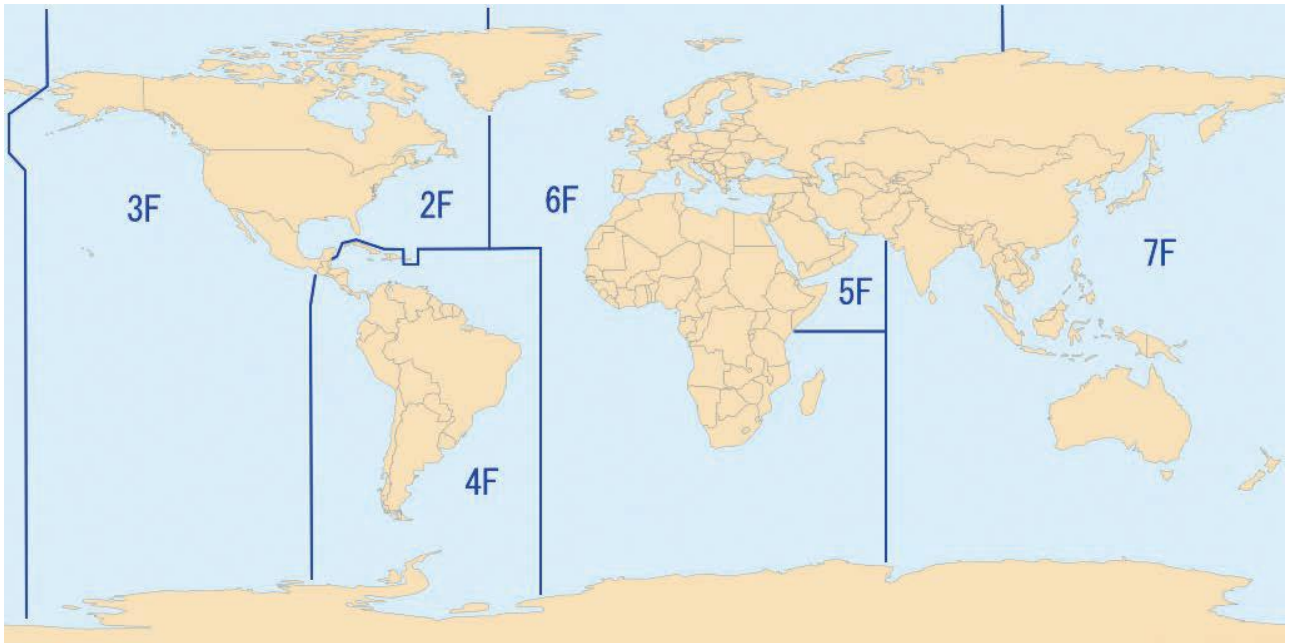
40 Christopher H. Sharman, *China Moves Out: Stepping Stones Toward a New Maritime Strategy,* China Strategic Perspectives No. 9, Center for the Study of Chinese Military Affairs, Institute for National Security Studies, National Defense University, Washington, DC, April 2015, p. 37, http://inss.ndu.edu/Portals/68/Documents/stratperspective/china/ChinaPerspectives-9.pdf.

and meet the needs of its security and development interests is a strategic task of China's modernization drive…"— it could become very large indeed.[41]

Implications

The United States carves the Indian Ocean into three separate areas of responsibility for three different US Fleets. As illustrated in the picture below, the Seventh Fleet is responsible for the largest portion of the Indian Ocean, but not for the Northern Arabian Sea, the area where most of the PLAN activity takes place. This division of responsibilities between three different US fleet commanders for the Indian Ocean makes it difficult for a country such as India, whose navy has responsibility for the entire Indian ocean, to coordinate with its USN counterparts. This division complicates United States and Indian efforts to maintain a coordinated understanding of PLAN activities in the Indian Ocean.

Beijing's fixation with SLOC defense and the related protection of the maritime leg of BRI has put the PLAN into an unfamiliar situation The PLAN is now the away team, forced to operate in the shadow of the most capable military in the region, the armed forces of India. But, other than working to prevent terrorists from landing along its extensive coast line, India apparently does not have a unifying theory for the defense of maritime approaches that resembles China's A2/AD because, until now, India has not needed one. In the future, depending on New Delhi's threat perception of the PLAN presence, India may need to capitalize on its geographic position to put in place a joint area-denial capability to defend its maritime interests. A useful example would be Australia. In the eastern Indian Ocean, the very capable armed forces of Australia already pursue a defense of Australia based on a sea denial strategy that employs submarines and land based airpower coupled to advanced open ocean surveillance.



Source: https://en.wikipedia.org/wiki/Structure_of_the_United_States_Navy

41 "Full text of Hu Jintao's Report at the 18th Party Congress," Xinhua, 17 November 2012, http://news.xinhuanet.com/english/special/18cpcnc/2012-11/17/c_131981259.htm.

Should the PLAN begin to maintain a routine naval presence in the Indian Ocean in addition to its anti-piracy operations, such an increase seems likely to increase Indian apprehension regarding long-term Chinese objectives along the Indian Ocean littoral. That could increase the incentives for an even closer Indian-American naval relationship. The pace of that relationship will naturally be dictated by the overall state of Sino-Indian relations; however, it is conceivable that an increase in PLAN presence, especially submarines, could result in some sort of combined India-US ASW organization dedicated to keeping track of in-region PLAN submarines.

One implication for Washington of potential PLAN "open seas protection" task forces routinely operating in the western Indian Ocean is that US authorities can no longer assume unencumbered freedom to posture US naval forces off Middle East and East African hotspots if Chinese interests are involved and differ from Washington's. It is possible that both governments would elect to dispatch naval forces to the water offshore of a country in question. The best-known historic example of what happens when "competitive" naval forces intermingle occurred during the 1973 Arab-Israeli War, when the Soviets deployed more than ninety-five ships to the Eastern Mediterranean to challenge the US Sixth Fleet's sea control in the area.[42]

Once the reality of a large Chinese navy that routinely operates worldwide sinks into world consciousness, the image of a PLAN "global" navy will over time attenuate perceptions of American power, especially in maritime regions where only the USN or its friends have operated freely since the end of the Cold War. Since 1945, the United States has been able to employ its naval-centered expeditionary capabilities in the pursuit of national interests on the far shores of the Indian and Pacific Oceans with little or no concern regarding the USN's ability to arrive and stay wherever it thought best for as long as it wanted.

A highly speculative implication is that it is not unreasonable to suggest that by the mid-2020s the PLAN could begin to maintain a deployed carrier centered fleet of fifteen to twenty ships in the western Indian Ocean. It is also possible that a second force could be postured in its new Spratly Island bases, three of which have huge harbors, and could be used as a surge force for PLAN operations in the Eastern Indian Ocean.

In short, China already has a naval capability of close to 100 ships that can routinely deploy to the Indian Ocean. It is entirely possible that by the middle of the next decade this capability could grow to over 150 ships. How would that change regional perceptions of small countries along the in the Indian Ocean? During the Cold War, between 1968 and 1989, Washington was in a competition in the Indian Ocean region with Moscow for naval access. In many ways, this competition was treated by both Moscow and Washington as zero-sum. This is obviously not the case today, as the unfolding Djibouti experience illustrates. Today, if there is a game for influence in the Indian Ocean region, it is between New Delhi and Beijing; Washington is not a major participant. Washington pursues security engagement, along with access agreements, with Indian Ocean littoral states, based solely on US military needs and does not actively seek to counter Chinese attempts to gain influence.

For the United States, how Washington reacts to any growth in PLAN presence depends on how one forecasts the evolution of the overall Sino-US relationship. Will it grow increasing contentious, as many predict, and, if so, will that contention spill into the Indian Ocean? It is entirely possible that the current "live

42 Bruce W. Watson, Red Navy at Sea: Soviet Naval Operations on the High Seas, 1956-1980 (Boulder: Westview Press, 1982), p. 88.

and let live" relationship between the United States and China in this region will continue well into the future. To some degree, that might depend on how the relationship between India and China evolves, and whether Washington elects to tilt toward India if the relationship between New Delhi and Beijing really turns sour. It is also possible that, in its desire to secure its vital sea lanes that cross the Indian Ocean, China will, as discussed, continue to build up its own daily presence in the Indian Ocean, and to do so in a way that makes many of the Indian Ocean littoral states begin to worry about their own security. This has already happened in East Asia, where China's desire to ensure its own security through military modernization has made its neighbors feel less secure.

Since the future is unknown, this forecast of Chinese capabilities, mainly naval, suggests that U.S. decisions on maintaining a substantial US naval presence in the region over the long term may be dictated more by the implications of PLAN presence than concerns about Iran or any other Gulf state.

Chapter 8

Understanding China's Naval Strategy in the Indian Ocean

Chapter 8　Understanding China's Naval Strategy in the Indian Ocean

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Introduction

This paper considers China's future naval strategy in the Indian Ocean and some options for influencing that strategy. The paper works on the assumption that China's naval strategy in the Indian Ocean will primarily grow in accordance with its interests in that region. Accordingly, the starting point in any discussion is to understand the nature and extent of China's current and future strategic interests in the Indian Ocean region (IOR). Although China has important strategic imperatives to protect its sea lines of communication, its interests are increasingly extending far beyond that. It is the breadth of those interests that will likely determine China's future strategy. This paper will then develop three basic scenarios in which China's military, and particularly naval, presence in the IOR, might develop in coming decades. These help provide a framework for understanding China's strategy in any given period. Finally, this paper will consider several options that may be available to influence the direction of China's strategy in the Indian Ocean.

I. China's Strategic Imperatives in the Indian Ocean

China has many important interests in the IOR that will drive its future military and naval presence in the region. While the protection of China's sea lines of communication across the Indian Ocean are a very important factor, this imperative should not be overstated or seen in isolation from other interests. Other strategic imperatives for China in the region, include:

- the need to evacuate Chinese nationals in response to local crises (in both permissive and non-permissive environments);
- the provision of on ground security for Chinese nationals and investments;
- support for UN peacekeeping operations (especially in Africa);
- conduct of HADR/SAR operations;
- the use of naval diplomacy and naval exercises as a tool of political influence;
- the ability to use naval demonstrations as a coercive tool; and
- the undertaking of military actions or interventions against violent extremists and/or in support of political objectives.

It is useful to consider these drivers in some detail in order to understand the breadth of China's interests that will drive its future strategic presence and behaviour. As noted below, some of these imperatives would involve a naval response while others would involve non-naval military responses. Importantly, this paper will proceed on the assumption that Chinese strategic behaviour will be primarily driven by economic and political considerations. Ideological factors would be expected to play a far lesser role in China's engagement

in the IOR, as compared with, say, the 1960s and 1970s. Nevertheless, a desire for recognition of China's status as a global power – which is a relatively new ideological factor - may still play a role in China's calculations.

1. SLOC Protection

China's most crucial strategic imperative in the IOR is the protection of its sea lines of communication (SLOCs) across the Indian Ocean. This principally involves the protection of China's energy imports from the northwest Indian Ocean area and West Africa, but also to a lesser extent the trading routes across the Indian Ocean for the export of Chinese goods. Beijing is aware that its Indian Ocean SLOCs are highly vulnerable to threats from state and nonstate actors, especially at the narrow chokepoints through which most trade must pass. Chinese planners are concerned that state adversaries may use these vulnerabilities as a bargaining chip in the context of a wider dispute.

Despite many uncertainties in the region, the strategic environment in the IOR in relation to sea lines of communication is arguably relatively stable at the moment. Beijing currently implicitly accepts U.S. predominance in the Indian Ocean, about which it can do little, and the public goods that the US Navy provides. There are no real indications, for example, that China is poised to replace or challenge the role of the US Fifth Fleet in the Persian Gulf. However, this could change quickly if there were a significant retrenchment of US defence resources from the Persian Gulf area or other major developments in that region that materially adversely affected China's interests.

Importantly, China takes quite a different view (compared with its views about the US presence) towards India's aspirations to be a leading provider of maritime security in the Indian Ocean, which is considered unrealistic in light of India's national power. China is therefore unlikely to accept any attempts by India to replace the United States as the dominant naval power in the Indian Ocean (particularly in the northwest Indian Ocean) in the case of significant US retrenchment from that region.

But it should be noted that any attempts by China to unilaterally protect its Indian Ocean SLOCs would also come with significant problems, which may make it an unrealistic aspiration for China even in the medium term. China would face severe problems in protecting the entirety of its SLOCs across the Indian Ocean from state actors such as the United States or India. Indeed, the protection of the entirety of China's SLOCs in a major conflict with the United States or India is probably unattainable, particularly given the length of the sea routes around the Indian subcontinent and the need to transit choke points. Note the severe difficulties that Britain and the United States (then the world's leading naval powers) faced in 1939-45 in protecting their far shorter SLOCs across the north Atlantic against Germany.

But there are also reasons to be sceptical about the ability of the United State or India to enforce a distant blockade against China in the Indian Ocean. These include many practical problems involved (determining which ships to interdict); on historical grounds (a strategy of distant blockade has not been used since the nineteenth century outside of world wars); the severe consequences on the global economy; and not least, China's ability to respond with its own blockade of Indian Ocean chokepoints against its adversaries.

Despite these doubts, Chinese analysts appear to take the possibility of distant blockade sufficiently seriously to be an important driver in their strategic thinking about the Indian Ocean. At the very least it is

a convenient justification for increased naval expenditures and also a justification for grand overland energy pipeline projects (in Myanmar and Pakistan) that might not otherwise be financially viable.

China also faces more localised threats to its Indian Ocean SLOCs from non-state actors and potentially from less powerful states (e.g. Iran). The threat of Somali-based piracy led to the establishment of a Chinese naval presence in the northwest Indian Ocean in 2008. Although the piracy threat has largely been addressed, the potential for its resurgence provides a justification for China to continue to deploy its naval task force in the northeast Indian Ocean for the foreseeable future. Interestingly, the PLAN does not appear to have taken on other constabulary duties in the western Indian Ocean (such as anti-drug and arms smuggling) in the same way that many other navies have.

2. Evacuation of Chinese Nationals

Another important interest is the growing presence of Chinese nationals in the IOR, many of whom live or work in insecure or politically unstable territories. This includes Chinese economic migrants and temporary workers on Chinese sponsored projects. It is estimated that there are more than 1 million recent Chinese economic migrants in Africa.[1] A Chinese company recently announced that it was building accommodation for 500,000 Chinese professionals in Gwadar by 2023, as part of the China Pakistan Economic Corridor (CPEC).[2] There are also older Chinese diasporic communities in the region which could potentially come under threat.

In the past China took a relatively passive approach to the safety of nationals and diasporic communities (about which it could generally do little). However, this is changing rapidly. The angry reaction of the relatives of the 154 Chinese nationals lost on Malaysian Airlines flight MH370 in the Indian Ocean in 2014 was probably a significant factor in the Chinese government's heightened response to that incident[3] and could presage future responses. Importantly, domestic political pressures to ensure the safety of Chinese nationals could narrow the Chinese government's options in responding to local crises, and potentially drive a Chinese military response where Beijing may otherwise prefer to respond in other ways.

An indication of the growing importance of protection of Chinese nationals is indicated by the following Noncombatant Evacuation Operations (NEOs) conducted by China in recent years:

- 2006 – Solomon Islands 325 Chinese nationals evacuated by chartered aircraft;[4]
- 2006 – Timor Leste 246 Chinese nationals evacuated by chartered aircraft;[5]
- 2006 – Tonga 300 Chinese nationals evacuated by chartered aircraft;[6]
- 2008 – Chad 210 Chinese nationals;[7]

1 "Empire of the sums," *The Economist,* 23 August 2014.

2 Ahmar Mustikhan, "Half million Chinese to take Gwadar by 2023: Report" *Times of India,* 30 October 2017. https://blogs.timesofindia.indiatimes.com/balochistan-insight/half-million-chinese-to-take-gwadar-by-2023-report/

3 Huey Fern Tray, "MH370: Chinese families of missing passengers react angrily to formal announcement of no survivors" *ABC News,* 30 January 2015. http://www.abc.net.au/news/2015-01-30/malaysian-government-rules-no-survivors-of-missing-mh370/6056380

4 Backgrounder: China's major overseas evacuations in recent years, *China Daily,* 30 March 2015. http://www.chinadaily.com.cn/china/2015-03/30/content_19954649.htm

5 Ibid.

6 Ibid.

7 Ibid.

- 2008 – Thailand 3,000 Chinese nationals evacuated by chartered aircraft;[8]
- 2009 – Haiti 48 Chinese nationals;[9]
- 2010 – Kyrgzstan 1299 Chinese nationals evacuated by aircraft;[10]
- 2011 – Egypt 1848 Chinese evacuated by chartered aircraft;[11]
- 2011 – Libya 35,000 Chinese nationals and 2100 other nationals evacuated by sea on chartered merchant vessels (with protection from a PLAN vessel), chartered aircraft, PLAAF aircraft via Khartoum, and overland;[12]
- 2014 – Iraq 1200 Chinese nationals evacuated from northern Iraq to Baghdad;[13]
- 2015 – Yemen 570 Chinese nationals and 270 others evacuated by PLAN via Djibouti.[14]

Further large NEOs should be expected in the future in the IOR as numbers of Chinese nationals grow in West Asia and Africa.[15] Based on prior operations, this might be expected to primarily involve chartered aircraft or the PLAAF where there is permissive access to airports, although it may involve the PLAN or Chinese special forces in less permissive environments. Importantly, the ability to conduct large-scale NEOs at short notice will require assured access to port and air facilities for staging purposes and the presence of naval assets within the region, particularly amphibious vessels.

The need to conduct NEOs in non-permissive environments (including the extraction of hostages) means that armed interventions in support of such NEOs may become more probable. The likelihood of such interventions far from home is being normalized in China by recent films such as *Wolf Warrior 2*.[16] (The story line involved the rescue by Chinese special forces of Chinese and US nationals being held hostage in an unnamed African country.)

The need for assured access to facilities from which to conduct or stage NEOs and other Military Operations Other Than War (MOOTW) was an important driver in the establishment of Chinese facilities in Djibouti, and may also drive the establishment of further facilities elsewhere in continental Africa or nearby islands.

The inclusion of 2100 non-Chinese in the 2011 Libyan evacuation and 270 non-Chinese in the 2015 evacuations from Yemen is an indicator that NEOs may also increasingly become part of China's contribution to public goods in the IOR, as an expression of Chinese soft power.

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8 Ibid.

9 Ibid.

10 Ibid.

11 Ibid.

12 Gabe Collins, Andrew S. Erickson, "Implications of China's Military Evacuation of Citizens from Libya" *China Brief,* Vol. 11 No: 4 (2011). https://jamestown.org/program/implications-of-chinas-military-evacuation-of-citizens-from-libya/

13 Backgrounder: China's major overseas evacuations in recent years, *China Daily,* 30 March 2015. http://www.chinadaily.com.cn/china/2015-03/30/content_19954649.htm

14 Eddie Linczer, "Yemen evacuation demonstrates China's growing far-seas naval capabilities", AEIdeas, 3 April 2015. http://www.aei.org/publication/yemen-evacuation-demonstrates-chinas-growing-far-seas-naval-capabilities/

15 Michael S. Chase, "The PLA Prepares for Future Non-Combatant Evacuation Operations" *China Brief*, Vol. 13 Issue: 4, 15 February 2013. https://jamestown.org/program/the-pla-prepares-for-future-non-combatant-evacuation-operations/

16 wolf-warrior-2--see-this-film-and-youll-finally-understand-china, *Australian Financial Review,* 4 September 2017. http://www.afr.com/lifestyle/arts-and-entertainment/film-and-tv/wolf-warrior-2--see-this-film-and-youll-finally-understand-china-20170904-gyabfs

3. Provision of On-Ground Security for Chinese Nationals and Investments

China's growing investments in the IOR including as part of the Belt and Road Initiative (BRI), and the large Chinese workforces often associated with those projects may also increasingly drive a Chinese military presence. Some of these projects will be highly vulnerable to attack by non-state actors. There are, for example, many large Chinese BRI projects in highly insecure areas of Pakistan and Myanmar and there have been several instances of actual or threatened attacks on Chinese projects or workers in Baluchistan.[17] As noted above, it is projected that there will be 500,000 Chinese nationals resident in Gwadar by 2023. Attacks on these projects and workers could lead to NEOs as described above and/or Chinese military involvement in the provision of security on the ground.

The likelihood of direct Chinese involvement in the provision of local security will depend upon the perceived adequacy of responses by local authorities to threats. As part of the CPEC project, China negotiated for the establishment of a special Pakistani security force of some 15,000 troops to protect Chinese projects.[18] The failure of such security forces to adequately protect Chinese projects could see the increasing direct involvement of Chinese advisors and/or troops. There are credible reports of a growing Chinese security presence in Pakistan Occupied Kashmir, likely to protect transport infrastructure and PLAN construction units.[19] There are also reported plans to deploy a Chinese marine contingent to Gwadar.[20]

4. Support for UN Peacekeeping Operations

China is also becoming an increasingly prominent contributor to UN peacekeeping operations in the region. As at January 2017, China had 2,639 troops deployed on UN peacekeeping operations. Recent Chinese contributions in Africa have included to South Sudan, Cote d'Ivoire, Liberia and Western Sahara.[21] In 2017, Beijing flagged an increased commitment of peacekeeping troops, in addition to its financial and other contributions to peacekeeping.[22] China's requirements to provide better logistical support for its peacekeeping activities in Africa were an important justification put forward by Beijing for establishing its new base at Djibouti.

5. HADR/SAR

Other types of MOOTW, including Humanitarian and Disaster Relief (HADR) operations and Search and Rescue (SAR) operations, will also likely drive a Chinese naval/military presence in the IOR. Perceptions that China responded inadequately to major natural disasters (including the 2004 Indian Ocean tsunami and the 2013 Typhoon Haiyan in Philippines) might have led to a greater understanding in Beijing of the soft power value of HADR operations. In 2010, the Chinese hospital ship Daishan Dao *(Peace Ark)* deployed on

17 "China warns its citizens in Pakistan of possible militant attacks" *The Hindu,* 8 December 2017. http://www.thehindu.com/news/international/china-warns-citizens-in-pakistan-of-possible-terror-attacks/article21310684.ece

18 Syed Irfan Raza, "15,000 military personnel protecting CPEC" *Dawn,* 21 February 2017

19 Monika Chansoria, "China makes its presence felt in Pak occupied Kashmir", *Sunday Guardian,* 17 December 2017.

20 Ananth Krishnan, "China may station Marines in Gwadar, say PLA insiders" *India Today,* 13 March 2017. *http://indiatoday.intoday.in/story/pla-navy-plans-china-navy-marine-corps-gwadar-djibouti/1/903117.htm*

21 Bo Zhou, "How China Can Improve UN Peacekeeping", *Foreign Affairs,* 15 November 2017.

22 "China completes registration of 8,000-strong UN peacekeeping force, defence ministry says", *South China Morning Post,* 29 September 2017.

a three-month "Harmonious Mission 2010" to the Gulf of Aden to provide medical treatment to people in Djibouti, Tanzania, Kenya, the Seychelles and Bangladesh. We should expect further deployments in response to future natural disasters in the IOR.

The growing presence of Chinese nationals in and around the IOR may also spur Chinese participation in search and rescue operations in the IOR. In 2014, China was one of the leading contributors of ships and aircraft to search and rescue operations for MH370 being conducted out of Western Australia.

6. Naval Diplomacy & Exercises

Since the establishment of its counter-piracy naval task force in the western Indian Ocean in 2008, the PLAN has conducted a very active program of naval diplomacy in the Indian Ocean. This has involved PLAN vessels returning from anti-piracy operations and additional vessels deployed to the Indian Ocean for that purpose. Naval diplomacy is recognized as a valuable way of developing soft power as part of a narrative about the provision of public goods in the Indian Ocean. It may also in part by driven by China's aspirations to be recognized as a great power.

The PLAN is also increasingly participating in naval exercises in the Indian Ocean as part of locally hosted exercises, or as unilateral exercises. The PLAN is a regular participant in Pakistan's multilateral AMMAN exercises as well as bilateral exercises in the Arabian Sea. More recently, in November 2017, the PLAN participated in IONS search and rescue exercises hosted by Bangladesh. The PLAN is also conducting an increasing number of unilateral exercises in the Indian Ocean, which may be driven by familiarization with Indian Ocean conditions and/or as an expression of Chinese power. For example, on at least three occasions since 2014 when Chinese naval task forces have conducted exercises in or near the EEZ of Australia's Christmas Island. This included combat-simulation exercises in 2014 and 2017 and a counter-piracy exercises in 2016.[23]

7. Naval Demonstrations

Increasingly, the PLAN may be used to conduct naval demonstrations in the Indian Ocean in connection with unrelated land-based disputes. Such demonstrations have occurred at least twice in connection with India. One possible example involved the visits of a Chinese submarine and support vessel to Colombo in September and November 2014. It seems likely that this was intended to coincide with President Xi's first visit to India in September 2014. Simultaneously a battalion of PLA soldiers also made an incursion over to the Line of Actual Control in the Himalayas.[24] The submarine visit and LOAC incursion had a significant adverse impact on Xi's visit. In August 2017, during the Doklam standoff near the China-Bhutan-India

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23 R. Medcalf, China makes statement as it sends naval ships off Australia's maritime approaches,' *The Interpreter,* 7 February 2014 https://www.lowyinstitute.org/the-interpreter/china-makes-statement-it-sends-naval-ships-australias-maritime-approaches; CCTV, 'Combat vessels training for quick response in electronic war', CCTV.com, 2 February 2014. http://english.cntv.cn/program/newsupdate/20140202/100068.shtml; CMO, 'Chinese naval taskforce conducts anti-piracy drill in Indian Ocean' *China Military Online*, 5 May 2016,http://english.chinamil.com.cn/news-channels/china-military-news/2016-05/16/content_7057720.htm; David Wroe, 'China's new military might is Australia's new defence reality', *Sydney Morning Herald,* 15 February 2014; and David Wroe, 'Chinese naval ships close to Australia? 'Get used to it', experts warn,' *Sydney Morning Herald,* 10 March 2017.

24 David Brewster, "India and China at Sea: A Contest of Status and Legitimacy" *Asia Policy,* No.22 (2016), pp.4-10.

trijunction, the PLAN also reportedly conducted live fire exercises near the Maldives.[25] In the future, there may be temptations for China to conduct further naval demonstrations in the Indian Ocean in the event of further standoffs between India and China in the Himalayas or in the context of disputes with other countries.

8. Military Interventions against Violent Extremist Groups and/or in Support of Political Objectives

Recent, unconfirmed, reports that China is considering the deployment of special forces to Syria is an excellent example of possible future interventions in the region. According to Michael Clarke, Beijing may now have arrived at the conclusion that provision of military support to the Assad regime in conjunction with Russia serves not only its narrow interest in combating the Chinese Uighur extremists but is also a low-cost, low-risk means of contributing to its broader strategic goal of keeping the United States off-balance.[26]

As China's economic and political interests in the IOR grow, there may be increasing pressures to conduct limited military interventions in support of political objectives. This could include interventions in support of local regimes or local opposition groups against governments. China is suspected of providing limited, indirect, support for insurgent groups operating in India, including separatist groups operating from Myanmar territory into India's northeast states. During the 1960s, 70s and 80s, there were numerous examples of China providing military support for insurgent groups or regimes in Africa, primarily for ideological reasons and/or as part of strategic competition with the Soviet Union.

In the post-Cold War era there was a significant reduction in Chinese military involvement in east Africa and elsewhere in the IOR. However, it likely that there will be an increase in Chinese military interventions in support of political objectives in the region. In February 2018, China publicly warned other countries from intervening against the 'self coup' by Maldives President Abdulla Yameen. The presence of Chinese naval forces in the Indian Ocean has now become a factor in regional calculations of possible responses to the coup.

II. Scenarios for China's Future Naval Presence in the Indian Ocean

The breadth of China's growing strategic interests in the Indian Ocean indicate that it is highly likely that China's military and naval presence in the region will continue to grow in size, mission and geographic range. However, the nature of China's naval presence in the region remains open to question. While China might ultimately pursue a naval strategy in the Indian Ocean that resembles US strategy in the region, it would be a mistake to assume that this will automatically be the case. China has choices about the extent and purpose of its naval capabilities in the Indian Ocean region which will be influenced by numerous factors, including the responses of the United States and possibly others. It should be recalled that the United States resisted developing a major naval presence in the IOR for many years. Up until the late 1970s, the US Navy considered the Indian Ocean as a secondary theatre and did not consider the Soviet naval presence as representing a major threat.

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25 Ankit Panda, "Chinese Navy Holds Rare Live-Fire Drill in Western Indian Ocean" *The Diplomat,* 28 August 2017. https://thediplomat.com/2017/08/chinese-navy-holds-rare-live-fire-drill-in-western-indian-ocean/

26 Michael Clarke, Is China's Uyghur Challenge Changing Its Calculus on Syria? *The Diplomat,* 7 December 2017. https://thediplomat.com/2017/12/is-chinas-uyghur-challenge-changing-its-calculus-on-syria/

It may be useful to explore the possible development of China's military presence in the IOR through several basic (and somewhat crude) scenarios. Although these scenarios could potentially overlap or evolve, they may be useful in assessing Beijing's military priorities in the region:

1. Scenario 1: Limited Chinese Naval Presence with an Emphasis on MOOTW and Naval Diplomacy

China's naval presence in the Indian Ocean over the last decade has been overwhelmingly focused on MOOTW, including the conduct of anti-piracy operations, NEOs, HADR and naval diplomacy. It appears likely that these tasks will continue to be a major focus of China's regional concerns in the foreseeable future. Such MOOTW tasks might increasingly evolve to also include capabilities to conduct limited naval demonstrations or naval support for limited military interventions in the region.

There are several reasons why Beijing might elect to limit its naval presence and nature of its capabilities in the Indian Ocean for some years to come. First, the primary maritime threats faced by China remain overwhelmingly in the Pacific, including the Taiwan Strait, South China Sea and East China Sea. Although China's naval forces are growing, Beijing may avoid dispersing its forces to a secondary theatre. Second, is geography. Chinese naval deployments to the Indian Ocean must always be made at long distance through Southeast Asian chokepoints and face limited local logistical support. They would involve a disproportionate commitment of naval resources for uncertain return. Third, given China's practical inability to protect the entirety of its Indian Ocean SLOCs against the United States and India, there would be little reason to develop capabilities in the Indian Ocean other than for limited SLOC protection against localized threats. Instead, a focus on MOOTW would allow the PLAN to gradually develop its capabilities, regional familiarity and logistical access that could provide it with more options in the case of contingencies.

Indeed, although China's naval and military presence in the IOR has been increasing steadily for almost a decade, in broad terms, China has so far been relatively cautious and incremental in its approach in the IOR. China's naval presence is currently around 4-5 surface vessels and occasional submarine deployments (see McDevitt paper), although there will be occasional spikes in numbers if there is a cross-over between transiting vessels.[27] But it should be noted that these numbers remain well below Soviet naval presence during the 1970s-80s.[28] Overall, the level and nature of China's naval presence in the Indian Ocean is currently more appropriate for MOOTW and naval diplomacy rather than other purposes

China's decision to develop naval and logistics facilities in Djibouti (which opened in 2017) would be consistent with a continued focus on MOOTW, including support for anti-piracy operations, African peace-keeping operations and NEOs as far afield as North Africa/Mediterranean, continental Africa and the Middle East. Djibouti might also make a useful staging point for limited military interventions in the Middle East or Africa. However, the Chinese facilities at Djibouti have some disadvantages. Although it has a heliport, it currently lacks a dedicated air base for fixed wing aircraft. The distance from Djibouti to the Strait of Hormuz of around 1600 nautical miles would make it less useful as a base for protecting that chokepoint or SLOCs

27 Shaurya Karanbir Gurung, 14 Chinese navy ships spotted in Indian Ocean, Indian Navy monitoring locations," *The Economic Times,* 1 December 2017. https://economictimes.indiatimes.com/news/defence/14-chinese-navy-ships-spotted-in-indian-ocean-indian-navy-monitoring-locations/articleshow/61882634.cms

28 Ankit Panda, "Sri Lanka Formally Hands Over Hambantota Port to Chinese Firms on 99-Year Lease," *The Diplomat,* 11 December 2017. https://thediplomat.com/2017/12/sri-lanka-formally-hands-over-hambantota-port-to-chinese-firms-on-99-year-lease/

between the Persian Gulf and China. Further, given the proximity of the Chinese base to US, French and Japanese facilities in Djibouti, the Chinese base would not be well placed to support operations in the event of a major conflict.

An intention to primarily focus on MOOTW would also likely involve relatively greater Chinese reliance on 'places not bases' across the IOR. That is the development of naval logistics facilities and air staging facilities to which China has reasonably assured access in most circumstances other than major conflict. This might include arrangements giving preferential access to Chinese built ports and/or airports around the region (e.g. Gwadar, Khartoum, Hambantota, Dar es Salaam[29]).

2. Scenario 2: Limited Sea Denial Strategy

A second broad scenario would involve the development of sea denial capabilities across the northern Indian Ocean in support of SLOC security in addition to MOOTW capabilities discussed above. Such capabilities could provide Beijing with some asymmetrical options in the event of the interdiction of Chinese SLOCs or other contingencies. Such a strategy may involve a combination of a submarine presence and anti-access area denial systems principally focused on the Arabian Sea and Bay of Bengal. This may provide China with options to respond in the event of the interdiction of Chinese SLOCs at a fraction of the resources required for a sea control strategy. However, such a strategy would not be without its difficulties.

China's increasing submarine deployments to the Indian Ocean in recent years point to an effort to familiarize with PLAN with local subsurface conditions. However, these deployments appear to be relatively few and irregular and have not involved the development of dedicated submarine logistics facilities (although the PLAN could to some extent rely on support facilities in Karachi). The lack of such facilities might limit the ability of the PLAN to surge submarines into the Indian Ocean in a contingency.

A sea denial strategy might also involve the development of long-range precision strike capabilities in the Indian Ocean, based on Chinese territory. Indeed, such capabilities may already cover some northern parts of the Arabian Sea and Bay of Bengal.[30] However, the distance of southern China from the Indian Ocean will also limit the effectiveness of such systems.

China could also develop land-based sea denial capabilities in the Indian Ocean using the territory of local partners. A greater reliance on regional partners may also potentially reduce what might otherwise be perceived as a provocative Chinese presence. This could include supplying local partners with technologies such as Anti-Ship Cruise Missiles (ASCMs), Over the Horizon Radar (OTHR) systems, advanced submarines and jointly operated ISR facilities. China is already supplying many of these technologies to Pakistan.

Gwadar, located some 700 nautical miles west of the Strait of Hormuz, may be a useful location for such capabilities. The China has so far been relatively cautious about developing an overt naval presence in Gwadar, notwithstanding repeated calls from Pakistan for China to develop a naval base there. This is gradually changing, including reported plans to deploy a Chinese marine contingent to Gwadar. In 2017, the

29 Apolinari Tairo, "Tanzania surrenders Bagamoyo port project to Chinese firm", *The East African,* 3 October 2017. http://www.theeastafrican.co.ke/business/Tanzania-Bagamoyo-port-project-to-Chinese/2560-4122244-rxa9wtz/index.html

30 Iskander Rehman, "Tomorrow or yesterday's fleet? The Indian Navy's emerging operational challenges" in Anit Mukherjee and C.Raja Mohan (eds), *India's Naval Strategy and Asian Security* (Routledge, 2016), pp.37-64.

Pakistan Navy reportedly opened a new naval air station at Turbat (around 100km inland from Gwadar),[31] that would presumably be available to PLAAF maritime surveillance and strike aircraft. A new civilian airport is also being constructed close to Gwadar which reportedly includes a 4,000m runway that could accommodate large military aircraft.[32] There were further reports in early 2018 that Beijing was considering developing naval facilities at Jiwani, some 60km west of Gwadar, at the site of a small Pakistan naval base.[33] All of these locations would be well placed for sea denial capabilities.

However, a strategy involving reliance on local partners would have limitations. China currently has no reliable proxy partners in the region other than Pakistan, and there might be questions about Pakistan's reliability in certain circumstances. A broad sea denial strategy covering the northern Indian Ocean SLOCs would also require reliable partners in the central/eastern Indian Ocean.

3. Scenario 3: Sea Control Strategy

The third broad scenario would involve a bid to achieve naval predominance in the Indian Ocean in order to protect China's SLOCs and potentially control maritime trade of China's competitors. This would be more or less analogous to current US strategy. This would be a major undertaking, likely requiring decades of sustained expansion of the PLAN and of China's economic and political effort in the IOR, including the development of multiple local military partnerships.

One might expect that such a strategy would primarily focus on the Persian Gulf/northwest Indian Ocean, just as the United States currently does. But any substantial Chinese presence in the Indian Ocean for the purposes of SLOC protection would also require the development of a significant presence in the central and eastern Indian Ocean, including at the Southeast Asian chokepoints. Unlike the United States which can access the Persian Gulf either by the westabout route (via Southeast Asia) or the eastabout route (via Suez or the Cape), China can realistically only access the Persian Gulf by transiting Southeast Asia and the northern Indian Ocean. Overland oil and gas pipelines (including existing pipelines from the coast of Myanmar to southern China and proposed pipelines from Gwadar to western China) will not provide a realistic alternative to ships. They could provide only a fraction of China's energy requirements and are still highly vulnerable to interdiction. Energy for such pipelines would still need to transit Hormuz (and in the case of the Myanmar pipelines, the Indian subcontinent also) and the overland pipelines themselves could be easily cut.

Any significant, ongoing Chinese naval presence in the Indian Ocean will require assured access to logistical support facilities (with associated airfields) in the northwest, southwest and east/central Indian Ocean. The acquisition of such facilities would be a major step, signaling a significant new phase in China's regional ambitions. China now has control over or assured access to several valuable naval ports in the northeast Indian Ocean (Djibouti, Gwadar and Karachi). Pakistani airbases near Gwadar and Karachi would provide useful staging points for Chinese maritime air surveillance in the northwest Indian Ocean. But China currently has no assured port or airfield access arrangements inside the Persian Gulf or in the eastern, central

31 "Naval Air Station in Turbat becomes operational, will provide support to CPEC" *Dawn,* 25 May 2017. https://www.dawn.com/news/1335356

32 Drazen Jorgic, "Suspicion at China's Handouts" *Australian Financial Review,* 20 December 2017.

33 http://www.scmp.com/news/china/diplomacy-defence/article/2127040/first-djibouti-now-pakistan-port-earmarked-chinese

or southwest Indian Ocean. It is difficult to imagine a credible Indian Ocean sea control strategy without control over or access to such facilities.

Although the PLAN/PLAAF does not currently have assured access to facilities in the southwest Indian Ocean, there are several potential sites. There was speculation several years ago that the PLAN may gain assured access to the Seychelles and there have also been unconfirmed reports of discussions over PLAN access to Walvis Bay in Namibia, among other locations.[34] There are numerous weak states in and around the southwest Indian Ocean that may be susceptible to offers of Chinese economic assistance.

There has been much discussion over the potential for Chinese built and/or operated port facilities in the central/eastern Indian Ocean to be made available to the PLAN. Much of the focus of the Indian media has been on the port of Hambantota in southern Sri Lanka, financed and constructed by Chinese interests. The lack of commercial success of this development has placed significant financial pressure on the Sri Lankan government. This resulted in an equity for debt swap in December 2017 under which a Chinese company gained a 70% equity interest in the port company. Although the Sri Lankan government has claimed to have created a separate port management company in which it has retained a majority interest, the details of ownership and control remain murky.[35] Several naval analysts have argued that the proximity of Hambantota to Indian air bases makes it a highly vulnerable location for use as a Chinese base. The Indian government is also proposing to acquire the nearby Hambantota airport (which has become known among foreign analysts as "the world's emptiest airport") for around $300 million. Indian control over the airport would severely limit the usefulness of Hambantota port to the PLAN.[36]

If the PLAN is denied assured access in Sri Lanka, then it will still require assured access elsewhere in the eastern/central Indian Ocean, including potentially in Bay of Bengal countries such as Bangladesh, Myanmar, Thailand, Malaysia or Indonesia. In the current strategic environment it seems unlikely that any of these countries would be prepared to grant facilities to the PLAN . A more likely host country may be the Maldives, which has experienced significant financial problems, weak governance and political instability for some years. The worst-case scenario would involve Chinese access to the former British port and air base at the Maldives island of Gan, located some 740km north of Diego Garcia.

III. Options for Influencing Chinese Strategy

Although Chine has numerous and growing interests in the IOR that will likely drive a growing naval and military presence, the nature and geographic extent of China's future naval presence in the region is by no means pre-ordained. This section makes some preliminary observations on some of the options that might be available to influence the direction of Chinese naval strategy in the Indian Ocean or that might otherwise mitigate its impact.

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34 Chinese naval base for Walvis Bay, *The Namibian,* 19 November 2017. https://www.namibian.com.na/index.php?id=130693&page=archive-read

35 Abhijit Singh, "Sri Lanka's Hambantota gambit," *Livemint,* 16 August 2017. http://www.livemint.com/Opinion/qKTtTf3S4UwaFrSnD3KDJJ/Sri-Lankas-Hambantota-gambit.html

36 David Brewster, "Why India is buying the world's emptiest airport" *Lowy Interpreter,* 4 December 2017. https://www.lowyinstitute.org/the-interpreter/why-india-buying-world-s-emptiest-airport

China's regional presence and strategy will develop primarily according to the direction of its interests and developments in the strategic environment. China's current focus on MOOTW has served its interests well, while also allowing it to develop new options to respond to future contingencies. Over time, the MOOTW-focused strategy may well evolve into one where China has limited sea denial capabilities in the northern Indian Ocean. In the long term there is a possibility that China could pursue a sea control strategy in the Indian Ocean, although that would require it overcome some major obstacles.

It is assumed that it would be in the interests of Japan, India, the United States and Australia to avoid, or at least significantly delay, unnecessary strategic competition with China in the Indian Ocean (although it is acknowledged that this assumption could be challenged.) This section will make some preliminary observations about some ways of reducing strategic competition or otherwise influencing Chinese strategy:

- Focusing on common interests with China in the IOR
- Strengthening IOR regional institutions for engagement with China
- Chinese access to port and air facilities

1. Focus on Common Interests

One approach would involve focusing on common interests and opportunities for collaboration between China and the Quad countries in the Indian Ocean with the aim of providing China with a greater stakes in cooperation with other stakeholders. Shared interests between the Quad countries and China in the IOR include:

- Securing maritime trade from hostile non-state and state actors
- Fulfilling constabulary functions such as suppression of drugs and arms smuggling in the western Indian Ocean
- Opposition to violent extremism
- Promotion of regional stability and economic development
- Promotion of international norms of freedom of navigation and overflight in the IOR (see discussion below)

To date China has largely (but not wholly) relied on the public goods provided by the US navy in respect of SLOC security and other constabulary functions. Although the PLAN has maintained an anti-piracy naval presence in the northwest Indian Ocean since 2008, the threat presented by Somali-based piracy has significantly diminished. While the naval forces of other states remain in the region, many vessels have now been reassigned to other constabulary duties such as suppressing drugs and arms smuggling that provide financial support for violent extremist groups in Afghanistan and elsewhere. Together, the Quad countries could encourage the PLAN to play a more active role in these constabulary duties in conjunction with other navies.

There might also be potential to engage with China for the purpose of jointly promoting international norms of freedom of navigation and overflight in the IOR. This may seem counterintuitive given China's challenges to international norms in the western Pacific. However, China's incentives in the IOR are quite the opposite to those in the Pacific. Logically, China would also wish to avoid challenges to international norms

of freedom of navigation and overflight (both commercial and military) in the IOR. Although India and some other IOR states have in the past taken the position that it has the right to restrict the activities of naval vessels within its EEZ, it would of course not be in China's interests for its naval activities to be restricted in IOR EEZs. Indeed, China's actions in recent years in conducting naval exercises within the EEZ of Australia's Christmas Island (helpfully) weakens China's claims to exclude foreign military vessels from the South China Sea. Accordingly, although this issue would need to be approached very carefully, there might well be opportunities to leverage China's different interests in the IOR in the interests of strengthening international norms.

2. Strengthening Regional Institutions to Provide Regional Voice

It is in the interests of Quad states to strengthen regional institutions in order to provide IOR states with a collective means to voice concerns about potential sources of instability. Once strengthened, those institutions can then provide another valuable means for regional engagement with China with a focus on common interests.

For the last 10 years, key Indian Ocean countries including India and Australia have stepped up their efforts to develop institutions and norms in the Indian Ocean, including further developing the Indian Ocean Rim Association (IORA) and the Indian Ocean Naval Symposium (IONS) as effective regional groupings. There has been a degree of success in this, although there remain significant challenges. Japan, the United States and China are all observers to IORA and Japan and China (but not the United States) are observers to IONS. For several years, China has been actively pressing to play a more active role in IORA, including making small, but significant, financial donations. China is also using Blue Economy expertise as a way of working with IORA members. China has also expressed a desire to move towards full membership of IONS although it is not an Indian Ocean littoral state arguing, among other things, that India is a full member of WPNS, despite not being a Pacific littoral state.

The need to strengthen IORA and other regional institutions has now become a matter of priority. Relatively small financial investments can have significant results. A recent donation of Euro 1 million to IORA from a German political foundation is significant. Japan could and should significantly increase its engagement with IORA, including matching and exceeding China's financial contributions. There are also significant opportunities for Japan to provide technical expertise in areas such as Blue Economy where it is a world leader.[37]

3. Access to Naval and Air Facilities

The ability of China to pursue a sea control strategy or even a strategy of more than limited sea denial will to a considerable extent be defined by China's ability to gain assured access to port and air facilities in the IOR. This may provide Quad countries with an opportunity to influence the shape of China's future naval presence.

During the Cold War, the United States and its allies were able to successfully restrict access of the

37 Anthony Bergin, A vision in blue: Japan and the Indian Ocean, *ASPI Strategy,* 21 March 2016. https://www.aspistrategist.org.au/25444-2/

Soviet Navy to on-shore support in the Indian Ocean. Apart from access for several years to limited facilities in Somalia, the Soviet Navy was forced to rely on long distance support from its base at Cam Ranh Bay in the South China Sea or in the Black Sea, or otherwise rely on replenishment afloat. The lack of local on-shore logistical support substantially complicated Moscow's efforts to change the naval balance of power in the Indian Ocean through effectively limiting the Soviet naval presence. Soviet deployments required very long transits from their home ports and around 50% of Soviet naval vessels in the Indian Ocean were non-combatant support vessels.

China will face similar issues in developing a significant naval presence across the Indian Ocean. The PLAN has developed or have access to several facilities in the northwest Indian Ocean, including at Djibouti, Gwadar and Karachi. There are also several potential sites for Chinese facilities in the southwest Indian Ocean (on the African littoral or in the islands) for the protection of Chinese SLOCs around the Cape. However, the PLAN will likely find it more difficult to secure access to port and air facilities inside the Persian Gulf and in the central/eastern Indian Ocean. The failure of China to gain access to such facilities would severely limit the extent of its reach in the IOR.

It will likely be in the interests of Quad states to work with countries in the IOR, and particularly with the less developed states, to ensure that they have access to alternative sponsors of infrastructure developments. China's success in enhancing its economic influence among Indian Ocean states is to a significant degree founded upon perceptions among those states of a lack of alternatives. Japan and India efforts in countries such as Sri Lanka, Bangladesh and Myanmar should be supported and expanded. In particular, further efforts should be made to provide the Maldives with alternative sources of infrastructure development.

Chapter 9

Enhancing Maritime Connectivity in the Indo-Pacific Region —Peacetime Military Engagement from the Sea—

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Introduction

Ocean matters. Ocean connects the nations. Ocean is a treasure house of resources and provides prosperous trade and commerce. The major actors related the Pacific Ocean and Indian Ocean express their own clear initiatives. The United States has conducted strategic Rebalance west.[1] China's "One Belt, One Road (OBOR)" concept which combined Silk Road Economic Belt with Twenty-first Century Maritime Silk Road influences the entire region.[2] India is implementing "Act East" policy, replacing the previous "Look East" policy to more actively engage its neighbors.[3]

The most prominent initiative must be the Indo-Pacific strategy which the U.S. President Donald Trump and Prime Minister of Japan Shinzo Abe has promulgated in Tokyo on November 6, 2017. The first stop of Trump's Asian Odyssey in which the U. S. President Donald Trump visited five Asian countries, his longest overseas trip yet, is Japan. Both U. S. President Donald Trump and Prime Minister Shinzo Abe delivered remarkable and historic joint address as enhancing the importance of Indo-Pacific region.[4] It was strong Japanese leadership and engagement based upon the original idea of Prime Minister Shinzo Abe's "Free and Open Indo-Pacific Strategy," which bears the responsibility of fostering the confluence of the Pacific Ocean and Indian Oceans and of Asia and Africa into a place that values freedom, the rule of law, and the market economy, free from force or coercion, and making it prosperous.[5]

Confluence of the Pacific Ocean and Indian Oceans is becoming the center stage of the world economy and security. The common posture of these initiatives is outward-looking for economic and security connectivity. It is crucial perspective for the international society to ensure the common objective of each initiative works for the regional and international development rather than their own gains.

The Indo-Pacific region remains the most consequential area for the world economy under the stable security environment. However, there is non-negligible unstable major actor for economy and security in the Indo-Pacific region. It is Chinese assertive challenge against the current stable order. China has challenged its unfavorable status quo with Chinese characteristics. The key question is how to manage and incorporate

1 Department of Defense, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," January 2012.
2 *People's Daily*, October 4, 2013.
3 Anil Sasi, "'Look East' has become 'Act East Policy,' says PM Modi at ASEAN summit," *The Indian Express,* November 13, 2014.
4 White House, "Remarks by President Trump and Prime Minister Abe of Japan in Joint Press Conference Tokyo, Japan," November 6, 2017, https://www.whitehouse.gov/the-press-office/2017/11/06/remarks-president-trump-and-prime-minister-abe-japan-joint-press
5 Address by Prime Minister Shinzo Abe at the Opening Session of the Sixth Tokyo International Conference on African Development (TICAD VI), August 27, 2016, http://www.mofa.go.jp/afr/af2/page4e_000496.html/.

China in the rule-based regional order. It is critically important to identify security role and implement for Japan, allies and partner nations to maintain stable order in the region. Japan's "Proactive Contribution to Peace" initiative stresses the need to integrate economic development with its national security strategy. What security role and action should Japan do?

The cooperation among these nations could expand favorable influence in the field of economy and security. The key catalyst of expanding cooperation will be military engagement from the sea as practical means. Japan Ministry of Defense could contribute to enhance military engagement under Japan's security banner "Proactive Contribution to Peace."

I. Chinese Opportunities and Challenges

President of the People's Republic of China Xi Jinping called China a "great power" or "strong power" 26 times in his opening speech at 19th Congress of the Chinese Communist Party (CCP) National Congress on October 18, 2017. *Time* magazine evaluated that President Xi Jinping becomes China's most powerful leader since Mao Zedong.[6] President Xi Jinping has heralded the dawn of a "new era" of Chinese politics and power in the surprisingly long speech – titled "Secure a decisive victory in building a moderately prosperous society in all respects and strive for the great success of socialism with Chinese characteristics for a new era." President Xi Jinping said, "The Communist Party of China is a great party; it has the fight and mettle to win." "Through a long period of hard work, socialism with Chinese characteristics has entered a new era; this is a new historical direction in our country's development." "China will be transformed into a modern socialist country by 2035 and a more powerful country by 2050," as "China Dream."[7]

On March 28, 2015, China unveiled the 28 principles, framework, and cooperation priorities and mechanisms in its Belt and Road Initiative (BRI) in a bid to enhance regional connectivity and embrace a brighter future together. The vision and actions are jointly built the OBOR, an initiative raised by President Xi Jinping. The initiative aims to promote orderly and free flow of economic factors, highly efficient allocation of resources and deep integration of markets by enhancing connectivity of Asian, European and African continents and their adjacent seas. It is open to all countries and international and regional organizations for engagement and honors mutual respect and market operation to seek common prosperity.[8] BRI appears to be more than just an infrastructure-building project that aims to open market access.

China has developed the network of military and commercial footprints in countries falling on the Indian Ocean between the Chinese mainland and Port Sudan as "String of Pearls" policy. China has set up military and naval facilities at Gwadar in Pakistan, Hambantota in Sri Lanka, Chittagong in Bangladesh, Sittwe in Myanmar and Maroa in Maldives. China is said to have a powerful presence on the eastern part of Africa in Sudan and Kenya while it's now building a military base in Djibouti to counter the increase of the U.S.

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6 Charlie Campbell, "Xi Jinping Becomes China's Most Powerful Leader Since Mao Zedong," *Time*, October 24, 2017, http://time.com/4994618/xi-jinping-china-19th-congress-ccp-mao-zedong-constitution/

7 Xi Jinping, "Full text of Xi Jinping's report at 19th CPC National Congress," *China Daily,* October 18, 2017, http://www.chinadaily.com.cn/china/19thcpcnationalcongress/2017-11/04/content_34115212.htm

8 The State Council The People's Republic of China, "China unveils action plan on Belt and Road Initiative," Xinhua, March 28, 2015, http://english.gov.cn/news/top_news/2015/03/28/content_281475079055789.htm

footprint in the Middle East and Indian Ocean.[9] China's growing presence in the Indo-Pacific region has influenced many countries.

China is building up combat power and positional advantage in an attempt to assert de facto sovereignty over disputed maritime features where they are fundamentally altering physical and political landscape by creating and militarizing man-made islands in the South China Sea where they are using its military and economic power to erode the rules-based international order.

The Chinese People's Liberation Army Navy (PLAN) has begun to emerge as a significant naval force. Chinese strategists have read fundamentally Alfred Thayer Mahan and recalled how the United States had successfully supported the imperialist adventures with their fleet in the nineteenth and early twentieth centuries. China has begun employing their navy in support of foreign policy through naval presence in peacetime.

The PLAN's surface forces are on the march. Notably, the Type 052D *Luyang* Ⅲ destroyer, the Type 054A *Jiangkai* Ⅱ frigate, and the Type 056 *Jiangdao* corvette have all entered serial production, adding mass and balance to the fleet. Chinese destroyer is very powerful for local conflicts in Asian waters.[10] The Pentagon's 2016 annual report on Chinese military power asserted that the PLAN now possesses the largest number of vessels in Asia, with more than 300 surface ships, submarines, amphibious ships, and patrol craft.[11] Michael McDevitt, senior fellow in strategic studies at the Center for Naval Analyses affirms that China will have both the largest navy in the world (by combatant, underway replenishment, and submarine ship count) and the second most capable 'far seas' navy in the world.[12]

In December 2016, one Type 052D destroyer, two Type 052C DDGs, and two Type 054A frigates escorted the aircraft carrier *Liaoning* through Miyako Strait into the open waters of the Pacific Ocean for the first time. The carrier task force then steamed east of Taiwan and entered the South China Sea through the Luzon Strait.[13]

China's Armed Forces are composed of three major organizations, each of which has a maritime subcomponent. The People's Liberation Army (PLA) contains the PLAN; the People's Armed Police, which increasingly leads China's Maritime Law Enforcement (MLE) forces, including the China Coast Guard; and the Militia, which contains a growing proportion of sea-based units, the People's Armed Forces Maritime Militia (PAFMM). Each of China's three sea forces is the world's largest of its type.[14]

Chinese maritime power is growing in quantity and quality. China has been far more dependent on the sea as it recognized the need to use the navy in a global sense. The fundamental role of the navy has been

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9 Maninder Dabas, "Here Is All You Should Know About 'String Of Pearls', China's Policy to Encircle India," *India Times*, June 22, 2017, https://www.indiatimes.com/news/india/here-is-all-you-should-know-about-string-of-pearls-china-s-policy-to-encircle-india-324315.html

10 James R. Holmes and Toshi Yoshihara, "Taking Stock of China 's Growing Navy: The Death and Life of Surface Fleets," *Orbis*, Vol. 61, Issue 2, Spring 2017, p. 269, 275.

11 U.S. Department of Defense, *Annual Report to Congress: Military and Security Development Involving the People's Republic of China 2016,* p. 25.

12 Michael McDevitt, "Becoming a Great 'Maritime Power': A Chinese Dream," Center for Naval Analyses, June 2016, p. v.

13 Holmes and Yoshihara, "Taking Stock of China 's Growing Navy," p. 276.

14 Andrew S. Erickson, "Understanding China's Third Sea Force: The Maritime Militia," Harvard Fairbank Center Blog Post, September 8, 2017, https://medium.com/fairbank-center/understanding-chinas-third-sea-force-the-maritime-militia-228a2bfbbedd

sea control. This is the capacity to assert one's own use of the seas and to deny that use to others.[15] Navies' missions can also differ considerably. For sea denial, large combatants and big numbers are not usually necessary. A weaker opponent at sea can effectively use non-naval capabilities such as land-based aircraft, ballistic missiles, coastal cruise-missile batteries, and mines in denying to a much stronger blue-water navy access to the littorals.[16]

When the United States and the Soviet Union had competing interests in an event or a place – and when they use their navies to demonstrate just how interested they really are – then the relative quantity, quality and character of these forces *in situ* could tip the balance and can affect what happens.[17] A favorable naval balance reduces our risk in carrying out the national will. The less favorable the balance, the greater the risk.[18]

China's anti-access capabilities are much greater than those posed by its navy alone. This illustrates that navy-to-navy comparisons of numbers of ships or aggregate tonnage can provide a highly inaccurate measurement of the true relative maritime capability.[19]

Professors Stephen Biddle and Ivan Oelrich at George Washington University analyze future warfare in the Western Pacific that Chinese Anti-Access/ Area Denial (A2/AD) is a real threat to the U.S. interests in the Western Pacific. It will be very difficult for China to extend A2/AD's effects over distances great enough to threaten U.S. allies if China's opponents take reasonable precautions.[20]

On July 30, 2017, Chinese President Xi Jinping wearing military camouflage reviewed more than 12, 000 soldiers at the 90th anniversary of the founding of People's Liberation Army at the Zhurihe military base and noted China is "closer to the goal of great rejuvenation than ever." There will be increasing pressure within China to use military force as diplomatic, economic, and informational warfare efforts fail to provide a solution.[21]

China's peaceful rise is so welcomed. However, the assertive and aggressive rise with ignoring international rules and norms is attracting the world's attention.

II. Evolving Maritime Connectivity

The Indo-Pacific construct, which conceives the Pacific Ocean and the Indian Ocean as an interconnected economical and security space, has assumed key importance in the emerging geopolitics of 21st century. One of the driving factors behind the region's growing importance is to enhance maritime connectivity on the Indo-Pacific sea lanes of communications (SLOCs).

On the contrary to "China Dream," U. S. President Donald Trump is prepared to work and deal with

15 Stansfield Turner, "The Naval Balance: Not Just A Numbers Game," *Foreign Affairs*, Vol. 55, No. 2, January 1977, p. 342.
16 Milan Vego, "The False Promise of Metrics," *Proceedings,* Vol. 137/10/1, 304, October 2011, p. 41.
17 Stansfield Turner, "The Naval Balance: Not Just A Numbers Game," *Foreign Affairs*, Vol. 55, No. 2, January 1977, p. 344.
18 Ibid., p. 351.
19 Testimony of Ronald O'Rourke, specialist in naval affairs, Congressional Research Service, before the U.S.-China Economic and Security Review Commission Hearing on the Implications of China's Naval Modernization for the United States, June 11, 2009, p. 6.
20 Stephen Biddle and Ivan Oelrich, "Future Warfare in the Western Pacific: Chinese Antiaccess/Area Denial, U.S. AirSea Battle, and Command of the Common in East Asia," *International Security*, Vol. 41, No. 1, Summer 2016, p. 41.
21 Jim Fanell, "The Clock is Ticking in China: The Decade of Concern has Begun," *Proceedings*, Vol. 143/10/1, 376, October 2017, pp. 10-11.

the partners in Indo-Pacific region that will abide by the principles of fair and reciprocal trade on a basis of mutual respect and mutual benefit and called it the "Indo-Pacific dream" at APEC CEO Summit on November 10, 2017.[22]

Japan and the United States have been a Pacific nation and a Pacific power for binding closely through the strong Japan-U.S. alliance. It has also been an anchor of peace, stability, and prosperity in the Indo-Pacific region. From Africa to East Asia, Japan and the United States could build on the enhanced partnership to support sustainable, inclusive development, and increased reginal connectivity by collaborating with the other interested partners. The Indo-Pacific remains a top priority for Japan and the United States.

Admiral Harry B. Harris Jr., the commander of the U.S. Pacific Command, often used the term Indo-Asia-Pacific. Because he explains Indo-Asia-Pacific more accurately captures the fact that Indian and Pacific Oceans are the economic lifeblood linking the Indian Subcontinent, Southeast Asia, Australia, Northeast Asia, Oceania, and the United States together.[23] Admiral Harris expects Indian power and respects its peaceful means with military powers. He described India as a beacon on a hill, not on castles of sand, to take a leading role in the region for the India's willingness to resolve the maritime dispute through peaceful means and international law and its respect for arbitration by upholding the tribunal's verdict.[24]

On December 12, 2015, Japan and India signed a joint statement "Japan and India Vision 2025 Special Strategic and Global Partnership" to mutually work towards building peace and stability in the Indo-Pacific region within a decade.25 It is the vision for a deep, broad-based and action-oriented partnership, which reflects a broad convergence of their long-term political, economic and strategic goals.

On May 22-26, 2017, Japan and India announced the creation of sea-corridor, the Asia-Africa Growth Corridor (AAGC), linking the two continent, Asia and Africa, amidst China's Belt and Road Forum.[26] It is a collaborative vision between Japan and India to promote development, connectivity, and cooperation between Africa and Asia as part of a liberal and value-based order.

Admiral Harris recognized that the region is now home to the world's three largest economies and seven of the eight fastest market. The Indo-Asia-Pacific also has seven of the world's ten largest armies, which means the area also shapes the course of global security. But even so, this region has experienced decades of relative peace and stability. This success story has been made possible, in large part, by the rules-based security architecture in the region supported by seven decades of American military presence and underpinned by America's security alliances and partnership. The foundation of the rules-based international order:

First, the peaceful resolution of disputes.

Second, freedom of navigation for military and civilian ships and aircraft.

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22 White House, "Remarks by President Trump at APEC CEO Summit Da Nang, Vietnam," November 10, 2017, https://www.whitehouse.gov/the-press-office/2017/11/10/remarks-president-trump-apec-ceo-summit-da-nang-vietnam

23 Admiral Harry Harris' Address to the Lowy Institute for International Policy, December 14, 2016, http://www.pacom.mil/Media/Speeches-Testimony/Article/1029173/address-to-the-lowy-institute-for-international-policy/.

24 Admiral Harry Harris' Remarks to Raisina Dialogue "Let's Be Ambitious Together," March 2, 2016, http://www.pacom.mil/Media/Speeches-Testimony/Article/683842/raisina-dialogue-remarks-lets-be-ambitious-together/.

25 Japan Ministry of Foreign Affairs, *Japan and India Vision 2025 Special Strategic and Global Partnership Working Together for Peace and Prosperity of the Indo-Pacific Region and the World,* December 12, 2017, www.mofa.go.jp/s_sa/sw/in/page3e_000432.html

26 Jagannath P. Panda, "Asia-Africa Growth Corridor (AAGC): An India-Japan Arch in the making?," *Institute for Security & Development Policy*, August 2017, http://isdp.eu/publication/asia-africa-growth-corridor-aagc-india-japan/

Third, unimpeded lawful commerce.[27]

On November 23, 2017, the Australian Government published a new Foreign Policy White Paper which is the first comprehensive review of Australia's international engagement for 14 years. It delivers a framework to ensure its prosperity and security by guiding its international efforts over the next decade and beyond. The White Paper's fundamental objectives are to work to keep the Indo-Pacific region secure, open and prosperous.[28] The White Paper makes clear that the most significant challenges stem from the two major powers, the United States and China in the region. It describes a more contested and uncertain international environment as a result of the changing balance of power between the United States and China and its concerns about how China may use its political, military and economic weight in the future. It also recognized Japan as the partner and encourage its expanding role in the Indo-Pacific regional order based on rules of the laws following the United States.

There is a unique framework what Admiral Harris calls the regional democracies multilateral alliance -- Japan, the United States, Australia and India for creating a model of strategic partnership for the rest of the world to emulate.[29] This concurs with the Prime Minister Shinzo Abe's "Asia's Democratic Security Diamond," to expand allies and partner's strategic horizons.[30]

The advocacy of Quadrilateral comes as a gospel for the advent of a new era. Quadrilateral offers an opportunity for Japan to redefine and re-establish a healthy relationship in the Indo-Pacific region. It could serve as an instrument for improving relative week bilateral relationship through truly symmetrical Quadrilateral relationship with enhancing maritime connectivity.

The idea of Quadrilateral cooperation seems so natural. First, the Quadrilaterals share common security interests, linked with the United States. Second, the countries share democracies based on common values. Third, they respect free trade market economy. Quadrilateral is strongly felt as to create a common determination to overcome the constraints.

What is essential is that the Quadrilateral agree on the orientation that they explore each appropriate role and responsibility with concrete action. Concrete actions inspire the trust among them.

Quadrilateral should be reorganized as "Triangular Pyramid" to take more proactive roles and responsibilities through enhancing maritime connectivity in each assigned responsible theater. It will be great challenge from the current "Hub and Spokes" system to "Triangular Pyramid" system which Japan, India and Australia take responsible regional area as the basement of the Pyramid and the United States assigned as top of the Pyramid to overview and compliment them. Each area of responsibility (AOR) will be as shown in Figure 1.

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27 Admiral Harry Harris' Remarks to IISS Fullerton Lecture, October 17, 2017.

28 Australian Government, *Opportunity, Security, Strength: The 2017 Foreign Policy White Paper*, November 23, 2017, https://www.fpwhitepaper.gov.au/foreign-policy-white-paper

29 Admiral Harry Harris' Remarks to Raisina Dialogue "Let's Be Ambitious Together," March 2, 2016, http://www.pacom.mil/Media/Speeches-Testimony/Article/683842/raisina-dialogue-remarks-lets-be-ambitious-together/.

30 Shinzo Abe, "Asia's Democratic Security Diamond," *Project Syndicate*, December 27, 2012, https://www.project-syndicate.org/commentary/a-strategic-alliance-for-japan-and-india-by-shinzo-abe?barrier=accessreg http://www.mofa.go.jp/region/asia-paci/pmv0708/speech-2.html

Figure 1 Triangular Pyramid

Mainly, Japan should have a responsible role in East China Sea and South China Sea with using the base of Philippine as maritime domain awareness operation center (MDAOC) in cooperation with the Philippine Armed Forces. India has a responsible role in Andaman Sea and South China Sea with using the base of Andaman and Nicobar command as MDAOC. Australia has a responsible role in Java Sea and South China Sea with using the base of Information Fusion Center in Singapore as MDAOC in cooperation with Singapore Armed Forces. It is also required to have each ASEAN country's positive efforts and practical cooperation in the "Triangular Pyramid" system. In this way, South China Sea is overlapped as common responsible theater.

The U. S. Naval War College Joint Military Operations Department Professor Milan Vego, one of the foremost theorist on operational art, emphasizes the importance of identifying the center of gravity and defines it as "a source of massed strength – physical or moral – or a source of leverage whose serious degradation, dislocation, neutralization, or destruction would have the most decisive impact on the enemy's or one's own ability to accomplish a given political/military objective."[31] The South China Sea is the center of gravity of Indo-Pacific region from the perspective of economy and security that merges each nation's national interests. The South China Sea is fast becoming the world's most important waterway. As the main corridor between the Indian and Pacific Oceans, the sea carries one-third of global maritime trade, worth over $5 trillion, each

31 Milan Vego, *Joint Operational Warfare: Theory and Practice*, U.S. Naval War College, 2009, p. VII-13.

year, $1.2 trillion of it going to or from the United States.[32]

It is not the containment of China. However, China has begun to assert its claims more vigorously and is now poised to seize control of the sea. Despite the enormous stakes, the United States has failed to stop China's assertiveness in the South China Sea. Time is running out to stop China's assertive advance which ignored the international rules and norms. The alarming behavior is to do any unilateral actions that change the status quo and increase tensions.

The United States and China agreed to enhance communication and cooperation on major international, regional, and global issues, and jointly seek proper resolution of relevant issues to make greater contribution to peace, stability, and prosperity of relevant regions and the world at large. The two sides need to set up communication and cooperation on Asia Pacific affairs, foster common friends, build constructive interactions, and jointly maintain and promote peace and stability in the region.[33]

Win-win cooperation is the only right choice and pathway toward a better future. The world welcomes the rise of a China that is peaceful, stable, prosperous, and responsible player in global affairs. The world should recognize that China's behavior in the sea is based on its perception of how the United States will respond. Quadrilateral has shared lots of common interests and concerns about regional and global issues and enough room for further cooperation to enhance maritime connectivity. It is time to expand the scope of cooperation based on Quadrilateral's leading efforts through implementing exercise and operation along with the partner nations in the Indo-Pacific region. As Japan and the United States' westward and India's eastward will merge, it will presage a new regional catalyst for the expanded cooperation in the Indo-Pacific region.

III. Seapower Expands the Cooperation

Alfred Thayer Mahan published *The Influence of Sea Power upon History* and supported the rise of the United States. Although China is traditionally continental state, it turns to the sea recently. Sea power is an issue that falls within the purview of national strategy and national-security strategy. The state's understanding and use of sea power are not a matter simply for the maritime domain. Rather, sea power is an inherent policy-oriented, a process of specific steps to be implemented. It begins with the land and how the land influences the ocean. Thus, people should no longer deliberately separate "land power" and "sea power" but should consider the two in tandem and conduct integrating planning.[34]

Japan Ministry of Defense promulgated Japan's Defense Cooperation Initiative with ASEAN called "Vientiane Vision" at the second ASEAN-Japan Defense Ministers' Informal Meeting held in Vientiane, Lao PDR on November 16, 2016.[35] Practical defense cooperation is conducted by effectively combining the

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32 Ely Ratner, "Course Correction: How to Stop China's Maritime Advance," *Foreign Affair*s, Vol. 96, No. 4, July/August 2017, p. 64.

33 White House, "Remarks by President Trump and President Xi of China in Join Press Statement, Beijing China," November 9, 2017, https://www.whitehouse.gov/the-press-office/2017/11/09/remarks-president-trump-and-president-xi-china-joint-press-statement

34 Zhang Wei, "A General Review of the History of China's Sea-Power Theory Development," *Naval War College Review*, Vol. 68, No. 4, Autumn 2015, p. 90.

35 Japan Ministry of Defense, "Vientiane Vison: Japan's Defense Cooperation Initiative with ASEAN," November 16, 2016, http://www.mod.go.jp/e/d_act/exc/vientianevision/index.html

following diverse measures;

First, international law seminar, especially in the field of maritime security with a view to its effective implementation.

Second, capacity building cooperation in various fields such as HA/DR, PKO, landmine and UXO (Unexploded ordnance) clearance, cybersecurity, defense buildup planning with sharing know-how.

Third, defense equipment and technology cooperation, developing human resources and holding seminars on defense industries.

Fourth, multilateral joint training and exercises.

Fifth, human resources development and academic exchange.

It is certain that the rules-based order is crucial. However, the reality is that the rules-based order is getting weak. There are lots of challenges as great power China does not respect the rules and norms, and does violations in the Indo-Pacific region albeit having strategic partnership at the strategic level.

It is the time to think operationally. It will be the key driver for evolving maritime connectivity to increase the frequent naval engagements. Admiral Harris emphasized that military-to-military contacts are the heartbeat of growing multilateral relationships in the region.[36] Multilateral joint training and exercises will be the most influential to the other measures and the center of gravity for galvanizing both economic and security effects.

The proposed new approach called TEON (Training, Exercise and Operation for Non-Traditional Security) which focuses on Humanitarian Assistance and Disaster Relief (HA/DR) such as international search for missing flights MH370, 2004-2005 Indian Ocean tsunami relief, 2013 Typhoon Haiyan relief effort, will be needed as a good start for the expanded cooperation in the Indo-Pacific region. It will be the most effective to use Quadrilateral's seapower for engaging and counting unstable actors from the sea. TEON could be one of the most influential concrete measures of "Vientiane Vision" and serve the maintenance of the relationship.

Japan and the United States among the Quadrilateral can lead to expand and increase opportunities for joint and combined training and exercises with the strongest Japan-U.S. alliance. Training and exercises are just the beginning, however training and exercising together will lead to operating together.

Cooperation through TEON stimulates the gradual emergence of understanding, and ameliorates the mistrust among key powers. Cooperation seems to break down the boundaries between economic, geopolitical, and security competitions. The geopolitical competition is not positive-sum relationship, whereas the economic engagements can be. The security attention is minimum required to safeguard the economic interests and vulnerabilities.

The expanded cooperation will play up how the Indo-Pacific region, especially East China Sea and South China Sea manage. These issues are manageable from the perspective of tactical naval engagements through TEON. It is incremental security step, but will deliver steady output. There is no need for America First, China first, but the Indo-Pacific First as the regional interests.

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36 Jim Garamone, "Indo-Asia-Pacific Region Remains 'Most Consequential' to America, Pacom Chief Says," *DoD News,* November 15, 2016.

IV. Seapower Contributes to Deterrence

The countries in the Indo-Pacific region have been seeking to establish closer ties with China for economic gains while relying on the United States for security guarantees.

Enhancing maritime connectivity through cooperation will be one of the best measure for securing economy and security in the Indo-Pacific region in peacetime. However, it is not the perfect measure. It is necessary to prepare for unpredictable unstable conditions. How best could the Quadrilateral deter and defense against the assertive power such as growing Chinese A2/AD capability? China's increasing assertive maritime activities are a matter of concern. Even PLAN's nuclear submarine has commenced to patrol the crucial SLOCs in the Indo-Pacific region.

The center of gravity methodology reminds of famous monster Godzilla which had the power to reach out and destroy antagonist forces and protect friendly forces from harm.[37] The deadliest Godzilla, which are fourteen Ohio-class nuclear-powered ballistic missile submarines (SSBNs) prowling the oceans today with upwards of half of the United States' nuclear arsenal onboard, is one of the best answer to Chinese A2/AD capability. Each vessel can carry twenty-four Trident Ⅱ submarine-launched ballistic missiles (SLBMs) which splits into up to eight independent reentry vehicles, each with 100- or 475-kiloton nuclear warhead.[38]

However, following the end of the Cold War, the U.S. Navy opted to overhaul and convert the four oldest Ohio-class submarines from twenty-four ballistic missile tubes to twenty-two special canisters for 154 TLAMs (Tomahawk land-attack cruise missiles) and the other two missile silos for sixty-six Navy SEALs, primary special operations force.[39] The tubes can also launch underwater unmanned vehicles (UUV), SEAL delivery vehicles (SDV) midget submarine and other acoustic sensors.

The four Ohio-class submarines converted from fleet ballistic-missile submarine duty to cruise-missile capability which offers a powerful, flexible option for dealing with A2/AD capability. It will be undoubtedly the most potent TLAMs capability as well as the most survivable.

In 2010, USS *Ohio*, USS *Florida* and USS *Michigan* all participated in a show of force in reaction to a Chinese missile test surfacing separately off Diego Garcia, the Philippines and South Korea at roughly the same time. In 2011, the USS *Florida* launched ninety-three missiles targeted at Libyan air defenses in support of Operation Odyssey Dawn.[40]

Under getting severe security environment of North Korea nuclear and missile development, USS *Michigan* arrived in Busan for a routine visit during a regularly scheduled deployment to the Western Pacific on October 13, 2017.[41] She could show force with cruise-missiles and send clear messages for strong will to North Korea.

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37 James P. Butler, "Godzilla Methodology: Means for Determining Center of Gravity," *Joint Force Quarterly*, Vol. 72, 1st Quarter, 2014, p. 28.

38 Sebastien Roblin, "The One U.S. Submarine That Could Completely Destroy North Korea," *The National Interest*, April 27, 2017.

39 Ben Ho Wan Beng, "Kicking Down the Door: Ohio-Class Subs vs. China's A2/AD," *The National Interest,* April 4, 2016.

40 Sebastien Robin, "America's Cruise Missile Submarines: Washington's Most Lethal Weapon of War?," *The National Interest*, April 6, 2017.

41 U.S. Naval Forces Korea Public Affairs, "Republic of Korea welcomes USS Michigan to Busan to Strengthen Partnership," U.S. Pacific Command, October 13, 2017, http://www.pacom.mil/Media/News/News-Article-View/Article/1342761/republic-of-korea-navy-welcomes-uss-michigan-to-busan-to-strengthen-partnership/

It is absolutely true to have limited capability for Quadrilateral in the Indo-Pacific region. Each Quadrilateral has different constraints and capabilities. Even the most powerful U.S. Armed Forces in the Indo-Pacific region is no exception. The demand for submarine is going to become more intense as Russia and China continue to challenge the United States in the undersea domain. The U.S. Navy is likely to have to build at least three nuclear-powered attack submarine (SSNs) per year for the foreseeable future.[42]

In addition, SSNs are capable of operating in shallow waters but the smaller, quieter, and more maneuverable antisubmarine subs (SSKs) are better suited for operations in such waters.[43] SSNs, with their high sustained speed and almost unlimited endurance while submerged, are the best platforms against enemy submarines. They can attack a great variety of targets, both on the surface and deep into the enemy shore. The very presence of an SSN in certain areas can have not only operational but strategic effects on enemy deployments and movement of merchant shipping. But SSKs seem much more capable of searching for and destroying enemy submarines operating in shallow waters, and of defending merchant shipping in coastal areas.[44]

The U.S. Navy's current and projected numerical shortfall in the submarine force can be resolved by acquiring a relatively small number of AIP (Air-Independent Propulsion) SSKs from friendly nations.[45]

My own research proposal is that nuclear submarine sharing among Quadrilateral will be possible solution for complimenting the lack of force capability to deter and attack. Japan could use cruise-missiles converted Ohio-class SSBN when needed to project power. One of the most problems which Japan and the United States have to coordinate is how to use it. There are different options and levels to use. It will be the first step for nuclear submarine sharing is to educate and train onboard together as well as developing nuclear technology.[46] On the other hand, the United States could have a possibility to use Japanese conventional submarine such as Soryu class AIP advanced conventional submarine for the U.S. purpose.

Despite all the claims to the contrary, the U.S. Navy remains essentially a blue-water force. Its rhetoric on the shift toward fighting in the littorals is not reflected in its current or projected battle-force composition. SSNs are too large to be effectively employed in the littorals, especially in the enclosed and semi-enclosed areas known as narrow sea. A navy should be properly balanced to conduct missions across the entire span of conflict at sea and operate in all physical environment.[47]

A properly balanced battle force composed of large surface combatants and nuclear-powered submarines as well as small surface combatants and advanced conventional submarines is far more effective, because it can be tailored for conducting diverse missions across the range of conflicts and in all environment.[48] Japan and the United States has more opportunities to enhance military cooperation especially in maritime domains for complementing each other.

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42 Dave Majumdar, "The U.S. Navy Is Turning Its Nuclear Attack Submarines into Cruise Missile Boats," *The National Interest,* July 22, 2017.
43 Milan Vego, "The Right Submarine for Lurking in the Littorals," *Proceedings*, Vol. 136/6/1, 288, June 2010, p. 17.
44 Ibid., p. 20.
45 Ibid., p. 21.
46 Takuya Shimodaira, "Embark JMSDF Officers On Board U.S. Ships," *Proceedings,* Vol. 143/3/1, 369, March 2017, p. 10.
47 Milan Vego, "Finding Our Balance at Sea," *Proceedings*, Vol. 136/1/1, 283, January 2010, p. 23.
48 Ibid., p. 24.

Conclusion

In 1980, Japanese diplomat, Hisashi Owada who later served as a judge on the International Court of Justice, expressed his two distinct directions on the role of Japan in the trilateral world which was advocated by influential advanced democracies in 1970s. First, Japan place greater emphasis, not only in rhetoric but in action on the cultivation of concrete opportunities for cooperation with other regions. Second, Japan plays a more useful and distinct role in broadening the vista of trilateralism beyond the narrow confines of its membership.[49]

Now, there are Trilateralism, Quadrilateralism, and bilateralism such as the strongest Japan-U.S. alliance in the Indo-Pacific region. Are there exclusive or complemental? It depends on participants' will.

Japan and the United States can do together. Because Japan and the United States have shared common values such as freedom, democracy, rules of laws, and open market. The Indo-Pacific region, covering the vast area of Asia Pacific through the Indian Ocean to the Middle East and Africa, is the growth center of the world, with more than half of the world population. The maintenance and enhancement of the maritime order that is free and open is critically important for the peace and prosperity of this region. Japan and the United States concurred to strengthen the cooperation toward realizing free and open Indo-Pacific.[50]

No single government has managed to dominate the Indo-Pacific region. Quadrilateral should seek further progress in multilateral relationship and set out the direction and drew up the blueprint for the new regional architecture. Quadrilateral must enjoy broader room for cooperation.

The Indo-Pacific nations all benefit from the region that preserves security, stability, and the freedom necessary for enduring prosperity. It is fundamentally necessary to communicate continuously, think positively, and encourage multilateral approach to common problems with collective wisdom.

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49 Hisashi Owada, "Trilateralism: A Japanese Perspective," *International Security*, Vol. 5, No. 3, Winter 1980/1981, p. 24.

50 White House, "Remarks by President Trump and Prime Minister Abe of Japan in Joint Press Conference Tokyo, Japan," November 6, 2017, https://www.whitehouse.gov/the-press-office/2017/11/06/remarks-president-trump-and-prime-minister-abe-japan-joint-press

Chapter 10

Cooperation Framework in the Indian Ocean for Regional Powers to Meet the Challenges of Non-Traditional Threats

Chapter 10 Cooperation Framework in the Indian Ocean for Regional Powers to Meet the Challenges of Non-Traditional Threats

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The contemporary discourse on security is built on two distinct thematic domains. First, traditional security i.e. 'States on State' that has strong historical evidence. This evolved over the years to manifest into the great wars such as the two world wars and the Cold War that had ideological differences over liberal democracy and Marxism, but was still a case of 'State on State' or 'block against another block'. The second discourse represents non-traditional security issues which challenge the traditional understanding of the word 'security'. It is focused on non-state actors who rely on asymmetric strategies to challenge the state, and their role and actions have invited international attention.

Not a day passes when the electronic and print media inform about the rising graph of non-traditional security threats and challenges such as piracy, terrorism, drug smuggling, and transnational crime including trafficking in persons. These are transnational in nature and its actors conduct their business with great alacrity. Many of them are proficient in the use of information technology and harness its potential as a force multiplier thus facilitating operations on a global scale.

In recent times, issues relating to climate change, natural disasters, sea level rise, infectious diseases, food, water, and energy security, have also found reference in the non-traditional security discourse. These pose wide and deepening impact on the socio-economic fabric of the society and are understood in the context of human security.

A number of scholarly and authoritative studies have argued persuasively that non-traditional security threats are transnational in nature and cannot be addressed by one country; instead they require multilateral approaches. Further, organized crime has steadily moved along the threat continuum and can potentially challenge the national security apparatus of both developed and developing countries alike.

This paper attempts to provide a holistic understanding of non-traditional security (NTS) threats and challenges. It defines the concept of NTS and identifies the role of humans and nature as the perpetuator or actuator of these threats and challenges. The paper also attempts to offer responses which States can mitigate NTS threats and challenges through multilateral approaches and argues for 'maritime multilateralism' as the key strategy for regional powers for a robust cooperation framework in the Indian Ocean.

I. Defining Non-Traditional Threats

In the post-Cold War period the concept of security has undergone major transformation: at one level, the state centric approach has partly given way to trans-national/ trans-regional security perspective; and at another level, individuals and non-governmental organizations (NGOs) have emerged as important

stakeholder. These entities have not undermined the primacy of the state in national security matters and some of these have assumed a crucial role to compliment the state and address several human security issues that may sometime challenge the state centric approach to security.

The emergence of cyber space as a medium to conduct economic engagements, strategic transactions, technology exploitation and human-social activities has added new dynamics to the complex web of NTS threats and challenges. While the cyber offers enormous opportunities in all facets of human activity, these have engendered disruptive neo-security threats. These can be non-lethal yet more lethal and cause global disorder.

States are now increasingly confronting hybrid type of threats and challenges in which traditional military and non-military threats coexist and are devising innovative national security strategies to address multitude of threats and challenges.

NTS threats have merited definition and it is useful to examine some of these to get a better understanding of the associated discourse. A very narrow and general definition notes that 'non-traditional threats come in the form of terrorism, drug trafficking, serious communicable diseases, piracy, illegal immigration, environmental security, economic and financial security, and information security'[1]

Another definition argues that NTS threats are those that challenge the 'survival and well-being of peoples and state that arise from non-military sources, such as "Climate change, resource scarcity, infectious diseases, natural disasters, irregular migration, food shortages, people smuggling, drug trafficking and transnational crime.'[2] This definition has been further qualified and notes that NTS are transnational in nature and 'defy unilateral remedies and requiring comprehensive political, economic and social responses, as well as the humanitarian use of military force'.

A synthesis of these two definitions suggests that there are a number of NTS threats and it is fair to argue that climate change, natural disasters and cyber threats are NTS threats and are transnational in nature.

At this juncture it is pertinent to mention that the state is the primary actor to deliver security to its people against 'harm' or 'distress' caused by humans or nature. Further, the source of the potential 'harm or distress' can have its origin either within the State; or the genesis can be in another country or region. In fact 'harm' has no boundaries.

II. Geography of NTS Threats and Indian Ocean

It is true that maritime NTS threats are transnational in nature and can have their origins anywhere in the globe; however, in the maritime domain a majority of these emerge and impact 'closer to the shore' notwithstanding the fact that pirates and drug runners have been intercepted on the high seas.

The 'closer to shore' spaces are referred to as 'littorals' and the contemporary strategic literature defines littoral as a space where sea meets the shore.[3] These spaces are extremely important for economic growth and social wellbeing of societies. In maritime security terms, the littoral are strategic spaces where national

1 For details see http://wiki.answers.com/Q/What_are_Non_traditional_security_threats accessed on June 20, 2017.

2 Mely Caballero-Anthony, "Non-Traditional Security Challenges, Regional Governance, and the ASEAN Political-Security Community (APSC)", Asia Security Initiative Policy Series, Working Paper No 7, September 2010. Centre for Non-Traditional Security Studies, S. Rajaratnam School of International Studies; Nanyang technological University, Singapore.

3 *Operational Maneuver from the Sea*, Department of the Navy, Headquarters United States Marine Corps Washington, 1996.

forces should be deployed to protect the economic hubs. Littoral spaces witness two significant phenomenon i.e. congestion and contestation. In the first case, dense shipping, port operations, fishing, and other maritime activities thrive providing the critical ballast for economic growth and wellbeing. In the second case, poor governance and absence of robust security systems result in favourable conditions for the growth of a number of non-state actors who engage in illegal activities. In essence, ambient conditions prevail in the littorals for opportunities for economic growth as also for insecurities wherein non-state actors pursue their activities with total impunity. These activities are in the form of maritime piracy, terrorism, drug smuggling, gun running, and illegal and forced migration / human smuggling. As far as safety is concerned, climate change, sea level rise, sea based natural disasters and marine environment pollution impact on the littoral communities.

In the Indian Ocean, a number of maritime NTS threats thrive in the littorals and can potentially undermine the economic potential of the region. The intensity of these threats and challenges varies depending on the ability of the contiguous littoral state to counter the asymmetric actors. For instance, the Gulf of Aden-Somali coast and the Straits of Malacca are known for piracy; the Yemeni and the Makaran Coast in Pakistan are known for maritime terrorism; the Makaran coast is also point of origin for drug and gun running; and till very recently, the Sri Lankan waters had witnessed terrorism, and criminal activity under the LTTE and Al Qaeda was suspected to have networks in Bangladesh, Indonesia and Maldives.

At another level, the Indian Ocean is also confronted with a number of nature induced NTS threats such as the 2004 Indian Ocean Tsunami, climate change, global warming and sea level rise. Scientists, meteorologists, oceanographers, and climate change experts have argued that there is ample evidence to suggest that global climate change has resulted in increased tropical cyclone activity.

III. Typologies of Non-Traditional Security Threats

In its annual report titled *The Global Risks Report 2017,* the World Economic Forum has identified top 10 risks[4] in terms of likelihood and impact and placed under five categories i.e. Economic; Environmental; Geopolitical; Societal and Technological.

Risks in terms of Likelihood		Risks in terms of Impact	
1	Extreme weather events	1	Weapons of Mass Destruction
2	Large scale involuntary migration	2	Extreme weather events
3	Natural disasters	3	Water Crisis
4	Terrorist attacks	4	Natural Disasters
5	Data fraud or theft	5	Failure of Climate Change Mitigation and adaptation
6	Cyber attacks	6	Large scale involuntary migration
7	Illicit Trade	7	Food crisis
8	Manmade Environmental disasters	8	Terrorist attacks
9	Interstate conflicts	9	Interstate conflicts
10	Failure of regional governance	10	Unemployment or underemployment

Source: World Economic Forum Global Risks Perception Survey 2016, World Economic Forum, p.5.

4 These are based on survey of respondents who were asked to assess the likelihood of the individual global risk on a scale of 1 to 7, 1 representing a risk that is not likely to happen and 7 a risk that is very likely to occur. They also assess the impact on each global risk on a scale of 1 to 5 (1: minimal impact, 2: minor impact, 3: moderate impact, 4: severe impact and 5: catastrophic impact).

Although these are not medium specific and occur over land, in the air, at sea, in the space and cyber, these offer some interesting insights into the typology adopted to understand NTS risks and their impact.

Another categorization notes that non-traditional security concerns are of three types: (a) Fragile and Failing States; (b) Global Terrorism; and (c) Transnational Political Challenges.[5]

This paper formulates four typologies specially designed to understand the risks and the likelihood of NTS threats in the maritime domain. These are (a) human induced; (b) nature driven; (c) manmade; and (d) state driven.

1. Human Induced

(1) Piracy

Since 2008, the Gulf of Aden has been the centre of global attention for the incidents of piracy which threatened sea based commerce transiting though the area. The hijacking of merchant ships by Somali pirates resulted in large sums of ransom money paid to the pirates for release of the crew. Perhaps the most worrying aspect of the Somali piracy was that some crew members were killed due to non-payment of ransom. The Somali pirates expanded their reach far and wide into the Indian Ocean including the Red Sea, coast of Oman, the Arabian Sea, waters around Maldives and the western seaboard of India.

The rising graph of piracy attacks on international shipping in the Gulf of Aden and also on Somalia's request, the United Nations Security Council (UNSC) adopted a number of resolutions urging states to conduct counter piracy operations while some resolutions were passed to support Somalia protect its EEZ and prevent illegal fishing and dumping of waste.[6] The international community formulated and put into operation a number of multilateral responses to counter piracy.[7] These initiatives involve the governments, industry and a number of other stakeholders thereby facilitating an interface to share perspectives, ideas and help develop multifaceted counter piracy strategies. These mechanisms have successfully controlled the scourge of piracy in the Gulf of Aden; however, piracy does remain a challenge[8] forcing international navies to continue with counter piracy operations.

(2) Terrorism

Threat of 'terrorism at sea', 'terrorism from the sea' or 'terrorism from shore to the sea' is not a new phenomenon. There have been several instances when ships have been taken over by insurgents or attacked by terrorists who had transnational linkages. The *Achille Lauro* attack in 1988, *the* PLOTE (People's Liberation Tamil Tigers Eelam) mercenaries landing the Maldives, attacks on USS Cole and MV Limburg, and the 2008 Mumbai terror attacks by Lashkar-e-Taiba (LeT), a terrorist group based in Pakistan, can be classified as transnational in nature. The ability of terrorist groups to use regular military hardware was best demonstrated

5 Leanne Jennifer Smythe, " Non-Traditional Security In The Post-Cold War Era: Implications Of A Broadened Security Agenda For The Militaries Of Canada And Australia" PhD thesis , The University Of British Columbia (Vancouver), April 2013.

6 For details of "Security Council Resolutions on piracy off the coast of Somalia" see http://www.un.org/depts/los/piracy/piracy_documents.htm (accessed June 18, 2013)

7 These include the Shared Awareness and Deconfliction (SHADE), Contact Group for Piracy off the Coast of Somalia (CGPCS) and the Internationally Recommended Transit Corridor (IRTC).

8 Muthoki Mumo "Fresh piracy attacks off coast of Somalia send shockwaves" http://www.businessdailyafrica.com/corporate/shipping/Fresh-piracy-attacks-Somalia-send-shockwaves-/4003122-4021216-14iiulz/index.html (accessed 20 July2017).

by the Hezbullah (Palestine) and the Houthi (Yemen) groups who were able to obtain shore based anti-ship missiles and attacked warships in the Red Sea region.[9]

These incidents were significant for states to position maritime terrorism high on the national and international agenda and the navies across the globe began to formulate common operational strategies as also engagements at bilateral, trilateral and multilateral levels through naval operations. A number of navies from Asia, Africa, Europe and Americas have come together to counter terrorism at sea and fight groups with maritime capability such as the Liberation Tigers of Tamil Eelam (LTTE) a Tamil militant organization, Al Qaeda and Lashkar e Taiba (LeT), a Pakistan based outfit.

(3) Drug Smuggling and Gun Running

Afghanistan and Myanmar are two important drug producing regions in Asia. The drug shipments transit through unmarked land routes across neighbouring countries and thence through sea routes. During 2014, the multinational forces operating in the Indian Ocean intercepted a number of dhows/boats carrying narcotics from South Asia bound for destinations in East Africa.[10] The Indian Ocean drug consignments generally originate in South Asia (Afghanistan / Pakistan / India), Southeast Asia (Thailand / Myanmar) and Latin America (Colombia). Further, East African coast (Djibouti, Eritrea, Kenya, Somalia and Tanzania) has emerged as the transshipment hub and reports suggest that on an average, nearly 24 tons of drugs valued at US $ 190 million are smuggled annually into the region.[11]

During 2013-2016, the Combined Maritime Forces (CMF) intercepted many dhows and seized over 9300 kg of high purity heroin on dhows.[12] Perhaps what is more disturbing is that east coast of Africa has emerged popular among drug smugglers from Colombia too. In recent times, the Indian Navy intercepted a Panama flagged ship MV Henry off the Gujarat coast and seized 1,500 kg of heroin worth 35 billion rupees ($545 million). The ship was sailing from Dubai to Alang, a shipbreaking town in Gujarat.[13]

The linkage between drug trafficking and proliferation of small arms is well established and it may not be possible to control the spread of small arms unless there is a corresponding control of drug trafficking. Pakistan offers a classic example of the linkage between drugs trade and arms proliferation particularly in the context of the Taliban and the Al Qaeda. The porous land border with Afghanistan and weak coastal security

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9 "Israel Navy Preparing for Hamas, Hezbollah Rocket and Missile Threats", http://www.jpost.com/Israel-News/Israel-Navy-preparing-for-Hamas-Hezbollah-rocket-and-missile-threats-454297 (accessed 20 July 2017). Also see "Iranian Missiles in Houthi Hands Threaten Freedom of Navigation in Red Sea", http://jcpa.org/article/iran-naval-weapons-houthi-hands-threaten-freedom-navigation-red-sea/ (accessed 20 July 2017).

10 In the first half of 2014, a number of boats / dhows carrying drugs have been intercepted by the ships of Combined Task Force (CTF) 150 operating under the Combined Maritime Forces (CMF). In January 2014, HMCS Toronto, a Canadian warship intercepted a vessel carrying 280 kilograms of heroin packed in 265 bags about 40 nautical miles off the coast of Tanzania. A few months later, a British Royal navy ship HMS Somerset intercepted a fishing boat carrying 60 kilograms of drugs. This was followed by Australian Navy's HMAS Darwin intercepting a dhow carrying 1032 kilograms of heroin in 46 sacks concealed in the consignment of bags of cement. Apparently, the drugs were to be transferred on the high seas to three dhows, bound for Zanzibar and Malindi which is known to be a haven for drug smugglers and money launderers.

11 Vijay Sakhuja , "Drug Smuggling across the Indian Ocean: Impact of Increasing Interceptions", http://www.ipcs.org/article/military-and-defence/drug-smuggling-across-the-indian-ocean-impact-of-increasing-interceptions-4654.html (accessed 30 July 2017).

12 "Indian Ocean: "Colombo Declaration" adopted to coordinate anti-drugs efforts", https://www.unodc.org/unodc/en/frontpage/2016/November/indian-ocean_-colombo-declaration-adopted-to-coordinate-anti-drugs-efforts.html (accessed 30 July 2017).

13 Sudarshan Varadhan, "India seizes ship with 1,500 kg of heroin off Gujarat coast", *Reuters*, 30 July 2017.

in Pakistan offers an easy outflow of drugs and inflow of weapons. Similarly, the easy availability of drug in East Africa appears to have encouraged Al Shabaab which is most active in Somalia, to have links with drug cartels and the drug business helps the organization to acquire weapons and other logistics.

(4) Trafficking in Persons

The need for better lives, job opportunities, fear of repression in home countries, escaping persecution and impact of failed states on societies are some of the factors which induce trafficking in persons. According to the United Nations Office on Drugs and Crime, organized crime groups that facilitate human smuggling are able to generate up to US $109 million a year from transporting illegal migrants around the world.[14] On United Nations World Day against Trafficking in Persons on 30 July 2016, in his statement Secretary-General Ban Ki-moon called[15] on "every nation- whether country of origin, transit or destination-to recognize" the necessity of "shared responsibility" to prevent trafficking in Persons and develop "strong legal basis for action" and encouraged all States to "adopt and implement the UN Convention against Transnational Organized Crime and its protocol on human trafficking as well as all core international human rights instruments." That year, the UN Security Council unanimously passed the New York Declaration that calls on states to "vigorously combat human trafficking and migrant smuggling, as well as provide support and assistance under the UN Convention against Transnational Organized Crime".[16] According to the International Organisation for Migration (IOM), it assisted 38,647 victims of human trafficking between 2006 and 2016 which it believes is the tip of the iceberg.[17]

The Indian Ocean countries have rich demographic advantages of approximately 2.6 billion, or 39 percent of the global population. However, majority of the countries of the Indian Ocean littorals are poor, at different levels of economic development, and a few figure very low in human development index. According to reports, most people smuggled through the Indian Ocean are from Afghanistan and Pakistan who seek entry into Australia by traveling by sea across the Indian Ocean.

(5) IUU Fishing

Sea is an important source of food for mankind and nearly 4.3 billion people are dependent on the fisheries for their animal protein needs. However, Illegal Unregulated and Unreported (IUU) fishing also referred as 'pirate fishing' adversely affects the ecological, economic and social conditions of countries that use the seas for economic development, livelihoods and national protein needs. One of the important issues of concern for the Global Ocean Commission was IUU fishing and apprehensions were expressed over unlicensed fishing operations, illegal transshipments or transfers of fish catch to other vessels, catching protected species, and not adhering to the regulations in force announced by the international, local and relevant regional fishery management organization (RFMO). According to the FAO, nearly 50 percent of marine fish stocks are fully

14 Ayaz Gul, "UN: Human Trafficking Increasing in Pakistan," *Voice of America*, January 23, 2014.

15 "Statement of the United Nations Secretary-General Ban Ki-moon on United Nations World Day against Trafficking in Persons - 30 July 2016 https://www.unodc.org/endht/en/statements.html (accessed 31 July 2017).

16 Statement of the UNODC Executive Director Yury Fedotov on United Nations World Day against Trafficking in Persons - 30 July 2017 https://www.unodc.org/endht/en/statements.html (accessed 31 July 2017).

17 "Over 38,000 Humans Trafficked Worldwide Annually" http://allafrica.com/stories/201707310880.html (accessed 31 July 2017).

exploited, 15-18 percent overexploited, and 10 percent are already depleted. Further, the annual global fish catch in 2010 was about 109 million metric tons, but official reports submitted by more than 200 countries and territories totaled 77 million which means that 32 million metric tons of fish goes unreported. The 2014 Global Ocean Commission report, *From Decline to Recovery: A Rescue Package for the Global Ocean* has likened the high seas to a 'failed State' where 'lawlessness verging on anarchy' prevails and it is free for 'plunder and neglect'. By some estimates, the IUU fishing may account for nearly US$10 to 23.5 billion annually which corresponds to 11–26 million tonnes of fish annually.[18]

In the Indian Ocean, according to the UN Food and Agricultural Organisation (FAO) report,[19] IUU fishing is 'rampant in the western Indian Ocean coast, occasioning a US $ 400 million loss per year in landings or nearly US $1 billion in processed products'. Further, "one out of every five fish is caught illegally in the western Indian Ocean region,"

2. Nature Driven

(1) Tsunamis, Cyclones, Hurricanes and Storm Surges

In the recent past, hurricanes, cyclonic storms, typhoons and storm surges (catastrophic feature of cyclones) have witnessed unprecedented increase in frequency and intensity. A study conducted by the Ministry of Environment of the Government of India notes that 'Storm surge has also become a major cause for concern in several coastal areas along the Bay of Bengal and the Arabian Sea. We have noticed that the intensity of cyclonic storms has increased though only 5-6 per cent of global tropical cyclones affect these two [Bay of Bengal and Arabian Sea] areas. It's also because of climate change.'[20]

There are a number of notable instances of rescue and relief in the Bay of Bengal. In recent times, one of the largest disaster aid operations was the 2004 Indian Ocean Tsunami; in 2007, Cyclone Sidr hit Bangladesh and 3295 people were killed, 2.2 million acres of croplands destroyed, and 1.5 million homes destroyed.[21] The livelihood of thousands of people particularly of the fishermen was destroyed. Likewise, Cyclone Nargis hit Myanmar in 2008 it left 78,000 people dead/missing and affected 2.4 million others.[22]

(2) Climate Change and Sea Level Rise

An OECD report has estimated that the total value of coastal assets exposed to climate change would increase from US $ 3000 billion in 2005 to US $ 35000 billion by the 2070s, nearly ten times the current levels and rising to roughly 9 per cent of projected annual GDP in this period.[23] The report further notes that nine of the top 10 cities of the world in terms of population exposure to climate change are in Asia: Kolkata,

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18 Cathy Haenlein, "Below the Surface: How Illegal, Unreported and Unregulated Fishing Threatens our Security", RUSI Occasional Papers, 18 July 2017.

19 Zephania Ubwani, "East Africa: Illegal Fishing in Western Indian Ocean 'Alarming' http://www.iuuwatch.eu/2017/07/east-africa-illegal-fishing-western-indian-ocean-alarming/ (accessed 30 July 2017).

20 S.Bhabani. 'India Takes Major Project to Study Climate Change.' 2009, http://igovernment.in/site/India-takes-major-project-to-study-climate-change/ (accessed 20 June 2017).

21 2.5 lakh buildings vulnerable to earthquake', *The Daily Star*, December 13, 2010.

22 'Myanmar Tropical Cyclone Nargis' http://www.unep.org/disasters/myanmarcyclone/ (accessed 28 March 2016).

23 R.J Nicholls, S.Hanson, C.Herweijer, N Patmore, S Hallegatte, Jan Corfee-Morlot, Jean Chateau and R Muir-Wood, "Ranking of the World's Cities Most Exposed to Coastal Flooding Today and in the Future" *Organisation for Economic Co-operation and Development, 2007*,p.4.

Mumbai, Dhaka, Guangzhou, Ho Chi Minh City, Shanghai, Bangkok, Yangon and Hai Phòng. Indian Ocean shorelines are quite replete with the symptomatic effects of climate change with visible erosion of coastal areas. Further, there are fears that climate change would lead to major human displacement in the coastal areas.

A Greenpeace report "Blue Alert: Climate Migrants in South Asia – Estimates and Solutions", suggests that, nearly 75 million people in Bangladesh could be homeless at the turn of the century and are likely to seek shelter in India. Likewise, another study notes that in the Bay of Bengal the combination of climate change, sea-level rise and natural hazards like flooding and cyclones impact severely and may result in 'the complete disappearance of large proportions of the land area of some countries like the Maldives and Bangladesh. Changes in climate may also directly impact habitats, the resources that depend on them, and the livelihoods of those that use those resources.'[24]

3. State Driven

(1) WMD Proliferation

Another vital issue in the debate on NTS threats relates to the proliferation of Weapons of Mass Destruction (WMD) and related technologies. Although the development of WMD has been the forte of technologically advanced countries, a number of actors, both state and non-state have been part of the global proliferation network, thus undermining international efforts at containing proliferation of WMDs. North Korea's clandestine trade in WMDs with Pakistan, Iran, Libya, and Syria has been the singular proliferation dynamic that has resulted in the rapid missile and nuclear programme of the these countries.

The international community has endorsed through several international conventions and arrangements that all states are duty bound to institute stringent measures to prevent the proliferation of WMDs. At the functional operational levels, the need for appropriate initiatives and responses to counter proliferation has been recognized and states have devised policies and strategies to collectively address the proliferation issues. In that context, the imperative to stem the flow of the WMDs has gained critical salience in bilateral and multilateral relationships. It figures prominently in official, diplomatic and operational discourse proving ample opportunities for states to engage in counter proliferation. Several UN Security Council resolutions have also urged states to develop institutional frameworks to address the problem of proliferation.

Non-state actors have also demonstrated the intentions to acquire WMDs for establishing an alternate political order that seeks not only regional but global supremacy. These entities advocate the destruction of the modern state system through unconventional warfare which is of immense concern. At another level, mercenary scientists and technologists have added a new dimension to the debate to proliferation of WMDs. Pakistan has emerged as the crucial knowledge base and transshipment hub of clandestine nuclear networks of the A.Q. Khan Inc. and the jihadi groups in pursuit of a nuclear weapon. Transfer of WMD and their delivery systems by sea is attractive due to ease of concealment, containerization and shipments onboard the Flags of Convenience (FoC) vessels. There have been some important interceptions of WMDs from *Ku Wol San* in India, *So* San in the Indian Ocean and BBC China in the Mediterranean.

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24 Townsley. P. Undated. 'Review Of Coastal And Marine Livelihoods And Food Security In The Bay Of Bengal Large Marine Ecosystem Region' *Report prepared for the Bay of Bengal Large Marine Ecosystem Programme*: vii.

(2) Cyber Attacks

The maritime sector has been quick to embrace the information technology revolution (IT) and obtain strategic, commercial and financial advantages. It has witnessed rapid assimilation of Cyber technologies and there is high degree of systems automation, use of smart sensors, global networks for data transfer, unmanned and remote controlled systems, and semi or fully autonomous operation by various sections of the marine and maritime sectors. Significantly, growing digitalization, and the ever-expanding use of digital data, has transformed the way marine and maritime sectors operate.

But there are a number of vulnerabilities in the maritime-trade ecosystem built around ports, ships, freight forwarders and host of other stakeholders who constitute the complex supply chains. Cyber risks to maritime-trade ecosystem are real and a few documented incidents of attacks on ports and shipping companies suggest that hackers successfully penetrated the networked computing systems. According to one report, the online defences of 16 of the world's top 20 container carriers had serious security gaps' and ship based computers and servers (electronic charts, onboard navigation and propulsion systems, safety and security sensors, other devices and instruments) are potential targets for cyber-attacks.[25] Likewise, the AIS is vulnerable to 'data manipulation' and there has been 30 per cent increase in the number of ships reporting false identities.[26]

Cyberspace is now a domain of conflict which is taking warfare to new frontiers. State and non-state actors alike have acquired this disruptive open-source technology and are marshalling these achieve their respective aims. Many of the cyber-enabled services in this ecosystem are being hardened through cyber software such as anti-virus, firewall and hacking protection software.

IV. Impact of NTS on Security, Economy and Development

The above narrative clearly showcases that NTS threats cut across regions and impact on security, economy and development of states in varying measures. States have marshalled their militaries to fight non-state actors and ensure security of critical economic infrastructure. Post 9/11 terrorist attacks, the security establishment was quick to adapt and respond to the NTS threats and challenges but these have come at enormous costs as also diversions for the military from their primary tasks. For instance, the US created a new Department of Homeland Security to "secure the nation from the many threats". Its 240,000 employees provide a wide-ranging security services which "range from aviation and border security to emergency response, from cybersecurity analyst to chemical facility inspector" to keep "America safe".[27] The economic impact of 9/11 was enormous and according to a study, the direct costs of the 9/11 attacks was US $27.2 billion. However, another study has pegged the cost of attacks at a staggering US $3.3 trillion.[28]

Similarly, the impact on terrorism on tourism and Foreign Direct Investment (FDI) is worth an examination. Terrorism is a high risk activity particularly on tourism and this is best demonstrated by the fact that

25 Vijay Sakhuja, "Big Data: The new wave in the Maritime World" *South Asia Defence and Strategic Review,* Vol 10 Issue 6 Jan - Feb 2017, p.45.

26 Vijay Sakhuja, "India and Maritime Security: Do More", http://www.ipcs.org/article/india/india-and-maritime-security-do-more-4764.html (accessed 30 July 2017).

27 "Department of Homeland Security" available at https://www.dhs.gov/about-dhs (accessed 05 August 2017)

28 Elvis Picardo, "Don't Hide From The Reality Of How Terrorism Affects The Economy" http://www.investopedia.com/articles/investing/030215/how-terrorism-affects-markets-and-economy.asp (accessed 05 August 2017).

there was nearly 30 per cent decline in tourism in France. Importantly, tourism contributes approximately 7 to 8 per cent of total gross domestic product (GDP) to the State. Similarly, terrorist attacks can lead to drop in FDI in unstable countries. The development cost of NTS is difficult to estimate in totality but natural disasters can result in huge amounts of fiscal resources for restoration and reconstruction.

1. Regional Cooperation and Existent Mechanisms

Modern history is replete with example of States joining alliances, coalitions and groupings to respond to common threats and fighting wars. In recent times likeminded states have come together to address terrorism, piracy, fight transnational crimes at sea, and the international efforts to jointly respond to natural disaster like the Indian Ocean Tsunami is clearly a new paradigm of cooperation at sea. It has been argued that unlike the economic globalization (driven by revolution in information technology), oceans are acting as catalysts for globalization of maritime security.[29] Further, the importance of multilateral arrangement among maritime states has helped address contentious issues through diplomacy. This has been the catalyst for the mushrooming of multitude of cooperative organisations, multilateral structures, bilateral and multilateral arrangements focussing on political, diplomatic, economic and security dialogue among regional countries address a number of issues relating to security, safety, economics, environment, ecology and development initiatives such as the Sustainable Development Goals 2030.

Interestingly, governments have encouraged the industry and other stakeholder to join multilateral initiatives and develop strategies to counter NTS threats and challenges. For instance, the multilateral approaches to counter piracy resulted in the Internationally Recommended Transit Corridor (IRTC), a multination initiative under which warships of China, India, Japan and Republic of Korea undertake patrolling duties and provide cover to international shipping;[30] Shared Awareness and Deconfliction (SHADE) is a platform where country force commanders share tactical intelligence, information on threats and challenges, deployment of forces and other operational details relevant to counter-piracy operations;[31] and the Contact Group for Piracy off the Coast of Somalia (CGPCS) is a an arrangement which enables the military, industry, legal experts and other interest-based groups to deliberate and share information relating to counter piracy.[32] The CGPCS meets three times annually at the United Nations and the five Working Groups meet on regular basis strategize international counter-piracy policies and programmes. In Southeast Asia, the Eyes in the Sky (EIS) is an initiative by Indonesia, Malaysia, Thailand and Singapore to address the menace of piracy the Straits of Malacca.[33]

29 Atul Bhardwaj. " Indian Ocean-The New Template For Indo-US Ties", Financial Express, December 1, 2001.

30 "Information On Internationally Recommended Transit Corridor (IRTC) For Ships Transiting The Gulf of Aden" http://www.mcw.gov.cy/mcw/dms/dms.nsf/All/0D267A9F9869F872C2257631002D22E3?OpenDocument (accessed 07 August 2017).

31 "Shared Awareness and Deconfliction (SHADE)". http://oceansbeyondpiracy.org/matrix/activity/shared-awareness-and-deconfliction-shade (Accessed May 4, 2013).

32 For details of Contact Group for Piracy off the Coast of Somalia (CGPCS). http://www.thecgpcs.org/main.do?action=main (Accessed June 18, 2013).

33 "Launch of Eyes in the Sky (EiS) Initiative", https://www.mindef.gov.sg/imindef/press_room/official_releases/nr/2005/sep/13sep05_nr.html (accessed on 20 July 2017).

2. Geo-Economic Dividends and Geo-Political Challenges of NTS

The NTS threats and challenges offer a mixed bag of opportunities for states and other stakeholders. Although states acknowledge that there are a number of dividends of multilateral approaches to NTS threats and challenges, these are not devoid of national interests. In fact states creatively use occasions to maximize their national and international agendas. In the context of NTS threats, there are numerous examples. For instance, there are over 20 navies currently deployed in the Gulf of Aden to counter piracy; given that the piracy has reduced considerably, these states continue to dispatch flotilla/ task groups to the region. Over the last nine years, China deployed its navy in the Gulf of Aden to counter piracy, and it has now set up a naval base and positioned marines in Djibouti.

Trust is an important factor when states deliver NTS support to the affected nation. In the post 2004 Indian Ocean Tsunami situation, although Indonesia willingly allowed foreign troops to supplement its inadequate military capability, but it reacted after an opinion in Jakarta suggested that Indonesia was surrendering its sovereignty to outsiders. The US Marines engaged in the relief efforts had to withdraw and the US ships stopped maritime operations in support of its marines. Likewise, the Myanmar government was not quite willing in allowing US and French warships and aircraft to provide disaster relief during Cyclone Nargis.

3. Challenges for Militaries and Cooperative Mechanisms

The militaries across the globe have been in the forefront to respond to different types of NTS threats. In many countries, national security strategy documents, operating doctrines, and the missions and roles of the forces have been modified to include NTS threats and challenges. The militaries have also framed standard operating procedures (SOP) for multilateral naval operations to respond to NTS threats and challenges as also engaged in addressing human security issues in the post-conflict environment.

It is true that many of the NTS threats arise due to non-military events and therefore a military response may not always be befitting. However in the maritime domain, the naval forces are the most appropriate to render assistance due to their inherent flexibility and mobility, and lesser political restrictions if they operate outside the territorial waters of the affected state. Further, the sea allows for the fastest deployment of forces. The onboard supplies make them self-sustaining and therefore can be deployed for extended periods of time with minimal external support.

In the above context, maritime and naval cooperation is inherently most suitable for building mutual trust and confidence. Significantly, in some cases, it can result in strategic partnerships with institutionalized 'Joint Action Plans'. This is particularly important for smaller states who are constrained due to lack of response capabilities, they leverage institutionalized support arrangements and agreements.

Among the Indian Ocean littorals, a few countries possess significant maritime capabilities to play an active role in delivering maritime cooperation both bilaterally and multilaterally as also through regional and sub-regional approaches. The agenda for cooperation could be at three levels: (1) Policy; (2) Operational; and (3) Capacity Building.

(1) Policy

(a) Political cooperation among the Indian Ocean littoral countries and regular ministerial level meetings.

(b) Support the initiatives of the IORA and the IONS.

(c) Establish specialized Working Groups to address NTS threats.

(d) Involve extra-regional stakeholders to support regional strategies to counter NTS threats.

(e) Intensify cooperation in the fight against piracy through the Shared Awareness and Deconfliction (SHADE) and the Contact Group for Piracy off the Coast of Somalia (CGPCS) partnership programme.

(f) Develop contacts among Indian Ocean states' intelligence agencies and other agencies in the fight against terrorism.

(g) Reinforce co-operation in fight against WMD proliferation and in export control regimes.

(h) Establish Track I and II annual maritime security dialogue at levels of EAS, IORA and EU.

(i) Enhance technical and regulatory co-operation spanning areas such as maritime law, marine pollution, shipping regulations, and other technical issues under the International Maritime Organisation (IMO).

(j) IUU fishing is an important issue of concern under the ten targets contained in SDG 14. This can be achieved by developing effective measures to enhance transparency, institute accountability, and develop technological capability to monitor IUU fishing in international waters.

(k) Support international efforts to fight IUU fishing by joining the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. By June 2017, only 48 States had become party to the PSMA counting all 28 members of the European Union as one - with Japan and Montenegro about to join after having deposited their instruments of adhesion.[34]

(2) Operational

(a) Establish mechanism for joint exercises among maritime enforcement agencies of the Indian Ocean countries, ASEAN, EU member states, China, Japan, Republic of Korea, United Kingdom, and the United States.

(b) Regular port calls to each other's ports by navies to build confidence and trust for a common understanding of the challenges posed NTS threats.

(c) Assist in developing doctrines and SOPs (standard operating procedures) for greater cooperation and improving communications interoperability among various arms of the security forces of smaller states.

(d) Integrate regional navies in multilateral maritime operations to build response capability.

(e) Technical cooperation to improve surveillance and enforcement of fisheries in the Indian Ocean.

(f) Develop cooperative mechanisms for search and rescue, and disaster relief activities.

(3) Capacity Building

(a) Capacity building in maritime security through training and infrastructure.

(b) Offer low cost maritime security technology solutions to island states.

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34 "FAO meets in Oslo to discuss agreement on ports and IUU fishing", http://en.mercopress.com/2017/06/07/fao-meets-in-oslo-to-discuss-agreement-on-ports-and-iuu-fishing (accessed on 30 July 2017).

(c) Undertake collaborative research on maritime security systems and processes.
(d) Provide training and capacity building of maritime law enforcement officials.

Concluding Remarks

It is true that naval practitioners will continue to respond to traditional naval missions ranging from safeguarding sovereignty but they will simultaneously have to be prepared to address multiple forms of NTS threats and challenges such as protecting the marine environment. These threats and challenges require new approaches and new tools. Therefore the new era of conflict at sea demands a freshly articulated maritime strategy based on newly defined maritime threats and challenges.

A secure maritime environment can never be achieved by the efforts of a single country: it requires mutual understanding and cooperation of all the countries in the region, including neighboring regions. For that, it is necessary to start by sharing the common values on the benefits of regional maritime cooperation to be enjoyed by the whole maritime community.

It is also widely understood and accepted that no country can, all by itself, manage multitude of nontraditional threats and challenges. It is important to note that the oceans are acting as catalysts for globalization of maritime security and it has been argued that "One of the key for the future security in the Asia Pacific region is to think of interactions among regional armed forces more like commercial transactions, where all participants gain better security as a result of individual transactions." It is in this context that the relevance and importance of multilateral engagements among Indian Ocean littoral countries becomes critical to address NTS threats.