

How the Japanese and global economy would be impacted
by potential disruption of oil tankers transport in the Malacca Strait

Paper prepared for the Workshop
International Cooperation in the War against Terror
in the Asia-Pacific Region
with a Special Emphasis on the Malacca Strait

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Preface

Approximately 7 million years ago in Africa, when the apes first ventured out of the forest onto the plains and began to walk on two legs, the ancestors of the human race were born. The great journey of humans as they searched for safer, more fertile places to live reached as far as the southernmost tip of the American continent. In time, man also ventured further afield in search of the fruits of the sea eventually trading with others across the seas—this sees the emergence of a seafaring population.

The very beginnings of civilization can be found in the history of the relationship between humanity and the sea. As traders traveled, using various sea routes, different ethnic groups met, different cultures mingled, and the world became one. Those ethnic groups and nations which established maritime transportation and conducted trade on the oceans became economically prosperous. Sea routes, namely sea lanes have been depending on safety and the principle of navigation freedom.

Today, humanity has entered a new era in its dealings with the sea. The end of the Cold War has eliminated the previous balance of sea power, the globalization of economic activity is breaking down national borders in the shipping industry, and legal structures on international law of sea are changing as a result of the UN Convention on the Law of the Sea: a paradigm shift in the maritime world is taking place leaving a strong impact on the sea lanes. Like a spider spinning a web in mid-air, the “Sea Lines of Communication (SLOC)” form a “web” that, when integrated with the various distribution systems, forms an organic complex that props up the logistic support systems that are so essential to the world economy. The term “Consolidated Ocean Web of Communication (COWOC)” would perhaps be more appropriate to describe this new world.

Such maritime world as we know it today is distinctly structurally vulnerable in terms of security. The danger from piracy and armed robbery which happen often or concern about maritime terrorism makes the security environment of the sea lane highly uncertain.

In this presentation, I refer the sea zone connecting East Asia and South Asia along the Eurasian Continent to as the Eurasian Blue Belt, and examine the condition of shipping, to obtain a clear understanding of its weakness from a security perspective, and to provide references that will help us to look at ways to improve the stability of sea lanes in that belt,

examining the condition of shipping and vulnerable security environment.

1. Eurasian Ocean World

1-1. Eurasian Blue Belt and Sea Lanes

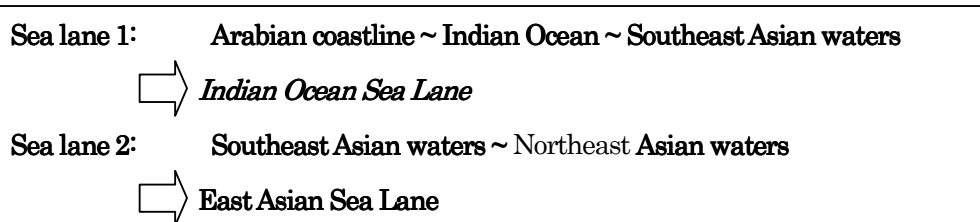
a. Eurasian Blue Belt

The ocean flowing along the southern and eastern borders of the Eurasian continent which connects the Indian Ocean, Southeast Asian Seas and East Pacific Oceans, namely the Eurasian Blue Belt prospered as the “Silk Road of the Sea” from way back to ancient times and still is the main artery of the sea that supports the world economy.

b. Sea Lane flowing along Eurasian Blue Belt

The world's two largest sea lanes flow along the Eurasian Blue Belt. Additionally, these two largest sea lanes are connected to a large outward-bound sea lane which is coming from the side of the South Pacific Ocean.

The two largest sea lanes are:



Other sea lane connected to the largest sea lanes is:



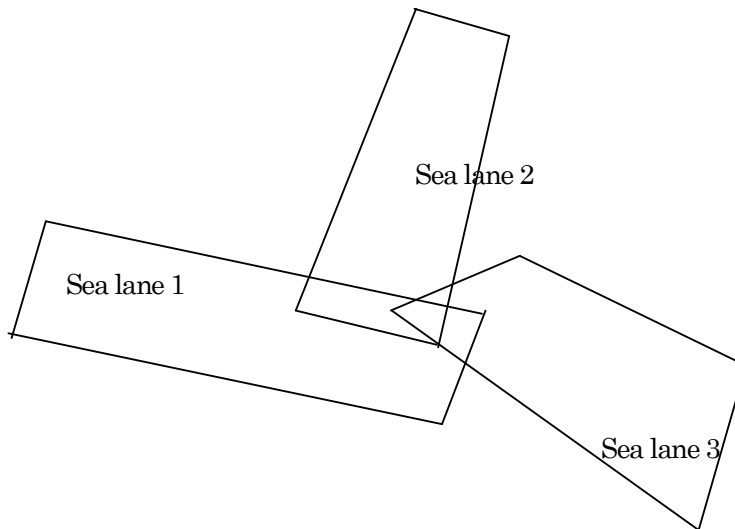
In this presentation, **sea lane 1** is referred to as the Indian Ocean sea lane, sea lane 2 as the East Asian sea lane and sea lane 3 as the South Pacific Ocean sea lane.

The Indian Ocean sea lane is located in the ocean which is wide open in the south. Way down south from this sea lane, circling South Africa and heading for South East Asia, there is another sea lane but by comparison the shipping is low and it merges into the Indian

Ocean sea lane which is presently the main stem. With the immediate security environment considered, adding to the historical tension between India and Pakistan, threat posed by the activities of the Liberation Tigers of Tamil Elam (LTTE) and other terrorist groups at sea are feared. Regarding naval power, the buildup of India is remarkable but by comparison other South Asian nations are small in size.

The East Asia sea lane runs through sea areas where jurisdictional and territorial waters of the neighboring coastal states are overlapped. As a security environment, aside from the tension between Taiwan and mainland China, there are territorial disputes over islands as well as disputes over sovereign right of sea bed resources in the South and the East China Sea. As for naval power, the buildup of strength of the Chinese navy is brisk.

The South Pacific Ocean sea lane passes through archipelagoes. There are various issues related to navigation in archipelagic waters and piracy problems as well as emerging apprehension of maritime terror. The naval power of neighboring countries is small in size when compared to Northeast Asia and remain in equilibrium.



1-2. World View of the Sea Lanes

a. Consolidated Ocean Web of Communication (COWOC)

The sea lane is composed of a neat combination of points and lines at sea which connects ports. With improved maritime transportation, it is traffic-laden with ships, as if the line connecting lading and landing ports is the main stem of a high-street. This is what is termed

as sea lane.

The sea lane extends, trade circles the globe, sea lanes are joined together, before long like a spider spinning a web in mid-air, a web of a sea lane network in all the seas of the earth will be formed and a maritime highway will be a newly-coined phrase.

These days, the globalization of economic activities and containerization of ships have drastically changed the shipping world along with imposing a change in the form of a maritime highway. Developed by a feeder services network that link regional ports, land and air transport systems with a central focus on hub ports handling giant containers and mutually connected by a hub and spokes network with a central focus on each hub port, a maritime highway will be organically integrated. As it was mentioned at the beginning, the term Consolidated Ocean Web of Communication (COWOC) would perhaps be more appropriate to describe this maritime highway than calling it as Sea Lines of Communication (SLOC).

In this age, a sea lane doesn't function alone. The Indian Ocean and East Asian sea lanes, which are tied inextricably to the other sea lanes passing through the North Pacific and Atlantic Oceans comprise the global economy. The defense of the sea lane can be thought of as the security of COWOC in a global scale.

b. Convergence Zones and Points

The sea lane is like the stem of a lotus plant. In the open seas outside the lading port, these lanes gradually become wider, and then converge at bottlenecks such as straits and islets. After passing through the bottleneck, they become wider once more, before finally converging in the landing port. After the Cold War, the dangers at these points and zones of convergence became apparent, and these dangers became recognized as major threats to sea lanes. In the Cold War era, all the seas were a battle field because of the global deployment of the US-Soviet navy. The decline of the Russian navy followed by the slimming down of US navy deployment brought about "Power Vacuum" in the seas, and danger and threat trend to concentrate in convergence points and zones where pirates and terrorist groups are able to operate .

The following are convergence zones and points in the sea lanes of the Eurasian Blue Belt:

Convergence Zones

- Northern Arabian Sea (Pakistan-India coast)
- Southern Bay of Bengal
- Strait of Malacca
- Indonesian archipelagic waters
- South China Sea
- East China Sea

Convergence Points

A hub port that props up the global economy as a maritime distribution terminal is precisely a convergence point. In the Eurasian Maritime World, the following world biggest hub ports account for major shares of world freight billing:

- Hong Kong
- Singapore
- Shanghai
- Shen Zhen
- Pusan
- Kaohsiung

c. Highly Accessed Sea Area (HASA)

The southeast Asian sea area where the three sea lanes intersect is the crucible of various security issues. Sea areas involving the Strait of Malacca, South China Sea, and archipelagic waters of Indonesia and the Philippines, dominating the strategic importance of maritime transportation, have a weakness in security. The South China Sea is not only the convergence zone of shipping, but while it is expected to have bountiful offshore resources, it is an area of unresolved territorial disputes such as the Spratly Islands, and at high risk of armed conflict. The Strait of Malacca is constantly-exposed to the risks of overcrowded shipping to collisions, entailing marine pollution as well as rampant piracy.

And in the archipelagic waters of Indonesia and the Philippines there has been a spate of crimes such as piracy, drug trade and terrorism across borders and affecting all the countries.

In this presentation, the convergence zones and points of Southeast Asian sea area where the three sea lanes intersect is referred to as the Highly Accessed Sea Area and is made an attempt to discuss the impact on the Japanese and global economy in the event when the sea lanes in the highly accessed sea area are blocked.

2. The Current Condition of World Shipping

2-1. Sea traffic volumes

The world shipping market is broadly divided into two categories—"bulk shipping" and "container shipping." Below, bulk carriers and container ships, which are regarded as the typical vessels that serve each of these types of shipping are examined.

a. Bulk Carriers

The cargoes of bulk carriers are broadly divided into two categories—"dry cargo" and "liquid cargo."

Dry cargo includes iron ore, coal, grain and other, minor bulk cargoes such as steel and timber. The total volume of dry cargo transported in 2005 in the world shipping market is estimated 2,362.5 million tons, and the total tonnage used to carry these cargoes is estimated 311.9 million tons (DWT).

Liquid cargo is crude oil and gas. The total volume of crude oil transported around the world in 2005 is estimated 1,956.2 million tons, and the total tonnage used to ship it is estimated 264.3 million tons.

According to calculations made by the research group of Nippon Yusen Co. Ltd., the total tonnage of bulk carriers required to meet the global dry cargo demand of 2,362.5 million tons would be 302.8 million tons, whereas the total tonnage of crude tankers required to meet the global demand for crude oil in the world would be 246.1 million tons.

These estimates show that there is a surplus of 9.1 million tons of dry cargo tonnage and a surplus of 18.1 million tons of crude tanker tonnage in the world's bulk shipping market.

Simply put, there is an over-supply of bulk carriers.

b. Container Shipping

There are 3,066 container vessels of 6.45 million TEU in 2003 and this has doubled of 7 years ago. However, the number of container vessel tend to be still inadequate unlike in the case of bulk carriers.

2-2. Situation of the convergence points

With the growing trend towards container ships in the liner sector of the shipping market, faster distribution and processing of larger volumes has become possible. This has led to more manufacturing of products in multiple countries, spurring on the development of the global economy. The hub ports that handle container ships are gradually becoming more systematized. Moreover, as networking on a global scale develops between hub ports, the feeder services networks that link the hub ports with regional ports and land and air transport systems are gradually taking on the shape of “hub and spokes.” In this process, shipping must be seen not simply as a system for sea transport, but as an essential sub-system of the Total Logistic Support System that props up the global economy. We are likely to see a pernicious effect on economic activities in the event of the blocking of container vessels even if short time period.

Major hub ports of the Eurasian Blue Belt

World Ranking	Hub Port	Handled Cargo (TEU)
1	Hong Kong	20,499,000
2	Singapore	18,100,000
3	Shanghai	11,280,000
4	Shen Zhen	10,614,000
5	Pusan	10,408,000
6	Kaoshang	8,840,000

Source: Informa UK Ltd *Containerisation International Yearbook 2005*

3. Security environment of the Eurasian Blue Belt

In the Eurasian Blue Belt, there are transnational issues including piracy, apprehension of maritime terrorism, conflicts between states over ocean utilization and unresolved territorial issues which make the security environment of the sea lane unstable. Additionally, sometime in the future, depending on what the forecasts of upheaval on the security environment which is attributable to resources and energy and the response of the international community, new conflicts over the sea lane will emerge and the security of the sea lane will become a major security concern.

3-1. Emerging dangers and threats

The following are the dangers and threats to the sea lane of the Eurasian Blue Belt.

- crimes at sea such as piracy
- maritime terror
- * natural and manmade disaster

More attention must be paid to terrorism at sea, as a threat that is likely to grow in the future. There had been no major incidents since the 1985 hijack of the Achille Lauro by Palestinian guerrillas. Following the 2000 bombing of the USS Cole, there have been terrorist incidents such as hostage –taking by Abu Sayyaf and cargo boat attacks by the Tamil Tiger, the bombings of MT Limburg (French tanker) in 2002 and of Superferry 14 in the Philippines in 2004..

3-2. Predictable destabilizing factors

The following are examples of destabilizing factors affecting the security environment of the sea lanes of the Eurasian Blue Belt in the near future.

- Upheaval of the security environment entailing an increasing demand for resources and energy
- Dispute between states over rights to marine resources or the delimitation of jurisdictional waters

- Impediments to passage due to excessive claims of sovereign and jurisdictional rights
- Expansion of global terror and frequent occurrence of maritime terror

Upheaval of the security environment entailing an increasing demand for resources and energy

For the stable securing of resources and energy, when various countries strengthen the deployment of their navies, the security environment change significantly. If China constantly deploys its navy to the Indian Ocean this could result in an upheaval in the security environment of the Eurasian maritime world. In China, which became a net oil importer in 1993, the degree of dependence on oil imports is soaring. If China deploys its naval vessels constantly or standing fleet in the Indian Ocean beyond the Strait of Malacca, the US will respond by strengthening navy presence in the Indian Ocean. The strategic environment will heighten the tension at once and the security environment of the convergence zones or points such as the South China Sea, the Strait of Malacca, the Southern Bay of Bengal, and the Northern Arabian Sea will precipitate instability.

Additionally, various states and actors are having more access to Central Asia, a prospective supplying district of oil and natural gas. When the energy resources of Central Asia are moved out from the Indian Ocean, the strategic importance of the Indian Ocean sea lane will further increase.

Dispute between states over rights to marine resources

With growing interest, various states are moving into the sea in search of resources and energy, disputes between states over rights to marine resources in the South China Sea and East China Sea and the delimitation of jurisdictional waters are fraught with the danger of escalating into armed conflicts in the future.

Impediments to passage due to excessive claims of sovereign and jurisdictional rights

Differences of claims between coastal states and user states over the navigation freedom and ocean management, peaceful use of the seas and military activities, in reality, would bring up serious issues such as impediments to passage.

It should be realized that it is specified by the UN Convention on the Law of the Sea (UNCLOS) that all coastal states would have an Exclusive Economic Zone (EEZ), where each state would assume sovereign rights over resources and jurisdiction over environmental conservation for sustainable ocean development. But a number of coastal states, which are still developing, assert rights bordering on sovereignty and develop ideas that they can place restrictions on navigation in their EEZs which are fundamentally regarded to be open as international waters. When claims by coastal states become excessive, they may be compared to an “enclosure of the sea” and the ocean looks like it was divided into each jurisdiction, jeopardizing the freedom of navigation itself which is essential for the economic development of countries and the international community. It is feared that the situation might take on an aspect of an “enclosure” war in convergence zones such as the East China Sea, South China Sea, Indonesian archipelagic waters, Southern Bay of Bengal and the Northern Arabian Sea.

4. When navigation in Highly Accessed Sea Area is disrupted.

4-1. Detours around the convergence zones

The potential to make a detour in the event of a blockage in one or more of the Convergence Zones of the Highly Accessed Sea Area, and the losses incurred as a result of the detour, are examined below.

a. Block in the Malacca Strait

If the Indonesian Archipelagic Waters were open, ships could enter the South China Sea through the Sunda Strait, or take a route East of the Philippines via the Lombok-Macassar Straits. In the case of a shipment of crude oil from the Gulf to Japan for example, in comparison to the route through the Malacca Strait, the detour would add about three days to the voyage. This calculation should be applied to China and Korea. Also, an additional 15 or so tankers would be required to secure the necessary volume of crude oil for peacetime requirements.

b. Block in South China Sea

Once more, based on the premise that the Indonesian Archipelagic Waters are open, ships could navigate to the East of the Philippines via the Lombok-Macassar Straits. The delay in transporting crude oil from the Middle East to Japan and the number of additional tankers required would be the same as the blockage of the Malacca Strait. Namely, additional three days navigation and 15 ships are required.

c. Block around the Indonesian archipelago

Considering the case of block around the Indonesian archipelago, In this case, the Sunda Strait and the Lombok-Macassar Strait would be blocked, and it may also be impossible to navigate through the Malacca Strait. The only detour available would be to go around the south of Australia. In the same example of transporting crude oil from the Middle East to Japan, this would add two weeks to the voyage and an additional 80 or so tankers would be needed to fulfill peacetime crude oil requirements.

4-2. Acceptability of Convergence Zones detours

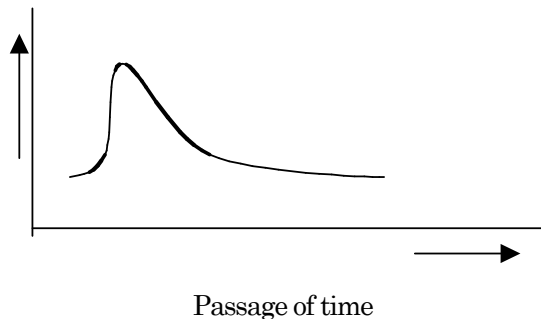
a. Bulk Shipping

Quantitative estimates of the economic losses that would be incurred by such detours differ according to the calculation methods and premises used. Some estimates of the potential losses to Japan from disruption of shipments of crude oil from the Middle East to Japan are \$87.9 million if the Malacca Strait were blocked, \$200 million if the South China Sea were closed, and \$1.2 billion if the Indonesian Archipelagic Waters became impassable. To what extent such losses would affect the Japanese economy is something that would have to be considered in terms of the economic situation at the time, so it is impossible to make an arbitrary general judgment. Nevertheless, if the Malacca/Singapore Strait and the Indonesian Archipelagic Waters were blocked, then all crude oil and other freight bound for Japan would have to make a detour around the south coast of Australia, which would have a significant economic impact not only on Japan but on many other countries, including the countries of Southeast Asia and South Korea. Although the US would also feel an economic impact, of even greater concern would be the security implications to the United States in the restrictions on the movements of its navy and the effect of such restrictions on its

strategic relations with China.

Someone estimates the extra freight costs involved in such detours would not be significant. The greatest expense would be the costs of chartering new ships to supplement the shortfalls resulting from delays in delivery. In terms of crude oil, however, Japan does have a domestic stockpile. If that stockpile could be used to cover the shortfall without having to resort to additional tankers, Japan should be able to manage for about twelve months even if the tankers had to make a detour traveling via the south coast of Australia. Also, as mentioned above, there is significant surplus capacity of crude oil tankers. Thus, the considerable number of underutilized crude oil tankers could move to areas of new demand. As can be seen in figure below, the new charter costs would experience an initial sharp increase, but market principles would eventually prevail and costs would settle down to appropriate levels. But, this estimation should be applied in short period. In long term, it must become a very serious situation.

Response of idle vessels



(Source: INSS and CNA, *Chokepoints*, National Defense University Press, 1996)

b. Container Shipping

In the case of container shipping, however, the situation is dramatically different. If container ships were forced to take detours that result in delivery delays, this would impose serious losses on the world economy. In container shipping, raw materials and products are shipped from regional ports in containers and are gathered together at the hub ports. They are then allocated to coastal shipping or land transportation. With the demands for JIT, large-scale turmoil in manufacturing processes could be expected to result from any delays in

delivery. The blockage of the Highly Accessed Sea Area would undoubtedly affect the economies of many countries in a short period of time.

4-3. Weaknesses of the Hub Ports

The hub container ports are the heart of the “Ocean Web of Communication,” and the destruction of their systems, for whatever reason, would incur immeasurable economic losses. Also, unlike Convergence Zones, in the case of Convergence Points, there is neither the possibility of a detour if there is a disruption nor are there any alternative ports. It would be virtually impossible to redirect all ships enter the Port of Singapore to other ports. Today, with the global economy moving as one, the effects of the paralysis of a hub port would know no bounds.

5 Considerations

The followings are summary of a discussion on detouring and its implications when navigation is disrupted due to the blockade of the convergence zone of the Highly Accessed Sea Area or when a hub port which constructs a convergence point is unusable due to terrorist attacks or so.

- For Highly Accessed Sea Area, detours are possible but only for the three major sea lanes, and coastal routes would still be disrupted. As things stand today in sea transport, which should be described as a “COWOC,” even the breakdown of the functions of just one coastal sea lane would affect the economies of many countries.
- One cannot make any sweeping generalizations about the economic losses and the acceptability of detours around Highly Accessed Sea Area. In terms of bulk shipping, surplus vessels and crude oil stockpiles may help those countries with spare economic capacity to escape significant losses. But it should be limited in short period. The losses due to a disruption in container shipping, however, would have a negative impact on the global economy.
- If sea lanes in HASA were to be cut off by an international armed conflict, terrorist attack,

criminal act or other similar reason, the establishment of detours would likely be the safest option. Nevertheless, “freedom of navigation” is an essential requirement for the survival and progress of nations and the human race. It is something that must be given to all ships in obeisance of the Convention on the Law of the Sea and its related agreements, as well as other international agreements for the protection of resources and the environment. Such an event is not a question of merely making a detour if the sea lane is blocked, but one that should be seen as a situation that demands responses in terms of defense power.

The required solutions are the stabilization of the security environment, the maintenance of order and international approaches to the strengthening of defense positions.

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