MARITIME TRANSPORT SYSTEMS IN THE NORTH-SOUTH PACIFIC BOUND ROUTES THROUGH INDONESIA

Saut Gurning¹, Stephen Cahoon²

¹ Australian Maritime College, Launceston, Australia, E-mail: rgurning@utas.edu.au
² Australian Maritime College, Launceston, Australia, E-mail: s.cahoon@amc.edu.au

Summary:
The maritime transport system in the north-south Pacific bound routes has been used intensively as the basis of seaborne trade among countries such as Australia, New Zealand, many East Asian countries and Indonesia. In relation to Indonesia, over the past five years there has been a significant increase in shipping traffic which may result in an adjustment being made to sea-lanes to ensure the sovereignty of Indonesia is not affected but instead to utilize the optimum benefits of countries around the routes. Security problems could potentially arise in the necessary adjustment for future cooperation. This paper discusses issues of concern and matters that should be addressed by various countries using the sea-lanes on the basis of the existing network of maritime transport systems in the routes.

Keywords: maritime transport systems, sea-lanes, sea-borne trade, Indonesia

1. INTRODUCTION

The maritime transport system is still a new and expanding concept. It encompasses not only the vessels, maritime routes and ports as traditional components of the marine sector, but also their sea-borne trade, maritime logistics, and the interactions among entities in one shipping region [1] in terms of cooperation or policies. As part of the broader freight transportation system, the north-south Pacific bound routes are constantly being shaped and reshaped by the development of its maritime transport systems. This paper examines these routes in the context of maritime traffic through Indonesia.

2. MARITIME ROUTES IN THE NORTH-SOUTH BOUND AS SEA-LANES

In general, sea-lanes can be defined as being various paths used by ships as they cross the seas between trading areas from the port of loading to the port of discharging. A trade route can exist without a sea lane, and, in many cases the sea lane is the trade route; therefore, as trade routes change, so do the sea-lanes. Therefore sea-lanes can be referred to as trade routes for shipping companies which are concerned with the flow of commodities between regions, countries, or ports. Various researchers [2]; [3]; [4], have redefined sea-lanes as being commercial sea-lanes of communication (SLOC).

The decision of which sea-lane is to be used is dependent on technical requirements and external factors. The technical requirements are related to the shipping market and its operational factors of trading through sea-lanes are referred to as seaborne trade. These factors pertain to types of trade, their volume, the consignment, and the cluster of directions either on north-south bound or on west-east routes; and these, in turn, determine which ships are used in terms of type, size, capacities and speed. These market forces and the needs of the trade and operational aspects of the ship determine scheduling and choice of a sea lane.

The external factors of sea-lane selection are often determined by political factors between the users of a particular sea-lane as well as domestic shipping policies and trade agreements surrounding the sea-lanes. As an archipelagic State, Indonesia has important sea-lanes located on the north-south routes referred to as the
Indonesian archipelagic sea-lanes (ASL). These sea-lanes, referred collectively as Sea-Lane III, connect Indonesia with the Pacific and Indian Oceans. Sea-Lane III is divided into three sub Sea-Lanes ASL IIIA, ASL IIIB, and ASL IIIC (see Figure 1 on the following page). The route from its entry from the Pacific Ocean to its exit to the Indian Ocean through Indonesia for each Sea-Lane is as follows:

**ASL IIIA**  Miangas Island - Maluku Sea - Grey Hound Strait - Banda Sea - Flores Sea - Ombai Strait - Sawu Sea - the Indian Ocean (exit point around Sawu island).

**ASL IIIB**  Miangas Island - Halmahera Sea - Maluku Sea - Grey Hound Strait - Banda Sea – Indian Ocean (exit point around Yoko Island to the east of Timor Island).

**ASL IIIC**  Sayang Island-Halmahera Sea - Seram Sea - Arafuru Sea then divides (a) east to Torres Strait; and (b) west to the Indian Ocean

### 3. SEA-BORNE TRADE USING THE NORTH-SOUTH PACIFIC ROUTES

The Bureau of Infrastructure, Transport and Regional Economics of Australia [5] reports that between 7,200-7,300 ships used Sea-Lane III in 2006-2007 and transported about 585 million-tonnes of trading cargo from Australia and New Zealand to its trading partners in East Asia, South East Asia, Japan and North Asia (see Figure 2). This tonnage represents 90% of the total Australian international trade of 656 million-tonnes in 2007 [5]. The same research at the time predicted there would be an annual increase of approximately 20% of cargo transported through these sea-lanes during the period of 2001-2008. In that period, typical cargoes transported through these important sea-lanes were dry-bulk commodities consisting of mining and agricultural products such as wheat, soybean, coal, iron-ore, bauxite, and alumina.

It can be assumed that from the trend of existing dominant shipping activities, the configuration of Indonesia Sea-Lane III has become a typical dry-bulk sea-lane. The other types of cargoes transported on the sea-lanes apart from dry bulk are general cargo, oil, and break-bulk between Australia and New Zealand to and from the Far East, Europe, North America, and Asian countries. More specifically the main generators of cargo in the North Pacific were the United States, Japan, Singapore, Hong Kong, Taiwan and South Korea. In the North Atlantic, ocean cargo was generated at ports in the United States, the UK, European Continent, and the European Mediterranean. Another major area of general cargo trade is via containerized trade. However, the main sea-lanes, particularly for Asian regions tend to cross the South China Sea to the Sunda Straits and the Indian Ocean after calling at Singaporean or Malaysian ports as transhipment flows [6]; [7]; [8]. Less important, but still significant are the other routes or sea-lanes through East Papua New Guinea to Western Australia and New Zealand. This development tends to emphasize the importance of select ports with high rates of cargo accumulation and, therefore, the importance of the corresponding SLOCs. For example, economic and operational factors may be substantial arguments for continuously choosing the passage through Sea-Lanes III for dry-bulk commodities. Economic factors such as high demand for energy and industrial development especially in China, South Korea, and Japan will produce long-term shipping contracts for dry-bulk fleets [4]; [5].

Due to operational concerns, the need for shorter distances with a suitable speed resulting in efficient fuel costs forces shipping companies to manage their operations as efficiently as possible. As ships are dependent on trade and supply chain patterns, any alterations of trade volume or the voyage distance will affect them. An increase in volume given the optimum distance will require more ships; and an increase in distance with the given volume will generally result in the use of larger ships [13]. Changing volumes, distances, and direction affects the fleet arrangement in respect to the types and sizes of ships and also the relative importance of changes to trading areas. This is particularly important in bulk trades where the routes often alter rapidly and frequently especially with raw materials or mining products such as iron ore, coal, and grains. Due to changes to trade routes, the use of established sea-lanes also changes. However, as there are no navigational restrictions using Sea-Lane III in terms of draught or the width of navigational route, the location of sea-lanes remains basically unchanged, but their use varies substantially. In addition, even if a trading area does not change in importance, the use of a suitable SLOC may change because of ship characteristics that require certain limitations due to technical requirements such as size and capacities. For example, coal exporters from Australia to Japan and China have been substantially and economically important for many years leading to established route problems. As an increasing proportion of these exports are carried in ships in excess of 300,000 deadweight tons (DWT), these ships may use different sea-lanes as they disperse from the converging points. The other existing progression in these sea-lanes that should occur is that trade flows are rarely balanced. During the period 2005-2006, the imbalance of inward and outward traffic differentiated in the range of 8-10% [11] and [5].

2
Figure 1: Archipelagic Sea-Lanes (ASL) in the North-South Bound Routes

NOTES: ASL I (A,B,C,D) Through Sunda Strait, Bangka / Batam, and Karimata Strait, and South China Sea; ASL II Through Lombok Strait and Makassar Strait ASL III A Through Lombok Straits, Buru and Molluca Sea; ASL III B Through Timor Sea, Banda Sea, and Molluca Sea; ASL III C Through Arafura Sea, and Banda Sea ASL D similar with ASL A; ASL E the continue of IIIA through Celebes Sea and Talaud; ASL F through Seram Sea; ASL J through Aru, Seram Sea and Halmahera EW (East-West Route) consisting of EWA and EWB through Java Sea

Sources: [12] and [11]
In 2006, there were about 3,400 ships entering the sea-lanes and 2,850 ships exiting the sea-lanes. The picture of traffic density illustrates less concentrated traffic on the southern region of sea-lanes supporting the idea that more cargo goes to the Asian region than to Australia and New Zealand. As a consequence, shipping companies try to plan the routing of their ships to minimise ballasting (in bulk trades) and unused cargo space (in general cargo trade). This leads to triangular voyages and cross trading, all of which contribute to today’s utilization pattern of sea-lanes especially markets bordering Sea-Lane III. Furthermore, Sea-Lane III supports the initial alternative of multimodal operation of some cargoes from Asian regions to Southern Australian regions and vice versa going via the Australian North-South land bridge through rail-linkage from Darwin to Melbourne [14]; [15]; [16]. This creates a considerable faster cargo route.

**Figure 2**: The trend of total volume and value of shipping using Sea-Lanes III in the period 2001-2008

### 4. THE DOMINANT MARITIME LOGISTICS OF BULK CARGOES

Bulk cargoes have been dominating the multilateral trade of countries utilizing the above routes as in the case of Australia and Indonesia trade in the period 2001-2006. In 2006, the traffic volume of cargo flowing between the two countries was estimated at 3.8 million-tonnes as bulk type cargo (both dry and liquid), 2.8 million-tonnes as containerised and 0.2 million-tonnes as break-bulk forms [7]. The total traffic volume through sea transportation reached around 6.8 million-tonnes accumulated from the non oil and gas trading activities of the two countries. If the period 2001-2006 is considered, then it could be stated that the trade pattern of the two countries has been fluctuating over the period with a reasonably stable portion of these three types of consignments. Commodities exported from Indonesia to Australia in the form of dry bulk cargoes are predominantly nickel ores in concentrate, uncoated papers, and chemical products. Products and commodities exported from Australia are mainly wheat and flour, artificial corundum, cane or beet sugar, iron-ores, mineral or chemical fertilisers, unwrought aluminium, and uncarded or uncombed cotton. On average, 25% of Indonesia bulk cargoes called at Townsville (Queensland), 22% at Newcastle, 32% at Port of Hedland (West Australia), and the remaining 20% at Gladstone, Broome, Darwin, and Wyndham. From Australia, the majority of bulk commodities, about 65%, called at Tanjung Priok and Cigading with approximately 30% going to Tanjung Perak and the balance of 5% calling at various ports in Indonesia [5]; [7]; [11]. Using secondary data sources during 2001-2006, it was found that both Australia and Indonesia have a similar pattern of international trading flow in terms of commodities which are mostly specialised in mining and agricultural products. For example, approximately 70% of Australian export commodities are mining goods in dry bulk consignment. Similarly, about 60% of Indonesia’s export merchandise is also categorised as mining and agricultural products. Indonesia’s semi or finished nickel products
have been exported to Australia as raw materials to be processed further then distributed to the Australian domestic market or international markets.

The countries of East Asia – Japan, China and South Korea in particular – have no choice but to depend predominantly on maritime transport through this route. Japan, is one example which depends on foreign energy resources for 99.7% of its crude oil, 99.6% of its iron ore, 86.3% of its wheat and 94.7 % of its coal, to name only a few major items in 2001-2006 [11]. Australia is Japan’s fifth largest source of imports – imports which play a key role in the Japanese economy. Australia is Japan’s third largest supplier of minerals and energy and the largest contributor to Japan’s energy supply. Australia’s stable supply of minerals and energy to Japan is essential for powering the Japanese economy. Japan continues to rely on Australia for well over half its iron ore and coal needs, one sixth of its natural gas needs and one third of its uranium needs. Australia is Japan’s largest supplier of a further six key minerals: zinc, bauxite/alumina, lead, silica, titanium minerals and zircon. Those commodities are dry bulk with the volume about 174 million-tonnes in 2006-2007 which was directly transported to Japan by dry-bulk fleets without any transhipment operations. The value of those commodities were at approximately US$ 47.1 billion [5]. The other important trade route which has been utilizing the routes is the China-Australia route. In its pattern of foreign trade, China is different from other countries in the region. First, in terms of endowment in natural resources, China is in an enviable position relative to its Northeast Asian neighbours, including Japan. However China’s maritime trade, coastal and inland shipping are becoming proportionally dominant in the area of north-south bound shipping through the Pacific Ocean mainly on dry bulk commodities. The major dry-bulk commodities passing through these sea-lanes as main trading commodities of Australia and China are iron ore, coal, wool, cereals, metallic products, aluminium products, scrap metal and oil, all valued at approximately $54.3 billion with the total volume approximately about 234 million-tonnes in 2006-2007 [5]. The other significant destination route using the sea-lanes is South Korea. The north-south bound route of South Korea mainly transports commodities such as oil, coal, iron ore, lead and zinc ores and concentrates, cereals, aluminium products, and logs which are valued at approximately $18 billion and about 74.5 million-tonnes in transported volume tons annually passing through Sea-Lane III [5].

5. POSSIBLE SECURITY THREAT

There is a possibility of terrorism threats using Sea-Lane III. A terrorist group had been tracked using Indonesia’s domestic shipping to supply illegal weapons in two conflict areas both in Ambon (Maluku) and Poso (Central Sulawesi) during the period of 1999-2004 (see diagram in Appendix). Jemaah Islamiyah has been frequently identified as the master-mind of various bomb attacks in these two areas [17]. Jemaah Islamiyah has been supported by the Moro Islamic Liberation Front, and Abu Sayyaf terrorist groups based in the Philippines. These three terrorist groups have long operated in the same areas coming from Moro and South Philippines using the Arafura Sea, and Banda Sea [18]. Their motives in using sea-linkages for their war acts are evident by the February blast of 2004. This al-Qaeda connected Abu-Sayyaf blast destroyed Super-Ferry 14 in the Philippines, killing 118 and leaving the ship wrecked on the beach [19]. The Super-Ferry 14 incident and their sea-way movement using Sea-Lane III from Moro-Ambo-Poso may be evidence that global terrorist groups continue to plan maritime terrorism activities including in the area of Sea-Lane III. Furthermore, information from captured Al Qaeda member Abd al Rahman al Nashiri reportedly included plans for attacks on a wide range of Western maritime targets, including military vessels, oil tankers, and cruise ships [17]; [19]. Similarly, according to Indonesia's state intelligence agency, detained senior members of Jemaah Islamiyah, the al Qaeda-linked Indonesian terrorist group, have admitted that the group has considered launching attacks on Malacca shipping [20]; [17]. This, however, requires strong naval forces, of which many of the navies of countries affected by maritime terror are not up to the task. The Indonesian navy, which faces the biggest challenge in terms of maritime terrorism, is aging and has few warships and resources to patrol the vast coastline and periphery of its 17,000 islands. Only 30% of its 117 ships are seaworthy [18]. In regards to the seaway of Moro – Ambon – Poso, the situation in Philippines is not much better. With insufficient maritime power, the two countries in charge of securing the passage to Indonesia Sea-Lane III are clearly incapable of doing it alone.

6. COOPERATION BASED ON BALANCED INTERESTS

Having discussed the development and future progress including the threat of the sea-lanes; countries, shipowners and shipping companies should further develop global community cooperation for using the routes. However, this needs to take into account the balance of power and approaches in terms of security and economic benefits without hampering the sovereignty of Indonesia as the archipelagic State of the sea-lanes. Security
cooperation designed for Sea-Lane III should be concentrated on the protection of marine navigation facilities, using coast-guard force and other maritime force among sea-lane users. The basic purpose of the cooperation should be to protect and secure marine assets including ships, cargo, seafarers, and the marine environment from endangering factors and threats including terrorism in the area [21]. Australia and Indonesia already have a recent security cooperation, the 2006 Lombok treaty [22], which covers various areas including cooperation on defence, counter terrorism, maritime security, emergency preparedness and transnational crime. However, due to significant traffic growth through the routes, the treaty could benefit by being expanded not only in the context of Australia and Indonesia, but also to include other users and parties with an interest in the use of Sea-Lane III, in particular shipping companies and ship owners from Japan, China, South Korea, and New Zealand. Table 1 provides examples of some approaches that may be considered by interested countries as a means to create safer and more secure trade routes.

Table 1: Potential Maritime Cooperation for trade routes

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Method</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone cooperation</td>
<td>Focus on semi enclosed seas and its related operations</td>
<td>[23]; [24]</td>
</tr>
<tr>
<td>Restricted cooperation</td>
<td>Under specific zones of boundaries</td>
<td>[8]; [25]</td>
</tr>
<tr>
<td>Joint two tiers scenario</td>
<td>License a corporation to exploit the object of cooperation</td>
<td>[8]</td>
</tr>
<tr>
<td>Air traffic service cooperation</td>
<td>Provide joint air surveillance</td>
<td>[26]</td>
</tr>
<tr>
<td>Clean slate decision</td>
<td>Action first prior to agreement</td>
<td>[27]</td>
</tr>
<tr>
<td>Interim regimes</td>
<td>Apply a relative long-term period of time for cooperation and establish a common authority</td>
<td>[28]; [24]; [29]</td>
</tr>
<tr>
<td>Regional initiatives</td>
<td>Building security awareness through economic cooperation</td>
<td>[9]; [30]</td>
</tr>
<tr>
<td>Revolving fund committee (RFC)</td>
<td>Provide a common operational funding collected from littoral states</td>
<td>[31]</td>
</tr>
<tr>
<td>Maritime domain awareness</td>
<td>Generating a common intelligence action for maritime security purposes</td>
<td>[32]</td>
</tr>
<tr>
<td>Joint law enforcement vessel and aircrafts</td>
<td>Naval cooperation and counter-terrorism efforts among regional and bordering countries</td>
<td>[33]; [8]; [34]</td>
</tr>
<tr>
<td>A neutral multinational framework</td>
<td>Combination of zone cooperation, limited actions and include extra regional efforts</td>
<td>[35]; [36]</td>
</tr>
<tr>
<td>“User pays”</td>
<td>Collectively provide payments mainly from ship owners</td>
<td>[37]</td>
</tr>
</tbody>
</table>

7. CONCLUSION

The regional economic network of sea-lanes on which Pacific north-south bound shipping users rely on its maritime trade are being used by its large merchant fleet which includes bulkers and tankers dominantly. Sea-lane security has been a matter of concern to shipping industries based in Indonesia, Japan, South Korea, China, and Australia as on energy-related dry-bulk type shipping through these sea-lanes. Therefore, in the future, countries in the Pacific north-south bound trade routes have to foresee the development of security threats of its maritime transport activities on the Indonesian Sea-Lane III. These parties need to come to the realization that if something happens in relation to the security of these sea-lanes, then the effect of redirecting to other routes from the existing sea-lanes would create uncertain shipping operations which are costly and time consuming. Based on that development, therefore, it is time to usher in a new paradigm that will focus on developing the use of the sea-lanes. In the future, problems of possible security threat in Sea-Lane III need to examine future cooperation on the basis of developing a common benefit of these sea-lanes.
REFERENCES


/indonesia_text.pdf.

Appendix: Maritime Threats in Sea-Lane III