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Maritime Connectivity in Archipelagic Southeast Asia: An Overview

Keith Trace, Barend Frielink, and Denis Hew
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Abbreviations

aSEA	-	archipelagic Southeast Asia
ASEAN	-	Association of Southeast Asian Nations
BIMP-EAGA	-	Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area
DSL B	-	Domestic Shipping Licensing Board
FPA s	-	Federal Port Authorities
GDP	-	Gross domestic product
IMT-GT	-	Indonesia-Malaysia-Thailand Growth Triangle
IPC s	-	Indonesian Port Corporations
JICT	-	Jakarta's International Container Terminal
KCT	-	Klang Container Terminal
MEC	-	Maritime Economic Corridor
MISC	-	Malaysian International Shipping Corporation
MPA	-	Maritime and Port Authority of Singapore
MPH	-	Moves per hour
PAT	-	Port Authority of Thailand
PNG	-	Papua New Guinea
PNGHL	-	PNG Harbors Ltd.
PPA	-	Philippines Port Authority
PRC	-	People's Republic of China
PSA	-	Port of Singapore Authority
PTP	-	Pelabuhan Tanjung Pelepas
Ro-Ro	-	Roll-on/roll-off
TEU	-	Twenty-foot equivalent units
UNCTAD	-	United Nations Conference on Trade and Development
USAID	-	United States Agency for International Development
WTO	-	World Trade Organization

1. Introduction

Archipelagic Southeast Asia (aSEA) covers five Association of Southeast Asian Nations (ASEAN) member countries—Brunei Darussalam, Indonesia, Malaysia, the Philippines, and Singapore—together with Papua New Guinea (PNG) and Timor-Leste.¹ The aSEA region includes the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA) and the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT).

The key to understanding the region lies in an appreciation of its archipelagic nature. aSEA includes more than 24,000 islands spread across 5,200 km from east to west and 3,400 km from north to south. It has a population of over 350 million, 225 million of whom live in Indonesia with a further 87 million living in the Philippines (Green, 2008).

To the inhabitants of the archipelago, the sea is at once a link and a barrier, as well as a resource and a challenge. On the positive side of the ledger, the sea provides food and employment, while the danger of an unsustainable marine environment and the fact that proximity to the sea heightens vulnerability to natural disaster are potential negatives.

This paper provides a detailed overview of maritime connectivity in the aSEA region. Section 2 discusses the economic diversity and development gaps that exist among and within the aSEA countries. Section 3 argues for the importance of improving maritime connectivity in bridging this economic divide as well as its role in economic development and poverty alleviation. Section 4 examines the development of the maritime sector including assessing the demand for maritime transport and the supply of shipping services in the aSEA region. Section 5 assesses the region's existing maritime infrastructure, particularly the adequacy and efficiency of ports. The region's maritime policies related to shipping and ports are examined in Section 6. Finally, Section 7 provides key policy recommendations that could strengthen maritime connectivity in the aSEA region. This final section also highlights the costs and potential problems that may arise with the implementation of policies to improve maritime connectivity.

2. The aSEA Economies

The aSEA economies are extremely diverse (see Table 1, page 36). Their population varies from 225 million in Indonesia to 40,000 in Brunei. Gross domestic product (GDP) per capita varies from \$440 in Timor-Leste to over \$35,000 in Singapore. aSEA countries differ significantly in their reliance on foreign trade. Measured by the ratio of exports to GDP, the degree of trade openness varies widely from 2.2% in Timor-Leste to 230.9% in Singapore.

While the ASEAN member nations of aSEA are at first glance diverse, they share a number of common features. Singapore is a mature economy with a level of GDP per capita comparable with many advanced western industrial nations. Having experienced strong

¹ Where relevant, this report will make reference to Thailand as well.

economic growth in the 1980s and early 1990s, Malaysia has enjoyed renewed growth following the Asian financial crisis of the late 1990s. Brunei is a wealthy country heavily dependent on earnings from oil. Indonesia developed rapidly in the 1980s on the basis of labor-intensive manufacturing (mainly centered on Java) but has failed to maintain early momentum. The Philippines has yet to show higher sustained growth. These countries have a number of features in common: relatively open economic policies; low and reducing levels of tariff protection; and a strong reliance on export-led economic growth. Indonesia, Malaysia and the Philippines also have in common that large areas of the country are not well-connected and much poorer than the main centers (eastern Indonesia, East Malaysia, southern Philippines).

PNG and Timor-Leste are at a much earlier stage of economic growth than their ASEAN counterparts. Not only is their GDP per capita much lower, but Timor-Leste's very low trade intensity reflects the country's wider political and economic problems. PNG and Timor-Leste's transport needs and existing service patterns differ significantly from those of the ASEAN members of aSEA. Timor-Leste has extremely limited airline and shipping links. PNG's connectivity is also poor and tends to be oriented towards Australia rather than Southeast Asia.

The development gap between the ASEAN members of aSEA and PNG can be considered analogous with that between the more advanced ASEAN countries (the ASEAN-6) and the newer and less developed members i.e., Cambodia, the Lao PDR, Myanmar, and Viet Nam.

3. The Importance of Maritime Connectivity

Improved connectivity, especially through transport links, is an essential condition for economic growth. Transport links not only provide physical access to resources, but also enable producers to take advantage of opportunities in domestic and foreign markets, leading to economies of scale and specialization.

At the grassroots level, local transport links—whether provided by road, rail, or water transport—are essential if local communities are to sell their produce in neighboring markets and purchase a range of manufactured goods with the proceeds. The existence of local transport links make possible specialization of production according to comparative advantage and facilitate the emergence of a local and regional economy. In many areas of archipelagic Southeast Asia, poor roads and non-existent rail communications mean that sea or river transport is required to access local urban centers.

Since poverty and isolation (the absence of basic transport services) are closely correlated, improved connectivity is a necessary condition for poverty alleviation. World Bank experience with rural highways in Africa and South Asia has shown that the provision of basic access through all-weather roads contributes to the reduction of poverty in rural areas, especially when combined with programs for socioeconomic development. Economic growth, made possible by the provision of improved transport links, contributes to

poverty reduction by generating income-earning opportunities for the poor and by increasing government capacity for income redistribution (Liu and Gannon 1999).

The impact of improvements in connectivity on poverty may be direct or indirect. Connectivity has a direct impact on poverty where improvements in transport or communications create additional income and employment. The construction of an all-weather local road, a bridge linking two islands or the provision of a regular shipping service where none existed before will lead to an expansion of employment opportunities in local industry. Transport improvements have an indirect impact when investment in a new facility sets off a chain reaction that creates upstream or downstream employment benefits. For example, port privatization coupled with improvements in local roads may lower container movement costs, thereby increasing the competitiveness of agricultural processing industries. While the indirect effects of transport improvements may be very important, relatively little is known about them and forecasting their scale is difficult. However, case studies of economic development suggest that there is considerable scope for improvements in connectivity to play a direct role in poverty alleviation (Liu and Gannon, 1999).

Improved connectivity at a regional level widens the potential market available to local producers, providing opportunities to specialize in agricultural or industrial production according to comparative or competitive advantage. The economies of scale generated may enable firms to lower the unit price of their products and further widen their market. Links between regional economies may develop within the borders of a country or between regions located in neighboring countries.

In a globalized world, efficient connections between the aSEA region and international markets are absolutely essential. Over the past two decades, the growth of global trade has consistently outpaced the growth of world GDP. In developing countries in Asia, including the People's Republic of China (PRC) and India, trade liberalization and the globalization of production have been the main drivers of economic growth. The aSEA region has also enjoyed an acceleration of economic growth as a result of globalization.

The ASEAN members of aSEA experienced a period of economic expansion and unprecedented prosperity in the 1980s and 1990s, attributable to political stability, sound macroeconomic management and an open international trading environment. Under the impact of trade liberalization, internationally traded aSEA production increased more rapidly than national income, the commodity composition of trade changed significantly, and major changes took place in the pattern of trade flows. In particular, there has been a significant increase in intra-Asia trade especially between ASEAN countries and the PRC. Intra-ASEAN trade has also increased significantly over the past two decades.

Since the bulk of the aSEA region's international trade is carried by sea, access to high quality international shipping services is of paramount importance. In an increasingly competitive world, nations with access to efficient and reliable shipping services have a competitive advantage over those that are poorly served. In an ideal world, shipowners would offer shippers relatively frequent services to a wide range of destinations, shipping capacity would be matched to the volume of cargo available, the vessels employed would

be as large as possible so as to benefit from economies of scale, transit times would be minimized, and freight rates would reflect the cost of providing the shipping service.

4. Shipping Services and the Development of the Maritime Sector

The differing physical and commercial characteristics of commodities carried by sea have led to the emergence of specialist types of shipping. General cargo is carried on liner services operated by cellular container or roll-on roll-off vessels. The hallmarks of a liner service are regularity of sailings and diversity of cargoes carried. Bulk dry cargo, formerly carried by tramp vessels which plied for hire and were typically employed carrying grain or ore cargoes under voyage or time charters, is now carried almost exclusively by specialist bulk carriers. Bulk liquid cargoes (e.g., crude oil, refined oil, etc.) are carried by tankers.

4.1 Demand for Maritime Transport in the aSEA Region

4.1.1. Demand for Regional Container (General Cargo) Shipping Services

Demand for regional container shipping services arises from several sources:

- Services linking regional ports with other regional ports and/or the major cities of member countries. Since most aSEA countries reserve their coastal shipping trades for vessels owned and crewed by their nationals (i.e., they have adopted a policy of cabotage), overseas owned vessels are usually excluded from these trades;
- Services linking regional ports in Country A with regional ports in Countries B, C and D. Typically, shipping services between regions located in different countries are provided by vessels beneficially owned by citizens of one of the countries or by vessels owned by third parties;
- Services linking ports in Country A with major hub ports such as Singapore, Pelabuhan Tanjung Pelepas (PTP) and Port Klang.

Trade growth between the economically advanced ASEAN countries has been particularly rapid. As far as maritime trade is concerned, the largest trade flows are between Singapore, Malaysia, Indonesia, and Thailand. The two-way exchange of products between Singapore and Malaysia is the most significant trade flow between ASEAN members, although a high proportion of this traffic is carried by road or rail.

Containerized cargoes form a very significant share of intra-ASEAN trade. Many commodities previously handled in bulk are now moving in containers. For example, while large shipments of low quality rice are still shipped in bulk or breakbulk form, premium quality rice is now packed in retail packs or 50kg woven poly bags and shipped in containers. Even exports of steel scrap are sometimes containerized. In short, there has

been a marked shift from bulk and breakbulk to containerized cargoes over the past twenty years. Major commodities in the intra-ASEAN trades shipped in containers include

- Agricultural products (e.g., rice, sugar, and beans);
- Consumer products;
- Raw materials (including palm oil);
- Electrical and electronic products; and
- Automotive components and some built-up cars (most built-up cars are shipped by specialist car carriers).

Demand patterns for regional container shipping services vary widely across the aSEA region. For example, Brunei Darussalam does not have a developed manufacturing sector and relies heavily on imports of foodstuffs, manufactured goods, construction materials and chemicals. While the majority of the country's imports are containerized, Brunei Darussalam's exports are shipped in bulk, creating a problem of container repositioning for shipping companies. The Philippines also imports a wide variety of containerized consumer goods and manufactures while containerized exports are limited. Over 90% of containers are exported empty. In contrast, Malaysia has a healthy two-way traffic in containerized cargoes, as does Singapore. The trading patterns of PNG and Timor-Leste do not generate large container flows to and from aSEA member economies.

A substantial share of intra-aSEA trade is carried on vessels employed either in mainline trades or on intra-Asian feeder container services. In times of relatively low demand, mainline carriers frequently carry intra-aSEA cargo on vessels employed in the Asia-Europe and trans-Pacific trades. However, during 2002–2008 the demand for space on long-haul container services by Chinese exporters led to shortages of shipping space for intra-aSEA cargoes. Given the impact of the financial market crisis of 2008 on world trade, this problem may have been resolved for the time being.

Demand for shipping services between the less-developed provinces of Indonesia, Malaysia, and the Philippines, as well as between the ASEAN members of aSEA and PNG and Timor-Leste, is very limited. Despite attempts at sub-regional cooperation such as BIMP-EAGA and IMT-GT, shipowners report difficulties in maintaining sufficient cargo to sustain regular services.

4.1.2. Demand for Mainline International Container Shipping Services

Since the 1980s Asian newly industrializing countries have enjoyed rapid, export-oriented economic growth, driven by Japanese firms choosing to move production offshore, by the quest for low-cost production in Southeast Asia by European and US firms, and by declining US industrial competitiveness. As a result, the volume of manufactured goods carried by sea has grown sharply. According to the United Nations Conference on Trade

and Development (UNCTAD), manufactures account for over 70 % of world merchandise trade by value.²

Maritime trade includes consumption goods as well as intermediate goods, parts and semifinished products. As much of this trade is carried in containers, world containerized trade has grown significantly. As a major producer of manufactures, Asia has been at the forefront of this growth.

There are three major East-West container flows in the Northern Hemisphere: Asia-Europe; Trans-Pacific (linking Asia and North America); and Trans-Atlantic (linking Europe and North America). According to UNCTAD estimates, the Asia-Europe trade—with a total cargo flow of 27.7 million twenty-foot equivalent units (TEU), of which 17.7 million TEU were shipped on the dominant leg from Asia to Europe—overtook the Trans-Pacific as the largest containerized trade lane in 2007. Container traffic on the Trans-Pacific totaled 20.23 million TEU in 2007, with 15.4 million TEU being carried on the dominant eastbound leg from Asia to North America.

The scale of container shipment on North-South trades (e.g., Australasia–Northeast Asia, Australasia–Southeast Asia) is increasing but is much smaller than those in the East–West trades.

4.1.3 Demand for Bulk and Breakbulk Shipping Services

Bulk shipping is conventionally sub-divided into dry bulk and tankers. Dry bulk vessels handle cargoes of minerals and agricultural products. The tanker market includes crude oil carriers, product carriers, liquid natural gas and Liquefied petroleum gas carriers. While economies of scale in bulk shipping dictate the use of large vessels wherever possible, intra-aSEA bulk flows tend to be of limited size. As a result, the very large bulk carriers employed in the carriage of iron ore and coal from Australia and Brazil to the PRC and Japan are not found in intra-aSEA trades. It was also noted that bulk shippers are now moving to ship product in containers unless they have sufficient volume to justify using Panamax-sized vessels.³

Commodities shipped in bulk or break-bulk form in the aSEA region include

- Rubber (exports from Malaysia and Indonesia are shipped in break-bulk or containerized form to aSEA destinations and by bulk carrier to long-haul markets);
- Palm oil (exported from Indonesia and Malaysia to the Philippines and Singapore in small 15,000-20,000dwt product tankers);
- Sawn timber (shipped in bulk or break-bulk vessels from Indonesia and Malaysia to

2 United Nations Conference on Trade and Development (UNCTAD). 2008. *Review of Maritime Transport 2008*. New York and Geneva, United Nations, p. 8.

3 The term "Panamax" refers to bulk carriers whose dimensions allow them to transit the Panama Canal. In practice, such vessels rarely exceed 70,000dwt (deadweight tonnage).

- Thailand, processed and exported in containers);
- Rice (Thailand and Viet Nam ship government-purchased contract rice to Indonesia and the Philippines in relatively small 8,000-15,000dwt bulk carriers, while higher value varieties, e.g., jasmine rice, is packed in retail packs or 50kg woven poly bags and shipped in containers);
- Oil, gas and petroleum products (Brunei Darussalam exports natural gas and oil to Singapore, the US, Japan and South Korea, while Indonesia exports oil to Malaysia);
- Coal (exports of Indonesian coal to the aSEA region, notably to Malaysia for electric power generation, are shipped in small bulk carriers 5,000–20,000dwt or barges while exports of Indonesian coal shipped further afield are carried in Capesize vessels); and
- Cement and raw materials for fertilizer production (the Philippines imports cement and raw materials for fertilizer production from Thailand and Viet Nam in handy size bulk carriers).

Whereas bulk carriers typically carry a single, homogeneous cargo (e.g., coal, iron ore, wheat), breakbulk vessels usually carry heterogeneous cargoes in parcel size lots. They may also carry general and project cargoes. Breakbulk vessels are typically small in size, enabling them to service a wide range of ports, including private wharves and jetties. Such vessels carried a high proportion of intra-aSEA cargoes until the late 1960s.

Breakbulk shipping survives in certain specialist trades. For example, logs and sawn timber as well as rubber are shipped in breakbulk from Indonesia, Malaysia and Thailand. Similarly, some rice exports from Thailand are still handled by breakbulk vessels. Interviews conducted in Thailand in 2004 suggested that low quality rice, exported in 50kg bags, is hand-stowed on board breakbulk vessels known as "tween-deckers."⁴ It was noted that Indonesia imports between 600,000-1,000,000 tons of rice a year, mostly from Thailand and Viet Nam. Raw materials for the fertilizer industry are commonly shipped in breakbulk vessels as is coal destined for cement works in Thailand.

4.2 Supply of Shipping Services in the aSEA Region

4.2.1 Supply of Container Shipping Services

Since the 1980s, shipowners operating in the major East-West container trades have developed new types and patterns of shipping services to replace the former "out-and-back" services between individual countries.⁵ These changes have been driven by the scale of cargo flows between the three major Northern Hemisphere cargo-generating regions, Asia, North America and Europe, as well as by economies of vessel size and the intensity of competition in container shipping markets.

⁴ See PDP/Meyrick. 2005. Promoting Efficient and Competitive Intra-ASEAN Shipping Services. Final Report, Thailand, March.

⁵ Prior to containerization, cargo liners typically sailed from Country A to Country B, turned around and sailed back to Country A.

The need to offer a high quality service between major ports as well as maximize the utilization of slot capacity has led to the development of first tier "round-the-world" and "pendulum" services.⁶ These share a number of common features: the ships employed are large enough (4,500–10,000TEU) to benefit from economies of vessel size; port calls are limited to regional hub ports or load centers; and cargoes to and from these hub ports are carried by feeder container or secondary liner services. The emerging pattern of mainline and feeder services is analogous with the "hub-and-spoke" networks, which evolved following the deregulation of US domestic aviation. Intense competition between the major container lines operating in the East–West trades guarantees freight rates reflect cost economies.

Intense competition and economies of vessel size lie behind recent increases in the size of container ships. Economies of vessel size arise from the technical characteristics of container shipping: the capital cost per container slot falls as vessel size increases, while the ratio of crew to carrying capacity as well as the consumption of fuel per unit of cargo carried decline as vessel size increases. Lloyd's Maritime Asia has estimated the construction cost of a 6,000TEU containership is only 50% above that of a 3,000TEU vessel. The fuel consumption of the 6,000TEU vessel is 30% above that of the smaller vessel, while crew size is the same. The largest vessels currently employed in the Asia-Europe and trans-Pacific trades can carry around 10,000TEU.

The recognition that early container services tended to serve an excessive number of ports, thus increasing costs, led to attempts to minimize the number of ports of call by main line vessels. This led to the development of regional hubs or load centers such as Singapore, Port Klang, and PTP. The preferred hub port varies between shipping lines. The volume of transshipment cargo available, the cost of using a port's facilities and the level of its productivity (containers handled per hour) each enter into the equation when a line chooses a hub port. Singapore remains the major hub for aSEA traffic. However, during the past decade Malaysian ports—especially Port Klang and PTP—have challenged Singapore's hub status. CMA CGM and Hapag-Lloyd have chosen to focus their Southeast Asian services on Port Klang, relying on the volume of transshipment cargo flowing into Port Klang from Peninsular Malaysia, which tends to be routed via Port Klang rather than Singapore.⁷ Three major container shipping operators—Maersk, Sealand, and Evergreen—used their market power in defecting from Singapore to PTP in 2002–2003.⁸ APL and Yang Ming remain wedded to Singapore, arguing that the volume of transshipment cargo available over Singapore is the crucial determinant in their choice of hub port.

In addition to major Round-the-World and Pendulum services operated by large container vessels, second-tier container services, operated by vessels appreciably smaller than those

⁶ Pendulum services are usually operated by vessels too large to transit the Panama Canal. A typical Pendulum voyage is Europe–Southeast Asia–Northeast Asia–West Coast North America–Northeast Asia–Southeast Asia–Europe.

⁷ Dekker, N. 2002. Give and Take. *Containerisation International*. August.

⁸ Woodbridge, Clive. 2004. ASEAN Blooms. *Containerisation International*. November.

employed on first tier services, connect major regional ports with the outside world. Such vessels incur higher costs per container. However, the marketing advantage gained by offering direct calls, rather than an indirect service via a major hub port, may offset the higher costs of operation. Within the aSEA region, such services not only call at the regional hubs but at other major regional ports such as Tanjung Priok (Jakarta), Manila, Laem Chebang and Bangkok.

4.2.2 Supply of Regional Shipping Services

At the regional level, the quality of shipping services varies markedly depending on the degree of development of the region in question and the extent to which production in a given region is export-oriented.

Most aSEA ports serving export-oriented regions receive relatively frequent shipping services. As noted above, the intra-ASEAN trades have expanded rapidly over the past twenty years. Many vessels employed in these trades are feeder vessels.⁹

The range of container shipping services operating exclusively between aSEA ports is limited. Shipowners interviewed in Malaysia and Thailand in 2004–2005 argued that cargo volumes were insufficient to make intra-aSEA or intra-ASEAN services profitable on a stand-alone basis. The scale of cargo movements between Northeast and Southeast Asia (and vice versa) makes it more profitable to operate services from the PRC to Southeast or South Asian ports, calling at one or more aSEA ports en route.

Table 2 (page 36) shows the number of direct container services between the various members of aSEA. The table includes First and Second Tier services, Asian feeder and intra-aSEA services. It provides a measure of maritime connectivity across the aSEA region. Note that the pattern of container services in Southeast Asia is highly complex, a result of the number of competing shipping companies as well as the fact that many shipping lines offer several service "strings" on a given route, i.e., services with different patterns of port calls. The table highlights the importance of Singapore and Malaysia as regional hubs for container shipping.

Shipping services connecting the less developed regions of aSEA suffer by comparison. For example, while relatively frequent container shipping services connect ports along the coasts of East Malaysia and Brunei with Southeast Asia's major hub ports, Singapore, Port Klang and PTP, shipping services between Philippine ports within the BIMP-EAGA region and their counterparts in Indonesia, East Malaysia and Brunei are infrequent or non-existent.

Table 3 (page 36) shows feeder container services operating between Port Klang/Singapore and ports in East Malaysia and Brunei. Such services not only carry cargo between regional ports, but cargo from East Malaysia and Brunei to/from Singapore or Peninsular Malaysia, as well as transshipment cargo to/from East Malaysia and Europe. The number of operators

⁹ In 2007, it was found that more containers were shipped in intra-ASEAN trades (42 million TEU) than in other major trades.

and the frequency of sailings suggest substantial two-way cargo movement. It was noted that a number of container ports, including Bintulu and Sandakan, aspire to achieve regional hub status.

Similarly, a number of Indonesian ports, including some within BIMP-EAGA, are within the hinterland of Singapore and Port Klang. They too benefit from relatively frequent sailings by feeder container vessels. It was found that Philippine ports within the BIMP-EAGA region tend to be served by Filipino domestic shipping services rather than being part of the regional container feeder system hubbing on Singapore or Port Klang.

4.2.3 Poor Connectivity on "Thin" Regional Routes

Infrequent maritime connections between less developed regions of aSEA countries have discouraged economic development. For example, shipping services between Philippine ports and member provinces of BIMP-EAGA in Indonesia, East Malaysia and Brunei, are unsatisfactory. While roll-on/roll-off (Ro-Ro) ferry services between Zamboanga (Philippines) and Sandakan (Malaysia) are operated by two Zamboanga-city based companies i.e., Aleson Shipping Lines and Sampaguita Shipping, the ferry service between General Santos City (Philippines) and Bitung (Indonesia) has been suspended. Similarly, PNG and Timor-Leste have poor maritime connectivity with ASEAN members of aSEA. The only containerized service linking Timor-Leste with the other members of aSEA is the Perkins service between Darwin-Dili-Singapore. "Thin" cargo flows on regional shipping routes have discouraged entrepreneurs from opening new routes or purchasing new equipment.

The development of maritime economic corridors (MECs) can address the issue of poor connectivity on "thin" regional routes. The corridor development concept hinges on an evolution from transport corridors, to trade corridors, to corridors where many dimensions of economic development are taken into account. In a maritime setting, such corridors can integrate highly scattered island economies with multiple economic, social and even environmental benefits. In archipelagic nations such as Indonesia and the Philippines, MECs can be domestic but most likely will have a bigger impact when crossing borders.

MECs in aSEA revolve around Ro-Ro vessels, associated port facilities, roads and supporting policies and regulations, as has been successfully implemented in the Philippines (see Box). The Philippine approach and experience warrants serious consideration for the aSEA region as a whole. On the supply side, it has the great advantage that large upfront capital investments are not needed. Hence, the entire system can be built in a gradual and modular fashion, including port facilities and road connections. However, what is more important in this case is the introduction of effective policies and regulations to support maritime economic corridor development. In terms of impact, MECs will significantly boost economic activity by linking small island economies into the wider regional transport networks, substantially lowering transport and associated transaction costs, thereby encouraging more trade and traffic between adjacent islands.

A detailed analysis of the potential benefits of MECs, however, is beyond the scope of this paper. Briefly, such benefits include an increase in economic opportunities, direct benefits for the poor in terms of lower transport costs (economic and social) and better market

access, concentration of development along corridors thereby achieving economies of scale and more efficient land use, and access to a wider variety of good and services.

Box: Marine Economic Corridor applied in the Philippines

In the Philippines, the Strong Republic Nautical Highway is a prime example of a successful MEC. Prior to 2005, Ro-Ro services did exist in the Philippines, but they were hampered by regulatory restrictions. Only after the government introduced policies to promote the nautical highway, supported with appropriate regulations and presidential orders, did the concept take off. The system consists of 3 north-south corridors supported with a number of lateral links:

- The Western Nautical Highway, already operational, links Luzon to Mindanao by way of the major islands of Mindoro, Panay, Guimaras and Negros, with the port of Batangas serving as the gateway to Visayas and Mindanao;
- The Eastern Nautical Highway, also known as the Pan Philippine Highway and mostly completed, links the islands of Luzon, Samar, Leyte and Mindanao, with Surigao City serving as the gateway to Mindanao; and
- The Central Nautical Highway, the last of the highways to be developed, links Luzon with Misbata, Cebu, and Bohol, with the port of Balingoan (Misamis Oriental) acting as the gateway to Mindanao.

A major benefit of the Nautical Highway lies in improved local connectivity for the islands along each of the routes. For example, prior to the development of the Western Nautical Highway, the island of Mindoro had extremely poor shipping links to the Visayas (Panay and Guimaras). There was very little cargo and passenger traffic southbound from Mindoro, almost all traffic being northbound from Mindoro to Luzon (Basilico, 2008).

Although the Western Nautical Highway has only been in existence for five years a number of benefits have already become apparent:

- **Reduced Transport Costs.** A 2006 study conducted by the Center for Research and Communication suggests that the Western Nautical Highway has substantially reduced transport costs.
- **Changes in Patterns of Freight and Passenger Movements.** The reduction in transport costs coupled with the efficiency and flexibility of the Nautical Highway has led to a shift in the way shippers transport their goods. For example, Nestlé Philippines now chooses to make small, frequent and direct deliveries to its clients, using the Nautical Highway where appropriate. As a result, the company has closed 33 of its 36 distribution centers. Similarly, whereas bus operators tended to serve either the northern or the southern section of the route between Luzon and Mindanao prior to the existence of the Nautical Highway, some bus operators now choose to operate through buses from Manila to destinations in Mindanao.
- **Increases in Agricultural Productivity.** The opening of the Western Nautical Highway has created new markets for farmers (Basilo, 2008). For example, farmers in San Jose (Occidental Mindoro) who used to sell onions and other agricultural produce to Manila now have the option of shipping their products southwards into Panay, Negros and Mindanao. Fruits such as mangosteen and durian grown in Davao are able to be marketed in Iloilo and Bacolod. Such developments enable farmers to increase their acreage and production, with benefits to agricultural productivity.
- **Enhanced Investment.** Over the period 2003–06, investment in Roxas is estimated to exceed P100 million. This is said to have generated over 2,000 jobs and to have increased business and property tax collections. Similarly, investment boomed following the development of the Port of Danqay. Basilo suggests that a year after the port became operational, substantial commercial development—appliance stores, retail outlets, drugstores, restaurants, banks and transport terminals—was evident. The number of petrol stations increased from two to seven. By 2006, 879 business establishments operated in the municipality, a 15% increase over the number for 2005.
- **Enhanced Tourism Potential.** Until recently the potential for tourism along the Philippines western seaboard was constrained by poor transport links. The introduction of Ro-Ro services between Luzon-Mindoro and Mindoro-Pasay has stimulated tourist traffic. Dangay Port in Roxas (Mindoro Occidental) has developed as a point of departure for the Boracay Islands, while Caticlan serves as a jumping off point to Panay Island. Over the period 2003-06 tourist receipts on Boracay grew by more than 50%, in Iloilo by 30%, in Bacolod by 15% and in Dapitan by 200%.

4.2.4 Supply of Local Shipping Services

The types of vessel employed in local trades vary widely across the aSEA region, depending on local custom, depth of water available and the nature of port facilities. At the most basic level, vessels may have to be loaded and unloaded directly on to a beach. In other cases, primitive wharf facilities may be provided, although mechanical cargo handling equipment is rarely available. In the aSEA region, rivers and estuaries are often shallow due to silting, mandating the use of shallow draft vessels. Typically, small sailing or motor vessels collect export cargoes from coastal villages for consolidation in regional ports, a process commonly referred to as coastal accumulation. In Indonesia, the *prahu* shipping sector performs this task. Until recently most prahus were sailing vessels. Since the 1970s, motor vessels have steadily replaced sailing vessels. The largest of the vessels now employed, the *prahu pinisi*, rarely carry the traditional two-masted rig. Similarly many so-called auxiliary sailing vessels (*prahu layar motor*) are now for all intents and purposes motor vessels. The sails are merely a decoration to avoid the more stringent manning and seaworthiness requirements for motor vessels (Dick, 1987).

The *prahu* sector is an important segment of Indonesian coastal shipping. Official estimates suggest that the sector had a 14% share of inter-island trade. The importance of the sector appears to be much greater than official statistics would suggest. Unofficial estimates suggest that the tonnage carried by the *prahu* sector is understated by at least a half and perhaps by as much as two-thirds.

Interviews conducted in Malaysia and Thailand in 2004–2005 suggest that traditional shipping services, employing small motor vessels, tug and barge, sailing craft and junks, still flourish in Southeast Asia. The vessels employed are small enough to use local ports or private wharves. Many of the vessels are Indonesian-owned and employed in what are known as barter trades. Vessels employed in these trades typically carry a range of cargoes from Indonesia (forest products, charcoal, coal or coke), unload at a Malaysian or Thai port, sell the cargo and purchase a back-loading cargo of foodstuffs, beverages or manufactures.

On one visit to the breakbulk wharf at Port Klang (Southpoint), a junk was unloading charcoal from Sumatra. The owner intended to purchase cases of Coca-Cola as back-loading for Sumatra. While most of these cargoes are cleared by customs, the heterogeneous nature of the cargoes means that it is difficult to develop an accurate picture of the trade from available customs records.

4.2.5 Supply of Bulk and Breakbulk Shipping Services

Historically, the intra-Asian bulk trades have been heavily dependent on small handy-sized bulk carriers. In this highly fragmented market, two Thai companies—Precious Shipping

and Thoresen Thai Agencies—have emerged as specialist operators of handy-sized bulk carriers.¹⁰

During the past decade many small bulk carriers have been scrapped and owners have been reluctant to order replacement tonnage. As a result freight rates for handy-sized bulk carriers have risen sharply. In turn, high freight rates have encouraged shippers to switch to containers unless they generate sufficient cargo volumes to use larger Panamax sized bulk carriers.

5. Maritime Infrastructure: Adequacy and Efficiency of Ports

5.1 The Port Task

Ports are the gateways through which maritime trade must pass. If a port's physical infrastructure is inadequate and/or if it is operationally inefficient, the costs incurred by shipping lines will be higher than necessary, forcing them to increase charges for handling imports and exports. As a result, trade growth will suffer and regional economic growth will be somewhat more constrained than would otherwise be the case.

Ports require a large number of specialist tasks and players. While the provision of wharves and cargo handling areas are of central importance, ports also require dredged channels, navigation aids, pilots, towage services, stevedoring services, customs clearance facilities, and an efficient interface with land transport. Typically such services are provided by different agents, some in the public and some in the private sector. Ownership and intensity of competition in the provision of such services differ greatly.

The archipelagic nature of the aSEA region means that countries—with the exception of Brunei Darussalam, Singapore and Timor-Leste—require many ports. Typically, a handful of ports owned and operated by government or government-linked corporations handle international deep-sea container traffic. Secondary ports, owned by national or provincial governments, are served by shipping lines operating near-sea regional and domestic shipping services.

Even a brief review of each aSEA port is beyond the scope of this paper. Fortunately, ASEAN has listed the ports that member nations consider to be of significance to the development of the intra-ASEAN trade (see Table 4, page 38). Almost all ports listed in Table 4 handle container and general cargo and a significant proportion of them have common user facilities for bulk dry cargoes. Table 4 also shows the inland connectivity of the ports: the road, rail and inland waterway connections to and from each port. It was found that rail and inland waterway connectivity were limited. The limited inland waterway connectivity was a surprising finding given the archipelagic nature of Southeast Asia.

¹⁰ Hand, M. 2008. Good rates come in handy packages. *Lloyd's List Maritime Asia*. April–May. p.38.

5.2 Container Ports

Container handling facilities within the ASEAN countries have had to adapt to changes in the size and nature of container vessels as well as changing service patterns. By the mid-1980s, containerization had been almost universally adopted on main line trades.¹¹ The subsequent growth of trade flows, the employment of larger vessels on mainline trades, and the emergence of new service patterns in both mainline and feeder trades have had important implications for ASEAN ports.

Not surprisingly, port investment undertaken in the early phase of containerization has proved inadequate and facilities have had to be expanded. While some ports have met these challenges successfully, others have been slower to react to the changing environment (Trace, 1997). Table 5 (page 39) shows the container volumes handled by major aSEA ports over the period 2000–2008.

The efficiency of container ports in the aSEA region varies widely. The region's major hub ports—Singapore, Port Klang and PTP—are highly efficient by world standards. However, the productivity achieved in the region's other main ports—Bangkok, Laem Chebang, Jakarta, and Manila—is of a lower order. In general, productivity in regional ports suffers as a result of inadequate investment and poor management.

Within the ASEAN region, the pivotal position of the Port of Singapore has been maintained over the past decade despite intense competition from Malaysian ports. Singapore is the aSEA region's main transshipment port. While the Port of Singapore Authority (PSA) does not publish the number of transshipment containers handled, it was estimated that between 60 and 70 per cent of containers handled may be for transshipment (Robinson, 1991). This would suggest that between 16.7 to 19.5 million of the 2007 container throughput of 27.9 million should be classified as transshipment cargo. Typically achieving 100-110 container moves per hour (MPH), port productivity in Singapore is high by world standards.

Singapore's dominant position depends on continuing efforts on the part of the government and the PSA to create and sustain the port's competitive advantage. The efficiency with which containers are handled and the cost-effectiveness of shipping cargo via Singapore combine to create a service that is qualitatively different from that offered by other ports in the region. The continuing growth of container throughput has made it necessary to further develop container handling facilities. By 2004, Singapore's four main container terminals (Tanjong Pagar, Keppel, Brani, and Pasir Panjang) had reached capacity. An additional three berths were commissioned at Pasir Panjang Terminal (PPT) in 2005 and a further five berths in 2006. With the addition of further berths at PPT, Singapore's container handling capacity will increase to 31 million TEU by 2011.¹²

¹¹ By the late 1990s containerization had been widely, though not exclusively, adopted in secondary trades, including those serving low labour cost developing economies.

¹² See Neil Dekker, Well prepared, *Containerisation International*, July 2005. Also see Marcus Hand, Holding on to pole position, *Lloyd's List Maritime Asia*, December 2007/January 2008.

Malaysia's Port Klang and PTP compete with Singapore for a share of the region's transshipment traffic. In 1993, the Malaysian government declared Port Klang to be the national load centre (i.e., the major Malaysian gateway for imports and exports). However, it is the development of PTP that has posed a more serious competitive threat to Singapore. It was noted that prior to the expansion of Port Klang and the development of PTP, around 90% of Malaysian cargo was handled by Singapore. Subsequently, the Malaysian government introduced measures actively encouraging Malaysian shippers to use Malaysian ports, including a doubling of duties on laden trucks leaving Malaysia. In the two main Malaysian ports, as in Singapore, container handling rates are high. For example, PTP achieves approximately 100 to 110 MPH which is similar to that of Singapore.

In contrast, Indonesia's ports are characterized by relatively poor turnaround times and inefficient work practices. Jakarta's International Container Terminal (JICT) was found to be one of the least efficient of the region's main terminals, judged by productivity and unit costs (Ray, 2003). Jakarta's container handling rate in mid-2008 was 40-45 MPH, less than half the rate achieved in Singapore and PTP.¹³ A recent USAID/Senada study finds that the entire port system is highly inefficient and in urgent need of upgrading (based on performance indicators for all the major commercial ports).¹⁴

Port performance data for 19 regional container ports in Indonesia suggest that berth occupancy rates are high by international standards, leading to berthing delays and excessive waiting time, while average turnaround time is high. Working time as a percentage of turnaround time is high. As the USAID/Senada study observed that the Indonesian cargo fleet is spending too much time sitting idle or waiting at ports. The comparatively poor performance of Indonesia's commercial port system is usually attributed to the following reasons:

- Geographic constraints: Indonesia has few natural deep-water harbors and a river system prone to serious siltation that restricts port depth;
- Lack of port infrastructure: Many regional ports lack container handling equipment such as gantry cranes and straddle trucks, forcing shipping lines to employ expensive self-geared vessels. The USAID/Senada study notes long delays in some regional ports, notably Panjang in Lampung and Belawan in North Sumatra, caused by breakdowns in container handling equipment;
- Work practices: Many ports operate on a one-shift basis. As the USAID/Senada study notes, "...the manner in which labor is used...effectively institutionalizes under-utilization of port facilities and limits the potential for efficiency improvements"¹⁵;

¹³ Note however that the container terminals at Jakarta typically operate 2-3 cranes per vessel, while Singapore and PTP load and unload using 3-5 cranes per vessel. On a per crane basis, the main container terminals in Jakarta achieve 18-22 MPH whereas Singapore and PTP achieve 30-35 MPH. (See USAID/Senada, *Indonesian Port Sector Reform and the 2008 Shipping Law*, August 2008, p.11.)

¹⁴ USAID/Senada, *Indonesian Port Sector Reform and the 2008 Shipping Law*, August 2008, p. 6.

¹⁵ See USAID/Senada, *Indonesian Port Sector Reform and the 2008 Shipping Law*, August 2008, p. 14.

- Informal payments (bribes) to cut queuing time; and
- Poor connectivity: Roads in the vicinity of ports are often congested and very few ports have sufficient space for container stuffing and unstuffing.

In the Philippines, Manila, Batangas, Subic Bay, Cebu, Iloilo, Cagayan de Oro, Davao, General Santos and Zamboanga handle overseas container cargoes. The main container terminals in Manila—South Harbor (ATI) and MICT (International Container Terminal Services Incorporated)—compete for custom. Crane rates at these terminals, 25–30 moves per hour (MPH) at MICT and up to 20MPH at ATI, while lower than the rates achieved in Singapore and PTP are higher than those in Indonesia.

The overriding port development problem for Thailand in the 1970s and 1980s lay in the adequacy of Bangkok's East Quay (Klong Toey) wharves to handle an increasing volume of trade coupled with the timing of the construction of alternative deep-water facilities on the Gulf of Thailand. This policy dilemma intensified following containerization. Container facilities at Klong Toey could handle only feeder vessels and space behind the wharves was limited, a serious deficiency for a port in which 90 % of containers were packed and unpacked within the port boundaries. Given the port's proximity to metropolitan Bangkok, roads leading to the port were extremely congested.¹⁶

A 1978 World Bank study noted that Klong Toey would only be able to handle the growth of traffic until 1990. Thereafter Thailand would require a deep-water port on the Gulf of Thailand. In July 1983, the Eastern Seaboard Development Committee formally approved the construction of new ports at Mab Ta Phut and Laem Chabang.

Opened in 1991, Laem Chebang handled 4.6 million TEU by 2007. The development of the port has been accelerated by a government decision limiting container throughput at Bangkok to 1 million TEU per annum. In recent years, Laem Chebang has attracted calls by carriers serving mainline trades as well as calls by feeder container vessels. For example, CMA CGMs Asia India-Middle East service, employing 2,500TEU vessels, makes direct calls at Laem Chebang, while APL began direct sailings between Laem Chebang and Karachi in April 2008¹⁷. Laem Chebang's aspirations to become a major hub port are unlikely to be realized as the port lies some distance from major shipping routes between Southeast and Northeast Asia. The cost of diverting large container vessels is likely to outweigh the benefits of port calls at Laem Chebang.¹⁸

Container handling rates in Port Moresby in PNG and Dili in Timor-Leste are low by aSEA standards. Port Moresby handles both container and bulk cargoes. Since the PNG manufacturing sector is weak, the number of containers required for exports is very limited

¹⁶ The Klong Toey wharves are located on the Chao Phraya River about 4 kilometers downstream of Bangkok. Construction of the port commenced in 1939, but was not completed until 1954. By the early 1960s the port and the roads surrounding it were seriously congested. See M. Falkus, Bangkok in the Nineteenth and Twentieth Centuries, in F. Broeze (ed.), *Gateways of Asia: Port Cities of Asia in the 13th-20th Centuries*, 1997.

¹⁷ Hand, M. 2008. Thai ports continue to grow. *Lloyd's List of Maritime Asia*, April/May.

¹⁸ Dekker, N. 2002. Value for money. *Containerisation International*. July.

and the cargo imbalance in the container trades is very noticeable. Labor problems on the wharves have led to low container handling rates. The port of Dili is the only international port of entry to Timor-Leste. It has a wharf length of 300m and can accommodate two vessels of up to 5,000dwt having a draught of up to 6.1m. Roll-on roll-off facilities are available for frontloading vessels. Improvement works at the port, including wharf extension, were undertaken by the United Nations Peacekeeping Force, with \$5.7 million of bilateral aid from Japan.

5.3 Bulk and Breakbulk Ports

Most ports mentioned above possess bulk as well as container handling facilities. Bulk and breakbulk ports may be divided into common user facilities and purpose built bulk ports associated with and often developed by a particular firm or industry. The aSEA countries do not possess the large scale bulk handling facilities that characterize Australian, Brazilian and South African coal and iron ore export ports as well as their Japanese and Chinese import counterparts. As noted above, bulk shipments to and from the aSEA region tend to be carried in handy-sized bulkers. More recently, Panamax vessels have been introduced into a limited number of trades.

Although Singapore is predominantly a container port, it handles breakbulk and specialized cargoes through its multi-purpose terminals at Pasir Panjang and Sembawang, while bulk cargoes are handled by dedicated facilities at Jurong Port. Pasir Panjang and Sembawang wharves handle about 20 million tons of break bulk and specialized cargoes annually. Pasir Panjang wharves have dedicated ro-ro and car carrier facilities. Dry and liquid bulk cargoes are handled by Jurong Port.

Similarly, Port Klang has both container and bulk handling facilities.¹⁹ The North Port, Westport and Southpoint facilities all have dry bulk berths. Berths No. 24 and No. 25 at Northport can handle vessels of 45,000dwt with a draught of 11m. The berths handle fertilizer, sugar, maize, feed meal and cement imports as well as palm kernel exports. Berth No. 4 at Southpoint handles bulk cargoes of wheat, maize and feed meal. Westport has three dry bulk terminals:

- DB1 Terminal has two 200m berths allowing vessels with a draught of 14.4m to be handled. This terminal has two gantry grab unloaders capable of discharging 2,000 tons/hour.
- DB2 Westport Slag Terminal has a 250m berth capable of handling vessels of 3.5m draught. This terminal handles fertilizer, silica, sand and slag.
- Westport Cement Terminal can accommodate vessels of up to 35,000dwt with a draught of 11m.

Private jetty/terminal development in the Chao Praya River (Bangkok) was driven by

¹⁹ For further details see: PDP/Meyrick, *Promoting Efficient and Competitive Intra-ASEAN Shipping Services*, Final Report, Malaysian Country Report, March 2005. Details of bulk and breakbulk handling facilities for each country may be found in the individual country reports.

government berths giving priority to vessels discharging imports, forcing export shippers to build their own facilities to handle cargoes such as sorghum, sugar, rice, chemicals and steel. There are now 128 private terminals along the river. Over 60% of these are dedicated to a single export cargo.

Corporatization and privatization have tended to concentrate investment in the region's major ports such as Singapore, Port Klang, PTP and Laem Chebang. Investment has also focused on container handling berths and equipment and on major bulk handling installations. The losers in this process have been the minor ports and/or those sections of the major ports handling lower volume breakbulk and especially those handling informal or barter trade cargoes.

Investment needs of regional ports have tended to be put in the "too hard" basket, especially investment in handling equipment. Vessels using these ports may need to be self-gearred. As a result, loading and discharging tend to be slow, congestion delays are common and cargo handling costs are higher than the need be.

As far as barter trades are concerned, there is a lack of investment in Port Klang's Southport (now called Southpoint). This port specializes in handling barter trade between Indonesia and Malaysia (normally carried in small motorized coastal vessels, junks and landing craft). Such minor trades tend to be invisible to the authorities and are in danger of being crowded out, physically and financially. Physically, the importance of providing adequate facilities for the container and major bulk trades may result in a diminution of the space available for minor trades. Financially, investment in facilities for barter trades is not attractive to major port operators (such as DP World and PSA). Meanwhile, following port privatization, governments will opt out of the responsibility to provide port facilities. This creates a funding gap in the provision of handling facilities for barter trades.

6. Maritime Policies

6.1 Shipping Policies

ASEAN as an institution was a relatively late convert to the benefits of liberalization of shipping markets. This is understandable given that a reasonably open market for shipping services to, from, and within ASEAN had already existed by the late 1990s. With the exception of cabotage limitations, ASEAN (and non-ASEAN) shipowners faced few restrictions regarding the routes on which they could operate or the cargoes they could carry.

The major ASEAN initiative in the maritime area is the *Roadmap Towards an Integrated and Competitive Maritime Transport in ASEAN*.²⁰ Recognizing that the ASEAN countries are at different stages in economic development and have differing factor endowments, the Roadmap develops a set of principles rather than focusing on clear-cut goals. ASEAN countries accepting the Roadmap commit themselves to:

- Foster competition in shipping markets;
- Adhere to the principle of free competition on a commercial basis for cargo movements to from or between ASEAN countries;
- Prevent or minimize the imposition of unjustifiable fees, surcharges or imposts by shipping lines or associations of shipping lines with a dominant position in any trade to from or within ASEAN;
- Ensure that any international shipping operations retained under government ownership are corporatized and operated in accordance with commercial principles;
- Refrain from providing preferential access to routes, cargoes or contracts to government-owned lines, and to adopt a timetable for the removal of such preferences where they currently exist;
- Work collectively and progressively towards the development of a single integrated ASEAN shipping market; and
- Develop guiding principles for the provision of port services based on the cost of service and infrastructure provision.

In the absence of leadership from ASEAN, liberalization of shipping policies has taken place on a country-by-country basis, with notable differences in the policy stance of individual aSEA members. In some aSEA countries, shipping policies have been the subject of considerable debate and careful formulation while in some others, they have developed policies on an ad hoc, spur-of-the-moment basis. The government of the Philippines consciously set out to accelerate the development of its maritime industry. Under *Presidential Decree 474 (Maritime Industry Decree)*, the government sought to enhance the competitive position of Philippine flag vessels operating in foreign trades; strengthen the balance of payments by increasing the inflow of foreign exchange; and generate job

²⁰ See ASEAN Secretariat, *Roadmap Towards an Integrated and Competitive Maritime Transport in ASEAN, 2006*. The Roadmap furthers the goals enunciated in the Vientiane Action Programme (2004–10) and the ASEAN Transport Action Plan (2005–10).

opportunities. Similarly, Malaysia has a long-standing and systematic program designed to encourage the growth of the Malaysian fleet. In contrast, PNG and Timor-Leste have poorly articulated shipping policies.

6.1.2 Coastal Shipping Policy (Cabotage)

Most aSEA members currently reserve their coastal trades for domestic shipping. For example, Indonesia's regulation PP17(1988) reserves coastal trades for Indonesian flag vessels, provides operating subsidies for vessels used on selected inter-island routes, and requires that crews be Indonesian citizens.²¹ Indonesia's cabotage policy does not appear to have been effective in reserving domestic cargoes for Indonesian owned and flagged vessels. It was estimated that foreign flag vessels carried 52% of coastal tonnage in 1997 compared to 35% in 1985.²²

PNG coastal shipping is reserved for PNG-owned and registered vessels.²³ The Merchant Shipping Act (1980) gives the power to grant a license to a person to engage in the coastal trade. A coastal trading license may only be granted to: the owner of the ship or the charterer of the ship. Ships registered under the Act may be granted a license for a period of 8 years. Where no ship is available to provide a particular shipping service or where a ship holding a license operates a service that is deemed inadequate, inefficient or unreasonably costly, a coastal trading permit to an unregistered vessel and/or a vessel registered overseas could be issued.

Similarly, Malaysia's Cabotage Act (1980) requires all vessels employed in coastal trades, including vessels trading between Peninsular Malaysia and East Malaysia, to be licensed by the Domestic Shipping Licensing Board (DSLMB). The DSLMB grants three types of licenses:

- Unconditional (permanent) licenses are granted to Malaysian-owned and registered vessels with 100% Malaysian crews.
- Conditional (temporary) licenses are granted to vessels meeting some, but not all, of these conditions.
- Temporary licenses are granted to foreign operators when there is inadequate capacity in the coastal trades.

The Merchant Shipping (Amendment and Extension) Act (1984) contains exemption provisions that have, in fact, led to a relaxation of cabotage restrictions. These were invoked in 1994 to allow foreign-flagged vessels to carry transshipment cargoes between the Malaysian ports of Penang and Port Klang, and extended to cover transshipment cargo between Penang, Johor and Port Klang in 1997. The exemptions were designed to enhance

²¹ See PDP/Meyrick & Associates, Promoting Efficient and Competitive Intra-ASEAN Shipping Services, Indonesia Country Report, Final Report, March 2005, p. 2.

²² See Containerisation International, September 1997.

²³ See Pacific Island Forum Secretariat, Review and Analysis of Forum Island Country Shipping Regulations, 2001.

Port Klang's position as a hub port and have since been extended to support the emerging hub of PTP.

Given the imbalances in cargo flows in the aSEA region, there would appear to be efficiency gains available if the coastal trades of Indonesia, Malaysia, the Philippines and Thailand were opened up to greater competition.

6.1.3 Ship Registration and Ship Ownership

The governments of Indonesia, Malaysia, the Philippines, Singapore and Thailand invested in the development of national merchant fleets in the 1960s and 1970s. In the 1960s, Southeast Asian countries were concerned with the power wielded by foreign shipping companies organized into shipping conferences.²⁴ Freight rates in trades such as Asia-Europe were considered excessive and the introduction of containerization appeared likely to enhance conference power²⁵. Southeast Asian countries were also concerned about the foreign exchange outflows required to pay for shipping services provided by predominantly foreign owners.

In this light, Malaysia established the Malaysian International Shipping Corporation (MISC) in 1968. A major reason for the establishment of MISC was the perception that the Far Eastern Freight Conference had a stranglehold over trade. Malaysia established a second national line, Perbadanan National Shipping Lines in 1982 to assist in developing a balanced and diversified fleet. Similarly, Thailand has a clearly articulated policy of developing a national fleet.

By the late 1980s and early 1990s, the inefficiencies of state-owned shipping had become self-evident, as had the fact that government ownership tended to distort shipping markets. ASEAN governments now moved to privatize government-owned lines. For example, MISC was listed on the Kuala Lumpur Stock Exchange in 1997, although the government remains the major shareholder. Singapore's national shipping line, Neptune Orient Line (has been privatized and is listed on the Singapore Stock Exchange. The commercialization of government shipping operations is generally considered to have led to improved operating efficiency and reduced distortions in shipping markets.

Currently, aSEA countries differ in the degree of openness of their ship registries. For example, a vessel on the Philippine register must be owned by citizens or permanent residents of the Philippines. If it is owned by a corporation, at least 60% of the subscribed capital must be provided by Filipino citizens. Similarly, under Malaysia's Merchant Shipping

²⁴ Shipping conferences are associations of shipowners serving a particular trade, formed for the purpose of controlling capacity and raising freight rates above levels that would prevail in a more competitive environment.

²⁵ The capital cost of container vessels, the cost of containers themselves, as well as wharf cranes, fork-lift trucks etc., were beyond the reach of most shipping companies. As a result, hitherto competing shipping companies formed container consortia to spread the costs. For instance, a trade served by a dozen shipping companies prior to containerization, might be served by only two or three container consortia.

Ordinance (1952), a vessel must be 51% owned by Malaysian interests to be eligible to fly the national flag. Greater flexibility in the requirements for vessel registration by number of aSEA countries has enabled national shipowners to achieve cost reductions without resort to flagging out.

6.1.4 Application of Competition Policy to Liner Shipping

In general, aSEA countries—unlike developed western economies such as the US and Australia—have not attempted to control the activities of shipping conferences. Neither Singapore nor Malaysia has attempted to regulate the activities of liner shipping. While the Thai government has not pursued an active anti-trust policy in the maritime sector, the Prices of Goods and Services Act B.E. 2542 (1999) and the Business Competition Act B.E. 2542 (1999) would appear to give it the power to act against conferences if considered necessary. However, under s.35(2) of the Business Competition Act, enterprises must be declared "controlled businesses" before action can be taken. The maritime sector has not been declared as a business of this type. In today's competitive shipping environment, the pressure to control the activities of shipping conferences is more muted than in the 1960s and 1970s.

6.1.5 Maritime Subsidies, Grants, and Cargo Preference

Indonesia, Malaysia, the Philippines and Thailand have historically offered various forms of subsidy, grants or cargo preference to encourage the development of national fleets. Malaysia has a long-standing program of support for national shipowners. The Industrial Development Bank was set up in August 1979 to provide loans at concessional rates of interest to shipowners, ship builders and ship repairers. Improved benefits, aimed at promoting fleet expansion, were made available to Malaysian shipowners in 1982. Similarly, Malaysia's 2001 Budget added RM1 billion to the National Shipping Fund to boost the national merchant fleet. Malaysian shippers that can demonstrate that they have supported national carriers will benefit from income tax concessions.

Under the Ship Mortgage Decree (1978), Philippine citizens may obtain preferential mortgage loans for the purpose of financing the construction, acquisition or initial operation of vessels. Philippine shipping enterprises are exempt from the payment of income tax on income derived directly from Philippine overseas shipping, while the Merchant Shipping Act (1985) allows exporters to deduct 150% of overseas freight and port charges from their taxable income if they use national flag carriers.

A number of aSEA member countries—including Indonesia, the Philippines and Thailand—have historically granted cargo preference to their own vessels. Thailand's Mercantile Marine Promotion Act (1978) required government generated cargo to be carried by national flag vessels. Similarly, Ministerial Regulation No. 2527 (1984) required all private firms engaged in business transactions with government agencies or state enterprises to carry imports in Thai vessels where possible. Presidential Decree 18-82 reserved Indonesian government cargoes for national flag carriers.

Generally speaking, maritime subsidies, grants and cargo preference policies were wound back in the late 1980s and 1990s. Thailand no longer has any bilateral agreements restricting access to cargo. Such residual restrictions as exist are limited to government-controlled cargoes. The Final Report of the ASEAN Maritime Transport Development Study found that there are no restrictions on access to cargoes to and from Thailand, except only the transport of goods from certain countries to Thailand which is required to be serviced by Thai flag vessels if such goods are purchased by government agencies or public enterprises.

6.2 Policies Relating to Ports

6.2.1 Ownership and Management of Ports and Terminals

Although a number of port authorities in the aSEA region are formally corporatized or operate under separate statutes that provide a high degree of independence, others remain branches of the public service. For example, the Ports Department of Brunei Darussalam owns and operates Muara port, providing a wide range of port services, including wharf facilities, towage, and pilotage. Stevedoring and road haulage are provided by the private sector.

Indonesia's 1,700 ports are organized in a hierarchical system. Of these, 111 ports (including 25 main or strategic ports) are deemed commercial ports and are controlled by four state-owned corporations i.e., Indonesian Port Corporations (IPCs) I, II, III and IV. A further 614 noncommercial ports operate on a small scale. In addition, about 1,000 special purpose or dedicated private ports service the needs of private companies.²⁶

In the main ports, almost all functions are undertaken by the IPCs. They control the port approaches, pilotage, towage, wharves and most of the cargo handling. Competition between ports is limited by the requirement that IPCs cross-subsidies each other to ensure financial sustainability. Port tariffs are determined centrally and imposed uniformly across ports (Senada, November 2008). However, shipowners have complained that the port charges were too high, with the charges at Tanjung Priok said to be among the highest in Southeast Asia.²⁷ In this light, Indonesia's 2008 Shipping Law removes the IPCs' legislated monopoly on commercial ports.

Malaysia's six major ports—Port Klang, Bintulu, Johor (including PTP), Kemaman, Kuantun and Penang—are controlled by Federal Port Authorities (FPAs), and all ports under FPAs are either corporatized or privatized.

The Philippine archipelago has more than 1,000 seaports, 123 of which operate under the jurisdiction of the Philippines Port Authority (PPA). The PPA has a dual role as regulator and operator. The final report of the ASEAN Maritime Transport Development Study noted that

²⁶ USAID/Senada, Indonesian Ports Sector Reform and the 2008 Shipping Law, August 2008, p.7.

²⁷ PDP/Meyrick, *Promoting Efficient and Competitive Intra-ASEAN Shipping Services*, Final Report, Indonesian Country Report, March 2005.

the PPA has financial autonomy, with the port revenues it collects remaining with the PPA rather than accruing to government. Port charges in the Philippines are controlled by government, with common charges applying in all ports.

Until the creation of the Maritime and Port Authority of Singapore (MPA) in 1996, the Port of Singapore Authority (PSA) acted as both regulator and port operator. Today, the MPA is the regulatory body responsible for overseeing Singapore's port and maritime affairs, while the PSA functions as a provider of port services. The PSA was corporatized in October 1997.

The Port Authority of Thailand (PAT) has jurisdiction over the major ports of Bangkok and Laem Chebang. Other common user ports (e.g., Songkhla) are under the control of the Harbors Department.

Until 2002, the major ports in PNG were owned and operated by the loss-making Papua New Guinea Harbors Board. In attempting to minimize losses, the Board neglected essential maintenance and ignored the need for capital spending to improve ageing infrastructure.²⁸ The Board was corporatized in 2002, the new entity being known as PNG Harbors Ltd (PNGHL). Currently, PNGHL operates 16 of the 22 declared ports in PNG. Only two PNGHL ports, Port Moresby and Lae, are commercially viable.

6.2.2 Models of Port Administration

The managerial model adopted by ports varies across countries and as between ports. The ADB has argued that port organizational structures may be grouped into three categories:²⁹

1. Landlord Port: the port owns the land and basic infrastructure but allows the private sector to lease out berths and backup areas either through a capital lease or concession agreement. Worldwide this is the most common governance structure;
2. Operating (Service) Port: the port provides not only infrastructure, berths and equipment but also provides services to vessels and their cargo; and
3. Resource (Tool) Port: the port owns the land, infrastructure and fixed equipment, provides common-user berths and rents out equipment and space to cargo-handling companies and other commercial operators, on a short-term basis.

Many public ports have adopted a mix of these strategies. Table 6 (page 40) suggests that a majority of aSEA ports have adopted the Resource (Tool) or Operating (Service) forms.

PAT has adopted different managerial models in Bangkok and Laem Chebang. At Bangkok (Klong Toey) PAT is both owner and operator, providing all port services except stevedoring. In contrast, PAT has adopted a landlord model at Laem Chebang, being content to supervise the operation of the port while others provide essential services.

6.2.3. Port Privatization

²⁸ Papua New Guinea Harbours Limited, Briefing Paper on the Functions and Activities of Papua New Guinea Harbours Limited, February 2004.

²⁹ ADB. 2000. *Developing Best Practices for Promoting Private Sector Investment in Infrastructure: Ports*. Manila.

Malaysia was one of the pioneers of the wave of privatization of port services that has swept through the world over the past 20 years. Klang Container Terminal (KCT) was privatized in 1986, followed by the sale of the remaining berths at North Port (Port Klang) to Klang Port Management (KPM) in 1992. KCT and KPM later merged their operations to form Northport. Subsequently, a major new container terminal at Westport (Port Klang) was constructed.³⁰

Similarly, in 1998 the Indonesian government adopted a policy of privatizing the major container terminals. Major facilities are now operated by the private sector, including foreign owned corporations. For example, Hutchison operates the JICT Terminal at Tanjung Priok (Jakarta) while P & O Ports operates the terminal at Tanjung Perak, Surabaya. In general, the performance and productivity of these facilities has improved over the past decade, although there have been concerns over congestion at Tanjung Priok and Tanjung Perak (Surabaya).

In the Philippines, Executive Order No. 12 (1994) encourages competition in the provision of cargo handling and other port services. Under the government's de-monopolization program, shipowners, operators and charterers may either use port services provided by the PPA or enter into contracts with one or more privately-owned port service contractors. There are two main terminal operators in the Philippines: Dubai Port World's Joint venture Asian Terminals (ATI) and locally based International Container Terminal Services.³¹

³⁰ Descriptions and physical details of Malaysia's major ports can be found in: PDP/Meyrick, *Promoting Efficient and Competitive Intra-ASEAN Shipping Services*, Final Report, Malaysian Country Report, March 2005.

³¹ Hand, M. 2007. Failing to satisfy port operators. *Lloyd's List Maritime Asia*. April.

6.2.4 Foreign Investments in Ports

During the 1950s and 1960s foreign shipowners, suppliers of port services and land transport operators faced a variety of formal and informal barriers that prevented them from offering their services in Southeast Asia. The WTO has noted that as late as 1994, Singapore prohibited foreign firms from engaging in customs clearance services and in the Port of Singapore's core services in cargo handling. Until 1992, exclusive foreign ownership of shipping agencies was also prohibited.³² In a number of Southeast Asian ports, foreign registered vessels paid higher port dues and/or faced discrimination in the handling of their cargoes.

Indonesia does not allow foreign investors to own more than 49% of a range of port services, including wharves, stevedoring, towage, container terminals, Ro-Ro terminals, liquid and dry bulk terminals. The 49% cap makes investment more problematical in that foreign investors have to find domestic partners. Given the inefficiency of Indonesian ports, more liberal rules on foreign investment would enable crucial upgrades in capacity using best international practice and technology.

Over the past 15 years, the move towards corporatization and privatization has removed many of the barriers. Port operators such as Hutchison, DP World and PSA have become directly involved in the development and operation of foreign ports. Liberalization in the provision of port services and the encouragement of private investment in port facilities have enhanced productivity and accelerated port development. Formal discrimination between vessels owned and registered domestically and those owned and registered abroad in the terms and conditions of supply of port services has been virtually abandoned. Similarly, restrictions on foreign participation in the provision of freight forwarding and inland haulage have been relaxed in many economies.

7. Conclusion

While direct government intervention in the provision of international shipping services does not appear necessary or desirable, governments can promote the efficiency of international shipping services by improving the performance of ports and inland transport networks as well as by encouraging more efficient and reliable domestic and regional shipping services. In this regard, this paper suggests the following policy recommendations to improve maritime connectivity in the aSEA region:

a) Strengthen Regional Connectivity on "Thin" Routes

Regional maritime connectivity can be improved by promoting the growth of transport links along economic corridors—especially maritime economic corridors. As discussed earlier, the Nautical Highway in the Philippines offer a practical example of a successful maritime

³² "Signal Decision". Lloyd's Maritime Asia, March 1992.

corridor.

What seems clear is that the archipelagic nature of this region makes the development of maritime economic corridors very favorable. In such corridors, a chain of islands each with its road network and the necessary ports to allow Ro-Ro ferry connections between adjacent islands appears to be relatively common. In this context, pre-feasibility studies to examine the economic potential of the following corridors should be undertaken:

- East–West Corridor (linking Singapore–Java–Bali–Lombok–Timor-Leste–West Papua–Papua New Guinea); and the
- North–South Corridor (linking Papua New Guinea–West Papua–Indonesia–Philippines–Thailand).

Ro-Ro vessels would appear the ideal means of maritime transport on these economic corridors. Their ability to accommodate large trucks (and, if necessary, railway freight cars) as well as their speed of turnaround in ports offers flexibility and economy.

However, regional routes with "thin" cargo flows that are considered important for social or developmental reasons may need to be subsidized in the short term. At the same time, these subsidy payments should be tied to clearly defined objectives and should be justified within the framework of a comprehensive transport policy. Furthermore, subsidies should be transparent and subject to regular review.

There has been a tendency for governments to seek value for taxpayer funds by putting out subsidized service to tender. Wherever practical, subsidies should be awarded on the basis of an open and competitive tendering process and tender periods should be of a limited duration.

b) Encourage Regional Cargo Consolidation and Port Rationalization

Regional ports face a "chicken and egg" dilemma. Shipping lines will only serve ports offering sufficient cargo to make calls economically viable, while shippers are reluctant to use a port unless it receives regular calls by shipping lines. Since trade volume is the main determinant of maritime connectivity, it is commonly argued that appropriate domestic initiatives should be undertaken to build a large enough cargo base to attract shipowners.

In principle, this problem might be solved by

- Giving shipping lines fiscal incentives to call at the port(s) in question (e.g., exemption from income tax for a given period or granting investment allowances or access to credit at concessionary rates). Incentives such as these may solve the problem in the short term. However, a shipping line in receipt of subsidies may lack the incentive to chase cargo volumes. In this case, governments may need to insert a sunset clause to discourage permanent subsidization.
- Offering shipping lines a minimum cargo guarantee. To make this viable, it may be necessary to designate specific ports as cargo consolidation centers. For example,

Davao might be designated as the collection point for Mindanao cargoes. Clearly a cargo consolidation centre must be strategically located. Ideally, it would be the port that offered the minimum total transport cost for a given region.

The creation of cargo consolidation centers implies port rationalization i.e., a reduction in the number of commercial ports in the interest of greater efficiency. Such a policy has both advantages and disadvantages. The use of larger vessels, making fewer calls at well-equipped regional ports could reduce the costs incurred by international shipowners. In a competitive shipping market, such reductions should be passed on to shippers. However, total transport costs will be minimized only if feeder container services or land transport links are efficient and competitive. However, it was noted that port rationalization—which will see some ports and regions lose their direct international links—is likely to be a contentious policy issue politically. Since some shippers are likely to have higher costs imposed on them, the question of compensation may well be raised.

c) Encourage Investment in Port and Inland Transport Infrastructure

Major hub ports in the aSEA region such as Singapore, Port Klang and PTP are efficient by world standards. However, it was found that other regional and local ports suffer by comparison. In some of these ports, the lack of investment in physical infrastructure may limit the size of vessels visiting the port and force shipowners to use costly self-gearred ships.

Nonetheless, substantial gains are possible if ports can enhance their productivity and efficiency. Since berth hire charges (based on the size of the vessel and the time spent in port) constitute a major component of port costs, the longer the ship takes to load/unload, the higher the berth hire charges. Efficient ports lower ship turnaround time, increasing vessel productivity and leading to lower port and voyage costs.

Raising port efficiency usually requires a combination of investment in physical infrastructure, improvements in the interface between the port and its hinterland, improvements in port governance, and privatization of those port services capable of being provided competitively.

There are several ways to bring about desired improvement in the quantity and quality of port infrastructure. For example, local or regional sinking funds aimed specifically at improving facilities in local and regional ports might be set up. Given the importance of the barter trades within the region as highlighted in this paper, there is a pressing need to improve facilities to handle breakbulk and minor bulk cargoes.

Governments and port authorities may need to cooperate to improve the interface between a port and inland transport. Inadequate storage within a port, an inefficient interface between the port and road transport operators, and congestion on roads in the immediate vicinity of the port may seriously detract from port efficiency.

d) Improve Governance Structures and Create Competitive Markets for Port Services

While the landlord port model has been widely adopted, the operating (service) and resource (tool) models also have their adherents. Whichever form is adopted, it is important

to implement the package fully. Government-owned ports should be corporatized or privatized rather than operated by the public sector.

It was found that common charges apply across ports in aSEA countries such as the Philippines and Indonesia. Ideally, port pricing should reflect the underlying cost of service provision on a port-by-port basis. Cross-subsidization between ports raises the cost of using efficient ports.

There is a general presumption in economics that efficient service provision is most likely to be achieved where services are delivered in a competitive market. Ideally, government should separate potentially competitive port services—including towage, mooring, and stevedoring—from port infrastructure development and regulatory control. For example, since competition in the provision of stevedoring has been shown to lead to improvements in service quality and lower costs of cargo handling, a port authority should issue a stevedoring license to any firm demonstrating the requisite skills. Exclusive licenses should only be granted where they can be shown to be in the best interest of the efficient working of the port. Port authorities can encourage the development of competitive stevedoring services by hiring cargo handling equipment to stevedores.

e) Reassess the Costs and Benefits of Cabotage

Given the imbalances in cargo flows in the aSEA region, there would appear to be efficiency gains available if the coastal trades of Indonesia, Malaysia, the Philippines and Thailand were opened up to overseas vessels. Access to coastal trade would enable shipowners to develop new route patterns designed to minimize the back-haul problem. To reassess the costs and benefits of cabotage, a variety of policy options could be considered which are highlighted below.

Modified Cabotage Regulations

As is the case with container transport to/from Port Klang in Malaysia, certain trades might be excluded from cabotage rules. This might be done by adopting a quota system allowing foreign flag vessels to gain partial access to coastal shipping markets, or by replacing existing licensing provisions with a tariff or tax with the aim of reduced the tariff or tax over time. Another possible option is to adopt a Single or Continuing Voyage Permit system, enabling foreign flag vessels to operate on the coast for a specified period of time.

Regional Cabotage

Under this option national cabotage regulations would be replaced by regional free trade in shipping services. aSEA members taking part in the scheme would simply exchange cabotage rights. A shipowner domiciled in a signatory nation would be able to operate international or coastal services throughout the region.

Open Seas

Any user of coastal shipping services would be free to use the services of a shipping operator of his choice, domestic or foreign. Under this option, government would continue to regulate to ensure compliance with safety and environmental laws.

The opening of coastal trades to greater competition by abolishing or modifying cabotage policies has the potential to lower domestic transport costs and encourage innovation in the provision of shipping services.

f) Encourage Supply Chain Integration

The services provided by ports and shipping companies form a segment of a total supply chain, stretching from the farm or factory in the country of origin through to the point of final consumption of the good in question. In an ideal world, the cost of transport would be minimized along the entire supply chain. Supply chain integration, involving the harmonization of operations and standards across the chain, may be necessary to effect such cost minimization.

In the absence of monopoly control over a given supply chain, strategic collaboration or strategic alliances may be necessary if the benefits of supply chain integration are to be achieved. It was noted that it may be advantageous for the governments of aSEA countries to create an environment conducive to strategic collaboration. Specific measures likely to enhance strategic collaboration include: tax incentives; relaxation of foreign equity limits encouragement of players to use state-of-the-art information technology across the supply chain; as well as the development of education and training programs on supply management (Tongzon 2009).

While sizeable benefits are achievable through enhanced maritime connectivity, there are nevertheless costs and potential problems associated with strategy implementation. Substantial direct costs would be incurred in upgrading infrastructure and providing shipping services, especially where regional port facilities require substantial investment and where many islands require improved maritime connectivity (as in the case of BIMP-EAGA) (Tongzon 2009).

Furthermore, improving maritime connectivity between less developed regions appears likely to incur substantial indirect costs, especially in the short run. Subsidies, tax concessions and other incentives may be necessary to persuade shipowners to offer the desired services or to persuade shippers to route cargo via regional load centers.

Attempts to improve maritime connectivity between less-developed regions of aSEA may create political problems and involve political costs. For example, while it may be in the regional interest for a hub port to be developed in Country A (as distinct from countries B, C and D), the national interests of countries B, C and D may favor the development of domestic hub ports. There is a possibility of trade diversion occurring when one particular port is selected for development over others. For example, it is conceivable that the upgrading and expansion of port facilities at Bintulu may divert Malaysian trade from Singapore.

The building of complementarities among regional economies may conflict with national priorities and policies. For example, enhancing maritime connectivity between Mindanao (Philippines) and Sabah (Malaysia) may divert cargoes from Manila. Tongzon argued that this trade-off between national and regional interests must be seen in a strategic and holistic perspective.

There may be a need to separate those policy recommendations that hold out promise of short-term gains from those whose pay-offs are likely to be in the long term. A similar separation may be needed for policy recommendations that can be implemented given existing legislation and customs from those that require fundamental shifts in law, custom or practice.

Finally, careful consideration should be given to the sequencing of policy measures designed to enhance regional connectivity. Before setting a definite timeline for implementing policy measures designed to enhance regional maritime connectivity, the interrelatedness of such measures have to be thoroughly understood.

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Table 1: aSEA Economic Indicators

Country	Population (million) (2007)	GDP per Capita (\$) (2008)	Exports (% GDP) (2008)
Brunei Darussalam	0.4	31,879	62.5
Indonesia	224.9	1,925	30.1
Malaysia	26.8	6,956	109.6
Philippines	88.6	1,626	39.7
Singapore	4.6	35,163	230.9
Papua New Guinea	6.1	991	78.8
Thailand	65.7	3,732	73.4
Timor-Leste	1.0	440	2.2

Source: Department of Foreign Affairs and Trade , Australia, Country Fact Sheets.

Table 2: Number of Direct Container Services Linking aSEA Members

	BRU	IND	MAL	PHI	SIN	PNG	THA	TML
BRU	-	3	12	2	4	-	1	0
IND	3	-	67	30	138	1	12	0
MAL	12	67	-	6	368	-	40	0
PHI	2	30	6	-	25	-	14	0
SIN	4	138	368	25	-	2	73	1
PNG	-	1	-	-	2	-	-	-
THA	1	12	40	14	73	-	-	0
TML	0	0	0	0	1	0	0	-

Note: BRU is Brunei; IND is Indonesia; MAL is Malaysia; PHI is Philippines; PNG is Papua New Guinea; THA is Thailand; and TML is Timor-Leste.

Source: Shipping Company Sailing Schedules.

Table 3: Feeder Container Services calling at Ports in East Malaysian and Brunei, 2007

Shipping Line	Service	Route	Frequency
MISC/PDZ/MSC	Perdana Service	Bintulu-Pasir Gudang- Singapore-Port Klang-Muara-Labuan	Weekly
Johan Shipping	West Malaysia (String 1)	Bintulu-Port Klang-Pasir Gudang-Kota Kinabalu-Muara	Weekly
Johan Shipping	West Malaysia (String 2)	Bintulu-Kota Kinabalu-Sipitang-Port Klang- Pasir Gudang- Kuching	Weekly
Johan Shipping	West Malaysia (String 3)	Bintulu-Pasir Gudang-Kuching	Fortnightly
HUBLLine	West Malaysia (String 1)	Bintulu-Port Klang-Pasir Gudang-Singapore-Muara-Kota Kinabalu	Every 10 days
HUBLLine	West Malaysia (String 2)	Bintulu-Penang-Port Klang-Pasir Gudang-Singapore-Muara-Kota Kinabalu	Weekly
Bintang Mas Shipping	Singapore Borneo (String 1)	Bintulu-Miri-Kuala Belait-Singapore	Weekly
Bintang Mas Shipping	Singapore Borneo (String 2)	Bintulu-Labuan-Muara- Singapore	Every 10 days
Geniki Lines	Straits Borneo Express	Bintulu-Penang-Port Klang-Singapore-Kuching	Every 10 days
Superior Shipping	Singapore Borneo	Bintulu-Miri-Muara-Singapore	Weekly
Malsuria Shipping	East Malaysian Feeder	Bintulu-Miri-Port Klang	Fortnightly
ACL	Kuching & Sibu Service	Bintulu-Sibu-Singapore-Kuching	Weekly
Harbour Link Line	East-West Service	Bintulu-Kuching-Port Klang-Pasir Gudang-Kuching-Kota Kinabalu	Weekly
Shin Yang Line	Port Klang Service	Bintulu-Miri-Port Klang	Weekly

Source: Haji Ahmat Narawi. 2007. Role of Bintulu Port in the BIMP-EAGA Paradigm. Presentation made at the 4th Philippines Ports and Shipping Exhibition and Conference, 7–8 February.

Table 4: Selected aSEA Ports: Types of Cargo Handled and Connectivity

Country/Port	Types of Cargo Handled				Inland Connectivity		
	Container	Dry Bulk	Liquid Bulk	General Cargo	Road	Rail	Inland Waterway
Brunei							
Muara	Y	-	-	Y	Y	-	-
Indonesia							
Jakarta (TPriok)	Y	Y	Y	Y	Y	Y	-
Palembang	Y	Y	Y	Y	Y	-	-
Pontianak	Y	-	-	Y	Y	-	-
Surabaya	Y	Y	Y	Y	Y	-	-
Makassar	Y	-	-	Y	Y	-	-
Balikpapan	Y	-	Y	Y	Y	-	-
Jayapura	-	-	Y	Y	Y	-	-
Benjarmasin	Y	-	-	Y	Y	-	-
Malaysia							
Port Klang	Y	Y	Y	Y	Y	Y	-
Penang	Y	Y	Y	Y	Y	Y	-
PTP	Y	-	-	-	Y	Y	-
Johore	Y	Y	Y	Y	Y	Y	-
Bintulu	Y	Y	Y	Y	Y	-	-
Kuching	Y	Y	Y	Y	Y	-	-
Sandakan	Y	-	-	Y	Y	-	-
Kota Kinabulu	Y	-	-	Y	Y	-	-
Philippines							
Manila	Y	Y	Y	Y	Y	Y	Y
Subic Bay	Y	-	Y	Y	Y	-	-
Cebu	Y	Y	-	Y	Y	-	-
Davao	Y	-	-	Y	Y	-	-
Zamboanga	Y	-	-	Y	Y	-	-
Singapore							
Singapore/Jurong	Y	Y	Y	Y	Y	Y	-
PNG							
Port Moresby	Y	Y	Y	Y	Y	-	-

Table 4 Cont'd

Country/Port	Types of Cargo Handled				Inland Connectivity		
	Container	Dry Bulk	Liquid Bulk	General Cargo	Road	Rail	Inland Waterway
Lae	Y	Y	Y	Y	Y	-	-
Thailand							
Bangkok	Y	Y	-	Y	Y	Y	Y
Laem Chebang	Y	Y	Y	Y	Y	Y	-
Songkhla	Y	-	-	Y	Y	-	-
Timor-Leste							
Dili	Y	Y	Y	Y	Y	-	-

Note: PNG is Papua New Guinea

Source: Almec Corporation. 2002. *ASEAN Maritime Transport Development Study*. Final Report, A-4.

PDP/Meyrick. 2005. *Promoting Efficient and Competitive Intra-ASEAN Shipping Services*. Final Report, March p. 32.

Table 5: Container Volumes handled by major aSEA ports, 2000–2008

Port/Year	2000	2004	2005	2006	2007	2008*
Singapore	17.1	21.3	23.2	24.8	27.9	30.6
Port Klang	3.2	5.2	5.5	6.3	-	-
PTP	0.4	4.0	4.2	4.7	5.5	6.5
Laem Chebang	2.1	3.6	3.8	4.3	4.6	-
Jakarta (Tanjung Priok)	-	3.2	3.3	-	-	-

* estimate

Source: *Containerisation International* (various issues)

Table 6: Major Ports in the aSEA Region (By Type of Port)

Tool Port	Service Port	Landlord Port	Tool-Landlord Port
Cebu	Singapore	Laem Chebang	Surabaya
Davao	Bangkok	Bintulu	Medan
General Santos	Tanjung Priok	Songkla/Phuket	
Balikpapan	Penang		

Source: Asian Development Bank. 2000. *Developing Best Practices for Promoting Private Sector Investment in Infrastructure: Ports*. Manila.

Maritime Connectivity in Archipelagic Southeast Asia: An Overview

The archipelagic region of Southeast Asia consists of 24,000 islands, spread across 5,200 kilometers (km) from east to west and 3,400 km from north to south, with a population of about 350 million. Many of the islands are poor, remote from main centers of economic activity, and not well connected. Improving maritime connectivity is key to the development of this region. This paper provides a brief overview of the state of maritime connectivity in the region, including demand and supply of shipping services, and existing infrastructure. The paper also reviews the region's maritime policies and offers key policy recommendations to strengthen connectivity.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than \$2 a day, with 903 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.