ASSOCIATION OF SOUTHEAST ASIAN NATIONS (ASEAN)

THE MASTER PLAN AND FEASIBILITY STUDY ON THE ESTABLISHMENT OF AN ASEAN ROLL-ON/ROLL-OFF (RO-RO) SHIPPING NETWORK AND SHORT SEA SHIPPING

FINAL REPORT

Volume 1 - Literature Review and Field Surveys

March 2013

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

ALMEC CORPORATION
Japan Marine Science Inc.
The Overseas Coastal Area Development Institute of Japan (OCDI)

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US$	1.00	=	JPY	81.48			
EURO	1.00	=	JPY	106.9	=	US$	1.3120
BN$	1.00	=	JPY	64.05	=	US$	0.7861
IDR	1.00	=	JPY	0.008889	=	US$	0.0001091
MR	1.00	=	JPY	26.55	=	US$	0.3258
PhP	1.00	=	JPY	1.910	=	US$	0.02344
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(as of 20 April, 2012)

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ABBREVIATIONS

ACCC	ASEAN Connectivity Coordinating Committee
ADB	Asian Development Bank
ADPEL	*Administrator Pelabuhan*, Port Administrator
AEC	ASEAN Economic Community
AFAFGIT	ASEAN Framework Agreement on the Facilitation of Goods in Transit
AFAFIST	ASEAN Framework Agreement on the Facilitation of Inter-State Transport
AFAMT	ASEAN Framework Agreement on Multimodal Transport
AFAS	ASEAN Framework Agreement on Services
AFF	Agriculture Fishery Forestry
APRIS	ASEAN-EU Programme on Regional Integration Support
ARMM	Autonomous Region in Muslim Mindanao
ASDP	*Angkutan Sungai Danau dan Penyeberangan*, Indonesia Ferry Company
ASEAN	Association of Southeast Asian Nations
ASITA	Association of the Indonesia Tour & Travel Agencies
ASW	ASEAN Single Window
ASYCUDA	Automated System for Customs Data
ATA	Admission Temporaire/Temporary Admission
B/L	Bill of Lading
BAPPEDA	*Badan Perencana Pembangunan Daerah*, Regional Development Planning Agency of Indonesia
BD	Brunei Dollar
BDWW	Butterworth Deep Water Wharves
BIMP-EAGA	Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area
CAMFFA	Cambodia Freight Forwarder Association
CAMPI	Chamber of Automotive Manufacturers of the Phils.,Inc.
CBD	Central Business District
CBU	Completely Built Unit
CFS	Container Freight Station
CHARO	Chassis RO-RO
CIF	Cost, Insurance and Freight
CIQS	Custom, Immigration, Quarantine and Security
CLC	International Convention on Civil Liability for Oil Pollution Damage
CLMV	Cambodia, Lao PDR, Myanmar, and Vietnam
COLREG	Collision Regulation
CPA	Cebu Port Authority
CPO	Crude Palm Oil
CPTFWG	ASEAN Customs Procedures and Trade Facilitation Working Group

CRT TV	Cathode Ray Tube Television
CTIC	Chaophaya Terminal International Co., Ltd.
CVLB	Commercial Vehicle Licensing Board
CY	Container Yard
DG	Directorate General
DGLT	Directorate General of Land Transportation, Indonesia
DGST	Directorate General of Sea Transportation, Indonesia
DMDI	*Dunia Melayu Dunia Islam*, Malay Muslim Community
DOR	Department of Roads
DOTC	Department of Transportation and Communications, Philippines
DWT	Dead Weight Tonnage
EIA	Environmental Impact Assessment
EO	Executive Order
EPU	State Economic Planning Unit
ERP	Electronic Road Pricing
EU	European Union
e-VIS	Electronics Vehicle Information System
EWEC	East-West Economic Corridor, GMS
FAO	Food and Agriculture Organization (of the United Nations)
FCL	Full Container Load
FEU	Forty-foot Equivalent Unit
FIRR	Financial Internal Rate of Return
FOB	Freight on Board
FTF	Frequent Traveler Facility
FY	Fiscal Year
GAIKINDO	*Gabungan Industri Kendaraan Bermotor Indonesia*, Association of Indonesia Automotive Industries
GATT	General Agreement for Tariffs and Trade
GDP	Gross Domestic Product
Gensan	General Santos City, Philippines
GHG	Greenhouse Gas
GMS	Greater Mekong Subregion
GMS-CBTA	Greater Mekong Sub-regional Cross Border Transport Agreement
GRDP	Gross Regional Domestic Product
GT/GRT	Gross Tonnage/Gross Registered Tonnage
GTAP	Global Trade Analysis Project
ICC	International Chamber of Commerce
ICD	Inland Container Depot
ICP	International Circulation Permit
IDL	International Driver's License
IDP	International Driving Permit
IDR/Rp	Indonesia Rupiah
IHR	International Health Regulations

ILO	International Labour Organization
IMF	International Monetary Fund
IMO	International Maritime Organization
IMSO	International Mobile Satellite Organization
IMT-GT	Indonesia-Malaysia-Thailand Growth Triangle
INMARSAT	International Marine/Maritime Satellite
INSA	Indonesian National Shipowners' Association
IOFC	International Offshore Financial Centre
IOPP Certificate	International Oil Pollution Prevention Certificate
IRF	International Road Federation
IRR	Internal Rate of Return
ISM Code	International Management Code for the Safe Operation of Ship and for Pollution Prevention
ISPS Code	International Ship and Port Facility Security Code
ITF	International Transport Workers' Federation
JAGS-CT	Jose Abad Santos-Glan-Sarangani Province Cooperation Triangle
JBIC	Japan Bank of International Coordination
JCCI	Japan Chamber of Commerce Industry
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JPA	Johor Port Authority
JPY	Japanese Yen
KADIN	*Kamar Dagang dan Industri Indonesia*, Indonesian Chamber of Commerce and Industry
KL	Kuala Lumpur
KOICA	Korea International Cooperation Agency
KRW	Korean Won
Lao PDR	Lao People's Democratic Republic
LCC	Low Cost Carrier
LCL	Less than Container Load
LDA	Labuan Development Authority
LDT	Light Displacement Tonnage
LIFFA	Lao International Freight Forwarder Association
LLMC	Limitation of Liability for Maritime Claims
LNG	Liquefied Natural Gas
LOA	Length Over All
LO-LO	Lift-On, Lift-Off
LPG	Liquefied Petroleum Gas
LRT	Light Rail Transit
LTFRB	Land Transportation Franchising and Regulatory Board, Philippines
LTO	Land Transportation Office
LWS	Low Water Spring
M/V	Motor Vessel or Merchant Vessel

MAA	Malaysia Automotive Association
MALINDO	Malaysia-Indonesia
MARINA	Maritime Industry Authority
MARPOL	International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978
MCTPC	Ministry of Communication, Transport, Post and Construction, Lao PDR
MHHW	Mean Higher High Water
MIMAROPA	Mindoro Marinduque Rombion Palawan
MISR	Malaysia International Ship Registry
MLIT	Ministry of Land, Infrastructure, Transport and Tourism, Japan
MLLW	Mean Lower Low Water
MLWS	Mean Low Water Spring
MOU	Memorandum of Understanding
MP3EI	*Masterplan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia*, Master Plan for Acceleration and Expansion of Indonesia's Economic Development
MPA	Maritime and Port Authority
MPAC	Master Plan on ASEAN Connectivity
MPV	Multi-purpose Vehicles
MPWT	Ministry of Public Works and Transport, Cambodia and Lao PDR
MRI	Mitsubishi Research Institute, Japan
MRT	Metro Rail Transit, Philippines
MT	Metric Ton
MTO	Multimodal Transport Operators
MTWG	Maritime Transport Working Group
MYR/RM	Malaysia Ringgit
NBCT	North Butterworth Container Terminal
NCIA	Northern Corridor Implementation Authority
NCV	Non-Conventional Vessel
NGO	Non Government Organization
NILIMJ	National Institute for Land and Infrastructure Management of Japan
nm	Nautical Mile
NORSULMIN	North Sulawesi-Mindanao
NSO	National Statistics Office, Philippines
NTC	National Transport Committee
NTFC	National Transport Facilitation Committee
NTTCC	National Transit Transport Coordinating Committee
OCDI	Overseas Coastal Area Development Institute of Japan
O-D/OD	Origin - Destination
ODA	Official Development Assistance
OPRC	Oil Pollution Preparedness, Response and Co-operation
OTC	Office of Transport Cooperatives, Philippines
OTS	Office of Transport Cooperatives

P&I Insurance	Protection and Indemnity Insurance
PAT	Port Authority of Thailand
PBCT	Prai Bulk Cargo Terminal
PCBSI	Prudential Customs Brokerage Service Inc.
PCC	Pure Car Carrier
PCG	Philippine Coast Guard
PCTC	Pure Car/Truck Carrier
PELINDO	*PT Pelabuhan Indonesia*, Indonesia Port Corporations
PELNI	*PT Pelayaran Nasional Indonesia*
PELRA	*Pelayaran Rakyat* (Traditional Shipping)
PHP	Philippines Peso
PKA	Port Klang Authority
PKS	Palm Kernel Shells
PLTC	Public Land Transport Commission, Malaysia
PMMA	Philippine Merchant Marine Academy
PMO	Project Management Office
PNG	Independent State of Papua New Guinea
PPA	Philippine Ports Authority
PPC	Port Penang Commission
PPD	Port Police Division
PPP	Public–Private Partnership
PPSB	Penang Port Sdn. Bhd.
PPUR	Puerto Princesa Underground River
RFID	Radio Frequency Identification
RHD/LHD	Right Hand Drive/Left Hand Drive
RICMT	Roadmap Towards an Integrated and Competitive Maritime Transport in ASEAN
ROPAX	RO-RO Passenger
RO-RO	Roll-On, Roll-Off
RRTS	RO-RO Terminal System
RT	Revenue Ton
RTG	Rubber Tyred Gantry Crane
SEOM	ASEAN Senior Economic Officials Meeting
SGD	Singapore Dollar
SOCCSKSARGEN	South Cotabato, Cotabato, Sultan Kudarat, Sarangani, General Santos
SOLAS	November 1995 amendments to Chapter II-1 of the International Convention for the Safety of Life at Sea
SOP	Standard Operating Procedure
SOSEK MALINDO	Socio-Economic Exchange for Malaysia-Indonesia
SPA	Sabah Ports Authority
SPAD	*Suruhanjaya Pengangkutan Awam Darat*, Land Public Transport Commission, Malaysia
SPSB	Sabah Port Sdn. Bhd.

SRNH	Strong Republic Nautical Highway
SRRFPDP	Social Reform Related Feeder Ports Development Program
SSF	Shanghai Shimonoseki Ferry
SSS	Short Sea Shipping
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
STOM	ASEAN Senior Transport Officials' Meeting
SUA Convention 88	Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation
TBFT	Tanjung Belungkor Ferry Terminal
TCCP	Tariff and Customs Code of the Philippines
TEN-T	Trans-European Transport Network
TEU	Twenty-foot Equivalent Unit
TIICTD	Transport, Infrastructure, ICT Development
TOR	Terms of Reference
TPB	*Terminal Petikemas Bitung*, Bitung Container Terminal
TPL	Third Party Liability
TRB	Toll Regulatory Board, Philippines
TTCB	Transit Transport Coordinating Board
TTR	Transit Transport Route
UK	United Kingdom of Great Britain and Northern Ireland
UN	United Nations
UNCLOS	United Nations Convention on Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNWTO	World Tourism Organization
USA	United States of America
USD	US Dollar
VAMA	Vietnam Automobile Manufacturing Association
VLCC	Very Large Crude Carrier
WCO	World Customs Organization
WTO	World Trade Organization

1 INTRODUCTION

1.1 Scope of the Study

1) Study Background

The vision of ASEAN Leaders to build an ASEAN Community by 2015 calls for a well-connected ASEAN that will contribute towards a more competitive and resilient ASEAN. An enhanced ASEAN Connectivity is essential to achieve the ASEAN Community, namely the ASEAN Political-Security Community, ASEAN Economic Community and ASEAN Socio-Cultural Community.

As a key step towards realizing the ASEAN Community of continued economic growth, reduced development gap and improved connectivity among Member States and between Member States and the rest of the world by enhancing regional and national physical, institutional and people-to-people linkages, ASEAN has prepared the Master Plan on ASEAN Connectivity (MPAC) in October 2010.

The ASEAN Connectivity Coordinating Committee (ACCC) was established in April 2011 for coordinating and monitoring the progress of the MPAC. The Japan Task Force to support ASEAN connectivity, consisting of relevant ministries, Japan International Cooperation Agency (JICA), Keidanren (Japan Business Federation) and Japan Chamber of Commerce and Industry (JCCI), held joint committee meetings with the ACCC in July and November 2011.

As a result of the said committee meetings, JICA agreed to fund the ASEAN RO-RO Study (hereinafter referred to as the “Study”). The Study is going to concretize the ASEAN RO-RO shipping network development project, which is one of the priority projects listed in the MPAC. It is also planned in the ASEAN Strategic Transport Plan 2011-2015 or the so-called "Brunei Action Plan" that a study would need to be conducted by 2012 to develop an ASEAN RO-RO Network. The study on ASEAN RO-RO network is also one of the cooperative projects in the ASEAN-Japan Logistics Partnership which was adopted at the 9th ASEAN-Japan Transport Ministers Meeting in Phnom Penh in December 2011.

ASEAN adopts a working group method to coordinate transport cooperation initiatives. The ASEAN RO-RO project will be coordinated and elaborated in the ASEAN Maritime Transport Working Group (MTWG) to be held twice in a year. It is noted that Indonesia and the Philippines are coordinating countries for the project.

2) Study Objectives

The study has the following threefold objectives:

(1) To collect and analyze a series of regional sea and land transport data/information in ASEAN, Europe and other regions to realize expansion/opening of RO-RO routes with efficient and reliable services;

(2) To select priority routes (or shortlist in the project) among the routes to be studied and identify development issues and necessary policy recommendations by route; and

(3) To recommend necessary policy initiatives to ensure RO-RO shipping services among ASEAN Member States after surveying legal and institutional frameworks in relation with international sea and land transports.

It is noted that short sea shipping on domestic routes will be analyzed in the case of direct continuation of likely intra-ASEAN RO-RO shipping routes.

3) Definition of RO-RO Ship

(1) Definition by IMO/SOLAS

The International Maritime Organization (IMO) defines roll-on/roll-off ship as "a passenger ship with RO-RO cargo spaces or special category spaces." Such definition is found in the November 1995 amendments to Chapter II-1 of the International Convention for the Safety of Life at Sea (SOLAS), 1974.

“RO-RO cargo space” is a space not normally subdivided in any way and extending to either a substantial length or the entire length of the ship in which goods, in or on rail or road cars, vehicles (including road or rail tankers), trailers, containers, pallets, demountable tanks or, in or on similar stowage units or other receptacles that are loaded and unloaded, normally in a horizontal direction.

“Special category space” is an enclosed space, above or below the bulkhead deck, that is intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, into and from which such vehicles can be driven and to which passengers have access.

(2) Coverage by ASEAN Connectivity Initiative

ASEAN has decided to take up a challenge to strengthen ASEAN-wide connectivity by RO-RO shipping network. RO-RO shipping is unique in providing seamless services by way of carrying passenger, vehicle, general cargo on truck, and container on chassis.

There is no ASEAN definition to cover RO-RO ships under the ASEAN connectivity initiative. Therefore, the Study’s Inception Report defined three (3) types of RO-RO shipping services, as follows: (Refer to Figure 1.1)

- Short-distance RO-RO and passenger (ROPAX) service by small and simple structured ROPAX ship;
- Middle- to long-distance ROPAX service by multi-deck ROPAX ship where various types of vehicles; bagged, boxed and container cargoes; and passengers are transported; and
- Middle- to long-distance RO-RO service by multi-deck RO-RO ship where containers on chassis are mainly transported.

The above coverage was approved in the 23rd ASEAN Maritime Working Group Meeting in late March 2012. It should be noted that specialized and dedicated RO-RO shipping services for certain shippers are excluded in the study scope.

Shipping Type	Image of Ship Type	Competitors in the Market
Short-distance ROPAX Service		• Fast Craft • Passenger Ship • Cargo Passenger Ship • General Cargo Ship • Container Ship (small)
Middle to Long-distance ROPAX Service		• Container Ship • Passenger Ship • General Cargo Ship • Car Carrier • Road Truck/Trailer • Expressway Bus • Aircraft (passenger, cargo)
Middle to Long-distance RO-RO Service		• Container Ship • Road Truck/Trailer • Aircraft (cargo)

Source: JICA Study Team

Figure 1.1 RO-RO Shipping Types under the Study

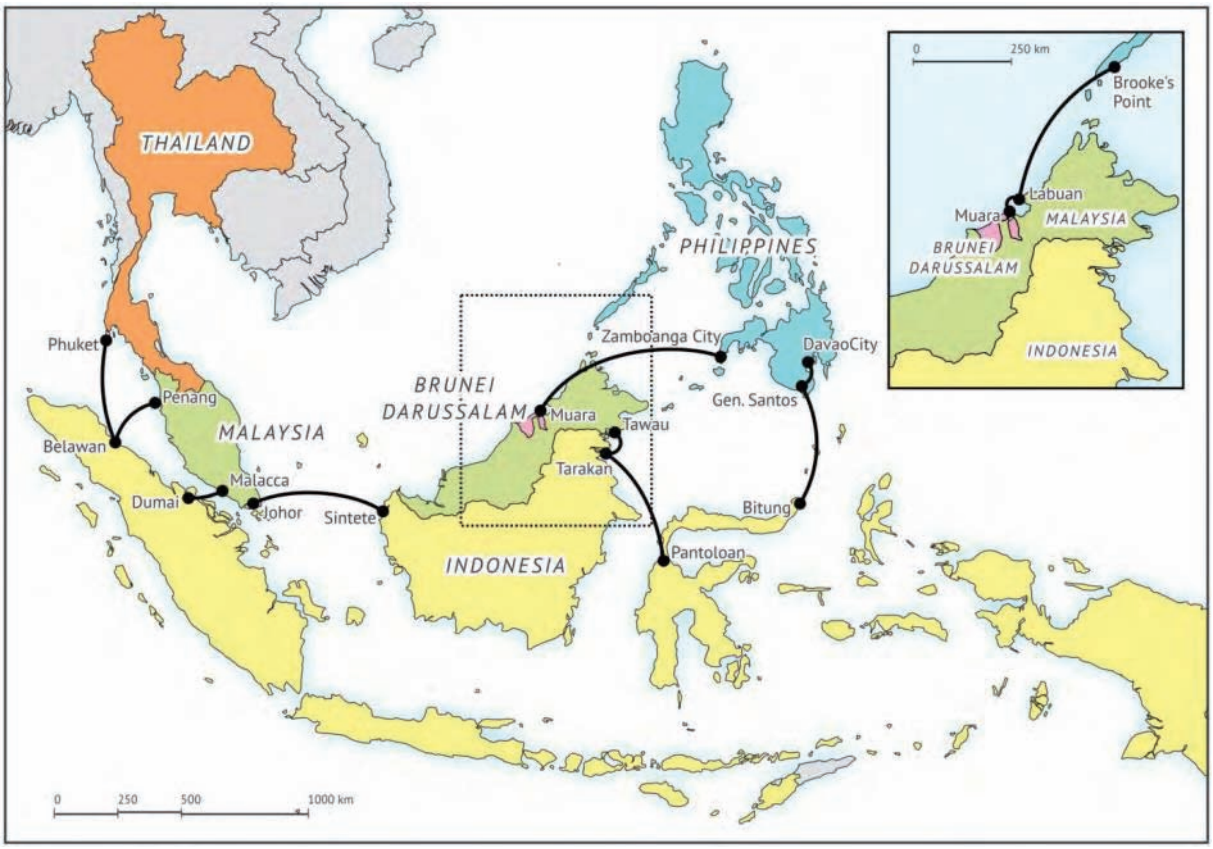
4) Study Area

In principle, the study area covers the ASEAN region consisting of ten member states (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam). Legal and institutional analysis in relation to international RO-RO shipping has been undertaken in all ASEAN Member States.

There are eight (8) RO-RO shipping candidate routes. The first field survey was conducted on the 8 routes in five (5) countries including Brunei Darussalam, Indonesia, Malaysia, Philippines and Thailand.

Document review was done to understand international RO-RO shipping practices in Europe and East Asia.

The 8 candidate routes under the first field survey are depicted in Figure 1.2 and Table 1.1.



Source: JICA Study Team

Figure 1.2 RO-RO Shipping Candidate Routes under the First Field Survey

Table 1.1 Profile of RO-RO Shipping Candidate Routes under the First Field Survey

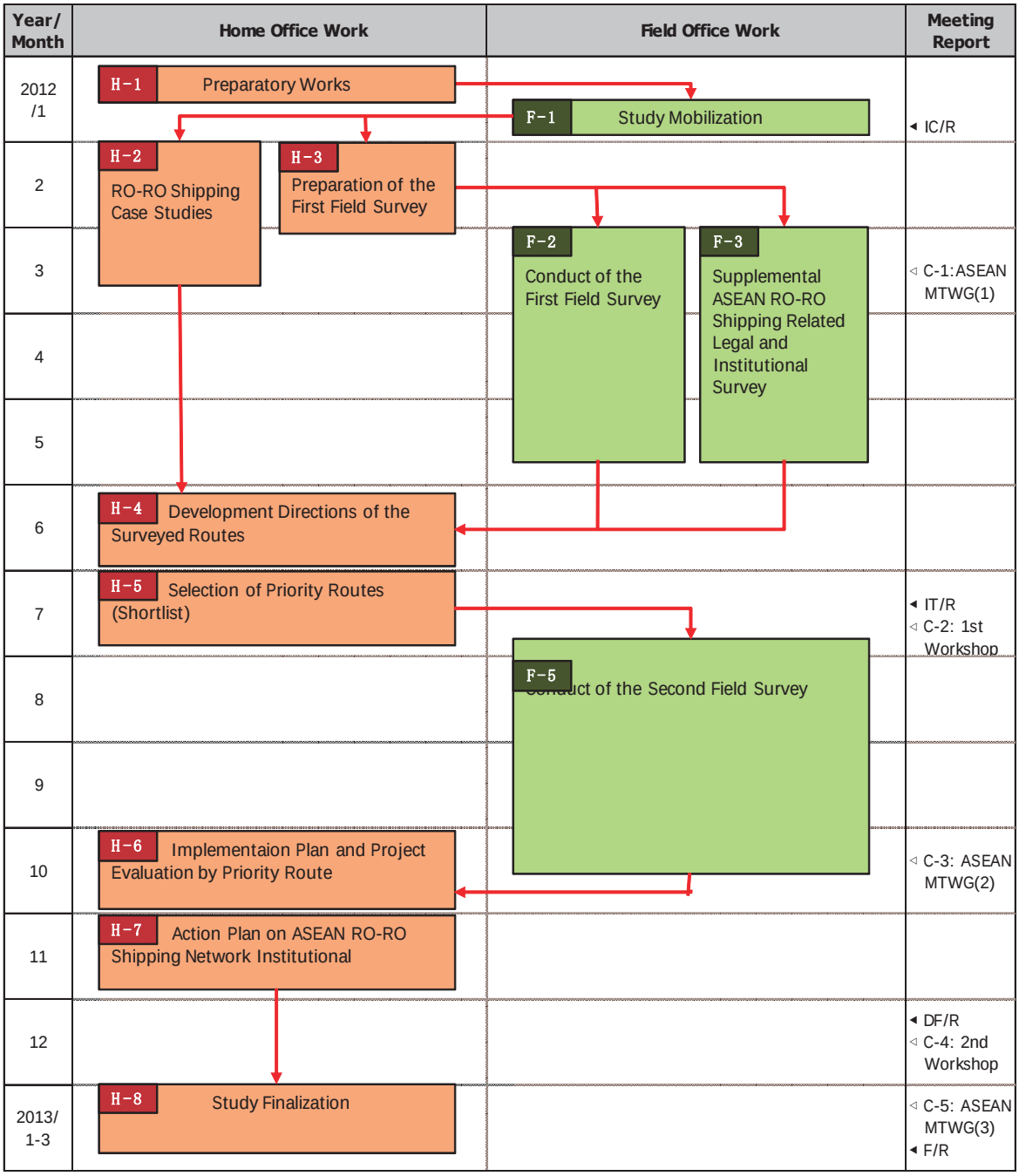
Route	Distance	Existing Shipping Service
(1) Zamboanga City (Philippines) – Muara (Brunei Darussalam)	537 N. Miles	No liner shipping service is observed.
(2) Davao City – General Santos (Philippines) – Bitung (Indonesia)	154 N. Miles between Davao and Gensan, 302 N. Miles between Gensan and Bitung	No liner shipping service is observed.
(3) Johor (Malaysia) – Sintete (Indonesia)	321 N. Miles	No liner shipping service is observed.
(4) Tawau (Sabah, Malaysia) – Tarakan (Kalimantan, Indonesia) – Pantoloan (Sulawesi, Indonesia)	82 N. Miles between Tawau and Tarakan, 281 N. Miles between Tarakan and Pantoloan	Passenger shipping service is observed between Tawau and Tarakan.
(5) Brooke's Point (Palawan, Philippines) – Labuan (Malaysia) – Muara (Brunei Darussalam)	20 N. Miles between Labuan and Muara, 261 N. Miles between Brooke's Point and Labuan.	One small RO-RO ship started its service in October 2010, plying between Muara and Labuan by 1 return trip per day.
(6) Dumai (Indonesia) – Malacca (Malaysia)	58 N. Miles	Fast craft provides frequent passenger shipping service between Dumai and Malacca.
(7) Belawan (Indonesia) – Penang (Malaysia)	140 N. Miles	Only wooden-hull ships provide this strait crossing service.
(8) Phuket (Thailand) – Belawan (Sumatra, Indonesia)	242 N. Miles	No liner shipping service is observed.

Note: As of March 2012

Source: JICA Study Team

1.2 Overall Activities of the Study

This section briefly reports the activities of the Study from mobilization to finalization.



IC/R :Inception Report, IT/R :Interim Report
DF/R :Draft Final Report, F/R :Final Report
MTWG :Maritime Transport Working Group

Source: JICA Study Team

Figure 1.3 Overall Work Flow

1) Study Mobilization

In January 2012, JICA organized a study team consisting of three Japanese consulting firms (ALMEC Corporation, Japan Marine Science Inc. and The Overseas Coastal Area

Development Institute of Japan). Soon after, JICA and the Team visited the study coordinating countries of the Philippines and Indonesia and the ASEAN Secretariat in order to discuss the study scope. As a result, the survey routes were modified and amended from six (6) routes in the original ASEAN TOR to eight (8) routes as illustrated in Figure 1.2. The amendment of the survey routes was also done by ASEAN to meet the following concerns:

- Inclusion of one Thailand connected route;
- Streamlining of Malacca Strait crossing routes for the study; and
- Addition of Borneo connecting routes with the Malay Peninsula and Sulawesi Island.

JICA and the Team attended the 23rd ASEAN MTWG meeting in Yangon, Myanmar on 19-21 March 2012. The Inception Report was submitted and presented. The meeting approved the report including study methodology, coverage and schedule.

2) Conduct of the First Field Survey and the Legal and Institutional Survey

The first field survey was conducted by the JICA Team in collaboration with the country coordinators and the contact points for the Study during the period March to May 2012. The JICA Team visited a total of 5 national capitals and 17 port cities for ocular surveys, data collection, consultation meetings and stakeholder interviews. Some 212 stakeholders from various sectors participated in the first field work activities.

Table 1.2 Number of Stakeholders Involved in the First Field Survey

Port		Port operator, port authority	Shipping company, ship owner, ship agent	Forwarder, forwarder assoc.	Cargo owner	Travel agent, tourism sector	Immigration, customs	Trader association, chamber of commerce, investment board	Other govt. agencies	Other private sectors	TOTAL
Indonesia	Bitung	3	3	1				2		3	**12**
	Pantoloan	3	3	1		1	1	2	2		**13**
	Tarakan	3	1				2	2	2		**10**
	Sintete	2					2	1	1	1	**7**
	Belawan	2	4	1	1		2	1	1		**12**
	Dumai	2	4	2			2	1	2		**13**
Malaysia	Penang	1	3			1	1		2		**8**
	Malacca, KL	1					1		3		**5**
	Johor	1				1		1			**3**
	Labuan	1									**1**
	Tawau, Sabah	3	1					1	2		**7**
Brunei	Muara	1	1			3	1	1	1		**8**
Philippines	Davao				3	3		3	7		**16**
	Gensan	2	2		5	2	2	4	12	2	**31**
	Brooke's Point	1			4	1	2	7	11	2	**28**
	Zamboanga	2	4	1	6		1	4	6	3	**27**
Thailand	Phuket, BKK	1	1			1	1	1	6		**11**
TOTAL		**29**	**27**	**6**	**19**	**13**	**18**	**31**	**58**	**11**	**212**

Source: JICA Study Team

The JICA Team organized a separate team of ASEAN experts to conduct the countrywide legal and institutional survey. The expert team visited and communicated with all the ASEAN member states to understand their readiness to open international RO-RO shipping routes.

3) Interim Report Preparation

The JICA Study Team made the Interim Report consisting of three (3) parts:

i Literature review such as international RO-RO shipping practices in Europe and East Asia, domestic RO-RO shipping practices particularly in Japan, Philippines and Indonesia, and legal and institutional framework for ASEAN RO-RO shipping;

ii The results of the first field survey and the legal and institutional survey in order to identify opportunities and constraints for ASEAN RO-RO shipping development; and

iii Planning works (interim version) where ASEAN RO-RO shipping development directions were elaborated and priority routes (shortlist) were selected in accordance with agreeable selection criteria among the member states.

The Interim Report was delivered before and during the First Regional Workshop in July 2012.

4) The First Regional Workshop

The First Regional Workshop was held in Manila, Philippines on 24-25 July 2012. It was jointly organized by the JICA Study Team and the Department of Transportation and Communications/ Maritime Industry Authority (DOTC/MARINA) Philippines. The workshop was attended by participants from all ASEAN Member States (except Singapore), JICA, the BIMP-EAGA Facilitation Center, and the ASEAN Secretariat. The agenda included (i) lessons learned from other RO-RO experiences, (ii) legal and institutional framework for RO-RO shipping development, (iii) survey results of ASEAN RO-RO candidate routes, (iv) how to promote ASEAN RO-RO shipping development, and (v) field surveys and planning works for priority routes.

Priority routes for early implementation by 2015 were selected in the workshop, covering (i) Dumai – Malacca route, (ii) Belawan – Penang – Phuket route, and (iii) General Santos – Bitung route. The highlights of discussions are attached as Annex 1.1.

5) Conduct of the Second Field Survey

The second field survey was conducted along the selected priority routes in Indonesia, Malaysia, the Philippines and Thailand from August to October 2012.

JICA Study Team conducted in-depth surveys at the following various levels:

- At first, the team met the central and local governments connecting with the priority routes to develop and share international RO-RO shipping related development visions, and with relevant customs, immigration and quarantine (CIQ) authorities to discuss efficient RO-RO shipping operation with adequate risk management.
- The team investigated international RO-RO terminal sites and interviewed responsible port authorities for port planning works.
- The team conducted seaborne traffic surveys along the priority routes at Dumai Port and its vicinity, Belawan Port, and Bitung/Tahuna/Marore ports in North Sulawesi in order to identify existing convertible traffic to RO-RO shipping.

- The team interviewed stakeholders or possible RO-RO shipping users about their business conditions and plans, and their expectations from the RO-RO shipping service in order to identify induced RO-RO shipping traffic in 2015. The number of interviewees amounted to 209 business entities as shown in Table 1.3.

Table 1.3 Number of Stakeholders Interviewed in the Second Field Survey

Region	Shipper/ Manufacturer/ Processor	Trader/ Distributor/ Retailer	Forwarder	Travel and Tour Operator	Total
Pekanbaru	0	1	5	5	11
Dumai	2	1	1	0	4
Malacca	0	3	0	5	8
Dumai – Malacca Corridor Total	2	5	6	10	23
Medan/Belawan	6	4	15	10	35
Penang	3	3	18	16	40
Phuket	2	1	3	4	10
Belawan – Penang – Phuket Corridor Total	11	8	36	30	85
General Santos	21	6	2	5	34
Davao	13	2	3	4	22
Bitung/Manado	10	3	17	15	45
General Santos – Bitung Corridor Total	44	11	22	24	101
Grand Total	57	24	64	64	209

Source: JICA Study Team

6) Presentation of Study Progress at Various Meetings

In the course of the study, various ASEAN and sub-regional meetings invited the team to present the progress of the study and discuss ASEAN RO-RO shipping opportunities and constraints in light of their meeting scopes. They are as follows:

- 9th BIMP-EAGA Transport, Infrastructure and ICT Development (TIICTD) Cluster Meeting in Bandar Seri Begawan, Brunei Darussalam on 12-13 June 2012;
- 19th IMT-GT Senior Officials' Meeting in Port Dickson, Malaysia on 25-26 September 2012;
- ASEAN Coordination Committee on Customs in Ho Chi Minh City, Vietnam on 6 November 2012; and
- 13th BIMP-EAGA Small and Medium Enterprise Development (SMED) Cluster Meeting in Davao City, Philippines on 7-8 November 2012.

It is also noted that the Japan – ASEAN Connectivity Coordination Committee Meeting at Phnom Penh, Cambodia on 9 September 2012 included this study project in the agenda for coordinating particularly legal and institutional issues.

JICA and JICA Study Team attended and presented the study progress at the 24th ASEAN MTWG Meeting in Yangon, Myanmar on 17-19 October 2012. The meeting noted the following:

a) Common factors and best practices leading to successful development of RO-RO shipping, among others, are the following: Creating market demand for RO-RO shipping services (in terms of cargo and passengers); Favorable geographic conditions; Strong support by the governments and private sector; Initial provision of incentives and subsidies (e.g., fuel, taxes, financing, reduced port fees, etc.) until the routes become commercially viable; Adequate infrastructure; Effective intermodal transport such as land transport (e.g., trucks and buses) to support RO-RO shipping; Effective marketing and promotion strategy; and Profitable operations.

b) A practical and harmonized legal agenda for ASEAN RO-RO shipping should underscore and converge into the following operational aspects:
   - Temporary admission of road vehicles(No customs security and No tax on goods in transit);
   - Mutual recognition of driving licenses;
   - Mutual recognition of vehicle inspection certificates;
   - Mutual recognition of insurance policies;
   - Mutual recognition of vehicle registrations;
   - Standardization of validity of cross-border vehicles permits;
   - Single-window inspection and single stop inspection;
   - Exemption from routine physical customs inspection at the border and no customs escorts in the national territory; and
   - Frequent traveler facility.

c) ASEAN transport facilitation agreements covering goods in transit (AFAFGIT), inter-state transport (AFAFIST), and multimodal transport (AFAMT) provide the relevant guiding and implementing principles to address, among others, the key institutional bottlenecks and constraints in ASEAN RO-RO shipping.

d) For initial route set up, possible implementation agreements/bilateral and sub-regional MOUs between interested countries will be put into practice.

e) The Workshop selected 3 priority routes, namely: Dumai-Malacca, Belawan-Penang-Phuket, and General Santos-Bitung. JICA Study Team will conduct further analysis on the selected routes.

7) The Second Regional Workshop

The Second Regional Workshop was held in Jakarta, Indonesia on 6 December 2012. It was jointly organized by the JICA Study Team and the Ministry of Transportation Indonesia. The workshop was attended by participants from four (4) ASEAN Member States and six (6) local governments which connect the selected priority routes, JICA, and the ASEAN Secretariat. The agenda included (i) proposed priority routes development, (ii) RO-RO shipping business environment, (iii) regional institutional framework and corridor-wide MOU. The highlighted discussions were recorded at Annex 1.2.

8) Final Report Preparation

This Final Report has been compiled after the Second Regional Workshop in Jakarta, Indonesia on 6 December 2012 with the comments from the Member States.

After this introductory chapter, the report encompasses 4 parts with 17 chapters. 'Part I – Literature Review' or the chapters from 2 to 5, 'Part II – Field Surveys' or the chapters from 6 to 10, 'Part III – Development Vision' or the chapters from 11 to 13, and 'Part IV – Development Planning' or the chapters from 14 to 18 for developing the selected priority routes and promoting ASEAN RO-RO shipping. Chapter 19 presents the Study's conclusions and recommendations.

1.3 Study Organization

The Study has been conducted under the JICA's technical cooperation scheme where JICA forms and dispatches a study team. The ASEAN side also formed JICA's counterpart organizations at two levels: advisory and technical levels.

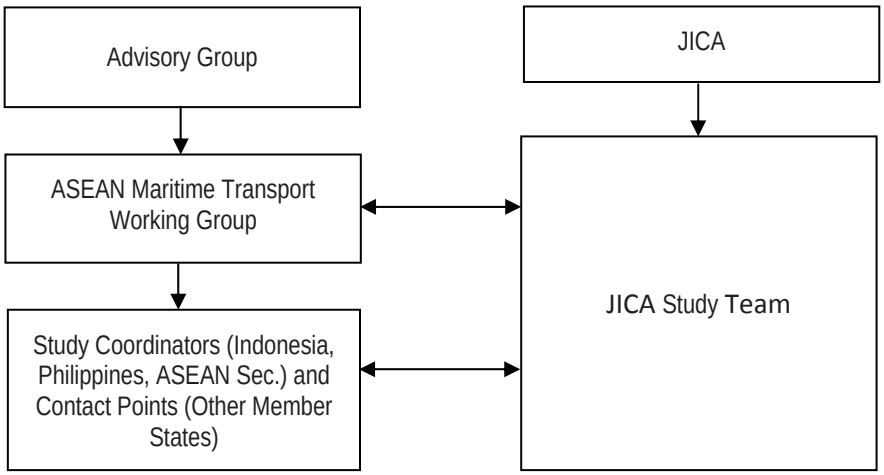
According to the ASEAN's project TOR, an advisory group is defined as follows:

'The Advisory Group shall be composed of the Philippine and Indonesian National Coordinators and ACCC representatives. The Advisory Group shall be jointly chaired by the Philippines and Indonesia. The Advisory Group shall (a) provide the overall direction and guidance to the Technical Study Group on the conduct of the study, and (b) report to the ASEAN Senior Transport Officials Meeting (STOM) on the progress of the study. It shall likewise prioritize the RO-RO routes that will be studied by the Technical Study Group. The membership of the Advisory Group shall expand in accordance with the RO-RO routes covered by the RO-RO Project.'

At the technical level, the ASEAN MTWG supervises the study progress and discusses RO-RO shipping development related policy issues. Each ASEAN Member State appointed a Contact Point or an officer-in-charge. Indonesia and the Philippines have worked as project coordinating countries.

For reporting, discussion, coordination and project management, the JICA Team organizes and participates in two meeting modules. They are:

- Regional workshops (two times) among the relevant countries to be held by the JICA Team and Philippines or Indonesia; and
- ASEAN Maritime Transport WG meetings to be held during the Study.



Source: JICA Study Team

Figure 1.4 Study Organizational Structure

Table 1.4 Study Organization

Organization/State	Name	Position
JICA Study Team	Mr. KUMAZAWA Ken	Team Leader / Sea & Land Transport Plan / Economic Analysis
	Mr. INOUE Kazuma	Comprehensive Shipping Policy
	Mr. ARIKAWA Hideo	Market Analysis / Demand Forecast
	Capt. SHIGETA Sigeo	Route Plan 1-Fleet / Financial Analysis 1 (Jan-July, 2012)
	Mr. TAKASAKI Toshiyuki	Route Plan 1-Fleet / Financial Analysis 1 (from Aug, 2012)
	Mr. SHISHIDO Tatsuyuki	Route Plan 2 – Port
	Mr. AOYAMA Noriyuki	Ship Design
	Mr. Samuel C. CUSTODIO	Legal and Institutional Analysis
	Mr. NOSE Michiharu	Financial Analysis 2
	Mr. Ronald G. SISON	Implementability Assessment through Participatory Approach
	Dr. KANAI Yoshikazu	Assistant to Team Leader / Sea & Land Transport Plan
JICA HQ	Mr. SUZUKI Jun	Officer-in-Charge
	Mr. KOMORI Takashi	Officer-in-Charge
Indonesia	Mr. Adolf R. Tambunan	Indonesia Study Coordinator
	Mr. Simson Sinaga	Indonesia Study Coordinator
	Mr. Johnny Siagian	Indonesia Study Coordinator
Philippines	Mr. Arsenio F. Lingad II	Philippine Study Coordinator
Brunei Darussalam	Hj Shahrani Hj Manan	Contact Point
Cambodia	Mr. Nhem Savong	Contact Point
Lao PDR	Mr. Somphone LOUANGLATH	Contact Point
Malaysia	Mrs. Elina Roslim	Contact Point
	Mrs. Nor Fazila Ramli	Contact Point
Myanmar	Mr. Ko Ko Naing	Contact Point
Singapore	Ms. LEE Wen Jie	Contact Point
Thailand	Ms. Kamolwan Kularbwong	Contact Point
Vietnam	Ms. Nguyen Viet Thi	Contact Point
ASEAN Secretariat	Ms. Megasari Widyaty	Officer-in-charge

Source: JICA Study Team

Part I

Literature Review

2 INTERNATIONAL RO-RO SHIPPING PRACTICES

2.1 Objectives and Methodology

It is a well-known fact that the RO-RO shipping network in Europe is already extensively established, and also RO-RO shipping network in Asia, particularly between Japan and China, has been successfully established this decade.

This study gets started with some case studies to understand the experiences on the RO-RO shipping in Asia and Europe, mostly those of Japan and UK, which shall focus on the following issues:

- Existing RO-RO Shipping routes in Europe and East Asia
- Profile of the RO-RO market
- Freight structure and Port charges
- Regulatory agencies
- Rules on truck registration and recognition
- Port infrastructure
- Road infrastructure
- Shippers association and logistics providers and freight forwarders
- RO-RO shipping operators

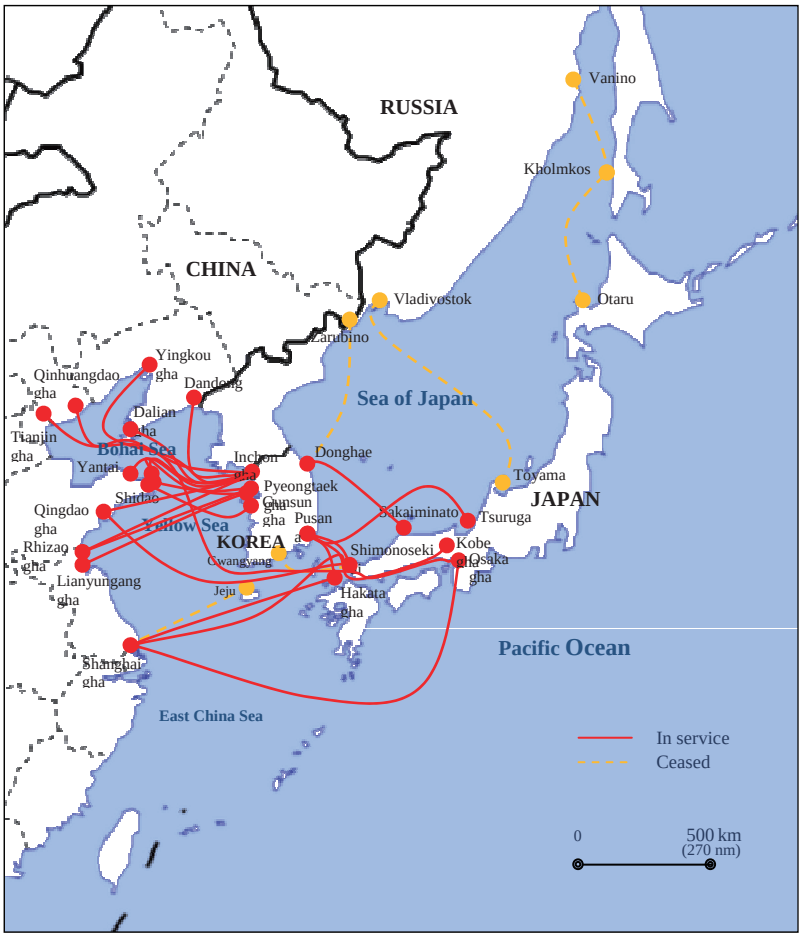
The studies in this Chapter presents a prelude to the following field survey of the proposed RO-RO shipping routes and the ports in ASEAN countries, intending to identify the business conditions of established international RO-RO shipping services, particularly physical conditions, traffic demands, legal and institutional frame work, and other relevant aspects.

The studies are completed only by exploring the accessible literatures or published information, such as those on the Internet web site, without immediate site visit or interviews to the concerned parties or personnel.

2.2 International RO-RO Shipping in North East Asia

1) Overview of International RO-RO Shipping Service in Asia (Japan/ China/ Korea)

The international RO-RO shipping networks that connect Japan, China, and Korea are illustrated in Figure 2.1. As of April 2012, there are i) six (6) routes connecting ports in western Japan and ports in Bohai Economic Rim of China or Shanghai, ii) five (5) routes between Japan and Korea mainly through Korea/Tsushima Straits, and iii) fifteen (15) routes connecting ports facing Bohai Sea or Yellow Sea in Korea and China. Details of those services are compiled in Table 2.1.



Note: Schematic chart, data as of April 2012, ceased routes are indicatory only.

Source: JICA Study Team

Figure 2.1 North East Asia International RO-RO Shipping Route Map

Table 2.1 International RO-RO Shipping Service in North East Asia (As of April 2012)

Operator	Service Route		Distance[1] (nm)	Transit time[2] (Hrs)	Sail / week (RT)	Ship Type	Capacity[3]	
							TEU	PAX
(Japan – China)								
Orient Ferry	Shimonoseki	Qingdao	575	27	2	ROPAX	265	350
Shanghai Shimonoseki Ferry	Shimonoseki	Taicang (Shanghai)	535	34	2	ROPAX	143	124
Shanghai Super Express	Hakata	Shanghai	490	28	2	RO-RO	242	-
Shanghai Ferry	Osaka	Shanghai	776	47	1	ROPAX	200	272
Japan-China Int'l Ferry	Osaka	Shanghai	776	46	1	ROPAX	250	345
Japan-China Int'l Ferry	Kobe	Shanghai	771	45	1	ROPAX	250	345
China Express Line	Kobe	Tianjin - Shidao	1060	52	1	ROPAX	170	442
(Japan-Korea)								
Camellia Line	Hakata	Pusan	115	5.5	6	ROPAX	220	522
Kanpu Ferry	Shimonoseki	Pusan	123	12	7	ROPAX	140	562
Pan Star	Osaka	Pusan	367	19.5	3.5	ROPAX	220	681
Pan Star	Tsuruga - Kanazawa	Pusan	384	19.5	1	ROPAX	220	681
Eastern Dream	Sakaiminato	Donghae	237	15	1	ROPAX	130	480
(China-Korea)								
Dandong Ferry	Inchon	Dandong	247	16	3	ROPAX	(n/a)	(n/a)
Daein Ferry	Inchon	Dalian	250	17	3	ROPAX	142	508
Beomyeong Ferry	Inchon	Yingkou	365	26	2	ROPAX	228	290
Inchon Ferry	Inchon	Tianjin	444	24	2	ROPAX	272	800
Jinin Haeum	Inchon	Qinhuangdao	352	24	2	Multi	228	348
Hanjung Ferry	Inchon	Yantai	238	16	3	ROPAX	293	392
Weidong Haeun	Inchon	Weihai	222	13	3	ROPAX	280	731
Weidong Haeun	Inchon	Qingdao	330	17	3	ROPAX	325	660
Yeonunhang Ferry	Inchon	Lianyungang	385	24	2	ROPAX	182	750
Yeonunhang Ferry	Pyeongtaek	Lianyungang	310	23	2	ROPAX	192	668
Pyeongtaek Jiaodong Ferry	Pyeongtaek	Weihai	239	12	3	ROPAX	240	900
Rizhao Ferry	Pyeongtaek	Rizhao	374	19	3	ROPAX	220	921
Dalong Ferry	Pyeongtaek	Logyan	182	19	3	ROPAX	267	720
Shidao Int'l Ferry	Shidao	Gunsun	208	14	3	ROPAX	203	750

(1) Distances and Transit time

As shown in Table 2.1, the distances of international RO-RO shipping routes in this region are mostly less than 600 nm, except for three Kobe/Osaka-Shanghai/Tianjin routes, for example the 1060 nm Kobe-Tianjin route. Accordingly, transit time ranges mostly between some 12 hours to 40 hours.

[1] Distance of the shortest route customarily taken by merchant ships, in general, according to "Distance Tables for World Shipping", Japan Shipping Exchange, Eighth Edition

[2] By internet source of each RO-RO service. Where transit times outward and inward are different, for instance, due to waiting for opening CIQ service after arriving early morning, shorter time is presented.

[3] Where multiple vessels are engaged, an instance will be presented.

[4] The ship has passenger compartment, but allegedly due to poor marquee, passenger service has been ceased in 2009.

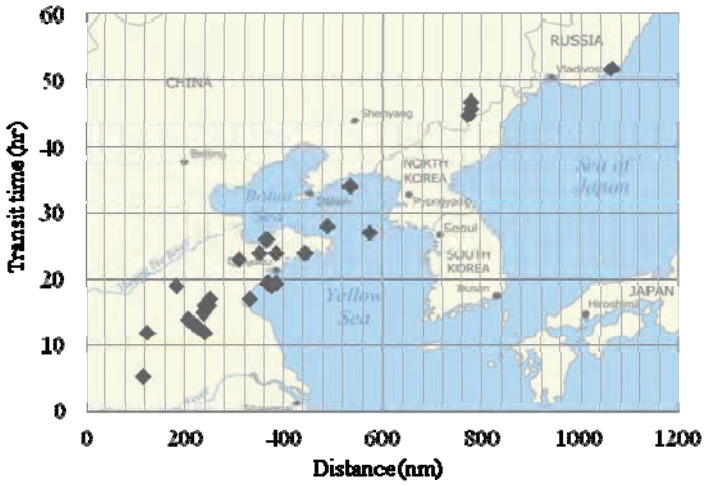


Figure 2.2 Distance versus Transit Time

(2) Connected Ports

i) Japan's ports

Shimonoseki as well as Hakata, which are located in the western part of Japan and the closest cities to China or Korea, plays the role of a gateway to Japan, particularly the Kanto area which surrounds the City of Tokyo and Kansai area. The Kanto area is the largest economic area in Japan, accounting for, more or less half of the economic activities of the country. The Port of Tokyo and the Port of Yokohama also play the role of a gateway for conventional seaborne trading.

Osaka and Kobe are both gateway ports for the Kansai area, west Japan, which is the second largest economic area in Japan, and ranked 3rd largest region in terms of gross regional product in 2009.[5]

ii) China's ports

Shanghai is the center of the growing Shanghai Economic Zone, which is the biggest in China, and has a population of more than 140 million. The amount of gross regional product is believed to be comparable to that of Korea.

Other ports, such as Tianjin, Dalian, Yantai, etc., are facing the Bohai Sea or Yellow Sea and included in the Bohai Economic Rim along with Beijing, which integrates the second largest economic zone. The Bohai Economic Rim has traditionally been involved in heavy industries and manufacturing. Tianjin has its advantages in aviation, logistics and shipping. Beijing complements this with strong petrochemical, education and R&D industries. The area is becoming a significant growth cluster for the automobile, electronics, petrochemical sectors, especially with Shenyang's automotive industry, software and aircraft, Dalian is attracting foreign investments in manufacturing, and Qingdao for its health services.

The Chinese central government has made it a priority to integrate all the cities in the Bohai Bay rim and foster economic development. This includes building an advanced communications network, better highways, increased education and scientific resources, as well as tapping natural resources off the Bohai rim.

[5] Global Metropolis: The Role of Cities and Metropolitan Areas in the Global Economy, Toronto University, 2009

iii) Korea's ports

Most of the RO-RO shipping in Korea arrive at and depart from Inchon or Pyeongtaek, which are located on the west coast. Pyeongtaek is located 64 km south of Seoul, and is a developing large city as one of the satellite cities to Seoul on the Yellow Sea where high technology industries such as major electric makers, automobile makers are building factories, and highways and high-speed railways connects directly to Seoul. The Port of Pyeongtaek is one of the national policy ports along with Inchon Port, where domestic transport are well developed[6].

(3) Shipping Service and Ship Type

Among the twenty-six (26) services, Shanghai Super Express and Shanghai Shimonoseki Ferry (SSF) transport only freight without passengers. The rest engages entirely in car ferry service by RO-RO passenger ship or ROPAX or the so called "car ferry."

It appears that the length of the ships currently used is rather scattered between 140 m and 200 m as shown in Figure 2.3, while cargo loading capacity ranges between 120 and 300 TEU with less regard to the ship length or distance. Most of those ships are second hand Japanese car ferry, except some that from Korea.

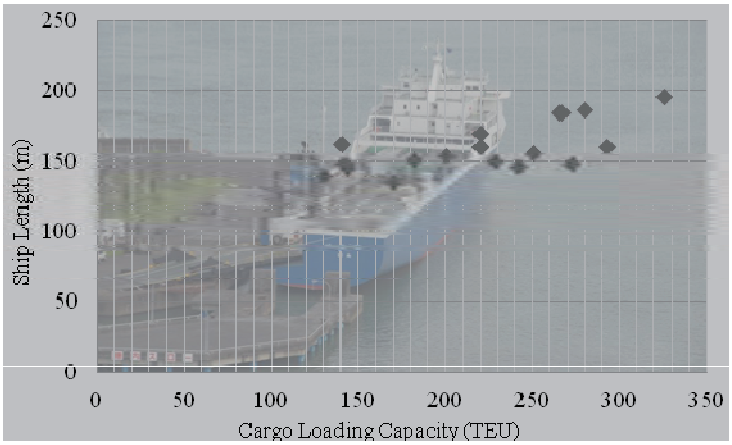


Figure 2.3 Ship Length versus Cargo Loading Capacity

2) Scale of RO-RO Shipping in North East Asia

Though there is no established scheme or organization to collect the statistics of seaborne cargo traffic by RO-RO ships to date in North East Asia, the scale of RO-RO shipping can be roughly estimated, as shown below, by some secondary sources, like developed research institutes in Japan.

Table 2.2 is an extraction from the article addressing an effective logistic network in Asian region issued by the National Maritime Research Institute, Japan, in 2009, in which they estimated container traffic volume by ship type in North East Asia, collecting and analyzing port call records and so forth. They concluded that container traffic by RO-RO ship, that is the summation of container traffic by ROPAX and Freight RO-RO, was estimated around 12% of the total traffic volume.

[6] Source: Internet home page of Pyeongtaek City and Pyeongtaek Port

Table 2.2 An Example of Estimated Container Traffic by Ship Type

Ship Type	No. of Calling Vessels	Estimated Cargo Traffic by Volume (x 1000TEU)	Percentile (%)
Container Ship (LO-LO Ship)	191	120	88 %
RO-RO Ship (Freight RO-RO Ship)	23	11	8 %
ROPAX	16	5	4 %
Passenger Ferry	12	-	-

Note: The basic unit in estimated number of calling vessels and cargo volume column is not available in the original report, but is assumed as of weekly in the context.

Source: Study on effective logistic network of the Asian Region, Papers of National Maritime Research Institute 2010, Volume 10, No.1

On the other hand, total container traffic volume among Japan, China and Korea is reported as shown in Table 2.3. Transshipment containers are excluded in the statistics.

Table 2.3 Container Traffic Volume Matrices in 2010 in North East Asia (Unit in TEU)

Origin/Destination	Japan	Korea	China
Japan	-	464,476	1,026,626
Korea	534,243	-	1,828,695
China	1,954,237	1,735,922	-

Source: Original data from International Container Handbook 2012、Ocean Commerce Ltd.

Container traffic volume by international multimodal transport between Korea and China, say by RO-RO shipping, is reported as shown in Table 2.4.

Table 2.4 Container Traffic Volume by International Multi-modal Transport between China and Korea

Route		2011 1st Half (TEU)	2010 1st Half (TEU)	Rate of Change (%)
Inchon	Dandong	7,604	8,421	6
Inchon	Dalian	9,287	8,643	7.5
Inchon	Yingkou	8,979	7,759	15.7
Inchon	Tianjin	n/a	n/a	n/a
Inchon	Qinhuangdao	8,638	7,619	13.4
Inchon	Yantai	17,644	19,091	-7.6
Inchon	Weihai	24,661	25,844	-4.6
Inchon	Qingdao	19,612	17,867	9.8
Inchon	Lianyungang	23,992	21,668	10.6
Pyeongtaek	Lianyungang	16,064	15,082	6.5
Pyeongtaek	Rizhao	10,018	5,759	74.7
Pyeongtaek	Logyan	18,440	16,795	9.8
Shidao	Gunsun	8,886	6,111	45.4

Source: International Container Handbook 2012、Ocean Commerce Ltd.

Analyzing recorded loading capacity and maximum slot capacity data by routes such as in Table 2.3 and Table 2.4, it is indicated that the average utilization rate which is a load factor against maximum slot capacity of this region is more or less just 50%. Also the utilization rate coincided with the results from some Japanese RO-RO ship operators where they indicated that the load factor in both ways average around 50%. Thus scale of total RO-RO shipping was estimated as shown in Table 2.5, setting the average utilization ratio of all routes at 50%.

Table 2.5 Estimated Scale of RO-RO Shipping in North East Asia

Connecting Countries	Route	Operator	Sailings /Week	Transit Time (Hrs)	Container Traffic (TEU)	Estimated Capacity by RO-RO
Japan - China	6	6	18	18 – 50	3.0 mil	0.10 mil
Japan - Korea	5	4	26	12 – 21	1.5 mil	0.18 mil
China - Korea	15	13	32	14 – 24	3.5 mil	0.44 mil

3) Busy Area and Findings

It is regarded that the Bohai Sea area connecting Korea and China region as a most active region in terms of RO-RO shipping. This situation results from the geographical advantage that the distance is rather short and they are not incorporated within the trunk line of container shipping. Further, the endeavors between the Korean government and the Chinese government to consolidate background and develop institutional framework[7] has led to effective multimodal transport.

Meanwhile, the routes connecting Japan and China are rather distant, so much so that the primary option is still transportation by the trunk line container shipping.

[7] See Annex 2.1

4) Competition between RO-RO Shipping Service and Air Freight Service

It is said that the air freight has a measurable share of foreign trade cargo from/to Japan compared to shipping by RO-RO. Although it is generally difficult to know cargo volumes by route and by transport mode, the level of service and the cargo movement by RO-RO and air on the Japan – Shanghai route, which is one of the most active transport corridors between Japan and China, are compared here. This analysis focuses only on Shanghai Super Express operated between Hakata and Shanghai attracting people's attention for providing a shorter lead time while there are several liner RO-RO services between Shanghai and other farther ports in Japan such as Shimonoseki, Kobe and Osaka.

Table 2.6 compares the level of RO-RO and air freight services on the route. Transit time by RO-RO is more than ten times longer than that by air and the cost of RO-RO is one twelfth or less. Those facts suggest that the air freight service is for very high value-added goods.

Table 2.6 Comparison of the Level of RO-RO and Air Freight Services between Japan and Shanghai, China (as of November 2012)

Item	RO-RO Service (Shanghai Super Express)	Air Freight Service
Transit Time	18 hours (Tokyo – Hakata) + 28 hours (Hakata – Shanghai)	3.5 hours (Narita – Pudong / Haneda – Hongqiao)
Number of Trips	Two round trips a week	More than 350 round trips a week, at least 127 round trips a week provided by ANA and JAL
Capacity	242 TEU/trip	(Various)
Tariff	13,980 Yen/m3 (LCL) 130,000 Yen/TEU (20' container)	Varies but typically 323 Yen/kg + Fuel Surcharge

Source: Shanghai Super Express, http://www.ss-express.biz/index.html

"Coordination between Maritime Transport and JR Freight", MLIT Japan (in Japanese), http://www.mlit.go.jp/common/000030247.pdf

ANA Cargo, http://www.ana.co.jp/cargo/

JAL Cargo, http://www.jal.co.jp/jalcargo/

Cargo volumes in the second half of 2007 are estimated as below:

- RO-RO (Hakata – Shanghai): About 15,000 TEU, equivalent to 150,000 tons assuming 10 tons/TEU; and
- Air Freight (All airports in Japan – Shanghai Pudong International Airport): About 94,000 tons

Since, as mentioned above, there are several RO-RO routes between Japan and Shanghai other than Shanghai Super Express, RO-RO services transported more than 60% cargoes in competition with the air freight services.

Table 2.7 shows percentages of cargo volume by direction. This also shows an interesting trend that air freight is preferred for cargo from Japan to Shanghai and RO-RO is preferred for cargo from Shanghai to Japan, which suggests air freight is used more often for higher value-added cargoes exported from Japan. In fact, small, light and valuable goods such as semiconductor and machinery account for 83% of cargoes exported from the Far East countries to Shanghai by air.

Table 2.7 Percentages of Cargo Volume by Direction on the Japan – Shanghai Route (2007)

Mode	From Japan to Shanghai	From Shanghai to Japan
RO-RO (Shanghai Super Express)	37%	63%
Air Freight	85%	15%

Source: Estimated by the Study Team based on Daily CARGO, Kaiji Press Co., Ltd. (June 2008, in Japanese), http://www.daily-cargo.com/new/attach/back_number/CA0806_58-carrier.pdf

Estimated by the Study Team based on "Study on International Air Cargo Movement at Shanghai Pudong International Airport in 2007", MLIT Japan (2008, in Japanese), http://www.mlit.go.jp/common/000040588.pdf

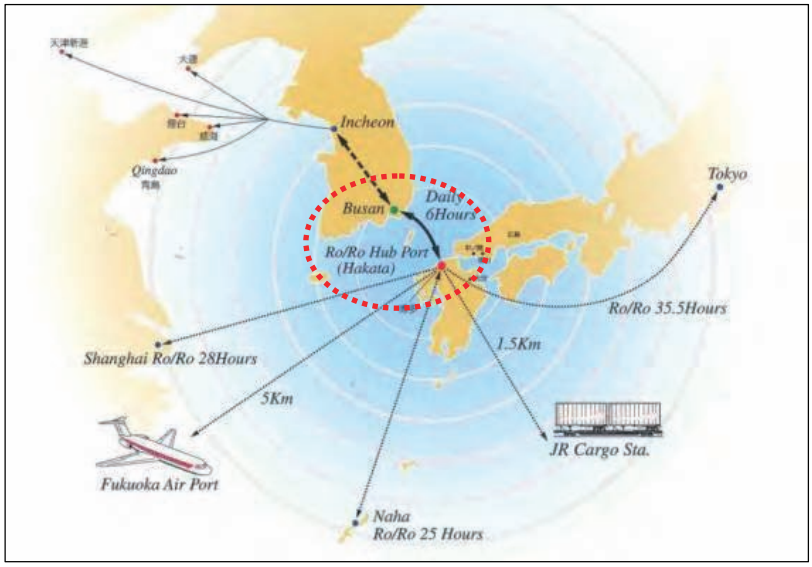
2.3 Practice of ROPAX Shipping Service between Japan and Korea

1) Services

Hereunder is an in-depth analysis of ROPAX service that connects Hakata, Fukuoka in Japan and Pusan in Korea, a distance of approximately 115 nm, and operated by Camellia Line.

This service is, as illustrated in Figure 2.4, integrated into the international multimodal transport network, which is named Hakata Cross Service connecting Tokyo metropolitan area of Japan and Seoul economic area of Korea, further Bohai Economic Rim that is most growing China's economic areas on Bohai Sea and Yellow Sea. It intends to provide shorter lead time than LO-LO shipping transport service and a more competitive cost than aerial transport service.

This service was initiated in December 1990 with a second hand car ferry by CAMELLIA LINE, a joint venture of Japanese shipping company and Korean shipping company, and to date has been operated by this company after introducing a new building RO-RO ship in 2004.



Source: Camellia Line

Figure 2.4 Service Route Map

The service is available daily from both ports. The current time table is shown in Table 2.8. The transit time of the vessel from Hakata to Pusan is approximately 5.5 hour. Passengers arriving at Hakata in the morning start disembarking only at half past seven o'clock after opening of CIQS service.

Regarding cargo transportation, standard cut-off time is announced as shown in Table 2.9, but according to the company the actual cut-off time is rather flexible to respond to client's requirements.

Table 2.8 Operation Time Table

Direction	Departure	Arrival
Hakata to Pusan	12:30	18:00[8]
Pusan to Hakata	20:00	Next morning 7:30
	(Time to complete Immigration for departure)	(Time to start immigration)

As of April, 2012, Source: Camellia Line

Table 2.9 Cut-off Time for Cargo Transportation

Direction (ETD)	Customs Clearance at CY	Customs Clearance at CFS
Hakata to Pusan (12:30)	16:00 in previous day	13:00 in previous day
Pusan to Hakata (22:30)	18:00	14:00

As of April, 2012, Source: Camellia Line

The operator said that i) passenger transport is major profit-making source, while cargo transport is a steady income source, ii) so, they focus particularly on the group tourism from Korea to Japan. However, passenger transport market of this route is very competitive where three to five round trips by seven fast boats – each 220 pax Jetfoil - are provided by two different companies.

Thus, the time table is set considering the concerns of Korean tourists, who are believed to come in group tour and visit rather close tourist areas in Kyushu area than distant famous sightseeing spot in Kyoto or Tokyo.

CIQS used to open at 8 o'clock in the morning, but they have changed earlier time in 2003, responding to strong requests from the operators in the wake of tourism promotion in Japan

The vessel uses exclusive berths in Hakata and Pusan.

On-schedule operations, and lesser voyage cancellation due to rough sea, are regarded as significant factors for marquee for a passenger ferry and freight RO-RO vessel; practically they experienced no voyage cancellation last few years.

[8] There is no time difference in Japan and Korea.

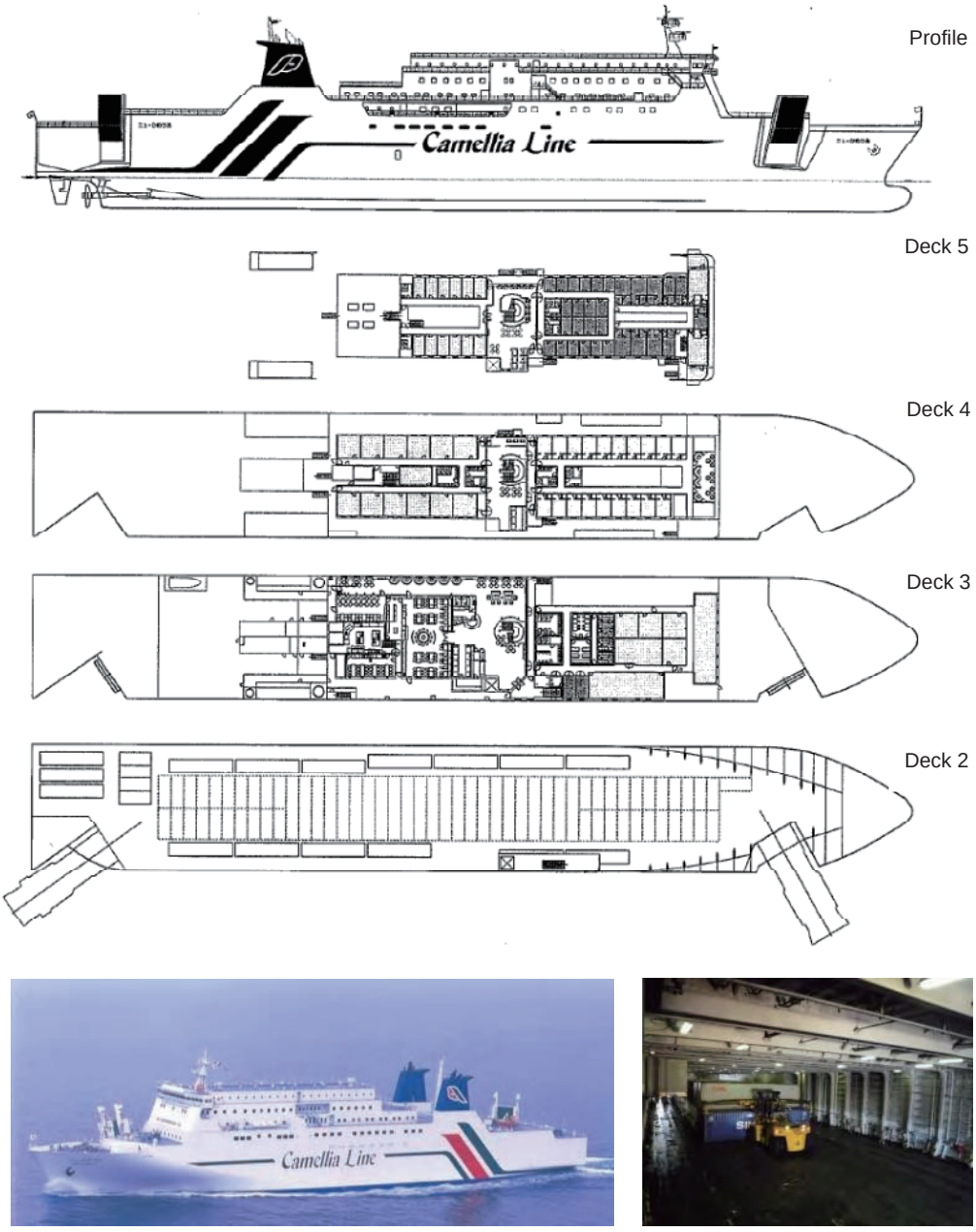
2) Ship

The current service is provided by one vessel, M/S NEW CAMELLIA which was newly built in Japan and has entered in service in June 2004. The particulars of the vessel are described below.

Table 2.10 Particulars of "M/V NEW CAMELLIA"

Vessel Name	NEW CAMELLIA
Owner/Operator	NYK Line/Camellia Line Co. Ltd.
Type:	Roll-on/Roll-Off Cargo and Passenger Ferry, Twin Decker
Flag	Japan
Class	Japanese Government (JG)
Navigation Area	Coasting (Short International Voyage)
Call Sign	JG5720
Year built (Delivery)	June 2004
Service Speed	23.5 kn
Deadweight	4,642 tons (at design draft)
Gross tonnage (International)	19,961 T
Net tonnage	5,988 T
Length over all	170.0 m
Breadth (mould)	24.00 m
Depth (mould)	17.90 m
Draft (design)	6.00 m
Container loading capacity	220 TEU (63 forty feet containers + 94 twenty feet containers)
Reefer Plug	80
Vehicle loading capacity	41 cars
Crew	49 persons
Passenger capacity	522 persons
Main engine	JFE PC182-6V x 2 sets (MCO 9,900 kW x 520 rpm)
Fuel consumption	78.4 ton/day
Note	- This is the first large international car ferry built in Japan after establishment of the Japan's law in terms of impediment removal (So called barrier-free in Japan) - Facilities and cabin are equipped such as a luxury cruise ship to provide conformity to passengers. - Sea containers are loaded two-tiered taking off from chassis by cargo handling equipment onboard to increase total cargo loading capacity. (Cf. Figure 2.5 bottom right) - High speed is decided considering materializing daily service by one ship only - CAMELLIA is the flower of Pusan City and CAMELLIA SAZANKA is the flower of Hakata City, the ship is named after commonality in the name of Camellia.

Source: Camellia Line



Source: Photos = Camellia Line, Drawings = Car Ferries in Japan, Kaijinsha, in Japanese

Figure 2.5 New Camellia

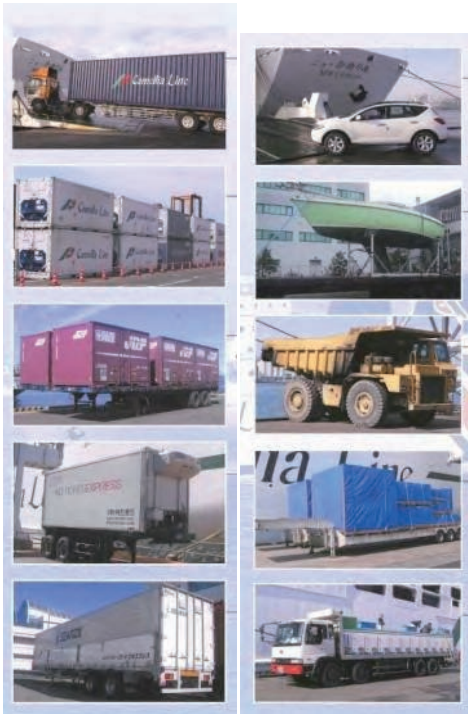
3) Performance of Cargo and Passenger Transport

The cargoes carried in the service are dry/reefer containers, Japan Railway container (12ft container widely used in Japan), vehicles (both new and second hand), heavy vehicles, break bulk on chassis, and heavy machinery, as illustrated below.

The annual total cargo traffic volume was reported to be 76,394 TEU in 2009, and 64,514 TEU in 2010.

Goods transported to date by the vessel are mainly electronic appliances, vegetables, live and frozen fish, gravestones and so on, however clothing, shoes, kitchen utensils which were major part of transported goods some twenty years ago disappeared due to the shift of manufacturing base from Korea to China.

In this RO-RO service, sea containers on chassis are loaded and off-loaded on board the vessel, but it is reported that some particular clients in Korea export semiconductor products on a special air suspension type truck which is allowed for driving both in Korea and Japan.

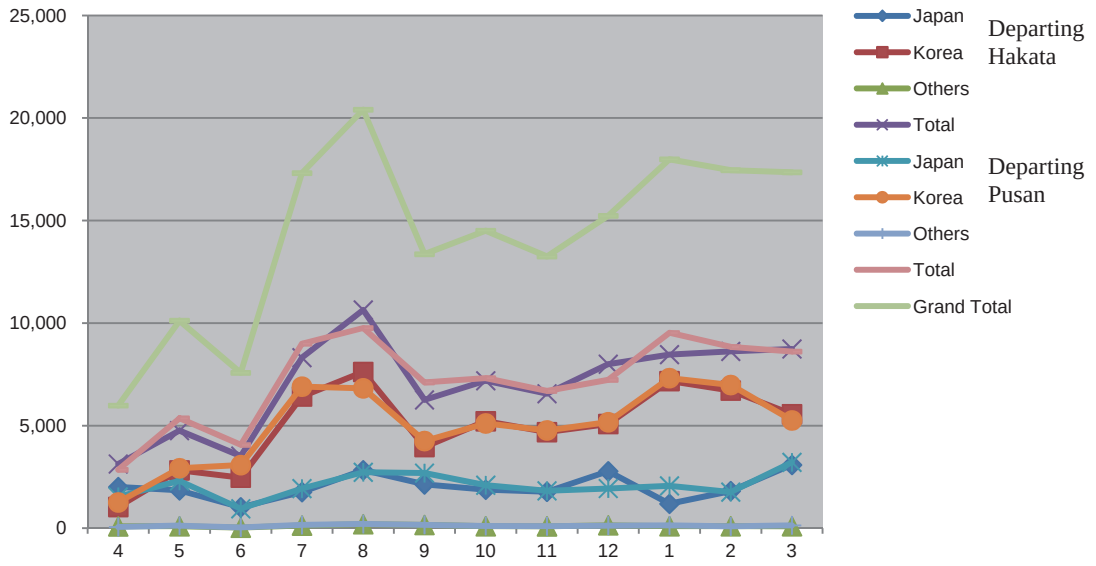


Source: Camellia Line

Figure 2.6 Range of Cargoes

Figure 2.7 shows the detailed records of passenger traffic volume in FY2011 (April 2011 – March 2012). The ferry service has presented a fluctuation in passenger traffic, in winter it becomes less busy but in summer it becomes busy, particularly August and July – when they have long school holidays both in Japan and Korea.

The total amount of passenger traffic was some 170,500 last year and some 171,900 the year before.



Source: Camellia Line

Figure 2.7 Passenger Traffic Volume in FY2011 by Nationality

4) Tariff structure

The tariff for passengers and vehicles are shown in Table 2.11 and Table 2.12, respectively. The published tariff for freight is shown in Table 2.13 and Table 2.14.

Table 2.11 Passenger Tariff

Passenger Tariff (prices in JPY unless noted otherwise) [9]					
Class	**Deluxe Suite**	**Special Single use**	**Special Twin use**	**First**	**Second**
Adult (One-way)	20,000	16,000	14,000	11,000	9,000
Adult (Round-trip)	38,000	30,400	26,600	20,900	17,100
Student (One-way)	18,200	14,200	12,200	8,800	7,200
Child (One-way)	10,000	8,000	7,000	5,500	4,500
Extra charge (as of February 2012)					
Fuel surcharge per person	Hakata 1,200/ Pusan ₩12,000				
Facility charge	Hakata Adult 500, Child 200/ Pusan ₩3200				
Baggage					
Baggage type	Less than 20Kg		Over 20kg per 5kg		
Ordinary Luggage	600 per piece		150		
Special luggage (Bicycle)	1,000				

[9] - Japanese Yen (JPY), US$1 .00 = 81.48 (as of April 20, 2012)
- Korean Won (KRW), roughly US$1 .00 = ₩1,100 (as of April, 2012)

Table 2.126 Vehicle Tariff

Vehicle (prices in JPY unless noted otherwise)			
Vehicle Length	5 m	5-6 m	6-7 m
Round trip	60,000	66,000	72,000

Table 2.13 Cargo Tariff

(Unit in US$ unless noted otherwise)

Freight	FCL Cargo (CY/CY)		LCL Cargo (CFS/CFS)
Base Rate	12 ft container	300	**See Table 2.12**
	20 ft dry container	500	
	40 ft dry container	1,000	
	12 ft reefer container	420	
	20 ft reefer container	1,210	
	40 ft reefer container	2,420	
Currency Adjustment Factor (CAF)	**LCL Cargo 26.2%**		
Bunker Adjustment Factor (BAF)	12 ft container		**JPY 6,000**
	20 ft container		**JPY10,000**
	40 ft container		**JPY20,000**
	LCL		**JPY700 per R/T**
	Bulk		**120%**
Minimum Bill of Lading Charge (M/M B/L Charge)	**Less than 1RT[10] 20.00/BL** **Less than 2RT 15.00/BL** **Less than 3RT 10.00/BL**		
Container Freight Station Charge (CFS Charge)			**Pusan KRW6,000 per RT** **Hakata JPY3,980 per RT**
Japan Terminal Handling Charge (Japan THC)	12 ft dry container	JPY12,000	**JPY1,800 per RT**
	20 ft dry container	JPY24,200	
	40 ft dry container	JPY42,200	
	12 ft reefer container	JPY15,000	
	20 ft reefer container	JPY37,200	
	40 ft reefer container	JPY54,800	
Korea Terminal Handling Charge (Korea THC)	12 ft dry container	KRW 55,000	**KRW 6,000 per RT**
	20 ft dry container	KRW101,000	
	40 ft dry container	KRW137,000	
	12 ft reefer container	KRW100,000	
	20 ft reefer container	KRW177,000	
	40 ft reefer container	KRW247,000	
Document Fee	Japan		**JPY2,000 per BL**
	Korea		**KRW 30,000 per BL**

[10] RT, RT stands for “Revenue Ton”, or “Weight or Measure (W/M)”

Table 2.14 Freight Tariff Structure (LCL Cargo Ocean Freight)

(Hakata – Pusan as of Mat 2012, Unit in US$)

Item of goods	Export		Import	
	K/T	M3	K/T	M3
High-Priced Goods	1% of Good's value			
Aluminum Product	31.00	n/a	28.00	25.00
General merchandise, Cases, Carton, Pallet, Bag, Bale, Drum, Bundling, Crate, Roll, Skid.	31.00	27.00	28.00	25.00
Automobile parts	31.00	27.00	28.00	25.00
Chemicals	38.00	34.00	34.00	30.00
Clay wear/stone ware, Firebrick, Ceramics, Porcelain, Slate, Ceramic tile	33.00	30.00	30.00	27.00
Electrical/electronic product	33.00	30.00	30.00	27.00
Glass product	33.00	30.00	30.00	27.00
Dangerous goods	47.00	42.00	43.00	38.00
Instruments and tools	33.00	30.00	30.00	27.00
Steel product	33.00	30.00	30.00	27.00
Fell, Fur, Leather product	33.00	32.00	33.00	29.00
Timber, Lumber, Log, Plywood, Veneer	26.00	23.00	23.00	21.00
Machinery and parts	31.00	27.00	28.00	25.00
Non ferrous material and ingot	31.00	27.00	28.00	25.00
Furniture, Household goods, Exhibit goods	38.00	33.00	34.00	30.00
Synthetic resin	33.00	30.00	30.00	27.00
Rubber tire and tube	33.00	30.00	30.00	27.00
Silk product, Korean ginseng product	61.00	55.00	56.00	49.00
Textile, Fabric	31.00	27.00	28.00	25.00

5) Facilities

The Hakata port international ferry terminal, where this RO-RO ship is based in Japan, is located close to the city center and around twenty minutes bus ride or ten minute drive takes them to the ferry terminal from the main train station or the airport. Roads connecting to the ferry terminal have been well developed including the highway. Figure 2.8 presents the bird-eye view of the terminal.

The Pusan International ferry terminal, where the RO-RO ship is based in Korea, is located also adjacent to the down town of Pusan.

The general conditions of both terminals are regarded similar. The details of the facility in Hakata for Camellia are described below.

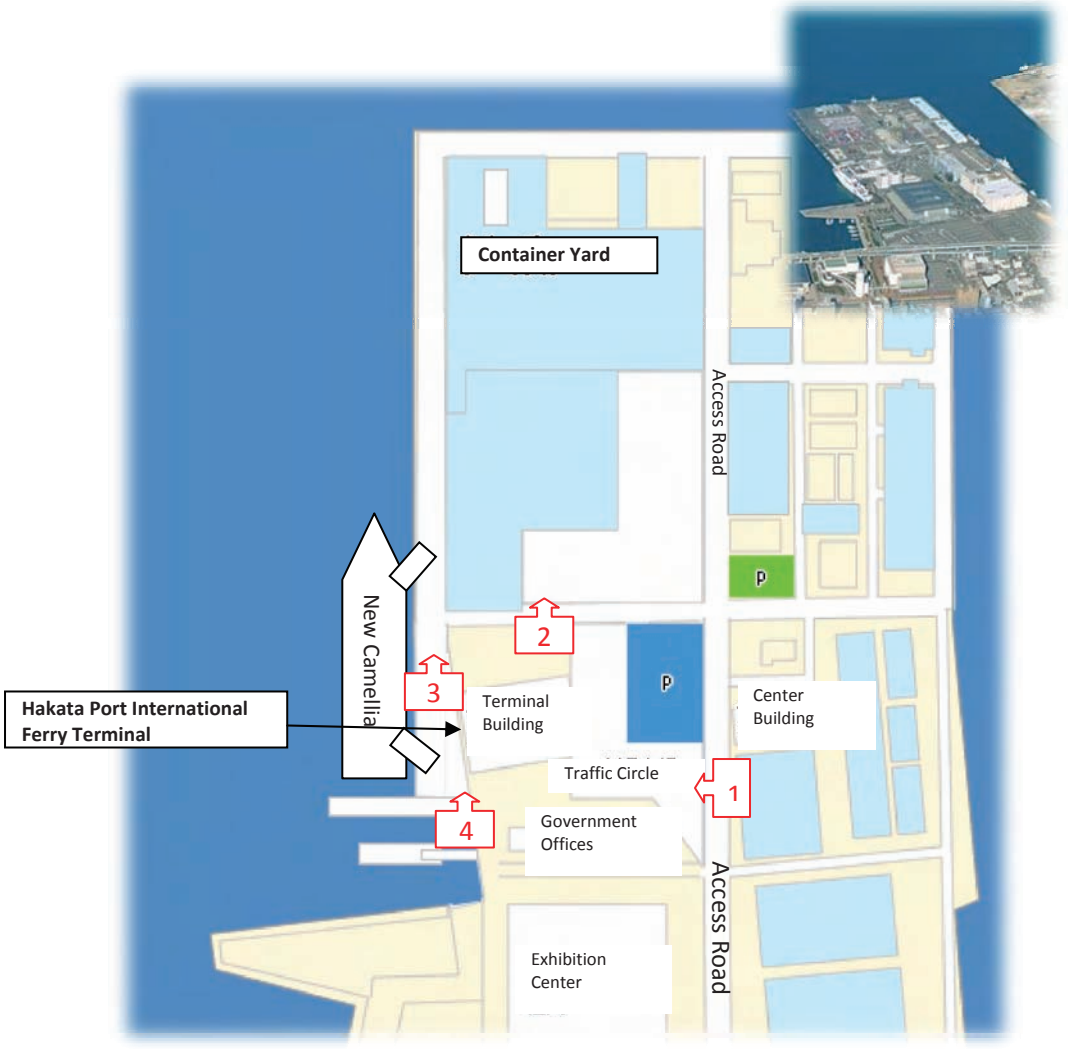


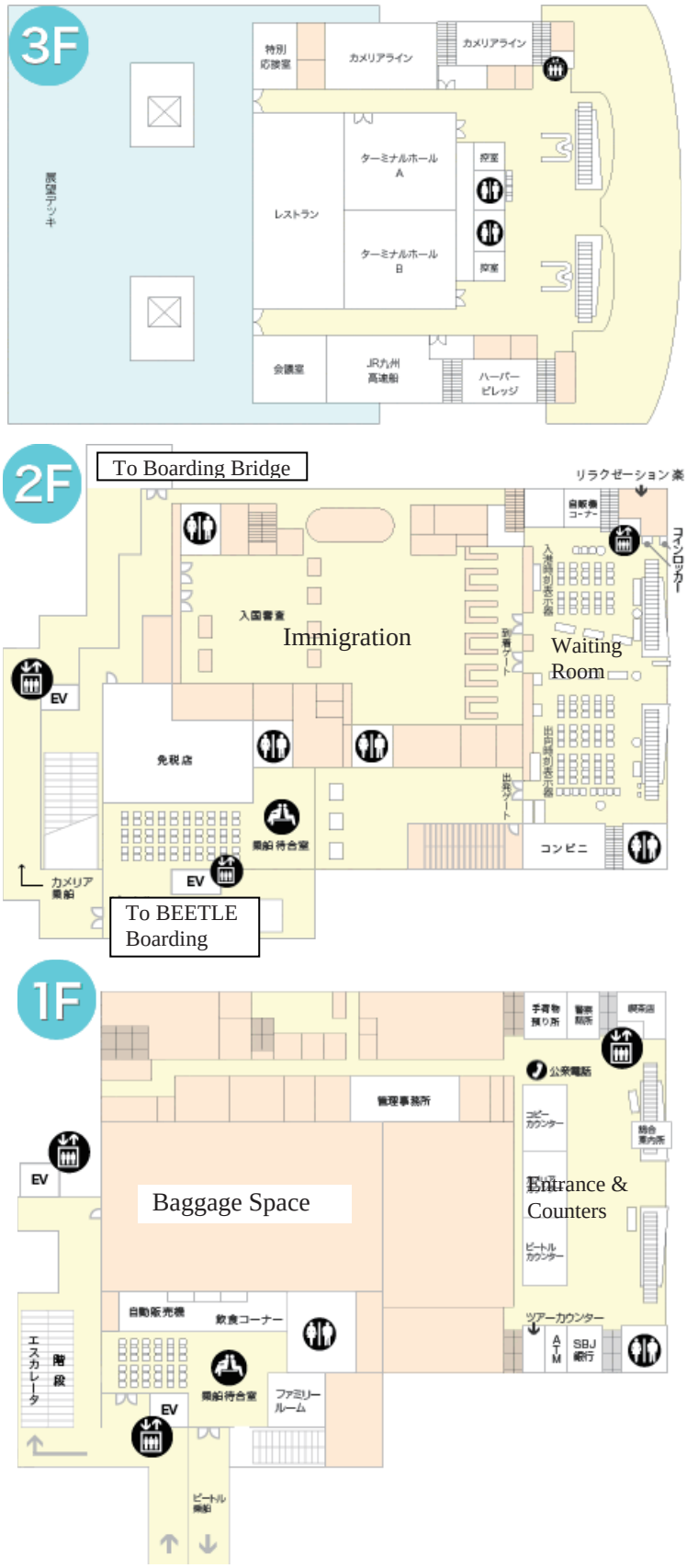
Figure 2.8 Location of the Terminal in Hakata Chuou Wharf

Note: Numbers at bottom right on the photo to be referred to those in Figure 2.8.

Figure 2.9 Photos of Hakata Port International Terminal

Table 2.15 Outline of Hakata Port International Ferry Terminal

Lot area	11,230 m^2
Parking lot	153 slot at terminal sides & 63 slot on road side (216 slot in total)
Facilities	
Ground Floor	Entrance, check-in counter, general information desk, coffee shop, and office
1st Floor	Waiting lobby, convenience store, immigration control, custom inspection, quarantine, and duty free shop
2nd Floor	Terminal hall, special reception room, conference room, restaurant, and office
Ships in service	
CAMELLIA LINE	New CAMELLIA, 7 flights/week
JR KYUSYU JET FERRY	BEETLE, 3 or 4 flight round trip/day
MIRAEJET	KOBEE, 1Round trip/two flight day
Other Passenger ships	COSTA, ASUKA, ASUKA2, NIPPON MARU, FUJIMARU to call in Irregularity



Source: Hakata Port and Harbor Bureau

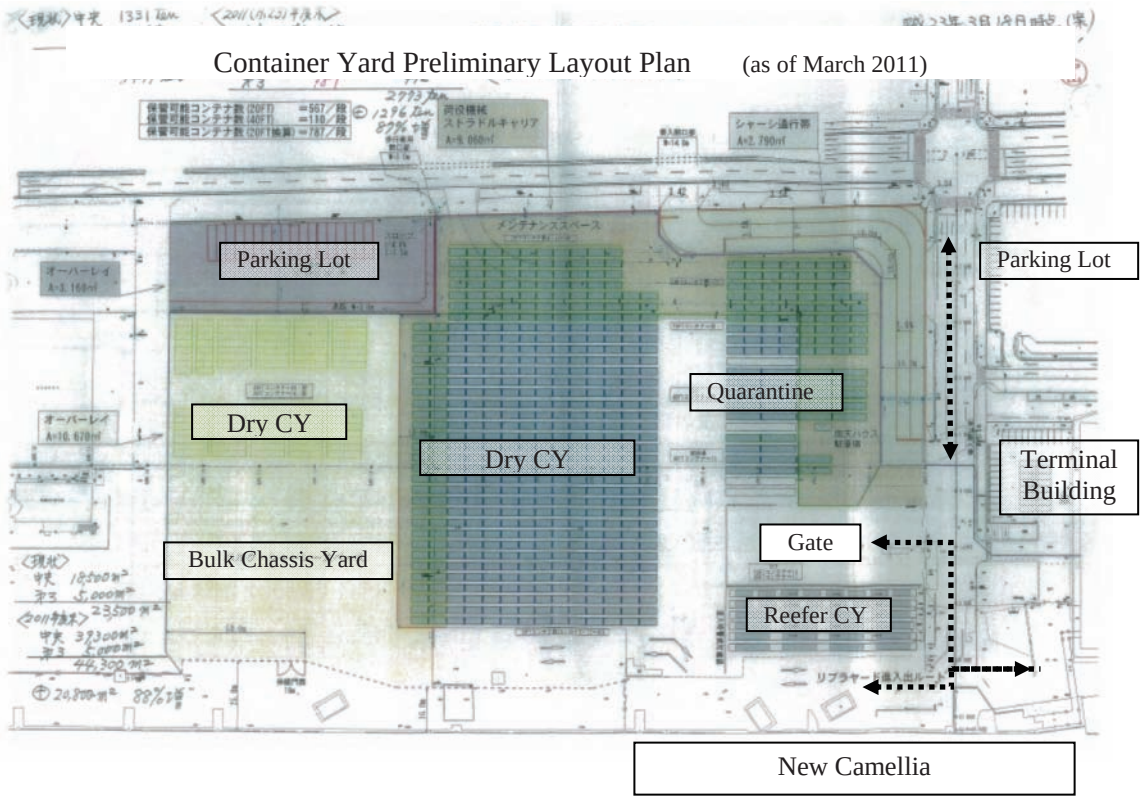
Figure 2.10 Floor Plan of the Terminal Building

Adjacent to the ferry terminal is a container yard for Camellia. The particulars of the yard, yard plan, and photos are shown below.

Table 2.16 Outline of Container Yard

Container Yard Area	
Central	44,300 m^2
3rd Container Yard	5,000 m^2
Container Storage Capacity	
Central	787 slot x 3 tier = 2,371 TEU
3rd Container Yard	412 TEU
Total	2,773 TEU
Reefer Plus	20FT x 14 40FT x 17

Source: Camellia Line



Source: Camellia Line

Figure 2.11 Camellia Ferry Terminal Container Yard Plan

2.4 RO-RO Shipping in Europe

1) Overview of RO-RO Shipping in Europe

The Baltic Sea, North Sea, and Aegean Sea are known as the waters where RO-RO shipping services are quite active in Europe.

Figure 2.12 and Figure 2.13 are part of a map which were recently published by a Polish shipping and shipbuilding journal company regarding RO-RO shipping routes in the Baltic Sea. This map is very informative and useful to grasp the development of RO-RO shipping network at a glance. The map also indicates that there are 29 RO-RO and/or ROPAX ship operators including some major operators such as DFDS Seaways, Finnlines, Scandlines, Tallink/Silja, and Viking Line, and more or less 98 service routes are in service in total.

Figure 2.12 RO-RO Shipping Networks in Baltic Sea

Source: Both Baltic Transport Journal RO-RO Map, 2011

Figure 2.13 RO-RO Shipping Networks in Baltic Sea (zoom)

2) Background of Short Sea Shipping and RO-RO Shipping in EU

The EU had pursued an effective logistics across borders in the region since 1980s even before the integration of EU, and EU countries had adopted a common transportation policy which intended the establishment of unified standards and uniform system based on the fundamental ideas of deregulation and harmonization.

After the integration of EU, EU deregulated the custom duties in the region in January 1993, and deregulated the tariff rate-making in 1993, the cabotage of truck transportation in July 1998, and so forth, to promote the streamlining in terms of the logistics in the EU region.

In the shipping industry, the cabotage has been abolished in a phased manner since 1993, considering parameters such as characteristics of the region or commodity as follows:

- In principle, the cabotage right was abolished on 1st January, 1993.
- Derogations until 1st January 1999 for France, Italy, Portugal and Spain.
- Derogation until 1st January 2004 for Greece.

Currently, regional shipping in EU is completely liberated for the ships registered in EU. Community still holds safeguard measures to intervene if the internal market is seriously disrupted. Reportedly, due to the remaining cabotage for shipping outside the EU region, practical procedures at port where both ships are mixed are still cumbersome compared to those of the surface transportation.

Since the 2000s, more concerns of balanced modal composition and environmental protection have been addressed in the Trans-European Transport Network (TEN-T). One EU initiative is the Marco Polo Programme which shifts freight from the road to sea, rail and inland waterways at some designated routes and areas. Now the Marco Polo II Programme (2007-2014) where several inter-state RO-RO shipping routes or ‘Motorways of the Sea’ are planned is put into practice with an annual budget of around 60 million euro.

3) RO-RO Shipping in UK

UK is an archipelago in EU and shipping is vital as a means of transportation to connect UK and the mainland of the continent. The in-depth case study of UK RO-RO shipping will lead to the valuable suggestions for the archipelagic ASEAN countries when they intend to emulate the UK RO-RO systems.

It is convenient to regard that UK Short sea shipping market is broken into five sub-sectors, defined according to the overseas port destinations served, as follows;

- Near Continent of Europe – Ports in Belgium, Netherlands, and German North Sea coast ports
- Channel – Ports in eastern and western Channel, including Eurotunnel and Bay of Biscay, connect to ports in France, Spain, and Portugal.
- Irish Sea – Irish ports, north and south
- Scandinavia – Norway, Sweden, Denmark, and Iceland
- Baltic – Ports in the Baltic Sea, inside of the Sound that flows between Copenhagen and Helsingborg

Following the idea above, number of RO-RO shipping routes in service, operators, sails and annual total carrying capacity in 2010 are summarized as reported in Table 2.17.

Table 2.17 Statistics of RO-RO Shipping Service in UK in 2010

Connecting Regions	Route	Operators	Sailing	% of RO-RO	Total Capacity
Near Continental	21	6	198	77 %	4,539,069 unit[11]
Channel	11	6	434	95 %	5,571,669 unit
Irish Sea	14	5	254	97 %	2,848,544 unit
Scandinavian	6	2	22	80 %	671,237 unit
Baltic	6	5	7.5	35 %	233,034 unit

Source: Recompiled by Consultant based on statistics in UK Short sea freight RO-RO and LO-LO Capacity Analysis & Report

The major ports in the Near Continental Region are Harwich International Port in UK, and Rotterdam or Zeebrugge in continental Europe. Hull in UK is major port in the Baltic Service, connecting to ports in Finland.

It is reported that the total capacity in SSS is around 13.9 million units, from which RO-RO shipping service takes around 10.6 million or 76% in 2010.

As can be seen from the table above, the busiest routes in terms of the capacity are the Near Continental routes or the routes between UK and Belgium, Netherlands and Germany, which stretches more or less 100 nm to 200 nm.

In terms of the service frequency, the most number of sailing are the Channel routes such as between Dover and Calais, where the distance is rather short.

In terms of the ship type used, Freight RO-RO (in Table 2.18, denoted as “RO-RO”) is dominant than RO-RO Passenger Ferry (in Table 2.18, denoted as “ROPAX”) except in the routes of Dover and Calais where actually no freight RO-RO, which accommodates only 12 passengers/truck drivers or less, is served.

In the Baltic area, for example, the routes between UK and Finland, where distance becomes longer up to around 500 nm, freight RO-RO, without any passenger, is exclusively in service.

There are 41 ports which are used in SSS, while there are 151 RO-RO berths in UK and 132 unit-load terminals. The major ports are Harwich International Port in UK, and Rotterdam or Zeebrugge in the continent. Hull in UK is a major port in the Baltic Service, connecting to ports in Finland.

[11] Unit - In this paragraph “unit” means in general “FEU-forty feet equivalent unit” (or, 2 x TEU). But, “lane meter capacity” is so commonly used in RO-RO ship’s parameter that those converted into divided by 14.6 m to take account of the unaccompanied trailer unit and some clearance for Freight RO-RO, 16.5 m to take account of accompanying trailer for ROPAX, considering the gaps by type of ships.

Figure 2.14 Route Map of Freight Ferries Operated by P&O Ferries (left) and DFDS Seaways (right)

Table 2.18 RO-RO Shipping Service in UK

Operator	Service		Sail/week	Ship Type
	(UK – Continental)			
DFDS Seaways	Rosyth	Zeebrugge	4	RO-RO
DFDS Seaways	Tyne	Amsterdam	7	PAX
P&O Ferries	Teesport	Rotterdam	3	RO-RO
P&O Ferries	Teesport	Zeebrugge	6	RO-RO
P&O Ferries	Hull	Rotterdam	7	ROPAX
P&O Ferries	Hull	Zeebrugge	7	PAX
Stena Line Freight	Killingholme	Hook of Holland	7	ROPAX
CLdN RO-RO	Killingholme	Rotterdam	6	RO-RO
Cobelfret Ferries	Killingholme	Zeebrugge	6	
DFDS Seaways	Immingham	Cuxhaven	5	RO-RO
DFDS Seaways	Immingham	Vlaardingen	6	RO-RO
DFDS Seaways	Felixstowe	Vlaardingen	16	RO-RO
CLdN	Ipswich	Rotterdam	5	RO-RO
Stena Line Freight	Harwich Int'l Port	Hook of Holland	14	ROPAX
Stena Line Freight	Harwich Int'l Port	Rotterdam	10	ROPAX
Mann Lines	Harwich Navyyard Wharf	Cuxhaven/Bremenhaven	1	
P&O Ferries	Tilbury	Zeebrugge	10	RO-RO
Cobelfret Ferries	Purfleet	Zeebrugge	20	RO-RO
CLdN RO-RO	Purfleet	Rotterdam	6	RO-RO
Cobelfret Ferries	Dagenham	Flushing	13	RO-RO
Transeueopa Ferries	Ramsgate	Ostend	39	ROPAX
	(UK-Channel)			
Sea France	Dover	Calais	22	ROPAX
Sea France	Dover	Calais	83	PAX
Sea France	Dover	Calais	182	ROPAX
DFDS Seaways	Dover	Dunkerque	78	ROPAX
Transmanche Ferries	Newhaven	Dieppe	14	ROPAX
Brittany Ferries Freight	Portsmouth	Caen	20	PAX
Brittany Ferries Freight	Portsmouth	St. Malo	7	PAX
Brittany Ferries Freight	Portsmouth	Cherbourg	3	PAX

Operator	Service		Sail/week	Ship Type
Brittany Ferries Freight	Portsmouth	Santander	2	PAX
LD Lines	Portsmouth	Le Harve	7	PAX
Brittany Ferries Freight	Pool	Cherbourg	6	ROPAX
Brittany Ferries Freight	Pool	Santander	2	ROPAX
Brittany Ferries Freight	Plymouth	Roscoff	11	PAX
Brittany Ferries Freight	Plymouth	Santander	2	PAX
	(UK-Irish Sea)			
Fastnet Line	Swansea	Cork	3	PAX
Irish Ferries	Pembroke	Rosslare	14	PAX
Stena Line Freight	Fishguard	Rosslar	14	PAX
Irish Ferries	Holyhead	Dublin	27	PAX
Stena Line Freight	Holyhead	Dublin	7	ROPAX
DFDS Ferries	Liverpool	Belefast	13	ROPAX
DFDS Ferries	Liverpool	Dublin	12	ROPAX
P&O Ferries	Liverpool	Dublin	18	ROPAX
Seatruck Ferries	Liverpool	Dublin	11	RO-RO
DFDS Seaways	Heysham	Belfast	12	RO-RO
DFDS Seaways	Heysham	Dublin	6	RO-RO
DFDS Seaways	Heysham	Belfast	12	RO-RO
Seatruck Ferries	Heysham	Warrenpoint	11	RO-RO
Seatruck Ferries	Heysham	Larne	11	RO-RO
Stena Line Freight	Stranraer	Belfast	46	RAX/HSS
P&O Ferries	Cairnyan	Larne	47	PAX/HSS
P&O Ferries	Troon	Larne	6	ROPAX
	(UK-Scandinavia)			
DFDS Ferries	Immingham	Esbjerg	6	ROPAX
DFDS Ferries	Immingham	Brevik	2	ROPAX
DFDS Ferries	Immingham	Gothenburg	6	ROPAX
Sea-Cargo	Immingham	Norway(west coast)	2	ROPAX
DFDS Ferries	Harwich	Esbjerg	3	ROPAX
DFDS Ferries	Tilbury	Gothenburg	3	RO-RO
	(UK-Baltic)			
Finnlines	Hull	Finland	2	RO-RO
UPM Seaways	Hull	Finland/Germany	0.5	RO-RO
Finnlines	Immingham	Finland	1	RO-RO
Mann Lines	Harwich Navyyard Wharf	Paldiski/Turku	1	RO-RO
Finnlines	Immingham	Finland	1	RO-RO
Transfennica	Tilbury	Finland	1	RO-RO
UPM Seaways	Tilbury	Finland	1	RO-RO
Transbaltic Line	Sheerness	Sodertalje/Pitea	1	RO-RO

Source: Freight RO-RO and LO-LO Capacity Analysis & Report in UK

2.5 Practice of RO-RO Shipping in EU

1) Outline of Services

The following describe some detailed practice of the freight RO-RO shipping service provided by DFDS Seaways, which currently connects Rosyth, Scotland in UK and Zeebrugge, Flanders in Belgium, on the coast of North Sea, Continental Europe.

This is the sole RO-RO service directly connecting Scotland and Continental EU. The distance is approximately 400 nm and the transit time is approximately 23 hours. Three round trips per week by two vessels in general is provided.

Figure 2.15 Route Map of Zeebrugge-Rosyth RO-RO Service

The port of Zeebrugge is known as one of the major RO-RO ports in EU, where 23 RO-RO berths are located, and loading & unloading capacity reaches approximately 3,500 trucks per 24 hours or ten million trucks annually.

There are frequent RO-RO services connecting Zeebrugge and UK ports, for instance, Dartford, Purfleet, Felixstowe, Grimsby, Immingham, Hull, Teesport (Middlesbroug), Southampton, Portbury, Sheerness, Killingholm, Rosyth, Dublin, Cork,involving 14 ports and 20 services a day by operators Colbelfret, P&O ferries, Dart Line, U.E.C.C. Superfast Ferries, KESS, Finnlines, Toyofuji, etc. Besides the UK routes, there are RO-RO services connecting the Scandinavian countries, Spain, Portugal, Italy, Greece, Turkey, Morocco, and so forth.

According to the web page of Ports and Harbors of the UK, Rosyth is introduced as following: The Port of Rosyth offers deep water river berths with up to 540 m frontage and a minimum depth of 8.3 m. The Port lies on the north bank of the River Forth upstream of the Forth road and rail bridges, well sited for the main North Sea shipping lanes and oil and gas fields. Rosyth enjoys excellent road links with the Scottish and UK motorway network to the main centers of population; it is also rail linked, for customers who prefer or require an alternative to road distribution.

From its former role as a naval dockyard, Rosyth has quickly established itself as a vigorous facility. New equipment is in place which meets the highest standards of plant and industrial safety and development, and has introduced systems designed to achieve fast and economic ship turnarounds. Cargo discharge or loading is systematically planned, with control and scheduling information processed automatically by an integrated communication system, thus keeping paperwork to a minimum.

A number of businesses have set up in the port, including a pallet manufacturing plant and an offshore support facility. Superfast Ferries operate from the port to Zeebrugge in Belgium.

The other side of the route, Zeebrugge is regarded as a gateway to the Continual Europe and advantageous in the following aspects:

- Favorable geographical position
- On the coast of North Sea, the busiest sea in the world
- Central in relation to other North Sea ports
- Within a short distance from Great Britain
- Close to many major populated and industrialized cities
- Good nautical accessibility for deep draft vessels, which brings in a network of intercontinental and intra-European container services
- Good railway and road connections to all countries of Continental Europe
- Sufficient skilled labor to satisfy modern shipping and handling techniques and achieve high productivity, and modern port equipment

This route was originally opened in 2002 by Superfast Ferry thru the Scottish Elective's consultation and tendering process. However, the operation ceased once in 2008, but Norfolk Line (Later taken over by DFDS) reopened the route in 2009, operating two ROPAX ships. In 2011 passenger service ceased, now focusing on freight only service.

The current time table is set as below.

Table 2.19 Time table of Rosyth-Zeebrugge RO-RO Service

Departure from Rosyth	Arrival at Zeebrugge	Departure from Zeebrugge	Arrival at Rosyth
Tuesday 20:00	Wednesday 20:00	Monday 18:00	Tuesday 16:00
Friday 04:00	Saturday 04:00	Wednesday 24:00	Thursday 22:00
Sunday 12:00	Monday 12:00	Saturday 10:00	Sunday 08:00

In terms of freight service, the terminal at Rosyth is subject to the following timetable and latest check-in time.

- Driver accompanied transport:1 hour prior to departure
- Unaccompanied transport: 1 hour prior to departure
- Hazardous cargo: 2 hours prior to departure

Table 2.20 Time table of Rosyth Freight Station

Day of the week	Opening Hours
Monday	06:00-18:00
Tuesday	06:00-20:00
Wednesday	06:00-18:00
Thursday	06:00- 23:59
Friday	06:00-18:00
Saturday	08:00-12:00
Sunday	08:00-12:00

2) Ships

The following are the particulars of the two freight RO-RO vessels currently in service after the taking over by DFDS Seaways in 2011.

Table 2.21 Particulars of "TOR FINLANDIA"

Vessel Name	TOR FINLANDIA
Ex ship name	HMS KENT / HMS KENT AT ANCHOR / TOR FINLA / FINREEL
Owner/Operator	DFDS Seaways
Type:	Roll-on/Roll-Off Cargo Vessel
Flag	Lithuania
Class	LRS
Navigation Area	Ocean going
Call Sign	LYTC
Built	2000, Jinling Shipyard, Nanjing, China
Service Speed	14.6 kn
Deadweight	8,702 tons
Gross tonnage	11,530 T
Net tonnage	3,459 T
Length over all	162.5 m
Breadth (mould)	20.00 m
Depth (mould)	-.-0 m
Draft (design)	6.60 m
RO-RO capacity	1,900 Lanemetre (or, approx. 130TEU)
Passenger capacity	12 persons
Main engine	MAN B&W 12V48/60 x 1 set, 12,600 kW

Figure 2.16 TOR FINLANDIA

Table 2.22 Particulars of "TOR CIMBRIA"

Vessel Name	TOR CIMBRIA
Ex ship name	CIMBRIA SEAWAYS / AQUAE / TOR CIMBRIA / DANA CIMBRIA / MERCHANDIA EXPRESS II
Owner/Operator	TOR CIMBRIA RO-RO KS / DFDS Seaways
Type:	Roll-on/Roll-Off Cargo Vessel
Flag	UK
Class	DNV
Navigation Area	Ocean going
Call Sign	VQEQ3
Built	1987, Frederikshavn Verft A/S, Frederikhaven, Denmark
Speed	17.0 kn (maximum)
Deadweight	6,897tons
Gross tonnage	12,189T
Length over all	145.0 m
Breadth (mould)	20.40 m
Depth (mould)	-.-0 m
Draft (design)	6.60 m
RO-RO capacity	2,026 Lane meter (or approx 130 Trailers)
Passenger capacity	12 persons in 6 cabins
Main engine	Mak 6M601AK x 1 set, 6,618 kW

Figure 2.17 TOR CIMBRIA (at Docking)

3) Cargoes

In terms of cargo volume, the annual traffic volume is reported to be 55,804 units or approx. 110,000 TEU in 2010.

Cargoes include driver-accompanied cars, unaccompanied trailers, trade cars & light vans, ISO tanks & containers.

4) Port Facilities

(1) Zeebrugge

The port of Zeebrugge in Belgium has become a major European port since major development works were carried out in the 1972 to 1985 period. It is Europe's leading RO-RO port, handling 12.5 million tons in 2010, and the world's largest port for imports and exports of new vehicles, with over 1.6 million units handled in 2010 (24.5% less than in 2008 due to the economic crises). It is also Europe's largest terminal for liquefied natural gas.

The most important functions of the port are summarized below:

- Intense RO-RO traffic between the Continent, Great Britain, Scandinavia and Southern Europe;
- European hub port for the automotive industry;
- Container port with a good nautical accessibility for + 14,000 TEU ships;
- Import of Liquefied Natural Gas and energy products;
- Handling, storage and distribution of perishables and other agricultural products;
- Handling of conventional general cargo and 'high & heavy' cargoes;
- Passenger transport;
- Organization of the European distribution via an intricate network of hinterland connections.

There are more than 10 RO-RO handling terminals in the Port of Zeebrugge to date, as shown in Figure 2.18 with DFDS Seaways terminal, a dedicated terminal for the operator of the Rosyth Zeebrugge ferry, being close to the port entrance.

DFDS Seaways Terminal

Figure 2.18 Port of Zeebrugge

(2) Rosyth

The freight ferry port of Rosyth in Scotland is located eight (8) miles from Edinburgh and forty (40) miles from Glasgow on the north shore of the Firth of Forth, immediately west of the Forth Road and Rail Bridges on the north bank of the River Forth, upstream of the Forth road and rail bridges, well sited for the main North Sea shipping lanes and oil and gas fields.

Rosyth is linked by excellent road with the Scottish and UK motorway network to the main centers of population; it is also rail linked, for customers who prefer or require an alternative to road distribution.

Since its opening in 1998, a number of businesses have boomed around the commercial harbor, so Scottish Enterprise is looking to further develop the port of Rosyth and expand services. It is currently a commercial port owned and managed by Forth Port PLC.

The Port has a 50,000 m^2 terminal area, including a common used 21,000 m^2 shed covered area. There are three berths, those are North wall, OPQ berth and ROPAX berth; its quay length of ROPAX berths is 220 m long with water depth of 7.2 m.

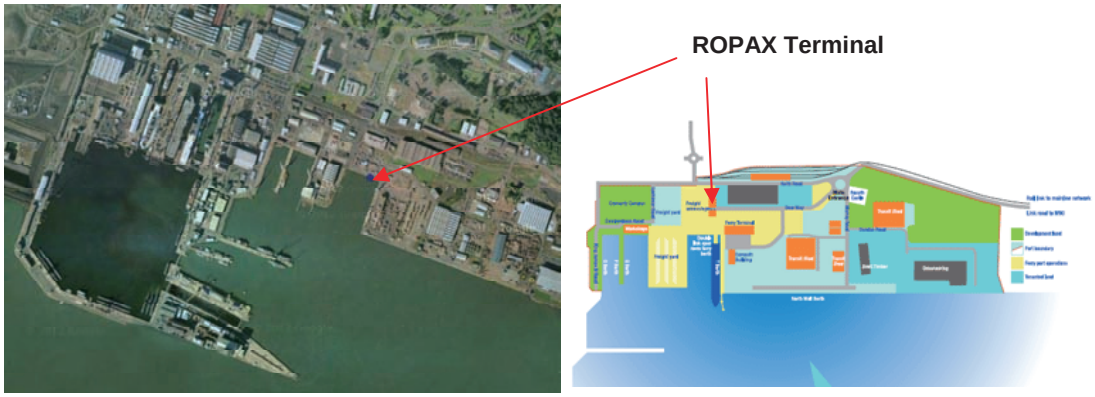


Figure 2.19 Port of Rosyth

5) Tariff

Table 2.23 shows the tariff structure. Besides this, tariff surcharges are also added. The existing price table is not published, as it is not available. Instead, for reference, one of the past tariff table of this route by Super Ferry is shown in Table 2.24.

Table 2.23 Tariff Structure of Vehicles

Vehicle Type	Description
Car / Motorhome under 2.4m high	This vehicle type includes all standard car types including saloon cars, estate cars, and 4x4's with or without a roofbox or a roof rack where the total height is under 2.4 metres. This vehicle type also includes motorhomes that are under 2.4 metres in height; with a maximum of 9 passengers allowed to travel with this vehicle type.
Car / Motorhome over 2.4m high	Passenger vehicle, as defined above, over 2.4 metres; with a maximum of 9 passengers allowed to travel with this vehicle type.
Van under 2.4m high	A van is defined as a motor vehicle with panelled sides and is designed for commercial purposes, irrespective of commercial or private use; with a maximum of 9 passengers allowed to travel with this vehicle type. Note: If the van is being used to transport goods for commercial gain then it will be classified as 'freight' traffic at check-in and the appropriate freight fare applied at that time.
Van over 2.4m high	Van, as defined above, over 2.4 metres in height; with a maximum of 9 passengers allowed to travel with this vehicle type.
Motorcycle	Fare includes 2 passengers; with a maximum of 2 passengers allowed to travel with this vehicle type.
Bicycle (one only)	Push bike with one passenger only, maximum one passenger.
Car with caravan or trailer	Car towing a caravan or trailer; with a maximum of 9 passengers allowed to travel with this vehicle type.
Minibus	A minibus must have no more than 15 seats including the driver (maximum, no larger vehicles will be carried) irrespective of how many passengers travel; with a maximum of 15 passengers allowed to travel with this vehicle type.
Motorhome with caravan or trailer	Motorhome (with windows, sleeping and cooking facilities) towing a caravan or trailer; with a maximum of 9 passengers allowed to travel with this vehicle type.
Motorcycle with sidecar or trailer	Motorcycle with a trailer or sidecar. Fare includes 2 passengers; with a maximum of 4 passengers allowed to travel with this vehicle type.

Source: DFDS HP

Table 2.24 Tariff Example
(Super Ferry – Rosyth-Zeebrugge in 2008 by Super Ferry, High season)

	prices per vehicle	in Euro		super saver* in Euro
	Description of Vehicle	**One way**	**Round trip**	**Round trip**
1	Vehicles Up To 6m Length & Up To 2m High	139	251	159
2	Vehicles Up To 6m Length & Over 2m High	201	364	230
3	Vehicles From 6.1m To 8m Length	215	389	246
4	Vehicles From 8m - 10m Length*	291	525	332
5	Trailers/Caravans Up To 2,50m Length	84	150	95
6	Trailers/Caravans From 2,51 To 6m Length & Up To 2,4m High	139	251	159
7	Trailers/Caravans From 2,51 To 6m Length &/Or Over 2,4m High	201	364	230
8	Trailers/Caravans From 6.01m - 8m Length	215	389	246
9	Trailers/Caravans From 8m - 10m Length*	291	525	332
9	Motorcycles	65	114	74
10	Bicycles	Free	Free	Free

Note: For vehicles longer than 10m, there is an extra charge of Euro 25 per meter per way.

2.6 Practice of RO-RO Terminal Facilities in EU

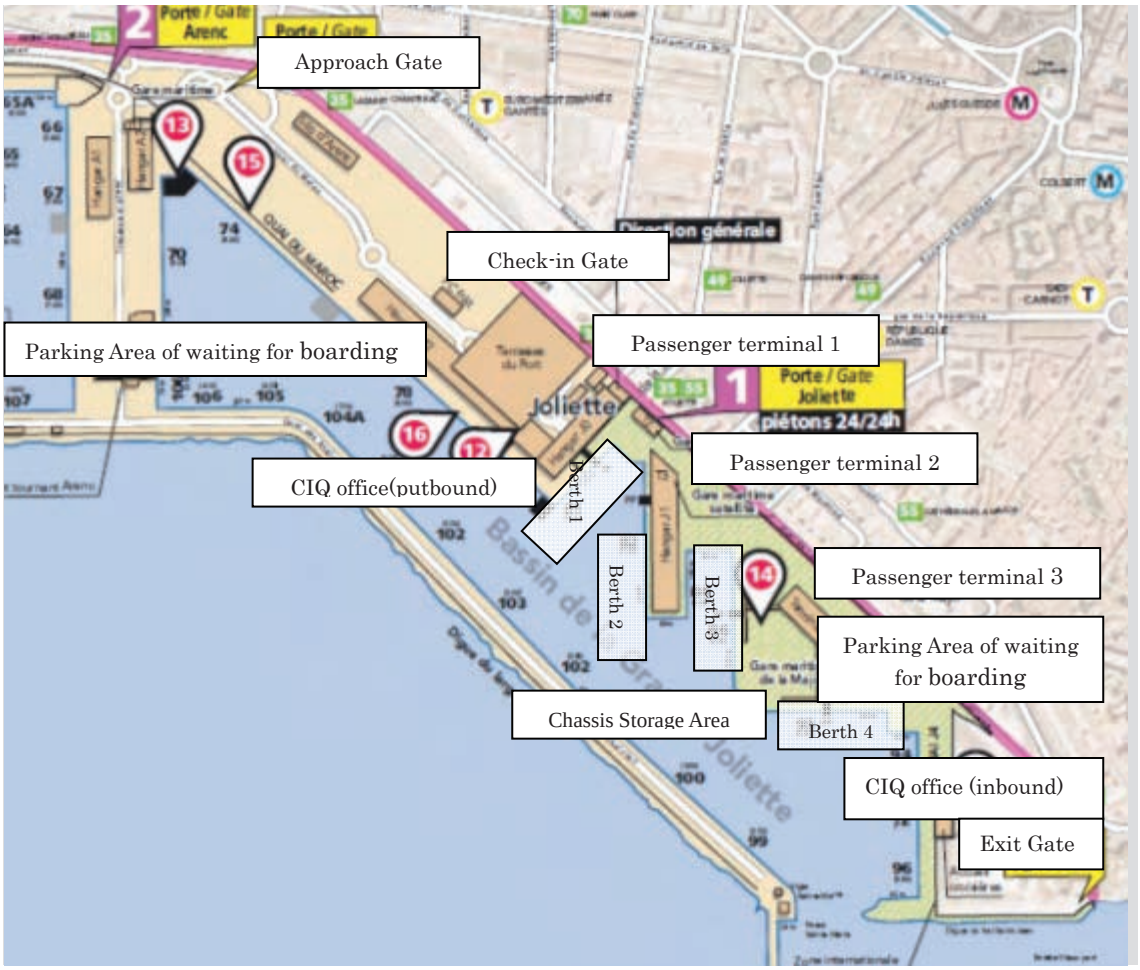
The following is an introduction of RO-RO terminal in EU, Port of Marseille.

The Port of Marseille is located on coast of the Mediterranean Sea and provides international ferry services between Europe and North Africa. The international ferry terminal is located at the east part of the Eastern Harbor. In north-western part of this terminal area, domestic ferry berths are located. Main facilities of international RO-RO terminal of the port of Marseille are;

- Berth 1, 2, 3 and 4
- Passenger terminal 1, 2 and 3
- Approach Gate
- Check-in Gate
- CIQ offices (out bound)
- Parking Area of waiting for boarding
- Chassis Storage Area
- CIQ offices (inbound)
- Exit Gate
- Gangway for Vehicles
- Passenger concourse and
- Port Facilities which meet the ISPS Code.

The location of the terminal and its layout are shown in the Figure 2.20 and Figure 2.21.

Figure 2.20 Eastern Harbors of the Port of Marseille



Source: Prepared by JICA Study Team using Map in web site of the Port of Marseille

Figure 2.21 Layout of Facilities

There are four berths that are provided for international ferry services; the dimensions of each berth are 200 m in length and 8 m to 12 m in depth. Three passenger buildings are located in the terminal area. Two of them are used for international ferry services, but the other one is also used for international services at peak time. The approach gate is located at the north-western part of the area and the exit gate is located at south-eastern end of the area.

Embarkation and disembarkation of vehicles and passengers are carried out according to the procedures shown in Table 2.25.

Table 2.25 Procedures of Embarkation and Disembarkation at the Port of Marseille

Procedure	Note
Embarkation (Vehicles)	
Entry to the terminal (a restricted area)	-Entry through a designated gate. -Gate is open two hours before the departure time.
Check-in	-Ticket is submitted to staff of the terminal and exchanged for a boarding pass at a booth outside.
Cargo Inspection	-Random sampling inspection is carried out. -The vehicle and all cargoes are inspected fully when it is subject to inspection. -Contents of inspection depend on destination ports or the security situation.
Outbound Immigration Inspections	-Passport control
Waiting of boarding	-Waiting at a waiting lane.
Boarding	-Boarding by using ship's ramp -Commences one hour before the departure time.
Embarkation (Passengers)	
Entry to the terminal (a restricted area)	-Entry through a designated gate. -Gate is open two hours before the departure time.
Check-in	-Ticket is submitted to staff of the terminal and exchanged for a boarding pass at a booth in the passenger terminal.
Cargo Inspection	-100% inspection is carried out by using X-ray scanner. -Four staff members work at two booths.
Outbound Immigration Inspections	-Passport control
Waiting of boarding	-Waiting at a designated waiting room
Boarding	-Boarding through a boarding bridge -Commences at one hour before the departure time.
Disembarkation (Vehicles)	
Disembarkation	-Vehicle disembarks using ship's ramp
Immigration Inspections	-Passport control -To check the registered finger print against the passport records or to take a finger print when there is no registered fingerprint
Inspection of Cargo	-All cargoes transported by vehicles and drivers' and passengers' effects are inspected. It is combined with quarantine inspection. -Inspection is carried out by approximately fifteen officials from customs and the army as well as sniffer dogs. -When doubt exists, detailed inspection is carried out after moving to another place.
Entry into a country (Going out of a restricted area)	-The above procedures are carried out by groups composed of about ten vehicles and the vehicles can go out of the restricted area after inspection of all vehicles of the group is completed.
Disembarkation (Passengers)	
Disembarkation	-Passengers disembark using a boarding bridge.
Immigration Inspections	-Passport control -To check the registered finger print against the passport records or to take a finger print when there is no registered fingerprint
Inspection of Cargo	-All passengers' effects are inspected. It is combined with quarantine inspection. -Inspection is carried by officials of customs. -When doubt exists, detailed inspection is carried out after moving to another place.
Enter country (Exit of restricted area)	-Exit the restricted area

The ISPS Code is applied to the whole port. The area of ferry terminal is considered as a restricted area under the ISPS Code and fences with more than 2.5 m in height are erected around the area including ship-side. The whole area is monitored by CCTV and the image data are saved and kept for the period of one month. Access control at the gates is also carried out. Private security guards go on patrol, and police and army are stationed in the port. In addition, access to the restricted area is controlled by the means of ID cards for staff and presentation of valid tickets for passengers.

(Source: Report of the study on the improvement of ports for an intermodal transport by the international ferry service: March 2010, Hokuriku Region Development Bureau, MLIT, Japan)

2.7 Implications

1) Source of revenue

It is regarded that the most critical factor toward successful opening of a RO-RO shipping service on a new route, which intends to be particularly dedicated to freight, is securing a sufficient base cargo or cargoes which will make a stable profit source. An interesting instance which indicates the importance of base cargo is discussed below.

This undertaking has been conducted by the Hokkaido Regional Development Bureau, Ministry of Transport, Japan, in response to the Fundamental Principles of General Logistics Policy (2009-2013) which was endorsed by the Cabinet. They established a task force gathering experts from the private, public, and academic sectors, and launched 3-year activities to explore mainly the following:

- Creation and transmission of local brand (Hokkaido Brand)
- Establishment of marine transportation means to improve export and enforcement of global competitiveness of air transportation

In this region, the industrial clustering is not well established in general, although some steel product industry or paper product industry are located therein. As a result, the industrial product is not competitive enough so that import surpasses export as is shown by local marine transport statistics.

They say that Hokkaido is a treasure house of agricultural and livestock products, and fishery products, such as Walleye Pollack. This is a representative export commodity to Korea, along with paper product to China. The problem is that almost all of them are products from small scale enterprises, so they do not take any action to export them but leave export processes to trading companies in Tokyo, once they have sent their products to Tokyo.

The team confirmed the situation and concluded to pursue utilizing international RO-RO shipping service which was deemed to provide cost effective but shorter delivery time. The following are the major parts of the endeavors to establish a first RO-RO shipping route directly connecting Hokkaido and Korea.

- To conduct experimental international voyage between Hokkaido and Pusan, Korea by a real RO-RO vessel
- To hold series of business meeting to match exporter and importer before experimental voyage by a RO-RO vessel

- To organize workshops regarding RO-RO shipping
- To investigate ships traffic passing near-by seas to identify the potential cargo

Through those experiments and studies, it was found that there still remained a lot of technical and institutional constraints, such as no common technical standards for trucks or chassis, so that they are not allowed to run through both countries, driver licensing system and insurance, etc., but marine transport by a RO-RO vessel was proven good enough to export fishery products, which usually require strict temperature control and quick delivery. Furthermore, it can provide competitive transportation service compared to LO-LO vessel (conventional container ship) or aviation.

Unfortunately, the reality is that they could not change the exporters' mind into direct export, thus the estimated cargo volume to date is far less than the general requirement for the establishment of a RO-RO shipping route.

After these endeavors, the Hokkaido Regional Development Bureau started a new program this year, focusing more on the enhancement of business aspects. In particular, they regard the following two endeavors as keys to achieve an environment for introduction of a RO-RO vessel in near future.

- Improvement of transportation measures suitable for small lot product, and
- Development of refrigerated commodity transportation system suitable for food

To date, the demand is so small that the cargo volume still does not reach the LCL cargo level. The people involved in this program expect that they can achieve collecting sufficient cargoes to be transported by FCL cargo.

Before closing this chapter, an interesting opinion, which addresses conditions for likely freight RO-RO shipping service in terms of cargo volume versus port to port distance concluded by analysis of existing Asian ferry services, is extracted below.

2) A Rough Guideline of RO-RO Shipping's Profitability

Studies addressing the conditions of RO-RO shipping's profitability have been conducted in EU and Japan. They should be a rough but useful guideline of feasibility of new RO-RO shipping service.

For instance, a feasibility study conducted in EU with regard to the new ROPAX service between Ireland to Continental Europe[12] reports as follows:

[12] Feasibility of New RO-RO ROPAX services between Ireland and Continental Europe, 2007

In comparison between RO-RO, conventional LO-LO and hatchless LO-LO vessels, TRAPIST[13] makes a case for the use of hatchless LO-LO[14] vessels for intermediate trading distances (280 – 660 nautical miles). However, in the absence of hatchless LO-LO vessels, the following is a summary of its conclusions:

- For short distances (up to approximately 280 nm) RO-RO and ROPAX have no maritime competitor.
- For intermediate distances (280 – 660 nm), RO-RO would be challenged by hatchless LO-LO, if hatchless LO-LO ships were available. Conventional LO-LO for these distances is not in the running.
- For distances greater than approximately 660 nm and less than 1,200 nm, conventional LO-LO is the winner

Another study conducted in Japan analyzing the Northeast Asian RO-RO services [15] conceded as beneath:

When car/trucks are the subject, a car ferry is naturally selected, and not a conventional container ship.

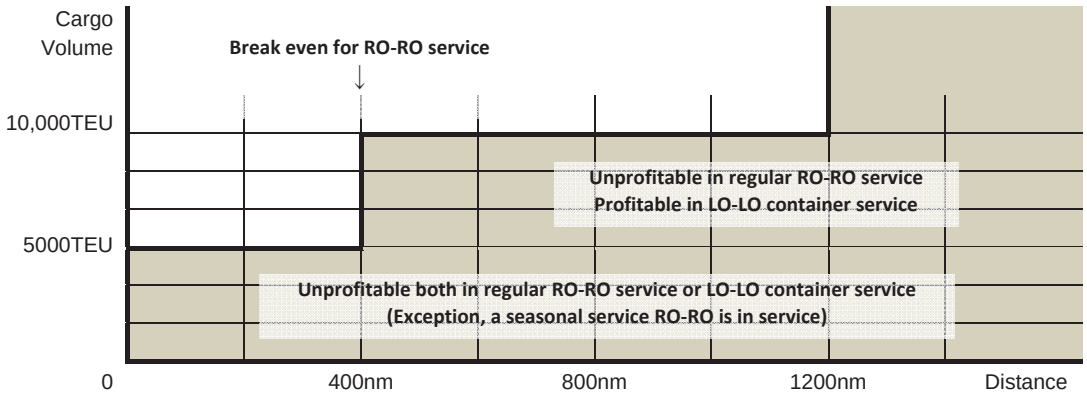
But as seen in North Asia, there still remains difficultly to cross national borders by a vehicle, and passenger transport can be regarded large scaled. Thus, depending on the situation, they may decide LO-LO vessel, freight or passenger RO-RO vessel in terms of seaborne transportation means, and the following will give some rough guidelines to decide.

- They will opt for a LO-LO ship if a port to port distance exceeds 1,200 nm.
- Annual container traffic per a port shall exceed 5,000 TEU to establish a specific shipping route, based at the shipping routes connected to the Pusan hub network. If a cargo traffic volume is less than 5,000 TEU, such a shipping route will not be feasible.
- Annual container traffic per a port shall exceed 7,000 TEU to establish a RO-RO shipping route, if less than 7,000 TEU such a RO-RO shipping route will not be feasible.
- If container traffic volume is between 7,000 and 10,000 TEU, a port to port distance shall be less than 400nm to establish a RO-RO shipping route. If it is more than 10,000 TEU, any RO-RO shipping route will be feasible.

[13] Acronym of Tools and Routines to Assist Ports and improve shipping, a project based in Ireland

[14] Open top or hatchless (container) ships, which are ships without hatch covers. This will decrease the loading and unloading times and increase the flexibility of the ship

[15] Study on logistics for Aomori Port Internationalization, 2004, Aomori Port Internationalization Conference (In Japanese)



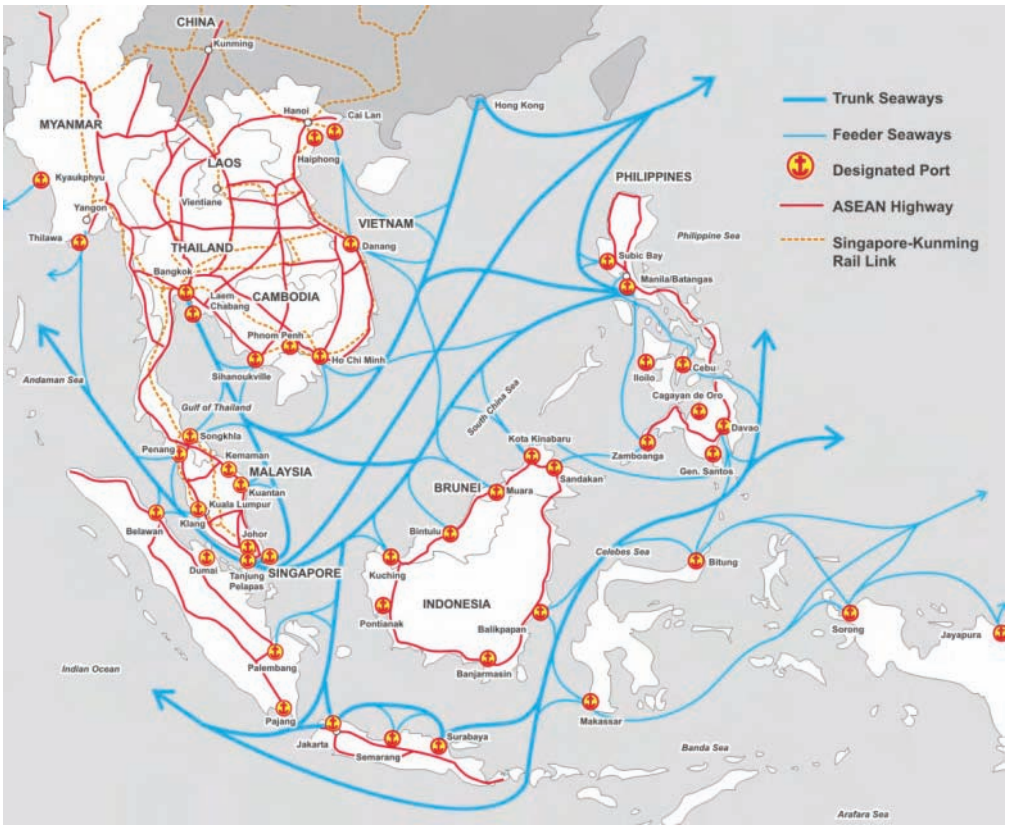
Source: Aomori Port Internationalization Conference, 2004

Figure 2.22 A Rough Guideline of RO-RO Shipping Route's Profitability

3) Comparison of Port System between RO-RO Shipping and Container Shipping

RO-RO shipping and container shipping emerged after the WWII. They are considered innovative and unitized transport services compared with conventional shipping. RO-RO shipping has longer history than container shipping. In this sense, container shipping is more efficient than RO-RO shipping in terms of vessel space utilization. Since the 1980s, container shipping has greatly benefited low-cost and secured cargo service to the users. Container shipping can increasingly enjoy the scale of economy if larger container vessels to be assigned on trunk routes and productive container handling equipment such as gantry cranes to be installed at dedicated terminals on the hub-and-spokes shipping system.

For ASEAN, shipping modernization means more or less container shipping which seeks for the scale of economy in such the afore-mentioned way. ASEAN conceptualized its port system in 2002, namely the ASEAN-wide 47 ports system. All the designated ports can accommodate container vessels at dedicated berths or multi-purpose berths. On the contrary, RO-RO shipping port system has never been discussed in the region.



Source: ASEAN Maritime Transport Development Study (ALMEC Corporation, 2002)

Figure 2.23 ASEAN-wide Ports System

RO-RO shipping may require a different port system. It is advantageous to connect both port hinterlands directly without lift-on/lift-off operations at ports. As the previous section states, RO-RO shipping is no longer competitive with container shipping on long-distance routes. RO-RO shipping does not require a hub-and-spokes network even though RO-RO shipping sometimes works on feeder routes in a hub-and-spokes network.

It is repeatedly reported that, in UK, there are 41 ports which are used for short sea shipping (SSS) while RO-RO shipping with 151 RO-RO berths accounts for 76% of SSS in 2010. There is an obvious contrast that ASEAN having over 600 million has focused on the 47 ports system while UK, an archipelagic country of 60 million, has developed 41 SSS ports for intra-Europe connection.

ASEAN definitely has an opportunity to explore RO-RO shipping development. However, the development path may be different from the recent regional efforts for an internationally competitive container shipping system. RO-RO shipping is suited to diversified cargo movement rather than consolidated cargo flow. It means RO-RO shipping prefers many feeder ports within short-distance rather than intercontinental hub ports. RO-RO shipping in ASEAN will be able to take a complementary role to container shipping by providing fast and seamless unitized cargo service on selective feeder routes.

3 DOMESTIC RO-RO SHIPPING PRACTICES

3.1 Japan

1) General

Japan, an archipelago nation, is a cluster of 4 large islands (viz., Hokkaido, Honshu, Shikoku and Kyushu) and more than 3,900 small islands with a total land area of 377,780 km^2. The country's arable and habitable land is considerably limited owing to its vast steep forest lands (67% of total land mass) and numerous volcanic mountains. The population of Japan has reached 128 millions in 2010, the tenth most populous country in the world.

2) Historical Background and Current Issues of Domestic Shipping

Because of the archipelagic nature of the country, cargo distribution has historically depended on domestic shipping. Therefore, many initiatives to foster domestic shipping have been practiced from time to time.

During the decade after the World War II (1945-1955), although domestic shipping suffered from more than 80% loss in assets during the war, it gradually recovered to its pre-war traffic level in terms of quantity.

Facing the high economic growth period (from 1955 till the "Oil Shock" in 1973), the stabilization of domestic shipping became a major concern. The issue focused on the replacement of war standard ships (World War II vintage), which played an important role during the war restoration and economic recovery period. In this connection, Senpaku Seibi Kodan or Maritime Credit Corporation in Japanese was established and implemented the ship replacement program.

In line with the fleet replacement, modernization of domestic shipping in Japan took place from 1955 thereafter. Modernization commenced with diversion from wooden to steel vessels. Associated measures were enlargement of vessel size, improvement of cargo handling capability, increase in turn-around times of vessels and operating efficiency such as those for coal, limestone, cement, automobile, LPG, asphalt, container etc. RO-RO ships were also developed and extensively used since 1965.

In the 1990s, national population and economic activities, particularly manufacturing, reached its peak; then it began showing shrinking trends in the 2000s. Under such changed situations, domestic shipping industry has also shrunk in terms of fleet size. At present, the industry tries to improve services and reduce subsidy. To help the shipping companies cope with such new challenges, the government has prepared several policy tools, including the following:

- Introduction of environmental friendly ship design and technology with financing incentive;
- Promotion of merger and acquisition (M & A) among local shipping companies on the same operation area/service segment; and
- Grouping of small shipping companies and contracting out selective and possibly consolidated works to one ship management company such as manning, seafarer training, docking arrangement and marine insurance.

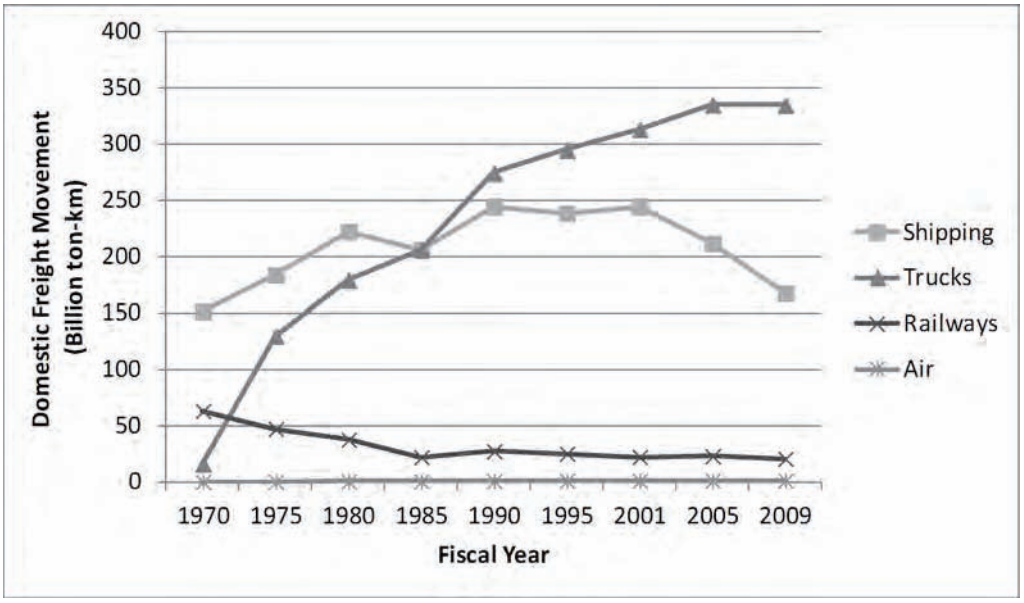
3) Domestic Shipping Industry

The domestic shipping demand for cargo was 332 million tons in 2009 and it has gradually decreased from the peak year of 1990 due to factory relocation mainly to developing countries. The average trip length has ranged from 400 km to 500 km constantly and shows a gradual increase in the last decade. The domestic shipping sector has decreased in recent years and it decreased by 32.0% in 2009 in terms of freight movement (ton-km). The major commodities, as of 2009, are oil products (90 million tons), limestone (64 million tons), iron and steel (40 million tons), cement (32 million tons), manufactured industry goods (24 million tons), stone and sand (19 million tons) and chemical products (18 million tons).

Table 3.1 Trend in Cargo Traffic by Japan's Domestic Shipping

Year	**Quantity** (Million Ton)	**Movement** (Billion Ton-km)	**Average Distance** (km)
1970	377	151	401
1975	452	184	407
1980	500	222	444
1985	452	206	456
1990	575	245	426
1995	549	238	433
2000	537	241	449
2005	426	211	496
2009	332	167	504

Source: MLIT, Japan



Source: MLIT, Japan

Figure 3.1 Trend in Modal Share of Japan's Domestic Freight Movement

On the other hand, domestic passenger demand is stable at around 100 million passengers per year between 2005 and 2010. It may be attributed to population size and distribution.

In line with the decreasing domestic maritime cargo, the domestic fleet has also shrunk from 5.4 million GRT in 1995 to 4.8 million GRT in 2005. On the contrary, the average ship size has grown bigger from 479 GRT in 1995 to 549 GRT in 2005. Industrial restructuring effort has been observed through this process.

Under such situations, the number of new shipbuilding has declined from 325 ships in 1993 to 59 ships in 2010. Today, 74% of domestic ships are older than the ship depreciation term (14 years) stipulated in the domestic regulation.

Table 3.2 Fleet Composition of Japan's Domestic Shipping (as of 2005)

Type	No. of Ships	Total GRT (000)	Average GRT
Cargo Ship	3,796	1,555	410
Sand/Stone Carrier	731	498	682
Cement Carrier	164	409	2,494
Car Carrier	44	179	4,068
Oil Tanker	1,141	734	643
Specialized Tanker	378	210	556
Passenger Ship / Ferry	2,020	127	63
RO-RO-ROPAX	384	1,042	2,714
Total	8,658	4,753	549

Source: MLIT, Japan

4) Current Situation of Domestic RO-RO Shipping Services

(1) Long-Distance ROPAX Service

In the late 1980s, all four (4) major islands in Japan were connected by bridges. Since then, fierce competition has been observed among road, rail, shipping and air in the inter-island transport market. As a result, only one service segment in domestic shipping has successfully survived. It is long-distance RO-RO-ROPAX service whose route is over 300 km in one-way distance. Recently, eight (8) shipping companies operate 14 routes with 35 ships to provide ROPAX service. The total distance of the routes is 10,350 km and the average distance is 739 km.

The table below shows a summary of level of service of long-distance ROPAX services obtained from Annex 3.1. Those existing routes connect three major metropolitan areas (viz, Kanto, Chukyo and Hanshin) to their farthest destination, that is, Hokkaido and Kyushu. Most routes are operated everyday with large vessels, whose average size is over 10,000 GRT and the average capacity is 700 passengers, several cars and more than 100 trucks in an 8-ton truck equivalent unit.

Table 3.3 Level of Service of Long-Distance ROPAX Services (as of June 2012)

Area	Average Distance (km)	Frequency (per week)	Number of Vessels	Average Vessel Size (GRT)	Average Capacity		
					Pax	Car	Truck[1)]
Hokkaido - Kanto	754	14	4	12,501	409	70	157
Hokkaido - Chukyo/Hokuriku	1,021	29	11	17,398	770	84	160
Northern Kyushu - Kanto	1,163	7	4	11,318	275	73	129
Northern Kyushu - Hanshin	456	28	8	11,952	767	104	197
Mid Kyushu - Hanshin	437	14	4	10,211	763	88	134
Southern Kyushu - Hanshin	542	14	4	12,174	736	113	180

Note: 1) Numbers in an 8-ton truck equivalent unit.

Source: Compiled by JICA Study Team based on statistics of Japan Federation of Coastal Shipping Associations and Japan Long Course Ferry Service Association

Table 3.4 shows the achievements of long-distance ROPAX services in 2010 and the numbers of carried vehicles and passengers suggest load factors of 15%, 70% and 60% for passengers, cars and trucks, respectively, and therefore, vessels deployed to the long-distance ROPAX routes have too much spaces for passengers.

Table 3.4 Achievements of Long-Distance ROPAX Services in 2010
(1 April 2010 – 31 March 2011)

Indicator	Passenger	Car	Truck
Number of Passengers/Vehicles (000)	1,236	698	1,107
Movement (million pax-km or million ton-km)	686	431	712

Source: MLIT, Japan

Ship operators and the government are promoting voyages by sea as a travel mode with less load for drivers who want to travel by their private vehicles beyond the destination of the ship, and a mode that is relaxed, comfortable and exciting. However, in the viewpoint of transport planning, Japanese people, whose value of time is as high as over 50 yen per minute, prefer faster travel modes. Some passengers like to take bullet trains and airplanes with a higher fare; others may drive themselves or ride long-distance highway buses with a lower fare. On the contrary, local trains running on conventional railways and ferries are usually considered as modes not for “trips” but for “journeys.” As is clear from the fact that almost all sleeper trains have been retired, long-distance ROPAX seems no longer competitive in passenger transportation in Japan.

(2) Middle-Distance ROPAX Service

The business environment of shorter distance ROPAX services has been recently damaged due to the government’s preference on toll road operation with large subsidy[1]. There remain five middle-distance ROPAX services whose route is 100-300 km in one-way distance as shown in Table 3.5. Since Honshu and Hokkaido are not connected by a road, there are 17 services a day between Aomori and Hakodate, and 4 services a day between Hachinohe and Tomakomai for passenger cars and trucks. The other three routes are

[1] The toll charge ceiling is placed at 1,000 yen per day for passenger cars on holidays from 2009 to 2011.

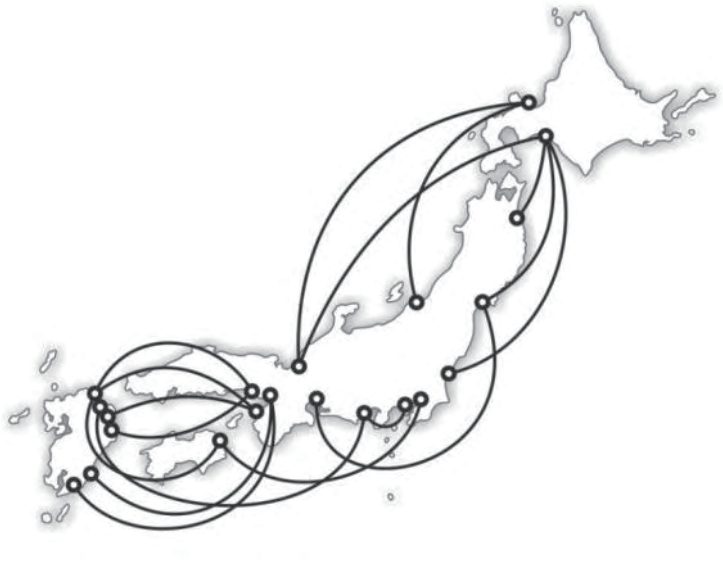
operated among cities of Hanshin, Shikoku and Kyushu regions facing the Seto Inland Sea, under fierce competition with road transport.

Table 3.5 Middle-Distance ROPAX Routes in Japan (as of June 2012)

Operator	Route	Distance (km)	Frequency	Vessel Name	Speed (kt)	Vessel Size (GRT)	Capacity		
							Pax	Car	Truck[1)]
Kawasaki Kinkai Kisen	Hachinohe - Tomakomai	242	4/day	Silver Princess	20.5	10,500	500	30	92
				Silver Queen	23.2	7,005	600	20	90
				Vega	20.0	6,698	600	20	96
				Venilia	20.0	6,558	450	14	96
Ferry Sunflower	Kokura - Matsuyama	184	1/day	Hayatomo 2	18.0	4,238	568	41	73
				Kurushima	18.0	4,273	568	41	73
Jumbo Ferry	Kobe - Takamatsu	119	4/day	Kompira 2	18.5	3,639	475	30	61
				Ritsurin 2	18.5	3,664	475	30	61
Orange Ferry	Toyo/Niihama - Kobe - Osaka	240	2/day (Toyo/Niihama - Osaka) 1/day (Niihama - Kobe)	Orange 7	22.5	9,917	744	42	122
				Orange 8	22.5	9,975	750	42	122
				Orange Hope	22.2	15,732	218	—	160
Seikan Ferry	Aomori - Hakodate	113	8/day	Hayabusa	X[2)]	1777	80	X[2)]	X[2)]
				Hayabusa 3		2107	105		
				Asakaze 21		2048	198		
				Asakaze 5		1958	103		
Tsugaru Kaikyo Ferry			8/day	Blue Dolphin	20	7003	586	200	65
				Venus	20	7198	590	200	65
				Virgo	20	6706	580	200	65
				Esan 2000	17.5	2367	78	70	30

Note:
1) Numbers in an 8-ton truck equivalent unit.
2) Data are not available.

Source: Japan Federation of Coastal Shipping Associations and Japan Long Course Ferry Service Association



Source: JICA Study Team

Figure 3.2 Middle- to Long-Distance ROPAX Routes in Japan (as of 2010)

(3) Local Liner Shipping Service for Remote Islands

In Japan, the number of inhabited remote islands, where no prefectural capitals are located, is 314. To serve these islands, local liner shipping services are provided by 252 operators with 579 ships (353 GRT on the average). The ship types are fast craft, ordinary passenger ships and small RO-RO passenger ships.

The remote island traffic demand in 2008 is 47 million passengers or 1,170 million person-km, thus the average trip length is as short as 25 km. Since the demand is stable or slightly declining due to remote islanders' profile, profit margin is low or negative. As a result, one third of the operators are publicly owned or partially invested in by the local governments.

Remote Island Shipping Development Act in 1952 allows ship operators of remote island routes to tap operational subsidy. As of 2009, 106 routes are subsidized with 7.3 billion yen. There are several conditions to receive operational subsidy, such as establishment of a shipping route stakeholders' council and submission of a shipping service improvement plan including revenue increase and cost reduction measures. Practical measures include remote island tourism promotion, restructuring of shipping route and operation body, assignment of smaller ship and barrier-free related ship modification for the aged and the handicapped.

(4) Liner RO-RO Shipping Service

In regard to liner RO-RO shipping services in Japan, 11 shipping companies operate 18 routes with 37 vessels. The total distance of the routes is 20,900 km. Table 3.6 shows a summary of level of service of RO-RO shipping obtained from Annex 3.1. Most of the routes connect three major metropolitan areas and Hokkaido and Kyushu as it is for the long-distance ROPAX routes. The size of operated vessel is about 9,600 GRT in average and the average capacity is 100 chassis and 280 cars. Data of RO-RO service achievements have not been found.

Ports of call of liner RO-RO vessels are located closer to manufacturing and distribution hubs, unlike those of ROPAX, for shorter lead times. Therefore, it can be said that liner RO-RO shipping is different from short sea shipping and is an alternative faster mode for container vessels. The frequency of those RO-RO services is lower than that of long-distance ROPAX and there are only two routes operated everyday; Tsuruga – Tomakomai and Hitachi – Kushiro.

Table 3.6 Level of Service of Liner RO-RO Services (as of June 2012)

Area	Average Distance (km)	Frequency (per week)	Number of Vessels	Average Vessel Size (GRT)	Average Capacity	
					Chassis	Car
Hokkaido - Kanto	985	26	12	9,190	98	87
Hokkaido - Chukyo/Hokuriku	1,235	9	7	11,542	120	527
Hokkaido - Hanshin	1,983	3	3	13,092	150	260
Kyushu - Kanto	1,112	21	11	9,941	131	264
Kyushu - Chukyo 1)	1,537	1	1	12,691	52	1,479
Kyushu - Hanshin	540	3	1	2,187	40	140
Shikoku - Kanto	917	6	3	6,398	92	207

Note: 1) Excluding a car carrier service for Nagoya - Miyazaki - Shin-Moji.

Source: Compiled by JICA Study Team based on statistics of Japan Federation of Coastal Shipping Associations and Japan Long Course Ferry Service Association

3.2 Philippines

1) General

The Philippines, as an archipelago of more than 7,000 islands, depend greatly on inter-island shipping for its economic growth and political unity. Cognizant of this fact, the Philippine government has adopted the policy of developing and strengthening the nationwide trunk maritime routes in order to establish a nationwide port development plan and to ensure the country's physical integration. Considering further that there are two big land masses, Luzon and Mindanao, there is a need to integrate the development of both road and maritime transport.

2) Domestic Shipping Industry

Due to the numerous islands of the country and the varying social and economic conditions therein, the domestic shipping industry is a hodgepodge of different vessel types and shipping services. There are still a sizeable number of wooden hulled vessels offering services at far-flung islands, and big cargo-passenger or RO-RO-passenger (ROPAX) vessels servicing the main shipping routes. Table 3.7 shows the breakdown of registered vessels doing coastwise trading in the country.

The Philippine domestic shipping has also been plagued with scores of maritime accidents resulting into huge losses in terms of human lives and economic properties. Annex 3.2 shows the list of marine accidents in the Philippines.

Table 3.7 Philippine Registered Vessels in Domestic Trade (excluding Bay and River Trade)

Type of Service and Hull	Number	GRT		Average Age
		Total	Average	
I. CARGO VESSELS	1,149	942,274.56	820.08	23.64
A. BARGE	126	119,166.66	945.77	21.46
FERRO CEMENT	7	4,049.23	578.46	13.29
STEEL	119	115,117.43	967.37	21.94
B. GENERAL CARGO	962	724,137.66	752.14	22.17
FERRO CEMENT	1	605.70	605.70	16.00
FIBERGLASS	4	274.83	68.71	28.00
STEEL	761	704,548.56	925.82	25.20
WOOD	188	4,482.19	23.84	9.92
OTHERS	8	14,226.38	1,778.30	20.25
C. CONTAINER VESSEL	15	33,989.31	2,265.95	24.20
FIBERGLASS	1	2.42	2.42	2.00
STEEL	14	33,986.89	2,427.64	25.79
D. TANKERS	46	64,980.93	1,412.63	16.78
FIBERGLASS	1	1.07	1.07	6.00
STEEL	43	64,948.75	1,510.44	16.79
OTHERS	2	31.11	15.56	27.00
II. PASSENGER CARRYING VESSELS	1,486	371,171.67	249.78	13.26
A.CARGO/PASSENGER	666	157,036.17	235.79	12.41
ALUMINUM	1	29.00	29.00	14.00
FIBERGLASS	4	106.69	26.67	6.00
STEEL	138	145,794.90	1,056.48	31.09
WOOD	518	10,702.18	20.66	7.40
OTHERS	5	403.40	80.68	20.20
B. PASSENGER ONLY	780	132,952.12	170.45	13.39
ALUMINUM	28	5,238.67	187.10	21.14
FERRO CEMENT	1	23.00	23.00	26.00
FIBER GLASS	26	1,144.09	44.00	11.27
STEEL	126	119,145.44	945.60	27.59
WOOD	591	7,092.53	12.00	10.03
OTHERS	8	308.39	38.55	16.00
C. ROPAX	40	81,183.38	2,029.58	24.90
STEEL	40	81,183.38	2,029.58	24.90
III. FISHING FLEET	4,039	192,944.29	47.77	15.04
A. FISHING VESSELS	4,039	192,944.29	47.77	15.04
ALUMINUM	1	107.50	107.50	34.00
FIBERGLASS	77	2,968.68	38.55	16.52
STEEL	1,132	13,4214.4	118.56	23.80
WOOD	2,821	55,547.82	19.69	11.48
OTHERS	8	105.89	13.24	12.13

3) Historical Background of Domestic RO-RO Shipping

The RO-RO Port Development started in earnest in 1965, with the development of the Pan-Philippine Highway, also known as the Maharlika Highway. The Pan-Philippine Highway covers a stretch of 3,517 kms of roads, bridges, and ferries that connect the islands of Luzon, Visayas (Samar & Leyte), and Mindanao, serving as the country's principal transport backbone. The highway was supported by loans and grants from foreign donors.

The project was proposed with the goal of stimulating agricultural production in the countryside by reducing transportation costs, encouraging social and economic development outside the major urban centers and expanding industrial production for domestic and foreign markets.

In 1983, two RO-RO ferry boats, i.e. Mahalika I and Mahalika II, started operation between Matnog (Sorsogon, Southern Luzon) - San Isidro (Northern Samar) and Liloan (Southern Leyte) - (Lipata, Surigao del Norte). The completion of the Pan-Philippine Highway was considered as major achievement in national development.

In 1970's, RO-RO Ferry service started between Batangas City and Calapan, Mindoro Oriental. The concept of using RO-RO ferry service vessel as a part of highway connection, which was first introduced to the Pan-Philippine Highway was adopted to link Batangas and Mindoro. In 1990's, many RO-RO ships had been introduced in short-distance shipping links especially in the Visayas Regions.

4) Studies for the RO-RO Transport Development

In order to promote further the RO-RO transport system, the Philippine Government through the Department of Transportation and Communications (DOTC) in cooperation with other government entities carried out several RO-RO transport development study establish development policies and implementation plans. Hereunder are some of the studies on RO-RO transport system carried out by DOTC and other agencies:

Table 3.8 RO-RO Related Policy and Port Development Studies

Year	Policy and Port Development Studies
1992	Nationwide Roll-On Roll-Off transport System Development Study (1992, JICA)
2000	Master Plan for Feeder Port Development in Social Reform Related Feeder Ports Development Project (SRRFDP, 2000, JBIC)
	Implementation Program for the Roll-on/Roll-off Ferry Network Development (2000, DOTC)
	Project for the Trans Visayas Intermodal Transport Network (2000/2002, DOTC)
2001	Preliminary Study for Roll-on Roll-off System Development in the Philippines
	Bohol Ferry Link and Terminal Feasibility Study Phase I (2001, DOTC)
2002	The Cebu Integrated Port Development Plan (2002, JICA)
2004	The Study on the Master Plan for Strategic Development of the National Port System of the Philippines (Jan. 2004, JICA)
2005	Study On RO-RO Vessels to Promote the Strong Republic Nautical Highway (SRNH)
	Domestic Shipping Development Plan (DOTC-MARINA-JICA)
2006	Inter-modal Transport Development Project for the Southern Philippines (DOTC-ADB)
2007	The Feasibility Study on the Development of Road RO-RO Terminal System for Mobility Enhancement in the Republic of the Philippines

In the 1992 JICA study on Nationwide Roll-on/Roll-off Transport System Development provided a detailed assessment of RO-RO ports and ferry services in the Philippines. The priority list of 42 RO-RO ports became the basis for the development of port facilities and operation of additional RO-RO ferry services nationwide.

Table 3.9 Proposed RO-RO Links of the 1992 RO-RO Study

Priority 1	Priority 2
Batangas City - Calapan	Dumaguete - Santander
Toledo - San Carlos	Iloilo City - Jordan
Matnog - San Isidro	Tubod- Tangub
Matnog - Allen	Dumaguete - Dapitan
Cebu City - Tagbilaran	Iloilo City - Pulupandan
Iloilo City - Bacolod	Batangas City - Abra de Ilog
Liloan - Lipata	Jagna - Cagayan de Oro
Cebu City – Tubigon	Lucena City – Balanacan
Cebu City - Ormoc City	Zamboanga City - Basilan
Escalante - Tuburan	Zamboanga City – Jolo
Tandayag – Bato	Benoni – Balingoan
Guihulngan - Dumanjug	Tabaco – Virac
	Bulan – Masbate
	Cebu – Talibon

Additionally, the "Master Plan Report for Feeder Port Development" under Social Reform Related Feeder Ports Development Project, identified the development of 82 candidate ports, for development until 2020.

The most comprehensive review of the national port system was undertaken in 2003-2004 with the conduct of the JICA Study on the Master Plan for the Strategic Development of the National Port System. The 2004 Port Master Plan recommended the: (i) reclassification of ports into international gateway, principal ports, major ports and regional ports; (ii) establishment of the national maritime transport network comprising of international trunk routes and domestic maritime trunk routes; (iii) port investment program focusing on international and domestic container, bulk cargo, break-bulk facilities and RO-RO ports for mobility enhancement; (iv) transfer of the port operational functions of PPA to terminal operators under lease arrangements; (v) decentralization of port management through the creation of Regional Port Authorities (RPAs) and a new agency under the DOTC, the Philippine Port Administration Agency, tasked with coordination and supervision on nationwide issues such as formulation of basic policies for port development, coordination of main projects of all RPAs, regulation of port security problems, etc.; and (vi) promotion of private sector investment in port development and operation.

The “Implementation Program for the Roll-on / Roll-off Ferry Network Development Project for the Trans-Visayas Intermodal Transport Network", proposed for the long term development plan 32 RO-RO ferry routes and 33 highways. These routes are chosen considering the: 1) current and future traffic demand, 2) development of RO-RO traffic on the routes of JICA 1992 study, and 3) potentials of development of RO-RO traffic.

5) Current Situation

In 2003, the Philippine government introduced the Strong Republic Nautical Highway (SRNH) consisting of three routes, the Eastern, Central and Western Nautical Highways. These trunk maritime routes combine land transportation and maritime transportation, notably short distance RO-RO linkage.

(1) Eastern Nautical Highway

The Eastern Nautical Highway, also known as the Pan Philippine Highway or the Maharlika Highway, bridges the islands of Luzon, Visayas, and Mindanao via an extensive network of roads, bridges, and ferry services spanning a total distance of 2,500 kilometers. Please see Figure 3.3 for the alignment of the Eastern Nautical Highway

The Eastern Nautical Highway links Luzon to Visayas and Mindanao via the provinces of Sorsogon, Samar, Leyte, Southern Leyte and Surigao del Norte. The northernmost tip of the transport network is located in Laoag City, Ilocos Norte (Luzon) while the southernmost tip is located in Zamboanga City, Zamboanga del Sur (Mindanao).

Figure 3.3 Eastern Nautical Highway

As the first major short sea shipping route, the eastern seaboard has been widely used as an alternative means for transporting produce as well as passengers from Luzon to Mindanao. Compared to the Western Nautical Highway which crosses four short sea links, traveling via the Eastern Nautical Highway takes one to Mindanao via only two short sea links.

The major ports found along the Eastern Nautical Highway are the Ports of Matnog in Sorsogon, San Isidro and Allen in Samar, Liloan in Southern Leyte and Lipata in Surigao del Norte. Of the four RO-RO ports and terminals that make up the Eastern Nautical Highway, three are public-owned while one port, which is the Balwarteco Port in Allen, Samar is privately owned.

The three regions that span across the Eastern Nautical Highway include the Bicol Region, the Eastern Visayas Region, and the Northern Mindanao Region.

(2) Central Nautical Highway

The Central Nautical Highway was launched by President Gloria M. Arroyo in April 2008. The said route is the last main trunk line of the Strong Republic Nautical Highway and mostly composed of missionary routes. The Central Nautical Highway extends from Manila to Pasacao in Camarines Sur; San Pascual and Claveria in Burias Island; Aroroy - Cawayan in Masbate; Bogo, Cebu; Tubigon and Jagna in Bohol; Mambajao and Benoni;

Camiguin Island; Balingoan Misamis Oriental to Cagayan de Oro City. Figure 3.4 shows the Central Nautical Highway.

Figure 3.4 Central Natural Highway

(3) Western Nautical Highway

The Western Nautical Highway bridges Luzon and Mindanao through the major islands of Mindoro, Panay, Guimaras, Negros with the Port of Batangas serving as Luzon's gateway to Visayas and Mindanao. Figure 3.5 shows the land and sea routes of the Western Nautical Highway

Former President Gloria Macapagal-Arroyo led the first RO-RO caravan from Manila to Dapitan, Zamboanga del Norte via the Western Nautical Highway covering a total of 703 kilometers and 137 nautical miles of land and sea travel on March 31 to April 1, 2003.

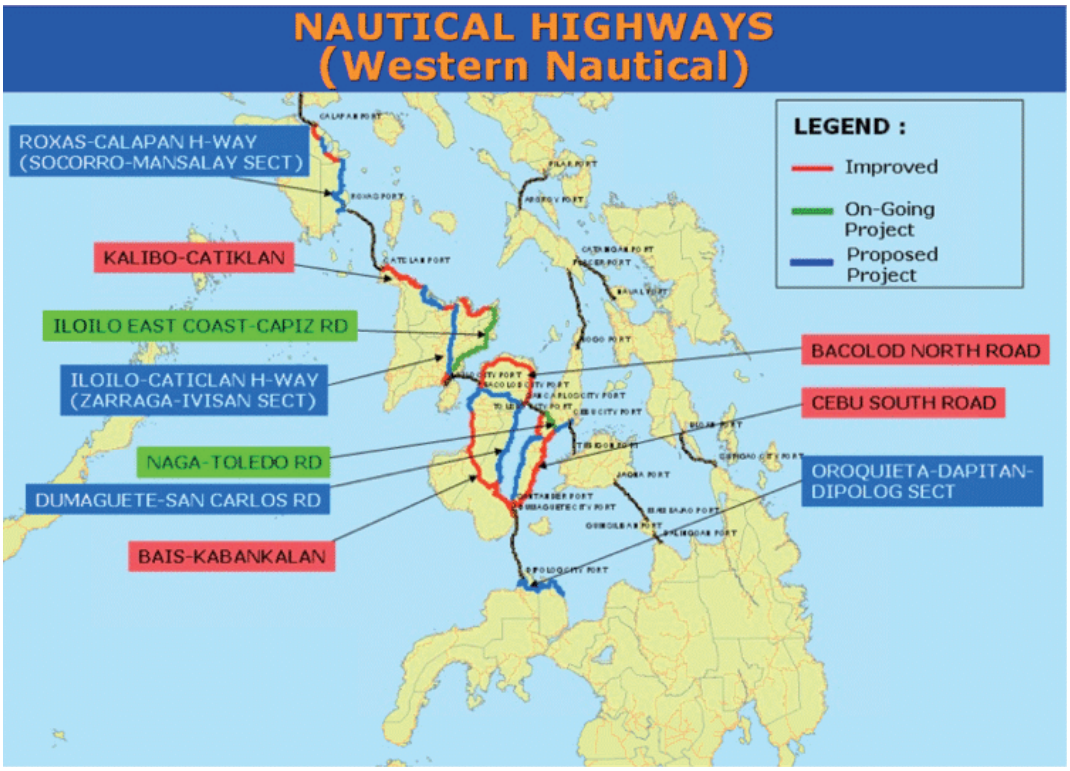


Figure 3.5 Western Nautical Highway

(4) Other Short-Distance RO-RO Routes

There are other short-distance RO-RO routes that are not in the SRNH, but are nonetheless very important in the economy of the country. These are:

Batangas City – Puerto Galera, Mindoro Oriental. This route connects Puerto Galera, which is one of the top tourist destinations for diving and other sea-based recreational activities, with Metro Manila, via the Port of Batangas.

Atimonan, Quezon – Alabat, Quezon, Both ports were constructed under the Social Reform Related Feeder Ports Development Program (SRRFPDP). This connects the island of Alabat with mainland Luzon via the Port of Atimonan.

Iloilo City – Jordan, Guimaras. This connects the island of Guimaras to mainland Panay, via the Port of Iloilo.

Real, Quezon – Polilio, Quezon. Both ports were also constructed under the SRRFPDP. This route links the island of Polilio with mainland Luzon via the Port of Real.

(5) Middle- to Long-Distance RO-RO Routes using Containers on Chassis (CHARO)

The big domestic shipping companies are also using RO-RO to move containers across the country, sometimes called CHARO, or chassis RO-RO. This development was brought about by the popularity of using containers and the lack of quay gantry cranes at many ports in the country. The use of containers in domestic trade also spawned the use of ten-foot containers (XEU containers).

The big shipping companies (William Lines, Go Thong Lines, Aboitiz Shipping, Superferry, Negros Navigation Company) experienced a series of corporate mergers and re-

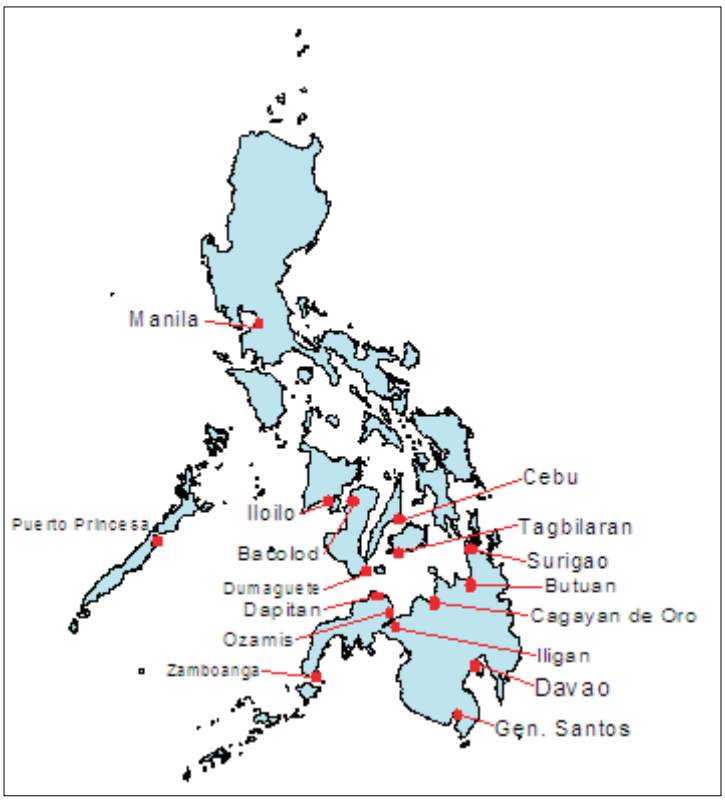


Figure 3.6 Long Distance RO-RO Ports

structuring. William Lines, Go Thong Lines and Aboitiz Shipping merged to become WG&A. Later on this company became Aboitiz Transport System (ATS), which later on came to be known as Superferry. When the Aboitiz group opted out of the shipping industry, it was absorbed by Negros Navigation Company (NENACO). To consolidate resources, especially marketing, the major ferry shipping companies has now conglomerated into the new company, 2GO.travel.

Sulpicio Lines, which used to be a dominant shipping company in the past due to its vast area of operations and big fleet, has ceased operations. The new company that took over, Span Asia Shipping, is no longer providing passenger service, and they are concentrating on container services.

The main ports being served are: Manila, Bacolod, Butuan, Cebu, Cagayan de Oro, Dapitan/ Dipolog, Davao, Dumaguete, General Santos, Iligan, Iloilo, Ozamis, Puerto Princesa, Surigao, Tagbilaran and Zamboanga. Figure 3.6 shows the locations of these long-distance RO-RO ports. Table 3.10 lists the particulars of the RO-RO vessels deployed in these routes.

Table 3.10 Particulars of Middle to Long-Distance RO-RO Vessels

Name of Vessel	Company	GRT/ DWT	TEU Capacity	Passenger Capacity	Ports of Call
SuperFerry 2	Negros Navigation Company	11,405			Manila – Cebu – Tagbilaran – Surigao – Butuan – Cagayan de Oro – Iligan – Ozamis – Dipolog – Dumaguete – Puerto Princesa
SuperFerry 5	Negros Navigation Company	11,638			Manila – Bacolod – Dumaguete - Cebu – Tagbilaran – Surigao – Cagayan de Oro – Iligan – Ozamis – Dipolog – Puerto Princesa
SuperFerry 12	Negros Navigation Company				Manila – Cebu – Cagayan de Oro
SuperFerry 20	Negros Navigation Company	11,914			Manila – Iloilo – Cebu – Surigao - Butuan – Zamboanga – Gen Santos
SuperFerry 21	Negros Navigation Company	19,468			Manila – Iloilo – Cebu – Surigao – Butuan - Zamboanga – Gen Santos
St. Peter the Apostle	Negros Navigation Company	6,090	90	2,027	Manila – Bacolod – Iloilo - Cagayan de Oro
St. Michael the Archangel	Negros Navigation Company	6,090	90	2,220	Manila – Bacolod – Iloilo

Table 3.11 Profile of Short- to Medium-Distance RO-RO Operators
(with 3 RO-RO vessels or more)

Shipping Company	Base Port	No. of Vessels	Total GRT	Average GRT	Average Pax Cap	Largest Vessel	Average Age
ASIAN MARINE TRANSPORT CORP.	CEBU	5	2,168.50	433.70	291	730.42	33.6
CARLOS A. GOTHONG LINES, INC.	CEBU	3	28,232.14	9,410.71	409	15,439.00	36.00
COKALIONG SHIPPING LINES INC.	CEBU	6	10,900.59	1,816.77	588	2,772.49	36.33
E. B. AZNAR SHIPPING CORPORATION	CEBU	4	1,084.28	271.07	221	359.12	40.00
GOTHONG SOUTHERN SHIPPING LINES, INC.	CEBU	3	6,266.00	2,088.67	223	2,760.00	32.00
MONTENEGRO SHIPPING LINES, INC	BATANGAS	8	7,540.16	942.52	87	1,266.77	38.25
ROBLE SHIPPING LINES INC	CEBU	3	1,362.86	454.29	594	925.66	38.00
TRANS ASIA SHIPPING LINES INC	CEBU	8	20,584.33	2,573.04	761	4,790.00	36.62

Table 3.11 gives the profile of short- to medium-distance RO-RO operators and their vessels. Their RO-RO vessels are mostly of the bow-ramp type. Further, it is quite evident that most of the vessels are very old, with the average age at more than thirty (30) years.

CHARO services are competing with the conventional lift-on, lift-off (LO-LO) shipping services, whether it be on the general cargo or cellular container vessels. The CHARO shipping services capitalize on their inherent efficiency of operations at the port during unloading and loading, and faster vessels, thereby assuring faster delivery of goods. The LO-LO shipping services are more efficient in terms of usage of vessel space, since cargoes or containers can be stacked one on top of the other. As such, they can offer lower shipping rates.

RO-RO cargo services are most suitable for cargoes that are best left inside the truck or containers during the voyage. These are mostly unitized dry goods, in boxes or stacked in pallets. Even loose cargo loads can be consolidated into containers for onward shipping. As a matter of fact, this is a burgeoning market for 2GO.

The emergence of Low-Cost Carriers (LCCs) in the airline industry has also spawned a new inter-modal competition between the airlines, shipping and bus (using RO-RO) sectors. Whereas, the airline industry was previously targeting the higher income class of the society, they are now targeting even the lower-income class of the society with their promotional fares. This has cut deeply into the market of the shipping sector, so much so that the passenger shipping service to Davao has been stopped due to lack of traffic. The shipping companies are now just concentrating on cargo services to Davao, which is predominantly a CHARO service. The farthest passenger shipping service being offered to date is only up to General Santos. But this service is again facing stiff competition from the LCCs.

On the Manila-Tacloban route, the preponderance of RO-RO bus service brought about the demise of passenger shipping service in the route.

Table 3.12 Fare Comparison by Destination and by Mode of Travel compares the passenger fares from Manila to different destinations using different modes.

Table 3.12 Fare Comparison by Destination and by Mode of Travel

Manila to:	By Air*	By RO-RO (Bus and Ferry)**	By Direct Shipping***
Caticlan	3,291.28	1,040	760.40[1]
Kalibo	2,255.28	1,140	
Iloilo	2,591.28	1,350	1,370.40
Cebu	2,570.48	1,850	1,370.40
Tacloban	4,439.28	1,620	

*) Airfare is computed as half of the Cebu Pacific round-trip fare with baggage allowance (to make the comparison similar with the other services). Sometimes, there are differences in inbound and outbound fares, so half of the round trip fare was used. The flight schedule was chosen based on the cheapest available flight, even if it is the “shut-eye” or near midnight flight. The terminal fees (P200 at Manila and Cebu, and P40 for other airports) were also added

**) RO-RO fare is Air-con service and inclusive of bus fare and ferry fare. The passengers are also allowed to carry baggage free of charge.

***) Direct shipping is based on tourist class accommodation, without meals.

[1]) This fare is from Batangas to Caticlan. The bus fare from Manila to Batangas is about P240. There is also a terminal fee at the Port of Batangas.

The table shows that for the Manila – Panay sector, the total cost for air transport is about double that of the cost of the RO-RO transport or of direct shipping. The total cost of the latter two are almost the same. The main advantage of air travel is the very short travel time, which is only about three hours, inclusive of the provision for check-in time. The main advantage of the RO-RO bus is the almost door-to-door service, especially for those whose end destinations are towns or cities along the highway, and not the main city itself, where the port or airport is located. The main advantage of maritime travel is the more relaxed way of traveling; one can stroll around the ship, play games, have a party, and enjoy the other amenities inside the ship.

6) Government Intervention

The Philippine government does not directly provide shipping services through a national shipping company. Shipping services are provided by private companies that are given franchises, also known as Certificate of Public Convenience and Necessity (CPCN).

Additionally, the provision of shipping services, including RO-RO shipping services, have largely been deregulated with the enactment of Republic Act 9295, otherwise known as the "Domestic Shipping Development Act of 2003." The only requirements are: 1) Filipino citizenship of the operator; 2) Vessel safety; and 3) Financial capability of the operator.

3.3 Indonesia

1) General

As the biggest archipelagic country in the world, in terms of area and population, sea transportation plays an important role in Indonesia's social and economic activities; it is the primary mode in domestic and international trade and connecting the many regions with one another. Indonesia has more than 17,000 islands, and there are several big islands, namely, Sumatera, Java, Kalimantan, Sulawesi, Papua. These Islands have very strategic position and very important meaning for most Indonesian people. Based on Indonesia's geography, maritime transportation has been identified as a priority to be developed by government of Indonesia.

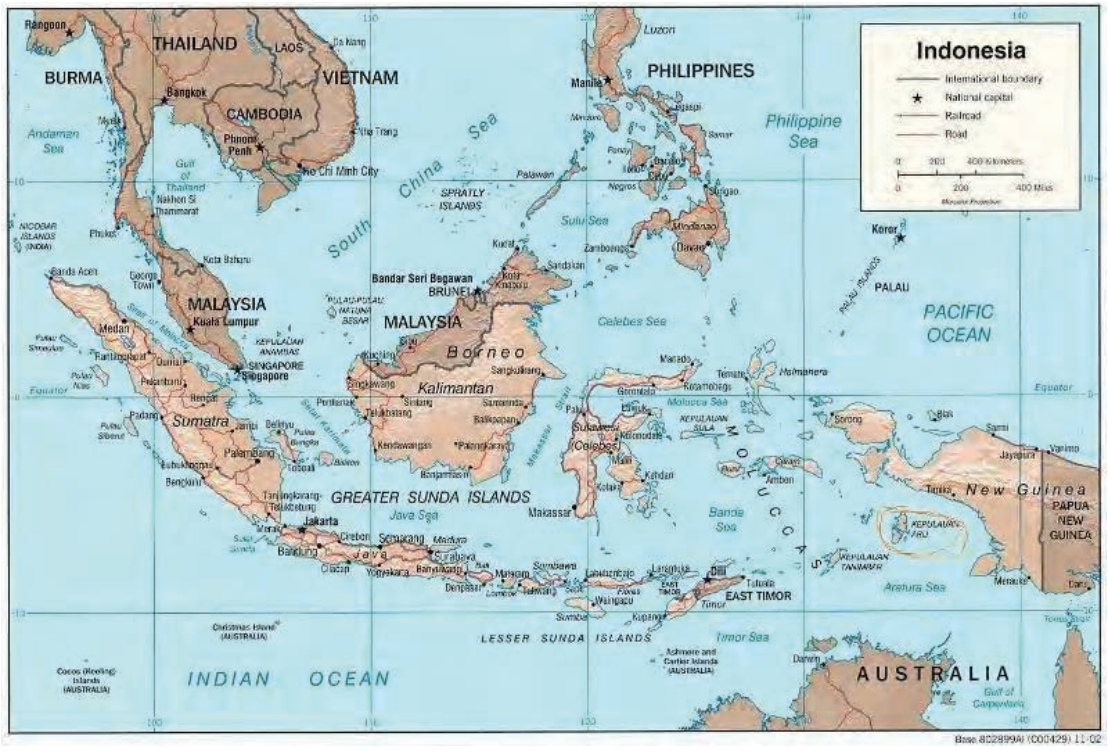


Figure 3.7 Indonesia Map

2) Historical Background

With its tens of thousands of islands, Indonesia would be the country wherein the RO-RO transport system would be most applicable and most feasible. This mode of transportation makes it possible to enter the inland and remote area because of its minimum draught. RO-RO vessels are also multifunctional, serving as people transporter, vehicle transporter, and cargo transporter without requiring special loading-unloading equipment. Due to this distinct advantage, RO-RO transport has developed is own niche in the Indonesian market.

The development of RO-RO transport system in Indonesia had its start in 1973 with the implementation of the Lake and River Transport Crossing Project (PASDF). The concept then was of a "floating bridge" or a "sailing bridge." Thus, the RO-RO transport system was viewed as an extension of the road, and, therefore, the responsibility for its development was lodged with the Directorate-General for Land Transport.

In 1980, the PASDF was changed into the Lake and River Ferry Transport (PASDP). Later on, in 1986, the PASDP was changed into a Public Enterprise on River Crossing Transportation (ASDP Perum). In 1992, another change was instituted, ASDP (Perum) was changed into Lake and River Crossing Transportation PT ASDP (Limited). In 2004, the corporate identity of PT ASDP (Limited) was changed into PT ASDP Indonesia Ferry (Limited). The latest corporate restructuring was done in 2008. The business transformation was done with the redefinition of the vision, mission, as well as the modernization of operations to international standards.

3) Government Intervention in the Provision of Ferry Services

The Government of Indonesia started the practice of providing subsidy to pioneer shipping service in the decade of the 1970s based on the provision of Section 34(3) of the Constitution where it states:

"The state has the responsibility to provide proper medical and public service facilities**."** (Underscoring ours).

With this expressed provisions of the Constitution and relevant laws, the Ministry of Transport has enunciated the policy of "Access for All" as the guiding principle of the Government of Indonesia for the transportation sector. This policy stance has been the key backbone for the development and maintenance of the Pioneer Service (*Perintis*) and Public Service Obligation in the shipping sub-sector.

The basic principle is for the government to identify the routes that would require the services based on a set of criteria and put it to tender for private entities to provide the service. There have been some policy changes since then, but the basic practice has remained the same. Figure 3.8 shows the basic flowchart for procuring ferry pioneer service.

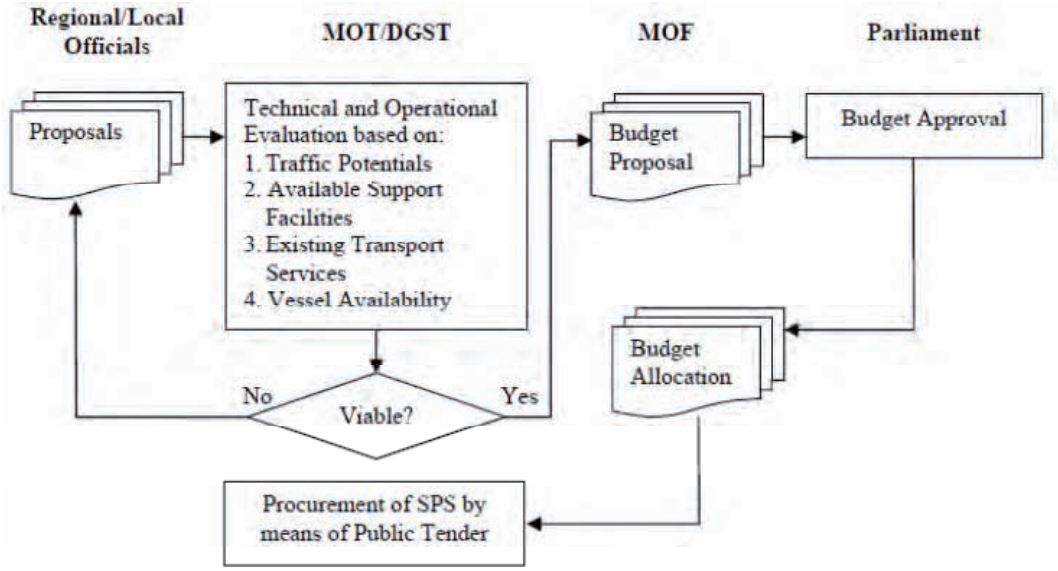


Figure 3.8 Flowchart For Shipping Pioneer Service

4) Current Situation

In Indonesia, there are two authorities under the Transportation Ministry that act as regulators for RO-RO transportation. The first is the Directorate General of Sea Transportation (DGST), and the second is Directorate General of Land Transportation (DGLT).

The delineation of authority for DGST and DGLT is based on the vessel's operational services. According to DGLT, the delineation of Short Distance and Long Distance ferry services are classified according to Ministry of Transport Regulation. All short distance routes are regulated under the Transport Ministry Regulation. In terms of supervision, operational activity for short distance services are supervised by DGLT, but the sea-worthiness procedure is supervised under the DGST authority. However, for long distance services, both operational and sea-worthiness activities are under DGST supervision.

(1) Under the DGST Authority

There are two types of companies that provide RO-RO services for long distance transportation, namely, (1) State Owned Company, and (2) Private Shipping Company. The first category is represented by PT PELNI and PT ASDP Indonesia Ferry (Persero). In the case of PT PELNI, the service provided is under the auspices of the Public Service Obligation, wherein the tariff for the lower-class passenger service is decided based on the national policy in order to provide access to the remote frontier areas at very affordable rates. Currently, they operate 3 RO-RO vessels out of 28 vessels. PT ASDP Indonesia Ferry (Persero) operates one RO-RO vessel named Ferrindo 5 to serve Tanjung Priok – Merak – Ciwandan – Panjang – Merak route. For the private shipping company, the biggest player nowadays would be PT Dharma Lautan Utama and PT Prima Vista. According to the data collected from DGST-MOT there are twenty-three (23) RO-RO vessels operated by seven (7) Private Shipping Companies and fifteen (15) of them belong to PT Dharma Lautan Utama and PT Prima Vista. Vessel Information is shown in Table 3.13 meanwhile, Figure 3.9 shows the shipping routes available to serve long distance services.

Source: DGST-MOT

Figure 3.9 RO-RO Shipping Network for Long Distance Services

Table 3.13 List of RO-RO Operator

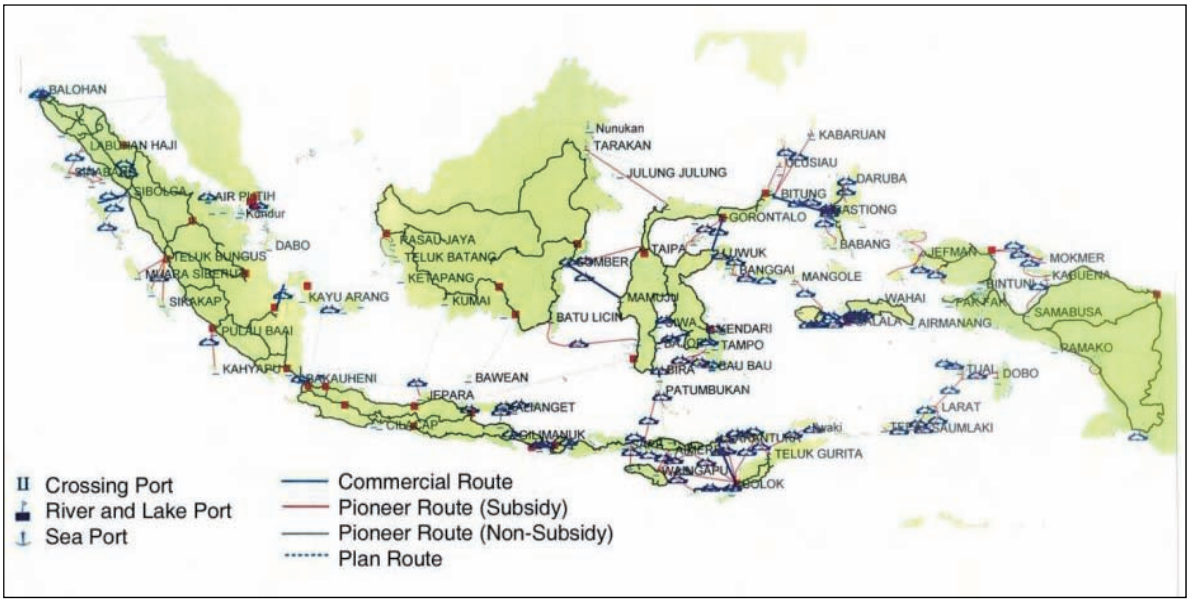
No	Shipping Company	Vessel's Name	GT	Year Built	Capacity
State Owned Enterprises					
1	PT. PELNI	MV Ganda Dewata	4,931	1978	635 pax + 140 cars
		MV Egon	4,851	1991	520 pax + 100 cars
		MV Fudi	13,494	1979	1314 pax + 420 cars
2	PT. ASDP Indonesia Ferry (PERSERO)	FERRINDO 5	3,587		
Private Shipping Companies					
1	PT. Darma Bahari Utama	Trisar 2	1,776		
2	PT. Mitra Anugrah Samudra	Pricilia	5,662		
		Dinda	9,741		631 pax + 40 vehicle
		Gandi	2,870		80 pax + 50 vehicle
3	PT. Pelayaran Putra Sejati	Nusantara Sejati	7,956		
		Simfoni Sejati	8,132		
4	PT. Bukit Merapin Nusantara Lines	Salvia	2,439		575 pax + 50 vehicle
5	PT. Munic Line	Munic 1	2,640		540 pax + 40 vehicle
6	PT. Dharma Lautan Utama	Kirana	2508		900 pax + 190 vehicle
		Kirana Ii	4043		2500 pax + 115 vehicle
		Kirana Iii	2669		300 pax + 40 vehicle
		Dharma Kencana	3611		2500 pax + 115 vehicle
		Dharma Kencana I	2326		800 pax + 18 vehicle
		Dharma Kencana Ii	3007		850 pax + 115 vehicle
7	PT. Prima Vista	Mahkota Nusantara	7,570	2002	325 pax + 82 vehicle
		Safira Nusantara	6,345	1995	701 pax + 44 vehicle
		Farina Nusantara	4,824	1994	407 pax + 30 vehicle
		Laskar Pelangi	1,001	1998	50 pax + 48 vehicle
		Marisa Nusantara	3,898	1994	537 pax + 23 vehicle
		Madani Nusantara	4,300	1991	253 pax + 59 vehicle
		Marina Nusantara	5,272	1990	528 pax + 52 vehicle
		Mabuhay Nusantara	5,035	1990	379 pax + 40 vehicle
		Mandiri Nusantara	8257	1989	(stop operation)

Source: Shipping Company, PT PELNI, and MOT 2012

(2) Under the DGLT Authority

There are two types of ownership that provide this service, namely, (1) State Owned Company, and (2) Private Shipping Company. For the first type, this is represented by PT ASDP Indonesia Ferry (Persero), which provides a crossing transportation service via sea for passenger, vehicle and also acts as a port manager. Currently, PT ASDP Indonesia Ferry (Persero) operates 98 RO-RO vessels in Indonesia. The private sector provides 103 RO-RO vessels from 27 shipping companies and the top three are PT Jembatan Madura (owner of 31 RO-RO vessels), PT Dharma Lautan Utama (owner of 18 RO-RO vessels), and PT Putera Master SP (owner of 14 vessels). Vessels and routes Information are shown in Annex 3.3.

The term “short distance crossing” in Indonesia also known as ferry service whose function is the same as a “moving bridge”. The analogy of a moving bridge is more likely if someone is using an expressway, one may have to pay a toll fee, but under no circumstances is one asked to declare what he or she carries in the vehicle. In other words, one just pays for the passage or the use of that facility. Currently, according to data collected from DGLT in 2011, there are seventy-eight (78) active routes of 144 routes available and most of these routes are served by PT ASDP Indonesia Ferry (Persero). Thirty-eight (39) of these 78 routes are classified as commercial shipping routes, while the rest of them are pioneer shipping routes. The figure below shows the existing RO-RO/ferry crossing services operated by PT ASDP Indonesia Ferry (Persero) and Private Shipping Companies.



Source: DGLT-MOT

Figure 3.10 RO-RO/Ferry Crossing Service Network

5) Domestic RO-RO Practices

The type of Roll-on/Roll-off (RO-RO) ship is a vessel designed to carry wheeled cargo, such as automobiles, trucks, semi-trailer trucks, trailers or railroad cars, which are driven on and off the ship on their owned wheels. This is in contrast to LO-LO (lift-on/lift-off) vessels which use a crane to load and unload cargo.

In other countries, like Japan and China, they already utilize RO-RO vessels as container transportation, especially for long distance trip. But in Indonesia, people are not familiar with this kind of service. RO-RO vessels in Indonesia mostly carry passenger and vehicle and sometimes cargo with irregular shape.

(1) Service and Vehicle Acceptability

The RO-RO/Ferry service is based on criteria and conditions that are distinct and separate from regular shipping, namely:

- Only self-driven vehicles and passengers are allowed. There is therefore no need for cargo handling.
- No manifests are required for cargo inside the vehicles.

- The passage rate for vehicles is based on occupancy of lane meters onboard and is regulated by the Minister of Transportation Regulation
- Since this kind of service is acting as a moving bridge, so passenger or vehicle would just simply go to the port, buy the ticket, and sail inside the vessel.
- The ferry operator is given a special franchise and may enjoy no direct competition with other kind of shipping services for that particular terminal.
- The ferry operator is responsible for compliance with safety regulations.
- For subsidy route, the ferry operator is selected (ideally) based on an open bidding for the franchise, but for commercial route there is free market competition.
- In regard to RO-RO cargo shipping, there are some different criteria prevailing, namely:
- Self-driven and non-driven vehicles are allowed as long as they can pass the entrance door.
- The passage rate for vehicles is based on occupancy of lane meters onboard and decided by shipping company itself, that's why shipper is required to do a booking order first before departure.
- There will be an additional fee charged by the shipping operator for cargo carried inside the vehicle except for private cars in some extent.

In most ports in Indonesia, there is no dedicated terminal to serve RO-RO vessels. They simply use a cargo terminal alternately with cargo or container vessels. Since passenger vessels have top priority compared to cargo and container vessels according to International Maritime Regulation, so a RO-RO vessel has the advantage of berthing priority. Cargo vessels will stop their activities and let the RO-RO vessel finish their activities first.

In regard to passenger or vehicle that will use this service, they have to order before departure day. Because of its limited capacity and traffic pattern, this kind of service has not had fixed schedule.

(2) Tariff Structure of RO-RO Shipping

Shipping tariff structure is based on lane meter used by the vehicle, classified by group for each kind of vehicle. It is decided according to Minister of Transportation Regulation concerning Inter-Province Crossing Tariff (PM 71 year 2010), which is the latest regulation. The prevailing tariff is quite simple, every vehicle using the crossing service just simply comes into the port and then they will be placed into each of category. There will be no additional charge for people inside the car as well as cargo inside or on top of the vehicle.

The following table describes passenger and vehicle category for application on the tariff.

Table 3.14 Tariff Classification for RO-RO/Ferry Crossing Service

Category	Remarks
A. Passenger	
Adult	Economy class
Child	Economy class
B. Vehicle	
Category I	Bicycle;
Category II	Motorcycle (engine < 500) cc and barrow;
Category III	Big motorcycle (≥ 500 cc) and three-wheeled vehicle.
Category IV	Motor vehicle such as jeep, sedan, minicap, minibus, mikrolet, pick up, station wagon limited to 5 meters maximum length, and kind;
Category V	Motor vehicle such as bus, goods car (truck)/ tanker limited to 7 meters of length, and kind;
Category VI	Motor vehicle such as bus, goods car (truck)/tanker limited from > 7 to 10 meters of length, and kind;
Category VII	Motor vehicle such as goods car (tronton truck)/tanker, towing truck and its trailer, and heavy vehicle limited from > 10 to 12 meters of length, and kind;
Category VIII	Motor vehicle such as goods car (tronton truck)/tanker, Heavy vehicle and towing truck along with its trailer more than 12 meters of length, and kind;

Source: Transport Minister Regulation number 71 year 2010

For long distance tariff, the shipping company has the authority to implement the shipping price and in some case they will charge additional cost for cargo loaded on chassis or inside the truck. The following table shows how passenger and vehicle categories are classified in order to apply the shipping tariff.

Table 3.15 Tariff Classification for Long Distance Service

Passenger Classification		
No	Class	Passenger Type
1	VIP Class	Adult
2	VIP Class	Baby
3	VIP Class	Child
4	1st Class	Adult
5	1st Class	Baby
6	1st Class	Child
7	2nd Class	Adult
8	2nd Class	Baby
9	2nd Class	Child
10	3rd Class	Adult
11	3rd Class	Baby
12	3rd Class	Child
13	Economic Class	Adult
14	Economic Class	Baby
15	Economic Class	Child

No	Vehicle Classification
1	Bicycle
2	Motorcycle
3	Big Motorcycle
4	Sedan/Kijang/Jeep
5	Luxury Car
6	Truck/Minibus
7	Truck Long Chassis
8	Truck Long Chassis 10 meter
9	Truck Long Chassis 13 meter
10	Additional baggage (Ton/m3)

Source: Shipping Company's website

(3) Road Infrastructure

In general, for both type of services, ports are located near the city, that's why most of road infrastructure from and to the port are provided with good asphalt pavement. Some obstacles observed in some ports in eastern Indonesia is the ban regulation issued by local governments limiting the time to use the roads inside the city, especially for big trucks or container trailers because of road class and traffic congestion in the city.

(4) Problems and Issues

Tariff set by government is very low especially for short distance service. For long distance service, the attitudes of some truckers or forwarders make the shipping operator feel aggrieved, i.e. forwarders carry cargoes that sometimes can surpass the length of the truck, and cargoes use additional space inside the ship while the tariff is based on length of vehicle category only.

Imbalance between berthing spaces with the number of ship calls makes ship utilization very low at around 40% per year.

Port Size, especially in dense routes, needs to be upgraded to accommodate big vessel activity. According to GAPASDAP, in the densest route like Merak – Bakauheuni, the total of RO-RO/ferry vessel trips are more than 50 trips per day. These RO-RO/ferry can carry around 50-100 cars. These RO-RO/ferry operators cannot upgrade their vessels since the port facility is not good enough to handle big vessel activity. While in other countries, port facilities for densest routes can handle RO-RO/Ferries with 500-1000 cars capacity

RO-RO schedule for long distance service depends on the demand condition, so no fixed schedule prevails.

Dedicated RO-RO terminals are available only in ASDP Ports, while in ports other than ASDP ports, RO-RO will use cargo wharf alternately. Since the service design for most of RO-RO vessels operated for long distance is a side ramp door, so tidal condition has an important role in loading and unloading activities.

Low backload cargo. For example, on the route Jakarta/Surabaya, one shipping company carries about 90% of vehicle load capacity and 60% of passenger load capacity from Jakarta, while in the return trip they carry 30-40% of vehicle load capacity and 50% of passenger load capacity only.

Ageing vessels. This poor condition is very dangerous for passengers. For example, at the Merak-Bakauheuni route, the densest route in Indonesia, it is being served by 33 vessels. These vessels consist of seven (7) vessels that are 10-20 years old, thirteen (13) vessels at around 21-30 years old, and thirteen (13) vessels are more than 30 years old. Since MV Senopati Nusantara sunk because of bad weather on 29 December 2006 which caused the death of more than 300 persons and the loss of hundreds of vehicle, there were a series of accidents that happened after that. According to the data collected, there were about 12 RO-RO vessels accident from 2007 to 2011, more than 100 persons died in the accidents, and hundreds of vehicle burned and sunk. List of accidents are shown in Annex 3.4.

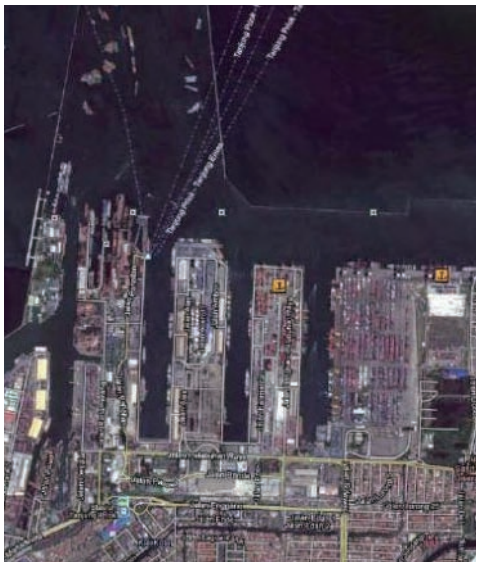
Most of the ports managed by PELINDO do not provide enough parking area.

6) Assessment on RO-RO Services

The following is comparison example between RO-RO and container vessel services from Jakarta to Balikpapan. The distance between Tanjung Priok and Semayang Port (Balikpapan) is about 913 nm or 3 days sailing time.

(1) Port Comparison

Tanjung Priok Port Profile: Tanjung Priok is one of the biggest sea-port located in Jakarta, Indonesia. The size of Tanjung Priok Sea Port is 424 hectares, the length of wave buffer is 8,456 meters, with total pier length of 16,853 meters. In total, it is has twelve (12) units of ports with depth from 50 to 140 DM. General Cargo has 47 piers with total length 6,372 meters. Container pier has fourteen (14) units with total length of 2,487 meters. Scrap metal terminal 1 unit, with total length of 200 meters. Passenger terminals are 2 units, with total length of 300 meters. Special pier for oil, 4 units, with total length of 100 meters. Special chemical pier, 1 unit, with total length of 276 meters. Public Godown, 45 units, with the size 170,077 square meters. Public Square, 52 units, with size of 293,393 square meters. Container Freight Station, 6 units, with the size of 16,019 square meters. Container Yard, 25 units, with the size of 142,409 square meters.



Semayang (Balikpapan) Port Profile: The Port of Balikpapan serves as the main port for the City of Balikpapan. Presently, there are two public terminals, Semayang terminal and Kampong Baru. A third terminal “Kariangau” is currently under construction. Semayang is a seaport city on the eastern coast of the Island of Borneo, Indonesia, in the East Kalimantan Province. The port is located some three kilometers west-northwest of the city. The Port of Balikpapan has twelve (12) berths with total length of 625.6 meters, with maximum berth width of twenty-one (21) meters and maximum depth of thirteen (13) meters.

(2) Operation Comparison

There are so many advantages using RO-RO vessel compare to Container vessel in terms of operational activity. Please see figure below showing stages of container movement from Tanjung Priok Port to Semayang Port by using Container Vessel and RO-RO Vessel.

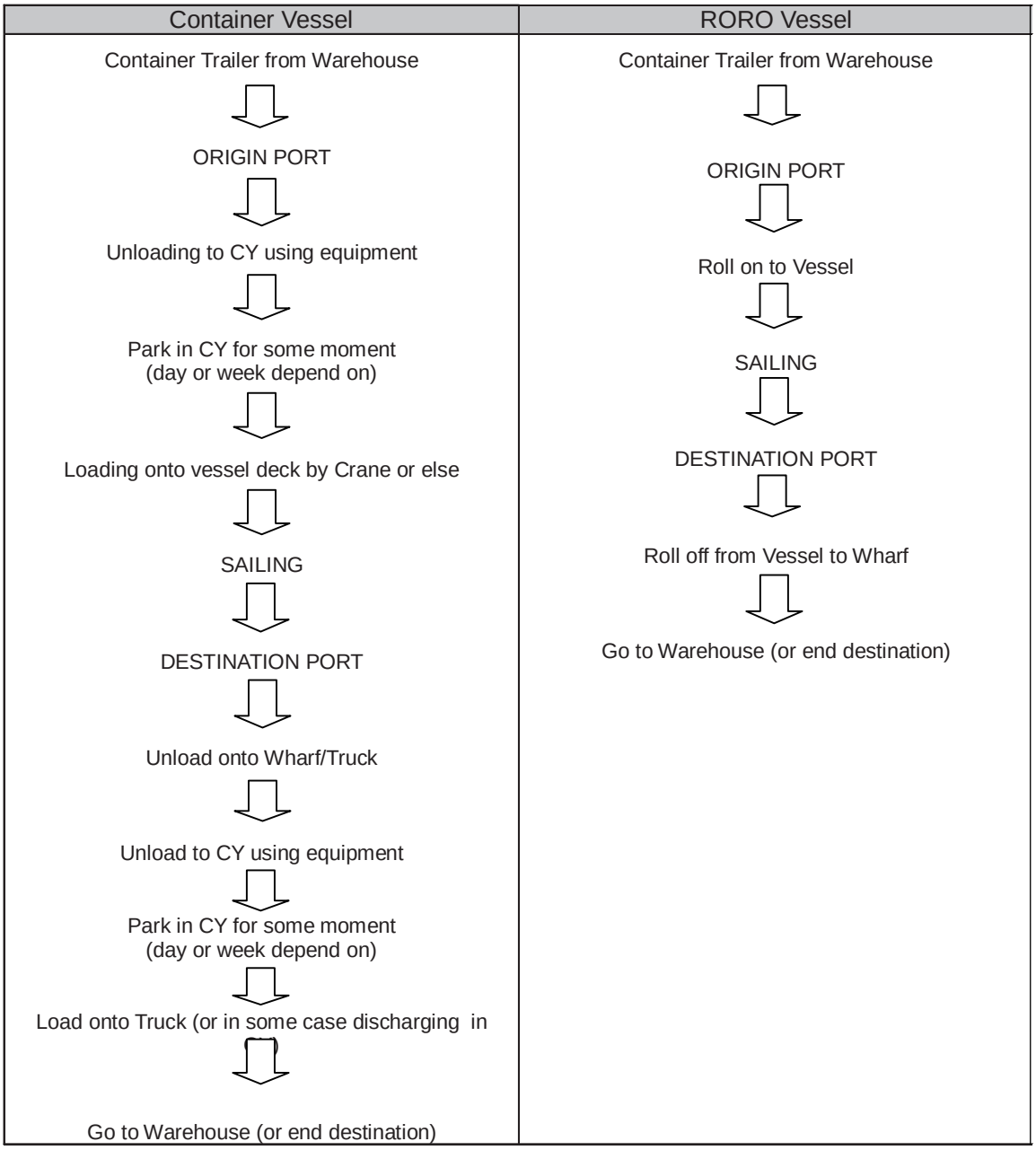


Figure 3.11 Stages Comparison between Container Vs RO-RO in Domestic Operation

(3) Cost Comparison

An obvious example to illustrate cost competitiveness of RO-RO compared to other shipping mode could be simply observed from vehicle shipping company practices. A CY-to-CY vehicle shipping company based in Jakarta offers its customers to deliver their vehicles from Jakarta to out of Java, by choosing either to use RO-RO, cargo, or container shipping service. In order to calculate the disparity, Jakarta – Balikpapan route were chosen by implementing following general assumption:

- Cost from Warehouse to Port between Container Vessel and RO-RO Vessel is same
- Container size 20 ft with approximately 10 tons loaded
- Route from Jakarta (Origin) Port to Balikpapan (Destination) Port

Based on data collected, the following table shows the price comparison for Jakarta - Balikpapan route with same delivered item (20 ft container).

Table 3.16 Comparative Cost of Shipping Goods between Container vs. RO-RO Vessel

Activity	Container Vessel		RO-RO Vessel	
	Tariff	Time	Tariff	Time
Jakarta Port				
Truck from Warehouse – CY	0	0	0	0
LO-LO in CY (FCL 20 ft)	Rp 187.500	5 min	-	-
Haulage (FCL)	Rp 150.000	5 min	-	-
Shipping	Rp 7.300.000 (FCL CY – CY)	4 days	* Rp 15.000.000 – Rp 23.000.000 (chassis only) Rp. 11.000.000 (Head only) Rp. 8.500.000 (addional cost for carry container)	3-4 days (if direct from JKT-BPN) 5-6 days (if transit)
CY/box 20 ft/Night	Rp 17.500	Depends	Rp 17.500	1 day
Parking/(Chassis only)	Rp 26.600		Rp 26.600	1 day
Balikpapan Port				
Haulage	Rp	5 min	-	-
LO-LO in CY	Rp	5 min	-	-
CY/box/Night	Rp			
Parking/(Chassis only)	Rp			
Truck from CY to Warehouse	0	0	0	0
Shipping frequency	Almost everyday		Twice a week (not fix, depends on demand)	

Source: shipping company's, Stevedoring Company's and PELINDO's website

Cost savings come from reduction of some service costs that occurs in the port, such as container handling charge. But in fact, in totality, the disparity between container delivery tariffs from CY Tanjung Priok to CY Balikpapan is wide between these two service vessels. One of the reasons of the disparity is because carrying container on chassis is uncommon practice in Indonesia, that's why for some companies face difficulty to put the competitive price compared to other alternative services. Moreover many of their vessels were not designed to handle this kind of cargo (entrance door is not high enough).

3.4 Implications to ASEAN RO-RO Shipping Development

1) Japan

Although many ROPAX services have been driven out after competing with trucking with the use of a developed road network, long-distance ROPAX services are still maintained and linear RO-RO services have been activated. Those existing routes serve as bypasses to link three major metropolitan areas to Hokkaido which has no road connection with Honshu, and to mid and southern Kyushu to which trucks should go a long way round. Especially, linear RO-RO routes directly connect among cities with manufacturing and/or distribution hub and therefore they are considered as an alternative faster freight transport mode for container shipping. Demands for those direct faster shipping services will increase in ASEAN along with its economic growth. However, ROPAX and RO-RO services in Japan are different from short sea shipping such as the nautical highway which provides smaller RO-RO vessels operated in inter-island routes with minimal distances.

While the share of maritime transportation is dropping in Japan, shipping companies suggest its advantages: (1) lower cost; (2) no traffic accident or congestion on the road; (3) less cargo damages; and (4) smaller environmental load. On the other hand, the Ninth Survey on Net National Freight Circulation in 2010 shows that cargo owners who actually selected maritime transportation listed only cost and environmental load as major reasons for their selection. Cargo owners do not expect promptness, punctuality[2] or less cargo damages of maritime transportation.

In spite of high labor and fuel cost, a strong demand for promptness and punctuality is the reason why trucking has a dominant share in the freight transport market. The demand side which mainly consists of cargo owners of industrial products is subjected to a strong pressure to reduce stocks, including stocks on the way, for better cash flow and hence there is an increasing demand for frequent, speedy and just-in-time shipment of small-lot cargo. On the other hand, the supply side can respond to the demand by trucking based on well-developed highway and trunk road networks.

Freight transportation in ASEAN basically depends on maritime or aerial modes because there is no inter-island road network and RO-RO shipping in ASEAN will necessarily compete with container shipping and air. Transportation among Honshu, Shikoku and Kyushu may have less implication for ASEAN because those areas are connected by roads but shipping conditions between Honshu and Hokkaido may give suggestions since those areas are connected only by a railway.

The figure below shows the increase of RO-RO vessels' share in freight transportation from Kanto to Hokkaido, in which it is notable that 75% of cargo was carried by ROPAX (ferries) or RO-RO in 2000. Additionally, the railway, one of the fastest modes next to trucks, has a share of 19%. Without any railway connections there, most of the railway's share would shift to RO-RO which is faster than container shipping and therefore RO-RO would gain a share of at least 80%.

[2] Japan's domestic shipping offers a reliable punctuality according to the on-time arrival performance; 98.7% for routes within the Seto Inland Sea and 93.4% for the other routes (Source: Japan Federation of Coastal Shipping Associations and Japan Long Course Ferry Service Association). It is thought that cargo owners are not satisfied with the speed only.

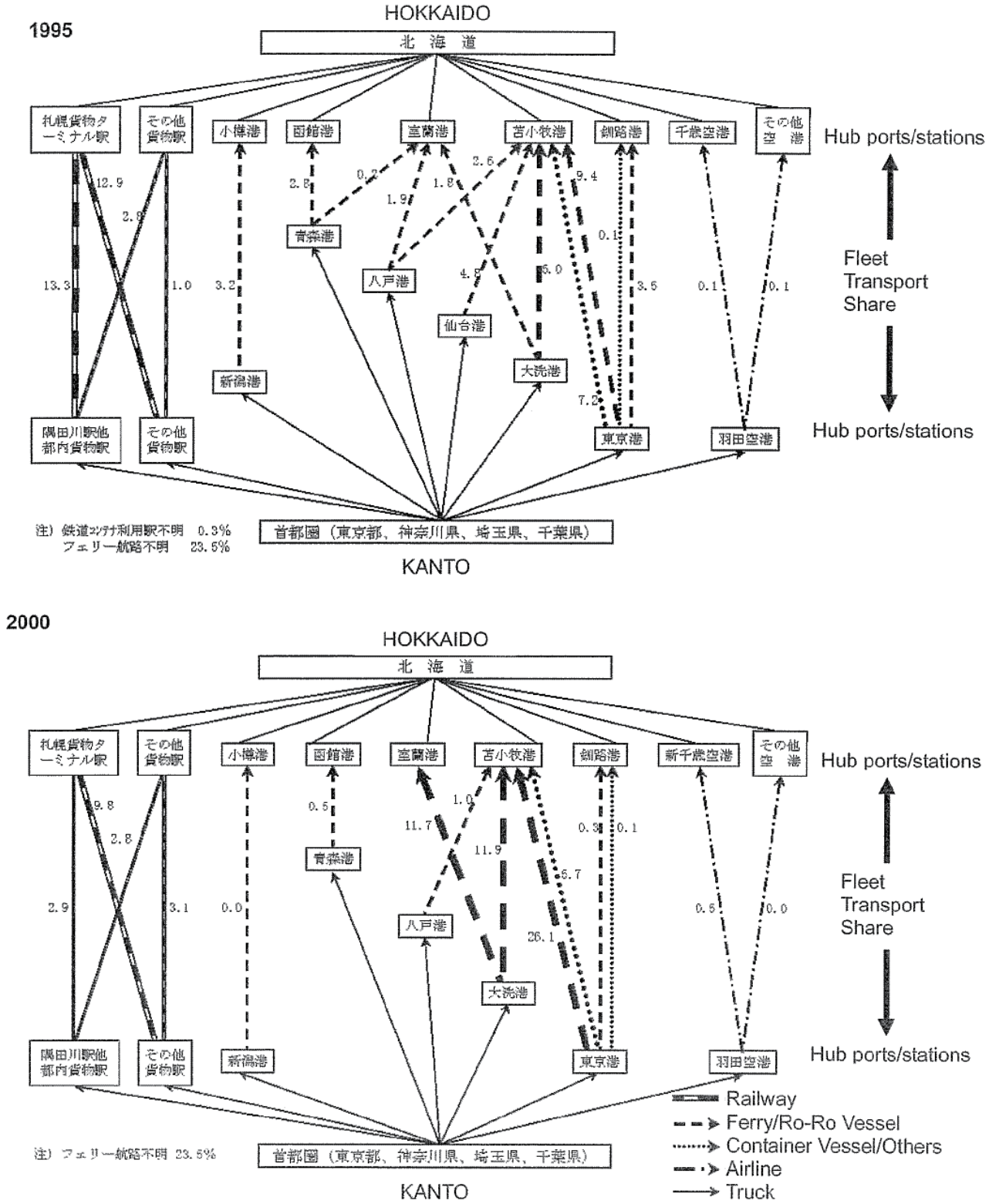


Figure 3.12 Change of Modal Share in Freight Transport from Kanto to Hokkaido

It should be noted that the large share of RO-RO and ROPAX services partially owe efforts of shipping companies. They release timetables on the web and every ship leaves the shore right on schedule if there are spaces to be filled in the ship. They also open reservation counters by telephone, fax and internet to ensure shipping on the appointed date. Forwarders or cargo owners do not have to check the space availability at the port

just before the departure and they also do not have to wait for next ship when all the spaces have been filled up. As a matter of course, the cost of those additional services is reflected to the tariff but it is quite important to allow forwarders and cargo owners to ship cargo as they scheduled without any unexpected delays.

A well-maintained road linkage between a port and a highway is another important factor to support maritime transport. Those port access roads are usually planned and designed to allow passage of freight vehicles anytime and to separate the traffic flow of freight vehicles from that of urban transport. As such, freight vehicles can smoothly enter/exit each port anytime. In addition to port access roads, well-developed highway and trunk road networks give larger hinterland area to every port. Although manufacturing and distribution hubs used to be located only in coastal areas in Japan, some portion of them have been moved to inland areas along the highways. Trucks can access to nearby ports within few hours from those hubs.

To summarize above, although Japanese shipping companies are requested to respond to the cost-conscious demand for frequent, speedy and just-in-time shipment of small-lot cargo, there are two major implications found for ASEAN: (1) punctual ship operation and reservation system for sure logistics; and (2) development and maintenance of port access roads, highway and trunk road networks for a smooth traffic flow of freight vehicles and giving a large area of hinterland.

2) Philippines and Indonesia

Both Indonesia and the Philippines have extensive domestic RO-RO shipping networks, but no international RO-RO service. The domestic RO-RO routes cover from short-distance river and bay crossings up to long-distance sea crossings. The RO-RO vessels used are either front-ramp vessels or side-ramp and/or stern-ramp vessels.

In Indonesia, the domestic RO-RO service is either subsidized (pioneer) or non-subsidized (either pioneer or commercial). Most of the RO-RO service is provided by the government-owned PT ASDP Indonesia Ferry (Persero), with a number of private shipping companies providing services in high-volume routes. The busiest route is the Merak-Bakauheni route that connects the two big islands of Java and Sumatera.

In the Philippines, all shipping services are based on business and commercial considerations, and no subsidy is provided by the government. As such, shipping services, including RO-RO services, are concentrated along high-volume routes. The busiest route is the Batangas-Calapan route, connecting the island of Mindoro with the big island of Luzon via the Port of Batangas.

The Philippines also have Executive Orders (EO 170, EO 170-A and EO 170-B) to identify the scope of RO-RO operations, rationalize the port charges and to encourage private sector to invest in the development of RO-RO ports. As a result of these issuances, the RO-RO service has seen an increase in terms of number of RO-RO routes, RO-RO vessels, RO-RO bus service and RO-RO trucking services. The RO-RO bus service has the advantage of more frequencies and the convenience of getting on and off near the eventual destination without having to go to the port or airport, which would entail additional expenses and travel time.

This development has resulted in strong competition between modes. The RO-RO bus service to Leyte and the Low Cost Carriers (LCCs) has brought the demise of passenger shipping to Tacloban, Leyte. The LCCs have also brought about the demise of ROPAX

service to Davao, where shipping services are now concentrated on cargo, mostly containers. It seems to show that ROPAX loses to LCCs when the total travel time exceeds two (2) days. The RO-RO bus service is competitive when the total travel time is about one day or less.

The sailing time and area of operations would also impact on the vessel design. A front ramp RO-RO vessel may be alright for short bay crossing, but would not be appropriate for long distance, open sea crossings that would take a day or several days.

Based on the foregoing, it can be surmised that based on the prudent evaluation that a pioneering international RO-RO service would not be a money making venture in the early years, the most probable ferry operator would be the PT ASDP Indonesia Ferry (Persero), since it is government-owned and the government can direct the company which route to serve. Nonetheless, providing such a service would mean either procuring a new vessel and deploying it at the route, or extending a service route to cover the ASEAN RO-RO route, thereby disrupting the current schedule of services. Either way, there will be costs to the service provider.

4 LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Necessary Arrangement to Ensure Seamless RO-RO Shipping Service

Seamless international RO-RO shipping services should be viewed from its different aspects: (i) the RO-RO vessel service; (ii) the port structures and facilities; (iii) the carriage of passengers, and rolling vehicles; and (iv) the documentary requirements and protocols.

1) RO-RO Vessel Service

The RO-RO vessel service itself helps make the shipping service as seamless as possible. The very concept of the RO-RO service is premised on the proposition that it would be just like a “floating bridge” or a “sailing bridge.” In international shipping, the seamlessness of international RO-RO vessel operation is further guaranteed by the fact that international shipping services are not regulated by any singular country or state.

The very design of a RO-RO vessel is for the carriage of wheeled cargo, from cars automobiles, trucks, semi-trailer trucks, trailers, up to railroad cars, that are driven on and off the ship on their own wheels. RO-RO vessels have built-in ramps which allow the cargo to be efficiently "rolled on" and "rolled off" the vessel when in port. The ramps and doors may be stern-only, or bow and stern for quick loading.

RO-RO operations can be seen not only across rivers and other short distances but also for larger ocean-going vessels.

The efficiency of RO-RO operations was emphasized during WWII, when Landing Ships were used. These ships enabled road vehicles to roll directly on and off, saving precious time, which is very critical in war operations. After the war, the idea was adopted for merchant ships and short ferry crossings. The first RO-RO service crossing the English channel began from Dover in 1953. Since then, the popularity of RO-RO service has increased and expanded.

RO-RO operations also entered the market for exporting and importing cars. There are now pure car carriers (PCCs) that can carry thousands of automobiles. Today’s PCCs and their close cousins, the pure car/truck carrier (PCTC) are distinctive ships with a box-like superstructure running the entire length and breadth of the hull, fully enclosing the cargo. They typically have a stern ramp and a side ramp for dual loading of thousands of vehicles.

2) Port Infrastructures and Facilities

The requisite port structures and facilities must also be present to ensure seamless services. The vessels would require enough draft for berthing of RO-RO vessels. If there is considerable tidal difference in a port, then an adjustable RO-RO ramp might be required for vessels with bow ramps. This does not present any problem for side ramp vessels.

There should also be adequate parking/marshalling area for vehicles that would be using the RO-RO service. An area would be used for security screening of vehicles prior to loading onto the vessel. Another separate marshalling area would also have to be provided for security screening after the vehicle has been discharged from the vessel.

A passenger terminal would also be required for customs, immigration, quarantine and security (CIQS) processing. The procedure must also be clarified as to CIQS processing of the drivers and the screening of the vehicle to ensure smooth and efficient operations.

3) Carriage of passengers and rolling vehicles

The carriage must be such that the vehicles inside the vessels are securely lashed to obviate any movement during voyage especially during bad weather and choppy sea conditions. Access to the vehicles must also be restricted during voyage, and the drivers can only enter their vehicles after the vessel has safely docked. The passengers must also be within a safe, confined area during the voyage and they should not be allowed to enter their vehicles during the voyage, for safety and security considerations.

4) Documentary requirements and protocols

International RO-RO shipping requires documentary requirements and procedures on both passengers, cargo, and vehicles. For passengers, the primary requirements would be a valid passport and visa, and the usual customs clearance, if there are commercial volume of cargoes carried by the passenger. For cargoes, the manifest would be required from which the taxes and duties to be levied would be calculated. If the cargo is plant or animal, then the necessary clearance would also have to be required from plant and animal industry authorities.

The issues related to processing of passengers and cargoes are not as problematic as that of the vehicle processing. The processing of vehicles present some formidable issues, especially with customs. Although there is already an agreement on mutual recognition of vehicle registration, however, the agreement has not yet been ratified by the legislative bodies of the signatory countries. Presently, the usual customs procedure would treat incoming vehicles, including the container chassis, as imported goods, which would require payment of huge import duties, which in turn puts a very big barrier to cross-border movement of vehicles. A compromise can be made here wherein the vehicle owner would just pay a fee for a waiver and a declaration that the vehicle would be “re-exported.”

Another issue aside from the customs duties is the vehicle insurance coverage. This is another sticky issue since most countries require insurance, at least a third-party-liability insurance, for any vehicle that will be using public roads. Another solution here would be for the vehicle owner to procure an insurance at the destination country for a limited period only.

4.2 International Conventions Governing RO-RO Shipping

International operation of RO-RO ships is governed by a number of IMO conventions such as SOLAS, MARPOL, STCW, etc.

SOLAS: The IMO's work on RO-RO shipping is predominantly related to improving the safety aspect of RO-RO shipping, which is done through SOLAS 1974 and its subsequent amendments. The SOLAS Convention is regarded as the most important of all international treaties concerning the safety of merchant ships. SOLAS requires Flag States to ensure that their ships comply with minimum safety standards in construction, equipment and operation.

Since the late 1980s, in response to a series of RO-RO ferry accidents, the IMO has made a number of amendments to the SOLAS to enhance the safety aspect of RO-RO ferry design, construction and operation. Table 4.1 provides a listing of the important amendments.

ISPS-Code: In response to the perceived threats to ships and port facilities in the wake of the 9/11 attacks in the United States, the International Ship and Port Facility Security Code (ISPS Code) was incorporated in the SOLAS Conventions. The Code entered into force in 2004. Implemented through **Chapter XI-2 Special measures to enhance maritime security** in the SOLAS, the ISPS Code applies to most international operation of ships, including RO-RO ships.

MARPOL: The International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 is the key IMO convention dealing with prevention of pollution of the marine environment by ships from operational or accidental causes. International operation of ships, including RO-RO ships, is governed by this convention. Among others, the conventions deals with prevention of pollution by oil from operational measures as well as from accidental discharges; stipulates the discharge criteria and measures for the control of pollution by noxious liquid substances carried in bulk; specifies requirements to control pollution of the sea by sewage; deals with different types of garbage and specifies the distances from land and the manner in which they may be disposed of; and sets limits on sulfur oxide and nitrogen oxide emissions from ship exhausts and prohibits deliberate emissions of ozone depleting substances.

STCW: RO-RO ferries are required to be manned in compliance with the 1978 International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW 1978) and its subsequent amendments. The Convention specifies minimum standards relating to training, certification and watchkeeping for seafarers which member states are obliged to meet or exceed. The competency of the master and officers on board must meet the standards prescribes under the STCW.

Besides SOLAS, MARPOL and STCW, there are various other IMO conventions, International Labour Organization (ILO) conventions, International Health Regulations (IHR) and International Telecommunication Union Conventions that dealt with international RO-RO shipping operation. Some of these conventions are as indicated in Table 4.2. The table shows the certificates and documents required by international conventions and mandatory codes to be carried on board. The list is not exhaustive. Only certificates and documents required by international conventions and mandatory codes are listed in the table. In addition, Port and Flag States might have more extended requirements.

Table 4.1 A Summary of Amendments to SOLAS

Date of amendment/ enter into force	Scope/objective of amendment	Remarks
Oct 1989	A new regulation requiring indicators on the navigating bridge for all doors to monitor and detect water leakage in order to prevent major flooding of a special category space or a RO-RO cargo space. A new regulation that dealt with monitoring of special category and RO-RO spaces to detect undue movement of vehicles in adverse weather, fire, the presence of water or unauthorized access by passengers whilst the ship is underway. An amendment requiring supplementary emergency lighting for RO-RO passenger ships.	The amendment was a direct response to the sinking of the RO-RO passenger ferry Herald of Free Enterprise off the waters in Belgium in March 1987 which killed 193 people. The accident happened because the bow door was left open when the ship left port allowing water to enter and flood the car deck.
Apr 1990	Introduction of the "SOLAS 90" standard on the stability of passenger ships in the damaged condition which stipulates that the maximum angle of heel after flooding but before equalization shall not exceed 15 degrees. The amendment applied to ships built after 29 April 1990. An amendment requiring masters to be supplied with data necessary to maintain sufficient intact stability, including information showing the influence of various trims, taking into account operational limits. A new regulation requiring cargo loading doors to be locked before the ship proceeds on any voyage and to remain closed until the ship is at its next berth. A new regulation requiring a lightweight survey to passenger ships to verify any changes in lightweight displacement and the longitudinal centre of gravity, at periods not exceeding five years.	The capsizing of the European Gateway following a collision with another ship in 1982 marked the beginning of the work on developing this standard.
May 1991	Amendments to improve fire safety on ships, in particular concerning large open spaces such as atriums on passenger ships built on or after 1 January 1994. Such spaces were to be provided with two means of escape, one of which gives direct access to an enclosed vertical means of escape and befitted with a smoke extraction system and with automatic sprinkler systems.	
Feb 1992	A new regulation requiring new ships to be equipped with power-operated sliding doors, except in specific cases, which must be capable of being closed from a console on the bridge in not more than 60 seconds. All watertight doors must be kept closed except in exceptional circumstances.	
Apr 1992	An amendment to SOLAS 90 standard to phase in for existing RO-RO passenger ships between 1 October 1994 and 1 October 2005, based on the value of a ratio known as A/Amax to assess the survivability characteristics of existing RO-RO passenger ships.	
Jan 1994	Introduction of the Code of Safe Practice for Cargo Stowage and Securing (CSS Code) and its accompanying annexes that addressed wheel-based cargoes and unit loads which are carried on RO-RO ships. There have been	

Date of amendment/ enter into force	Scope/objective of amendment	Remarks
	several revisions to the code. Essentially, the code stipulates that the master of a RO-RO ship must take appropriate precautions to ensure that the cargo units remain secure throughout the intended voyage. In particular, the master must give due attention to the securing arrangements on the ship and on the cargo unit; and the strength of the securing points and lashings. The master of a RO-RO ship must ensure that a road freight vehicle, road tank vehicle or road livestock vehicle, taken on board the ship, having a gross mass of 3.5 tons or more, is fitted with vehicle securing points complying with the requirements of ISO 9367-1.	
Nov 1993	To minimize human errors, including those errors stemming from management faults, the International Management Code for the Safe Operation of Ships and for Pollution Prevention (the ISM Code) was adopted in 1993. In 1994, a conference adopted amendments to SOLAS to make the Code mandatory, in a new chapter IX Management for the Safe Operation of Ships. The ISM Code establishes safety-management objectives and requires a safety management system (SMS) to be established by "the Company", which is defined as the ship owner or any person, such as the manager or bareboat charterer, who has assumed responsibility for operating the ship. The Company is then required to establish and implement a policy for achieving these objectives. This includes providing the necessary resources and shore-based support. Every company is expected "to designate a person or persons ashore having direct access to the highest level of management". The procedures required by the Code should be documented and compiled in a Safety Management Manual, a copy of which should be kept on board.	
July 1997	Amendments to the stability of RO-RO passenger ships in Chapter II-1 of the SOLAS Convention. The SOLAS 90 damage stability standard, which applied to all RO-RO passenger ships built since 1990, was extended to existing ships in accordance with an agreed phase-in program. Ships that only meet 85% of the standard had to comply fully by 1 October 1998 and those meeting 97.5% or above, by 1 October 2005. A new regulation intended to phase out ships built to a one-compartment standard and ensure that they can survive without capsizing with two main compartments flooded following damage. Amendments to Chapters III of the SOLAS Convention to deal with life- saving appliances and arrangements, including the addition of a section requiring RO-RO passenger ships to be fitted with public address systems, a regulation providing improved requirements for life-saving appliances and arrangements and a requirement for all	The sudden sinking of the passenger RO-RO ship in a severe storm in the north Baltic Sea which killed more than 850 people in September 1994 had compelled the IMO to review all aspects of RO-RO safety, which resulted in these amendments to the SOLAS.

Date of amendment/ enter into force	Scope/objective of amendment	Remarks
	passenger ships to have full information on the details of passengers on board and requirements for the provision of a helicopter pick-up or landing area. Amendments to include a requirement that all RO-RO passenger ships should have an established working language.	
2009	Amendment to Chapter II-1 of the SOLAS Convention to rationalize and harmonize the damage stability rules for vessels. This so-called SOLAS 2009 requires passenger ships to comply with requirements to cover local vulnerabilities to flooding. In SOLAS 1990 only damages up to the B/5 line needed to be assessed. In SOLAS 2009 all potential damage cases are to be considered. Under SOLAS 1990, no pipe work, valves or openings that could lead to progressive flooding were allowed within an area of 20% of the ship's breadth adjacent to the hull (B/5). This meant that no matter what standard of stability the ship met, there was always some protection against local, minor damage. With SOLAS 2009, the analysis of progressive flooding is handled differently through a more thorough and comprehensive process. In addition, the requirements regarding margin line immersion no longer exist but there is zero contribution to the attained index when evacuation routes are immersed.	

Source: IMO

Table 4.2 Certificates and Documents Required by International Conventions and Mandatory Codes to be carried on Board Ships (as of April 2012)

International Conventions/Certificate or document required on board	Restrictions	Application									
		Passenger Vessel	RO-RO Passenger Vessel	Oil Tanker	Chemical Tanker	Gas Carrier	Bulk Carrier	Container Vessel	General Cargo Vessel	Passenger High Speed Craft	Cargo High Speed Craft
1 SOLAS 74											
Passenger Ship Safety Certificate	Vessels carrying more than 12 Passengers	X	X	-	-	-	-	-	-	-	-
Cargo Ship Safety Construction Certificate	Cargo Vessels • •500 GT	-	-	X	X	X	X	X	X	-	-
Cargo Ship Safety Equipment Certificate	Cargo Vessels • •500 GT	-	-	X	X	X	X	X	X	-	-
Cargo Ship Safety Radio Certificate	Cargo Vessels • •300 GT	-	-	X	X	X	X	X	X	-	-
Cargo Ship Safety Certificate 1	Cargo Vessels • •500 GT	-	-	X	X	X	X	X	X	-	-
Exemption Certificate	Cargo Vessels • •500 GT Passenger Vessels	X	X	X	X	X	X	X	X	-	-
Document of Compliance with the special Requirements for Ships carrying Dangerous Goods	Vessels carrying Dangerous Goods	X	X	-	-	-	X	X	X	X	X
Minimum Safe Manning Certificate	Cargo Vessels • •500 GT Passenger Vessels	X	X	X	X	X	X	X	X	X	X
Document of Authorization for the Carriage of Grain	Vessels carrying Grain in Bulk	-	-	-	-	-	X	-	X	-	-
International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk	Vessels carrying Dangerous Chemicals in Bulk, built on or after 1 July 1986	-	-	-	X	X	-	-	-	-	-
International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk	Vessels carrying Liquefied Gases in Bulk, built on or after 1 July 1986	-	-	-	-	X	-	-	-	-	-
International Certificate of Fitness for the Carriage of INF Cargo	Vessels carrying Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes	X	X	-	-	-	-	X	X	X	X
Safety Management Certificate (ISM)	Passenger Vessels	X	X	-	-	-	-	-	-	X	-
	Cargo Vessels • •500 GT MODUs • •500 GT	-	-	X	X	X	X	X	X	-	X
Document of Compliance (ISM)	Companies operating Passenger Vessels	X	X	-	-	-	-	-	-	X	-
	Companies operating Vessels or MODUs • • 500 GT	-	-	X	X	X	X	X	X	-	X
High Speed Craft Safety Certificate	High-Speed Craft	-	-	-	-	-	-	-	-	X	X

International Conventions/Certificate or document required on board	Application									
	Restrictions	Passenger Vessel	RO-RO Passenger Vessel	Oil Tanker	Chemical Tanker	Gas Carrier	Bulk Carrier	Container Vessel	General Cargo Vessel	Passenger High Speed Craft	Cargo High Speed Craft
International Ship Security Certificate	Passenger Ships, MODU's	X	X	-	-	-	-	-	-	X	-
	Cargo Vessels • •500 GT	-	-	X	X	X	X	X	X	-	X
2 MARPOL 73 / 78 Annex I											
International Oil Pollution Prevention Certificate (IOPP Certificate)	Oil Tankers • •150 GT Other Vessels • •400 GT	X	X	X	X	X	X	X	X	X	X
Statement of Compliance with CAS (as a supplement to ship's IOPP Certificate)	non-double hull oil tankers • •5 000 tdw	-	-	X	-	-	-	-	-	-	-
3 MARPOL 73 / 78 Annex II											
International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk	Chemical Tankers built on or after 1 July 1986	-	-	-	X	-	-	-	-	-	-
Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk	Vessels carrying Dangerous Chemicals in Bulk, built before 1 July 1986	-	-	-	X	-	-	-	-	-	-
International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate)	Vessels carrying Noxious Liquid Substances in Bulk and not holding a Certificate of Fitness	-	-	X	-	X	-	X	X	-	-
Certificate of Fitness for Offshore Support Vessels	Offshore Support Vessels carrying limited Amounts of Noxious Liquid Substances in Bulk	-	-	-	-	-	-	-	X	-	-
4 MARPOL 73 / 78 Annex IV											
International Sewage Pollution Prevention Certificate	Vessels • •400 GT or carrying more than 15 Persons	X	X	X	X	X	X	X	X	X	X
Result of calculation of moderate rate of discharge in accordance with MEPC.157(55) *	Vessels • • 400 GT or carrying more than 15 Persons fitted with a sewage holding tank for untreated sewage 4	X	X	X	X	X	X	X	X	X	X
5 MARPOL 73 / 78 Annex V											
Garbage Management Plan	Vessels • •400 GT or carrying more than 15 Persons	X	X	X	X	X	X	X	X	X	X
Garbage Record Book	Vessels • •400 GT or carrying more than 15 Persons	X	X	X	X	X	X	X	X	X	X

International Conventions/Certificate or document required on board	Restrictions	Application									
		Passenger Vessel	RO-RO Passenger Vessel	Oil Tanker	Chemical Tanker	Gas Carrier	Bulk Carrier	Container Vessel	General Cargo Vessel	Passenger High Speed Craft	Cargo High Speed Craft
6 MARPOL 73 / 78 Annex VI											
International Air Pollution Prevention Certificate	Vessels • •400 GT Platforms and Drilling Rigs	X	X	X	X	X	X	X	X	X	X
Engine International Air Pollution Prevention Certificate incl. Technical File and Record Book of Engine Parameters if applicable.	Marine Diesel Engines • •130 KW	X	X	X	X	X	X	X	X	X	X
7 Load Line 1966											
International Load Line Certificate	Vessels • •24 m in Length	X	X	X	X	X	X	X	X	X	X
International Load Line Exemption Certificate	Vessels • •24 m in Length	X	X	X	X	X	X	X	X	X	X
8 International Tonnage Convention 69											
International Tonnage Certificate	Vessel • •24 m in Length	X	X	X	X	X	X	X	X	X	X
9 International Convention on the Control of Harmful Anti-fouling Systems on Ships, AFS Convention											
International Anti-fouling System Certificate	Ships • •400 GT	X	X	X	X	X	X	X	X	X	X
International Anti-fouling System Declaration	Ships • •24 m and < 400 GT	X	X	X	X	X	X	X	X	X	X
10 STCW 1978 / 95											
Certificates for Masters, Officers and Ratings	Seafarers serving on Board Merchant Vessels	X	X	X	X	X	X	X	X	X	X
Records of Hours of Rest	Seafarers serving on Board Merchant Vessels	X	X	X	X	X	X	X	X	X	X
11 Special Trade Passenger Ships Agreement (Pilgrim Trade)											
Special Trade Passenger Ships Certificate	Special Trade Passenger Ships	X	X	-	-	-	-	-	-	-	-
12 Space Requirements for Special Trade Passenger Ships (Pilgrim Trade)											
Special Trade Passenger Ships Space Certificate	Special Trade Passenger Ships	X	X	-	-	-	-	-	-	-	-
13 Gas Carrier Code (not mandatory)											
Certificate of Fitness for the Carriage of Liquefied Gases in Bulk	Vessels carrying Liquefied Gases in Bulk, built before 1/7/1986	-	-	-	-	X	-	-	-	-	-

International Conventions/Certificate or document required on board	Restrictions	Application									
		Passenger Vessel	RO-RO Passenger Vessel	Oil Tanker	Chemical Tanker	Gas Carrier	Bulk Carrier	Container Vessel	General Cargo Vessel	Passenger High Speed Craft	Cargo High Speed Craft
14 ILO Conventions											
Certificate of Compliance for ILO 92 6	Vessels • •500 GT	X	X	X	X	X	X	X	X	X	X
Certificate of Compliance for ILO 133 6	Vessels • •1 000 GT	X	X	X	X	X	X	X	X	X	X
Medical Certificate for ILO 73 6	Vessels • •200 GT	X	X	X	X	X	X	X	X	X	X
Load Test Certificate for ILO 152 7	All Merchant Vessels with Cargo Gear	-	-	-	-	-	X	X	X	-	-
15 Liability Convention											
Certificate of Insurance in Respect of Civil Liability for Oil Pollution Damage	All Vessels carrying more than 2.000 Tons of Oil in Bulk as Cargo	-	-	X	X	X	X	X	X	-	-
16 International Health Regulations (IHR)											
Ship Sanitation Control Exemption Certificate/Ship Sanitation Control Certificate	All Vessels	X	X	X	X	X	X	X	X	X	X
Deratting or Deratting Exemption Certificate After 15 December 2007 no Deratting Certificate will be valid.	All Vessels	X	X	X	X	X	X	X	X	X	X
17 International Telecommunication Union Conventions											
Radio Station License	Vessel´s Radio Station	X	X	X	X	X	X	X	X	X	X
18 Convention on the Law of the Sea											
Certificate of Registry	All Vessels	X	X	X	X	X	X	X	X	X	X

Source: Adopted from Germanischer Lloyd (http://www.gl-group.com/en/)

Table 4.3 shows the status of acceptance of IMO Conventions by ASEAN Member States as of 31 March 2012. As discussed, many of these IMO Conventions are directly applicable to international RO-RO shipping operation.

Table 4.3 Status of Accession/Ratification of IMO Conventions by ASEAN Member States (as of 31 March 2012)

X = accession, ratification, etc d = denunciation	IMO Convention 48	* IMO amendments 91	* IMO amendments 93	SOLAS Convention 74	SOLAS Protocol 78	SOLAS Protocol 88	LOAD LINES Convention 66	LOAD LINES Protocol 88	TONNAGE Convention 69	COLREG Convention 72	CSC Convention 72	STCW Convention 78	SAR Convention 79	STP Agreement 71	STP Protocol 73	IMSO Convention 76	INMARSAT OA 76	INMARSAT amendments 94	INMARSAT amendments 98	FACILITATION Convention 65	MARPOL 73/78 (Annex I/II)	MARPOL 73/78 (Annex III)	MARPOL 73/78 (Annex IV)	MARPOL 73/78 (Annex V)	MARPOL Protocol 97 (Annex VI)	London Convention 72	CLC Convention 69	CLC Protocol 76	CLC Protocol 92	FUND Convention 71	FUND Protocol 92	LLMC Convention 76	LLMC Protocol 96	SUA Convention 88	SUA Protocol 88	OPRC Convention 90	OPRC/HNS 2000	BUNKERS CONVENTION 01	ANTI FOULING 01	BALLASTWATER 2004
Brunei Darussalam	X	X	X	X	X		X		X	X		X				X	X		X		X						d	X	X	d	X			X	X					
Cambodia	X			X	X	X	X	X	X	X		X									X	X	X	X			X	X	X		X			X	X					
Indonesia	X	X	X	X	X		X		X	X	X	X		X	X	X	X	X	X	X	X						X		X	d										
Lao PDR																																		X	X					
Malaysia	X	X		X	X	X	X	X	X	X		X				X	X				X	X	X	X	X		d		X	X	X		X			X		X	X	X
Myanmar	X		X	X	X		X		X	X		X									X													X	X					
Philippines	X	X	X	X			X		X			X		X		X	X				X	X	X	X		X			X		X			X	X					
Singapore	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X	X	X		d	X	X		X	X		X		X	X	X	X	
Thailand	X	X	X	X			X		X	X		X				X	X			X	X															X				
Vietnam	X		X	X	X	X	X	X	X	X		X				X	X		X	X	X								X					X	X			X		

Source: IMO

4.3 ASEAN Cooperation

ASEAN have over the years put in place several transport facilitation related agreements that are fundamental to the establishment of intra-ASEAN RO-RO shipping network. This section highlights the main objectives, key features and status of implementation of these agreements. It also provides an analysis on the issues facing the implementation of these agreements and, where relevant, proposes possible solutions to the issues.

1) The Agreement on the Recognition of Domestic Driving Licenses Issued by ASEAN Countries (signed in July 1985)

(1) Main objective and key features

The agreement aims to facilitate the movement of citizens of the ASEAN countries by recognizing domestic driving licenses issued by the respective countries.

Under the agreement, ASEAN Member Countries agreed to recognize all domestic driving licenses except for temporary/ provisional/learner's driving licenses issued by the designated authorities or national automobile associations of the ASEAN countries.

Holders of the licenses issued in any one of the ASEAN Member Countries who intends to take only a temporary stay in the territory of any of the other ASEAN countries may drive the classes or types of vehicles the licenses permit them to drive.

(2) Status of implementation and analysis

Based on the information provided by the ASEAN Secretariat, the agreement has already entered into force.

However, its full implementation has been delayed by a few administrative requirements of the agreement. First, Article 1 of the agreement requires Member Countries to deposit their respective types and classes of licenses to the ASEAN Secretariat as samples and annexes of the agreement. Second, Article 3 requires Member Countries to translate and certify their driving licenses that are not in English language for submission to the ASEAN Secretariat as integrated parts of the agreement. Third, as stipulated in Article 7 of the agreement, changes in the format of licenses issued by any one of the Member Countries should be notified accordingly to all member countries of ASEAN by the member country concerned. Recognition of the license format of which has been so changed is conditional upon such notification.

To date, not all of the Member Countries have fully completed the above administrative requirements. These countries are requested to submit the list of types and classes of their driving licenses as well as samples of actual licenses to the ASEAN Secretariat.

Moreover, there appears to be different interpretation about the scope of the agreement. Some of the Member Countries including Malaysia recognize only private driver licenses but not commercial driver licenses of other ASEAN Member Countries. On the other hand, Laos PDR and Cambodia recognize both types of driving licenses (source: Country Survey).

An amendment to the agreement is desirable to bring the agreement up to date and to improve some of the vague phrases found in it, which have resulted in different interpretations being made. To foster intra-ASEAN RO-RO shipping, the amended agreement should be less restrictive and administratively less burdensome than the original.

2) The Agreement on the Commercial Vehicle Inspection Certificates for Goods Vehicles and Public Service Vehicles Issued by ASEAN Member Countries (signed in September 1998)

(1) Main objective and key features

The agreement aims to facilitate cross-border movement of commercial vehicles with regard to goods vehicles and public service vehicles within ASEAN via mutual recognition of commercial vehicle inspection certificates.

The certificates contains particulars such as the vehicle registration number, chassis number, engine number, certificate serial number, the period of validity of the certificate and inspection date.

The agreement applies to inspection certificates of commercial vehicles used for carriage of goods and passengers. It does not however apply to certificates of private motor cars drawing a trailer and vehicle carrying dangerous goods.

Article 3 of the agreement stipulates that any certificate if not drawn up in English shall be accompanied by a certified translation in English issued by the relevant competent authority.

(2) Status of implementation and analysis

The agreement entered into force in January 2007, some nine years after being signed. However, to date, not all the Member Countries have deposited the original and English language copies of their domestic commercial vehicle inspection certificates to the ASEAN Secretariat.

Mutual recognition of inspection certificates exempts cross-border vehicles from the requirement of undergoing roadworthiness inspection in the host country.

The findings of the JICA Study Tem Country Survey have shown that the agreement has been widely adopted and applied in bi-lateral or sub-regional transport facilitation agreements.

However, there is limited ASEAN-wide implementation owing to the protracted delay in the implementation of two key ASEAN transport facilitation agreement, namely the ASEAN Framework Agreement on the Facilitation of Goods in Transit (AFAFGIT) and ASEAN Framework Agreement on the Facilitation of Inter-State Transport (AFAFIST).

The “Mutual Recognition of Inspection Certificates” provisions (Article 12) of the AFAFGIT and AFAFIST are based on this agreement.

The Agreement on the Commercial Vehicle Inspection Certificates for Goods Vehicles and Public Service Vehicles Issued by ASEAN Member Countries cannot be a standalone document. Its full impacts depend very much on the implementation of the AFAFGIT and AFAFIST.

3) ASEAN Framework Agreement on the Facilitation of Goods in Transit (AFAFGIT) (signed on 16 December 1998)

(1) Main objective and key features

The AFAFGIT aims to facilitate transportation of goods in transit to support the implementation of the ASEAN Free Trade Area, and to further integrate the region's economies.

The agreement applies to transit transport, in which each member country shall grant to other member countries the right of transit transport and the right to load and discharge third countries' goods destined for or coming from Contracting Parties.

The agreement calls for designation of an ASEAN-wide transit transport routes and effort to simplify and harmonize transport, trade and customs regulations and requirements for the purpose of facilitation of goods in transit.

AFAFGIT consists of nine implementing protocols, as follows. Full implementation of the AFAFGIT would require ratification and implementation of all the nine protocols by all ASEAN member countries.

- Protocol 1: Designation of Transit Transport Routes and Facilities
- Protocol 2: Designation of Frontier Posts
- Protocol 3: Types and Quantity of Road Vehicles
- Protocol 4: Technical Requirements of Vehicles
- Protocol 5: ASEAN Scheme of Compulsory Motor Vehicle Third-Party Liability Insurance
- Protocol 6: Railways Border and Interchange Stations
- Protocol 7: Customs Transit System
- Protocol 8: Sanitary and Phytosanitary Measures
- Protocol 9: Dangerous Goods

In addition, the following two agreements are integral to the AFAFGIT:

a) Agreement on the Recognition of Domestic Driving Licences Issued by ASEAN Countries (signed in July 1985); and

b) Agreement on the Commercial Vehicle Inspection Certificates for Goods Vehicles and Public Service Vehicles Issued by ASEAN Member Countries (signed in September 1998)

(2) Status of implementation and analysis

This framework agreement entered into force in October 2000. However, the agreement is still not implemented due to a number of its implementing protocols remain outstanding.

To date, Protocols 3, 4, 5 and 8 have been ratified by all the ten member countries. Protocols 1, 6 and 9 have been signed but not ratified by all. The status of the ratification and entering into force as of December 2011 is shown in Table 4.4.

Given the outstanding protocols, there has not been any transit transport operation that had taken place under the AFAFGIT to date.

Arguably, the AFAFGIT may be one of most important transport agreements of ASEAN. It has many legally binding features that are critical for spurring intra-ASEAN RO-RO ferries operation. For one, the agreement commits the ten member countries to grant transit rights to one another within the designated transit routes as stipulated in Protocol 1. Member countries are required to provide facilities for transit transport and such transit transport shall not be subject to any unnecessary delays or restrictions and shall be exempted from customs duties and taxes. Generally, goods carried in sealed road vehicles, combination of vehicles or container shall not be subjected to examination at Customs offices en route.

Finalization of the AFAFGIT and its protocols is thwarted by a number of institutional and technical challenges. While the agreement was signed by the ASEAN Economic Ministers, its implementation requires the involvement of a number of other line ministries and agencies, including transport, customs, health, immigration, finance and security.

Such a complex set up demands strong leadership and coordination skills on the part of the lead agency (transport). Often, transport officials find it difficult to influence their customs counterparts in reaching quick solutions to the protracted impasses facing the finalization of Protocol 2 (Designation of Frontier Posts) and Protocol 7 (Customs Transit System). Protocols 1 and 7 are the only protocols of the AFAFGIT that remain unsigned. The ASEAN Customs Procedures and Trade Facilitation Working Group (CPTFWG) are responsible for finalizing the technical details of the two protocols. The ASEAN-EU Programme on Regional Integration Support Phase III (APRIS III) 2011-2015 is currently assisting the customs officials to develop a pilot system for ASEAN Customs Transit System. As the project is still at pilot stage, it may take some time before a region-wide customs transit system is put in place.

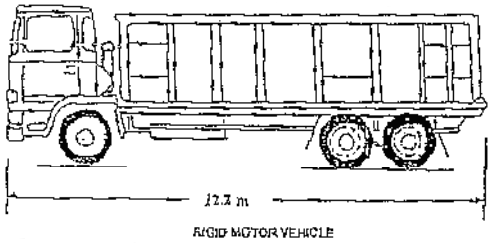
Notwithstanding the foregoing, there has been progress made at the organizational level. Pursuant to Article 29 (Institutional Arrangements) of the agreement, all the ten Member Countries have set up their respective National Transit Transport Coordinating Committee (NTTCC). At the ASEAN level, the regional Transit Transport Coordinating Board (TTCB) has been established.

The NTTCC in each member country is responsible for effective and efficient coordination and implementation of the agreement at the national level. The committee consists of representatives from the Ministries of Transport and/or Communications, Trade, Finance and Home Affairs and customs administrations, immigration and police departments, among others. The TTCB coordinates the implementation of the agreement at the regional level. It comprises senior official nominated from each member country and a representative of the ASEAN Secretariat. The establishment of the NTTCCs and TTCB shall hasten the implementation of the AFAFGIT.

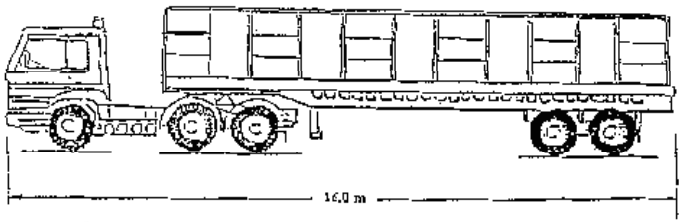
Protocol 3 (Types and Quantity of Road Vehicles) of AFAFGIT stipulates that the number of road transit transport vehicles for transit transport shall be no more than 60 vehicles per member country. However, seeing that such quantity would not be sufficient to serve the expected volume of transactions across borders, the recent ASEAN Transport Ministers (ATM) Meeting agreed to increase the number of vehicles to 500 units per member country.

It is worth noting that the types of road vehicles allowed under Protocol 3 include both rigid and articulated vehicles (including vehicle towing a trailer), which may be suitable for RO-RO ferry operation. The graphical descriptions of the vehicle types and specifications are, as follows (source: Protocol 3, AFAFGIT).

Maximum Length of Vehicle

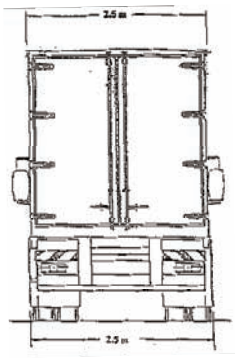


(Rigid Motor Vehicle – 12.2 m)

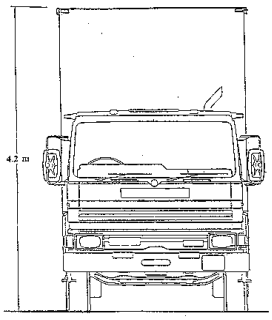


(Articulated Motor Vehicle – 16.0 m)

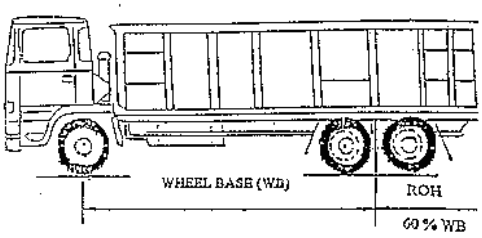
Maximum Width of Vehicle – 2.5 m



Maximum Height of Vehicle – 4.2 m

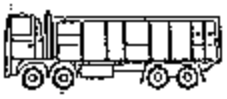
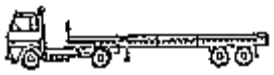


Rear Overhang – 60% of Wheel Base



Source: Protocol 3, AFAFGIT

Figure 4.1 Maximum Vehicle Specifications

Type of Vehicle	Maximum Permissible Gross Vehicle Weight (Tonnes)
 3-Axle Rigid	21.0 T
 4-Axle Rigid	25.0 T
 4-Axle Articulated	32.0 T
 5-Axle Articulated	36.0 T
 6-Axle Articulated	38.0 T

Source: Protocol 3, AFAFGIT

Figure 4.2 Maximum Vehicle Weight by Axle Rigid

Though the AFAFGIT is yet to be implemented, some of its key protocols and features have already been adopted for sub-regional implementation. The BIMP-EAGA MOU on Buses and Couches is an example of how this may be done.

4) ASEAN Framework Agreement on the Facilitation of Inter-State Transport (AFAFIST) (signed in December 2009)

(1) Main objective and key features

The main objectives of the agreement on the Facilitation of Inter-State Transport are as follows:

a) To facilitate inter-state transport of goods between and among ASEAN member countries, to support the implementation of the ASEAN Free Trade Area, and to further integrate the region's economies;

b) To simplify and harmonize transport, trade and customs regulations and requirements for the purpose of facilitation of inter-state transport of goods; and

c) To work in concert towards establishing an effective, efficient, integrated and harmonized regional transport system that addresses all aspects of inter-state transport.

Under the agreement, each Member Country shall grant to other Member Countries the right to inter-state transport by allowing transport operators in one member country to undertake transport of goods into and/or from the territories of other member countries; and granting the right to load and discharge goods destined for or coming from Member Countries. Cabotage is not covered by this agreement.

The number of inter-state transport vehicles allowed to be used for inter-state transport shall be no more than 500 vehicles per member countries. Thereafter, the number of inter-state transport vehicles shall be discussed from time to time between the member countries.

The National Transit Transport Coordinating Committee (NTTCC) and the regional Transit Transport Coordinating Board (TTCB) established for AFAFGIT is also applicable to AFAFIST.

(2) Status of implementation and analysis

The agreement has not yet entered into force. As of December 2011, only two member countries, namely Loa PDR and Thailand had ratified the agreement.

However, one of the unique features of this agreement is that two or more member countries that are ready, may negotiate, conclude and sign implementation agreements/arrangements to implement the agreement as in line with the ASEAN-X Formula. The other member countries may join in the implementation when they are ready (Article 30). In this light, Loa PDR and Thailand who are adjacent to each other and have already ratified the agreement are able enter into negotiation to determine the implementation arrangements to implement the agreement.

However, implementation of this agreement faces the same set of challenges as the AFAFGIT. This is by virtue of the fact that it shares the same set of implementing protocols as AFAFGIT, except that it does not have Protocol 6 (Railways Border and Interchange Stations). Like the AFAFGIT, the implementation of AFAFIST also depends largely on the effectiveness of the following agreements:

- Agreement on the Recognition of Domestic Driving Licenses Issued by ASEAN Countries (signed in July 1985); and
- Agreement on the Commercial Vehicle Inspection Certificates for Goods Vehicles and Public Service Vehicles Issued by ASEAN Member Countries (signed in September 1998)

To foster intra-ASEAN RO-RO shipping, it is imperative that Member Countries look for practical solutions to address the challenges faced.

The AFAFIST is critical for the success of the ASEAN RO-RO shipping initiative. For one, Article 16 of the AFAFIST requires member countries to grant temporary admission to road vehicles (and the fuel contained in its supply tanks, its lubricants, maintenance supplies, and spare parts in reasonable quantities) registered in another member country, without payment of import duties and import taxes, without depositing a Customs' guarantee bond and free of import prohibitions and restrictions, subject to re-exportation and other related conditions. Failure to implement this article will render intra-ASEAN RO-RO shipping services impractical and not viable for vehicle users using the RO-RO shipping services.

5) ASEAN Framework Agreement on Multimodal Transport (AFAMT) (signed in November 2005)

(1) Main objective and key features

The ASEAN Framework Agreement on Multimodal Transport aims to make possible the door-to-door delivery of goods in the member countries, using as many modes of transport and terminals, under a single transport document.

This agreement lays down rules relating to the carriage of goods by ASEAN multimodal transport operators (MTO), including the minimum qualifications to be fulfilled before becoming eligible to register as an ASEAN MTO. It incorporates the basis of liability in the UNCTAD/ICC Rules for Multimodal Transport Documents and the UN Convention on Multimodal Transport 1980. The agreement serves to be the model legal instrument for national implementation.

(2) Status of implementation and analysis

Article 41 of the agreement stipulated that member countries shall be given flexibility in the implementation of the agreement. Two or more member countries may proceed with the implementation first, if other member countries are not ready. According to the same article, the agreement shall become effective only among the member countries that have ratified it. As of December 2011, Cambodia, the Philippines, Thailand and Vietnam had ratified the agreement (Table 4.4).

When an ASEAN agreement enters into force, member countries must be able to implement its provisions through appropriate national legislation and to provide the necessary infrastructure. In this context, a member country must have a functioning legislative body to enact the relevant multimodal transport laws and to provide for their subsequent enforcement.

It appears that besides Cambodia, the Philippines, Thailand and Vietnam have established some form of multimodal transport legislation, for example in the form of laws (in the case of Thailand) or presidential decree (in the case of Vietnam)., The remaining six ASEAN member countries appears not to have such kind of legislation in place. Some of the member countries (e.g., Malaysia) are developing their liability framework for regional multimodal transport operation in line with global multimodal transport regime development.

While the agreement may not directly deal with physical operations of pick-up and delivery of goods carried out by truck using RO-RO shipping services, its early implementation will contribute towards establishing a predictable liability regime for regional multimodal transport operation. Eventually this will enhance intra-ASEAN movement of cargo and foster the growth of regional RO-RO shipping service.

Table 4.4 ASEAN Transport Instruments and Status of Ratification
(As of December 2012)

INSTRUMENT	DATES OF SIGNING	DATES OF RATIFICATION BY MEMBER STATES										DATE OF ENTRY INTO FORCE
		BNR	CAM	INA	LAO	MAL	MYM	PHI	SIN	THA	VNM	
TRANSPORT FACILITATION												
ASEAN Framework Agreement on the Facilitation of Goods in Transit (AFAFGIT)	16/12/98	15/08/00	30/04/99	13/01/00	21/12/99	02/03/99	16/12/98	20/05/99	02/10/00	17/02/99	24/06/99	02/10/00
Protocol 1 Designation of Transit Transport Routes and Facilities	08/02/07	19/10/09	27/10/09	24/11/11	20/06/11			13/11/07		22/06/11	10/10/07	
Protocol 2 Designation of Frontier Posts												
Protocol 3 Types and Quantity of Road Vehicles	15/09/99	08/09/04	09/05/07	23/06/00	19/01/00	24/07/09	21/08/00	25/11/99	02/05/06	19/04/10	15/11/99	19/04/10
Protocol 4 Technical Requirements of Vehicles	15/09/99	08/09/04	09/05/07	23/06/00	19/01/00	24/07/09	21/08/00	26/11/99	02/05/06	19/04/10	15/11/99	19/04/10
Protocol 5 ASEAN Scheme of Compulsory Motor Vehicle Insurance	08/04/01	08/04/02	30/01/02	30/07/02	06/11/02	26/03/02	16/10/03	22/09/03	29/08/02	08/01/03	02/07/01	16/10/03
Protocol 6 Railways Border and Interchange Stations										03/09/12	26/11/12	
Protocol 7 Customs Transit System												
Protocol 8 Sanitary and Phytosanitary Measures	27/10/00	07/08/10	23/05/03	31/12/02	9/5/01	10/08/10	10/10/02	26/11/09	30/03/06	23/8/03	29/3/01	10/08/10
Protocol 9 Dangerous Goods	20/09/02	30/03/04	09/05/07	24/08/03	19/05/03		25/04/03	05/05/03	12/09/07		15/11/02	

INSTRUMENT	DATES OF SIGNING	DATES OF RATIFICATION BY MEMBER STATES										DATE OF ENTRY INTO FORCE
		BNR	CAM	INA	LAO	MAL	MYM	PHI	SIN	THA	VNM	
ASEAN Framework Agreement on the Facilitation of Inter-State Transport (AFAFIST)	10/12/09				20/06/11					30/11/11		
ASEAN Framework on Multimodal Transport (AFAMT)	17/11/05		27/10/09					30/06/08		11/07/08	01/11/11	
Agreement on the Commercial Vehicle Inspection Certificates for Goods Vehicles and Public Service Vehicles Issued by ASEAN Member Countries	10/09/98	Ratified	Ratified	Ratified	Ratified	Ratified	Ratified	Ratified	Ratified	Ratified	Ratified	01/07
Agreement on the Recognition of Domestic Driving Licenses Issued by ASEAN Countries	09/07/85	05/11/86	30/04/99	20/11/86	16/12/97	24/02/86	16/12/97	02/06/86	10/09/86	07/12/87	Ratified	EIF
LAND TRANSPORT												
Ministerial Understanding on the Development of the ASEAN Highway Network Project	15/09/99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Upon signing
MARITIME TRANSPORT												
MOU on Cooperation Relating to Marine Casualty and Marine Incident Safety Investigations	10/12/09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Upon signing

Source: ASEAN Secretariat

6) Ministerial Understanding on the Development of the ASEAN Highway Network Project (signed in September 1999)

(1) Main objective and key features

The objectives of this MOU are:

a) To provide the institutional mechanism to formalize the strategic route configuration and the uniform technical design standards of the ASEAN Highway Network, being the major road (interstate highway) component of the overall trans-ASEAN transportation network;

b) To formulate the ASEAN Highway Infrastructure Development Plan consisting of priority highway projects of regional significance, for funding and implementation through Official Development Assistance (ODA), project financing by the private sector or by joint public-private sector arrangement, or by the individual ASEAN Member Countries, as may be necessary;

c) To promote cooperation with other international and regional organizations, so as to ensure technical compatibility of ASEAN's road standards and road safety requirements and create stronger road transport links and connections within ASEAN and those with neighboring or adjoining regions; and

d) To intensify cooperation in the facilitation of international road traffic throughout the ASEAN region.

Member Countries were required to adhere to the agreed route configuration of the ASEAN Highway Network, for the coordinated improvement and upgrading of their respective routes of the ASEAN Highway Network. They were also required to conform to the recommended technical design standards and requirements as specified in the MOU.

To improve and upgrade the highway network, Member Countries committed themselves to the following works/activities and timelines:

Phase	Tentative Completion Year	Technical Requirement
Stage 1	2000	Network configuration and designation of national routes to be completed
Stage 2	2004	Road signs for all designated national routes to be installed. All designated national routes upgraded to at least Class III standards. All missing links to be constructed. All designated cross-border points to be operational.
Stage 3	2020	All designated national routes upgraded to at least Class I or Primary Road standards. For low traffic volume non-arterial routes, the Class II standards are acceptable.

(2) Status of implementation and analysis

ASEAN has already completed the activities required under Stage 1: the highway network configuration and designation of national routes are now in place. However, many of the ASEAN member countries have missed the Stage 2 deadline (2004). To date, road signs installation works are still on-going in some of parts of the CLMV Countries, Indonesia and the Philippines. The issue of route numbering for the Singapore-Malaysia stretch of the ASEAN Highway is still pending bilateral consultation. Several Member Countries have yet to fully upgrade their designated national routes to at least Class III standards. Not all the missing links have been constructed and not all the designated cross-border points are operational. Lack of funding appears to be the main reason behind the delays. Also, member countries may not see it as a priority to invest in upgrading their respective routes given the perennial delay in the implementation of the AFAFGIT and AFAFIST.

(Mainland)

(Archipelago)

Figure 4.3 ASEAN Highway Network

Table 4.5 ASEAN Highway Design Standards

Highway Classification		Primary (4 or more lanes)			Class I (4 or more lanes)		
Terrain classification		L	R	M	L	R	M
Design speed (km./h.)		100-120	80-100	60-80	80-110	60-80	50-70
Width (m)	Right of Way	(50-70) ((40-60))			(50-70) ((40-60))		
	Lane	3.75			3.5		
	Shoulder	3		2.5	3		2.5
Min. horizontal curve radius (m)		390	230	120	220	120	80
Type of pavement		Asphalt/cement concrete			Asphalt/cement concrete		
Max. superelevation (%)		(7) ((6))			(8) ((6))		
Max. vertical grade (%)		4	5	6	5	6	7
Min. Vertical clearance (m.)		4.50 [5.00]			4.50 [5.00]		
Structure loading (min.)		HS20-44			HS20-44		

Highway Classification		Class II (2 lanes)			Class III (2 lanes)		
Terrain classification		L	R	M	L	R	M
Design speed (km./h.)		80-100	60-80	40-60	60-80	50-70	40-60
Width (m)	Right of Way	(40-60) ((30-40))			30-40		
	Lane	3.5			3.00 [3.25]		
	Shoulder	2.5		2	1.5 [2.0]		1.0 [1.5]
Min. horizontal curve radius (m)		200	110	50	110	75	50
Type of pavement		Asphalt/cement concrete			Double bituminous surface treatment		
Max. superelevation (%)		(10) ((6))			(10) ((6))		
Max. vertical grade (%)		6	7	8	6	7	8
Min. Vertical clearance (m.)		4.5			4.5		
Structure loading (min.)		HS20-44			HS20-44		

Note: 1. Abbreviation: L = Level Terrain M = Mountainous Terrain R = Rolling Terrain
2. ( ) = Rural (( )) = Urban
3. [ ] = Desirable Values
4. The right of way width, lane width, shoulder width and max. superelevation rate in urban or metropolitan area can be varied if necessary to conform with the member countries design standards.

7) ASEAN Sectoral Integration Protocol for the Logistics Services Sector (signed in August 2007)

(1) Main objective and key features

This Protocol spells out measures for the progressive, expeditious and systematic integration of the logistics services sector in ASEAN. The logistic services sector covers maritime cargo handling services, storage and warehousing services, freight transport agency services, other auxiliary services, courier services, packaging services, customs clearance services, international freight transportation excluding Cabotage, air freight services, international rail freight transport services and international road freight transport services.

These measures are:

- Member country shall endeavour to achieve substantial liberalisation of logistics services
- Enhancing competitiveness of ASEAN logistics services providers through trade (including documentation simplification) and logistics (transport) facilitation
- Expanding capability of ASEAN logistics service providers
- Human resource development
- Enhance multi-modal transport infrastructure and investment

The ASEAN Senior Economic Officials Meeting (SEOM) is the overall coordinating and monitoring body in the implementation of this Roadmap, with Vietnam as the Country Coordinator.

(2) Status of implementation and analysis

The progress of this Protocol hinges on the pace of services sector liberalization under the ASEAN Framework Agreement on Services (AFAS). So far AFAS seems to be moving rather slowly given that the commitments for liberalization made by Member Countries are hardly WTO plus (no better than what they have already offered at the WTO level). Another challenge is that the services sector covered by the protocol is very wide and requires the commitment of multiple agencies. Nevertheless, notable progress has been achieved in the air services sector.

8) MOU on Cooperation Relating to Marine Casualty and Marine Incident Safety Investigations (signed in December 2009)

(1) Main objective and key features

The MOU lays out a framework for strengthening cooperation and mutual assistance of ASEAN Member States in marine safety investigation. Indonesia has prepared a draft guideline to implement the MOU. The Guidelines are for establishing a mechanism for cooperation among ASEAN Member Countries in the conduct of marine safety investigation into marine casualties and marine incidents.

(2) Status of implementation and analysis

The MOU is not yet implemented. The draft Guidelines are still being finalized by the ASEAN MTWG. There was a concern that ASEAN may not have the technical capacity to conduct marine casualty and marine incident safety investigations. Another concern was that making the final report of marine safety investigation available to public may not be a common practice in some ASEAN Member Countries.

4.4 Subregional Efforts within ASEAN

ASEAN has several subregional groupings such as the Brunei – Indonesia – Malaysia – Philippines East ASEAN Growth Area (BIMP-EAGA), the Indonesia – Malaysia – Thailand Growth Triangle (IMT-GT) and the Mekong Basin Countries. Subregional groupings are advantageous to promote policy coordination and technical harmonization rather than ASEAN as a whole due to their cultural similarity and historical connectivity. This section outlines significant achievements of BIMP-EAGA and IMT-GT in the transport sector.

Figure 4.4 IMT-GT (above) and BIMP-EAGA (bottom)

1) BIMP-EAGA Agreements and Initiatives

The BIMP-EAGA member countries have been very proactive in pushing forward the ASEAN Agreements. Cognizant that the ASEAN Agreements could take time in putting them in operation, considering the number of member countries, BIMP-EAGA adopted the principles of these Agreements and applied them in a more confined area of just the defined territories of the four countries, with the objective of applying the principles of the Agreements much earlier than the rest of ASEAN.

The following BIMP-EAGA meetings made important decisions and declarations to move closer to fruition the ASEAN Agreements:

- BIMP-EAGA Roadmap to Development, 2006-2010, adopted at the Second BIMP-EAGA Summit at Kuala Lumpur, Malaysia on 11 December 2005, to establish border arrangements that will facilitate flow of goods and people and reduce transport costs within BIMP-EAGA, as well as expediting the development of integrated, multi-modal transport logistics services within the sub-region;
- The Third BIMP-EAGA Summit held at Cebu City in the Philippines on 12 January 2007 to further facilitate cross-border movement of people and goods through adoption of sub-regional interstate transport and transit transport agreements; and,
- The Fourth BIMP-EAGA Summit held in Singapore on 19 November 2007 to undertake specific measures to pilot-test the ASEAN Framework Agreement on the Facilitation of Goods in Transit in BIMP-EAGA by 2008;

Three (3) comprehensive agreements that have been entered into, thus far, by Member-Countries are: (1) the Memorandum of Understanding Between the Governments of Brunei Darussalam, Indonesia, Malaysia and the Philippines on Establishing and Promoting Efficient and Integrated Sea Linkages (2) the Memorandum of Understanding Between the Governments of Brunei Darussalam, Indonesia, Malaysia and the Philippines on Transit and Inter-State Transport of Goods; and (3) the Memorandum of Understanding Between the Governments of Brunei Darussalam, Indonesia, Malaysia and the Philippines on Cross Border Movement of Commercial Buses and Coaches. The first two (2) MOUs were signed in Singapore on 02 November 2007, while the third MOU was signed in Manado, Indonesia on 25 June 2009. Copies of the MOU are attached to this Report as Attachments A, B and C.

The first MOU identified the BIMP-EAGA Gateway Ports and the Designated BIMP-EAGA Priority and Pioneer Routes, and their respective type of service. In order to enhance the role of the Gateway Ports and to promote and facilitate intra-EAGA maritime trade and movement of people, the MOU identified the following measure to be undertaken:

- Information Sharing
  - Regularly updating each other on respective port facilities development and privatization projects; latest Customs, Immigration, Quarantine and Security (CIQS) facilities, procedures and requirements; and best practices in port management including human resource and operation at the BIMP-EAGA Transport, Infrastructure, ICT Development (TIICTD) Cluster Meeting and its associated meetings.
  - Exchanging of information and experience on port safety, security and environment protection at the TllCTD Cluster Meeting and its associated meetings.

- Accession to International Conventions
  - Participating Parties shall be encouraged to become a party or make accession to international conventions laid down in the conventions of the International Maritime Organization (IMO).
- Joint Studies
  - Conducting joint studies to identify shortfalls in port performance and capacity among the Designated BIMP-EAGA Gateway Ports and develop project priorities for bridging the performance and capacity gaps.
- Database and Projection
  - Establishing a comprehensive database on intra and extra-EAGA maritime trade flows and passenger movement, inventory of the facilities available, shipping services, port tariffs and key performance indicators.
  - Developing a projection process and produce projection reports of future maritime trade flows and passengers movement within EAGA.
  - Disseminating the projection reports to public and private stakeholders for more informed policy and business decision making.
- Port Tariff
  - Granting of port tariff incentive by the respective port authorities/operators to promote pioneering shipping services.
- Customs, Immigration, Quarantine, and Security (CIQS)
  - Coordinating the establishment, upgrading and modernization of CIQS facilities in the BIMP-EAGA gateway ports.
- Port Facilities and Services
  - Continuously upgrading port facilities and services especially cargo handling capability and capacity as well as other ancillary port services.
- Sister Ports
  - Implementing sister port programmes to enhance business and trade relations as well as to promote greater understanding among the people within EAGA.
- Joint Marketing
  - Conducting joint marketing and promotion activities within and outside EAGA.

The Participating Parties committed to implement joint measures to promote the commercial viability and sustainability of shipping services in the identified priority and pioneer routes, to which other routes or services could be added.

To ensure the sustainability of the EAGA shipping services plying the Designated Priority and Pioneer Routes, the Participating Parties committed to undertake the following:

- Facilitating the entry of shipping operators and potential investors.
- Granting of temporary exclusive rights to pioneering shipping services until they reach a certain level of maturity provided that the temporary exclusive right shall not exceed a period of five years from the date of the granting of the temporary exclusive rights. The Participating Parties shall determine the implementation details of temporary exclusive rights under this Memorandum of Understanding, including but

not limited to the frequency and capacity and special incentive of the transport operations in the Designated Priority and Pioneer Routes. Such mutual and reciprocal arrangement may be carried out on a bilateral basis between two Participating Parties or on a tri-lateral or multilateral basis between the Participating Parties.

- Promoting the new and existing shipping services in close coordination with private sector.
- Ensuring freight rates are as much as possible determined by market forces and/or mutual agreement by ship operators, but subject to antitrust restrictions, so as to avoid excessively high or low pricing.
- Ensuring compliance of the minimum safety, security and environmental protection standards set by the International Maritime Organization (IMO).

On the other hand, the stated objectives of the latter two MOUs are: “to facilitate inter-state transport of goods and transportation of goods in transit between and among the Participating Parties as well as to promote multimodal transport” and “to facilitate cross-border transport of people between and among the Participating Parties through commercial buses and coaches”, respectively.

The MOU on Transit and Inter-State Transport of Goods, which is more relevant MOU with regard to the ASEAN RO-RO Study, has explicit provisions with regard to entry and admittance of vehicles into the territory of other participating parties. The MOU on Commercial Buses and Coaches has similar provisions. The provisions are:

- Identification of Marks, Certificate of Registration and Registration Plate
  - Vehicles in cross-border traffic shall be registered in their Home Country. They shall bear identification marks (trademark of manufacturer, chassis and engine serial number), carry a valid certificate of registration issued by the Competent Authority of its Home Country and display their registration number on a plate in the rear and the front. Each Participating Party shall recognize the vehicle registration certificate and registration plate issued by the Competent Authority of the other Participating Parties.
- Technical Conditions
  - Vehicles travelling to the territory of other Participating Parties must comply with the road safety requirements and equipment safety and emissions standards laid down in the Transit Country and Host Country. They must also comply with the technical standards on weights, axle loads, and dimensions in force in the Transit Country and Host Country.
  - Operation of right and left hand-drive road vehicles is allowed provided that special permit for such operation is obtained from the Transit Country and Host Country;
  - The age of the vehicle should not exceed fifteen (15) years and be certified by the Competent Authority of the Home Country
- Technical Inspection Certificates
  - Vehicles travelling to the territory of other Participating parties shall be road worthy. The Home Country is responsible for the supervision of the roadworthiness of the vehicles in its territory, based on which it will issue a

technical inspection certificate. The other participating Parties will recognize such technical inspection certificate in accordance with the Agreement on the Recognition of Commercial Vehicle Inspection Certificates for Goods Vehicles and public Services Vehicles issued by ASEAN Member Countries signed at Singapore on 10 September 1998.

- Compulsory Third-Party Motor Vehicle Liability Insurance
  - Vehicles travelling to the territory of other participating parties shall comply with the compulsory third-party motor vehicle liability insurance required in the Transit Country and Host Country so as to be adequately insured against death or bodily injuries and/or property damages arising from road traffic accidents in the territories of the other Participating Parties.
- Driving Licenses
  - The Participating Parties shall recognize driving licenses issued by all other Participating Parties in accordance with the Agreement on the Recognition of Domestic Driving Licenses issued by ASEAN Countries signed at Kuala Lumpur in Malaysia on 9 July 1985.
- Vehicle Permit
  - Vehicles travelling to the territory of other Participating Parties shall be required to secure a vehicle permit from the Host Country and Home Country, and, where applicable, from the Transit Country. Such permit should be valid for one (1) year. The number of permits issued shall be determined by market forces for transport services.
- Body Marking, Advertisements and Sticker on the Vehicle
  - Only company's name, country, approved routes and the permit/license and tourism advertisement approved by the Home Country are allowed on the body of the vehicles. Any use by the Transport Operators of the Home Country of any name, logo and/or emblem of any of other Participating parties shall have prior written approval by the other relevant participating parties.
- Immigration requirement
  - The Transport Crew shall possess a valid passport or international travel document in lieu of the passport and shall meet the visa requirements of the Transit Country and Host Country, unless exempted in accordance with bilateral or regional agreement or Transit Country and Host Country laws and regulations.
  - The Participating Parties shall exempt citizens of any other Participating Parties holding valid passports from visa requirement for a period of stay from the date of entry as determined by the Participating parties in accordance with the ASEAN Framework Agreement on Visa Exemption signed at Kuala Lumpur in Malaysia on 25 July 2006.

One critical agreement that is crucial for the smooth and efficient implementation and operation of ASEAN RO-RO would be the Memorandum of Understanding Between the Governments of Brunei Darussalam, Indonesia, Malaysia, and the Philippines for the Simplification, Streamlining and Harmonization of Customs, Immigration, Quarantine and Security Procedures for the East ASEAN Growth Area (EAGA).

The objective of the proposed MOU is to accelerate and enhance the integration of BIMP-EAGA economies as referred to in ASEAN Economic Community Blueprint through:

- Streamlining, simplifying and, to the extent possible, harmonizing of CIQS formalities including rules, regulations, and procedures relating to the cross-border movement of goods and people between and among the Participating Parties; and
- Strengthening of the security and safety of BIMP-EAGA's trade supply chains at EAGA designated crossing checkpoints.

2) IMT-GT Agreements and Initiatives

Similar agreements were initiated in the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT). These are:

- Road transport facilitation through mutual recognition of: road vehicle registration; transport operating license; vehicle inspection certificates.
- Development of RO-RO Ferry Services in the IMT-GT. The project includes the restoration of RO-RO ferry services in between Belawan and Penang, Penang-Malahayati (Indonesia), Penang-Trang (Thailand), Trang to designated port in Indonesia, and Kuala Linggi (Melaka) and Dumai.

These projects are undertaken under the strategic framework of "Strengthening infrastructure linkages and support to the integration of the IMT-GT subregion." Based on the ASEAN IMT-GT website, the implementation period for these projects is from 2007 – 2011. No further updates were given on the website.

Part II

Field Surveys

5 THE NORTHERN MALACCA STRAIT CROSSINGS AMONG INDONESIA, MALAYSIA AND THAILAND

This section deals with two route candidates: (i) Belawan – Penang, and (ii) Belawan – Phuket.

Figure 5.1 Surveyed Routes

5.1 Economy and Trade

1) North Sumatra, Indonesia

Belawan is located in North Sumatra Province of Indonesia. The province stretches across the island of Sumatra between the Indian Ocean and Malacca Strait. It borders Aceh province on the northwest and Riau and West Sumatra provinces in the southeast. The province has a total land area of 71,681 km^2 and is administratively divided into eight (8) cities and twenty-five (25) regencies. North Sumatra's population in 2009 was 13.2 million, growing by an average of 1.45% during 2000-2009 (see Table 5.1). About 16% of the population live in Medan City, the province's capital, and the fourth largest city in Indonesia.

The agriculture sector employs a major part of the labor force (47%), followed by trading, tourism and beverage sector (20%), private and government services sector (12%), and industrial sector (9%). The Gross Regional Domestic Product (GRDP) in 2009 was IDR236.4 trillion at current prices and IDR110.8 trillion at constant 2000 prices. This translates to a per capita GRDP of USD1,932 at current prices, an average growth of 14% yearly from 2006. The industrial sector is still the main contributor to national production (23.3%), closely followed by the agricultural sector (23%) and trading (19%).

Table 5.1 Socio-Economics of North Sumatera Province

Year	Population	GRDP (IDR billion)		GRDP p.c. (USD)
		At current price	At constant price	At current price
2006	12,643,494	160,377	93,347	1,374
2007	12,834,371	181,820	99,792	1,534
2008	13,042,317	213,932	106,172	1,777
2009	13,248,386	236,354	110,851	1,932

Source: Statistics of North Sumatera

North Sumatra's total exports were up to 8.1 million MT by 2009, a decrease of 5% from the year before. Similarly, the import volume decreased by 11% to 5.2 million MT. These exports were valued at USD6.5 billion and the imports, USD2.7 billion, making the province a net exporter. In terms of value, the major export commodities are vegetable oils and fats, natural rubber latex, aluminum, coffee, tobacco, apparel and accessories, margarine and shortening, cocoa and alcohols (see Table 5.2). Its biggest export markets are India (26% share) and Japan (10%). Major imports include petroleum products, animal feeds, fertilizer, aluminum ores and concentrates, oil seeds, flour, machinery and transportation equipment, and construction materials (see Table 5.3).

Table 5.2 Top 10 Export Commodities of North Sumatra, 2009

No	Export Commodity	Value (USD 000)	Net Weight (MT)
1	Vegetable fats and oils	2,726,016	4,312,082
2	Natural rubber latex	943,011	567,639
3	Aluminum	244,216	153,614
4	Coffee	203,646	67,318
5	Tobacco, manufactured	198,495	37,307
6	Articles of apparel and clothing accessories of other than textile fabrication	173,462	49,676
7	Margarine and shortening	167,992	210,710
8	Animal and vegetable oil and fat, processed and wax of animal/ vegetable	156,036	247,629
9	Cocoa	140,375	55,453
10	Alcohols, phenols, phenolalcohols and their halogenated	120,398	145,860
	Others	1,386,471	2,211,568

Note: Based on 3-digit SITC code.

Source: North Sumatra in Figures (2010), Statistics of North Sumatra

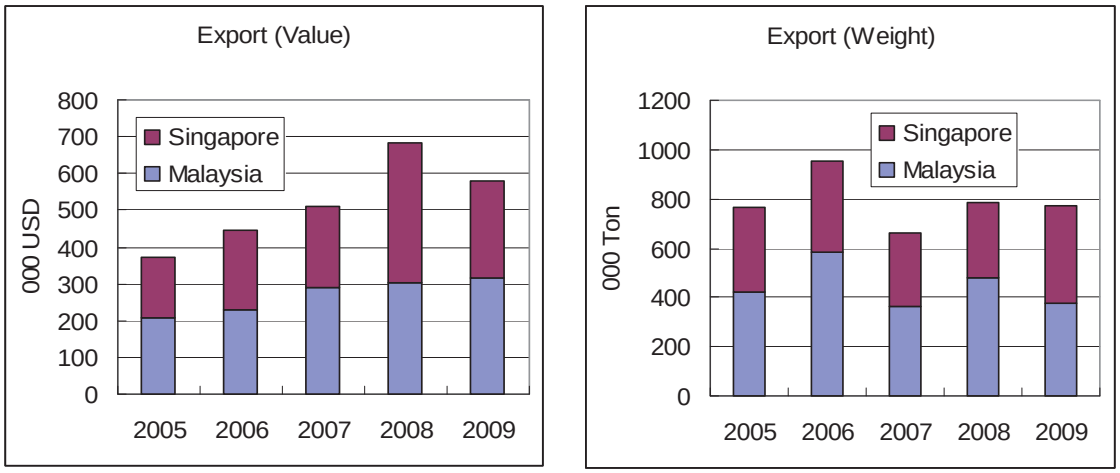
Table 5.3 Top 10 Import Commodities of North Sumatra, 2009

No	Import Commodity	Value (USD 000)	Net Weight (MT)
1	Petroleum products, refined	546,715	984,921
2	Feeding stuff for animals	214,423	466,520
3	Fertilizer manufactured	139,766	425,342
4	Aluminum ores and concentrates	131,546	472,286
5	Residual petroleum products and related materials	69,370	134,516
6	Rotating electric plant and parts	57,795	700
7	Oil seeds used for extraction of soft fixed vegetable oils	51,721	90,533
8	Steam and other vapor generating boilers and parts	46,759	13,751
9	Meal and flour wheat and flour of meslin	41,409	128,198
10	Lime, cement and fabricated construction materials	41,151	840,055
	Others	1,383,580	1,659,654

Note: Based on 3-digit SITC code.

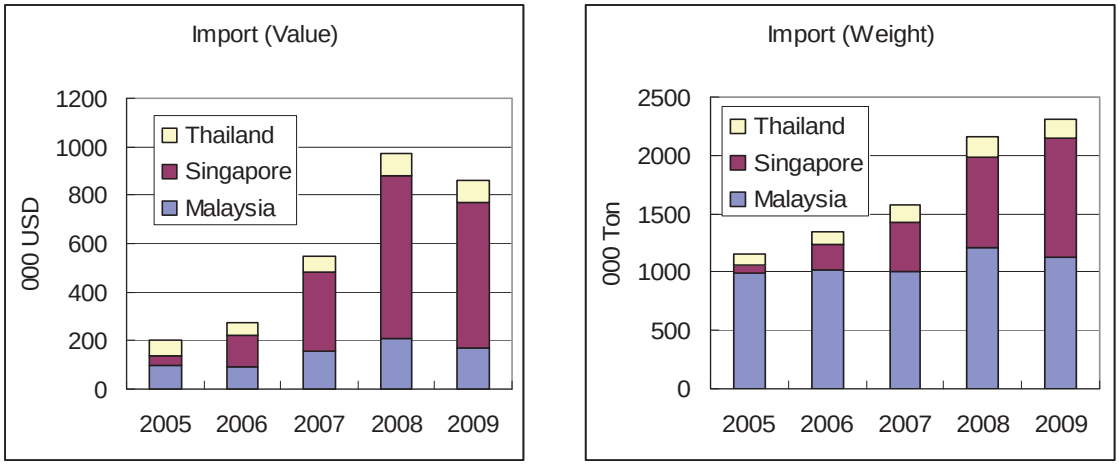
Source: North Sumatra in Figures (2010), Statistics of North Sumatra

North Sumatra's exports to ASEAN countries are mainly shipped to Malaysia and Singapore, while import cargo from ASEAN countries comes from Malaysia, Singapore and Thailand (see Figures 5.2 and 5.3). In its trade relations with ASEAN countries, North Sumatra is a net importer.



Source: Statistics of North Sumatra

Figure 5.2 Exports of North Sumatra to ASEAN



Source: Statistics of North Sumatra

Figure 5.3 Imports of North Sumatra from ASEAN

2) Penang, Malaysia

Penang is one of the thirteen (13) states of Malaysia. Located near the northwestern coast of Peninsular Malaysia, Penang State consists of Penang Island (with a land area of 285 km$^{2)}$ and Seberang Perai mainland (land area of 753 km^2). The island is connected to the mainland by ferry and by the 13.5 km-long Penang Bridge. Penang Island is irregularly shaped, with a granitic, hilly and mostly forested interior. Due to the lack of land for development in Penang, a few land reclamation projects had been undertaken to provide suitable low-lying land in high-demand areas. On the peninsular side, industrial estates and housing areas are developed.

Penang's total population in 2011 was 1.6 million, growing by an average of 1% a year (see Table 5.4). This includes an estimated 70,000 to 80,000 migrant workers, especially from Indonesia, Myanmar, Vietnam, Thailand, and South Asian nations who are mostly involved in domestic help, services, manufacturing, construction, plantation and agricultural work. In 2010, Penang's GRDP reached MYR46.5 billion at current prices, translating to a per capita GRDP of USD9,133. The manufacturing sector is the biggest contributor to the national economic output.

At Penang Port, foreign trade is larger than domestic trade. It handled a total of 39.3 million MT of foreign cargo and 21.6 million MT of domestic cargo in 2010 (see Table 5.5). Most (62%) of this is containerized cargo carried by container ships. The average daily total of exports/ imports was about 80,000 MT (see Figure 5.4).

Table 5.4 Socio-economic Indicators of Penang State, 2009-2011

Year	Population	GRDP at Current Prices (MYR Million)	Per Capita GRDP at Current Prices (USD)
2009	1,577,300	42,217	8,471
2010	1,609,900	46,455	9,133
2011	1,611,600	nd	nd

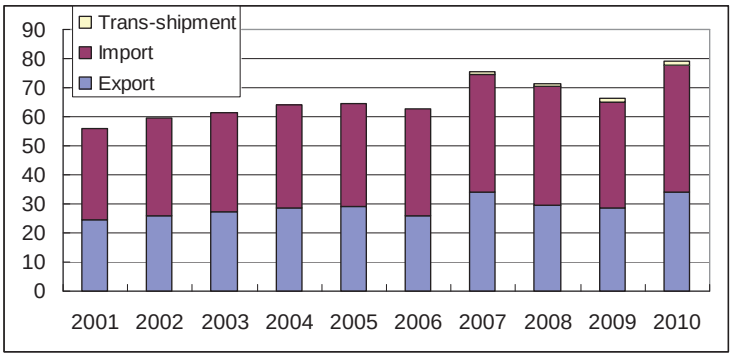
Note: Other statistical sources indicate that per capita GRDP is more than USD10,000.
nd - no data available

Source: Department of Statistics, Malaysia

Table 5.5 Trade Volume in Penang Port, 2010-2011

Domestic & Foreign	Type	2010	2011
Gross Registered Tonnage (MT)	Domestic	21,649,520	23,976,343
	Foreign	39,328,559	nd
Type of Cargo Handled	**Unit**	**2010**	**2011**
General Cargo	MT	1,950,574	1,620,791
Dry Bulk	MT	3,743,738	3,694,818
Liquid Bulk	MT	4,563,636	4,882,371
Containerized	MT	18,594,422	19,192,472
Container	TEU	1,106,099	1,198,844

Source: Derived from the statistics provided by Penang Port Sdn Bhd



Source: All Ports and Marine Department, Malaysia

Figure 5.4 Average Daily Cargo in Penang Port ('000 MT), 2001-2010

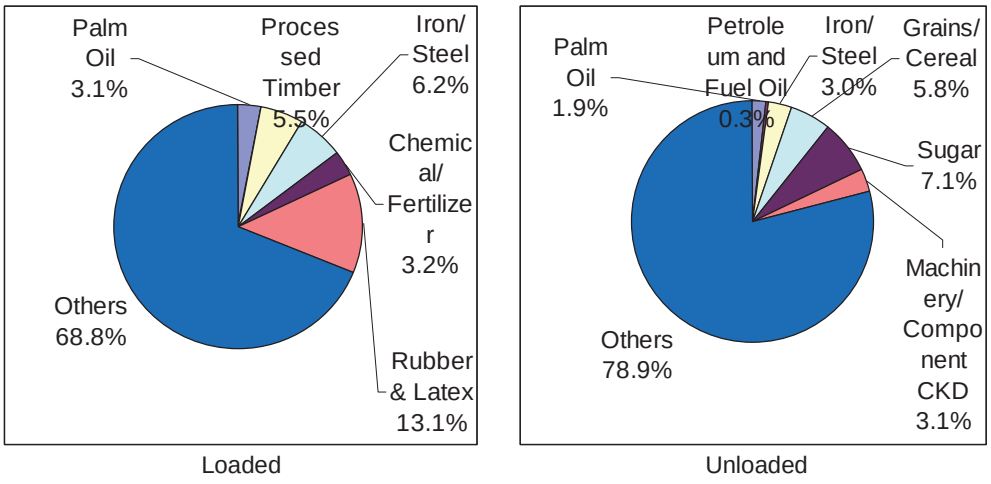
In terms of both exports and imports at Penang Port, machinery and transport equipment account for more than 70% of the total trade value (see Table 5.6). The next commodity is manufactured goods.

Table 5.6 Percentage Share of Export/Import Commodities in the Total Trade Value in Penang Port, 2009

Commodity	Exports CIF	Imports FOB
Food	1.06	4.47
Beverages and Tabacco	0.12	0.29
Crude Materials, Inedible	1.10	2.67
Mineral Fuels, Lubricants	0.03	0.13
Animal and Vegetable Oil and Fats	0.37	0.27
Chemicals	2.57	3.85
Manufactured Goods	4.04	7.02
Machinery and Transport Equipment	78.34	71.18
Miscellaneous Manufactured Articles	11.87	4.68
Miscellaneous Transactions and Commodities	0.50	5.44
Total	100	100

Source: Derived from the statistics provided by Penang Port Sdn Bhd

In terms of weight, the higher volume of commodities loaded at Penang Port in 2010 included rubber and latex products, iron and steel, processed timber, chemicals and fertilizers, and palm oil (see Figure 5.5). The unloaded commodities include sugar, grains and cereals, machinery and CKD components, iron and steel, palm oil, and petroleum and fuel oil products.



Source: All Ports and Marine Department, Malaysia

Figure 5. 5 Loaded/Unloaded Commodities (Weight) in Penang Port, 2010

In terms of tourism, tourists usually come by air, car and railway. The Penang Airport handled an average of 2,700 international passengers daily in 2010. George Town in Penang is a designated World Heritage Site which attracts many tourists. The medical tourism market is also a growing market segment for Penang. Star Cruises currently use Swettenham Pier, Penang Port as a homeport of the fleet.

3) Phuket, Thailand

Phuket is an island province of Thailand. It has a land area of 543 km^2 and it the second smallest province among all the 76 provinces in the country.

The official census of population shows 335,913, but they do not include semi-permanent workers and visitors. The major industries are tourism, rubber, tin, agriculture, such as coconuts, pineapples, bananas and cashews, and fishing. The Thai government does not want industrialization of this island and the industries are encouraged to be developed in the mainland, in south Thailand.

Table 5.7 Socio-Economics in Phuket

Items	2006	2007	2008	2009	2010
Population	292,245	300,737	315,498	327,006	335,913
GRDP (mil. Baht)	65,906	74,934	74,241	70,196	78,964
GRDP per capita (USD)	7,141	7,890	7,451	6,798	7,444

Source: Statistics of Phuket, 2011

In the island there are four (4) ports and six (6) marinas. Because the deepest port is Phuket port, most trading goods are carried to Phuket port from south Thailand.

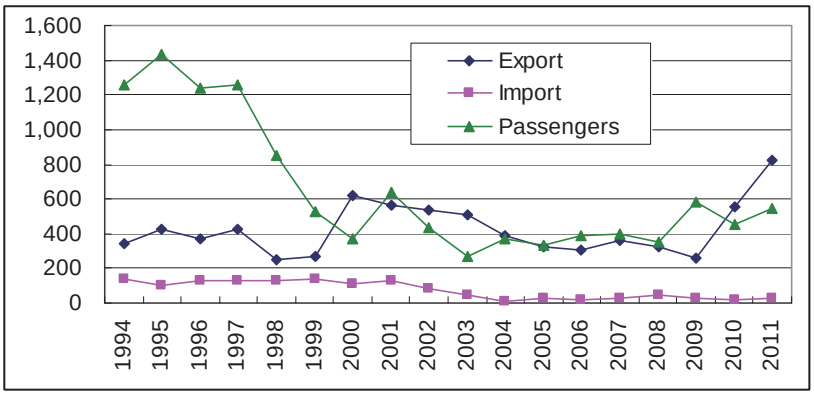
At Phuket port the major export cargoes are latex, rubber, MDF board, and limonite ore. The major import cargoes are petroleum coke, equipment, and tin. In the past tin ore was collected from southern Thailand to Phuket island and tin metal was exported, but at present, the role of Phuket port for tin trade is diminishing because the big tin-producing areas are now in Nigeria, Lao PDR, Banka island in Indonesia, and Myanmar.

The import is negligible and much smaller than the export because the import goods are firstly unloaded in the capital region and they are distributed domestically to the island.

In 2011, the ratios of trade at Phuket port are shown in the figure. In the recent trend, the major export item is wood and furniture and some frozen fish is also imported.

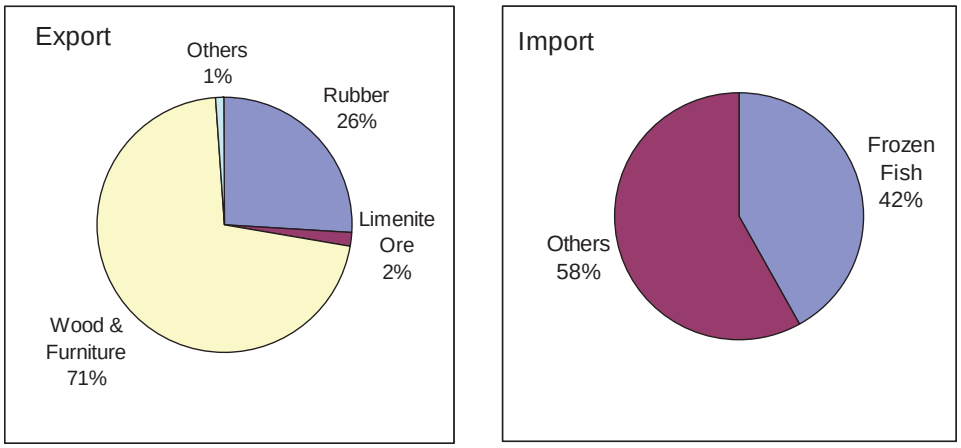
Many cruise ships for tourists come to Phuket port, but the number of sea passengers will be limited by the capacity of the berth. Meanwhile 14 air companies have air routes from Phuket, so air passengers are increasing.

Average daily export/import tons and passengers at Phuket port are shown in the following figure which does not include the other three (3) ports in Phuket island.



Source: Chaophaya Terminal International Co.,Ltd. Phuket Port

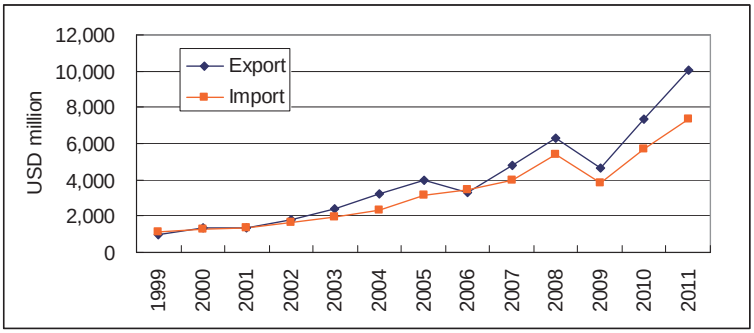
Figure 5.6 Average Daily Cargo Volume (Ton) and Passenger



Source: Chaophaya Terminal International Co.,Ltd. Phuket Port

Figure 5.7 Export/Import Cargo (Ton) at Phuket Port

In the last decade, trade between Thailand and Indonesia has been sharply expanding. Since the economic and industrial structures between Southern Thailand and North Sumatra are similar, there is no obvious direct trading activity according to the reports of respective port administrators and customs offices.



Source: Ministry of Commerce, Thailand

Figure 5.8 Trade in Thailand to Indonesia

5.2 Corridor-wide Traffic

1) Belawan - Penang

Container shipping movement at both Belawan and Penang is analyzed, using two bench mark years of 2008 and 2011. As a result, some distinguishable features are identified. (Refer to Table 5.5)

- There is direct container shipping service between Belawan and Penang. After a couple of years' suspension from 2009, such direct service was revived in 2012.
- Belawan Port has increased container service frequency from 22 vessels in 2008 to 47 vessels in 2011. During the period, the port has strengthened the routes with Port Klang (19 vessels) and Singapore (21 vessels) rather than the national gateway ports, such as Tanjung Priok (2 vessels) and Tanjung Perak (5 vessels).
- Penang Port has also greatly increased container service frequency from 26.6 vessels in 2008 to 61 vessels in 2011. During the period, the port is more connected with Singapore (31 vessels) rather than Port Klang (14 vessels). Penang has a wider port network in 2011, including Tanjung Priok, Bangkok and East Asia compared with the 2008 network.

In March 2012, container shipping shuttle service was revived by MV Uni Assent (refer to Section 15.2).

Fast passenger shipping service was also suspended in June 2010 due to severe competition with air transport, particularly low cost air carries. The port statistics shows a sharp decrease in ship passengers since 2009.

Table 5.8 International Ship Passengers, Belawan

Activity	2006	2007	2008	2009	2010	2011
Embark	28,102	30,488	24,397	12,667	4,503	-
Disembark	26,975	26,337	24,261	13,939	4,749	-

Source: Port Authority of Belawan

Nowadays, air traffic is very vital on the corridor. The number of flights weekly is as high as 71 round trips. These services are provided by 4 airline companies, namely, Sriwijaya Air, Lion Air, Air Asia and Firefly. Flight duration between Medan and Penang is 45-55 minutes. In 2010, according to KADIN North Sumatra, there were around 500 thousand passengers that flew from Medan, this figure increased in 2011 to around 700 thousand passengers.

Table 5.9 International Flights between Medan and Penang

Airline	Type of Airplane	Maximum Capacity (pax)	Number of Weekly Flights (one way)
Lion Air	ATR	72	15
Air Asia	Airbus 320	180	21
Sriwijaya Air	Boeing 737- 600	167	7
Firefly	ATR	72	28
Total			71

Source: Relevant Airlines, as of June 2012

During the first field survey, it was reported that three (3) wooden-hull vessels ply between Belawan and Penang to transport perishable goods such as vegetable and fruits, 400 tons per month on the average. The service is directional and thus no backload cargo is carried from Penang.

Table 5.10 No. of Monthly Container Ships by Route, Belawan and Penang, 2008

	BELAWAN	PENANG	Tj Priok	Tj Perak	Port Klang	Tj. Pelepas	Singapore	South Asia	Middle East	North America	Total
BELAWAN		1.6	3.0	8.0	3.6	0	4.0	0	0.6	0.5	**21.3**
PENANG	0		0	0	16.0	2.0	8.0	1.0	0.6	0	**27.6**
Tj Priok	10.6	0									
Tj Perak	1.7	0									
Port Klang	7.1	12.0									
Tj. Pelepas	0	1.0									
Bintulu	0	2.0									
Singapore	2.0	4.0									
South Asia	0	6.0									
Middle East	0.3	0									
Africa	0.3	0									
North America	0	0									
Total	**22.0**	**26.6**									

Note: As of 2008

Source: MDS Transmodal Containership Databank

Table 5.11 No. of Monthly Container Ships by Route, Belawan and Penang, 2011

	BELAWAN	PENANG	Tj Priok	Tj Perak	Port Klang	Tj. Pelepas	Singapore	Bangkok	South Asia	East Asia	Total
BELAWAN		0	2	5	15	0	21	0	0	0	**43**
PENANG	0		12		14	0	31	4	4	4	**69**
Tj Priok	2	12									
Tj Perak	5	0									
Port Klang	19	14									
Tj. Pelepas	0	0									
Singapore	21	31									
Bangkok	0	0									
South Asia	0	4									
East Asia	0	4									
Total	**47**	**61**									

Note: As of July 2011

Source: Indonesia Shipping Gazette

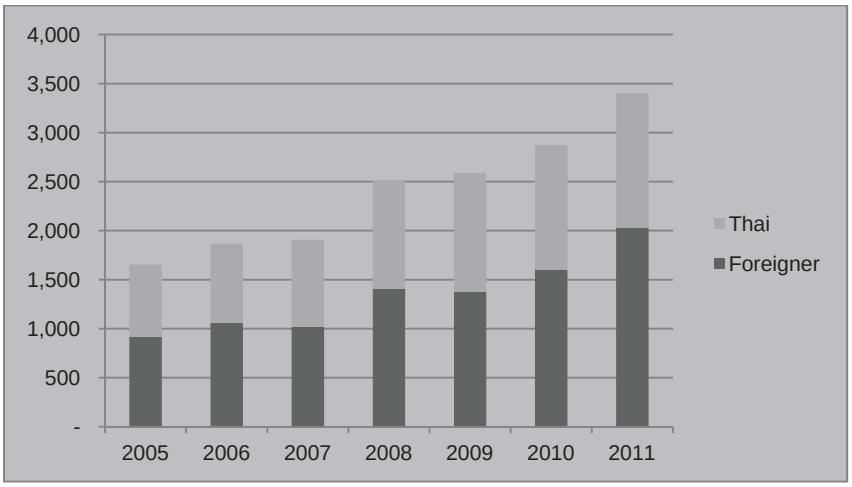
2) Belawan – Phuket / Penang – Phuket

Due to similar economic structures, no trade is recorded between Belawan and Penang although one general cargo ship regularly enters into both the ports to load similar local products for the markets of USA and the Middle East.

Catamaran ferry boat was operated three (3) or four (4) times weekly between Phuket and Penang in the 1990s. A couple of reasons forced the service to be suspended, including short and unstable demand and rough sea conditions particularly during the southwest monsoon season from May to October.

Today, two Star Cruises vessels viz, Super Star Virgo and Super Star Libra, coming from Penang call at Phuket every week. The passengers of cruise ship take immigration clearance on board because Phuket Port has no immigration office.

One remarkable trend is the increasing cross-border movement between Malaysia and Thailand from 1,655 thousand in 2005 to 3,403 thousand in 2011, 60% of which are foreigners, mostly Malaysian. However, vehicle types and objectives to cross the border are uncertain. During the first field survey, a tourism association representative in Phuket reported increasing tourism bus coaches from Malaysia.



Note: From Malaysia to Thailand, thousand persons

Source: Thailand Immigration

Figure 5.9 Malaysia – Thailand Land Cross-border Traffic

3) Foreign Visitors

The three surveyed areas are regarded as international tourism destinations such as Phuket beach resort, the World Heritage site of George Town, Penang and Lake Toba in North Sumatra. The numbers of foreign visitors in 2009 are comparatively analyzed as follows:

- North Sumatra (116 thousand foreign visitors in 2009): The number is quite small compared to Phuket and Penang. Malaysian visitors have a dominant share of 88%.
- Penang (3.6 million foreign visitors in 2009): The foreign visitors account for around 60% of the total visitors. It is almost equal to the foreign visitors of Phuket.

- Phuket (3.6 million foreign visitors in 2009): The foreign visitors have a share of 68% in the total visitors.

Table 5.12 Average Daily Foreign Visitor Arrivals in North Sumatra by Nationality

Nationality	2007	2008	2009
Brunei	0.4	0.2	0.3
Malaysia	222.9	231.2	281.3
Myanmar	0.2	0.3	0.4
Philippines	2.5	2.7	2.7
Singapore	20.9	27.2	28.4
Thailand	2.7	4.0	4.6
Vietnam	0.4	0.3	0.3
Others ASEAN	0.0	0.4	0.1

Source: Statistics of North Sumatra

5.3 Port Operation and Infrastructure

1) Port of Belawan

(1) Overview of the Port

The Port of Belawan is located about 30 Km from Medan City the Capital of North Sumatra Province and about 13.5 km upstream from the mouth of the Belawan River. Belawan Port is a main gate for economic activities of North Sumatra and neighboring provinces. Most of the agroindustry commodities of Indonesia that are exported through the port are palm, rubber, chocolate, coffee, tobacco, etc.

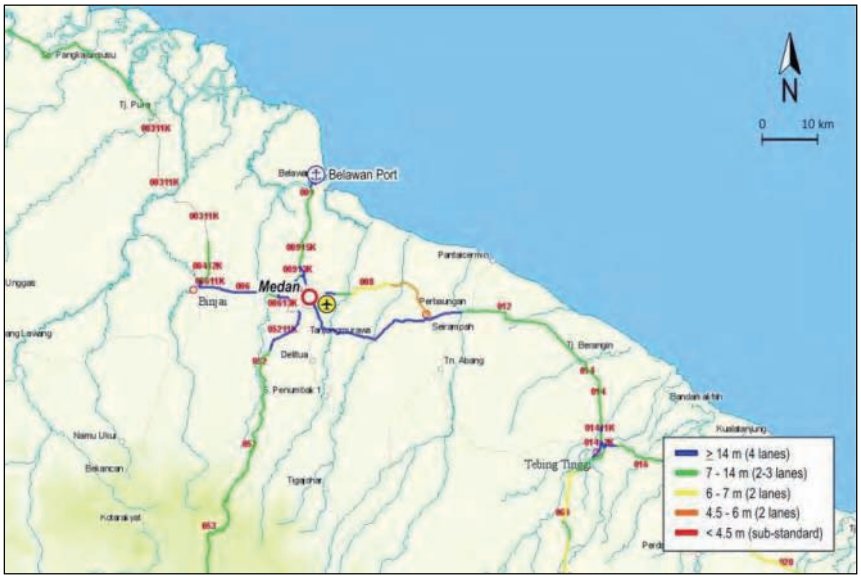


Figure 5.10 Location of the Port of Belawan

(2) Natural Conditions

The port is located along the river and so the waters surrounding the port are calm generally and the wave does not have a significant influence on port operation and ship navigation. The tidal range of the port waters is about 2 m in average but during a spring tide, it reaches more than 5 m. The depth of the port waters is 5 m to 10 m.

(3) Port Facilities/Layout

An approach channel to the port is about 12 nm in length and an approaching vessel takes 30 minutes to one hour going through the channel. The depth of channel is 8.7 m LSW and its width is enough only for one vessel to go through.

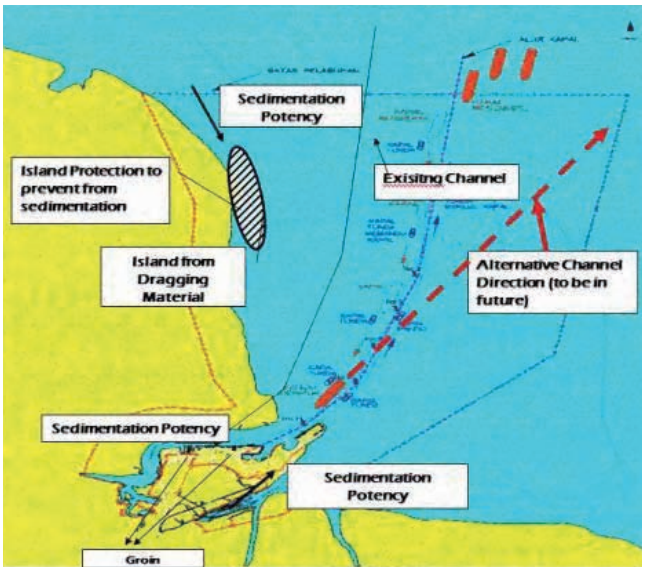


Figure 5.11 Approach Channel

There are six terminals: Container Terminal, Pertamina Jetty, IKD, Citra, Ujung Baru and Belawan Lama. The Passenger Terminal is located at the east edge of Ujung Baru. The location of these terminals is shown in Figure 5.11; and dimensions of the facilities of each terminal is shown in Table 5.13.

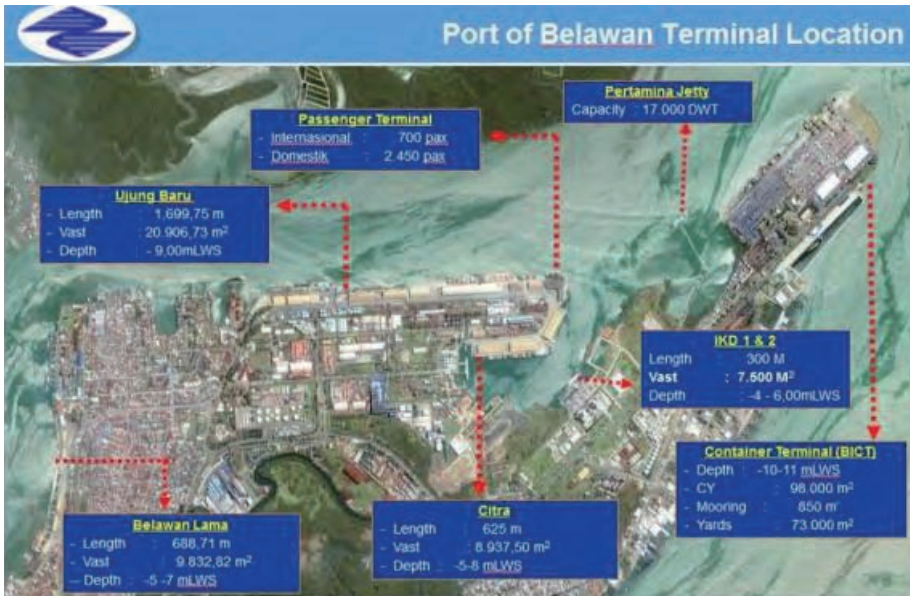


Figure 5.12 Layout Terminals

Table 5.13 Outline of Terminals

Terminal	Dimension
Container Terminal	Quay length: 500 m, Depth 10 to 11 m,Yard:73,000 m^2
Pertamina Jetty	Maximum vessel size: 17,000 DWT
IKD	Quay length: 300 m, Depth 4 to 6 m, Yard: 7,500 m^2
Citra	Quay length: 625 m, Depth 5 to 8 m, Yard: 8,938 m^2
Ujung Baru	Quay length: 1,670 m, Depth: 9 m, Yard: 20,906 m^2
(Passenger Terminal)	Capacity of passenger building: 700 pax /international, 2,450 pax/domestic
Ujung Baru	Quay length: 1,670 m, Depth: 9 m, Yard: 20,906 m^2
Belawan Lama	Quay length: 689 m, Depth: 5 to 7 m, Yard: 9,833 m^2

(4) Management and Operation

There are three key organizations related to the management and operation of the port, such as the Port Authority of the Port of Belawan, ADPEL and the Belawan branch of PELINDO I. The port authority and ADPEL are stage agencies under DGST, while PELINDO I is an operator which was privatized according to the provisions of the Shipping Act in 2008. PELINDO I takes the role of a port management body and carries out construction and improvement of port facilities.

(5) Connection with Hinterland

From downtown Medan, Belawan Port can be reached via a toll road in 30-45 minutes, which provides a good connection between Belawan Port and Trans-Sumatra Highway or ASEAN Highway No. 25. The traffic flow between Belawan and Trans-Sumatra Highway is not affected by urban transport in Medan because the toll road passes only at the edge of the urban area of the city. On the other hand, there are some road sections with bad conditions on the Trans-Sumatra Highway. Maintenance and road expansion would improve the transport network in Sumatra.

Figure 5.13 Belawan-Medan Toll Road

Most of the port access road has big capacity and there is no regulation banning container trailers, etc. High-standard roads (four lanes with a median) are available between the end of the toll road and gates of Belawan Port and thus freight vehicles from/to the port do not have to go through the downtown of Belawan.

Port access roads:

- Road width	:	7-14 m
- Number of lane	:	2-3 lanes
- Pavement type	:	Flexible pavement
- Weight limit	:	n.d.
- Freight vehicle type observed on site	:	Truck, container trailer
- Passage of heavy vehicle	:	Allowed
- Time/distance to the nearest city	:	45 minutes (to Medan)
- Future plan related to road infrastructure	:	n.d.

(6) Future Development

PELINDO I is implementing the project of developing a new passenger terminal. The project aims to relocate the existing passenger terminal at Ujung Baru to Belawan Lama. The project is composed of improvement of the existing wharf, construction of passenger terminal building, dredging of basin and other attendant works. The size of a wharf is planned to be 689 m in length and 5 to 7 m in depth with an area of 9,833 m^2. The project cost is 15 billion IDR.

PELINDO I has an interest in the development of RO-RO terminal but does not have a clear plan at present.

In addition, PELONDO I plans to improve the alignment of the present channel by deepening and widening the channel.

The port is supported by CIQS facilities, such as security posts, police station, customs office, immigration office, quarantine office. The port provides necessary facilities for securing port security.

2) Port of Penang

(1) Overview of the Port

The port of Penang is located along the north-west coast of Malay Peninsula facing the Malacca Straits. The port is cast as one of the feeder ports for Port Klang, but plays important roles in the economic activities of northern Malaysia and in the international trade with southern Thailand, Myanmar and northern Sumatra. The port was opened in George Town on Penang Island in 1786. Now this area is used for a cruise terminal mainly and cargo handling facilities are situated on the mainland.

(2) Natural Conditions

The port faces the Straits of Malacca but hydrographic conditions do not affect the use of the port almost. The tidal range is 1.6 m on average.

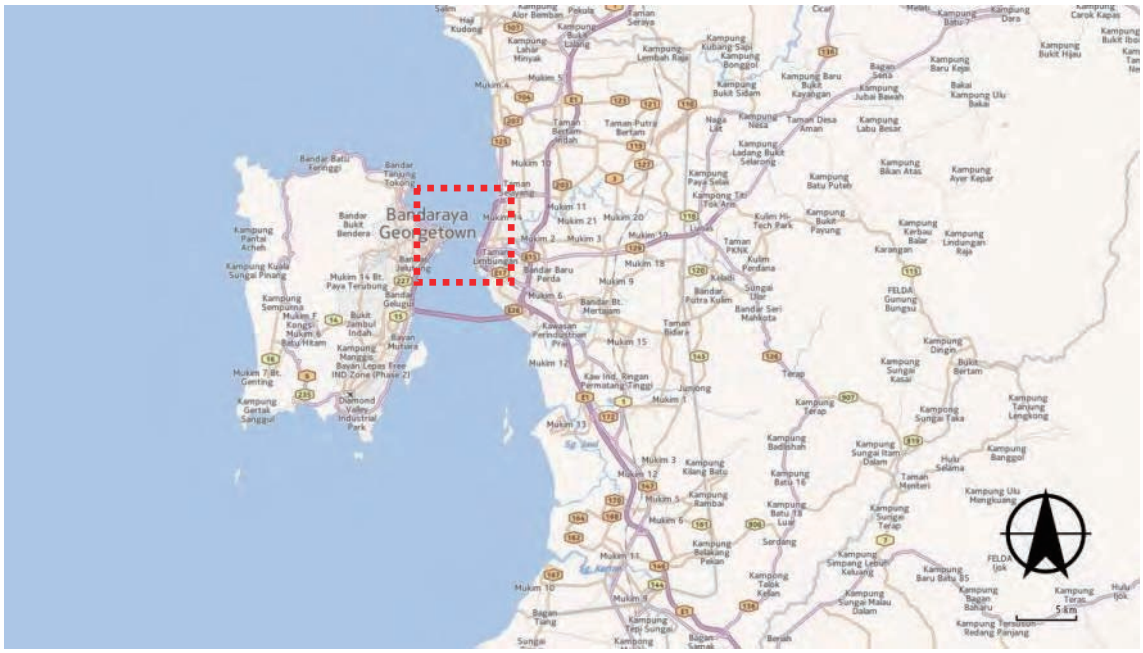


Figure 5.14 Location of Penang

(3) Port Facilities/Layout

Two approach channels are available and a 20-nm-long north channel is the main channel with the width of 182 m and the depth of 11 m. The maximum vessel size is 60,000 DWT. However, maintenance dredging on the scale of 8 million cubic meters need to be conducted once in two or three years.

There are four terminals, one on Penang Island (Swettenham Pier) and three on the mainland, namely North Butterworth Container Terminal (NBCT), Butterworth Deep Water Wharves (BDWW), and Prai Bulk Cargo Terminal (PBCT). In addition to these terminals, ferry jetties are located at both sides of the island and the mainland. The Port layout is shown in Figure 5.15 and the outline of the main terminals are shown in Table 5.14.

(4) Management and Operation

The Port of Penang is under the management of Penang Port Commission (PPC) which serves as the port authority. PPC is a statutory body under the purview of the Ministry of Transport. As a statutory body, PPC is responsible for the administration of the Port of Penang. Its responsibilities are to provide and maintain port and ferry services in the port as well as upgrading the development and the use of the port. Since January 1994, the operation of the port has been privatized to Penang Port Sdn. Bhd. (PPSB) under the Ports Privatization Act 1990.

Regarding CIQS, Penang Port is well supported by CIQS facilities, such as security posts, police station, customs office, immigration office and quarantine office.

Figure 5.15 Port Layout

Table 5.14 Outline of Main Terminals

Swettenham Pier		
	Cruise Terminal	4 berths (2 outer berths/2 inner berths) Quay of 400m in length, 12.0 m in depth, 25 m in width A three-story terminal building of 15,005 m^2 area
	Pontoons	1 for domestic use: 30m x 10m 1 for international use: 30m x 10m (not in use)
	Ferry Jetty	Jetty for ferry connecting island and main land
	Yacht harbor	Pontoon type facilities
North Butterworth Container Terminal		
	Container Terminal	1,500 long quay with 12 m in depth Container yard with capacity of 4,400 TEUs GS CFS of 8,400 m 16 Gantry Crane etc.
Butterworth Deep Water Wharves		
	General Berth	4 berths (715 m in length and 9.0 m in depth) Storage area(more than 10, 000m^2
	Container Berth (Use as General Berth)	2 berths(331 m in depth and 9.0 m in depth) Container yard
Ferry terminal		
	Ferry Jetty	Jetty for ferry connecting island and main land
Prai Bulk Cargo Terminal		
		2 berths (331 m)

(5) Connection with Hinterland

The port is connected by a good network of roads and rail to its hinterland. Berths in the Butterworth side can be accessed smoothly via toll roads, Butterworth Outer Ring Road (Route E17) and Butterworth–Kulim Expressway (Route E15), which connect

the port to the North-South Expressway (Route E1) or ASEAN Highway No. 2. There is no heavy vehicle ban regulation. The current road maximum capacity is 40 tons. At the Butterworth side, there is a frequent railway freight transport service by KTM Kargo on the rail tracks of the Malayan Railway. Currently twelve (12) round trips of container trains are operated between Butterworth and the Malaysia-Thailand border, Padang Besar.

George Town in Penang Island is linked with the mainland by a 6-lane road called Penang Bridge and with a ferry service crossing the Selatan Strait. The length of the bridge is 13 km while the ferry route distance is 3.2 km. There are eight (8) available ferries to serve the route. The capacity varies but on average a ferry can carry around 300 passengers and 30 cars each way. There is a large traffic volume on street roads around the passenger terminal in George Town but the streets are in good conditions. It would be necessary to evaluate the effect on local city traffic of the additional port traffic, especially during the morning and evening peak hours if a RO-RO service utilizes a berth in the George Town side. Street safety could also be one of problems because there are numerous tourists in the World Heritage town.

Port access roads:

- Road width	:	n.d.
- Number of lane	:	n.d.
- Pavement type	:	flexible pavement
- Weight limit	:	40 ton 12 tons (max. axle rating for single axle with 4 wheels) based on Weight Restriction Order (Amendment) 2003 for Peninsular area
- Freight vehicle type observed on site	:	n.d.
- Passage of heavy vehicle	:	Allowed
- Time/distance to the nearest city	:	n.d.
- Future plan related to road infrastructure	:	The Second Penang Bridge is under construction.

(6) Future Development

The construction project of a new Swettenham Pier Cruise Terminal was completed in November 2009. The terminal consists of a T-shaped berth with a 400-m-long quay and depth of 12 m, a three-story terminal building and an open yard in front of the building

The expansion project of the container terminal of NBCT is being carried out at present.

(7) Topics of RO-RO terminal

The old container terminal in Butterworth Deep Water Wharves was used as a RO-RO terminal some years ago but it is used as general cargo terminal at present.

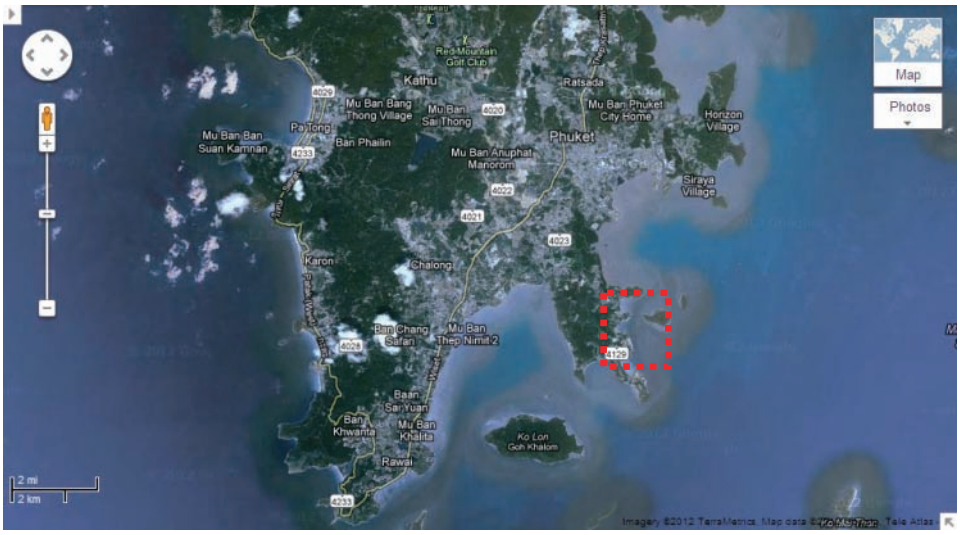
In a RO-RO service trial in 2005 to 2006, the pontoon which is situated behind the cruise terminal of Swettenham Pier was used for passenger's embarking and

disembarking and a part of the North Butterworth Container Terminal was used for vehicle loading and unloading. The pontoon remains at such a position but is no longer used at present.

3) Port of Phuket

(1) Overview of the Port

There are four ports in Phuket: Gipsy Port (the largest and the main port and called Phuket Port), Rassada Port (Ferry Port), Victory Port (for Cruises) and one small port. The port of Phuket is located in the southeast area of Phuket Island. The port was built in 1989 for serving both cargo and passenger vessels. The main export cargoes are latex, rubber, and limonite ore, while the main import cargoes are petroleum, beverages, equipment (for festival and other occasions) and tin.



Source: Google Maps

Figure 5.16 Location of Phuket Port

(2) Natural Conditions

During the southeast monsoon season between May and October, strong swells happen frequently, or 20-30% of the days, in the sea around the port. The tidal range of the port waters is about 2.7 m in spring.

(3) Port Facilities/Layout

The access channel to the port is 1,500 m in length, 120 m in width and 9 m in depth. The necessary depth is maintained by dredging. There is a turning basin of 360 m in diameter at the north of the wharf.

The port has a total area of 26 ha and is provided with two berths with a total length of 360 m and a 30-m-wide apron. The depth of water along the wharf is 10 m. In addition to the berth, four barge berths are also provided. The maximum LOA and depth of vessels which can enter the port is 180 m and 9.4 m respectively.

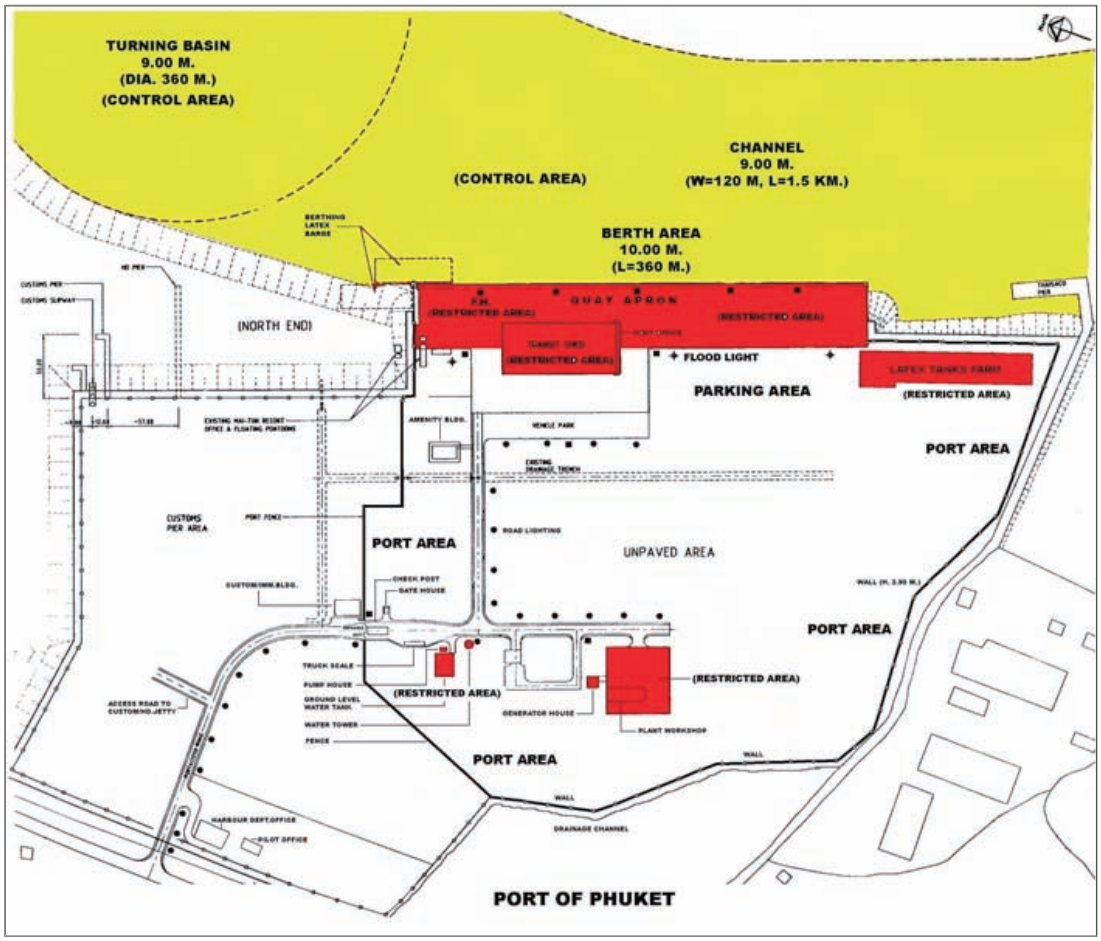


Figure 5.17 Layout of Terminal

(4) Management and Operation

The port is under the management of the Marine Department, Ministry of Transportation. The operation of the port is conducted by a private company based on a concession contract between the Marne Department and the selected private company. At present, the port is operated by Chaopaya Terminal International Company with a two-year concession term. The company has operated the port since the beginning of the port (1989) and the current contract is valid until 2014.

Phuket Port has no immigration office for international visitors. Immigration service is provided onboard for international cruise passengers.

(5) Connection with Hinterland

There is only one main road connecting the City Center to Phuket Port. From the City Center, this road is connected to two highways, which are the north highway (Route 402) and the south highway (Route 4021 and 4024). The port access road length is about 6 km with approximately 15 minutes distance by car from the city center. The road width is approximately 12 meters, with two lanes only, adequate to accommodate about two medium size trucks passing each other at the same time. The road surface condition is good with asphalt pavement. If the cargo traffic volume increases in the future, it would be necessary to consider expanding the port access road.

Phuket Island is not connected directly to the ASEAN Highway Network but Route 41, a part of ASEAN Highway No. 2, is connected to the Island via Routes 4 and 402. The latter is a 4-lane highway with a median which links between the island and the mainland of Thailand.

(6) Future Development

Phuket Port has a berth expansion plan by 60 m at the area where several dolphin structures are installed. The plan is now in the process of EIA.

(7) Topics related to RO-RO Terminal

Phuket Port experienced a trial fast ferry service connecting Phuket Port and Penang Port, but it was unsuccessful and stopped due to demand shortage and rough sea conditions.

A representative of Port Administrator of the Marine Department suggests Lamshabang Port as a suitable port for RO-RO operation using a RO-RO vessel with side Ramp.

An operator points out that sea condition may be a main factor against RO-RO operation. Because wind condition is very bad and the wave is very high during May – October due to southwest monsoon, specific tools to keep trucks or vehicles safe when vessels are caught by high waves may be necessary.

Column 5.1	Pilot RO-RO Shipping Project between Belawan and Penang
Pilot Operation	PT. ASDP, an Indonesian state-owned ferry operator, ran operational test of the Belawan-Penang route with a RO-RO vessel named KMP Jatra III on 15-22 June 2005. The first trip carried nothing from Belawan Port, and the second trip carried only one car from Malaysia.
Vessel Information	Jatra III (GT 3,123) was a second hand vessel bought from Japan which was built in 1985. 
Identified Problems	(1) Technical problem: Jatra III needed additional waiting time by 1-2 hours to enter into the port due to shallow tide. The ramp door position of Jatra III is at front and rear with no side ramp available, so it was difficult to allow rolling-on and rolling –off when the weather was bad. In Penang, there was no dedicated RO-RO terminal available. RO-RO vessels must use for vehicle at Butterworth wharf while for passengers at Swettenham Pier Cruise Terminal; (2) Regulation problem: In relation with the customs regulation in Indonesia, all foreign vehicles must be treated as imported goods or temporary imported goods. In case of transit vehicles, they are regarded as temporary imported goods (MOF Regulation No. 142/2011). In the pilot project, a Malaysian driver bought a guarantee bond from an Indonesian insurer which was equivalent to the import duty of his vehicle, usually 40-50% of its vehicle price. Due to prohibitive guarantee bond and its complicated procedure, foreign drivers must hesitate to bring their vehicles to Indonesia by using RO-RO vessel; (3) Subsidy problem: The Government of North Sumatra agreed to support the pilot operation by giving PT. ASDP fuel subsidy. But in fact, there was misunderstanding between PT. ASDP and the government regarding the definition of fuel subsidy. PT. ASDP considered to use domestic fuel to operate Jatra III. Due to the relevant international regulation, however, the company must use international fuel which is expensive than domestic fuel due to no central government's subsidy. The difference made the company's business plan unattractive. Due to combined impacts of those problems, an anticipated RO-RO shipping market was not realized in the pilot project.

Source: JICA Study Team, interviewed with PT. ASDP and Customs Office in Belawan Port

5.4 Shipping Routes

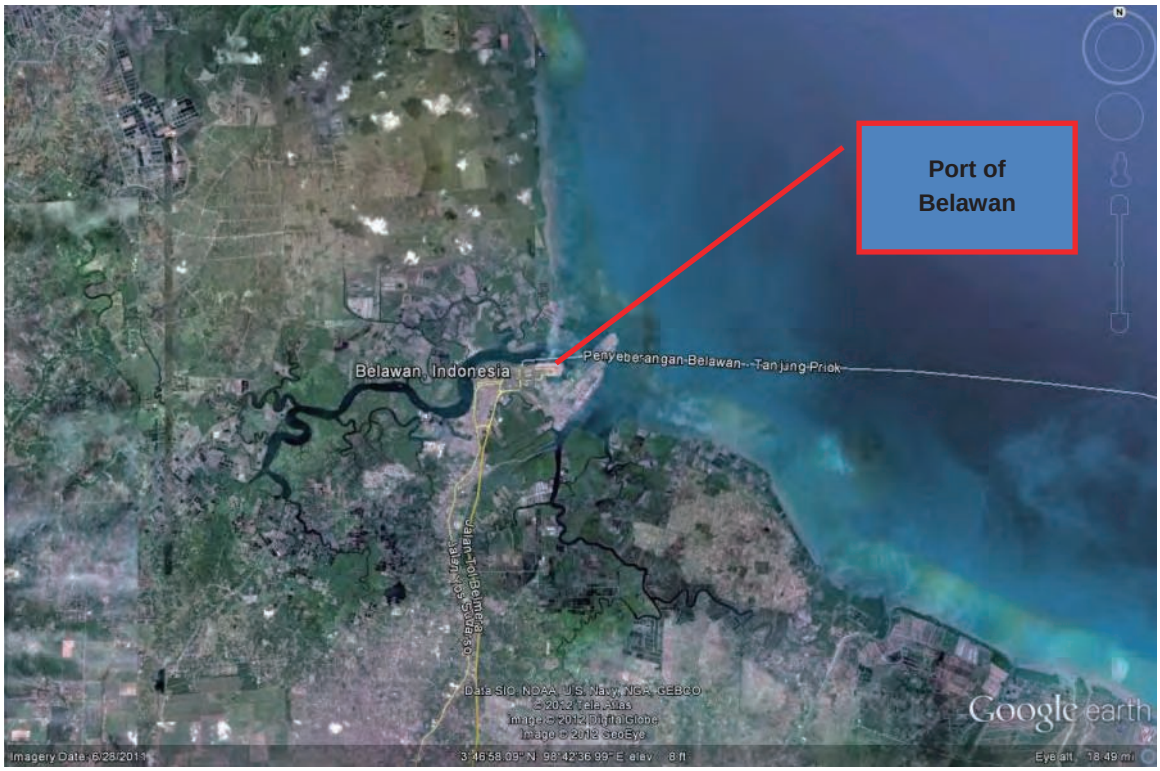
The Port of Belawan serves as the central port for this route. The route traverses the Strait of Malacca to connect the Island of Sumatra with Mainland Asia through Penang (Malaysia) and Phuket (Thailand). The sea distance from Belawan to Penang is around 140 nautical miles, and around 240 nautical miles to Phuket. After navigating the river channel of the Port of Belawan, the voyages are just straightforward crossing of Malacca Strait to either Penang or Phuket.

The Port of Belawan is located on the estuary of Belawan and Deli River, on the east coast of Sumatra close to Malacca Straits. It serves Medan, which is a fast-growing urban center of Sumatra. The approach to the port is marked at the entrance of Belawan River by a lighthouse at Tj. Nipah Larangan. Considering that the river channel of more than seven (7) nautical miles is narrow, pilotage is compulsory for vessels over 150 GT. The channel is continuously dredged up to 8.5 m (MLWS), at the basin the draft limit is from 6.0m－10.0m (LWS). The port operates 24/7 and has no tidal or nighttime restrictions. Please see Figure 5.18.

The Port of Penang is on the west coast of Malaysia and is protected by Penang Island. Penang is a highly urbanized and industrialized and one of the most developed and economically important states of Malaysia. It has also developed into a thriving tourist destination. The port that can be used for ASEAN RORO could either be at the island or at the mainland. The ports at Penang operate 24/7 and have no tidal or nighttime restrictions. The port can be accessed via the North Channel, with a draft of 11.0m, or via South Channel, with a draft of 5.8m. There is also an air draft limitation of 28m due to Penang Bridge. Pilotage is compulsory for berthing vessels over 200 GT. Please see Figure 5.19.

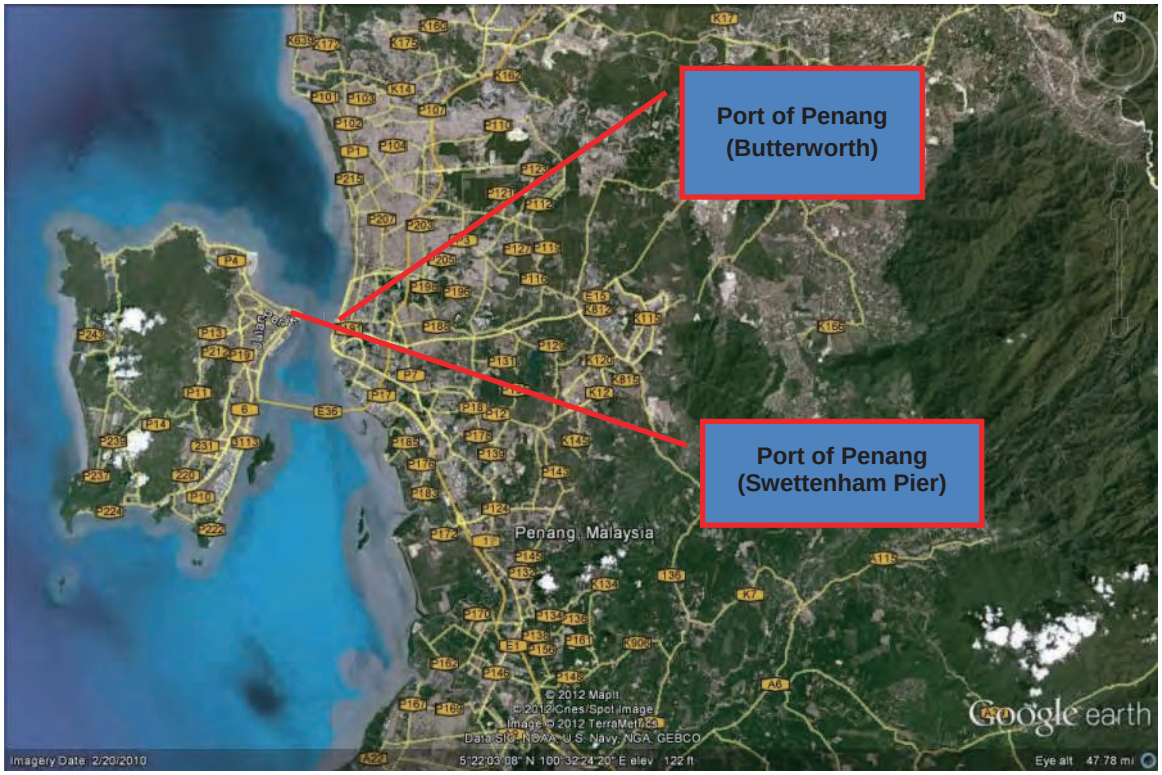
The Port of Phuket is located at Makham Bay on the eastern coast of Phuket island, on the western seaboard of Thailand, on the Andaman Sea. It is but a small port serving limited passenger and cargo traffic. Although Phuket is a prime tourist destination, however, most of tourists arrive via air. The approach to the port is normally through the channel around Koh Tapae Kyai, passing it in a clockwise direction. Pilotage is compulsory due to the many bends and turns along the access route. Please see Figure 5.20.

See Annex 5.1 for more details.



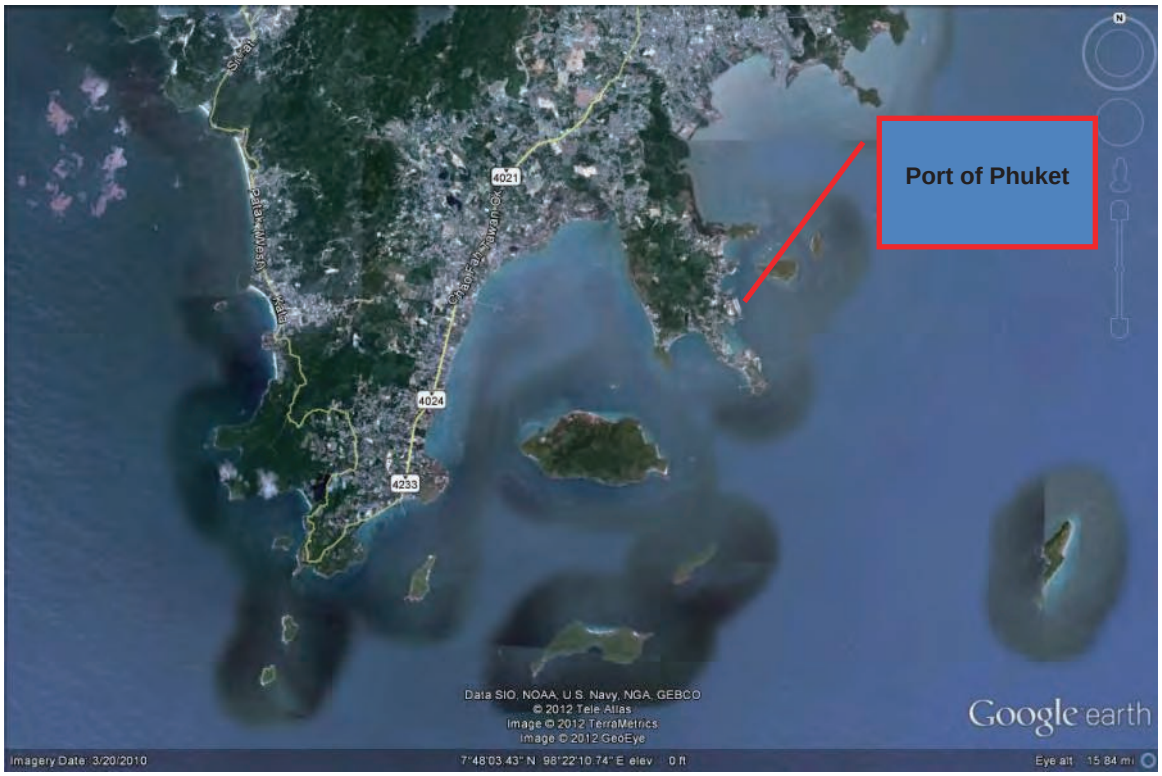
Source: Google Earth

Figure 5.18 Port Channel at Belawan



Source: Google Earth

Figure 5.19 Port Channel at Penang



Source: Google Earth

Figure 5.20 Port Channel at Phuket

5.5 CIQS Services

The ports of Belawan and Penang already have CIQS offices and systems in place, considering that these ports have historically been handling international cargoes and passengers being declared as international gateway ports. Both ports operate under the "single-window" system, wherein the CIQS services are done in a single corridor and in an integrated area.

The CIQS services at the Port of Belawan operate on a 24-hour basis, so passengers and cargoes can expect immediate service upon arrival. The Customs at the Port of Penang operates from 6:00 a.m. until 4:45 p.m., while Immigration and Quarantine services operate on a 24-hour basis.

The Port of Phuket does not have complete CIQS facilities and services. For example, the immigration clearance procedures are done on board for international passengers. Although Phuket is a well-known tourist destination, the big bulk of tourists comes in via air transport mode, and international passengers coming via the maritime mode are few and far in between.

With regard to the proposed ASEAN RO-RO services, all three countries committed to support the proposed service by further improving their CIQS facilities and services.

At the Port of Belawan, the Customs Office commits to support RO-RO ASEAN operation and will follow the adjusted CIQS regulation, if Customs Office in Central

Government agrees and gives directions. In order to support future ASEAN RO-RO operation, the Customs planned three (3) improvements as follows:

- Vessel for Import and Export must berth at customs area. Hence, the administrator will construct a new design of customs and immigration inspection area
- To prepare specific places or terminals with separation function for passenger, goods and tourism vehicle corridor
- To prevent smuggling activities (especially drugs), the administrator plans to improve the security officers capacity building and increase the number of security and inspection equipment

At the Port of Penang, CIQS operations and services will be improved to cover the plan of container terminal expansion. The number of several inspection equipment, such as cargo x-ray and security posts will be increased according to the growing demand.

As discussed in an earlier section, there are still outstanding issues with regard to the treatment of vehicle in transit and the requirement for pocket money of incoming international passengers. In order that the ASEAN RO-RO service will be successful and sustainable, these issues must be resolve in the spirit of facilitation of trade and movement of people and goods.

Table 5.15 shows the CIQS facilities and services at the three (3) ports.

Table 5.15 CIQS Facility Condition in Belawan, Penang, and Phuket Port

Item	Belawan (Indonesia)	Penang (Malaysia)	Phuket (Thailand)
Port Name	**Belawan Passenger Port**	**Swettenham Port**	**Phuket Port**
		CIQS Facility	
Building	Security Post and Gates Police Station Customs Office Immigration Office Quarantine Office Passenger Waiting Room Secure Parking Health Emergency Room	Security Post and Gates Police Station Customs Office Immigration Office Quarantine Office Passenger Waiting Room Secure Parking Health Emergency Room	Security Post and Gates Police Station Secure Parking Multifunction Room
Facility	X-Ray Machine Walkthrough Metal Detector Handheld Metal Detector CCTV CCTV Monitor Room Permanent Fence Temporary Fence Access Card Gate with Access Card Mirror Inspection for Vehicle Street Poles and Lights	X-Ray Machine Walkthrough Metal Detector Handheld Metal Detector CCTV CCTV Monitor Room Permanent Fence Temporary Fence Access Card Gate with Access Card Mirror Inspection for Vehicle Street Poles and Lights Manifest System	X-Ray Machine Walkthrough Metal Detector Handheld Metal Detector Street Poles and Lights
		CIQS Service	
Service Hours	24 Hours	• Customs: 06:00 am – 04:45 pm according to arrivals at jetties • Immigration and Quarantine are 24 Hours	No specific information
Operational System	• The operation system adopts Single window system with custom, immigration and security checks are done in a single corridor and more integrated area • There is an improved facility to do customs and immigration checking for passengers on board • Basically, as an international port, Belawan Port already implemented the standard of customs working by implementing two types of cargo inspection lanes, namely Green Line and Red Line. Green Line, trusted line, is measured by reliability of shipper. It usually took about 2 minutes process with the latest is 1 hour. The 1 hour scenario would happen if a technical problem occurred such as broken computer, off electricity etc. in this kind of line, there is no need to do physical inspection. The second line is Red Line, this line will take maximum 3 days process including physical inspection, but in fact as long as shipper document complete, it usually take 1 day only. About 90% of cases in Belawan took 1 day process only. • Port visitors and porters are well managed to enter wharf area under port administrator control	The operation system adopts Single window system with custom, immigration and security checks are done in a single corridor and more integrated area.	Phuket Port has no specific room for CIQS so far, such immigration service is provided onboard for international cruise passengers.

Major Issues	• Unofficial import products • Cross border vehicle treatment differences between Indonesian side and Malaysian side (unsuccessful operation of RO-RO Belawan – Penang, where customs matter become one of main cause)	• Cross border vehicle treatment differences between Indonesian side and Malaysian side (unsuccessful operation of RO-RO Belawan – Penang, where customs matter become one of main cause) • Administration and information. According to Immigration Office, many passengers from Belawan (Indonesia) cannot enter Penang area when they arrived due to administration matters such as incomplete document. For instance: regarding money should carry in pocket of foreign passenger. One time a passenger came to Penang and brought 1000 RM, the immigration office said not enough at least 2000 RM available, and then other day passenger came again showed 2000 RM, but the immigration said not enough again. Passenger that could not enter will claim back his ferry ticket to shipping company. This attitude made shipping company feel disadvantaged, also such problems made passenger from Indonesia felt hesitate to enter Penang via seaport.	No specific information
Coordination with other country			
Cross-border Agreement	• Coordination between Indonesian government and Malaysian government were taken several times to solve the treatment differences between Indonesian side and Malaysian side • So far, Indonesia government follows Ministry of Finance Regulation Number 142/2011 regarding Temporary Import, where cross-border vehicles will be treated as temporary import product which given free import duty. However, the regulation mentions if in order to prevent smuggling, customs will ask for cash or custom bond that is released by insurance company or bank guarantee as a safety guarantee. This safety guarantee will be released back at the time when the vehicle going back to origin country • According to regulation, the amount of money released for safety guarantee is equivalent with the price of import duty for its vehicle, usually about 40% to 50% of its vehicle price • In additions, in terms of wider region, as a part of ASEAN, this port is also regulated under IMT-GT and ASEAN agreements, therefore, the port will follow those agreement points which mainly	• Coordination between Indonesian government and Malaysian government were taken several times to solve the treatment differences between Indonesian side and Malaysian side • Malaysia under their regulation recognize cross border vehicle as temporary import product with free tax. However the regulation stipulated two requirements for cross border vehicle, which among others: (1) one international circulation permit issued by Road Transport Agency of Malaysia (valid for 90 days free of charge and 1 day process), and (2) safety insurance for vehicle. In this case, Malaysia recognize Malaysian and Singaporean insurance. Therefore, Indonesian, Thailand or other countries cross border vehicle want to enter Malaysia gate, they should pay for these insurance from the third party, usually informed in the Immigration Office/gates. • In additions, in terms of wider region, as a part of ASEAN, this port which located under IMT-GT and ASEAN agreements, will follow those agreement points which mainly regulate integration of cross border trade, immigration, and vehicle.	As a part of ASEAN, this port which located under IMT-GT and ASEAN agreements, will follow those agreement points which mainly regulate integration of cross border trade, immigration, and vehicle. The specific aspects related are as follows: • Recognition of country domestic driving license and vehicle inspection • Handling on left hand driving and right hand driving • Tax and Insurance for cross border vehicle In terms of land cross border, Thailand has at least three strategic connections with other countries, which are Malaysia, Cambodia, and Lao PDR. Since 2010, Thailand has two regulation arrangements regarding cross-border car with other countries, especially with Malaysia, Lao PDR and Cambodia. They are government to government agreement and ASEAN agreement (Brunei Action Plan). In case of ASEAN agreement, it is still draft. For Agreement with Lao PDR, Thailand had completed the regulation, therefore, now many Lao PDR cars come to Thailand everyday and vise versa. For agreement with Cambodia and Malaysia, those are still in draft

	regulate integration of cross border trade, immigration, and vehicle especially between Penang (Malaysia) and Phuket (Thailand).		status, and to be completed in few years ahead. Thailand accepts all driving license type from ASEAN countries. This policy shows Thailand commitment to start the ASEAN agreement. But, this system should be improved since many driving license have different type and classification, and this difference can make the inspection process difficult to implement. Thailand regulation allows all foreign vehicle to move freely around Thailand area, include to refill the fuel, if the vehicle is registered in the customs and immigration gates. The registration requirement is different between countries, but the minimum requirement documents are same, which among others: • Valid driving license from origin country • Passenger passport • Certificate of vehicle inspection • Thailand Insurance Thailand Insurance can be obtained in border gates, and upon this complete registration foreign vehicles can stay in Thailand for one month.
Export-Import	Customs mostly handles vegetables, rubber, CPO, cocoa for export commodities, while for import commodities such as fish, spare part for palm manufacture, supporting chemical for industry. To be noted, it is recorded that many commodities (from local and sometimes from foreign countries) come by informally (without sufficient documents)	Customs mostly handles vegetables, rubber, CPO, and fishery products	Potential commodities to be handled by Customs if RO-RO ASEAN Operated are as follows: • Rubber • Fishery Products
Other related matters			
Regulation for Truck and Port	No specific regulation provided by the government to control truck movement	No specific regulation provided by the government to control truck movement	No specific regulation provided by the government to control truck movement
Future CIQS Improvement Plan	Customs Office intended to support RO-RO ASEAN operation and will follow the adjusted CIQS regulation if Customs Office in Central Government agree and gives directions. In order to support future RO-RO ASEAN Operation, Customs planned 3 improvements as follows: • Vessel for Import and Export must berth at customs area. Hence, the administrator will construct a new design of customs and immigration inspection area • To prepare specific places or terminals with separation function for passenger, goods and tourism vehicle corridor	CIQS implementation will be improved to cover the plan of container terminal expansion. The number of several inspection tools such as cargo x-ray and security posts will be increased in adjustable scale	CIQS Facility will be located near to wharf area.

	• To prevent smuggling activities (especially drugs), the administrator planned to improve the security officers capacity building and increase the number of security and inspection tools		

5.6 Stakeholders' Views

Firstly, the stakeholders in relation to the northern Malacca Strait crossing understand well the pilot RO-RO shipping project in 2005, particularly the reason why the pilot operation was suspended. In addition, the stakeholders in Belawan/Medan, Penang and Phuket expressed the following views:

1) Belawan – Penang Route

The lack of backload from Penang has contributed to the unsustainability of the RO-RO service from Belawan. The local KADIN pointed to a lack of products that can be traded across the route. Perhaps more attention can be given to promoting tourism across the border. However, the competition with air transport is very tight.

Aside from the RO-RO service, the passenger ferry service between Belawan and Penang also had its share of problems. This service was provided by the Express Bahagia Group, a Malaysian passenger shipping company. The company served the Penang-Belawan route using two passenger boats, "MV Ekpres Kenangan" and "MV Ekpres Bahagia", from 1991 until 2010. The passenger service stopped due to the following reasons:

(1) Tight competition with air transport service. The last passenger ferry tariff between Belawan and Penang is MYR150/ pax per one way, and MYR220/ pax for two ways within one month expiry. This price was only a bit lower than the cost of airline tickets for the same route.

(2) Immigration regulations. There seems to be a lack of consistency in the regulation by the Immigration agency at the Penang side on the minimum amount of backup cash required per passenger crossing the border. For instance, a passenger came to Penang with MYR1,000 and the immigration officer said the amount was not enough and suggested the passenger should carry at least MYR2,000. When the same passenger returned the day after with the increased amount, the immigration officer said the amount was not enough again, making the passenger hesitate to come again. Passengers that cannot enter Penang will reimburse his ferry ticket to the shipping company.

(3) Declining passenger traffic. The passenger ferries used to average 160 passengers per trip. Due to declining traffic, the number of return trips decreased from 3 to just 1 before the service ceased operations in 2011.

As an active large international port in Western Indonesia, Belawan Port is considered a strategic gateway for international trade in Indonesia. It is supported by complete CIQS facilities. The Customs agency committed to support the ASEAN RO-RO project as long as the Customs Central Office agrees. For smooth RO-RO operations, they suggested several requirements, namely: (1) the vessel for import and export must be berthed at the customs area; (2) a place or terminal for passenger and goods and tourism vehicles should be prepared; (3) to prevent drug smuggling, it will be better to prepare the necessary

inspection places. With regard to the customs guarantee, a possible model that can be explored for the ASEAN RO-RO project is that of the European regulation called ATA Carnet. Every vehicle registered in ATA Carnet will have guarantee from each country.

According to PELINDO, there are currently two vessels prepared to serve Belawan-Port Klang-Singapore-Tanjung Pelepas route, but not a direct Belawan-Penang route. PELINDO is studying the possibility to move RO-RO activities from Belawan Port to Belawan Lama Port, about 20 minutes away, where passenger embarking/disembarking has already been moved. This is because Belawan Port has a multipurpose terminal, which makes passenger activities inside the terminal dangerous. Belawan Lama Port is served by train and bus terminals.

2) Belawan – Phuket Route

Stakeholders expressed contrasting sentiments about the potential trade between Indonesia and Thailand through the Belawan-Phuket route. Some believe trade prospects are small since both countries have similar products. So far, there is not much cargo from Belawan. There is, however, some transit cargo on the Bangka (Palembang)-Belawan-Phuket-Padang-USA (New Orleans) route. On a more positive note, KADIN North Sumatra sees many business opportunities that can be created in opening up trade between Belawan and Phuket. From Belawan, live fish, handicrafts, cangkingan (goods carried with hand) can be exported. From Thailand, rice (used to be a major import but is now limited by the Indonesian Government to protect its domestic product), appliances (e.g., washing machines, air conditioners) can be imported.

The port operator and shipping agent in Phuket said that Phuket Port's deep seaport characteristics make it more competitive than other ports located in Southern Thailand such as Songkhla and Kantang. If the port would handle more cargo and attract more cargo vessels, Phuket Port could benefit the economy of Southern Thailand. However, the Government intends for Phuket to be an international tourism destination rather than a logistics hub. A RO-RO service could increase cargo truck traffic and industries coming to Phuket and this may be against the tourism promotion policy. There is also concern that during May-October, the wind condition at the southwest sea of Phuket is very bad and waves are very high, e.g. 2 meters, making it dangerous for small RO-RO vessels, especially for vehicles inside the vessel.

A tourism association representative in Phuket related that past efforts to develop subregional tourism products between Phuket and Penang and between Phuket and North Sumatra have failed. Despite this, the Tourism Association of Phuket continues to be interested in diversifying its tourism products under subregional collaboration. This will require greater efforts among stakeholders. The RO-RO shipping service may provide opportunities to attract more Malaysian tourists to Phuket. In recent years, an increasing cross-border tourism bus traffic from Malaysia to Phuket has been observed. There was an attempt to open a once-a-week fast ferry service between Phuket and Penang but after three or four trips, the service was stopped due to lack of demand.

6 THE SOUTHERN MALACCA STRAIT CROSSING BETWEEN INDONESIA AND MALAYSIA

This section deals with the route candidate of Dumai – Malacca.

Figure 6.1 Surveyed Route

6.1 Economy and Trade

1) Riau Province, Indonesia

Dumai is one of two cities in Riau Province in the island of Sumatra, Indonesia. The other, the City of Pekanbaru, is the provincial capital. Riau Province is geographically located on 01° 05’ 00” South Latitude - 02° 25’ 00” North Latitude and 100° 00’ 00” East Longitude - 105° 05’ 00" East Longitude. It is adjacent to Malacca Strait and North Sumatra province in the north, Jambi Province and North Sumatra province in the south, West Sumatra Province and North Sumatra province in the west, and Riau Isles Province and Malacca Strait in the east.

Riau Province is divided into nine (9) regencies and the cities of Dumai and Pekanbaru. The province has a total land area of 89,150 km^2. Its population in 2010 was 5.5 million (see Table 6.1).

The Provincial GRDP at current prices, with oil and gas, increased from IDR297.2 trillion in 2009 to IDR342.7 trillion in 2010. Without gas and oil, GRDP at current prices also increased from IDR179.0 trillion to IDR214.6 trillion over the same period. The Per Capita GRDP at current prices was USD13,009 and USD8,146 with and without oil and gas, respectively.

Riau Province is one of the richest provinces of Indonesia in terms of natural resources, particularity petroleum, natural gas, rubber and palm oil. It has the largest plantation area of oil palm which accounts for about 25% of the country's total. Agriculture is the main sector, producing plantation commodities such as coconut, oil palm, gambir, cocoa, rubber, coffee and durian. The fishery subsector produces fish from sea culture and brackishwater cultivation. The services sector is mainly from tourism, particularly culture and nature-based tourism.

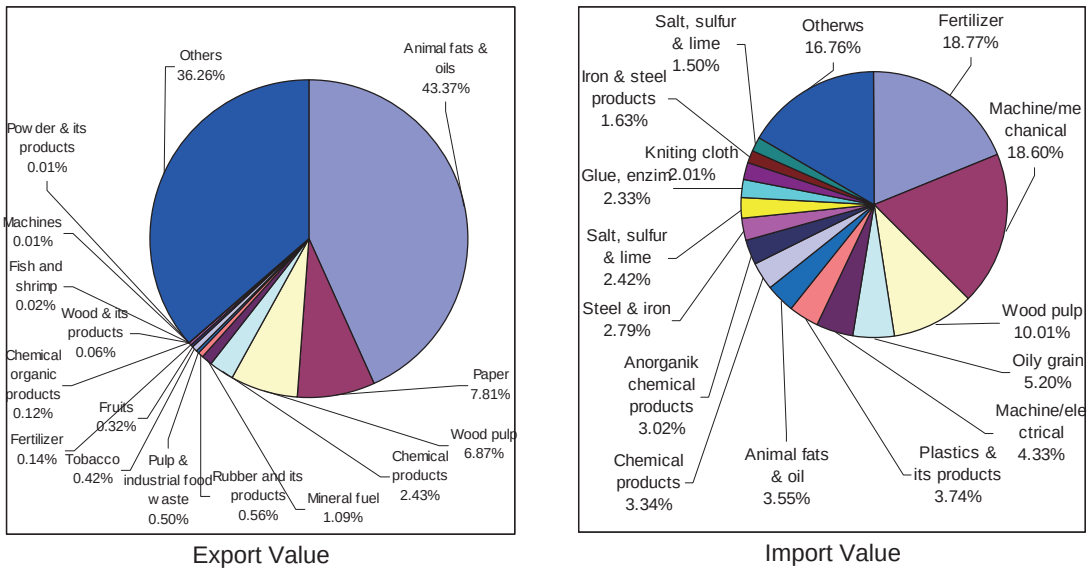
Dumai has a land area of 1,727 km^2 and is divided into three (3) districts that consist of 22 villages. The city's population in 2010 was 253,178 with a density of 147 persons per km^2. Dumai's GRDP at current prices, including oil and gas, increased to IDR6.5 trillion in 2010 from IDR5.3 trillion in 2009. At constant 2000 prices, the GRDP, excluding oil and gas, was IDR2.1 trillion as compared to IDR1.9 trillion in 2008, indicating a real economic growth of 8.6%.

Table 6.1 Socio-economic Indicators of Riau Province

Year	Population	GRDP at Current Prices with Oil & Gas (IDR Billion)	Per Capita GRDP at Current Prices with Oil & Gas (USD)	Per Capita GRDP at Current Prices without Oil & Gas (USD)
2000	nd	94,758	8,471	nd
2005	nd	139,019	9,133	nd
2010	5,538,367	342,691	13,009	8,146

Source: Riau in Figures (2011), Statistics of Riau

Figure 6.2 and Table 6.2 show the international trade of Riau Province excluding oil and gas because the value of exported oil and gas accounts for half of the non-oil and gas products. The major export commodities are animal fats and oil, paper, wood pulp, chemical products and mineral fuel, among others. The major imports are fertilizer, machine/ mechanical products, wood pulp, oily grain, machine/ electrical products, and other industrial products.



Export Value | Import Value

Source: Riau in Figures (2011), Statistics of Riau

Figure 6.2 International Trade (Excluding Oil & Gas) of Riau Province, 2011

Table 6.2 Top 10 Export and Import Commodities (Excluding Oil & Gas) of Riau Province, 2011

Top	Export			Import		
	Commodity	Weight (000 MT)	Value (Mil. USD)	Commodity	Weight (000 MT)	Value (Mil. USD)
1	Animal fats & oils	8,120.8	6,894.6	Fertilizer	650.9	185.5
2	Paper	1,480.9	1,242.3	Machine/mechanical	34.3	183.7
3	Wood pulp	1,969.1	1,091.4	Wood pulp	133.5	98.9
4	Chemical products	493.3	385.7	Oily grain	59.7	51.4
5	Mineral fuel	2,614.5	173.8	Machine/electrical	7.2	42.8
6	Rubber and its products	28.0	89.7	Plastics & its products	23.9	36.9
7	Pulp & industrial food waste	917.6	79.9	Animal fats & oil	46.2	35.1
8	Tobacco	5.5	66.1	Chemical products	8.8	33.0
9	Fruits	121.0	50.9	Organic chemical products	157.5	29.9
10	Fertilizer	58.5	23.0	Steel & iron	31.4	27.6
	Others	89.0	47.3	Others	839.7	263.2
	Total	**15,898.1**	**10,144.6**	**Total**	**1,993.2**	**988.0**

Source: Riau in Figures 2011, Statistics of Riau

The largest ASEAN trade partner of Riau Province is Malaysia, both in terms of export and import (see Table 6.3). The weight on both ways is about 7,500 MT per day, but one third of the weight is crude oil and oil.

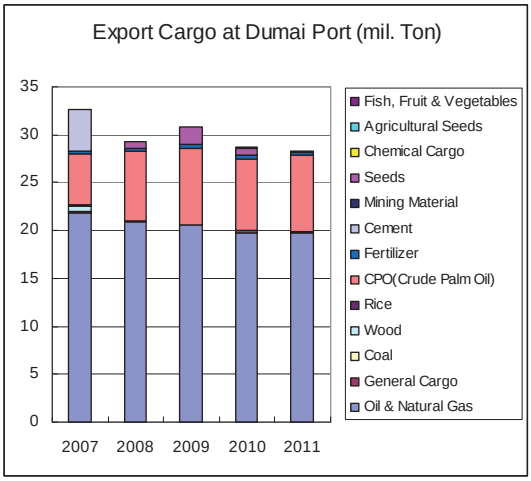
Table 6.3 International Trade Destinations from/to Riau Province, 2011

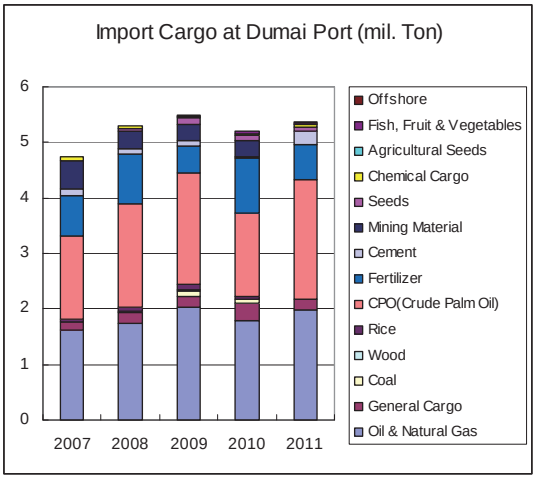
Country	Export		Import	
	000 MT	Mil. USD	000 MT	Mil. USD
Brunei Darussalam	0.394	0.338		
Cambodia	115	9		
Malaysia	2,218	1,070	527	191
Myanmar	63	56		
Philippines	135	82	0.000027	0.003057
Singapore	579	350	292	255
Thailand	754	71	152	60
Vietnam	138	100	18	11

Source: Riau in Figures 2011, Statistics of Riau

To support economic activities and investments in Riau Province, the province has four seaports, namely Pekanbaru Port in the City of Pekanbaru, Perawang Port in the City of Pekanbaru, Dumai Port in the City of Dumai, and Bagan Siapi-api Port in the Regency of Rokan Hilir; as well as two airports, namely Sultan Syarif Kasim II Airport in Pekanbaru and Pinang Kampai Airport in Dumai.

At Dumai Port, the major commodity for export is oil and natural gas, and for import is crude palm oil (see Figure 6.3). Although both of these commodities are carried by liquid tankers and are not cargoes on RO-RO vessels, it is worth noting that trade of palm oil between Malaysia and Indonesia is very large (see Table 6.4). There is also potential for trade in fertilizer, seeds, fish, fruits and vegetables.





Source: Dumai Port Authority

Figure 6.3 Export/Import Cargo at Dumai Port

Table 6.4 Intra-ASEAN Export/Import Matrix of Palm Oil, 2009 (in USD 000)

From/To	Brunei Darus-salam	Cambo-dia	Indo-nesia	Lao PDR	Malay-sia	Myan-mar	Philip-pines	Singa-pore	Thailand	Vietnam
Brunei D.										
Cambodia										
Indonesia	804	298			719,443	77,921	24,001	392,602	4,163	129,306
Lao PDR										
Malaysia	4,569	5,820	27,739	129	364	64,750	62,031	244,208	34,920	188,055
Myanmar										
Philippines										
Singapore	390	358	51		14,195	1	714		41	2,427
Thailand		31	1	1,447	9,182	29,561		16		8,593
Vietnam										

Source: FAO, FAOSTAT: Trade Sheets

2) Malacca, Malaysia

The State of Malacca is a small state in the southern part of the west coast of Peninsular Malaysia. The state covers a total land area of 1,664 km^2 and is divided into three (3) districts, namely Central Malacca, Alor Gajah, and Jasin. Malacca is adjacent to Johor in the east and south, Malacca Strait (and Sumatra Island) in the west, Kuala Lumpur and Negeri Sembilan in the north. The state capital, Malacca City, is strategically located between the two busiest cities of Kuala Lumpur and Singapore, and well connected by roads and highways. The State of Malacca also covers some offshore islands such as Besar Island, Upeh Island, and Tanjung Tuan Island.

The population of Malacca in 2010 was 821,110 and growing by an average of 1.3% a year (see Table 6.5). In terms of regional distribution, 61% of the population was in Malacca Tengah, 22% in Alor Gajah, and the rest in Jasin. Overall population density of the state was 493 persons/km^2. Only 1% of the State's labor force of 290,000 was unemployed, making it a region with one of the lowest unemployment rates in Malaysia.

Table 6.5 Socioeconomic Indicators of Malacca State

Year	Population	GRDP at Constant Prices with Oil & Gas (MYR Million)	Per Capita GRDP at Current Prices (MYR)	Per Capita GRDP at Current Prices (USD)
2006	732,700	13,091	nd	nd
2007	742,300	nd	nd	nd
2008	751,900	nd	24,686	nd
2009	761,600	14,445	22,583	nd
2010	821,110	15,284	24,697	7,817

Source: Department of Statistics, Malaysia

The State of Malacca had a GRDP at constant prices (with oil and gas) of MYR15,284 million in 2010, growing by an average of 3.2% from MYR13,091 million in 2006. The Per Capita GRDP at current prices was MYR24,697 or USD7,817. Malacca is similar to Penang with regard to industries and tourism. In terms of economic structure, Malacca's economy was dominated by services (46% share) and industry (42%). The biggest contribution to the industry sector was from the manufacturing industry while the services sector derived its income from the utilities, transportation, storage and communication, finance, insurance, real estate, and business subsectors. At 7% average growth per year, the services sector was also the fastest growing sector. Malacca has about 22 industrial areas which are developed by the private sector or the Melaka Development Corporation. In these industrial areas automotive, electronics, furniture and others are manufactured and distributed by road, rail and sea.

Aside from oil and gas, another major export commodity from Malacca is iron ore which is sent to China from its sources in Johor. The main import commodities are maize, corn, animals, steel coils, iron, and pipe gases from Taiwan.

As a World Heritage City, tourism in Malacca focuses on cultural and historic old-city tourism attractions such as museums, statues, rivers, and preserved buildings, as well as native and special tribe cultures.

To support its economic and investment activities, Malacca's transport infrastructure includes the Inter-City Highway (connecting Malacca City with Johor, Kuala Lumpur, and other big cities in Malaysia), Malacca Airport, and the state's two major seaports, namely Tanjung Bruas Port and Kuala Linggih Port. Most of the ports are supported by good road infrastructure. Access to the Tanjung Bruas Port is via a two-lane 9-meter wide road which can accommodate traffic of small cars, motorcycles, small buses, and small to medium-sized trucks. This road also connects the city to Kuala Linggih Port, located around 40 km from the city center. Tanjung Bruas is in between the city center and Kuala Linggih.

Tanjung Bruas is used for bulk cargo and the City Wharf is used for passenger ferry to Dumai and Bengkalis in Indonesia. Tanjung Bruas Port handled some 451,000 MT of cargo in 2010, most (92%) of which were imports (see Table 6.6). Cargo throughput at the port was mainly break bulk cargo (68%), dry bulk (28%), and liquid bulk (4%). However, its proximity to the two major neighboring ports of Tanjung Pelepas and Port Klang, which are connected with Singapore and Kuala Lumpur by good road, provides serious competition for export/ import.

Table 6.6 Cargo Throughput in Tanjung Bruas Port ('000 MT)

	2006	2007	2008	2009	2010
Export	7		14	25	37
Import	399	606	543	437	414
Total	406	606	557	462	451

Source: Transport Statistics Malaysia, 2010

6.2 Corridor-wide Traffic

1) Passenger Traffic

There are several shipping companies providing crossing service for passengers between Dumai Port – Malacca and Dumai – Port Klang. Dumai – Malacca is served by 2 passenger boats and Dumai – Port Klang is also served by 2 passenger boats. Other than this 4 passenger boats, there are 2 passenger boats provided as a back up when an unexpected incident happens.

Table 6.7 Ship particular operated in Dumai – Malacca and Dumai – Port Klang

No	Name of Ships	Hull Number	Flag	IMO #	Size (LxWxD) in meters	Machine Power	Number of Pax	Year Built
1	KM Indomal Express	GT.145 No.686/GGa	Indonesia	8966602	29.07x5.47x2.27	3 x 1,000 PK	255	1997
2	KM Indomal Express II	GT.147 No.510/PPm	Indonesia	8984355	29.07x5.47x2.27	3 x 1,000 PK	262	1997
3	KM Indomal Express 3	GT.143 No.987/GGa	Indonesia	9328194	31.28x6.70x2.58	3 x 1,500 TK	275	2003
4	KM Indomal Express 5	GT.159 No.840/GGa	Indonesia	9894376	30.82x6.60x2.80	2 x 956 KW 1 x 1,050 KW	272	2000
5	KM Indomal Express 8	GT.148 No.564/PPj	Indonesia	9123257	27.61x6.50x1.90	3 x 610 KW	212	1995
6	KM Indomal Express 1	GT.194	Indonesia	8980074	32.50x7.00x1.53	3 x 1,500 TK	275	2001

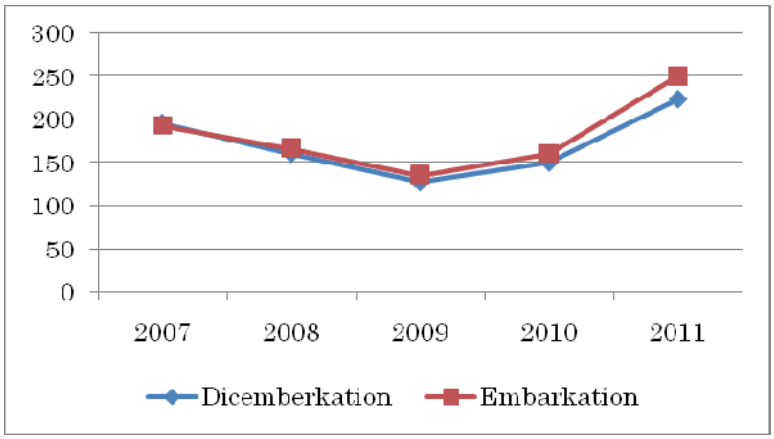
Source: PT. Lestari Indomabahari (DUMEX), 2012

Figure 6.4 Dumai – Malacca Route and Dumai – Port Kelang Route, 2012

The number of international shipping passengers is 261,495 on a disembarkation basis in 2012. The strait crossing passengers have some characteristics as follows:

- Although nationality is unknown in the statistics, the field survey observed most of strait crossing passengers are Indonesian. The provincial statistics shows that Dumai received merely 14,394 foreign visitors in 2010;

- Main clientele segments are overseas workers to Malaysia on the Dumai – KL route and the people visiting relatives and receiving medical care on the Dumai – Malacca route;
- A traffic drop in 2009 is explainable by a stricter overseas workers reception policy by the Government of Malaysia in response to the Global Financial Crisis that hit the world in 2008 and its associated economic recession in Malaysia.
- Unlike the Belawan-Penang route, the operators enjoy shipping business without competition with airlines. Dumai is located 199 km from Pekanbaru, the provincial capital with a feeder domestic airport.



Source: PT. PELINDO I, Dumai Branch

Figure 6.5 Trend in International Ship Passengers, 2007-2011

Malacca has a World Heritage Site, attracting 1.2 million foreign visitors in 2008. Indonesia was ranked as the third country with the most visitors, when 106 thousand Indonesians visited the city.

2) Cargo Traffic

The trade between Riau Province and Malaysia is vigorous. As introduced earlier, the Riau – Malaysia trade is outstanding among other ASEAN countries at 7,500MT per day. Although huge exports of oil and forestry related products account for 89% of the provincial export, however, Malaysia's share is a modest 13% in export and 26% in import in the economy of Riau Province.

The first field survey reveals the following characteristics in the strait crossing trade between Riau and the Malay Peninsula:

- Most of the strait crossing trade is done by Indonesian wooden-hull vessels. They homeport at PELINDO Dumai Port or the riverside shore nearby;
- According to the statistics of PELINDO Dumai Port, the sizes of foreign vessels and domestic vessels in external trade are quite different, 6,000 – 16,000 GRT for foreign vessels and 200 – 600 GRT for domestic vessels. The former may be engaged in bulk shipping to export oil and forestry products while the latter in the short strait crossing trade.
- It is difficult to estimate the number of Indonesian wooden-hull vessels that engage in the Riau – Malacca trade. PELINDO Dumai Port does not accommodate all the

wooden-hull vessels for the strait crossing trade. Many may avoid paying port duties and they thus prefer to moor at riverside or other places. Malacca State does not have a general port to accommodate those vessels. They must enter into other ports or alternative sites.

Table 6.8 Ship Calls at PELINDO Dumai Port, 2007-2011

		2007	2008	2009	2010	2011
Foreign Vessels	Call	1,202	946	944	894	974
	GRT	15,840,913	10,668,121	5,890,753	5,863,684	15,357,030
	Ave. GRT	13,179	11,277	6,240	6,559	15,767
Domestic Vessels	Call	1,066	1,208	852	995	986
	GRT	213,748	248,330	196,788	288,710	536,820
	Ave. GRT	210	206	231	290	544

Source: PT. PELINDO I, Dumai Branch

6.3 Port Operation and Infrastructure

1) Port of Dumai

(1) Overview of the Port

Dumai port is located in the middle of Sumatra Island and about 5 hours by vehicle from Pekanbaru, the capital city of Riau Province. The port is connected with Malacca Strait through the waterway between Sumatra Island and Rupat Island. Dumai Port provides several services, such as cargo and passenger terminals. The main commodities are CPO, crude oil and their products, which are main products of Riau Province.

Figure 6.6 Location of Dumai Port

(2) Natural Conditions

There is a small island named Rupat Island between the port and the strait and it forms a natural breakwater for Dumai Port. However, some port users point out problems caused by wave conditions. In February 2012, one vessel destined to Port Kelang canceled its voyage (before departing out from Rupat Island area, they come back to Dumai Port) due to the severe weather condition and waves up to 2 or 3 m. In 2011, one vessel from Malacca to Dumai was canceled due to the same reason. The port experiences the highest wave of about 2 to 3 m during December to January.

(3) Port Facilities/Layout

The port has a 55 mile long channel, which consists of 22 miles through the Strait of Bengkalis and 33 miles through the Strait of Rupat, with depth of more than 10 m LWS, width of about 255 up to 1,700 m. The area of the Port Basin is about 64,060,200 m^2 with minimum depth of 6 m LWS and maximum depth of 10 m LWS.

The area of Dumai Port is 785,161 m^2 with port facilities, such as office, warehouse, container yard, passenger terminal and also a commercial area. The layout is shown in Figure 6.7. Most of the commercial area is used for storage, such as CPO storage.

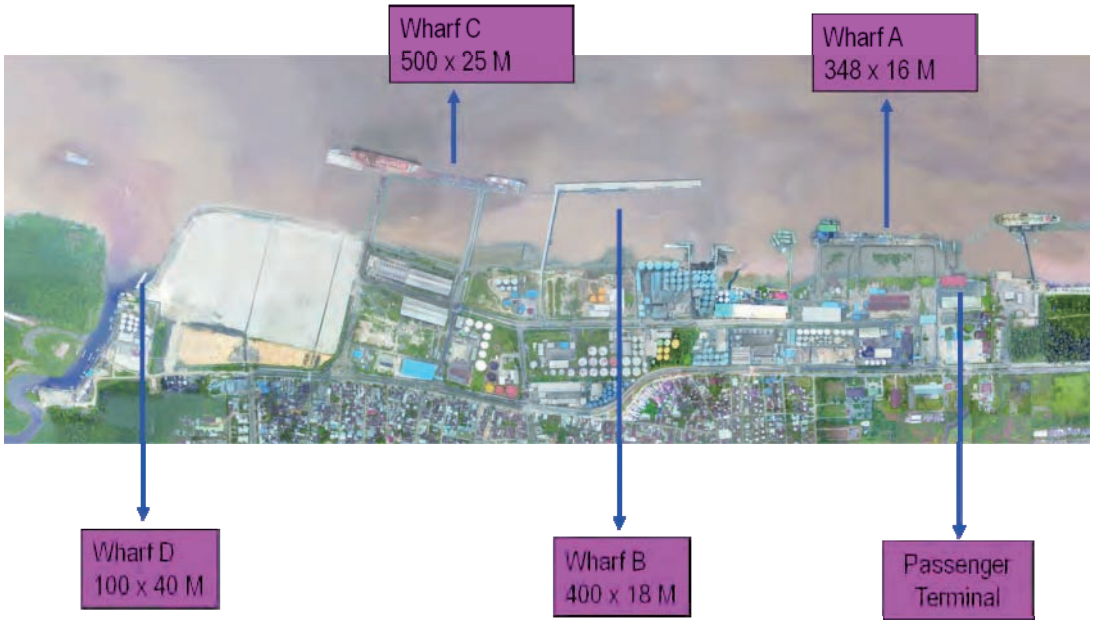


Figure 6.7 Layout of Dumai Port

Table 6.9 Main Port Facilities

Name		Dimension	Depth LSW	Apron
Wharf A	General Cargo Wharf(Old Wharf)	348 m	9 m	16 m
Wharf B	Palm Oil	400 m	11 m	18 m
Wharf C	Multi-purpose Wharf(New Wharf)	500 m	10 m	25 m
Wharf D	Traditional Shipping Wharf			
Passenger Terminal		10m×2	10 m	10 m

(4) Management and Operation

Dumai Port is under the operation of PELINDO I whose headquarter is located in Medan City in Sumatera Island. Permission to enter the port is under control of Port Authority which is a harbor master. The procedure to obtain port service is same as that in other ports in Indonesia. Several problems related to CIQS exist in Dumai Port, such as limited capacity of Customs and Immigration inspections in passenger room and unseparated domestic and international passengers line, shortage of facility, such as X-Ray machines, Cargo Detector, etc

(5) Connection with Hinterland

The existing access road from Pekanbaru to Dumai is still not adequate to support cargo and passenger movement both from Riau Province and outside Riau. In several spots, the damaged condition of the road obstructs transport activity. The traffic volume is about 12,492 passenger-car unit daily, which mainly consists of transportation of CPO products and forestry plantation as well as public transportation.

Those conditions of access and transportation networks cannot adequately support and accommodate the fast growing economy and business activities which require the availability of smooth and fast transportation facilities to provide a trouble-free

and efficient link between Pekanbaru, as the capital city of Riau Province, and other centers of growth in Riau mainland.

The development of Pekanbaru – Dumai toll road is one of the local Government policies in supporting and optimizing Dumai as Petroleum Port City, Industrial Zone and as the gateway for the eastern coast of Sumatra Island. According to the Ministry of Public Works Indonesia, the Pekanbaru – Dumai toll road will be regarded as a part of the ASEAN Highway No. 25 as well as the designated transit transport route. Therefore, there may be no issue to connect the ASEAN RO-RO route of Dumai – Malacca to the ASEAN Highway in Sumatra. The proposed "Pekanbaru – Dumai Toll Road" is about 135.34 km in length, consisting of 2 sections; Pekanbaru Kandis (46.20 km) and Kandis – Dumai (89.14 km) as depicted in Figure 6.8.

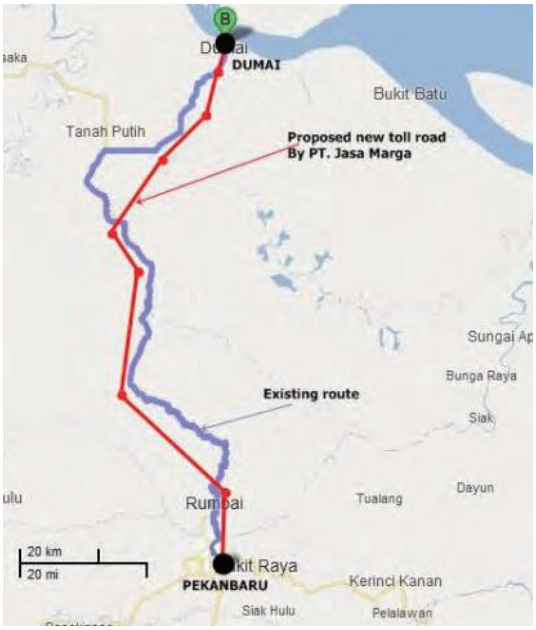


Figure 6.8 Proposed Pekanbaru-Dumai Toll Road Plan, PT Jasa Marga

The existing road networks connecting Pekanbaru-Dumai is 199.45 km long. Traversing such a distance normally takes 3.5-5 hours driving time. However, with the Toll Road with a length of only 135.34 km, and with the speed average ranging from 90-100 km per hour, the expected driving time will be reduced to only 1.5 hours.

Dumai has no specific regulation to control truck movement in the city. All kinds of trucks are allowed to access major roads from/to port and city area.

(6) Future Development

PELINDO I has already prepared the master plan to expand Dumai Port such as extending the wharf, providing more cargo handling equipment and developing a commercial warehouse.

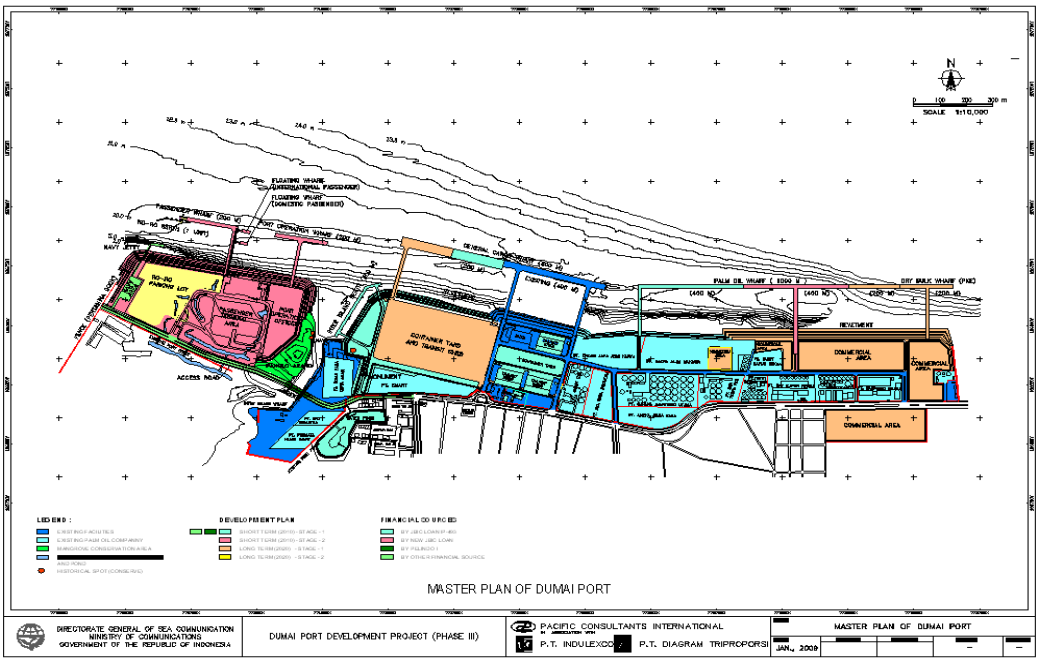


Figure 6.9 Master plan of Dumai Port by PELINDO I Dumai Branch

(7) Topics related to RO-RO Terminal

Currently, there are two (2) terminals that handle passengers in Dumai.

One is the terminal for Dumai / Malacca passenger service. The terminal is located within Dumai port adjacent to the general cargo terminal. This is not a RO-RO terminal but a normal pontoon type berth for mooring speed boat type passenger ship.

The other passenger terminal is dedicated to ASDP RO-RO ferry service. It is located in the western part of Dumai Port, 20 minutes from the city center by car. This RO-RO route connects Dumai with Rupat Island. It takes 30-45 minutes for the crossing. The City Government of Dumai provided the land and Riau Provincial Government provided the terminal facilities. The construction of facilities started in 2005 and was completed in 2009.

The terminal consists of:

- L-shaped Jetty with RO-RO Ramp at the end;
- Connecting bridge: length of about 600 m, width about 4 m (for one-way traffic plus pedestrian walkway on one-side); and
- RO-RO Ramp: Adjustable shore-side ramp connecting ship's fore ramp

The shore ramp is suitable for the ship currently employed, but it seems not suitable for larger size RO-RO ships. Water depth on ramp area is -7 to -10 m.

Adjacent to, but separate from, the RO-RO Terminal Facility, there is a passenger ship facility to be used for speed-boat type passenger service equipped with two (2) mooring spots. The facility is completed but not yet used for actual operation. There is a plan to induce passenger ferry service (domestic and international) to this facility.

Figure 6.10 Passenger Terminal of Dumai Port

Figure 6.11 RO-RO Terminal of ASDP Port

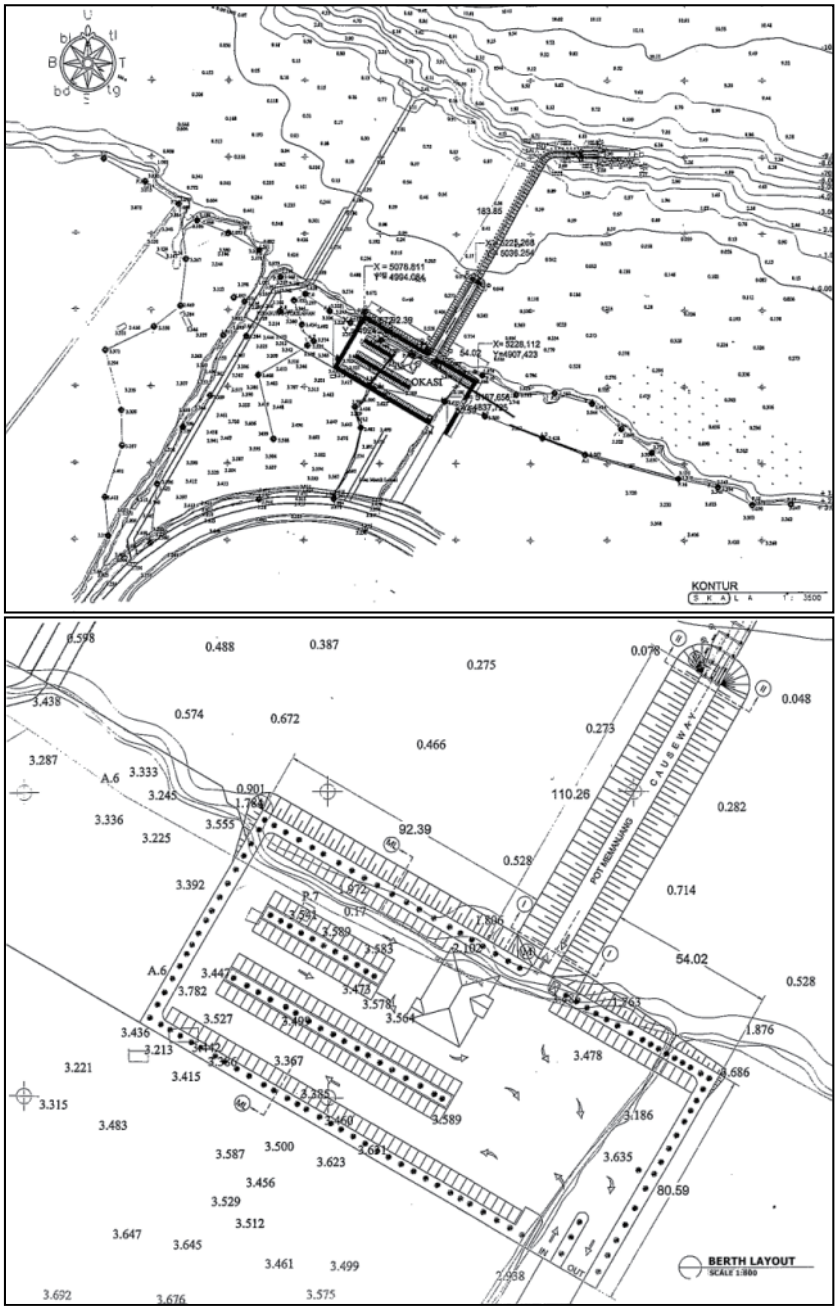


Figure 6.12 Berth Layout of ASDP RO-RO Terminal at Dumai

2) Port of Tanjung Bruas

(1) Overview of the Port

There are two minor ports in Malacca: Tanjung Bruas Port and the City Wharf. Tanjung Bruas is located in Tanjung Kling area about 12 km from the city center to the west and takes a role as the main cargo-handling port of Malacca State. The City Wharf is located at the mouth of the Malacca River. It is currently used as a passenger boat terminal connecting Dumai and Bengkalis, Indonesia. Tanjung Bruas Port was built in 1980 with facilities for direct loading/unloading of local products.

(2) Natural Conditions

The port faces the Straits of Malacca. Occasional strong NW wing occurs during the 3rd /4th quarter of the year, which lasts for 3-4 days. The tidal range of the port waters is about 2 m in average. The depth of the port waters is -9m.

(3) Port Facilities/Layout

The port operator, SPPG, informed the Study Team of the major port facilities including Office Building, Petronas Base Oil Depot (onshore), Parking Area (for several vehicles only), T-shaped Jetty (170 m long and 9 m deep), Connecting Bridge (400 m long and 7 m wide), Warehouse (3,000 m^2), Private Godown (storage, 24,722 m^2), and Tide Measurement Station.

Figure 6.13 Tanjung Bruas Port

(4) Management and Operation

Klang Port Authority takes the role of a port management body. The port was privatized to SPPG, a Malaysian company, in 1992 under 21 years concession contract with the Central Government (through the Malaysian Ministry of Transportation). The current contract comes to an end in 2013, however SPPG is willing to renew their contract and continue port operation.

The port is supported by limited CIQS infrastructure, such as 1) Security Posts, 2) Police Station, 3) Customs Office, and 4) Quarantine Office (with warehouse). Inspection tools were prepared but unutilized yet by the operator. There are X-Ray Machine, Walkthrough Metal Detector, and a set of CCTV.

(5) Connection with Hinterland

The state capital, Malacca City, is located between the two busiest cities: Kuala Lumpur and Singapore, and well connected to roads and highways. To support economic activities and investments in the State of Malacca, there are some transport infrastructures, such as Inter-City Highway (connecting Johor, Kuala Lumpur, and other big cities in Malaysia with Malacca), Malacca Airport, Kuala

Linggih Port, and Tanjung Bruas Port. Most of the ports are supported by good road infrastructure.

The North-South Expressway is regarded as the ASEAN Highway Route No.2 as well as the designated transit transport route. Malacca city center is located some 20 km from the Ayer Keroh exit of the North-South Expressway. A good local road network ensures a smooth traffic between Tanjung Bruas Port and the North-South Highway and the highway network provides relatively large hinterland area.

There is no specific regulation to control truck movement in the city. All kind of trucks are allowed to access major roads from/to the port and city area. In the case of Tanjung Bruas Port, the road access is about 9 meters wide, fit for two medium size cars passing each other. During the site visit period, traffic condition was low, and the types of vehicle using the road are, among others, small cars, motorcycles, small buses, and small to medium trucks.

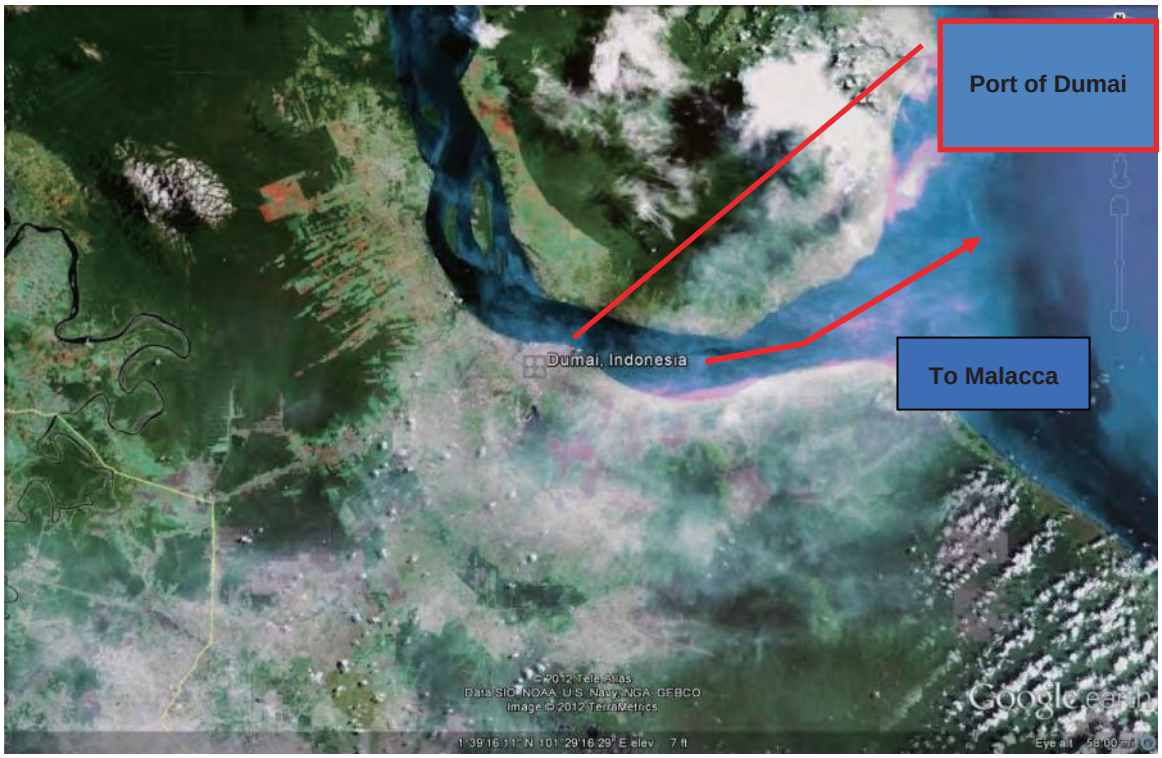
6.4 Shipping Routes

The Dumai – Malacca route is just a short sailing of about sixty (60) nautical miles, crossing the Malacca Strait. This route connects two traditional trading partners on both sides of the strait. Dumai is an important trade center, as the area is rich in fuel oil and palm oil.

The Port of Dumai is well-protected sea port situated along the north central shores of Sumatra Island facing Malacca Strait. The port can be reached by deep draft vessels by proceeding from Malacca Strait into Bengkalis and following a buoyed channel on a Southerly course of 22 miles to the junction of the Rupat Strait. The approach channel has a length of thirty-three (33) nautical miles, and it is wide enough even for a Very Large Crude Carrier (VLCC) to enter the port. The depth at the port basin varies from 7.0 m to 18.6 m depending on the terminal. Pilotage is compulsory for vessels more than 105 GT. For some years, the Rupat-Bengkalis Strait area has been designated as a Restricted Maritime Zone by decree of the Government of Indonesia. A partial exemption from the requirement to secure special Indonesian Consular Clearance before entering this Zone has been granted by the Indonesian Navy to tanker vessels proceeding to Dumai from any port in the world except Singapore. Please see Figure 6.14.

The Port of Malacca is a small port located in an open-sea area, along Malacca Strait. It is located in the southern part of the Malay Peninsula. Since it is situated in the open sea, it can be approached from all directions from the sea. It has a T-shaped jetty, with a length of 170 m and can accommodate vessels of 12,000 DWT. The depth of water at the seaward side is 9 m. Pilotage is compulsory for vessels entering or leaving port limits and during berthing/unberthing. Please see Figure 6.15.

See Annex 6.1 for more details.



Source: Google Earth

Figure 6.14 Port Channel at Dumai

Source: Google Earth

Figure 6.15 Port Channel at Malacca

6.5 CIQS Services

The Port of Dumai (Dumai PELINDO Port) has more CIQS facilities than the Port of Malacca (Tanjung Bruas Port). This could be so because Dumai has traditionally been a center distribution point for Riau Province and hinterland areas in border provinces such as West Sumatera, Jambi, and Bengkulu. Most of the exporters from those areas deliver their products via Dumai Port.

The Port of Dumai has existing office buildings for Customs, Immigration, Quarantine, and Police Station. It has a Passenger Waiting Room for the comfort of its passengers. The operation system adopts the “Single-window” system wherein customs, immigration, quarantine and security checks are done in a single corridor and a more integrated area. However, the room used for such activities is small, and would need further improvements. The operating hours are irregular, maybe in response to the demand, but it is usually from 7:00 a.m. till 4:00 p.m. To facilitate movement, the port uses the “Green Line and Red Line” system. Those who have their documents complete can expect to have their documents processed in just a few minutes.

The Port of Malacca has a multi-function building, which they plan to use as a passenger terminal building and for CIQS offices in the future.

Both ports have X-Ray Machines and Walkthrough Metal Detectors. The Port of Dumai has CCTV cameras to augment its security system.

The major issue confronting the route, if a RO-RO service is developed, would be the differences in the treatment of in-transit vehicles between the Indonesian side and Malaysian side. To prevent smuggling, the Customs at the Indonesian side would require cash or custom bond, which is about 40% to 50% of the value of the vehicle, issued by an insurance company or bank guarantee, as a safety guarantee, which will be released back at the time when the vehicle returns back to the origin country. At the Malaysian side, there are two requirements for cross border vehicles: (1) international circulation permit issued by Road Transport Agency of Malaysia (valid for 90 days, free of charge and 1 day processing); and (2) safety insurance for the vehicle. In this case, Malaysia recognizes Malaysian and Singaporean insurance. Therefore, Indonesian, Thai or cross border vehicle from other countries that want to enter Malaysian gate, should pay for these insurance from the third party, which is usually located in the Immigration Office/gates

There is also the operational issue on vessel and vehicle queuing for loading and unloading, as well as waiting for customs inspection.

In support of the ASEAN RO-RO project, the Port of Malacca intends to develop the required onshore CIQS infrastructure. The Port of Dumai plans to improve and add supporting facilities for CIQS. Additionally, they would seek clarifications on how to further improve the CIQS system.

Table 6.10 shows the CIQS facilities and systems at the Ports of Dumai and Malacca.

Table 6.10 CIQS Facility Condition in Dumai and Malacca Port

Item	Dumai	Malacca
Port Name	**Dumai Pelindo Port**	**Tanjung Bruas Port**
CIQS Facility		
Building	Security Post and Gates Police Station Customs Office Immigration Office Quarantine Office Passenger Waiting Room	Security Post and Gates Multifunction Building (for future passenger terminal and CIQS)
Facility	X-Ray Machine Walkthrough Metal Detector Handheld Metal Detector CCTV CCTV Monitor Room Permanent Fence Temporary Fence Street Poles and Lights	X-Ray Machine Walkthrough Metal Detector Permanent Fence Temporary Fence
CIQS Service		
Service Hours	Irregular (Mostly 07:00 – 16:00)	Irregular
Operational System	• The operation system adopts Single window system with custom, immigration and security checks are done in a single corridor and more integrated area. However, the room used for such activities is too small. • Basically, Dumai Port follows the national standard by implementing two types of import lanes used, namely, Green Line and Red Line. Green Line, trusted line, is measured by reliability of shipper. It usually took about 2 minutes process with the latest is 1 hour. One hour scenario would happen if a technical problem occurred such as broken computer, off electricity etc. in this kind of line, there is no need to do physical inspection. The second line is Red Line, this line will take maximum 3 days process including physical inspection, but in fact as long as shipper document complete, it usually take 1 day only. However, In Dumai cases, since the CIQS does not operate 24 hours, many vessels wait for more than three days for cargo inspection process.	No specific information
Major Issues	• Unofficial import products • Cross border vehicle treatment differences between Indonesian side and Malaysian side • Vessel queuing for loading and unloading (as well as waiting for customs inspection)	Preparation of RO-RO Malacca - Dumai
Coordination with other country		
Cross-border Agreement	• There is no specific agreement between Dumai and other foreign border cities (such as Malacca or Penang). However, In case of Dumai – Malacca, both local governments have conducted several meetings and coordinations to realize the implementation of RO-RO Dumai-Malacca (including the topic to synchronize the CIQS regulation) • Coordination between Indonesian government and Malaysian government were taken several times to solve the treatment differences between Indonesian side and Malaysian side • So far, Indonesia government follows Ministry of	Same as Penang, Malacca has not engaged to any agreement in government to government (G to G) concept with neighboring countries regarding cross border vehicle. However, Malaysia government stipulated two requirements for cross border vehicle, which among others: (1) one international circulation permit issued by Road Transport Agency of Malaysia (valid for 90 days free of charge and 1 day process), and (2) safety insurance for vehicle. In this case, Malaysia recognize Malaysian and Singaporean insurance. Therefore, Indonesian, Thailand or other countries cross border vehicle want to enter Malaysia gate,

	Finance Regulation Number 142/2011 regarding Temporary Import, where cross-border vehicles will be treated as temporary import product which given free import duty. However, the regulation mentions if in order to prevent smuggling, customs will ask for cash or custom bond that is released by insurance company or bank guarantee as a safety guarantee. This safety guarantee will be released back at the time when the vehicle going back to origin country • According to regulation, the amount of money released for safety guarantee is equivalent with the price of import duty for its vehicle, usually about 40% to 50% of its vehicle price	they should pay for these insurance from the third party, usually informed in the Immigration Office/gates.
Export-Import	Dumai is a center distribution point for Riau Province area and hinterland areas in border provinces such as West Sumatera, Jambi, and Bengkulu. Most of exporter from those areas deliver their products via Dumai Port.	If RO-RO Malacca – Dumai opened, there are several potential commodities will be served according to Malacca Port Administrator which among others: Maize, Corn, Animal, Steel Coil, Ion, Gases (by pipe).
Other related matters		
Regulation for Truck and Port	No specific regulation provided by the government to control truck movement	No specific regulation provided by the government to control truck movement
Future CIQS Improvement Plan	Customs Office concerned on several aspects that should be solved before ASEAN RO-RO service operated, which among others: • Regulation to treat passenger cars from foreign country must be clear • Reconsidering the implementation and price of guarantee for temporary import products • Possibility to conduct local government to local government agreement for customs policy in RO-RO service area • Additional supporting facility number should be improved, such as X-Ray, Cargo Detector, etc	There is no existing CIQS infrastructure and implementation in Tanjung Bruas Port. However, the port is planned to implement the onshore CIQS infrastructure in order to support future plan of RO-RO operation as follows: • Office Building: (a) for customs, immigration, quarantine, police, and JPJ for RO-RO operation with praying room and toilets, (b) single storey covered steel structure: 4.5 m width x 43.6 m length x 3.3 m height, (c) office Size: 2.80 m weight x 2.65 m height x 3.30 m length. • Inspection Posts: (a) 2 NOS Immigration, 1 NO each customs, JPJ and Police, (b) metal roof, half brick, tinted glass with sliding window in both sides, (c) posts size: 1.20 m weight x 2.55 m height x 2 m length. • Inspection Parking Bays and Vehicle Lay-by • 4 m Lane Width • All other related infrastructure like lighting, drainage, sewerage, concrete road barriers, building M&E, etc

6.6 Stakeholders' Views

Plans to open RO-RO services between Malacca and Dumai have been discussed since many years ago. The Riau side sent a couple of missions to Malacca to identify RO-RO shipping business environments, including a counterpart port of Dumai.

Malacca State took an action to appoint Invest Melaka as a potential RO-RO operator. Two companies, Kemajuan Amoy Sdn. Bhd. and Melewar Integrated Engineering Sdn. Bhd., with support from Invest Malacca, made engineering preparations (e.g., contracts, development and expansion of RO-RO terminal and support facilities, RO-RO ship designing of 500 GT) to operate RO-RO services at Tanjung Bruas Port. The report was submitted to the Chief Minister of Malacca State in December 2011.

The current terminal operator of Tanjung Bruas, SPPG, with a concession period of 21 years since 1992, considered the project unrealistic due to difficulty of traffic control between existing operation and additional RO-RO operation in the port. Some of the possible obstacles are the narrow jetty and limited land space for vehicles/ passengers' holding area. In addition, no demand forecast study had been conducted by the Malaysian side related to this plan.

In July 2012, the Ministry of Transport decided not to accept the Malacca proposal.

As in the case of Penang, Malacca has not made any government to government agreement with neighboring countries regarding cross-border vehicles. Malaysia only recognizes Malaysian and Singaporean insurance. Therefore, vehicles crossing the Malaysian border from Indonesia, Thailand or other countries should get third party insurance coverage, usually informed in the Immigration Office or border gates.

The Indonesian side might be better prepared to connect to the Malaysian side, since the former already operates domestic RO-RO services in Dumai. During the stakeholders' meetings, several operators showed an interest to participate in the Dumai – Malacca RO-RO operation, including SOEs and private operators. They shared similar concerns such as available RO-RO terminal at Malacca and institutional arrangements including Malaysian transit vehicles by Indonesian customs.

One of the infrastructure projects being discussed by the Governments of Malaysia and Indonesia is the Malacca Strait Bridge on the same corridor between Malacca and Dumai. Once completed, the 50 km long bridge would be the longest sea-crossing bridge in the world. There is a private-sector initiated project proposal. The Government of Malaysia currently appraises the proposal. Many stakeholders consider the project irrelevant and too expensive.

7 THE SULU SEA CROSSINGS AMONG BRUNEI DARUSSALAM, MALAYSIA AND PHILIPPINES

This section analyzes two route candidates: (i) Muara – Labuan – Brooke's Point, and (ii) Muara – Zamboanga.

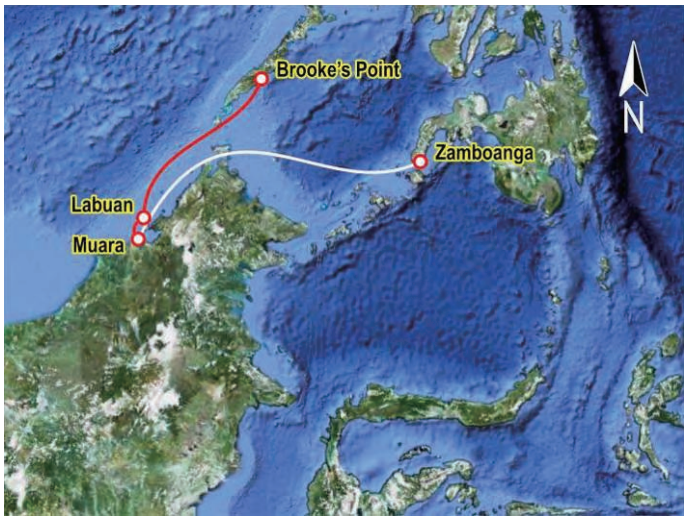


Figure 7.1 Surveyed Routes

7.1 Economy and Trade

1) Muara, Brunei Darussalam

Brunei-Muara is one of the four districts of Brunei Darussalam. Located in the northernmost part of the sultanate, Brunei-Muara is the most important district because it covers the state capital, Bandar Seri Begawan, which is the center of the country's commerce, finance and government. Another major town in the district is Muara town. Brunei Darussalam (which means "Brunei, the Abode of Peace") is a small Islamic sultanate which became an independent sovereign country on 1 January 1984. It is situated on the northwest coast of the island of Borneo. It is bounded on the north by the South China Sea, and on all other sides by the Malaysian State of Sarawak. It has a total land area of 5,765 km^2, with a coastline of about 161 km along the South China Sea. Brunei's population in 2010 was around 415,000, growing at an average of 2% a year, and composed mostly of Malay, Chinese and other indigenous groups. About 67% of the population is Muslim, the rest being Christians, Buddhists, and others.

Brunei's economy has been dominated by oil and gas since their discovery in 1929. As such, the oil and gas sector is the main source of the nation's revenue, constituting about 90% of its exports and about 60% of its GDP. It is the fourth-largest oil producer in Southeast Asia, averaging about 167,000 barrels a day in 2009. It also is the ninth-largest exporter of liquefied natural gas in the world. Its oil reserves are expected to last 25 years, and natural gas reserves 40 years. However, new technology and potential onshore and deep sea fields are expected to add to the lifespan of the reserves. Like many oil-producing countries, Brunei's economy has followed the swings of the world oil market. After enjoying moderate growth in the mid-2000s, primarily due to high world oil and gas prices, this growth has fallen sharply in recent years. In 2009, GDP shrank from BND20.4 billion

(USD15.6 billion) to BND15.6 billion (USD12.0 billion), but recovered to BND16.9 billion (2.6% growth) in 2010 (see Table 7.1). While Brunei continues to have one of the lowest GDP growth rates of any ASEAN nation, it is also ranked as having one of the highest rates of macroeconomic stability in the world and the highest in Asia. At USD29,915 Brunei's per capita GDP is the second highest in ASEAN next to Singapore and one of the highest in the world.

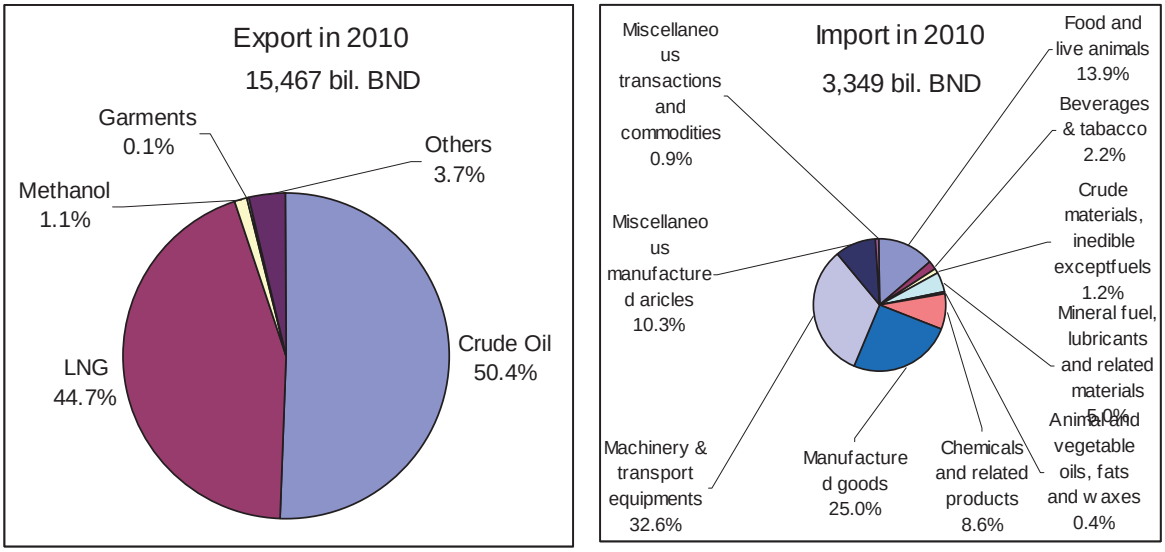
Table 7.1 Socioeconomic Indicators of Brunei Darussalam, 2006-2010

Year	Population	GDP at Current Prices (BND Million)	Per Capita GDP at Current Prices (USD)
2006	383,000	18,226	29,922
2007	390,000	18,458	31,582
2008	397,000	20,398	35,623
2009	400,000	15,611	26,385
2010	415,000	16,867	29,915

Source: Department of Economic Planning and Development, Prime Minister's Office; ASEAN Community in Figures 2011; UN World Statistics Pocketbook.

Despite Brunei's high dependence on oil and gas, this sector employs only 3% of the workforce. The public sector is by far the largest employer of Brunei's population, providing employment for over half the workforce. The government regulates the immigration of foreign labor out of concern that it might disrupt Brunei's society. Work permits for foreigners are issued only for periods of two years or less and must be repeatedly renewed. Despite these restrictions, the estimated 100,000 foreign temporary residents of Brunei make up a significant portion of the work force. Many foreign workers come from Indonesia, Malaysia, the Philippines, Thailand, and South Asia.

In 2010, Brunei exported a total of BND12.1 billion worth of products, mainly crude oil and LNG (see Figure 7.2). Brunei's non-petroleum industries include agriculture, forestry, fishing, aquaculture, and banking. The garment-for-export industry has been shrinking since the USA eliminated its garment quota system at the end of 2004. Nevertheless, with 75% of total garment exports valued at USD66 million, the USA remains the largest export market for garments. Since only a few products other than petroleum are produced locally, a wide variety of items must be imported including machinery and transport equipments, various manufactured items, food and animals, chemicals, mineral fuels, beverages and tobacco, inedible crude materials, and vegetable oils. The country imported a total of BND3.4 billion worth of these products in 2010. Nonetheless, Brunei has had a significant trade surplus throughout the past decade. Singapore, Malaysia, the USA, and China are the leading suppliers of imports in 2009.



Source: Brunei Darussalam International Merchandise Trade Statistics, 2010

Figure 7.2 Exports and Imports of Brunei Darussalam, 2010

Brunei's major export trade partner is Japan, which absorbed 44% of the sultanate's exports, while the ASEAN countries are its main import trade partners with a 51% share of imports (see Table 7.2). Malaysia is the biggest source of Brunei's imports from ASEAN, as they share a common border although the shares of Sabah and Sarawak in Malaysian exports to Brunei were only 6% and 10%, respectively. Major imports from Malaysia include refined petroleum products, edible products, medicines, manufactured tobacco, plastic products, machinery and equipment, cereals, animal feeds, cleansing products, and paper products. Most of this trade is with Peninsula Malaysia, but many food and live animals are imported from neighboring Sabah and Sarawak (see Table 7.3 for details of Brunei-Malaysia trade). Singapore is a close second as Brunei's import partner, followed more distantly by Thailand and Indonesia.

Table 7.2 Trade of Brunei Darussalam with ASEAN, 2010 (in BND Million)

Country	Export To	Import From
Cambodia	0.07	0.01
Indonesia	859.94	69.01
Laos	0.01	0.06
Malaysia Peninsular	156.90	649.85
Sabah	1.92	56.33
Sarawak	21.24	77.11
Myanmar	0.06	0.15
Philippines	8.31	7.95
Singapore	341.69	649.74
Thailand	106.28	178.75
Vietnam	8.97	7.45

Source: Department of Economic Planning and Development, Prime Minister's Office

Table 7.3 Trade of Brunei Darussalam with Malaysia, 2010 (in MYR 000)

	From Brunei Darussalam to Malaysia	MYR 000	From Malaysia to Brunei Darussalam	MYR 000
1	Petroleum oils, crude and crude oils	86,437	Petroleum products, refined	153,070
2	Alcohols, phenols, phenol- alcohols, and their derivatives	25,973	Edible products and preparations, n.e.s	101,618
3	Ferrous waste and scrap; remelting ingots of iron or steel	9,389	Medicaments (including veterinary medicaments)	78,507
4	Non-ferrous base metal waste and scrap, not elsewhere specified (n.e.s)	6,812	Tobacco, manufactured (whether or not containing tobacco substitutes)	50,337
5	Civil engineering and contractors' plant and equipment	5,227	Articles, n.e.s. of plastics	47,587
6	Telecommunications equipments, n.e.s, their parts and accessories used in Division 76	2,794	Civil engineering and contractors' plant and equipment	43,800
7	Special transactions and commodities	1,837	Cereal preparations and preparation of flour or starch of fruits or vegetables	38,522
8	Other machinery and equipment specialized for particular industries, and parts thereof, n.e.s	1,569	Feeding stuff for animals (not including unmilled cereals)	37,916
9	Tubes, pipes and hollow profiles, and tubes or pipe fittings, of iron or steel	1,092	Soap, cleansing and polishing preparations	34,918
10	Natural rubber, natural gums, In primary forms	1,090	Paper and paperboard, cut to size or shape, and articles of paper or paperboard	31,273

Source: Department of Statistics Malaysia

Brunei is a net importer of agricultural products. Its imports of crops, livestock, processed agricultural commodities, and food are much larger than its exports of the same (see Table 7.4). This presents opportunities for such imports via a RO-RO shipping route, though the reverse movement (that is, exports from Brunei) might not be expected.

Table 7.4 Major Agricultural Exports and Imports of Brunei Darussalam, 2009 (in USD 000)

	Item	Export	Item	Import
	Total Merchandise Trade	7,203,000	Total Merchandise Trade	2,454,000
1	Agricultural Products	1,216	Agricultural Products	291,312
2	Food and Animals	610	Food and Animals	235,151
3	Crude Materials	498	Cereals and Prep	86,663
4	Coffee,Tea,Cocoa	350	Beverages,Tobacco	44,391
5	Hides and Skins	158	Fruit,Vegetables	35,931
6	Meat and Meat Prep	93	Miscellaneous Food	32,711
7	Miscellaneous Food	59	Beverages	28,038
8	Cereals and Prep	35	Meat and Meat Prep	17,884
9	Fruit,Vegetables	29	Coffee,Tea,Cocoa	17,349
10	Beverages,Tobacco	27	Tobacco	16,353

Source: FAO, FAOSTAT: Trade Sheets

Looking at the trend of trade between Brunei and Malaysia and the Philippines, which are covered by the target RO-RO routes, there is a demand for imports from Sabah, but the exports to Sabah is small (see Table 7.5). Trade with the Philippines is even smaller.

Table 7.5 Trend of Trade of Brunei Darussalam with Malaysia and the Philippines
(in BND Million)

	Destination/ Source	2006	2007	2008	2009	2010
Export	Malaysia (Peninsular)	54.65	72.79	30.06	75.96	156.91
	Malaysia (Sabah)	0.92	7.15	1.56	0.45	1.92
	Malaysia (Sarawak)	8.15	12.08	11.64	87.28	21.24
	Philippines	1.07	1.42	215.31	33.21	8.31
Import	Malaysia (Peninsular)	505.13	517.8	588.88	572.17	649.86
	Malaysia (Sabah)	18.81	24.42	27.31	32.2	56.33
	Malaysia (Sarawak)	51.26	56.43	65.08	72.67	77.11
	Philippines	8.95	9.89	24.91	9.04	7.95

Source: Department of Economic Planning and Development, Prime Minister's Office

Tourism has become an important industry in Brunei. In the last five years, the government has mounted an aggressive tourism promotion campaign to attract more tourists. This campaign has so far paid off, as evidenced by the increasing number (except in 2009 at the height of the H1N1 scare and global financial crisis) of foreign visitors to the country, from 178,540 in 2007 to 225,029 in 2011. Half of this total came from the ASEAN region, mostly from Malaysia, Indonesia, Philippines and Singapore. Others mainly came from China, United Kingdom/ Ireland, Australia and New Zealand. About 60% of tourists come to Brunei either for work or to visit relatives/ friends while the rest go for holiday. An increasing share of leisure/ holiday visitors has been observed in recent years. Visitors arrive either through the Bandar Seri Begawan International Airport, Muara Port, Serasa Ferry Terminal, or by land. In 2011, nineteen (19) cruise ships called on Muara Port.

Muara Port, Brunei's main port and the gateway for trade, is 20 minutes away from Bandar Seri Begawan. Its dedicated container terminal, the Muara Container Terminal, is equipped with modern facilities, up-to-date machinery and equipment to handle large volumes of domestic and international container cargo traffic. The Muara Conventional Terminal handles general and other non-containerized cargoes. In 2009, Muara Port handled 85,060 TEUs equivalent to 928,000 MT of cargo. That year 1,726 vessels called on the port from seventeen (17) international and domestic port destinations. Its quay cranes can move 25 TEUs per hour and average vessel turnaround time was 22 hours. Its average occupancy rates for its local warehouses and its export zone are 49% and 69%, respectively.[1]

Passenger ferry services are handled at the Serasa Passenger Ferry Terminal beside Muara Port. The terminal started operations in 2009, mainly to provide an alternative mode of transportation to nearby international destinations such as Labuan and Lawas (Sarawak). The average road travel from Brunei to Kota Kinabalu in Sabah, Malaysia takes six to nine hours, crossing three immigration checkpoints and two rivers using a small car ferry. During peak periods such as school holidays or long weekends, the queue for car ferries and customs checkpoints becomes even longer and more time-consuming.

2) Labuan, Malaysia

Labuan is a small island located between Brunei Darussalam and Kota Kinabalu, the capital city of the Malaysian state of Sabah. Labuan was proclaimed a Malaysian Federal Territory in 1984, which means that it is administered as part of the Federal Territory under the Central Government, and not as part of any Malaysian state. It became an International

[1] Source: Brunei Darussalam Ports Department, www.ports.gov.bn

Offshore Financial Centre (IOFC) in 1990. Today, Labuan has become a thriving free port, offshore oil and gas industry base, tourist destination, and a leading IOFC. The Federal Territory consists of Labuan Island (with a land area of 75 km^2) and six other smaller islands, with a combined area of 91 km2.

In 2010, it had a population of 83,920 which was growing at an average rate of 1.3% a year (see Table 7.6). Labuan's GRDP at current market prices was about MYR2,275 million in 2010, a growth of 6% over its year-ago level. The Per Capita GRDP for the same year was USD9,215.

Table 7.6 Socioeconomic Indicators of Labuan, 2008-2010

Year	Population	GRDP at Current Prices (MYR Million)	Per Capita GRDP at Current Prices (USD)
2008	nd	2,150	nd
2009	nd	2,147	nd
2010	83,920	2,275	9,215

Source: Department of Statistics, Malaysia

All major products such as agricultural products, construction materials, etc. come from outside of Labuan Island, such as from Sabah or Sarawak through land transport and then shipped in from Menumbok Port. Visitor arrivals to Labuan have been growing at a healthy average rate of almost 8% a year, to 733,053 by 2008. Most are domestic visitors, with only about 12% from other countries including Brunei, Indonesia, Vietnam and the Philippines.

Labuan Liberty Port is the main port of entry for vessels carrying general cargo, bulk cargo and containers in Labuan. It is a feeder port with oil and gas activity and also serves as a supply point between Malaysia and Brunei. Labuan is a free port and almost all facilities are owned by private sector, especially oil and gas companies such as Petronas, etc. The port has a cargo handling capacity of 100,000 TEUs annually. Despite its small size, the port has its own unique strengths compared to neighbouring ports because customs procedures are much more relaxed. By using the appropriate import-export customs declaration forms, goods can be cleared more speedily and without hassle. Average waiting time for berthing is less than half an hour, and maximum vessel waiting time at the port is only 1-2 hours. In 2011, the port handled 6,023 domestic ship calls and 2,330 international ship calls and had a cargo throughput of 3.8 million MT of imports and 8.8 million MT of exports (see Table 7.7). The port has a dedicated RO-RO terminal with a single berth.

Table 7.7 Cargo Movement and Ship Calls at Labuan Port, 2009-2011

Year	Ship Call		Import (MT)				Export (MT)			
	Dom-estic	Interna-tional	Dry Bulk	General Cargo	Danger-ous Cargo	Container (TEUs)	Dry Bulk	General Cargo	Danger-ous Cargo	Container (TEUs)
2009	4,674	2,024	336,079	286,517	631,914	10,479	470,714	251,961	9,044,156	6,665
2010	5,588	2,028	1,040,430	269,892	892,042	2,505	778,645	233,305	9,921,521	1,315
2011	6,023	2,330	2,282,623	194,904	1,327,879	0	680,559	258,555	7,841,541	0

Source: Labuan Port Authority

Located just next to Labuan Liberty Port is the Labuan International Ferry Terminal, which was opened to the public in 2006. Labuan Development Authority (LDA) Labuan Holdings Sdn. Bhd. was appointed by Labuan Corporation to manage and operate the terminal. A centralized ticketing system, where customers can book and buy their tickets in advance to all destinations, is located at the ground floor of the terminal building. Five passenger ferries currently operate in Labuan; two are registered in Brunei Darussalam and three are registered in Malaysia. There is also one RO-RO ferry, the "MV Shuttle Hope" registered in Brunei. Labuan has several passenger shipping routes, namely Labuan-Kota Kinabalu and vice-versa (2 trips daily); Labuan - Menumbok (2 trips); Labuan - Sipitang (2 trips); Labuan - Lawas (1 trip); Labuan - Limbang (2 trips); and Labuan - Brunei, the only international passenger ferry (5 trips).

In 2011, more than 677,000 passengers passed through Labuan Port, including 332,000 to/from Menumbok (49% share) and 155,000 to/from Brunei (23%). The RO-RO service ferried over 40,000 passengers and 8,000 vehicles across Labuan and Muara, Brunei.

As a duty free port, Labuan can be a gateway to distribute products to Brunei, Indonesia, Malaysia and the Philippines. Manufactured goods can be produced specifically for export from imported raw materials, components, packaging materials, plant and equipment without taxes. These imports can be sourced from neighboring areas like Sabah and Sarawak.

Table 7.8 Passenger Movement at Labuan Port, 2005 and 2011

Destination	2005			2011		
	Arrival	Departure	Total	Arrival	Departure	Total
Menumbok	69,819	70,196	140,015	163,145	168,746	331,891
Sipitang	8,033	8,601	16,634	7,821	11,029	18,850
Kota Kinabalu	86,766	75,019	161,785	67,856	64,210	132,066
Limbang	13,740	14,229	27,969	16,098	19,083	35,181
Lawas	2,153	1,930	4,083	1,932	2,191	4,123
Brunei Darussalam	153,223	162,996	316,219	75,976	78,982	154,958
Total	333,734	332,971	666,705	332,828	344,241	677,069

Source: Labuan Port Authority

3) Brooke's Point, Palawan

Brooke's Point is one of the municipalities of Palawan Province, Philippines. Palawan is an archipelago of 1,768 islands, the southernmost of which are closer to Malaysia than to the rest of the Philippines. It is bounded on the west by the West Philippine Sea and on the

east by the Sulu Sea. Consisting of 23 municipalities and one component city, Puerto Princesa, the province has a total land area of 14,896 km^2. Palawan is part of Administrative Region IV-B or MIMAROPA (Mindoro, Marinduque, Romblon, Palawan).

In 2010, the MIMAROPA region had a population of 2.7 million. Palawan's population then was 893,000 (including Puerto Princesa), growing at an average of 2.4% a year (see Table 7.9). The region had a GRDP at current prices of PHP162 billion, translated to a Per Capita GRDP of USD1,188.

Table 7.9 Socioeconomic Indicators of MIMAROPA Region, Palawan and Brooke's Point, 2000 and 2010

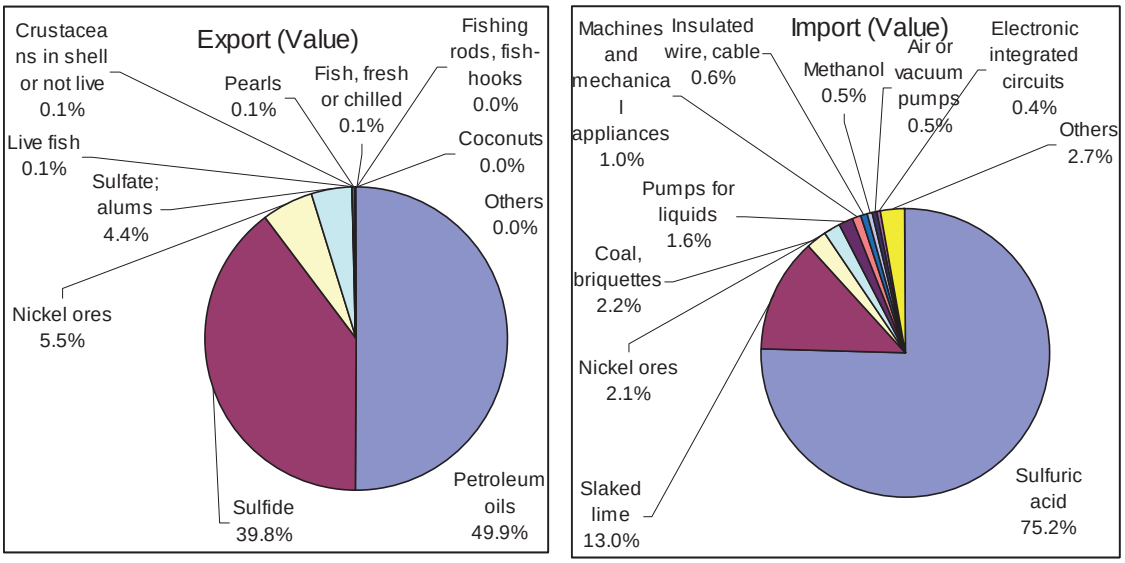
Year	Region/ Province/ Municipality	Population	GRDP at Current Prices (PHP Million)	Per Capita GRDP at Current Prices (USD)
2000	Region IV-B (MIMAROPA)	2,299,229	32,400[b]	nd
	Palawan[a]	593,500	nd	nd
	Brooke's Point	48,928	nd	nd
2010	Region IVB-MIMAROPA	2,744,671	161,986[c]	1,188[d]
	Palawan[a]	771,667	nd	nd
	Brooke's Point	61,300	nd	nd

Notes: a-Palawan population data excludes Puerto Princesa City; b-2005 GRDP; c-2009 GRDP; d-2009 per capita GRDP converted to end-2009 dollar-peso rate

Source: National Statistics Office/ National Statistical Coordination Board, Philippines.

Agriculture and fisheries form the backbone of Palawan's economy. Its total production of major agricultural products in 2011 includes coconut (289,000 MT), rice (238,000 MT), cashew (125,000 MT), fruits (33,000 MT), and corn (22,000 MT). It is also a major producer of livestock including chickens, swine, ducks, cattle, goats and carabao, among others. The province's 176 fishing grounds supply 65% of Manila's consumption of fish including sardines, scads, anchovies, groupers, snappers, squid, mackerel, tuna, crevalle and siganid. In 2010, its commercial fishing sector produced 36,000 MT of fish, municipal fishing sector 187,000 MT, and aquaculture sector 457,000 MT. That year, Palawan exported a total of USD665 million worth of products while importing commodities valued at USD168 million (see Figure 7.3).

Palawan is also rich in natural gas and oil deposits (the largest in the country) and mineral resources such as nickel, chromite, copper, silica, marble, quicksilver, manganese, cement, uranium, limestone, barite, feldspar, sand, gravel, and guano. Aside from the Malampaya offshore natural gas-to-power project and a few mining concessions, much of the province's mineral deposits remain untapped due to the environmental protection and sustainability policy of local governments. Half of total export value is contributed by petroleum oils. Sulfuric acid and sulfide are also major import/ export items as they are raw materials and byproducts of the nickel and cobalt mining plant in Rio Tuba in Southern Palawan. Because nickel is exported to Japan and China, trade volume with those countries is high. The Philippines is the 8^{th} biggest nickel producer in the world.



Source: National Statistics Office, Philippines

Figure 7.3 Exports and Imports of Palawan, 2010

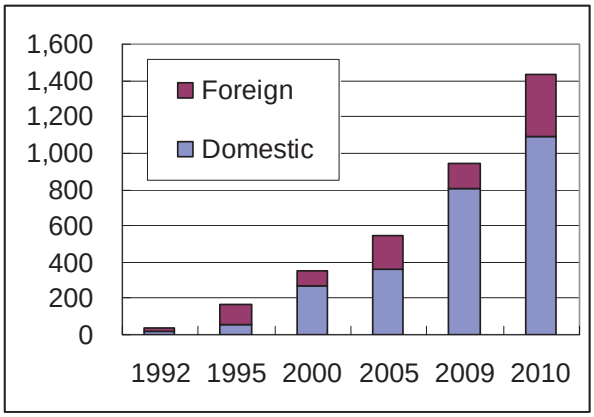
Japan, Korea, China, Thailand and Singapore are the top 5 trade partners of Palawan for exports (see 7.10). For imports, Japan, Malaysia, Korea, Indonesia and Taiwan are the major sources.

Table 7.10 Major Trading Partners of Palawan, 2010
(FOB Value in USD 000)

Country	Export	Import
Indonesia	0	4,579
Malaysia	1	21,531
Singapore	7,902	1,886
Thailand	14,778	831
Others	642,685	138,753

Source: National Statistics Office (NSO)

Tourism is another major driver of Palawan's economy. About 524,000 tourists visited Puerto Princesa and the municipalities of the province, a substantial 52% growth from the year-ago level (see Figure 7.4). These consisted of 397,000 domestic (76% share) and 127,000 foreign visitors (24%). In the campaign for the Puerto Princesa Underground River (PPUR) as one of the final candidates in the "New 7 Wonders of Nature" worldwide competition, which culminated in its final declaration as one of the seven in March 2012, an even more dramatic surge in visitor arrivals to Palawan was registered in 2011 until the first quarter of 2012. From only a few flights until two years ago, there are now 22 Manila-Puerto Princesa flights everyday. Aside from the PPUR, Palawan's major tourist attractions, among many, include a wildlife sanctuary, wildlife parks, world-class dive sites and beaches, natural lakes, lagoons, cliffs and rock formations, and historical and cultural landmarks.



Source: Provincial Tourism Office, Palawan

Figure 7.4 Average Daily Tourist Arrivals in Palawan, 1992-2010

Brooke's Point occupies a total land area of 85.1 km^2, or almost 6% of Palawan's area. In 2010, the municipality had an estimated population of 61,300 with an average annual growth rate of 2.5%.

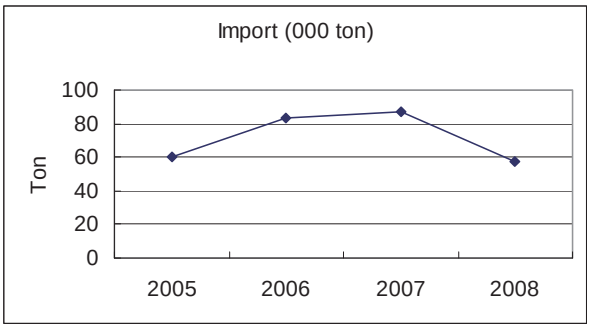
Agriculture and fishing activities are the main sources of income of most residents in the municipality. The principal products are copra, rice, corn, coffee, seaweeds and livestock like carabao, cattle and goat. The new product is palm oil which is developed in increasing hectarage of plantations.

As of 2008, there were 1,218 business establishments in the municipality, involved in wholesale and retail trade (62%), agricultural trading activities (13%), and hotels and restaurants (6%). Local tourism attractions include natural waterfalls and springs, mountains, nature resorts, parks and gardens. A total of 11,342 visitors, mostly domestic, were registered in 2011. The travel time between Puerto Princesa and Brooke's Point by private vehicle is about 3.5 to 4 hours on mostly asphalted and concrete paved road. The paving of many segments of this highway is ongoing.

There are 39 functional sea ports in Palawan. Only the ports of Puerto Princesa, Brooke's Point, Balabac, Coron and Cuyo are capable of berthing at least small inter-island vessels. The Puerto Princesa Port is the base port utilized for berthing passenger vessels, RO-RO/ containerized and general cargo vessels.

The Port of Brooke's Point is 192 km southwest of Puerto Princesa. The major commodities handled at the port are coconut and byproducts, corn, general and bottled cargoes, other consumer goods, chemicals and, until a few years ago, crude minerals. Incoming cargoes are cement, bottled cargoes, grains, machines and electrical equipment. Port linkages include Cagayan de Tawi-Tawi, General Santos, Dipolog, Balabac, Puerto Princesa, and Manila. The current import trade at Brooke’s Point is very small, and export is not reported (see Figure 7.5).

There are 15 airports and airstrips in Palawan, including 3 national, 1 provincial, 1 military, and 10 private airports/ airstrips. Only the Puerto Princesa Airport can accommodate medium-range international airplanes. The rest are classified as feeder airports with substandard landing aids but can accommodate light to medium aircraft.



Source: National Statistics Office (NSO)

Figure 7.5 Foreign Trade at Port of Brooke's Point, 2005-2008

4) Zamboanga, Philippines

Zamboanga City is located at the southernmost tip of the Zamboanga Peninsula (Region IX) in Mindanao, Philippines. In terms of land area, Zamboanga is the third largest city in the country with a total land area of 1,483 km^2. In 2010, it had a population of 807,129 with an average growth of 3.5% a year (see Table 7.11). It is the only highly urbanized and independent city of Region IX.

Table 7.11 Socioeconomic Indicators of Zamboanga Peninsula Region and Zamboanga City, 2000 and 2010

Year	Region/ City	Population	GRDP at Current Prices (PHP Million)	Per Capita GRDP at Current Prices (USD)
2000	Region IX (Zamboanga Peninsula)	2,831,142	83,770[a]	1,004[c]
	Zamboanga City	601,794	nd	nd
2010	Region IX (Zamboanga Peninsula)	3,407,353	186,433[b]	1,180[d]
	Zamboanga City	807,129	nd	nd

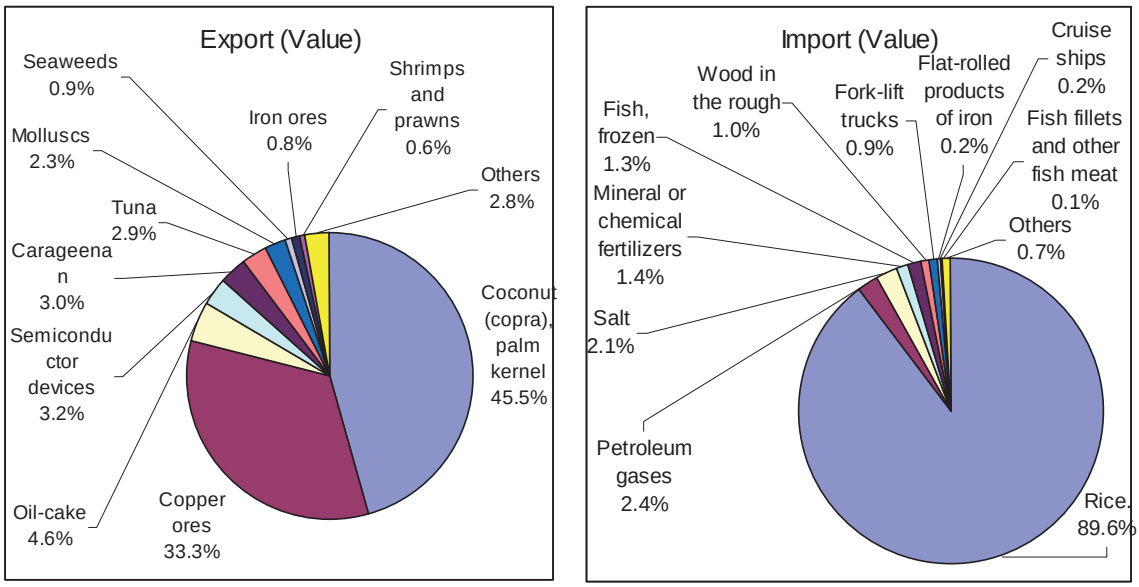
Notes: a-2001 GRDP; b-2009 GRDP; c-2001 per capita GRDP converted to end-2001 dollar-peso rate;
d-2009 per capita GRDP converted to end-2009 dollar-peso rate

Source: National Statistics Office/ National Statistical Coordination Board, Philippines.

Zamboanga City's primary source of income is agriculture and aquaculture. It is a producer of rice, banana, coconut, mango, cassava, seaweeds, abaca, sweet potato, coffee, sugar cane, and rubber. It is also the home of all sardines processing plants in the Philippines, namely Permex, Mega, Universal Canning, and Columbus Canning (Century Pacific Group) which all export canned sardines to Europe and the USA.

The Zamboanga Peninsula is composed of three (3) provinces, namely Zamboanga del Norte, Zamboanga del Sur, and Zamboanga Sibugay; the four (4) component cities of Dipolog, Dapitan, Isabela, and Pagadian; and the lone chartered city of Zamboanga. The region has a total land area of 14,811 km^2 and a population of 2.8 million. Total exports from the region in 2010 were valued at USD177.2 million, with its top 10 exports consisting of crude and refined coconut oil, copper ore and concentrates, oil-cake and other solid residues, semiconductor devices, carrageenan, prepared and preserved tuna, mollusks, seaweeds and other algae, iron ores and concentrates, and shrimps and prawns (see Figure 7.6).

The principal export markets are China (39% share of total exports), USA (27%), the Netherlands (13%), South Korea (5%), Singapore (4%), Japan (4%), France (3%), Spain (2%), Malaysia (2%), and Mexico (1%) (see Figure 7.6). Some exports to Indonesia were also recorded but none to Brunei. Rice from Vietnam and Thailand is the premier import, making up 90% of total import value.



Source: National Statistics Office (NSO)

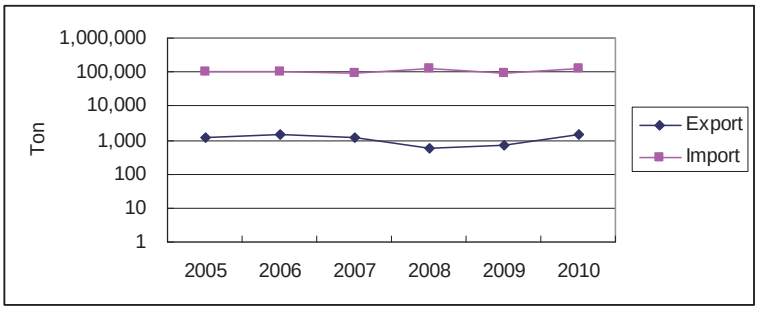
Figure 7.6 Exports and Imports in Zamboanga Peninsula Region, 2010

Table 7.12 Trading Partners of Zamboanga Peninsula Region in ASEAN, 2010 (by FOB 000 USD)

Country	Export	Import
Indonesia	53	9
Malaysia	3,266	882
Singapore	6,313	836
Others	167,534	74,318

Source: National Statistics Office (NSO)

The cargo trade volume handled at Zamboanga Port is relatively small, ranging from 200-300 MT daily (see Figure 7.7). Average annual growth of this volume is rather flat. Imports are about 100 times the volume of exports. The major commodities handled at the port are grains, crude minerals and other general cargo (see Table 7.13).



Source: National Statistics Office (NSO)

Figure 7.7 Trade at the Zamboanga Port, 2005-2001

Table 7.13 Export/ Import Commodities at Zamboanga Port, 2010 (in MT)

Products	Export			Import		
	Break Bulk	Bulk	Container	Break Bulk	Bulk	Container
Total	1,436			109,983	12,000	
Chemicals and related products	17					
Crude minerals					12,000	
Fish and fish preparations	12			25		
Fruits and vegetables and products	327			84		
Grains				108,803		
Other general cargo	1,059			1,071		
Sugarcane and by-products	21					

Source: National Statistics Office (NSO)

While there are many sea passengers going through the Zamboanga Port, over 10,000 daily, almost all of them come from domestic regions. Only about 1% of the total passengers are foreigners (see Table 7.14).

Mainly due to its physical attribute of having many proximate islands with significant populations and active inter-island commerce, the Zamboanga City Port has the highest passenger traffic, at 3.5 million annually, among the Mindanao ports. It is third nationwide, next only to Batangas and Tacloban Ports. It used to be the first in passenger throughput but volumes have declined over the years due mainly to the improved roads linking Zamboanga City to surrounding areas (which make overland travel and trucking more convenient and cheaper) and to competition from the new flights by budget airlines to surrounding islands.

The Zamboanga City Port's direct links include terminal ports to the island provinces of the Autonomous Region in Muslim Mindanao (ARMM) and to Sandakan. There are five homeported shipping lines in Zamboanga, namely Ever Lines Inc., Aleson Shipping Lines Inc., Sing Shipping Lines, Inc., Magnolia Shipping Corporation and Ibnerizam Shipping Lines Inc.

Table 7.14 Average Daily Sea Passenger Traffic at Zamboanga Port, 2008-2011

	2008	2009	2010	2011
Disembarking	4,473	4,806	5,523	5,103
Embarking	4,590	4,911	5,540	5,150
Foreigners: Disembarking				55
Embarking				49

Source: Zamboanga Port Management Office

Based on visitor arrivals in Mindanao, however, Region IX is the least visited region in 2010, garnering a total of 338,000 visitors (9% share in Mindanao) consisting of 317,000 domestic and 21,000 foreign/*balikbayan*[2] visitors. This comes up to about 930 visitors per day.

Three domestic airlines currently operate flights to Zamboanga City, through the Zamboanga City International Airport, from Manila (twice daily), Cebu (once a day), Davao (thrice weekly), Tawi-Tawi (once a day), and Jolo (thrice weekly).

[2] "Balikbayan" means either a Filipino citizen who has been continuously out of the Philippines for a period of at least one year, a Filipino overseas worker, or a former Filipino citizen and his or her family.

7.2 Corridor-wide Traffic

1) Muara - Labuan

The ferry services from Muara to Labuan (1.5 hours travel) onwards to Kota Kinabalu (3 hours) provides an alternative and more convenient route. At present, six (6) passenger ferries with 100-220 passenger capacities go to Labuan from Muara daily. Two (2) more ferry vessels service the Muara-Sundar/ Lawas routes.

The only passenger RO-RO vessel to Labuan, the "MV Shuttle Hope (482 GT)", can accommodate 200 passengers and 35 cars. Registered in Brunei, this RO-RO vessel is owned and operated by PKL Jaya Sdn. Bhd.

The vessel is a second-hand, 10-year old (considered relatively young) vessel from Japan. The vessel used to service the Muara-Menumbok (Sabah) route but this stopped several years ago due to low load factor. The company is planning to increase its Muara-Labuan trips to twice daily due to encouraging operational volumes. It is currently awaiting approval of the additional trip from the Malaysian Government.

The major cargos from Muara to Labuan are construction materials and daily commodities. The backload cargo from Labuan is fish or the vessels are sometimes empty. About 50% of passengers are Malaysian, about 20 – 30 % are Filipinos and about 10% are Indonesian. There are not so many tourists, and most of the passengers are laborers due to its lower tariff setting compared with that of the pure passenger craft.

Figure 7.8 Muara – Labuan Route

Figure 7.9 MV Shuttle Hope

Table 7.15 Muara- Labuan ROPAX Traffic

	Muara-Labuan		Labuan-Muara		Average per Day	
	Passenger	Vehicle	Passenger	Vehicle	Passenger	Vehicle
2010 Oct.	861	139	700	157	50	10
2010 Nov.	1165	206	1106	249	76	15
2010 Dec.	3690	585	3153	606	221	38
2011 Jan.	1336	283	1629	359	96	21
2011 Feb.	1721	348	1522	365	116	25
2011 Mar.	1614	275	1534	310	102	19
2011 Apr.	1038	262	1051	265	70	18
2011 May	1479	228	1698	368	102	19
2011 Jun.	2354	413	2000	423	145	28
2011 Jul.	1309	257	1434	298	88	18
2011 Aug.	1455	296	1456	364	94	21
2011 Spt.	2016	388	1958	396	132	26

Source: Marine Department, Labuan, Malaysia

The announced one-way fare from Labuan to Muara includes: (as of July 2012)

- Bicycle: RM 15
- Motorcycle: RM 70
- Sedan/MPV: RM 120
- VAN (Ford Transit type): RM 200
- Truck/Trailer/Lorry: (to be inquired to the administration office)
- Vehicle Driver: (free)
- Adult Passenger: RM 30
- Child Passenger (3-12 years): RM 15

2) Muara/ Labuan – Brooke's Point

There is no shipping traffic record on the route. During the field survey, it was reported that unofficial/illegal trade was done along the shorter routes between Kudat, Sabah State, and the southern edge of Palawan Island by small traditional vessels.

For Brooke's Point, live and fresh fish is a major export commodity. Part of the local products may be shipped out southwards through the "backdoor" on board traditional "kumpits" or motorized launches to nearby Kudat.

In order to promote tourism development in Palawan, Montenegro Lines, a Batangas-based passenger shipping company, has already opened passenger ferry services from Iloilo-Cuyo (Eastern Palawan) and Coron-El Nido (Northern Palawan) using 50-passenger RO-RO vessels. It is reported that Montenegro Lines is interested to service the Brooke's Point-Labuan route.

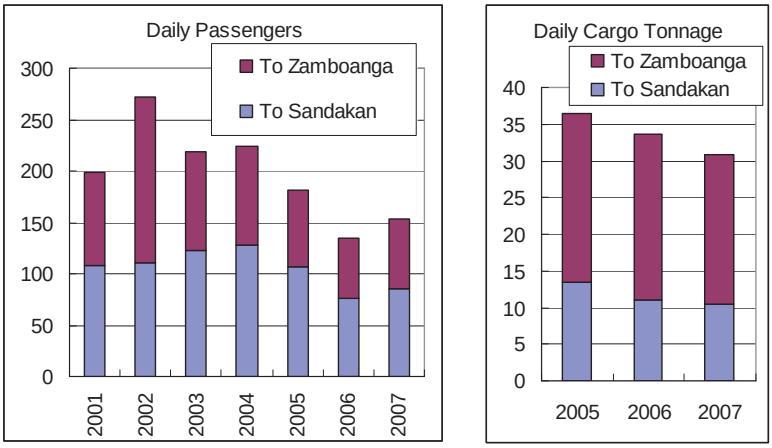
3) Muara – Zamboanga

The route is the longest at 537 nautical miles among the surveyed route. But the field survey did not find any shipping service.

However, between Zamboanga and Sandakan which is located in Sabah State at the midpoint on the Muara – Zamboanga route, there is a liner cargo passenger shipping service.

Aleson Shipping is the only shipping company plying the Zamboanga to Sandakan route (twice a week, every Monday and Thursday). A Malaysian shipping company, counterpart of Aleson Shipping, started to service the Sandakan-Zamboanga route some years ago but stopped after its initial trip. The main reason was the high CIQS fees charged at the Zamboanga side.

The shipping traffic, available up to the year 2007 only, shows that the traffic was stagnant in the mid of 2000s. The shipping service transported more Malaysian cargo than Philippine cargo while more passengers from Zamboanga. Such unbalanced passenger movement implies the continuous flow of Filipino immigrants to Sabah through Sandakan Port.



Source: Sabah Ports Sdn. Bhd.

Figure 7.10 Average Daily Traffic between Sandakan and Zamboanga

Like on the Muara/Labuan – Brooke's Point corridor, barter trade/unofficial trade seems active partially. Minor traders/fishermen in the Sulu islands use Semporna, Sandakan as trading ports in Sabah. It is not realistic for them to extend their business trips to Muara on the west coast of Borneo Island by their non-convention vessels (NCVs).

7.3 Port Operation and Infrastructure

1) Port of Muara

(1) Overview of the Port

The port of Muara is located at Brunei Bay, facing the South China Sea, approximately 27 km east from Bandar Seri Begawan, the capital of Muara. The Port of Muara is an international and gateway port of Brunei Darussalam. Port waters are sheltered by Pual Muara Besar.

Source: ezilon.com

Figure 7.11 Location of the port of Muara

(2) Natural Conditions

The quays of the port are located behind Pual Muara Besar Island and wave conditions do not affect use of the port almost. The tidal range is 2 m on average.

(3) Port Facilities/Layout

The vessels enter the port through the Muara Channel. The length of the approach channel is 4.8 km, the width is 180 m. The minimum depth of the channel is 13 m.

Several quays and jetties are located in the port. The Port of Muara means these container terminal and conventional terminal in general. Total length of the terminals is 861 m and the depth is 12.5 m. Serasa ferry terminal is located at the southwest of the container terminal. The location of these terminals is shown in Figure 7.12.

Figure 7.12 Location of Terminals

(4) Management and Operation

The port is under the management of the Ministry of Communications. The Ports Department is responsible for providing and managing port services and facilities.

The port is supported by several CIQS facility such as security posts, police station, custom office, immigration office, quarantine office, and passenger waiting room. It is also equipped with facilities for port security.

(5) Connection with Hinterland

Brunei Darussalam participates in the ASEAN Highway Project with two sections totaling 168 km. Due to separated territories within the country, there are 140 km-long and 28 km-long sections on ASEAN Highway No. 150. The first is the Muara-Jerudong-Tutong coastal road, which links the gateway port city of Muara and the oil-producing district of Belait. The second is the Pan Borneo Highway links among Brunei Darussalam and Malaysian cities from Kuching, Sarawak to Tawau, Sabah.

Muara –Tutong Highway, a 6-lane road with a median provides a convenient access between Bandar Seri Begawan and Muara. There is a truck ban regulation for some areas in the city center.

<u>Access roads Muara Port and Serasa Ferry Terminal:</u>

- Road width : > 21 m (including median)
- Number of lane : 6 lanes
- Pavement type : flexible pavement
- Weight limit : 8 tons (max. axle load)
- Freight vehicle type observed on site : Truck, articulated truck, car carrier trailer

- Passage of heavy vehicle : Prohibited in any regulated area, certificate of fitness issued by Brunei Road/Land Transport Department should be necessary
- Time/distance to the nearest city : ± 25 km, 30 min (to Bandar Seri Begawan)
- Future plan related to road infrastructure : -

(6) Future Development

There is a development project being planned, namely the Muara Export Zone at Pulau Muara Desal Island. In relation to the project, a container terminal with a capacity of 800,000TEU's is under consideration.

(7) Topics of RO-RO terminal

One passenger/RO-RO cargo vessel, MV Shuttle Hope, with a draught of 2.65 m is Shuttle Hope is deployed to the route between the Port of Labuan and the Port of Muara. At the Port of Muara, the vessel uses the Passenger and Vehicle Ferry Terminal. The terminal was designed as a RO-RO terminal and the project began in November 28, 2005 and competed in October 17, 2008 at a cost of B$4.88 million.

The layout plan of the terminal is shown in the figure below and the situation at boarding can be understood from the pictures.

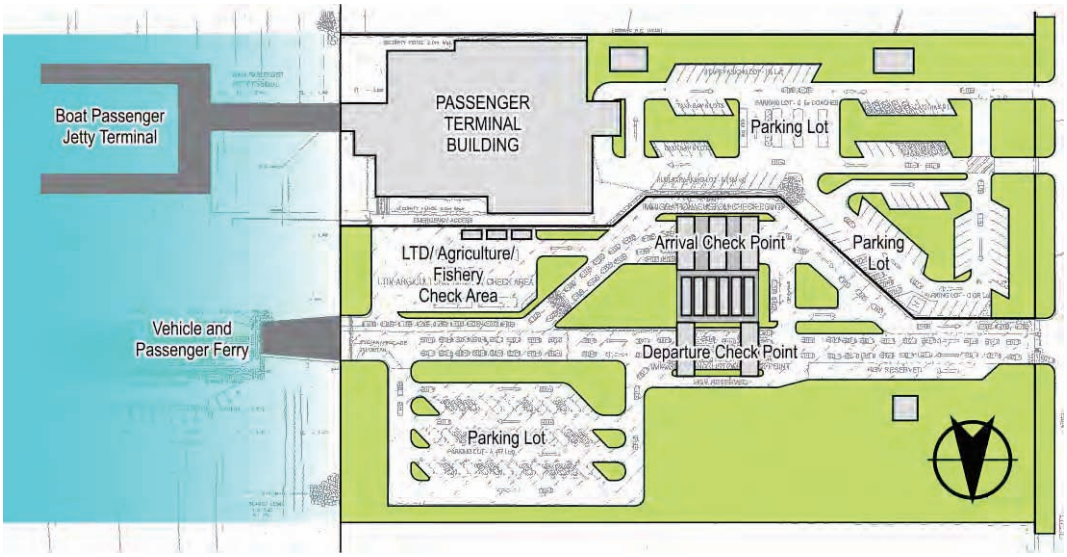


Figure 7.13 Layout Plan of Serasa Ferry Terminal

Figure 7.14 Boarding to Shuttle Hope at Serasa Terminal (Muara Port)

2) Labuan Liberty Port

(1) Overview of the Port

The port of Labuan is located in the Labuan Bay of the Labuan Island of East Malaysia. The public terminal which is named as Labuan Liberty Port is the main port of entry for vessels carrying general cargo, bulk cargo and containers in Labuan. A public wharf, ferry terminal, fishery port base, jetties of water taxi, marina and private dedicated wharves exist in the bay. The public wharf is named as Labuan Liberty Port. On the other hand, there are several private cargo terminals which are dedicated for specific cargo.

The port takes the important role in transshipment for Brunei, northern Sarawak and western Sabah and passenger traffic between Labuan Island and Kalimantan Island.

Figure 7.15 Layout the port of Labuan

(2) Natural Conditions

The port facilities are located in the bay area and they are free from typhoon and other bad weather conditions. There are deep anchorage areas of about 11-21 meter draft in the bay.

(3) Port Facilities/Layout

The layout of terminals for public use is shown in Figure 7.16. The main wharf has two outer berths and two inner berths and is 19.5 m wide and 244 m in length. Dolphins are 30.5 m from each end. It can accommodate vessels up to 16,000 DWT. The recommended arrival draft is 8.68 m. Next to the wharf, a ferry terminal with three-story-passenger building is located. (see Figure 7.16).

It has a 244-meter long jetty with a draft of 8.54 meter and the capacity to handle vessels of up to 16,000 DWT. Outline of the terminals are shown in Table 7.16.

Figure 7.16 Port Layout

Table 7.16 Outline of Main Wharfs

Wharf	Length (m)	Depth (m)	Vessel Size (DWT)	Note
New Liberty Wharf	244.0	10	16,000	
Labuan Passenger Terminal	20.0	-	-	
Terminal (pontoon)	8.0	-	-	
Victoria Wharf	83.6	4.6	-	
Shell Jetty	213	9.4	6,000	Petroleum
Iron Ore Jetty	220	18	150,000	Iron Ore
Methanol Jetty	650	13	35,000	Methanol
Asian Supply Base Jetty	120	8	6,000	Offshore
Sabah Flour Mill Jetty				Wheat & maize

Source: www.llpm.com.my

(4) Management and Operation

The port of Labuan falls under purview of the Marine Department of the Central Government. Labuan Liberty Port Management Sdn. Bhd. is the operator of Labuan Liberty Port and provides port and port-related services including cargo handling services, container services, storage services, transportation, and fresh water supply.

Regarding passenger terminal, LDA (Labuan Development Authority) Labuan (Holdings) Sdn. Bhd. was appointed by Labuan Corporation to manage and operate the terminal.

Related to CIQS agencies, the key agencies involved in the Customs, Immigration, Quarantine and Security (CIQS) processes are stationed in the port.

(5) Connection with Hinterland

The road networks in Labuan Island are generally in a good condition with asphalt pavement. This condition is one way to support the transport system of oil companies that develop in Labuan Island. The Labuan Port is in a 5-minute drive from the downtown area. Streets around the port are maintained well with 4 lanes and a median but traffic congestion near the port is expected to be getting worse in the coming decade. Hence, it is planned to consolidate all wharves and port functions at the opposite (western) side of the bay.

Being a small island, Labuan does not directly connect with the ASEAN Highway but the existing RO-RO service acts as a bridge between the island and Muara where ASEAN Highway No. 150 passes.

Access roads to Labuan Port:

- Road width	:	10 m
- Number of lane	:	2 lanes
- Pavement type	:	n.d.
- Weight limit	:	10 tons (max. axle rating for single axle with 4 wheels) based on Weight Restriction Order (Amendment) 2003 for Sabah & Sarawak area
- Freight vehicle type observed on site	:	n.d.
- Passage of heavy vehicle	:	n.d.
- Time/distance to the nearest city	:	Less than 15 minutes (to city center)
- Future plan related to road infrastructure	:	n.d.

(6) Future Development

The Malaysian Government conducted the feasibility study on the development of a new terminal aiming to provide better and bigger facilities and avoiding any congestion in the downtown area. The site of a new port is approximately 210 ha at the opposite side of the bay. In the study, the project will be completed within five years but the fund of the project is not yet arranged. (See Figure 7.17)

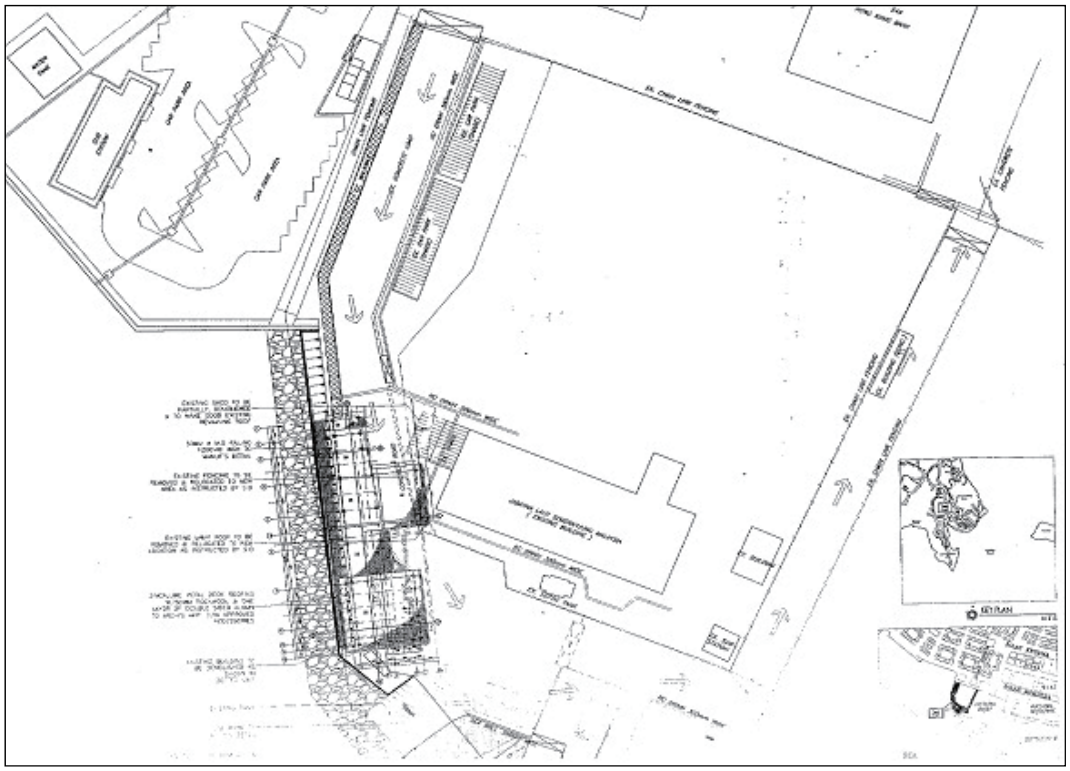


Figure 7.17 Port Site Development Plan

(7) Topics of RO-RO terminal

MV Shuttle Hope, a small RO-RO vessel plying between Muara and Labuan, arrives at the terminal which is located between Ferry Terminal and Labuan Liberty Port. The terminal is operated under poor conditions for vessels, vehicles and passengers. Only a slope is prepared for vessel arrival and vehicles and passengers get of the vessel using the ramp with the vessel. Transit place and clearance area is small and traffic lines of passengers and vehicles are not divided clearly.

Figure 7.18 Shuttle Hope at Labuan RO-RO Terminal

3) Brooke's Point Port

(1) Overview of the Port

The port of Brooke's Point is located 192 kilometers south of Puerto Princesa. The port linkages include Cagayan de Tawi-Tawi, General Santos, Dipolog, Balabac, Puerto Princesa and Manila. Brooke's Point is accessible by land and sea.

The port waters are shallow and only barges with a shallow draft can be accommodated at berth. A vessel with a deep draft has to stay at the sea of a distance of 400 m from the rock causeway pier and drop its anchor there.

Source: DPWH

Figure 7.19 Location of Brooke's Point

(2) Natural Conditions

The pier is exposed to northeast and southwest monsoons. Sea condition in the area varies accordingly to prevailing wind. Tidal range is 0.75 m between MHHW and MLLW.

The depth of the port waters is shallow but the sea area of 700 m from the shoreline has sufficient depth of 9 to 10 m.

(3) Port Facilities/Layout

The entrance channel starts three miles northeast from the lighthouse to avoid the coral reef.

The port area of 18,153.69 m^2 is composed of commercial area (2,329.51 m^2) and operational area (15,823.18 m^2). The layout of facilities and their outline are shown in Table 7.17.

Table 7.17 Main Port Facilities

Facilities	Outline
Quay	RC Pier of 12m wide x 60m long connected to an approach jetty of 6 m x 190 m.
Depth	-3.0 to -3.5 meters
Breakwater	4.5 meters x 150 meters
RO-RO Facilities	One RO-RO facility of 15 m x 25.00 m
Vehicle Parking Area	1,180 square meters
Passenger Terminal Building	375 square meters

(4) Management and Operation

The port is managed by the Philippine Ports Authority (PPA). Cargo handling and port service are carried by Prudential Customs Brokerage Service, Inc. (PCBSI).

Regarding port security, the Port Police Division (PPD) implements the ISPS Code. The PPA through the PPD ensures order and safety inside the port through the control of vehicles and pedestrians.

(5) Connection with Hinterland

The Port of Brooke's Point is 192 km southwest of the capital city of Palawan Province, Puerto Princesa. The average travel time between Puerto Princesa and Brooke's Point is 3.5 to 4 hours on mostly asphalted and concrete paved National Highway with 2 lanes. The paving of many segments of this highway and the reconstruction of decrepit bridges are ongoing. The travel time between the cities will be decreased by at least 30 minutes after the completion of the improvements. Land transport can be much better if road alignments would be improved in some sections going over hills. Furthermore, it would be encouraged to raise the load limit of the bridges from the existing limit of 10 or 20 tons to accommodate container trailers.

The Port of Brooke's Point is accessible by a two-lane concrete road only a kilometer away from the town center. Since the port is located at the edge of the downtown area and vehicles entering or exiting the port do not have to go through the busy areas to gain access to the National Highway, freight vehicles may not affect local traffic. If bigger trucks (around 10 tons or above) and trailers need to be used in Brooke’s Point, road expansion is necessary because the existing access road is only 6 m wide and big vehicles cannot turn corners.

Palawan Island is not included in the ASEAN Highway network.

Port access roads:

- Road width : 6 m
- Number of lane : 2 lanes
- Pavement type : Rigid pavement
- Weight limit : 13.5 tons (max. axle load based on RA No. 8794)
  45 tons (gross vehicle weight limit)
- Freight vehicle type observed on site : n.d.
- Passage of heavy vehicle : n.d.
- Time/distance to the nearest city : ± 192 km (to Puerto Princesa)
- Future plan (road infrastructure) : (Refer to Palawan 2nd DEO)

(6) Future Development

No information is available.

(7) Topics of RO-RO terminal

A RO-RO ramp facility of 15 m x 25.00 m is available at the port.

4) Port of Zamboanga

(1) Overview of the Port

The Port of Zamboanga is located on the southernmost tip of the Zamboanga Peninsula, in south-west Mindanao facing the Strait of Basilan. It is 460 nautical miles south of Manila, 365 nautical miles northwest of Kota Kinabalu, Malaysia and 345 nautical miles away from Manado, Indonesia.

The port plays a role not only as a shipping port of local products like copra and rubber, but also as a gateway to the neighboring countries called BIM.

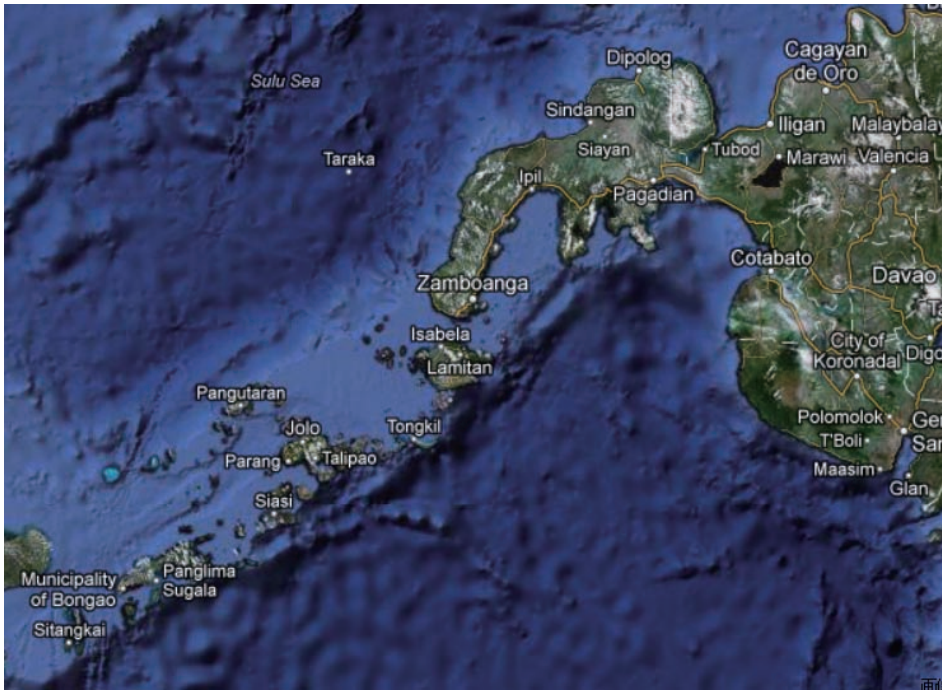


Figure 7.20 Location of Zamboanga

(2) Natural Conditions

No information available so far.

(3) Port Facilities/Layout

It has 9 berths totaling 1,536 m (without RO-RO ramps) including outer and inner berths (13 m deep), T-head pier, finger pier, 2 RO-RO ramps, and a marginal wharf. It has wide container yards and open storage areas, cargo handling gears and equipment, reefer facilities, container freight station, 1,300-seat capacity passenger

terminal, and a halfway house (operated by the Visayan Forum Foundation Inc. 24/7 to assist trafficking-in-persons victims[3]).

The layout of port facilities is shown in Figure 7.21. The outline of main facilities is shown in Table 7.18.

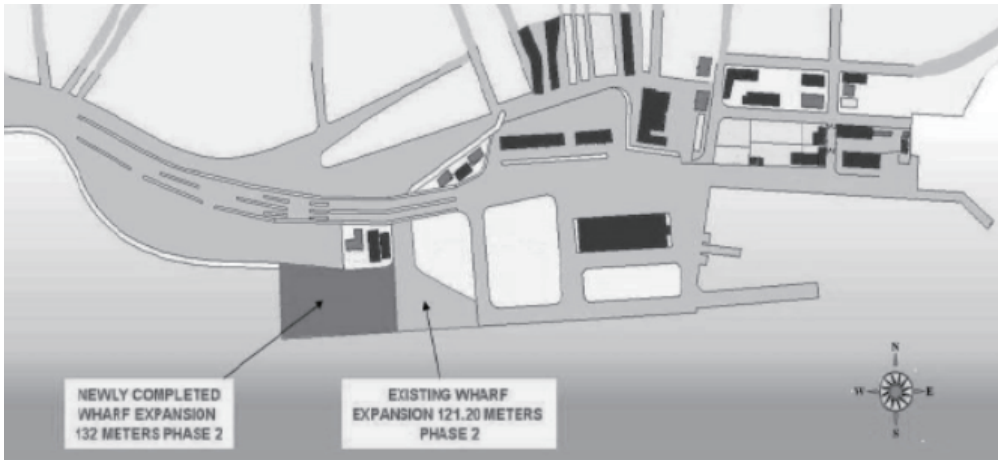


Figure 7.21 Layout of Terminal

Table 7.18 Outline of Main Facilities

Facilities	Outline
Berth	9 Berths, 1,536.5 m
Anchorage	Latitude 06^{o} 53'40"N, Longitude 122^{o}03'43"E
Container Yards	18,435 sq m (Phase I and II Expansion)
Marshaling Area	13, 700 sq. m.
Reefer facilities	12 outlets
Storage Spaces	Open Storage – 6200 sq m Paved Area – 5386 sq m
Transit Sheds	Container Freight Station 5,040 sq m
Passenger Terminal	PTB 1 – 1620 sq m (850 seats) PTB 2 – 960 sq m (450 seats)

Source: Port of Zamboanga

(4) Management and Operation

Port of Zamboanga is under the management of the Port Management Office-Zamboanga in the Port District Office-Southern Mindanao of the Philippine Ports Authority (PPA). There are plans for the port operation to be privatized.

(5) Connection with Hinterland

The hinterland road network of the port and city is linked to the main road traversing the eastern side of the Peninsula to Misamis Province and the rest of Mindanao. It is able to access the Pan Philippine Highway or ASEAN Highway No. 26 from

[3] The Visayan Forum Foundation, Inc. is a non-government organization (NGO) under authority of the Department of Justice and supported by the City Government, National Bureau of Investigation, Philippine National Police, Department of Social Welfare and Development, and Task Force Zamboanga. It is reported that the NGO is also being financially supported by the US Agency for International Development.

Zamboanga Port in a few minutes. However, ASEAN Highway No. 26 has some sections to be repaired in rural areas.

The Zamboanga City Port is only 15 minutes away from the city center. The city road leading to the port is four-lanes (about 12 m wide) and is paved by concrete. Although most of road sections in the city center are two-lanes and they become congested during peak hours, trucks can use a truck corridor to avoid the city center.

Port access roads:

- Road width	:	15 m
- Number of lane	:	4 lanes
- Pavement type	:	Rigid pavement 260 lineal meters from national road (9 m wide with asphalt overlay)
- Weight limit	:	13.5 tons (max. axle load based on RA No. 8794) 45 tons (gross vehicle weight limit)
- Freight vehicle type observed on site	:	
- Passage of heavy vehicle	:	There is no truck ban but trucks are restricted in certain areas during rush hours (7-9 am and 5-6 pm)
- Time/distance to the nearest city	:	± 25 km, 30 minutes (to Zamboanga City)
- Future plan related to road infrastructure	:	Widening, extension or construction of toll road

(6) Future Development

The port has an expansion plan which aims at meeting the international standards and becoming an attractive port for private investors.

The 1st phase of the port expansion was done in 2005 covering 131.5 m in length with project cost of P300 million. The 2nd phase was completed in 2007, covering 149 m in length with P400 million total project cost. The quay of the port will be further expanded covering 150 m in length with the cost of P200 million from PPA funds.

Additionally, the port's ongoing program includes renovation of the passenger terminal, and possible privatization (one of the three Mindanao ports being eyed for privatization, together with Davao and General Santos).

(7) Topics of RO-RO terminal

No information is so far available.

7.4 Shipping Routes

1) Muara – Labuan – Brooke's Point Route

The Muara – Labuan link is a short crossing across Brunei Bay with a distance of about twenty (20) nautical miles, while that of the Labuan – Brooke's Point link is more than 260 nautical miles sailing along the coast of Sabah and traversing on to the eastern coastline of the Island of Palawan. There is an existing daily RO-RO service between Muara-Labuan, which is being planned to be increased to twice daily. Presently, there are no scheduled services at Brooke's Point.

The Port of Muara is the main port for Brunei Darussalam and its main city of Bandar Seri Begawan. It is located on the west coast of Brunei Darussalam, facing Pulau Muara Besar. The main entrance channel with a length of more than two and a half kilometers is dredged to 12.5 m. The Main Berth is maintained with a maximum depth of 13.5 m, while the RO-RO berth has a depth of depth 6-10 m. Pilotage and tug services are available and under the jurisdiction of the Marine Department. Application should be made at least 24 hours in advance to avail of these services. Please see Figure 7.22.

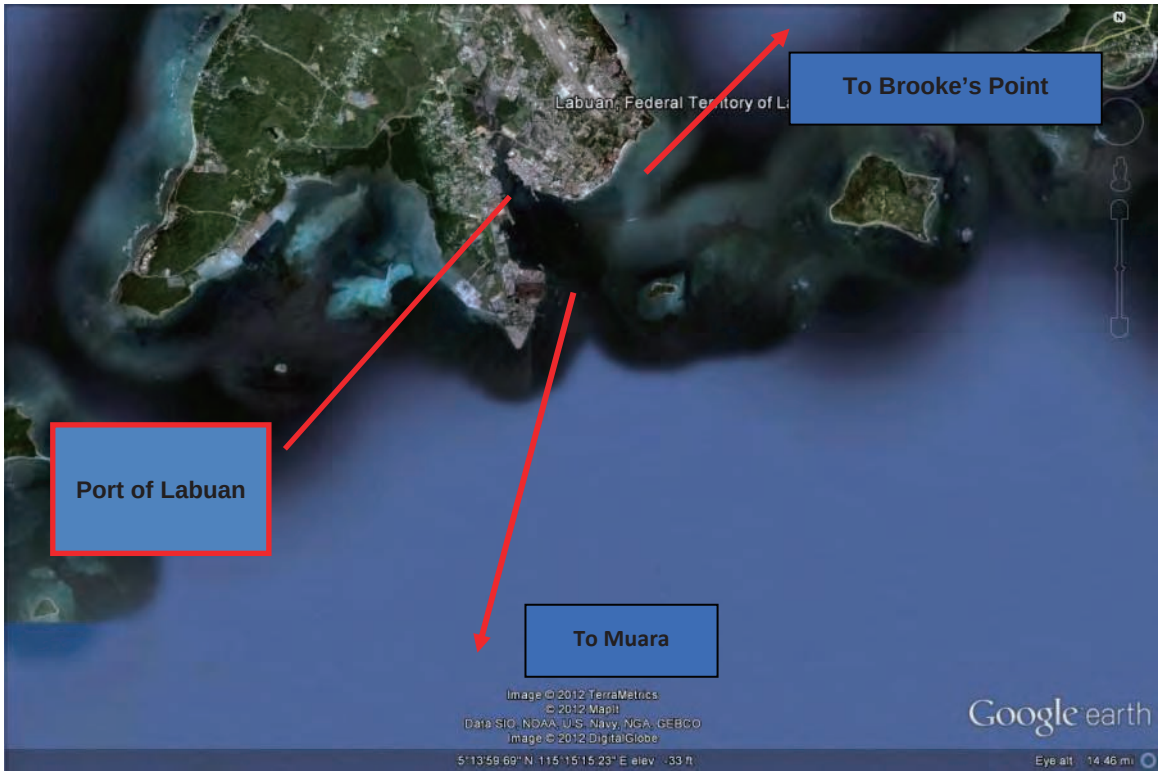
The Port of Labuan serves as the gateway port for the Federal Territory of Labuan, Malaysia, which is best known as an offshore financial center and a free trade zone. It has also become a tourist destination. The Port of Labuan is a naturally sheltered port within the Bay of Labuan. Pilotage is not compulsory, although a Pilot would be available if adequate notice is given. Vessels normally berth from 06.00-18.00 hrs, unberthing is possible throughout 24 hours, provided that notice of such movements is received from 08.00-16.00 hrs. Please see Figure 7.23.

Brooke's Point is a small town in the southern portion of the Island of Palawan. The Port of Brooke's is a terminal Port under the administrative jurisdiction of the Port Management Office of Puerto Princesa of the Philippine Ports Authority. The port has a breakwater to shelter it from wave and wind actions, although it is situated very near the port itself. The entrance channel of the port starts three miles northeast from the lighthouse to avoid the channel coral reef. The pier exposed to northeast and southwest monsoons. The sea condition in the area varies accordingly to prevailing wind. Please see Figure 7.24.

See Annex 7.1 for more details.

Source: Google Earth

Figure 7.22 Port Channel at Muara



Source: Google Earth

Figure 7.23 Port Channel at Labuan

Source: Google Earth

Figure 7.24 Port Channel at Brooke's Point

2) Muara – Zamboanga Route

The Muara – Zamboanga route is the longest route in the proposed ASEAN RO-RO Network, covering 534 nautical miles. The voyage will follow the northwestern and northeastern coastline of Sabah and along Sulu Archipelago up to the Port of Zamboanga. Presently, there is no trading done between Muara and Zamboanga. There is an existing RO-RO service between Muara and Labuan, while for Zamboanga, its current trading partner is Sandakan.

The particulars of the Port of Muara were discussed in the preceding section.

The Port of Zamboanga is the primary port in the Zamboanga Peninsula in Western Mindanao. The port is located at the southern tip of the peninsula and is very close to the Central Business District of Zamboanga City. Vessels may approach the port from the west via Caldera Bay, from the south via the Isabela Channel and from the east via the Tictaoan Channel. The controlling depth of the water is 5-12 m depending on the berth to be used. Pilotage is compulsory for foreign-going vessels and domestic trade vessels over 500 GT. A 24-hours' notice required to avail of the service. Vessels approaching the port use international code signals for calling the pilot. The Pilot station is operational 24/7. Vessels must always berth against the tidal current because of the very strong current experienced at the port. Please see Figure 7.25.

See Annex 7.1 for more details.

Source: Google Earth

Figure 7.25 Port Channel at Zamboanga

7.5 CIQS Services

The CIQS services and facilities vary considerably among the four ports. The Ports of Muara (Brunei) and Labuan (Malaysia) have frequent international RO-RO service. The Port of Zamboanga has a scheduled international shipping route to Sandakan (Sabah). The Port of Brooke's Point is a small port at the tip of Palawan Island with no scheduled international shipping service, but only wooden hull, non-convention size ships plying informal trade with Kudat (Sabah) at an intermittent frequency.

The Ports of Muara and Labuan have extensive CIQS facilities and equipment to take care of the growing influx of people and goods using the RO-RO service. They have X-Ray Machines, Walkthrough Metal Detectors, Handheld Metal Detector, and CCTV cameras, among others. Both ports implement the "Single-window" system for ease and convenience of transactions. The CIQS service operates on a 24-hour basis.

Presently, an International Circulation Permit (ICP)[4] is not necessary for vehicles from Brunei to enter Labuan territory. However, the Malaysian Ministry of Transportation will coordinate with Brunei Darussalam Ministry of Transportation for any possible change of ICP policy in the future.

The Port of Zamboanga is ISPS Code compliant. This is important considering that it handles international cargo bound for other countries other than just the Zamboanga-Sandakan route. For this reason, the international operation is physically separate from the domestic operation. It has complete CIQS facilities and services. It also uses the "Single-window" system. The problem is that there is an additional layer of screening being done by a non-government organization (NGO) prior to the CIQS procedures. This NGO focuses on anti-trafficking activities at the port. This additional layer of scrutiny causes numerous delays to passengers and to the vessel itself, forcing the vessel to delay its departure.

The Port of Brooke's Point has allocated offices for CIQS. However, there is not much international traffic at this port, hence the CIQS facilities and equipment are very limited.

Table 7.19 shows the CIQS facilities and systems at the Ports of Muara, Labuan, Zamboanga and Brooke's Point.

[4] Currently, international transport vehicles entering Malaysia are required to secure International Circulation Permit (ICP) for private vehicles and for freight transport to obtain a vehicle entry permit from Public Land Transport Commission (PLTC) in Peninsular Malaysia or from Commercial Vehicle Licensing Board (CVLB) in East Malaysia.

Table 7.19 CIQS Facility Condition in Muara, Labuan, Brooke's Point, and Zamboanga Port

Item	Muara (Brunei)	Labuan (Malaysia)	Brooke's Point (Philippines)	Zamboanga (Philippines)
Port Name	**Muara Port**	**Labuan Port**	**Brooke's Point Port**	**Zamboanga Port**
CIQS Facility				
Building	Security Post Police Station Customs Office Immigration Office Quarantine Office Passenger Waiting Room Secure Parking	Security Post and Gates Police Station Customs Office Immigration Office Quarantine Office Passenger Waiting Room Secure Parking Health Emergency Room	No specific information	No specific information
Facility	X-Ray Machine Walkthrough Metal Detector Handheld Metal Detector CCTV CCTV Monitor Room Permanent Fence Temporary Fence Access Card Gate with Access Card Mirror Inspection for Vehicle Street Poles and Lights	X-Ray Machine Walkthrough Metal Detector Handheld Metal Detector CCTV CCTV Monitor Room Permanent Fence Temporary Fence Access Card Gate with Access Card Mirror Inspection for Vehicle Street Poles and Lights	No specific information	No specific information
CIQS Service				
Service Hours	24 Hours	24 Hours	No specific information	No specific information
Operational System	The operation system adopts Single window system with custom, immigration and security checks are done in a single corridor and more integrated area. This Muara Port Custom Office concerned with the use of manifest especially for cargo handling by forwarding agents. According to the port regulation, consignee or forwarding agent shoul process their manifest to Shipping Agency. If the Bill Of Lading has already been endorsed "Freight Prepaid" then the consignee would not have to pay the freight to the local shipping agency. If the Bill Of Lading has been endorsed "Freight payable at port of discharge" the consignee would have to pay the freight at the local shipping office. The Shipping agency will issue the "Delivery Order" to the consignee or forwarding agent in exchange for the Bill Of Lading. (Alternatively the consignee or forwarding agent could produce the non-negotiable copy of the Bill of Lading for endorsement by the shipping agency to serve as a Delivery Order) The Consignee or forwarding agent with the Delivery Order or the endorsed copy of the Bill Of lading shall proceed to the Customs Office for endorsement by Customs. The types	Basically, Labuan Port already implement single window system for CIQS. Related to Customs Office, as a duty-free port, imports and exports from Labuan are not taxable. Thus, the role of the Customs Office in Labuan is to ensure that there are no export and imports of illicit goods. In addition, the Office also issues the final clearance for imports and exports that require special permits, such as pharmaceuticals, food, meat, fish and livestock. The most common Customs Forms used in Labuan are the following: K1 – Import K2 – Export K3 – Movement of goods within Malaysia K4 – Inward Manifest K5 – Outward Manifest K8 – Transhipment K10 – Port Clearance (clearance for last port of call for vessel) The forms indicate that Labuan Port is an international port and that the Customs Department, as is normal, plays a critical role in regulating port activities. Related to Immigration Department, The Immigration Department is involved in both Labuan Liberty Port and the adjacent International Ferry	No specific information	No specific information

	of Customs forms are commonly in use for import traffic and are obtainable from the offices of the shipping and forwarding agencies. The following documents required to be processed in Customs Office: • Duly filled Customs Declaration forms • Delivery Order • A copy of non-negotiable Bill of lading • Supplier's Invoices In case of Immigration, so far, not really much problem faced by Muara Port. The only problem is about visa on arrival. Not all country are free from visa on arrival. Country like Bahrain, Australia need to complete visa on arrival when they enter Brunei through Serasa Port. For employee coming from outside Brunei they impose employee visa. Among passenger come from Indonesia, Malaysia and Philipine, the most having problem related to immigration matter is come from Philipine passenger.	Terminal. Its task within Labuan Liberty Port is to check and clear the crew list of cargo and other vessels leaving and entering the Port. The Immigration Department, however, plays a central role at the Labuan International Ferry Terminal which is adjacent to Labuan Liberty Port. This is because the Terminal is an international gateway, with ferries connecting Labuan with Brunei Darussalam. The Immigration Department therefore checks all the international travel documents of passengers arriving from Brunei and vice versa. Unlike Sabah and Sarawak, where quarantine matters are under the purview of the state, quarantine agencies are under the control of Federal authorities in Putrajaya. In addition, there is also in place a policy to place all quarantine matters, except for Health, under a one-stop agency. While importers/exporters still have to apply for the respective import and export permits from the Fisheries, Veterinary or Plant Quarantine departments, physical checks of these imports and exports are carried by the Malaysian Quarantine and Inspection Services (MAQIS) established in July, 2008. MAQIS currently has the final say as to whether a consignment meets the requirements for export or import. It is only after MAQIS gives the nod that Customs can give the final release for the goods.		
Major Issues	No specific information	No specific information	No specific information	No specific information
Coordination with other country				
Cross-border Agreement	Muara Port engaged to a bilateral agreement with Labuan Port (Malaysia) under MoU on Establishment and Promoting Efficient and Integrated Sea Lingkage which signed by Transport Ministries of BIMP-EAGA countries (Brunei Darussalam, Indonesia, Malaysia, and Philippines – East Asia Growth Area) on 2 November 2007 and Government Reference Letter: PC Conf.32/3/2005 (B) Pt. VI, dated on 29 September 2010. The agreement points are as follows: • Roll-on/Roll-off (RO-RO) Ferry Service Operation for Wilayah Persekutuan Labuan, Malaysia -	Labuan Port engaged to a bilateral agreement with Muara Port (Brunei Darussalam) under MoU on Establishment and Promoting Efficient and Integrated Sea Lingkage which signed by Transport Ministries of BIMP-EAGA countries (Brunei Darussalam, Indonesia, Malaysia, and Philippines – East Asia Growth Area) on 2 November 2007 and Government Reference Letter: PC Conf.32/3/2005 (B) Pt. VI, dated on 29 September 2010. The agreement points are as follows: • Roll-on/Roll-off (RO-RO) Ferry Service Operation for Wilayah Persekutuan Labuan, Malaysia -	No specific information	No specific information

	Serasa Muara, Negara Brunei Darussalam route will be started on 4 October 2010 (Monday); • The operator, Syarikat PKL Jaya Sdn. Bhd. which appointed by Brunei Darussalam Ministry of Transportation, will control the operation using RO-RO Ferry MV "Shuttle Hope," Brunei Flag; • Syarikat PKL Jaya Sdn. Bhd was approved to provide ferry service with two trips frequency from Labuan Regional Terminal in 1100 HRS and 1600 HRS • Syarikat PKL Jaya Sdn. Bhd should take on insurance for passengers in order to deal with any damage claim and compensation that may be happened during the ferry operation; • Syarikat PKL Jaya Sdn. Bhd should report to Jabatan Laut Wilayah Persekutuan Labuan not more than 60 days if they want to stop the ferry operation by temporary or permanent; • Any costs related to the operation of ferry service between Wilayah Persekutuan Labuan, Malaysia – Serasa, Muara, Negara Brunei Darussalam will be covered by Syarikat PKL jaya Sdn. Bhd, and no claim shall be addressed to Kerajaan Malaysia and Kerajaan Negara Brunei Darussalam; • Malaysia Ministry of Transportation and Brunei Darussalam Ministry of Transportation will grant an exemption of marine charges and terminal tariff to Syarikat Pengusaha Ferry as mentioned in the clause number 4.2. MoU on Establishing and Promoting Efficient and Integrated Sea Lingkage which signed by Ministries of Transportation of BIMP-EAGA; • If there is any amendment to the sailing schedule or application of increasing the service frequency, the ferry operators should give an advance notice at least a week before to Jabatan Laut Wilayah Persekutuan Labuan, Malaysia for the purpose of berthing at Labuan Ferry Terminal; • At this time, International Circulation Permit (ICP) is not necessary for vehicles from Brunei to entry Labuan territory. However, Malaysian Ministry of Transportation will coordinate with Brunei Darussalam Ministry of Transportation for any change possibility of ICP policy in the future. • Ferry operator must comply with all applicable laws and regulations which provided and strengthened	Serasa Muara, Negara Brunei Darussalam route will be started on 4 October 2010 (Monday); • The operator, Syarikat PKL Jaya Sdn. Bhd. which appointed by Brunei Darussalam Ministry of Transportation, will control the operation using RO-RO Ferry MV "Shuttle Hope," Brunei Flag; • Syarikat PKL Jaya Sdn. Bhd was approved to provide ferry service with two trips frequency from Labuan Regional Terminal in 1100 HRS and 1600 HRS • Syarikat PKL Jaya Sdn. Bhd should take on insurance for passengers in order to deal with any damage claim and compensation that may be happened during the ferry operation; • Syarikat PKL Jaya Sdn. Bhd should report to Jabatan Laut Wilayah Persekutuan Labuan not more than 60 days if they want to stop the ferry operation by temporary or permanent; • Any costs related to the operation of ferry service between Wilayah Persekutuan Labuan, Malaysia – Serasa, Muara, Negara Brunei Darussalam will be covered by Syarikat PKL jaya Sdn. Bhd, and no claim shall be addressed to Kerajaan Malaysia and Kerajaan Negara Brunei Darussalam; • Malaysia Ministry of Transportation and Brunei Darussalam Ministry of Transportation will grant an exemption of marine charges and terminal tariff to Syarikat Pengusaha Ferry as mentioned in the clause number 4.2. MoU on Establishing and Promoting Efficient and Integrated Sea Lingkage which signed by Ministries of Transportation of BIMP-EAGA; • If there is any amendment to the sailing schedule or application of increasing the service frequency, the ferry operators should give an advance notice at least a week before to Jabatan Laut Wilayah Persekutuan Labuan, Malaysia for the purpose of berthing at Labuan Ferry Terminal; • At this time, International Circulation Permit (ICP) is not necessary for vehicles from Brunei to entry Labuan territory. However, Malaysian Ministry of Transportation will coordinate with Brunei Darussalam Ministry of Transportation for any change possibility of ICP policy in the future.		

	from time to time by Kerajaan Malaysia and Kerajaan Negara Brunei Darussalam and comply with all applicable technical, operational, safety, and security requirements which set by Jabatan Laut in both countries and International Maritime Organization (IMO) and follow the Standard Operating Procedure (SOP) that provided by related agencies in both countries. In additions, as a part of ASEAN, this port which located under BIMP-EAGA and ASEAN agreements, will follow those agreement points which mainly regulate integration of cross border trade, immigration, and vehicle. The specific aspects related are as follows: • Recognition of country domestic driving license and vehicle inspection • Handling on left hand driving and right hand driving • Tax and Insurance for cross border vehicle	• Ferry operator must comply with all applicable laws and regulations which provided and strengthened from time to time by Kerajaan Malaysia and Kerajaan Negara Brunei Darussalam and comply with all applicable technical, operational, safety, and security requirements which set by Jabatan Laut in both countries and International Maritime Organization (IMO) and follow the Standard Operating Procedure (SOP) that provided by related agencies in both countries. In additions, as a part of ASEAN, this port which located under BIMP-EAGA and ASEAN agreements, will follow those agreement points which mainly regulate integration of cross border trade, immigration, and vehicle. The specific aspects related are as follows: • Recognition of country domestic driving license and vehicle inspection • Handling on left hand driving and right hand driving • Tax and Insurance for cross border vehicle		
Export-Import	Muara Port handles livestocks, beverages, and general cargo, especially between Muara and Malaysia (Labuan)	No specific information	• No specific information	No specific information
Other related matters				
Regulation for Truck and Port	No specific regulation provided by the government to control truck movement	No specific regulation provided by the government to control truck movement	No specific information	No specific information
Future CIQS Improvement Plan	No specific information	CIQS Facility will be moved if Labuan Port finally moved to the other side of bay, approximately 210 Ha area. So far, Malaysian government already have the Feasibility Study and now waiting for the funding.	No specific information	No specific information

7.6 Stakeholders' Views

1) Muara – Labuan – Brooke's Point

The local stakeholders in Brunei and Labuan seem to favor the existing Muara-Labuan passenger and RO-RO services, as evidenced by the sustainable operations of the ferry and RO-RO operators plying this route. These provide Brunei-based residents, workers (including foreign workers such as Filipinos, Indonesians and Malaysians) and tourists with a convenient mode of travel between Brunei and Malaysia.

The local stakeholders in Brunei are keen on better connection with Sabah and Sarawak through RO-RO ship to transport vehicles and containers at cheaper price. They appreciate recent highway improvement up to Kota Kinabalu.

It is difficult for Brunei stakeholders to pay attention to the Philippines, both Palawan and Zamboanga. Although they receive some Philippine local products and overseas workers, there is no direct route by sea and air. Brunei stakeholders do not have export commodity to those areas. They consider that they have a market in the country while they are not interested in local Philippine markets. Therefore, they did not show any business ideas if a new RO-RO shipping route is opened with either Brooke's Point or Zamboanga, during the stakeholders' meeting.

The local stakeholders in Brooke's Point are interested, and in fact have been waiting and working on it since 1998, to establish formal trade relations with Malaysia and/or Brunei. More recently, in 2005 and 2011, public-private delegations from Palawan conducted business missions to Brunei and Labuan and Sandakan, respectively, to explore possible linkages.

They feel that the Kudat connection will not prosper mainly because it is a small port and seems to be having difficulty (or may not be interested perhaps due to the thriving illegal trade of fish) in putting in the necessary CIQS facilities at the port, and the potential market in Kudat for Palawan's products is small. This is the main reason why they mounted the exploratory missions to Brunei, Labuan and Sandakan.

The Palawan stakeholders are now more interested to develop trade with Labuan and Brunei with the following considerations: (i) Brunei is a consumption nation that can absorb many products from Palawan, though it can send only oil and fuel in return; (ii) Brunei can be a source of investments for priority business projects in Brooke's Point and Palawan (e.g., coco oil mill, fish processing, livestock production and processing, tourism development); (iii) Labuan can be an entry point for Palawan's products, for onward distribution to nearby Malaysian markets (and, thus, possibly solve the constraint in directly exporting to Sabah due to pending territorial issues); and (iv) Labuan is a traditional trading partner and source of cheaper (duty free) consumer goods. For these reasons, the stakeholders welcome the JICA study to develop RO-RO connections between Brooke's Point, Labuan and Brunei and hope that the project will soon be realized.

2) Muara – Zamboanga

The Labuan Port operator thinks that if traffic demand from Muara or other places continues to increase, there may be a need to expand existing port facilities. The Labuan-Zamboanga route, however, seems quite far and there may not be enough demand to merit RO-RO services along that route.

As in other survey areas in the Philippines, local stakeholders in Zamboanga generally welcome the possibility of establishing direct international links to its ASEAN neighbors. However, a common reaction to the ASEAN RO-RO study is why Zamboanga is being directly linked to Muara and skipping Sandakan, its traditional trading partner and international destination port for many years. Muara seems to be very far and its trading and business opportunities are unknown to the Zamboanga stakeholders.

For years now, the business stakeholders in the processed sardines sector, a major industry in Zamboanga, have been exploring ways to establish more direct shipping routes to their existing and potential export markets. Currently, canned sardines on container vans are shipped from Zamboanga to Manila where they are transshipped to export markets. Local canning companies want to tap the big markets in Malaysia and Indonesia, where

canned sardines are up to 30% more expensive.[5] However, they are looking for ways to avoid the circuitous Zamboanga-Manila-Malaysia or Indonesia routes and believe it would be more competitive to ship them out directly from Zamboanga to these countries. Canned sardines alone can fill up cargo vessels, RO-RO or containerized.

In addition to the political issues, a possible problem with Sandakan as a partner port for Zamboanga is that the former does not currently handle containerized cargo and also does not have RO-RO facilities. Muara, if ever, may be a limited market for canned sardines. A possible route that the Zamboanga fish canners would like to explore is Zamboanga-Labuan-Muara. This could open opportunities for supplying the Malaysian market, using Labuan as an entry/exit point and possibly circumventing the Sabah political issue. Local exporters and shipping companies are also interested to explore possible Zamboanga connections to Bitung (to tap the Indonesian market) and Singapore.

The Zamboanga stakeholders inquired if the shipping route should be limited only to RO-RO vessels. They believe that because RO-RO shipping is more expensive (due to the limited cargo space) than conventional containerized cargo shipping, there is only a limited radius/ distance where the former can be viable. Most ports also do not have the necessary RO-RO facilities. To convince shipping companies to invest in servicing the potential routes, either by RO-RO or conventional vessels, they need to see if there are enough cargo/ passenger volumes.

One problem is that most of the exports from Zamboanga are not recorded as such since they go to Manila as domestic cargo from where they are exported to foreign destinations. To guide shipping companies in their investment decisions, there is a need for government, perhaps the Department of Trade and Industry, to start gathering data on actual exports from the area. The government may also consider providing incentives (e.g., subsidies, reduced government fees, concessional loans) to shipping investors in the new routes.

Passenger traffic at Zamboanga Port to/from Sandakan is rather high. Zamboanga City is a popular jump off point for Filipinos working in Sabah, Labuan and Brunei. An interesting fact is that most of the passengers returning from Sandakan are Filipinos being deported/ repatriated to the Philippines either as illegal entrants/migrants or as victims of trafficking of persons. The presence of the Visayan Forum Foundation in Zamboanga has contributed to stricter monitoring, apprehensions and repatriation of illegal migrants and trafficking victims from Malaysia.

At the same time, however, the very tedious and stringent processing/ clearing of passengers at the Zamboanga City Port are causing delays and inconvenience to the timely schedule of vessel trips. In the case of MV Danica Joy, Aleson Shipping's 600-passenger capacity ferry service to Sandakan, the scheduled departure at 2:00pm sometimes leave as late as 7:00pm. The situation is made worse by the existence of unscrupulous groups that are "smuggling" illegal entrants to Malaysia hidden in compartments on small motorized bancas.

Aleson's vessels are semi-RO-RO but they do not load vehicles due to inadequate RO-RO facilities in Zamboanga Port. If the movement of passengers across the Zamboanga-Sandakan route continues to be affected by market forces and administrative delays, the company may stop servicing the route. They are exploring the opening of a Cagayan de

[5] For example, according to one fish processor in Zamboanga, they are currently discussing with a Malaysian partner to supply canned sardines to Malaysia.

Oro-Camiguin service in Northern Mindanao, possibly a more lucrative route. None of the three domestic shipping companies covered in the field survey was interested to consider investing in RO-RO shipping services to any of the routes from Zamboanga Port. They are not sure of the viability of the operations due to the lack of demand and high cost of operations, including the change from domestic to international shipping licenses.

8 THE PHILIPPINE SEA CROSSING BETWEEN INDONESIA AND PHILIPPINES

This chapter reports the results of the field survey covering the Davao/General Santos – Bitung route.

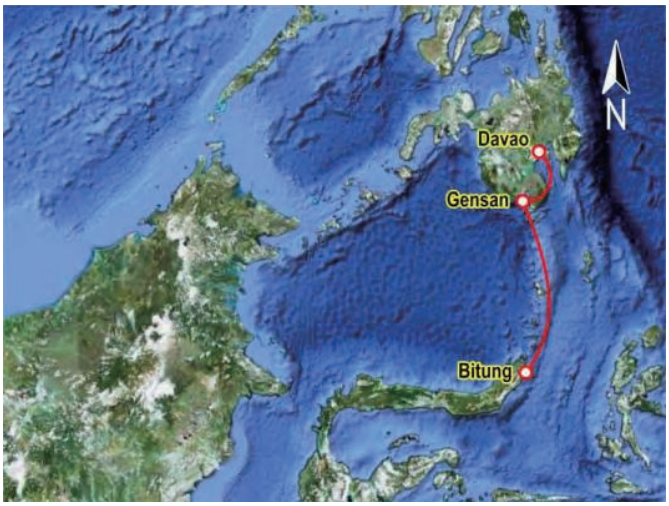


Figure 8.1 Location of Surveyed Route

8.1 Economy and Trade

1) Davao City, Philippines

Davao City is the regional center of the Davao Region (Region XI) as well as the premier city in the whole of Mindanao Island of the Philippines. Region XI, located in the southeastern portion of Mindanao, consists of four provinces, namely Davao del Norte, Davao del Sur, Davao Oriental, and Compostela Valley, six (6) cities and 44 municipalities. The region encloses the Davao Gulf.

At 20,244 km^2, Davao Region is one of the largest in the country. As of 2010, the region's population was placed at 4.5 million, growing by an average of 2.5% a year (see Table 8.1).

Davao Region's GRDP in current prices in 2009 was PhP367.9 billion, the second highest in Mindanao (next to Region X). The regional economy has consistently grown through the years at an average of 5.3% per year. The Per Capita GRDP was placed at USD1,891.

The region's major agricultural products include bananas, coconut, palay, sugarcane, livestock, corn, fish and other tropical fruits (e.g., durian, mango). Although it is agriculture-based, the services sector contributes the biggest to its growth, followed by the industry sector. The trade subsector, which is largely agriculture-based, is the prime booster of the services sector. The region has a sizeable financial base. With over 270 bank branches and over 650 non-bank financial intermediaries, the region is considered a hub of financial services in Mindanao.

The region is a growing tourism destination, with tourist arrivals in 2011 recording a 2.5% annual increase to around 700,000, generating tourism receipts of almost to PhP10 billion. It has a wide array of tourism facilities such as hotels, resorts, restaurants, cafes, malls, medical facilities, as well as land, sea and air transport.

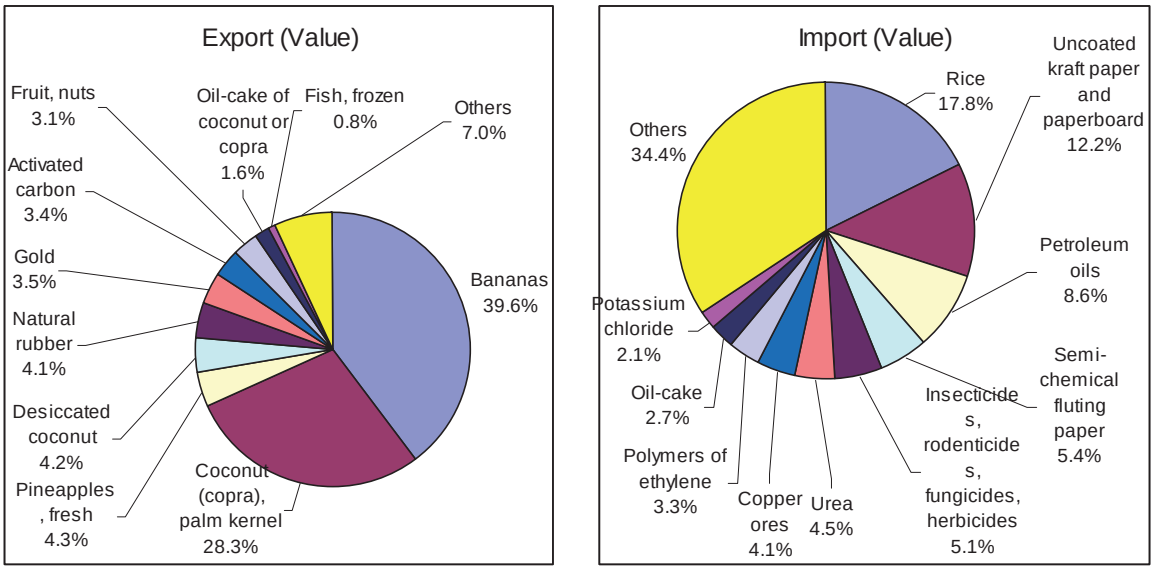
Table 8.1 Socioeconomic Indicators of Davao Region and Davao City, 2000 and 2010

Year	Region/ City	Population	GRDP at Current Prices (PHP Million)	Per Capita GRDP at Current Prices (USD)
2000	Region XI (Davao Region)	3,676,163	203,876[a]	1,274[c]
	Davao City	1,147,116	nd	nd
2010	Region XI (Davao Region)	4,468,563	367,903[b]	1,891[d]
	Davao City	1,449,296	nd	nd

Notes: a-2001 GRDP; b-2009 GRDP; c-2001 per capita GRDP converted to end-2001 dollar-peso rate;
d-2009 per capita GRDP converted to end-2009 dollar-peso rate

Source: National Statistics Office/ National Statistical Coordination Board, Philippines.

In 2010, Davao Region's exports were valued at USD785 million. The major export products were banana, copra and pineapples which together account for 72% of total export sales (see Figure 8.2). The main imports were rice, kraft paper and petroleum oils. The value of import was USD702 million, resulting in a trade surplus.



Source: National Statistics Office (NSO)

Figure 8.2 Exports and Imports of Davao Region, 2010 (by Value)

Davao Region's top five (5) export trading partners are Japan, USA, Netherlands, China and Korea. Its major import sources are the USA, Vietnam, China, Thailand and Singapore. In ASEAN, Davao's significant trading partners are Singapore, Malaysia and Indonesia (see Table 8.2).

Table 8.2 Trading Partners of Davao Region in ASEAN, 2010 (by FOB 000 USD)

Country	Export	Import
Brunei Darussalam	0	11
Indonesia	3,690	30,297
Malaysia	20,479	14,945
Singapore	42,450	64,917
Others	718,267	591,704

Source: National Statistics Office (NSO)

Davao Port (also called Sasa Wharf) is an international container port, with around 90% of its cargo throughput containerized. The rest are either break bulk or bulk cargo (see Table 8.3).

Table 8.3 Export/ Import Commodities in Davao City, 2010 (in MT)

Products	Export			Import		
	Break Bulk	Bulk	Container	Break Bulk	Bulk	Container
Total		17,271	1,948,631	10,451	94,685	896,141
Abaca			1,427			
Animal feeds			777			49,471
Cement			508			
Chemicals and related products			32,867			44,499
Coconut and by-products			75,447			
Crude minerals						194
Fertilizer					49,966	52,006
Fish and fish preparations			3,836			5,280
Fruits and vegetables and products			1,257,014			10,838
Fuel and by-products					4,867	3,575
Furniture			523			4,414
Grains					34,629	32,013
Machinery and electrical equipment				647		14,684
Meat, dairy products and eggs						1,069
Metal ores, products and scrap		17,271	25,054		5,223	20,316
Other general cargo			483,456			395,974
Pulp and paper products			92			234,918
Sugar Cane & By-products			278			3,889
Textile and products						1,988
Transport equipment, parts and accessories				9,804		4,590
Wood and by-products			67,352			16,423

Source: National Statistics Office (NSO)

There has been a tremendous increase in domestic and international cargo being handled at the port over the last few years, making Davao Port among the busiest ports in the Philippines, next to Manila and Cebu. Operating 24/7, Davao Port handles about 50% of the total cargo volume in Davao including those at the 24 private ports in the area. Bananas constitute 80-90% of cargo going out of Davao Port, loaded in reefer vans for the export market and in boxes/ crates for the Manila market. Other outgoing cargo includes other fruits, rice, corn, plywood and lumber. Imports through the port include fertilizer, plastics, steel products, hardware items, and sometimes cement, though Davao-made cement is also a major export to Manila.

According to the Bureau of Immigration officials, about five foreign vessels (e.g., Russian, Vietnamese, etc.) call at Davao Port daily.

With its focus on cargo operations, passenger vessels no longer call at Davao Port. The existing passenger ferry terminal is now underutilized. There is no RO-RO facility at Davao Port. A private shipping company, Mae Wess, built its own RO-RO wharf in Sasa in 1994 to service its four RO-RO vessels currently plying the Davao City-Samal Island route.[1]

The Davao International Airport is the busiest airport in Mindanao, with around 860 outgoing and 850 incoming flights per month, on the average, carrying close to 100,000 passengers (per way) monthly.

2) General Santos City, Philippines

General Santos City (or Gensan for short) is a chartered city in the SOCCSKSARGEN Region (Region XII). The region, located in central Mindanao, occupies a total land area of 19,166 km^2 and has an extensive coastline of 320 km. It is composed of four provinces (Cotabato, South Cotabato, Sultan Kudarat and Sarangani), five cities (Cotabato, General Santos, Kidapawan, Koronadal and Tacurong), and 45 municipalities. General Santos is the largest and most urbanized among the cities.

The SOCCSKSARGEN Region had a population of 4.1 million in 2010, growing by an average of 1.3% a year (see Table 8.4). Over the years, the region's GRDP exhibited irregular trends and recorded a slight shift in structure which remains predominantly agricultural.

Table 8.4 Socioeconomic Indicators of SOCCSKSARGEN Region and General Santos City, 2000 and 2010

Year	Region/ City	Population	GRDP at Current Prices (PHP Million)	Per Capita GRDP at Current Prices (USD)
2000	Region XII (SOCCSKSARGEN Region)	3,638,919	91,065[a]	855[c]
	General Santos City	411,822	nd	nd
2010	Region XII (SOCCSKSARGEN Region)	4,109,571	258,936[b]	1,362[d]
	General Santos City	538,086	nd	nd

Notes: a-2001 GRDP; b-2009 GRDP; c-2001 per capita GRDP converted to end-2001 dollar-peso rate;
d-2009 per capita GRDP converted to end-2009 dollar-peso rate

Source: National Statistics Office/ National Statistical Coordination Board, Philippines.

From 2004 to 2009, GRDP grew by an annual average of 4.6%, lower than the targeted growth range of 5.8-6.4% in 2009. At PhP258.9 billion in 2009, the region was the third largest economy in Mindanao, next to the Northern Mindanao and Davao regions. The Per Capita GRDP was placed at USD1,362 that year. The agriculture, fishery and forestry (AFF) sector contributed the biggest share to GRDP, though it slightly decreased from 43.6% in 2004 to 41.5% in 2009. Major AFF products include cultured and marine fish including high-value tuna, corn, coconut, fruits and vegetables.

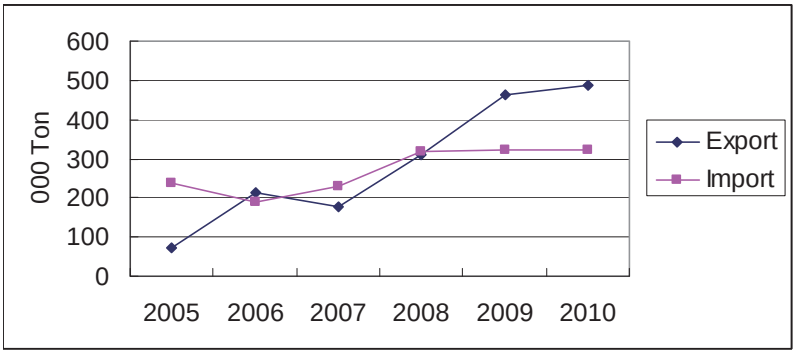
The decline in fishery production was attributed to the decline in commercial fishing due to the closure of Indonesian waters to foreign fishing, the ban on tuna fishing in parts of the Pacific Ocean (to allow fish re-stocking), and rising oil and fuel prices. On the other hand,

[1] The RO-RO vessels operate from 5:00 am to 11:00 pm. The trip across only takes 15 minutes.

the share of industry increased to 31.8% due to more intensive agro-industrial processing and manufacturing. The share of the services sector remained constant at around 27%. The tourism services subsector posted a sluggish growth.

Most of the region's agri-based manufactures are exported out of General Santos, where the major airport, seaports and logistics facilities are located. Exports have been growing by a robust average rate of 11% a year, to USD541 million in 2009. The marine sector dominates regional export trade accounting for 50% of aggregate exports with canned and fresh tuna taking up a combined share of 45%.[2]

The USA remains as the region's biggest export destination, followed by the European Union and Japan. The volume of trade (in terms of tonnage) in General Santos has been growing by an average of more than 20% a year. After 2008, exports have overtaken imports (see Figure 8.3).



Source: General Santos Port Management Office

Figure 8.3 Trade in General Santos City, 2005-2010 (in MT)

The major export commodities from the General Santos Port are fruits, vegetables, fish and their products, which are loaded on containers. The main import commodities are general cargo, metal ores and their products, crude minerals, pulp and paper products, fish and fish preparations, animal feeds, fruits and vegetables, and grains (see Table 8.5).

[2] The General Santos City Fish Port Complex is a large, modern fish port that yields a total daily capacity of 750 MT of fish catch and employs about 7,800 workers.

Table 8.5 Export/Import Commodities at General Santos Port, 2010

Products	Export			Import		
	Break Bulk	Bulk	Container	Break Bulk	Bulk	Container
Total	-	12,571	476,029	60,906	26,681	236,328
Abaca						36
Animal feeds			4,526			14,346
Chemicals and related products			72			3,258
Coconut and by-products			738			
Crude minerals			144		26,681	
Fertilizer						936
Fish and fish preparations			144,929			18,458
Fruits and vegetables and products		3,593	289,229			12,402
Fuel and by-products						360
Furniture			72			288
Grains			1,152	58,136		11,285
Live animals				1,241		
Machinery and electrical equipment						11,484
Metal ores, products and scrap		8,978	4,135	1,529		35,073
Other general cargo			25,776			90,691
Pulp and paper products						25,533
Sugarcane and by-products						1,854
Transport equipment, parts and accessories			108			10,324
Wood and by-products			5,148			

Source: PMO General Santos

An average of 400 passengers go through the General Santos Port daily (see Table 8.6). These come from other domestic ports in the Philippines.

Table 8.6 Average Daily Passenger Traffic at General Santos Port, 2008-2011

	2008	2009	2010	2011
Disembarking	166	148	141	196
Embarking	160	165	155	199

Source: General Santos Port Management Office

Most, about 80%, of the total export/ import cargo in General Santos is carried by container. This might mean that the market for RO-RO shipping should expect the shift from container.

3) Bitung, North Sulawesi, Indonesia

Manado is the capital city of and the main gateway by air to North Sulawesi province in the Republic of Indonesia. It is connected by good roads to the city of Bitung, located 55 km to the north. Bitung is the province's main sea gateway. North Sulawesi is located at the northernmost tip of Sulawesi Island. With a total land area of 13,930 km^2 and a population of 2.2 million (2009) growing by 1.2% yearly, the province is administratively divided into eleven (11) regencies and four (4) cities.

North Sulawesi's GRDP in current prices in 2009 was IDR33.0 trillion (see Table 8.7). The Per Capita GRDP amounted to USD1,613 growing by a steady 15% yearly. The biggest share of economic output was from the agriculture sector (20% of total GRDP), followed by the building sector (16%), and the trading sector (15%). The biggest contributor to the agriculture sector was the plantation subsector (36% share), and crops (31%).

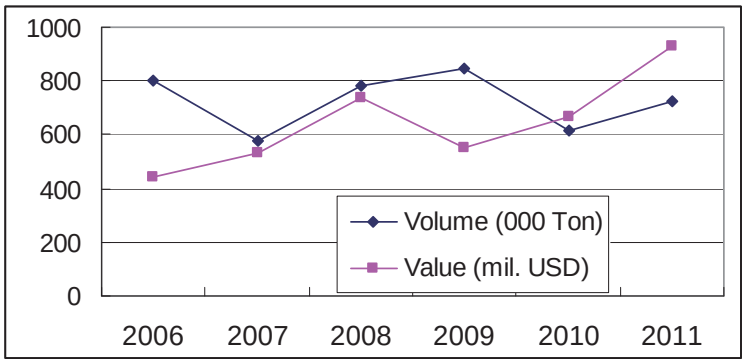
For the services sector, the biggest share was from large trading and retail subsector (80%), hotels (11%), and restaurants (5%). Tourism, mainly cultural and nature-based tourism especially marine tourism, is a major driver of the services sector.

Table 8.7 Socioeconomic Indicators of North Sulawesi, 2006-2009

Year	Population	GRDP at Current Prices (IDR Billion)	Per Capita GRDP at Current Prices (USD)
2006	2,160,641	21,216	1,068
2007	2,186,810	24,081	1,198
2008	2,208,012	28,698	1,414
2009	2,228,856	33,034	1,613

Source: Statistics of North Sulawesi

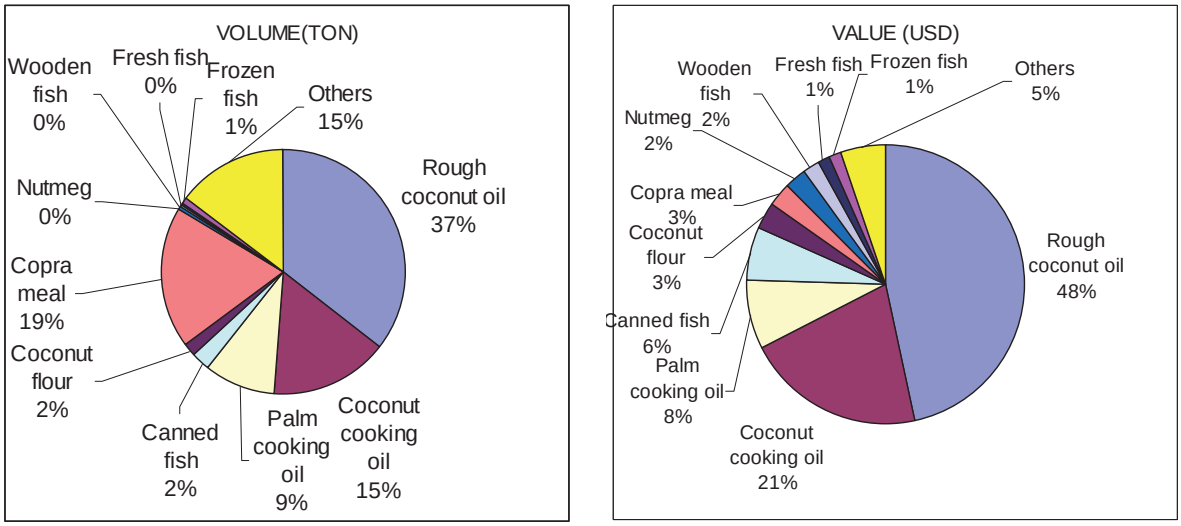
In 2011, the province exported 725,000 MT of products worth USD929 million. Both the volume and value of exports have exhibited fluctuating growth trends in the last six years (see Figure 8.4).



Source: Industry and Trade Agency, North Sulawesi Province

Figure 8.4 Exports of North Sulawesi, 2006-2001

The major export products of North Sulawesi are coconut oil, palm oil, coconut flour, copra and copra meal, canned fish, fresh and frozen fish, charcoal shell, and nutmeg (see Figure 8.5). These are exported mainly to the Netherlands, USA, China, South Korea, Japan, Germany and the Philippines (see Table 8.8). Most of these products, except perhaps the fish products, are not potential cargoes for RO-RO shipping.



Source: Industry and Trade Agency, North Sulawesi Province

Figure 8.5 Major Export Commodities of North Sulawesi, 2011

Table 8.8 Major Export Destinations of North Sulawesi, 2011

	Destination	Volume (000 MT)	Value (USD Million)
1	Dutch	164.19	269.58
2	USA	141.18	233.15
3	China	123.47	136.95
4	South Korea	142.68	106.94
5	Japan	5.88	33.78
6	Germany	6.77	21.20
7	Philippines	31.36	19.15
8	Singapore	5.61	11.84
9	Italy	1.01	11.29
10	Mexico	5.00	11.10
11	Others	97.65	73.58
TOTAL		724.81	928.57

Source: Industry and Trade Agency, North Sulawesi Province

Bitung Port, operated by PELINDO, is a port that handles mainly exports of coconut oil (30,000 MT/month, 90% of which are by special tankers) and desiccated coconut/copra (20,000 MT/month) to Korea, USA and Europe via Jakarta and/or Surabaya. Four (4) vessels regularly call on the port, namely Argo (2 calls/month), Cargill (2 calls), MNS (4.5 calls), and Bimoli (2 calls). Coconut raw materials come mainly from North Sulawesi, Makassar, Kalimantan, Gorontalo and Papua and are processed into coco oil in Bitung for onward export. Coconut oil accounts for about 80% of exported cargo from Bitung Port.

The major imports are rice from Vietnam and Thailand, capital goods (equipment and machineries) from China, Japan, South Korea and Singapore, and auxiliary raw materials from various countries. Currently, 90% of imports through the port consist of steel roll from China used for roofing materials and explosives for the local mining industry. Although a car carrier vessel comes to this port thrice weekly, this is not the demand for international RO-RO shipping.

An important development that is expected to further stimulate the province's economy is the planned development of a 600-hectare special economic zone near Bitung. The zone will include a 22-ha industrial park (Bitung Intranusa Industrial Estate) to host coconut processing, fish/aquaculture processing, and other high value processing plants; warehouses; container yards; and mixed use areas, among others. The new zone is only 6 km away and will be connected by toll road to Bitung Port, which will be expanded and further modernized as an international hub port for exports and imports. Other planned development projects are the Bitung Fishing Port and the Manado Tourism Harbor.

4) Tahuna, Sangihe Regency, Indonesia

There are three ports in Sangihe currently doing domestic and international operations, namely Tahuna Port (for passengers), Petta Port (cargo to the Philippines and fishing activities), and Tamako Port (RO-RO services to Bitung). Tahuna is a small town dominated by agricultural and fishing activities. From Manado, it can be reached in 10 hours by medium-sized ferry or 6 hours by a fast craft. The 300-capacity passenger boat plies the Manado-Tahuna route everyday, except during bad weather. The travel time by sea takes longer during bad weather.[3] Many people in Sangihe live or have relatives in Southern Philippines. A small airplane (Wings Air, 45 minutes flight time) also services the Manado-Tahuna route twice a week, operating in a rather distant airport about an hour's travel from downtown Tahuna.

The outbound commodities from Tahuna Port were dominated by copra (9,900 MT) and nutmeg (1,346 MT) in 2011 (see Table 8.9). Most of them were sent to Singapore and the Philippines via Surabaya. The major imports were premium oil, cement, rice and white sugar (see Table 8.10). Nowadays, cargo trading between Tahuna and Southern Philippines are done through the Petta Port, about an hour drive from Tahuna. A small cargo vessel carries around 1,000 MT of copra per month to Southern Philippines via Petta Port. There is also a lot of traditional trading, considered "illegal" as they are unregulated by government authorities, going on across this route. Traders from Tahuna carry marine products, soap, cigarettes, empty coca-cola cans, etc. on small wooden-hulled boats and in return, bring back consumer goods (e.g., groceries, soft drinks and Tanduay rum, accessories, cooking equipment, etc.) and even fighting cocks. However, accurate data on the informal trading volumes are difficult to get.

Table 8.9 Major Export Commodities of Sangihe Regency, 2009-2011

Product	Volume (MT)			Average Price (IDR)
	2009	2010	2011	
Nutmeg	2,287	2,474	1,346	58,350
Mace (Fuli)	228	247	135	123,850
Copra	20,000	7,612	9,900	4,150
Clove	191	568	17	71,900

Note: The destination of copra is the Philippines through Surabaya, nutmeg is Singapore also through Surabaya. Clove is mostly for domestic destinations.

Source: Industry and Trade Agency of Tahuna

[3] For example, the travel of the survey team member from Manado to Tahuna took 24 hours as the vessel had to go very slow and sought refuge in the smaller islands due to bad weather and sea conditions.

Table 8.10 Major Import Commodities in Sangihe Regency, 2009-2011

Product	Volume (MT)			Average Price (IDR)
	2009	2010	2011	
Rice	5,969	3,807	4,140	15,000
White Sugar	1,206	1,794	2,700	15,000
Wheat	449	445	613	60,000
Salt	5	50	101	45,000
Butter	78	75	73	15,000
Cooking Oil	120	64	128	15,000
Egg	1,572	13,363	250	10,000
Milk	768	827	960	10,000
Vegetable	0	0	0	2,875
Cement	18	20	4,900	
Zinc	85	94	90	
Iron	768	827	960	
Triplex	768	827	960	
Premium Oil	6,475	6,600	5,869	
Lubricant Oil	0	0	0	
Kerosene	7,980	8,825	6,625	

Source: Industry and Trade Agency of Tahuna

8.2 Corridor-wide Traffic

1) Bitung – General Santos/Davao

The field survey observes that there is no liner shipping service on the route.

There have been past attempts to open liner shipping services from North Sulawesi to Southern Mindanao, particularly Davao and General Santos, as part of overall efforts to improve connectivity under the BIMP-EAGA subregional cooperation initiative as follows:

- In 1996, KM Aru, an Indonesian shipping company, started operating a cargo vessel plying the Bitung-Davao route. It was reported that up to eight vessels of less than 1,000 GRT used to ply the Bitung/ Davao route three times a week.
- In 2004, another Indonesian shipping company started operating a 200-TEU container vessel between Bitung and General Santos. It carried mostly frozen and canned fish to General Santos but had not much backload to Bitung. In both instances, the Bitung-Davao and Bitung-General Santos services were short-lived due to the commercial non-viability of their operations. (Refer to Table 8.11)

The corridor has similar experiences in air transport which opened and suspended direct air services between Davao and Manado repeatedly. In the past, several airlines started servicing the Manado-Davao-Manado route, including Bouraq Airlines, Wings and Sriwijaya Air. These flights, however, have already stopped in 2008 mainly due to internal organizational issues (in the case of Bouraq) and low load factor in the case of the other airlines. Just recently, Mid-Sea Travel Express, a new Philippine carrier, started operating chartered flights from Davao to Manado on a 19-seater Jetstream plane. It has been reported that Jakarta-based Lion Air and Manila-based Zest Air are also working on the necessary documentary and administrative requirements to start servicing this route under the BIMP-EAGA open skies policy for selected priority airports.

Table 8.11 Container Shipping Experience Between Bitung and General Santos

	Container Shipping Experience between Bitung and General Santos
Operation	The first Bitung – General Santos (Gensan) container service started in March 2004 but it was soon suspended after three months' operation due to insufficient cargo demand. It was provided by an Indonesian shipping company, PT Humpus Intermoda Transportasi, using MV Rimba Tujuh, semi-container vessel accommodating up to 200 TEU, both dry and refrigerated containers, with a gross tonnage of 5,495 tons. The vessel plied between the two ports in 36 hours and took 10 days for one round trip.
Vessel	 *MV Rimba Tujuh*
Expectations and Lessons	The local economies of North Sulawesi and South Mindanao had sought for such services with the following expectations: (i) To offer additional opportunities for cross-border trade between the two focus areas of the BIMP-EAGA; (ii) To reduce freight cost and sailing time for East Indonesian exports to East Asia and the US west coast by avoiding of going down to Jakarta or Surabaya; (iii) To improve subregional competitiveness in global markets, for example, making use of North Sulawesi's strength in fishery products for General Santos City's developed canning industry. Thus, the Memorandum Agreement was made between North Sulawesi Chamber of Commerce and General Santos City Chamber of Commerce in 2001. The operation suspension of MV Rimba Tujuh demonstrated limited containerizable cargo demand between the two economies although traditional general cargo shipping is still active through small islands' ports such as Tahuna. There is another opinion that three months' pioneering operation was too short to root a new sea link taking account of much larger container vessels like 500 TEU plying between Bitung and Jakarta/Surabaya.

2) Tahuna – Talaud - Glan

Aside from the Manado/ Bitung-Davao/ General Santos route, another potential route that can be developed in conjunction with the former is the Glan/ Sarangani Province-General Santos-Miangas/ Talaud/ Tahuna (Sangihe Regency in Indonesia) route. This group of islands between Southern Mindanao and Bitung are rich fishing grounds and coconut producers. It takes 25 hours to bring fresh fish, copra and coconut shells from Talaud to Bitung but only 8-10 hours to General Santos.

Especially since there is no cold storage facility in the islands, it would be more practical and cheaper to bring these products to General Santos. KADIN is currently discussing with the Indonesia Minister of Fisheries to "open a window" allowing Filipino-Indonesian joint venture fishing operators to do limited area fishing around the islands and bring the fish to General Santos for processing.[4]

In March 2009, a passenger and cargo ship named KM Sunlia (with maximum capacity of 100 MT and 100 pax) started serving the Tahuna-Petta-Marore Island-Glan (Sarangani Province) route once a month. This shipping service was initiated by the local government of Tahuna in cooperation with the local government of Sarangani. The Tahuna government gave a 50% fuel subsidy. After almost two years of operation, the service stopped in December 2010.

Other than lack of demand, shipping operation was beset by problems of too many bureaucratic requirements and procedures, including customs, immigration, quarantine and security (CIQS), especially at the Indonesian side. Plans are afoot to revive this cargo service. Both the Tahuna Government and the Philippine Government are exploring opportunities to re-open this route, possibly providing incentives to KM Sunlia Express or another company.

In Sarangani Province, there are local shipping operators currently operating RO-RO vessels along domestic routes. One is servicing the General Santos-Balut Island (south of Glan) route with a small, 30-passenger vessel. The company[5] plans to invest PhP80-100 million to operate a bigger vessel to either Bitung, or between Malaysia and PNG. However, they need to carefully study the sustainability of operations in terms of market volumes, administrative arrangements (e.g., conversion from domestic to international franchise, registration, insurance coverage), competition (including from informal trade), and financial considerations. It would help if government can provide them incentives such as fuel subsidies. It was also reported that the winning bidder[6] for port services operation in the Glan Port is also interested in operating a vessel to service the Glan-Tahuna route.

[4] A Manado-based businessman is exploring with potential JV partners in Southern Mindanao to develop abaca plantations in Tahuna as well as to export up to 10,000 MT of fresh coconuts from Tahuna/ Talaud.

[5] Sarangani Transport Corporation.

[6] PTM Brokerage and Port Services Inc.

8.3 Port Operation and Infrastructure

1) Port of Davao

(1) Overview of the Port

The Port of Davao is located in Davao Bay at Barangay Sasa about 10 km north-east from the center of Davao City in the south-east of Mindanao Island. The port faces Samal Island across Pakiputan Strait. The port is the largest port in Mindanao Island supporting the economic activities of Southern Mindanao. Vital export activities from this port make it the third ranked port nationwide, in terms of foreign container traffic. The main commodities are fresh bananas to be exported to China, Hong Kong, Japan, Korea, Singapore, and Middle East Countries.

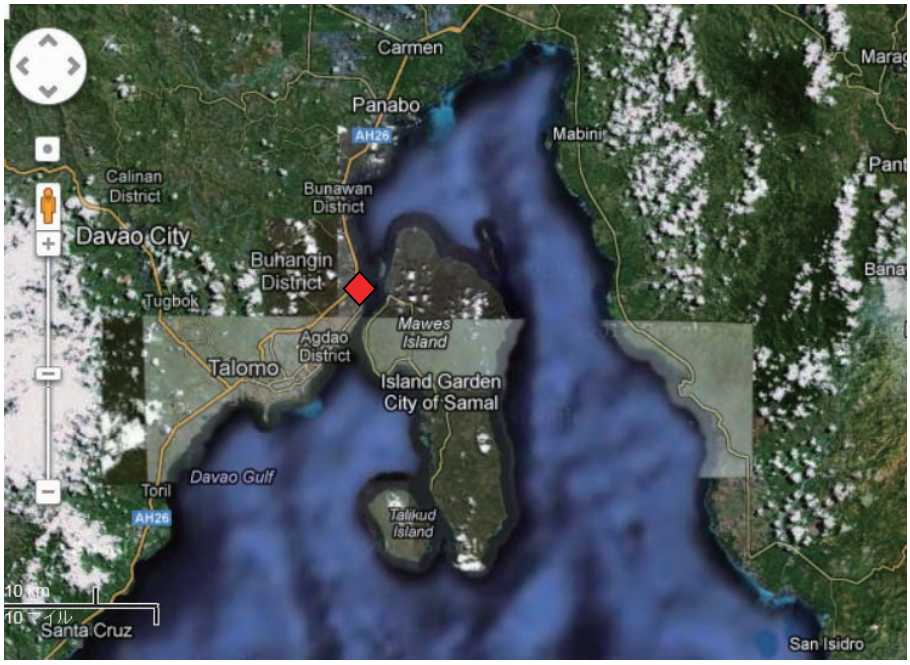


Figure 8.6 Location of Davao Port (Sasa Wharf)

(2) Natural Conditions

The port does not face severe wave situation due to its location, being sheltered by Samal Island. The tidal range of the port waters is 1.0 m.

(3) Port Facilities/Layout

The main wharf of the port is called Sasa Wharf and it is comprised of the Old Quay and New Quay. The layout of Sasa Wharf and the outline of its main facilities are shown in Figure 8.7 and Table 8.12.

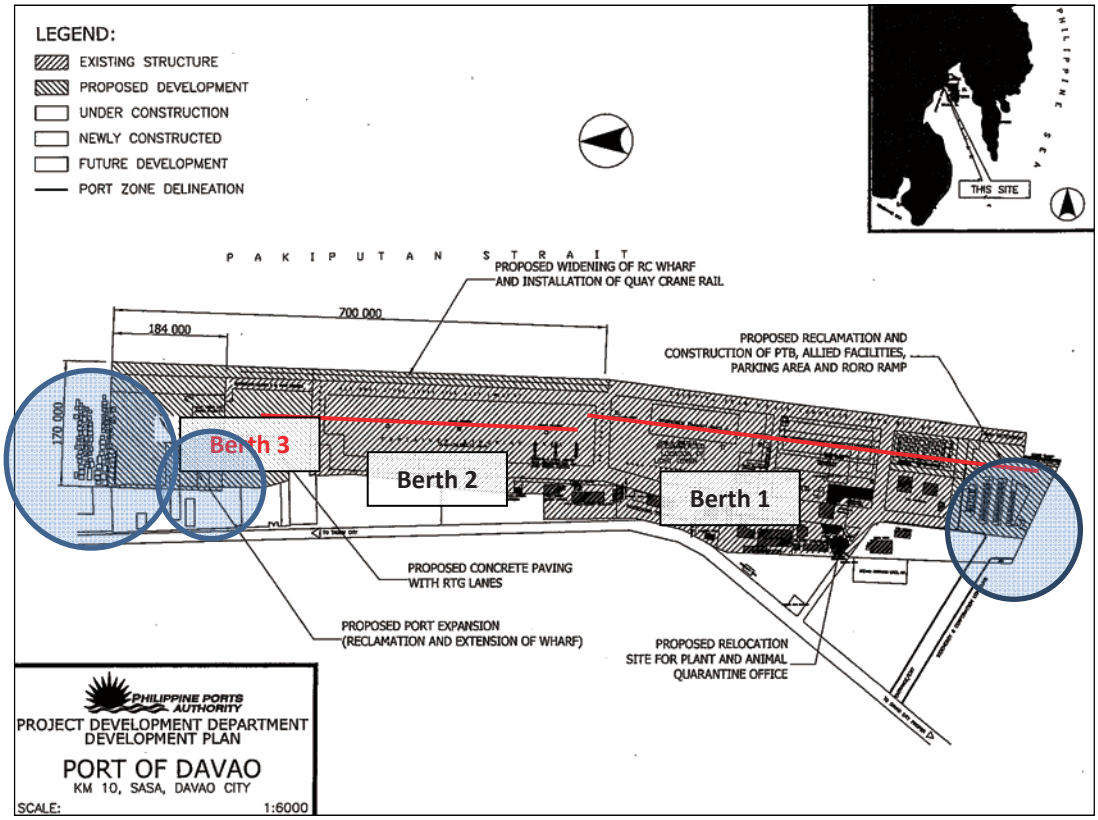


Figure 8.7 Layout of Davao Port and Improvement Plan

Table 8.12 Main Port facilities of Davao Port

Facility Name	Volume
Berth 1	1 – 5 (575 m x 18 m) – 10 m
Berth 2	6 – 9 (405 m x 35 m) – 10 m
Berth 3	10 (113 m x 25 m) – 10
Container yard	41,490 m^2
Marshalling area	11,700 m^2
Storage space	19,737 m^2
Transit shed	6,250 m^2
Passenger terminal	613 m^2

Source: Meeting Record with Port Operator, 18 April 2012

(4) Management and Operation

The Port of Davao is under the management of the Port Management Office-Davao in the Port District Office-Southern Mindanao of the Philippine Ports Authority (PPA).

The port has several CIQS infrastructure such as police/security post, customs building, passenger room with supporting CCTV and X-Ray machine.

The substantial activity in the Davao Port, however, has continued to take its toll on port facilities. The port is now very congested. Worse, the heavy traffic in the port has seriously degraded port infrastructure, particularly the concrete pavement of the wharf which is now full of holes that pose danger to both vehicles and people. The PPA-Davao continues to implement massive rehabilitation work on the eastern side of the wharf but such repair work is not enough to catch up with the fast deteriorating middle and western parts.

The delay in the planned privatization of the port in 2012, wherein the winning private sector bidder is expected to take over port improvements and modernization, adds to the degradation of the port's operational efficiency. Aside from ongoing port repairs, the port expansion plan will focus on expanding container handling facilities, acquiring additional cranes, etc. The foundation in the expansion area in the western side of the wharf needs to be reinforced and the informal settlers need to be relocated.

(5) Connection with Hinterland

The accessibility of Davao Port is in a good condition. It can be reached by 25-minutes driving from the downtown. The access road to the port can accommodate big size trucks however, according to the local regulation trucks are prohibited to enter the city roads during peak hours (5:00 – 9:00 AM), which is a big issue for logistics. Traffic congestions are also induced by many low-speed vehicles such as tricycles while the city has a certain road density with some 4-lane streets. Introducing LRT (light rail transit) or other mass transit system is one option of the city's urban transport plan. Mass transit system might be feasible in Davao thanks to a high population density in the limited habitable areas.

The Davao Port is only 2 km away from the Pan Philippine Highway (ASEAN Highway No. 26) and trucks from the other cities can easily access the port. A well-maintained regional road network is necessary for the development of Mindanao. Especially, the linkage between Davao and General Santos, the nearest big city, will be strengthened by pavement maintenance, road expansion, improvement of road alignments, prevention of rock falls and landslides, and so on.

Access roads to Davao Port:

- Road width	:	12 m
- Number of lane	:	4 lanes
- Pavement type	:	Rigid pavements
- Weight limit	:	13.5 tons (max. axle load) 45 tons (gross vehicle weight limit)
- Freight vehicle type observed on site	:	n.d.
- Passage of heavy vehicle	:	Trucks are not allowed to enter city roads during peak hour 05:00 – 09:00
- Time/distance to the nearest city	:	± 28 km, 25 minutes (to Davao City)
- Future plan related to road and land infrastructure	:	- 23 km coastal road development, connecting Toril to Cabaguio - Light rail, Panabo-Cruz line

(6) Future Development

In order to anticipate future demand of the port and to introduce RO-RO service operation, the port has a plan to expand their infrastructure and services. The plan includes the components outlined in Table 8.13.

(7) Topics of RO-RO Terminal

The port has a plan for RO-RO terminal improvement project. The project includes construction of passenger terminal building, allied facilities, parking area and RO-RO ramp at the south end of the port as well as reclamation. In the plan, the period of the

project is scheduled from 2012 to 2014. However, the site is currently crowded with informal settlers.

Table 8.13 Project Components of Davao Port

Project Components	Size	period
-Concrete paving with RTG lanes of newly completed back-up area	1.30 ha	2011–2012
-Widening of RC Wharf -Installation of Quay Crane Rail	700 m x 15 m 500 m	2011–2013
-Reclamation -Construction of RO-RO facilities	Passenger terminal building, allied facilities, parking area and RO-RO ramp	2012–2014
-Expansion at the north end	Container yard and 184-m-long wharf extension	2016–2018
-Relocation of plants and animal quarantine office -Development of vacated area,	-	2011-2012
-Procurement Quay Cranes	3 units,	2013–2014
-Procurement RTG Cranes	6 units,	2013–2014

2) Port of General Santos

(1) Overview of the Port

The Port of General Santos is located on the north of Sarangani Bay, in the southern Mindanao, approximately 2 km from General Santos City. The port is a regional base port and marketed as a multi-use port which caters seamlessly to both domestic and international shipping as the hub of the South Cotabato, Cotabato, Sultan Kudarat, Sarangani, General Santos (SOCCSKSARGEN) economic zone of Region XII. It is also the gateway for passenger ships bound for inter-island routes, especially the Visayas and Luzon islands, and vice versa.

Figure 8.8 Location of General Santos Port

(2) Natural Conditions

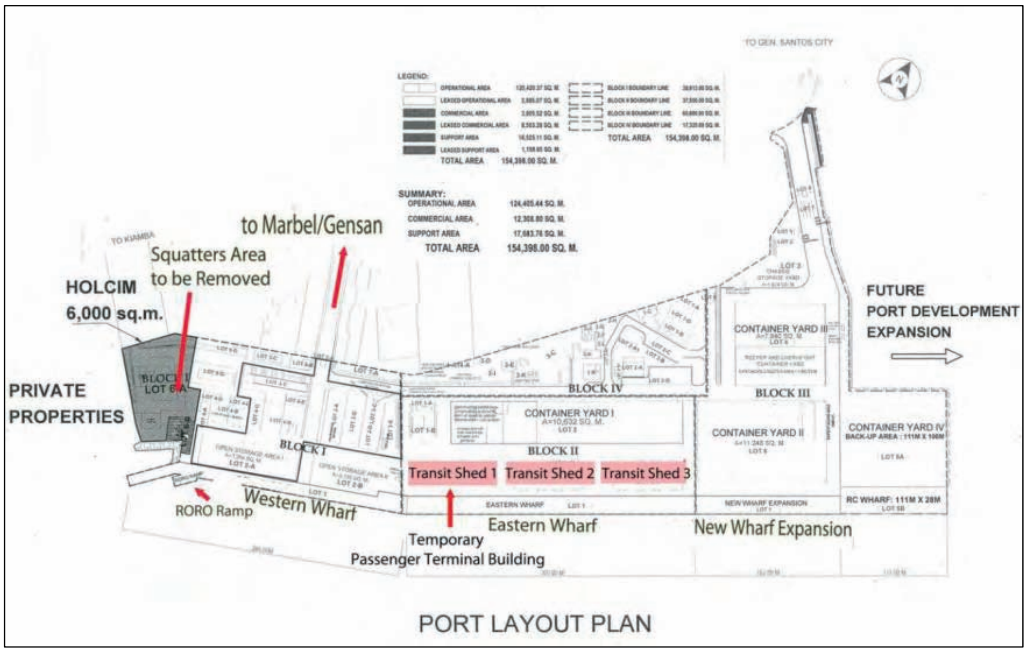
The tidal range at the port waters is 0.741 m on average.

(3) Port Facilities/Layout

The port is approached from the south south-west and entered between Tampuan Point and Sumbang Point. The length of the channel is 33 km and the maximum width is 16 km. The maximum vessel size is 32,774 DWT. There are five anchorages to the south of the port.

The main terminal of the port is named as Makar Wharf and its layout is shown in Figure 8.9.

Gensan Port has nine (9) berths that can accommodate up to six (6) ships of 120m average LOA at a time. It has container yards, marshalling area, reefer structures, storage spaces, transit sheds, and a 1,200-seat passenger terminal. Bagging operations can be done along the apron, however, this becomes slow when there are more than 2 vessels. Its facilities are shown in Table 8.14.



Source: Philippine Ports Authority-PMO General Santos

Figure 8.9 Layout of Makar Wharf

Table 8.14 Main Port Facilities at Makar Wharf

Facilities	Remarks
Berths 1 to 3:	Berth 1 to 3 (8 m. MLLW) Berths 4 to 6:10 m. MLLW Berths 7 to 9:12 m. MLLW
Container Yards:	41,692 sq.m.
Storage Spaces: (Open Type);	6,399 sq.m; 1,682 sq.m (for chassis) 368 sq.m (for general cargoes) 670 sq.m (for dangerous goods)
Transit Sheds	Three(3) buildings with 2,160 sq.m. each
Passenger Terminal Building	2,160 sq.m Inside Transit Shed (1200)

Source: Philippine Ports Authority-PMO General Santos

Makar Wharf is about the same size as Sasa Wharf but its current cargo throughput is much less than the latter's. It receives fewer domestic and international ship calls, although the big domestic ROPAX ships (e.g., 2GO/SuperFerry) regularly calls on the port twice a week.

(4) Management and Operation

The port is under the management of the Port Management Office-General Santos in the Port District Office-Southern Mindanao of the Philippine Ports Authority (PPA).

The port is supported by adequate CIQS facility such as security posts, police station, custom office, quarantine office, and temporary passenger waiting room. Immigration Office is available outside the port. In additions to those facilities, the port is also equipped by adequate inspection tools, such as X-Ray machines, metal detector, and basic inspection tools.

(5) Connection with Hinterland

General Santos is connected by good roads to the neighboring provinces of Sarangani, Cotabato and Sultan Kudarat and their component cities. The distance between General Santos and Davao is around 161 km, which takes about 3 hours of driving on the Pan Philippine Highway, a part of ASEAN Highway No. 26. There is an increasing volume of truck traffic along this route, carrying container vans that either enter or exit the Davao and General Santos Ports. From Cotabato City, the distance to General Santos is about 195 km or equivalent to 3.5 hours driving.

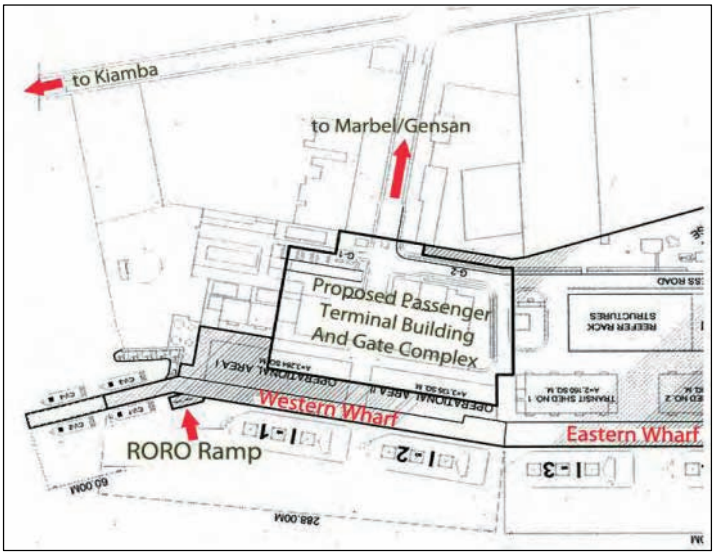
General Santos City has no specific regulation to control truck movement in the city. All kinds of trucks are allowed to access major roads from/to port and city area. However in near future, urban transport can affect logistics along with the development of the city. The road density of General Santos is not sufficient and traffic congestions are observed in the city center during the morning and evening peak hours. Especially in the east-west direction, there are only two main streets, the Pan Philippine Highway (4 lanes) and P. Acharon Blvd (2 lanes or 4-6 lanes in limited sections in the city center). Expansion of P. Acharon Blvd and/or construction of another east-west trunk road are highly encouraged.

Access roads to General Santos Port:

- Road width : 14 m
- Number of lane : 4 lanes
- Pavement type : Rigid pavement
- Weight limit : 13.5 tons (max. axle load
  45 tons (gross vehicle weight limit)
- Freight vehicle type observed on site : n.d.
- Passage of heavy vehicle : Allowed
- Time/distance to the nearest city : ± 199 km, 3.5 hours (to Cotabato City)
- Future plan related to road infrastructure : Improvement of Davao – General Santos road, etc.

(6) Future Development

The port has plans for the construction of a new passenger terminal building and a gate complex at the Western side of the port area. The layout plan of the passenger terminal building and the gate complex is shown in Figure 8.10.



Source: Philippine Ports Authority-PMO General Santos

Figure 8.10 Makar Wharf – RO-RO Passenger Terminal Building After Development

(7) Topics of RO-RO Terminal

Makar Wharf has one RO-RO ramp facility which is located at the Western Wharf. The ramp size is 9x11 m. The current passenger terminal has a vast area of 2,160 m^2.

While the port has a RO-RO ramp, it has no marshalling yard for RO-RO vehicles. This poses no problem to the side-ramp RO-RO ships that currently call on the port. Port development plans by 2013, at an estimated cost of PhP175 million, include rehabilitation work (retrofitting, reinforcement of below deck with carbon fiber, etc.) and expansion of the eastern side of the wharf.

3) Port of Bitung

(1) Overview of the Port

Port of Bitung is located in Bitung Regency about 45 km from Manado City, the capital of North Sulawesi Province. It is one of the most important ports in eastern Indonesia. The port is expected to assume a role as a gateway between the Pacific area and Asia.

Figure 8.11 Location of Bitung Port

(2) Natural Conditions

The port waters are protected by Lembeh Island which shields the port from storm and swell disturbances. Tidal range is about 1.8 m.

(3) Port Facilities/Layout

The length of the approach channel is approximately 9 miles and the width is about 800 m. Vessel can approach from the north and south.

The port is composed of two terminals: a conventional terminal and a container terminal. The conventional terminal consists of seven berths and the container terminal has a 357-m-long berth. (see Table 8.15) The layout of the port is shown in Figure 8.12.

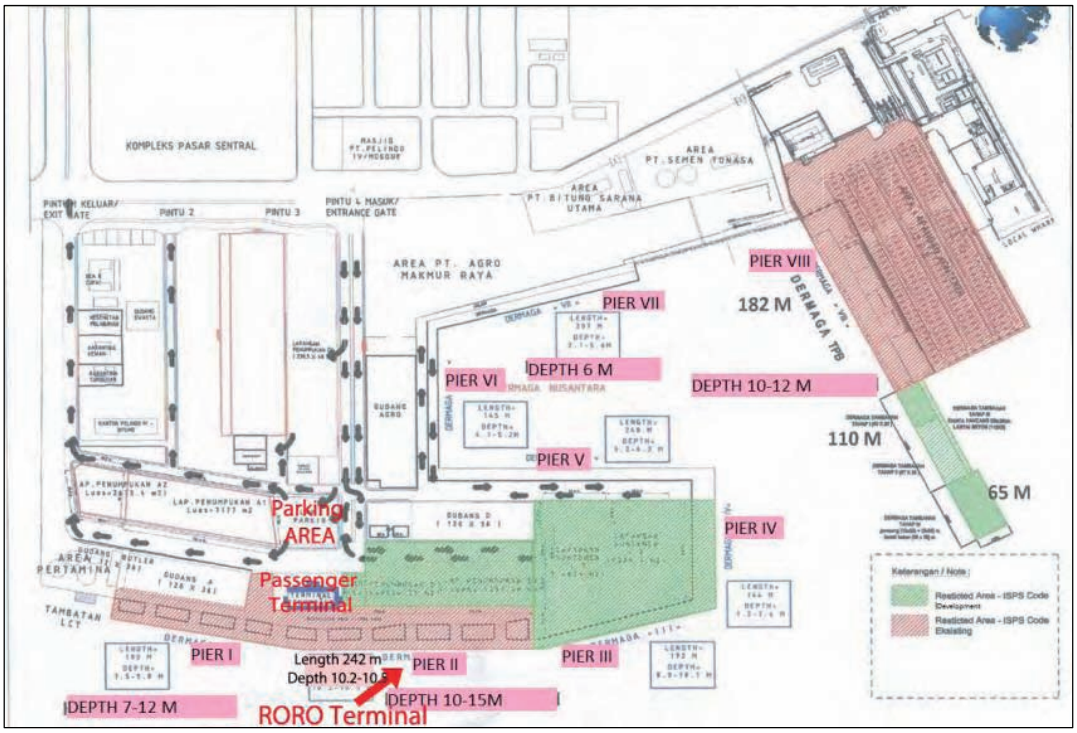


Figure 8.12 Layout Terminal of Bitung Port

Table 8.15 Profile of Bitung Port

Terminal	Name of Pier	Length	Depth (m)
Conventional Terminal	International pier 1	190 m	7 m – 12 m
	International pier 2	242 m	10.2 m-10.5 m
	International pier 2	175 m	10 m -15 m
	International pier 4	146 m	10 m -15 m
	Domestic pier 5	251 m	6 m
	Domestic pier 6	148 m	6 m
	Jetty Nusantara 7	205 m	6 m
Container Terminal	Container Wharf	357 m	10 m – 12 m

The current port facilities are considered adequate for current container vessel calls, although during peak season (Christmas and Lebaran holidays) conventional vessels require up to about three days of berthing due to limited space. It has enough parking spaces for up to 200 cars for RO-RO shipping.

(4) Management and Operation

There are three key organizations related to management and operation of the Port of Bitung: Port Authority of the Port of Bitung and ADPEL of state agencies and Container Terminal Bitung (TPB) of PELINDO IV. PELINDO IV is an operator which was privatized according to the provisions of the Shipping Act in 2008. PELINDO IV takes the role of port management and operation, substantially, and construction and improvement of port facilities.

Bitung Port is supported by adequate CIQS facility such as security posts, police station, customs office, immigration office and quarantine office.

(5) Connection with Hinterland

Sulawesi Island is not included in ASEAN Highway Network. Bitung is connected to Manado by a two-lane paved road only but a toll road project from Bitung to Manado, and the widening of roads to the hinterlands (especially those to the industrial sites) are ongoing. The government is currently acquiring land for the right-of-way and hopes to complete the road projects within two years. Since Bitung is located at the northeastern edge of Sulawesi Island, it would take a quite long time to develop a better road network in Sulawesi to link Bitung and every city in the province. Currently, a road-based hinterland of Bitung stretches to Manado and Gorontalo, which are linked by relatively better roads. Therefore, it is better to focus on gathering export cargoes by domestic shipping from other cities in Sulawesi and Papua.

The access road to Bitung Port is maintained well but vehicles from/to outside Bitung have to pass through the downtown of Bitung because of a ribbon development of the downtown extended about 8 km long along the Manado – Bitung road. There used to be a ban against big trucks and container vans passing through the city roads but this was lifted after 2011. Truck bans would affect logistics network centered on Bitung and it would be also against the national policy of Bitung as a global hub port. It is encouraged to develop bypass roads to lead the traffic flow of freight vehicles from/to the port if they really disturb urban transport. The location of an exit of the planned toll road should be considered carefully not to affect traffic in the city. Existing road networks in Belawan and Penang will show good examples for the road network planning.

Access roads to Bitung Port:

- Road width	:	Port entrance area: >14 m Main road access: 6-7 m
- Number of lane	:	Port entrance area: 6 lanes Main road access: 2 lanes
- Pavement type	:	Flexible pavement
- Weight limit	:	8 tons (max. axle load) Indonesia road classification: Class III A
- Freight vehicle type observed on site	:	Truck, container truck
- Passage of heavy vehicle	:	Currently allowed, but there used to be prohibited
- Time/distance to the nearest city	:	±16 km, 45 minutes (to Manado)
- Future plan related to road infrastructure	:	- Road widening between Manado and Tomohon. - Construction of 49 km (approx.) long toll road connecting Bitung and Manado with target completion date is year 2014.

(6) Future Development

The container terminal development project has been carried out under phased plan. Now it is at the stage of phase II.

(7) Topics of RO-RO Terminal

Pier 2 of 242 m in length and 10.2 to 10.5 m in depth is used by a RO-RO vessel whose name is Alexa. The vessel calls at the port every two or three weeks and discharges hundreds of cars which are loaded at the port of Jakarta. The terminal is also used by PELNI ship and a passenger building is located behind the quay. The building consists of two floors with an area of 2,554 m² on each floor. It is equipped with 680 seats and has a capacity of 2,120 persons. The parking area of 2,394 m^2 can accommodate up to 400 vehicles.

8.4 Shipping Route

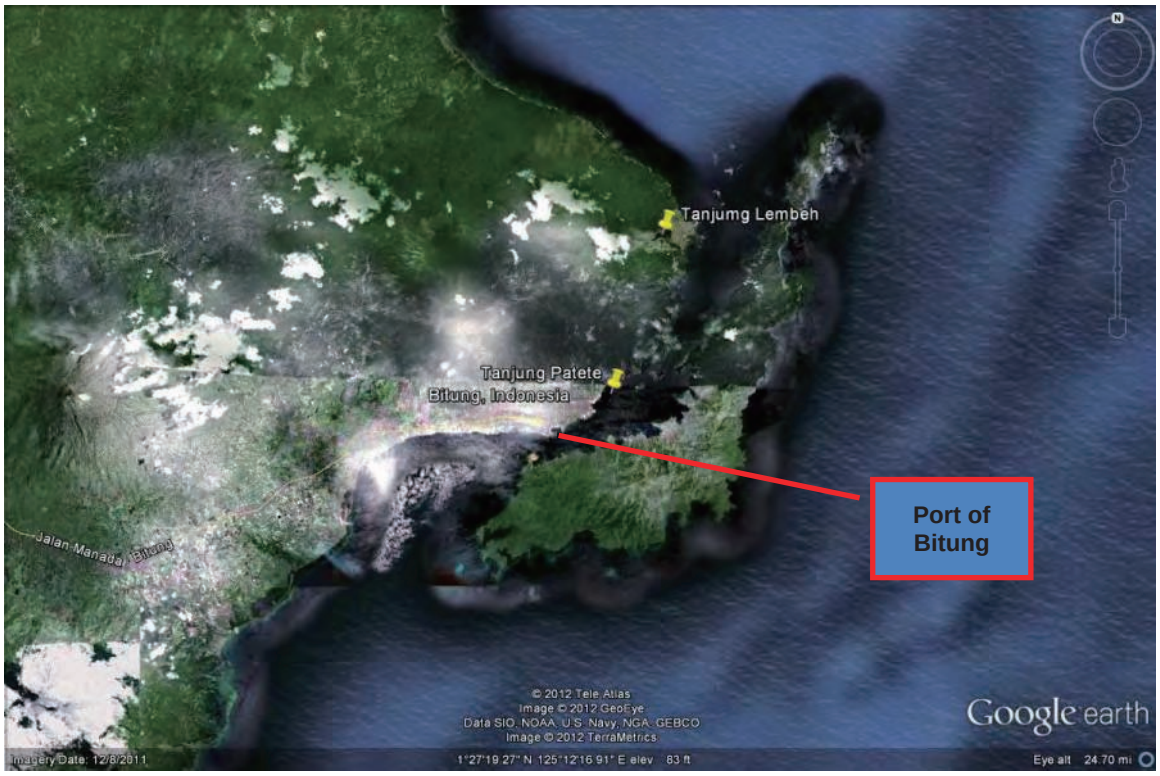
This route connects the two major cities of Southern Mindanao, Davao City and General Santos with the Manado, Capital City of North Sulawesi, via the Port of Bitung. The sea distance from Bitung to Davao is approximately 350 nautical miles; from Bitung to General Santos is 302 nautical miles; From Davao to General Santos is 154 nautical miles. The voyage from Bitung to General Santos will involve navigating the Lembeh Strait, crossing the Celebes Sea and on to Sarangani Bay, where the Port of General Santos (Makar Wharf) is located. The voyage from General Santos to Davao will involve going out of Sarangani Bay, following the coastline of eastern Sarangani Province and up the coastline of Davao del Sur up to Pakiputan Strait and to the Port of Davao (Sasa Wharf).

The access to the Port of Bitung is marked by approach buoys at Tanjung Patete and Tanjung Lembeh (Please see Figure 8.13). The port basin has a depth of 7.0 m (min.) with available turning basin. Pilotage is compulsory at the port. The port is open 24/7, but night-time approach is discouraged due to many activities on the waters at that time. Port activities are not affected by the tidal variations. The maximum draft of vessel that can be serviced by the port is 12.0 m.

Vessels approaching the Port of Sasa (Davao) enter through the southern entrance of Pkiputan Strait. (Please see Figure 8.14) The depth at the port basin varies from 4.0 m to 13.0 m, depending on the wharf. Pilotage is compulsory at the port. When an application for berthing permit is lodged 36 hours before the vessel's arrival, the pilot is given a notice to meet the incoming vessel. The port is open 24/7 and there are no restrictions (night-time or tidal) as to entry to the harbor as long as prior notice is given and the prescribed permit is secured from the Port Authority. The maximum size of vessel that may use the port is in the 30,000 DWT class.

The Port of General Santos is accessed through the mouth of Sarangani Bay, from where vessels are guided to the port by means of aids to navigation located at the port. (Please see Figure 8.15) The depth at the port basin varies from 8.5 m to 13.5 m, depending on the wharf. Pilotage at the port is compulsory for all foreign flag vessels of 500 GT and over, and for all domestic ships 1,000 GT and above. The port is open 24/7 and there are no night-time or tidal restrictions. The maximum draft of vessel that can be serviced by the port is 12.0 m.

See Annex 8.1 for more details.



Source: Google Earth

Figure 8.13 Port Channel at Bitung

Source: Google Earth

Figure 8.14 Port Channel at Davao

Source: Google Earth

Figure 8.15 Port Channel at General Santos

8.5 CIQS

All three (3) ports are international ports, but with domestic operations too. As such, the domestic operations must be separated from international operations.

The Ports of Davao and General Santos handle international cargo, and seldom, if ever, handle international passenger traffic. It is for this reason that both ports do not yet implement the “Single-window” system and the active CIQS implementation is only for cargo. The Port of Davao has Security Post and Gates, Police Station, Customs Office, Immigration Office, Quarantine Office, and Passenger Waiting Room. The last facility is no longer used since there are no more passengers using the Port of Davao. The Port of General Santos has Security Post and gates, Police Station and a Multi-function Room. Notwithstanding these differences, both ports have X-Ray Machines, Walkthrough Metal Detectors, Handheld Metal Detectors, and CCTV cameras to augment their security system.

The Port of Bitung has Security Post and Gates, Police Station, Customs Office, Immigration Office, Quarantine Office, Passenger Waiting Room, Secure Parking, and a Health Emergency Room. To ensure security at the port premises, the Port of Bitung has X-Ray Machines, Walkthrough Metal Detector, and Handheld Metal Detector. The port adopts the “Single-window” system where customs, immigration and security checks are done in a single corridor and integrated area. However, there are some aspects that need to be improved, especially the number of security officers, additional security gates, and CCTV system.

The major issue confronting this route is the existing informal trade using wooden hull vessels between the Bitung/Manado area (including Tahuna Port) and the General Santos/Glan area.

Davao City prohibits the big trucks in entering the Central Business District (CBD) but the trucks can use the diversion road that skirts the city center. Bitung and General Santos do not have regulations regarding big trucks entering the city. For Bitung, a toll road is being planned to connect it with the City of Manado.

In response to the possibility of developing the ASEAN RO-RO Network that would include the Port of Bitung, the port officials plan to improve CIQS implementation. This is also in accordance with government policy to upgrade the status of Bitung Port from Domestic into International Hub Port. Several aspect to be improved are the extension of the service hours to 24 hours; expansion of the Passenger waiting room; expansion of the Immigration and Customs rooms, with more secure and integrated design, and to continue coordination with the Philippine Government in smoothing the agreement of friendly cross border trade.

For the Port of Davao, the plans include providing an integrated inspection room for CIQS services; the development of a better system for immigration, such as passenger manifest; and a careful consideration on how to treat vehicles and the drivers.

For General Santos, the port authority plans to implement the single window system in the future. They have plans to construct a Passenger waiting room building and Immigration and Customs offices.

Table 8.16 shows the CIQS facilities and systems at the Ports of Bitung, Davao and General Santos.

Table 8.16 CIQS Facility Condition in Bitung, Davao, General Santos Port

Item	Bitung (Indonesia)	Davao (Philippines)	General Santos (Philippines)
Port Name	**Bitung Port**	**Sasa Davao Port**	**Makar Port**
CIQS Facility			
Building	Security Post and Gates Police Station Customs Office Immigration Office Quarantine Office Passenger Waiting Room Secure Parking Health Emergency Room	Security Post and gates Police Station Customs Office Immigration Office Quarantine Office Passenger Waiting Room	Security Post and Gates Police Station Multifunction Room
Facility	X-Ray Machine Walkthrough Metal Detector Handheld Metal Detector Security Fence Street Poles and Lights	X-Ray Machine Walkthrough Metal Detector Handheld Metal Detector CCTV CCTV Monitor Room Permanent Fence Temporary Fence Access Card Gate with Access Card Mirror Inspection for Vehicle Street Poles and Lights	X-Ray Machine Walkthrough Metal Detector Handheld Metal Detector CCTV CCTV Monitor Room Permanent Fence Temporary Fence Street Poles and Lights
CIQS Service			
Service Hours	07:00 – 22:00	No specific information	No specific information
Operational System	• The operation system adopts single window system with custom, immigration and security checks are done in a single corridor and integrated area, but there are some aspects need to be improved, especially number of security officers, additional security gates, and CCTV system.	The operation system has not yet adopted single window system. The active CIQS implementation is only for cargo since passengers vessels have not come regularly	The operation system has not yet adopted single window system. The active CIQS implementation is only for cargo since passengers vessels have not come regularly
Major Issues	Unofficial trades along Bitung – Manado (with Tahuna) – General Santos (including illegal fishing)	• Many informal trades happened so far, especially between Davao – General Santos (and Glan) – Tahuna – Bitung. • There is a lack coordination between Philippines Government (Davao and General Santos) with Indonesian Government (Tahuna and Manado/Bitung) regarding customs tariff.	Many informal trades happened so far, especially between Davao – General Santos (and Glan) – Tahuna – Bitung.
Coordination with other country			
Cross-border Agreement	Bitung has not implemented any Govt to Govt agreement or cooperation with neighboring countries. At this time, Bitung Port is still concentrating on internal improvement, such as CIQS area design improvement, integrated passenger and goods database system, port regulation, and personnel capacity building. However, in terms of region, as a part of ASEAN, this port and several ports in Brunei, Malaysia, Indonesia and Philippines are working on the	Davao has not engaged to any Govt to Govt agreement or cooperation with neighboring countries. At this time, Davao Port is still concentrating on internal improvement towards RO-RO International operation, such as CIQS area design improvement, integrated passenger and goods database system, port regulation, and personnel capacity building. However, in terms of region, as a part of ASEAN, this port and several ports in Brunei, Malaysia, Indonesia and Philippines are working on the	General Santos has not engaged to any Govt to Govt agreement or cooperation with neighboring countries. At this time, Davao Port is still concentrating on internal improvement towards RO-RO International operation, such as CIQS area design improvement, integrated passenger and goods database system, port regulation, and personnel capacity building. However, in terms of region, as a part of ASEAN, this port and several ports in Brunei, Malaysia, Indonesia and

	implementation of integration policies under BIMP-EAGA and ASEAN agreements, which mainly regulate cross border trade, immigration, and vehicle	implementation of integration policies under BIMP-EAGA and ASEAN agreements, which mainly regulate cross border trade, immigration, and vehicle	Philippines are working on the implementation of integration policies under BIMP-EAGA and ASEAN agreements, which mainly regulate cross border trade, immigration, and vehicle
Export-Import	Most of the export commodities passing through Bitung Port and checked by Customs Office are vegetables, coconut oil, and fishery products. As mentioned above, fishery products are the most type of trade that carried on by informal way and usually done in the middle of sea. Such matter interferes the registration and tax collection activities from Customs and disrupts the business existence of local fish traders and forwarding companies.	The main commodities handled by Davao Customs are banana, coconut, durian, and cacao. Those commodities are exported to Japan, China, Hongkong, Malaysia and Singapore.	The main commodity handled by General Santos Customs are fishery products with Tuna as the largest one
Other related matters			
Regulation for Truck and Port	No specific regulation provided by the government to control truck movement since the demonstration rejecting such regulation happened in 2010	No specific regulation provided by the government to control truck movement	No specific regulation provided by the government to control truck movement
Future CIQS Improvement Plan	CIQS implementation will be improved in accordance with government policy to upgrade the status of Bitung Port from Domestic into International Hub Port. Several aspect to be improved are: • Service hours from 07:00 -22:00 become 24 hours • Passenger waiting room expansion with larger capacity of international terminal • Immigration and Custom room expansion, with more secure and integrated design, and number of supporting tools increase • Continue coordination with Philippines Government in smoothing the agreement of friendly cross border vehicle and import duty regulations	Several concerns are found in the current status of CIQS implementation, which among others: • It is necessary to provide an integrated inspection room for immigration, customs, as well as quarantine. • In case of future RO-RO connection to Manado (Indonesia), both governments should consider how to threat passenger vehicle and truck (and its driver), especially from Indonesia to Philippines area, and vice versa. In this sense, both vehicles have a different driving position, where Philippines is left driving and Indonesia is right driving. • It is predicted, if RO-RO operation started, there would be so many immigrants from border countries especially from Malaysia come to Southern Mindanao, to enter Philippines. Therefore, better system for immigration, such as passenger manifest and record, security guard must be achieved. In this sense, formal documents such as input manifest and output manifest should be clearly imposed by port authority to support the immigration and customs activities.	CIQS implementation will be realized by constructing single window system in the future RO-RO port location. Such constructions include: • Passenger waiting room building • Immigration and Custom room

8.6 Stakeholders' Views

1) Davao

The Davao government and private sector stakeholders welcome the sea transport link with Manado/ Bitung as this would stimulate increased cargo and passenger traffic across the route. Among the main products currently exported by the Davao region are banana, cocoa, durian, and coconut oil. These products are shipped to China, Hong Kong, Japan, Korea, Singapore and the Middle East. The Davao City Government is pushing for export-oriented but sustainable agribusiness development, with careful implementation of local laws on water conservation that prevent monocrop development (e.g., palm oil, banana). The local government is also positioning the Davao region as a major tourism destination and Business Processing Outsourcing (BPO) host location.

Because of its highly containerized operations, officials of the Philippine Ports Authority (PPA) think that there may be no need for RO-RO connections with Indonesia in the near future. The DavTug Multipurpose Cooperative[7] shares the view that RO-RO services might not yet be viable considering the imbalanced trade and lack of cargo volume between Davao and Indonesia.

However, Davao business people are keenly interested to promote greater trade between the Davao region and Eastern Indonesia. Aside from the traditional exports of banana, coco oil and other agricultural products, Davao can also supply industrial products such as packaging materials and plastics as well as consumer items ranging from food and beverage products to clothing and accessories. Cargo consolidation will be a key to stimulating this cross-border trade.

While aware that the region has similar tourism products with Sulawesi particularly beach and diving resorts, tourism stakeholders in the Davao region would still like to explore greater cross-border tourism exchange to offer its islands-to-highlands and festival-oriented tourism resources. Davao City is positioning itself as a shopping, educational and medical tourism destination. Aside from marine cargo and passenger transport, local stakeholders are lobbying for more airline flights to Davao including connections to Manado.

2) General Santos

Like in Davao, the government and private sector stakeholders in General Santos City and other influence areas in the SOCCSKSARGEN region (provinces of South Cotabato, Cotabato, Sultan Kudarat and Sarangani, and the cities of General Santos and Cotabato) welcome the development of the transport link between Southern Mindanao and Eastern Indonesia. The General Santos City Mayor related that in April 2012, a government-private sector delegation from Bitung visited General Santos City to discuss continuing efforts to revive the General Santos-Bitung connection. The strengthening of this cross-border transport link is in line with the local government's positioning itself as the trade, investment and tourism gateway to the region and other surrounding areas. For this purpose, the city continues to strengthen its agro-industrial, commercial, financial, educational and medical sectors. The Philippine-Indonesian trade and social linkages have been so historically close that there are many Indonesians living in General Santos and many Filipinos living in Tahuna.

[7] The DavTug Multipurpose Cooperative operates 4 tug boats in 3 ports in Davao.

Representatives from the fishing sector have already studied the logistics of their industry and believe that it would be 40% cheaper to ship out canned fish from the Bitung canneries, a few of which are joint ventures between General Santos and North Sulawesi business partners, through the General Santos Port to Singapore rather than through Jakarta.

Other local business people want to learn more about what their potential trading counterparts in Eastern Indonesia need, and what the former can offer them to increase trade. They also want to know what surplus products there are in Bitung that General Santos can use or re-process and what the freight rates are. Food products, such as meat from the only slaughterhouse in the Mindanao (located in Polomolok, South Cotabato) permitted to export, can be shipped through the General Santos Port.

The Indonesian Consul-General in Davao is reported to be open to either hosting a livestock industry in Indonesia or sending feeds to Mindanao. As part of their sister chamber agreement, the General Santos City Chamber can sit down with their North Sulawesi Chamber counterparts to discuss potential trading prospects. Local private sector should also participate more in BIMP-EAGA forums and planning activities. Local tourism stakeholders also look forward to promote stronger tourism exchange across the border.

Due to the long distance, a big RO-RO vessel will be needed for the General Santos-Bitung route, which will also need a large volume of cargo and passenger traffic to sustain viable operations. To attract investors in servicing the developmental/ missionary route, incentives such as lower licensing fees, lower port tariffs and CIQS fees, fuel subsidies, and facilitation/ promotion of shippers' patronage may be considered by government.

While most local business people welcome the opportunity to increase trade linkages with Indonesia, there are some who are wary of it. They did not like it when the General Santos-Bitung route was opened because cheap Indonesian products (e.g., tiles, corn, etc.) directly competed with local products. They opined that government should set clear policies on this potential competition once the trade links are revived.

3) Manado and Bitung

Local stakeholders in Manado/ Bitung also welcome opportunities to develop more trade connections with Southern Philippines. The RO-RO study can contribute to reducing logistics costs in Bitung and improve the local economy. However, the study should be synchronized with the provincial and national plans. PT PELINDO IV Bitung Branch is also ready to support the RO-RO project's implementation. PELRA, one of the operators of traditional wooden vessels, is interested to see the Bitung-General Santos route developed as there are many commodities already being traded along this route, albeit informally.

The shipping agent in Manado/ Bitung thinks it is possible to develop containerized cargo trade between Bitung and General Santos/Davao, using a small RO-RO vessel, but the service may have to be subsidized by the government or Official Development Assistance (ODA) because a private shipping operator would probably be losing money in the first two years of operation.

Bitung could be an exit port for the agricultural and fisheries products as well as processed food products (e.g., noodles) from North Sulawesi, Gorontalo, Maluku and Papua to Southern Mindanao. Industrial and consumer products, many imported from China, are currently shipped to Bitung/Manado through Jakarta and/or Surabaya, thus making them up to three times more expensive. Being at least a third of the distance of this current route,

Southern Mindanao stands to become a potentially more competitive supplier of these products, including clothes, shoes, accessories, dishware, kitchenware, cosmetic products (such as those of Davao-based RDL Company), ice cream, soft drinks and liquor, fishing nets, epoxy, nylon rope, etc.

As these products required by Bitung/Manado and the rest of Eastern Indonesia are diverse and not in very big volumes individually, consolidation from Davao/General Santos may be necessary to fill up the vessels. There is also a need for business people, with support of the appropriate private and government organizations (e.g., Chambers, Industry Associations, Ministry of Trade and Industry, Ministry of Agriculture, etc.) at both sides to sit down and identify more specific products and volumes they need from and can supply to each other.

A critical legal and policy issue that needs to be addressed to open up Eastern Indonesia to greater trade with its neighbors is the declaration of Bitung Port as an international hub port. This can position Bitung as the international entry/ exit port for mother vessels carrying goods going to/ coming from Eastern Indonesia including the Sulawesi provinces, Gorontalo, Maluku, Papua and as far as Papua New Guinea.

North Sulawesi stakeholders have been lobbying for this for many years but the Indonesian central government has not been very keen and is slow to respond, probably because it would compete with the Jakarta and Surabaya ports which today, ironically, have become congested with burgeoning cargo traffic. A bit of good news is that the proposed designation of Bitung Port as an international hub port is already included in the Government’s development master plan (MP3EI). Local business people are awaiting this development which stands to increase the number of international mother vessels calling on Bitung. They believe that "the cargo/ trade follows the ship" and they will not have any problem in filling up the vessels. This sentiment is shared by the Bitung Port Authority officials. Bitung is also a sister-city of General Santos and Davao so the regional governments are supportive of the trade linkages. The local stakeholders expressed hope that this RO-RO shipping study can support moves to have Bitung declared as an international hub port.

North Sulawesi's tourism resources and products are mostly marine-based, such as dive and beach resorts. There is some apprehension that local tourism stakeholders may not be as supportive as the other industry sectors of having Bitung declared as a hub port since opening the province and surrounding areas to greater vessel traffic may adversely affect the quality of these natural tourism resources.