

**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)**

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

<b>EI</b>
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<b>13-069</b>

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**Exchange rates used in the report**

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
THB	1.00	=	JPY	2.630	=	US\$ 0.03228

(as of 20 April, 2012)

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## ABBREVIATIONS

ACCC	ASEAN Connectivity Coordinating Committee
ADB	Asian Development Bank
ADPEL	<i>Administrator Pelabuhan</i> , 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	<i>Angkutan Sungai Danau dan Penyeberangan</i> , 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	<i>Badan Perencana Pembangunan Daerah</i> , 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	<i>Dunia Melayu Dunia Islam</i> , 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	<i>Gabungan Industri Kendaraan Bermotor Indonesia</i> , 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	<i>Kamar Dagang dan Industri Indonesia</i> , 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
LTRFB	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	<i>Masterplan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia</i> , 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	<i>PT Pelabuhan Indonesia</i> , Indonesia Port Corporations
PELNI	<i>PT Pelayaran Nasional Indonesia</i>
PELRA	<i>Pelayaran Rakyat</i> (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	<i>Suruhanjaya Pengangkutan Awam Darat</i> , 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	<i>Terminal Petikemas Bitung</i> , 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		<ul style="list-style-type: none"> <li>• Fast Craft</li> <li>• Passenger Ship</li> <li>• Cargo Passenger Ship</li> <li>• General Cargo Ship</li> <li>• Container Ship (small)</li> </ul>
Middle to Long-distance ROPAX Service		<ul style="list-style-type: none"> <li>• Container Ship</li> <li>• Passenger Ship</li> <li>• General Cargo Ship</li> <li>• Car Carrier</li> <li>• Road Truck/Trailer</li> <li>• Expressway Bus</li> <li>• Aircraft (passenger, cargo)</li> </ul>
Middle to Long-distance RO-RO Service		<ul style="list-style-type: none"> <li>• Container Ship</li> <li>• Road Truck/Trailer</li> <li>• Aircraft (cargo)</li> </ul>

Source: JICA Study Team

**Figure 1.1** RO-RO Shipping Types under the Study

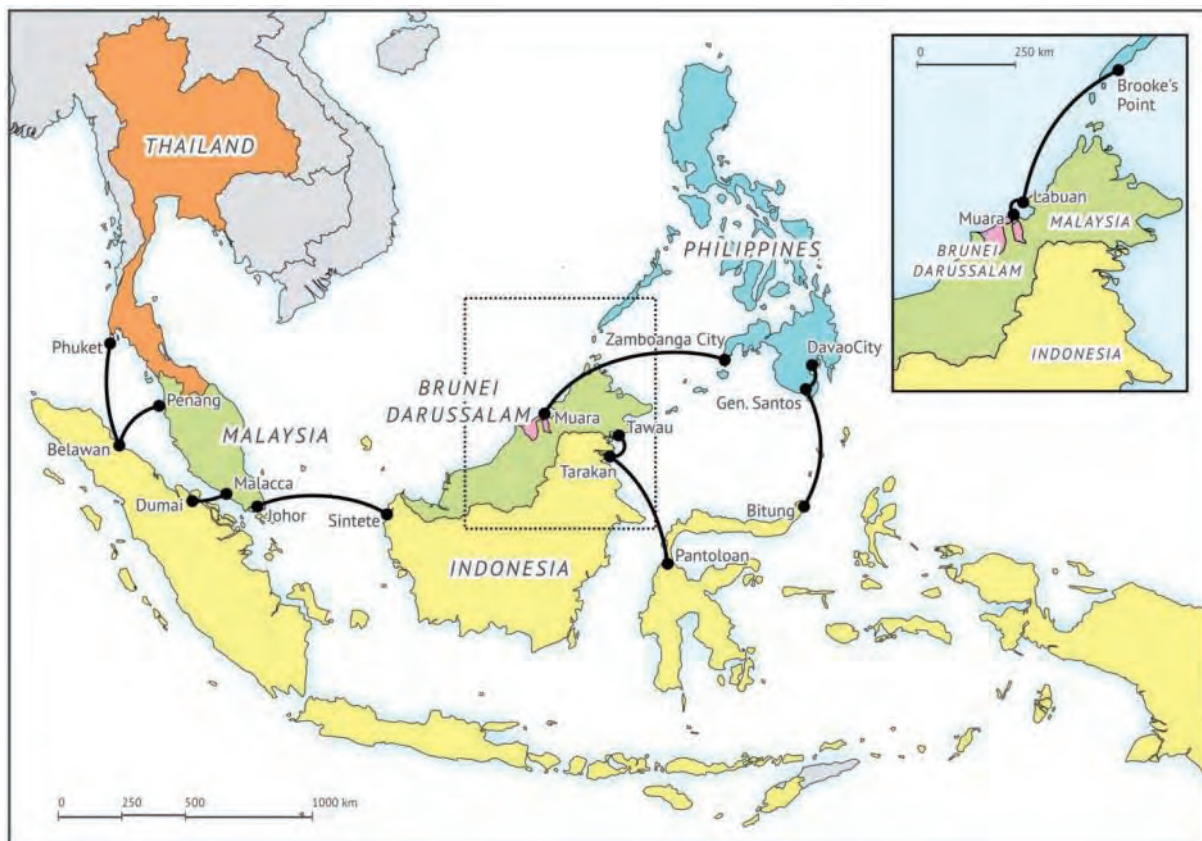
#### 4) Study Area

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

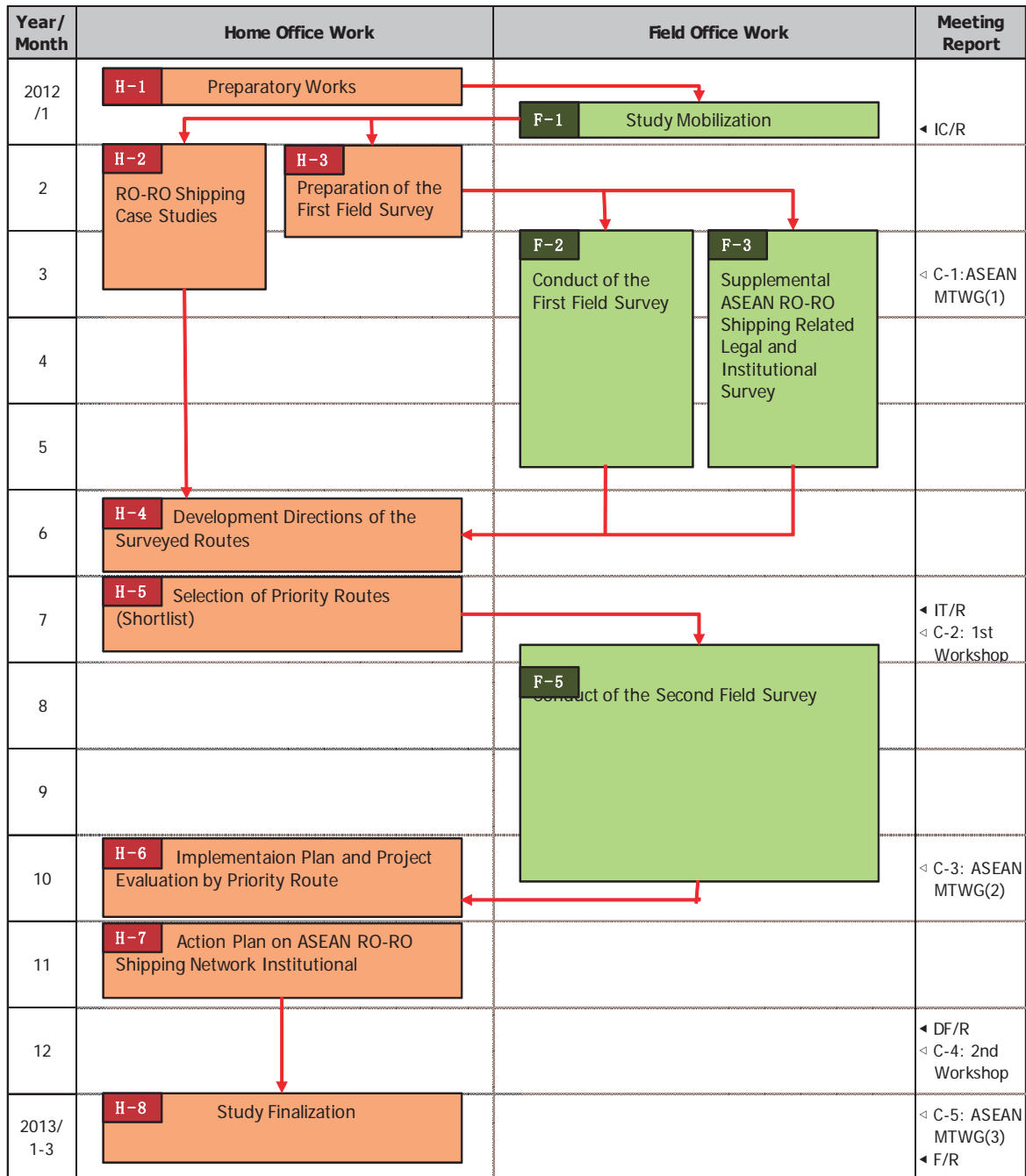
Route	Distance	Existing Shipping Service
(1) Zamboanga City (Philippines) – Muara (Brunei Darussalam)	537 N. Miles	No liner shipping service is observed.
(2) Davao City – General Santos (Philippines) – Bitung (Indonesia)	154 N. Miles between Davao and Gensan, 302 N. Miles between Gensan and Bitung	No 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
<b>TOTAL</b>		<b>29</b>	<b>27</b>	<b>6</b>	<b>19</b>	<b>13</b>	<b>18</b>	<b>31</b>	<b>58</b>	<b>11</b>	<b>212</b>

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:

- 9<sup>th</sup> BIMP-EAGA Transport, Infrastructure and ICT Development (TIICTD) Cluster Meeting in Bandar Seri Begawan, Brunei Darussalam on 12-13 June 2012;
- 19<sup>th</sup> 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
- 13<sup>th</sup> 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 24<sup>th</sup> 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.

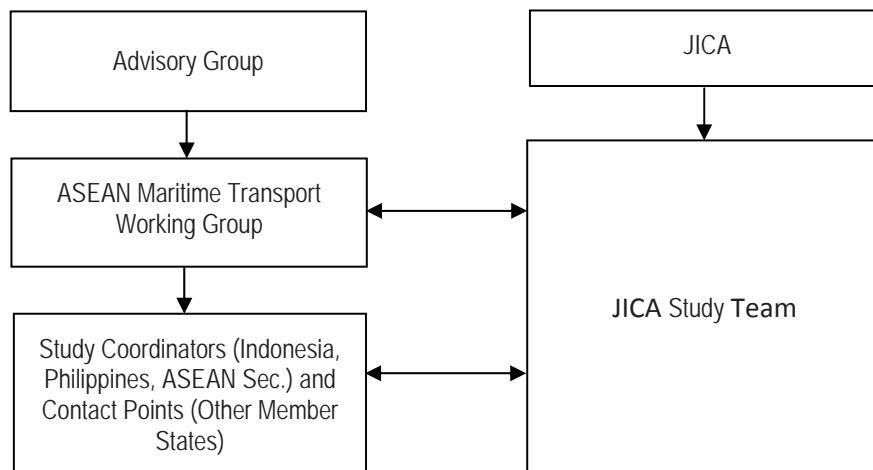
According to the ASEAN’s project TOR, an advisory group is defined as follows:

‘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

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## 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

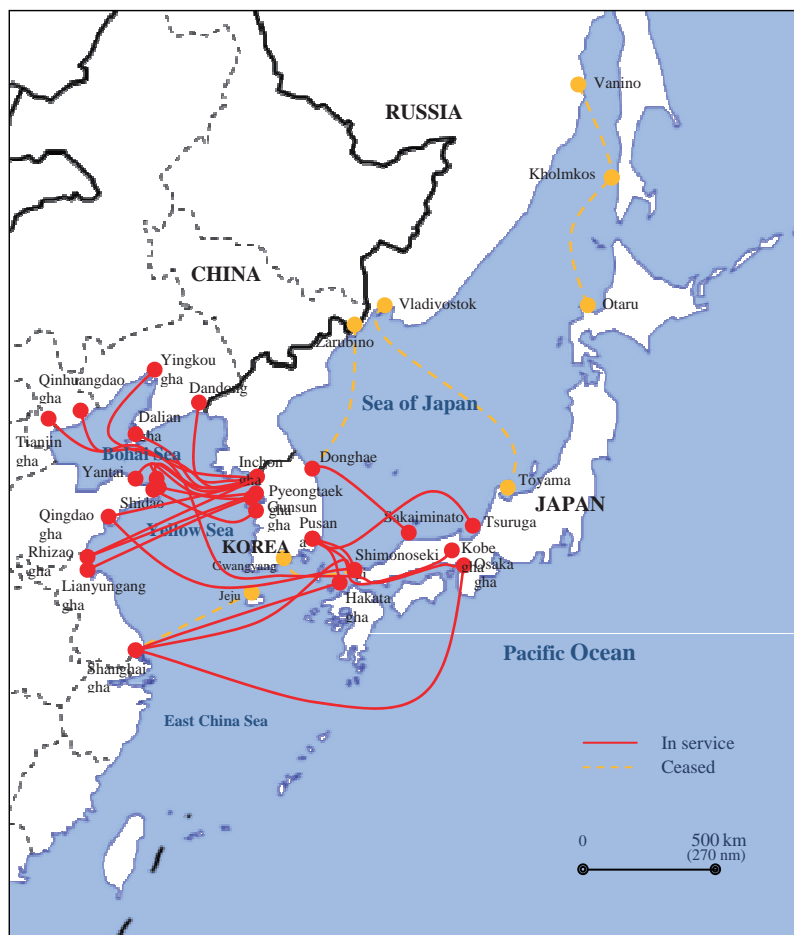
The studies in this Chapter presents a prelude to the following field survey of the proposed RO-RO shipping routes and the ports in ASEAN countries, intending to identify the business conditions of established international RO-RO shipping services, particularly physical conditions, traffic demands, legal 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 <sup>1</sup> (nm)	Transit time <sup>2</sup> (Hrs)	Sail / week (RT)	Ship Type	Capacity <sup>3</sup>	
							TEU	PAX
<i>(Japan - China)</i>								
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
<i>(Japan - Korea)</i>								
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
<i>(China - Korea)</i>								
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.

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

<sup>2</sup> 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.

<sup>3</sup> Where multiple vessels are engaged, an instance will be presented.

<sup>4</sup> The ship has passenger compartment, but allegedly due to poor marquee, passenger service has been ceased in 2009.

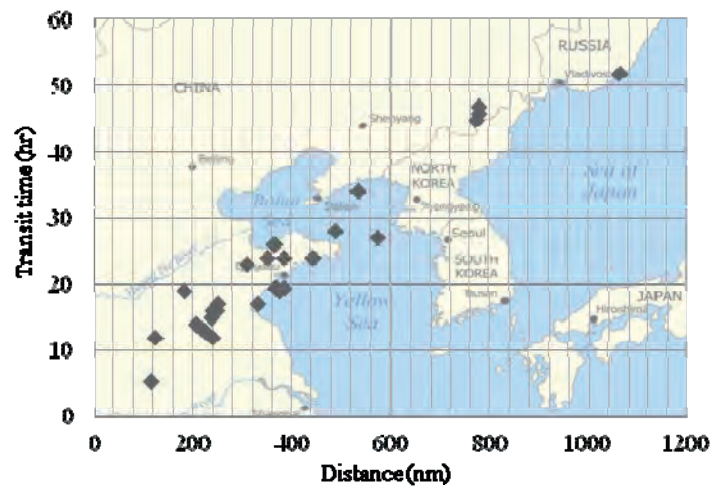


Figure 2.2 Distance versus Transit Time

## (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.<sup>5</sup>

### 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.

<sup>5</sup> Global Metropolis: The Role of Cities and Metropolitan Areas in the Global Economy, Toronto University, 2009



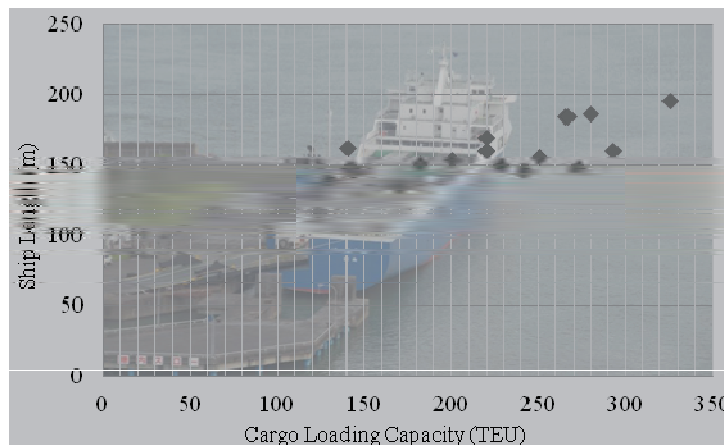
**iii) Korea’s ports**

Most of the RO-RO shipping in Korea arrive at and depart from Incheon 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 Incheon Port, where domestic transport are well developed<sup>6</sup>.

**(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.

<sup>6</sup> 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 1 <sup>st</sup> Half (TEU)	2010 1 <sup>st</sup> 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<sup>7</sup> 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.

<sup>7</sup> 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/m <sup>3</sup> (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](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>

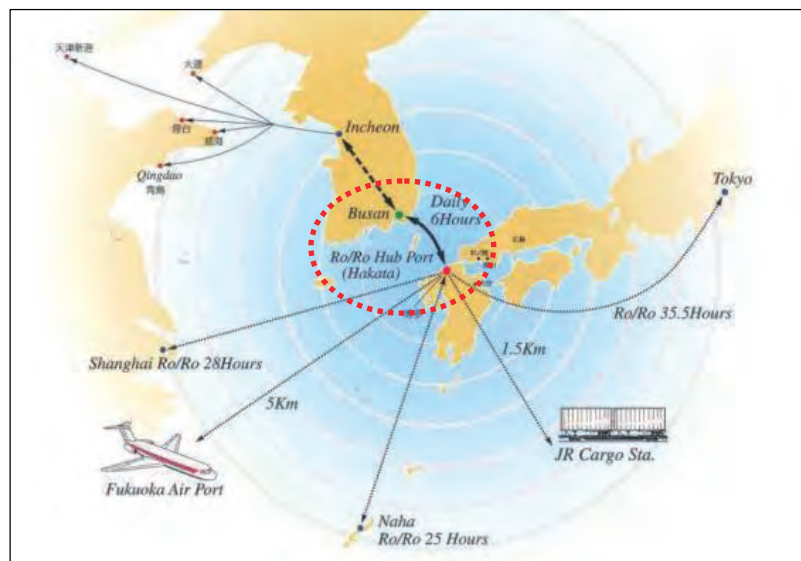
## 2.3 Practice of ROPAX Shipping Service between Japan and Korea

### 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 <sup>8</sup>
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.

<sup>8</sup> There is no time difference in Japan and Korea.

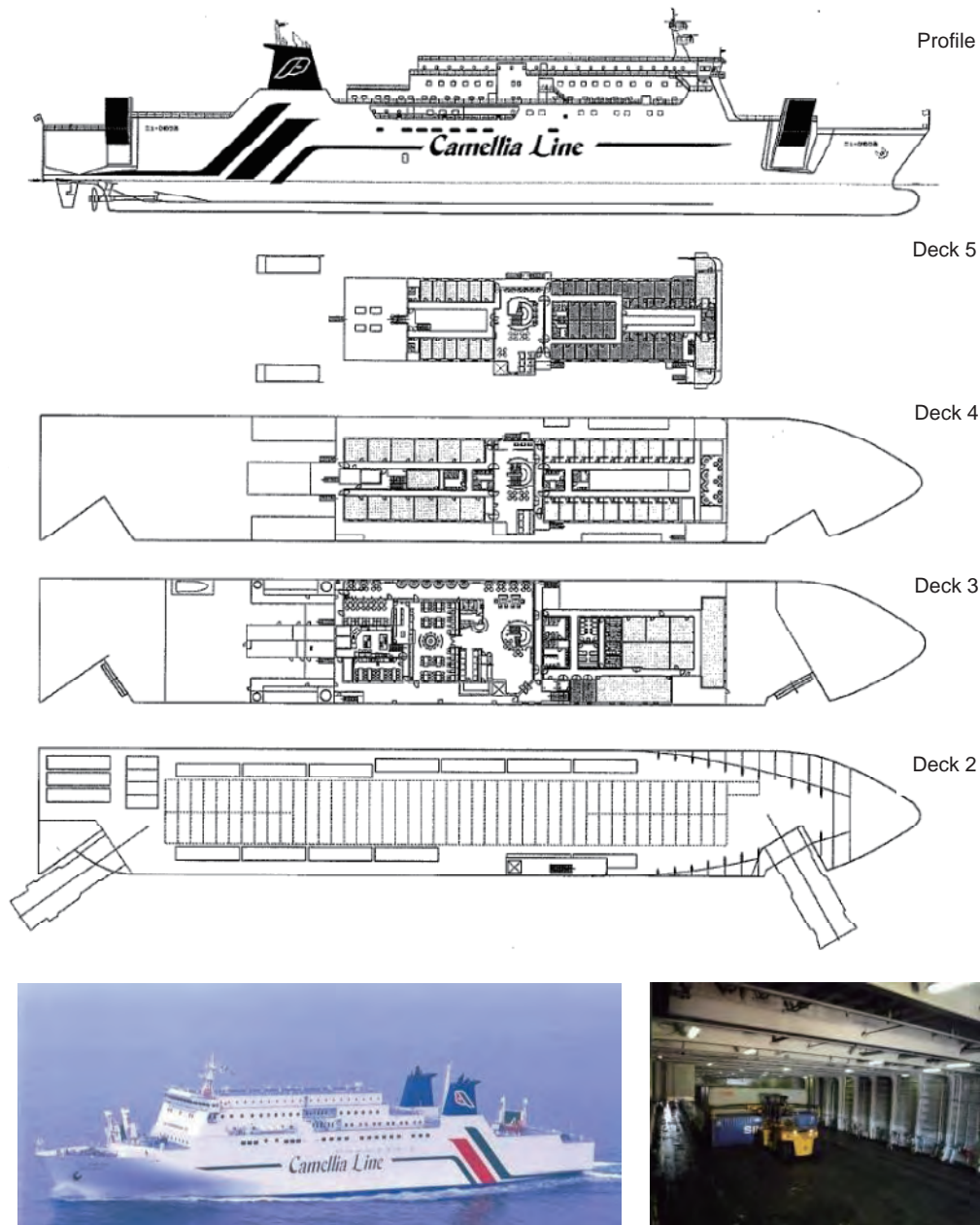
## 2) Ship

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”

<b>Vessel Name</b>	NEW CAMELLIA
<b>Owner/Operator</b>	NYK Line/Camellia Line Co. Ltd.
<b>Type:</b>	Roll-on/Roll-Off Cargo and Passenger Ferry, Twin Decker
<b>Flag</b>	Japan
<b>Class</b>	Japanese Government (JG)
<b>Navigation Area</b>	Coasting (Short International Voyage)
<b>Call Sign</b>	JG5720
<b>Year built (Delivery)</b>	June 2004
<b>Service Speed</b>	23.5 kn
<b>Deadweight</b>	4,642 tons (at design draft)
<b>Gross tonnage (International)</b>	19,961 T
<b>Net tonnage</b>	5,988 T
<b>Length over all</b>	170.0 m
<b>Breadth (mould)</b>	24.00 m
<b>Depth (mould)</b>	17.90 m
<b>Draft (design)</b>	6.00 m
<b>Container loading capacity</b>	220 TEU (63 forty feet containers + 94 twenty feet containers)
<b>Reefer Plug</b>	80
<b>Vehicle loading capacity</b>	41 cars
<b>Crew</b>	49 persons
<b>Passenger capacity</b>	522 persons
<b>Main engine</b>	JFE PC182-6V x 2 sets (MCO 9,900 kW x 520 rpm)
<b>Fuel consumption</b>	78.4 ton/day
<b>Note</b>	<ul style="list-style-type: none"> <li>- 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)</li> <li>- Facilities and cabin are equipped such as a luxury cruise ship to provide conformity to passengers.</li> <li>- 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)</li> <li>- High speed is decided considering materializing daily service by one ship only</li> <li>- 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.</li> </ul>

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

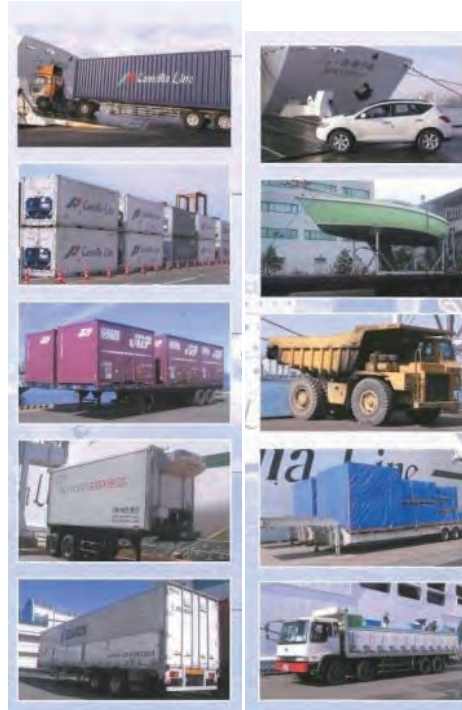
The cargoes carried in the service are dry/refer containers, Japan Railway container (12ft container widely used in Japan), vehicles (both new and second hand), heavy vehicles, break bulk on chassis, and heavy machinery, as illustrated below.

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 in Korea on a special air suspension type truck which is allowed for driving both in Korea and Japan.

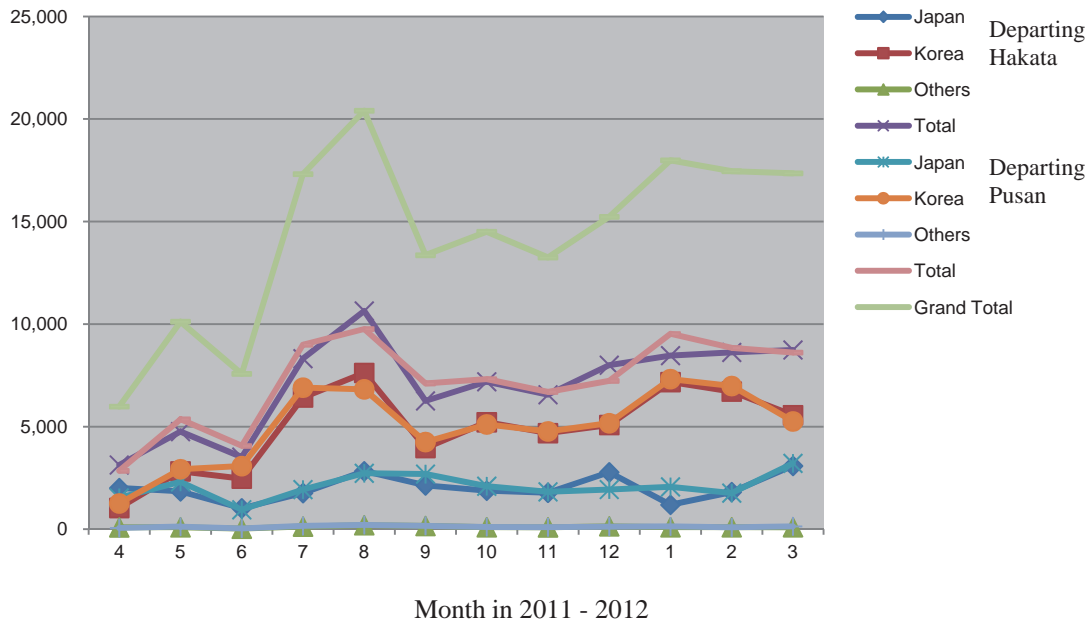


Source: Camellia Line

**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) <sup>9</sup>					
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				

<sup>9</sup> - 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**

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

**Table 2.13 Cargo Tariff**

(Unit in US\$ unless noted otherwise)

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

<sup>10</sup> 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 Mar 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.

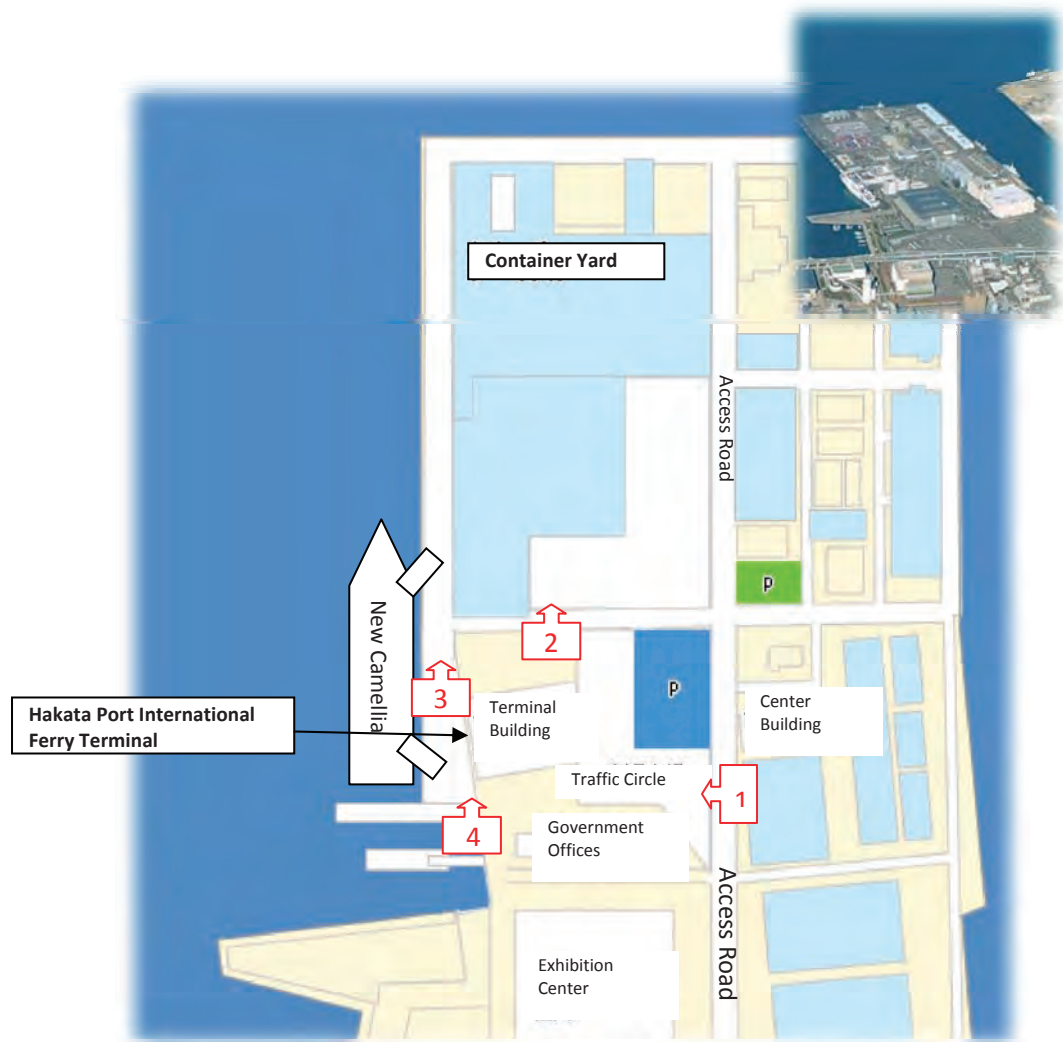
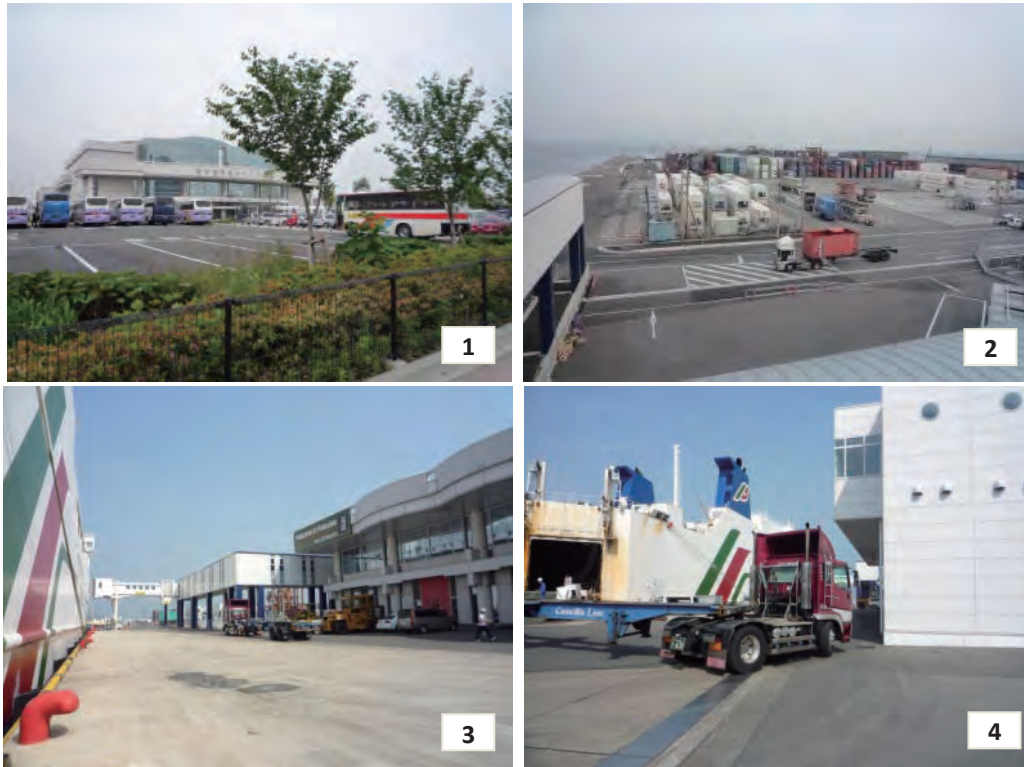


Figure 2.8 Location of the Terminal in Hakata Chou Wharf

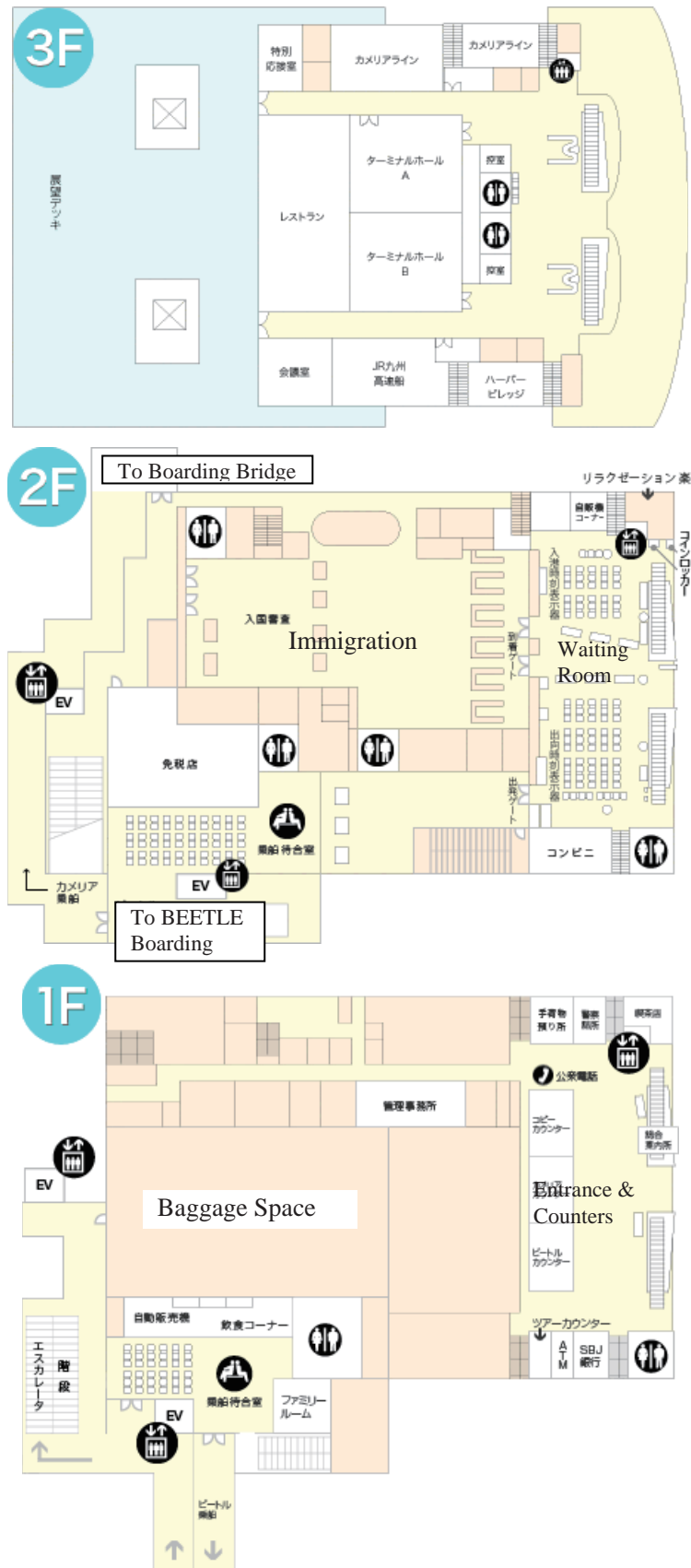


Note: Numbers at bottom right on the photo to be referred to those in Figure 2.8.

**Figure 2.9** Photos of Hakata Port International Terminal

**Table 2.15** Outline of Hakata Port International Ferry Terminal

<b>Lot area</b>	11,230 m <sup>2</sup>
<b>Parking lot</b>	153 slot at terminal sides & 63 slot on road side (216 slot in total)
<b>Facilities</b>	
Ground Floor	Entrance, check-in counter, general information desk, coffee shop, and office
1 <sup>st</sup> Floor	Waiting lobby, convenience store, immigration control, custom inspection, quarantine, and duty free shop
2 <sup>nd</sup> Floor	Terminal hall, special reception room, conference room, restaurant, and office
<b>Ships in service</b>	
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

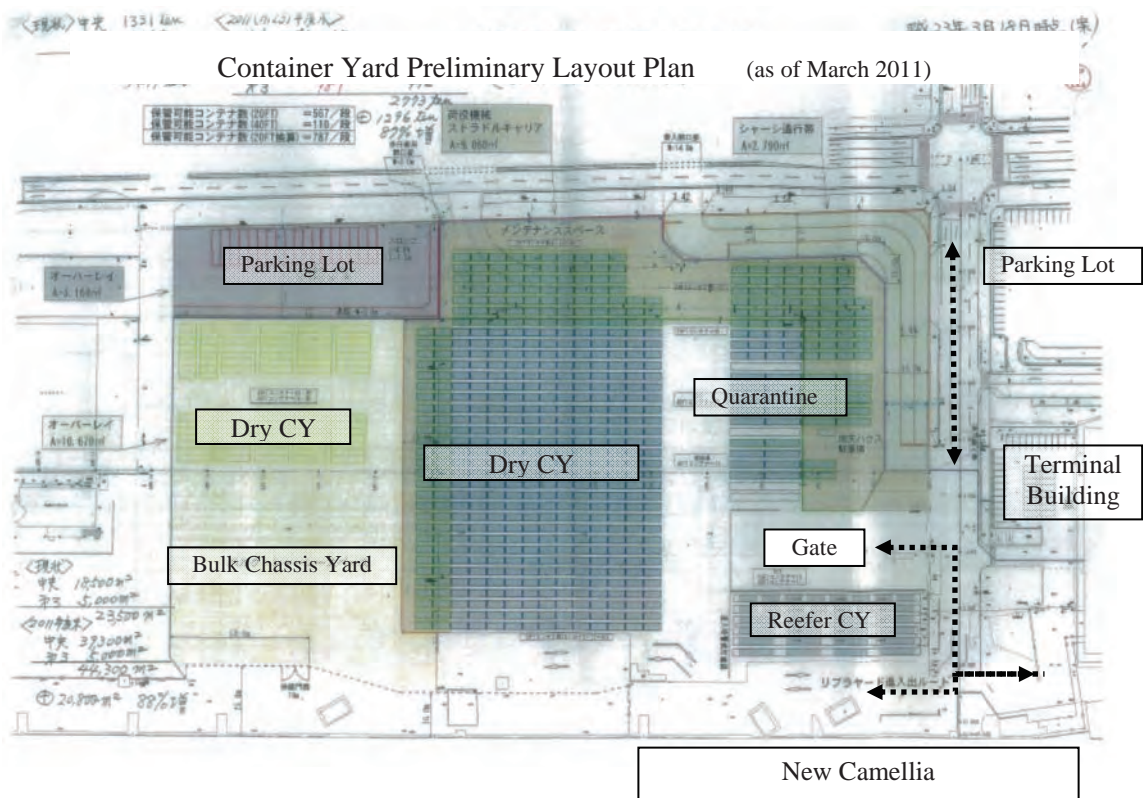
**Figure 2.10** Floor Plan of the Terminal Building

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 <sup>2</sup>
3 <sup>rd</sup> Container Yard	5,000 m <sup>2</sup>
Container Storage Capacity	
Central	787 slot x 3 tier = 2,371 TEU
3 <sup>rd</sup> 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 1<sup>st</sup> January, 1993.
- Derogations until 1<sup>st</sup> January 1999 for France, Italy, Portugal and Spain.
- Derogation until 1<sup>st</sup> 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 <sup>11</sup>
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.

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

Source: Freight RO-RO and LO-LO Capacity Analysis &amp; 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 (Middlesbrough), 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
<b>Tuesday 20:00</b>	Wednesday 20:00	Monday 18:00	Tuesday 16:00
<b>Friday 04:00</b>	Saturday 04:00	Wednesday 24:00	Thursday 22:00
<b>Sunday 12:00</b>	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
<b>Monday</b>	06:00-18:00
<b>Tuesday</b>	06:00-20:00
<b>Wednesday</b>	06:00-18:00
<b>Thursday</b>	06:00- 23:59
<b>Friday</b>	06:00-18:00
<b>Saturday</b>	08:00-12:00
<b>Sunday</b>	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”

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



**Figure 2.16** TOR FINLANDIA



**Table 2.22** Particulars of “TOR CIMBRIA”

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

- ROLL-ON/ROLL-OFF HANDLING**
- 30 Toyota Terminal
  - 31 DFDS Seaways
  - 32 PSA Zeebrugge - Wielingen Terminal
  - 33 P&O Ferries Terminal
  - 34 Sea-Ro Terminal (Swedish Quay)
  - 35 Sea-Ro Terminal (Hermes Quay-Britannica dock-Minerva square)
  - 36 Sea-Ro Terminal (Conada terminal)
  - 37 Wallenius Wilhelmsen Logistics Zeebrugge
  - 38 International Car Operators (ICO)
  - 39 International Car Operators (ICO)
  - 40 Roro 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<sup>2</sup> terminal area, including a common used 21,000 m<sup>2</sup> 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.

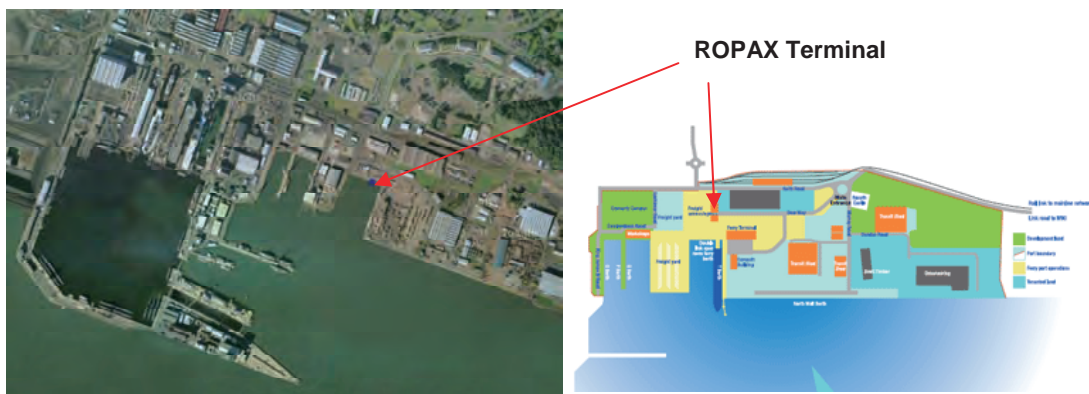


Figure 2.19 Port of Rosyth

## 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
<b>Car / Motorhome under 2.4m high</b>	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.
<b>Car / Motorhome over 2.4m high</b>	Passenger vehicle, as defined above, over 2.4 metres; with a maximum of 9 passengers allowed to travel with this vehicle type.
<b>Van under 2.4m high</b>	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.
<b>Van over 2.4m high</b>	Van, as defined above, over 2.4 metres in height; with a maximum of 9 passengers allowed to travel with this vehicle type.
<b>Motorcycle</b>	Fare includes 2 passengers; with a maximum of 2 passengers allowed to travel with this vehicle type.
<b>Bicycle (one only)</b>	Push bike with one passenger only, maximum one passenger.
<b>Car with caravan or trailer</b>	Car towing a caravan or trailer; with a maximum of 9 passengers allowed to travel with this vehicle type.
<b>Minibus</b>	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.
<b>Motorhome with caravan or trailer</b>	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.
<b>Motorcycle with sidecar or trailer</b>	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
<b>Embarkation (Vehicles)</b>	
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.
<b>Embarkation (Passengers)</b>	
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.
<b>Disembarkation (Vehicles)</b>	
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.
<b>Disembarkation (Passengers)</b>	
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<sup>12</sup> reports as follows:

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<sup>12</sup> 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<sup>13</sup> makes a case for the use of hatchless LO-LO<sup>14</sup> 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<sup>15</sup> 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 difficulty 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.

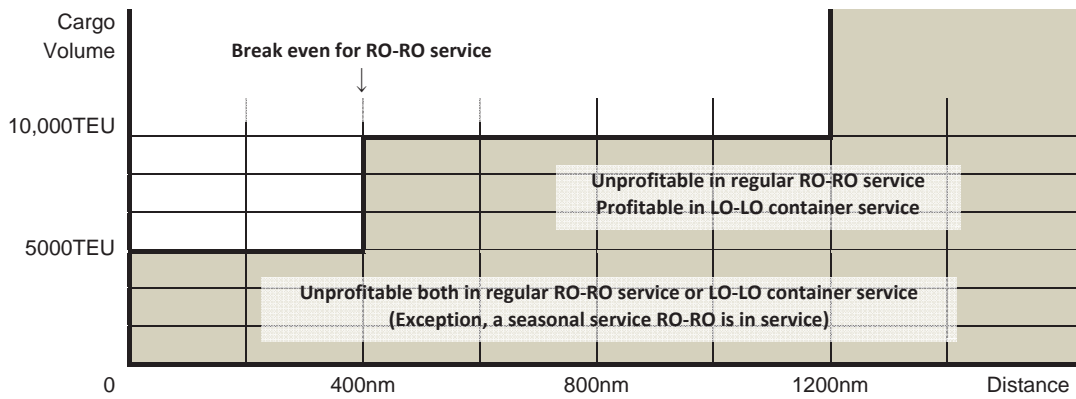
- They will opt for a LO-LO ship if a port to port distance exceeds 1,200 nm.
- Annual container traffic per a port shall exceed 5,000 TEU to establish a specific shipping route, based at the shipping routes connected to the Pusan hub network. If a cargo traffic volume is less than 5,000 TEU, such a 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.

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<sup>13</sup> Acronym of Tools and Routines to Assist Ports and improve shipping, a project based in Ireland

<sup>14</sup> 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

<sup>15</sup> Study on logistics for Aomori Port Internationalization, 2004, Aomori Port Internationalization Conference (In Japanese)



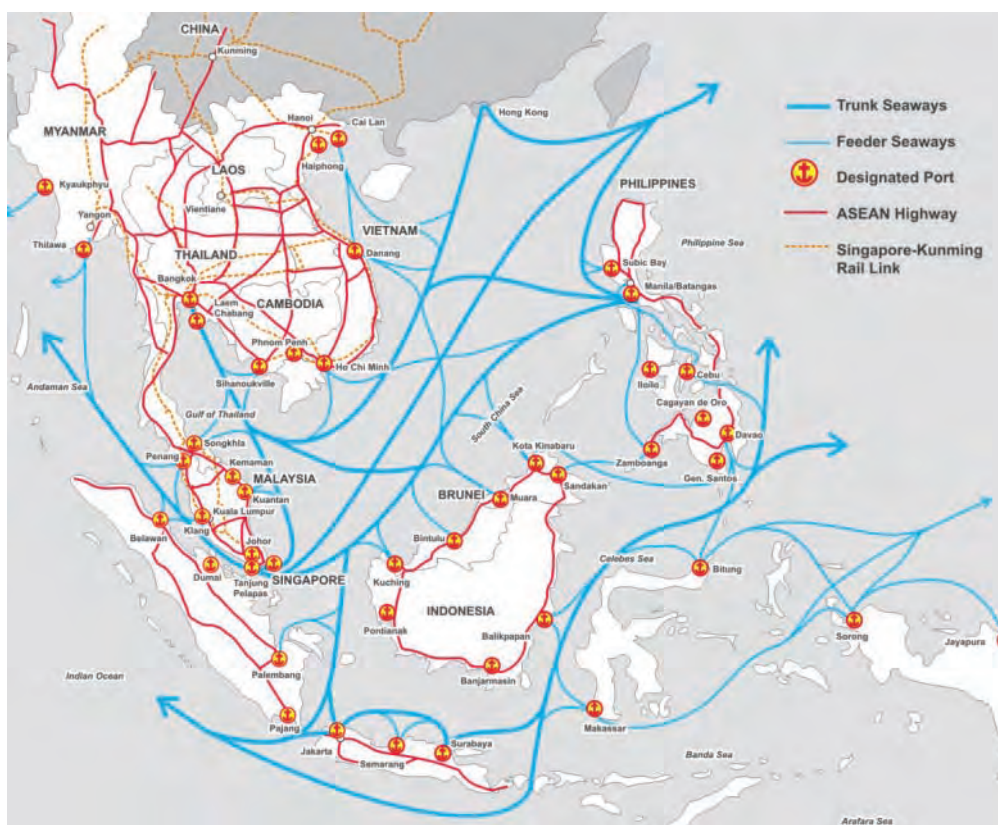
Source: Aomori Port Internationalization Conference, 2004

**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<sup>2</sup>. 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.

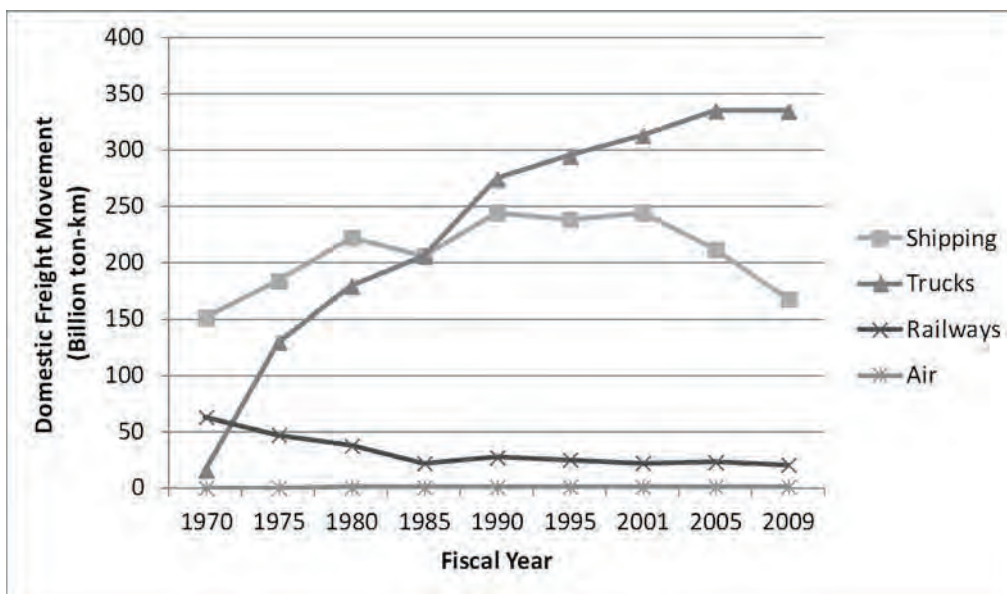
### 3) Domestic Shipping Industry

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 <sup>1)</sup>
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<sup>1</sup>. 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

<sup>1</sup> 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)

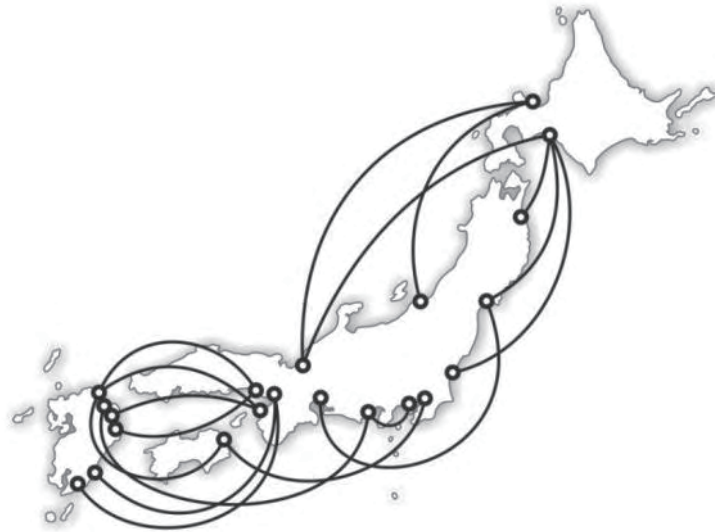
Operator	Route	Distance (km)	Frequency	Vessel Name	Speed (kt)	Vessel Size (GRT)	Capacity			
							Pax	Car	Truck <sup>1)</sup>	
Kawasaki Kinkai Kisen	Hachinohe - Tomakomai	242	4/day	Silver Princess	20.5	10,500	500	30	92	
				Silver Queen	23.2	7,005	600	20	90	
				Vega	20.0	6,698	600	20	96	
				Venilia	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 <sup>2)</sup>		1777	80	X <sup>2)</sup>	X <sup>2)</sup>
				Hayabusa 3			2107	105		
				Asakaze 21			2048	198		
				Asakaze 5			1958	103		
Tsugaru Kaikyo Ferry	Aomori - Hakodate	113	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 <sup>1)</sup>	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; Bogu, 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-

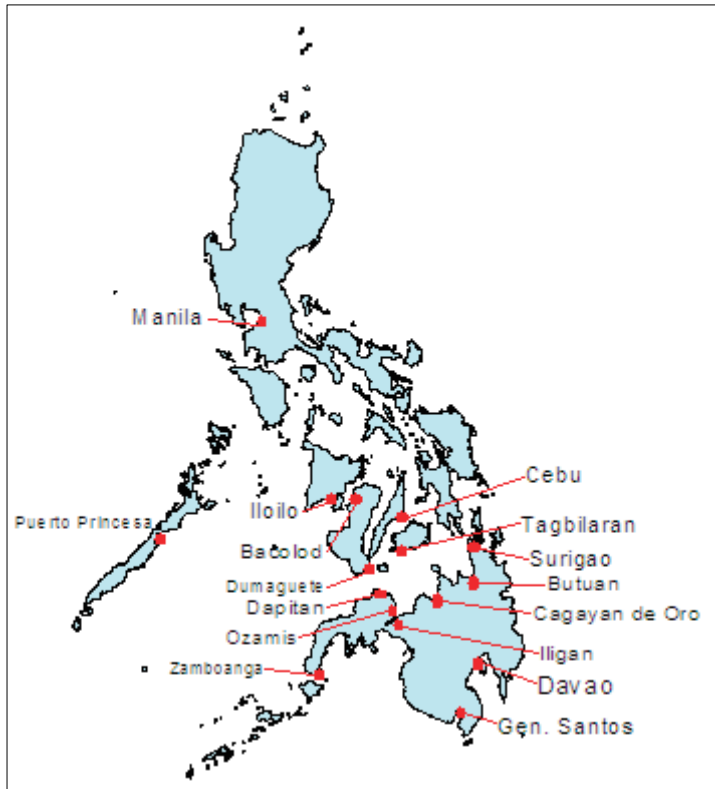


Figure 3.6 Long Distance RO-RO Ports

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 <sup>1</sup>
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.

<sup>1</sup>) 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, Sumatra, 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 its 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.

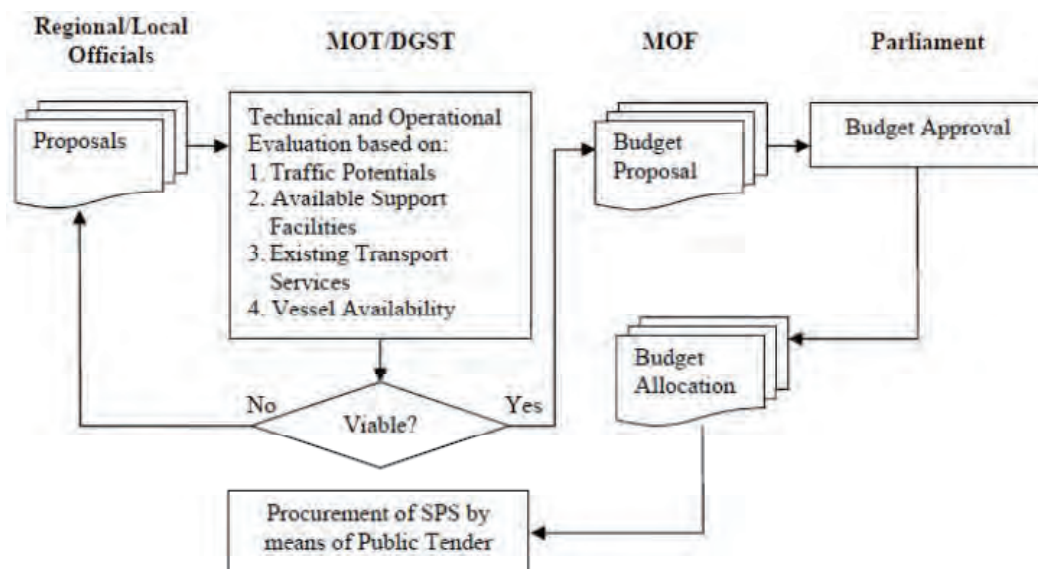
### 3) Government Intervention in the Provision of Ferry Services

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

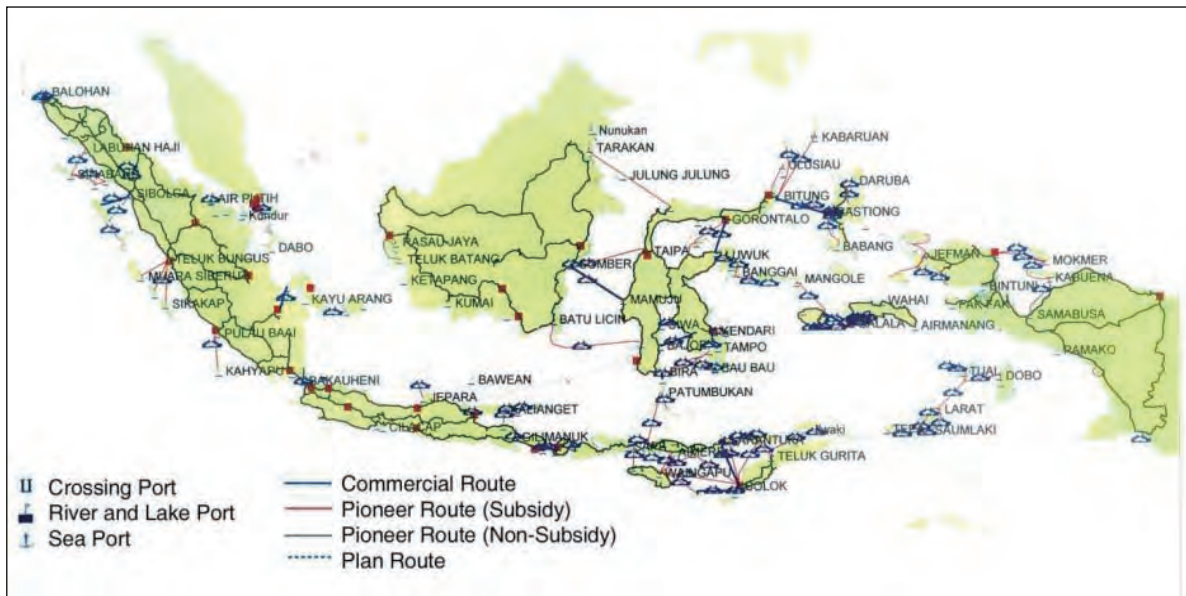
No	Shipping Company	Vessel's Name	GT	Year Built	Capacity
<b>State Owned Enterprises</b>					
1	PT. PELNI	MV Ganda Dewata	4,931	1978	635 pax + 140 cars
		MV Egon	4,851	1991	520 pax + 100 cars
		MV Fudi	13,494	1979	1314 pax + 420 cars
2	PT. ASDP Indonesia Ferry (PERSERO)	FERRINDO 5	3,587		
<b>Private Shipping Companies</b>					
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 li	4043		2500 pax + 115 vehicle
		Kirana liii	2669		300 pax + 40 vehicle
		Dharma Kencana	3611		2500 pax + 115 vehicle
		Dharma Kencana I	2326		800 pax + 18 vehicle
		Dharma Kencana li	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			Vehicle Classification	
No	Class	Passenger Type	No	
1	VIP Class	Adult	1	Bicycle
2	VIP Class	Baby	2	Motorcycle
3	VIP Class	Child	3	Big Motorcycle
4	1st Class	Adult	4	Sedan/Kijang/Jeep
5	1st Class	Baby	5	Luxury Car
6	1st Class	Child	6	Truck/Minibus
7	2nd Class	Adult	7	Truck Long Chassis
8	2nd Class	Baby	8	Truck Long Chassis 10 meter
9	2nd Class	Child	9	Truck Long Chassis 13 meter
10	3rd Class	Adult	10	Additional baggage (Ton/m3)
11	3rd Class	Baby		
12	3rd Class	Child		
13	Economic Class	Adult		
14	Economic Class	Baby		
15	Economic Class	Child		

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.

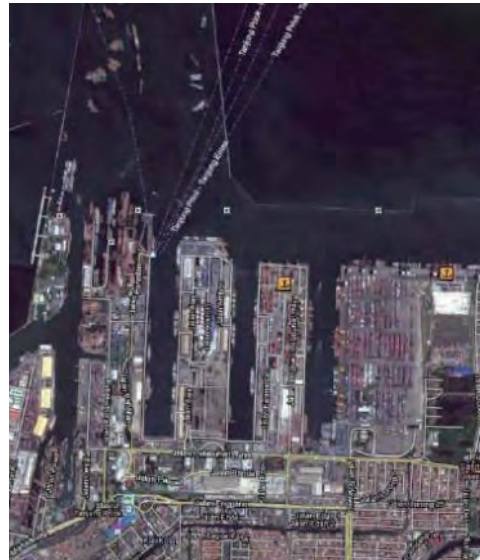


## 6) Assessment on RO-RO Services

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

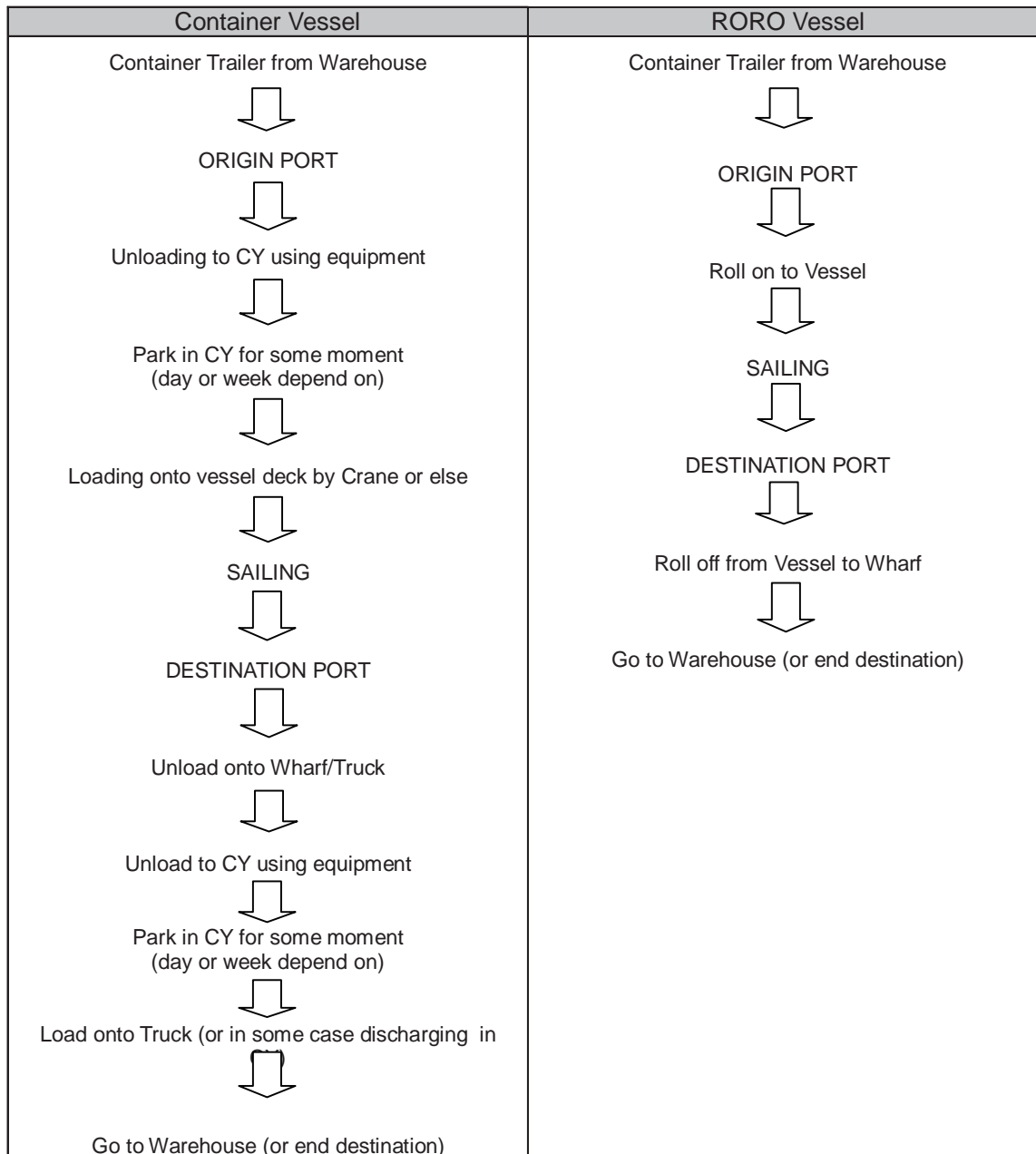
**Tanjung Priok Port Profile:** Tanjung Priok is one of the biggest sea-port located in Jakarta, Indonesia. The size of Tanjung Priok Sea Port is 424 hectares, the length of wave buffer is 8,456 meters, with total pier length of 16,853 meters. In total, it has twelve (12) units of ports with depth from 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
<b>Jakarta Port</b>				
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 (additional 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
<b>Balikpapan Port</b>				
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<sup>2</sup> 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%.

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<sup>2</sup> 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.

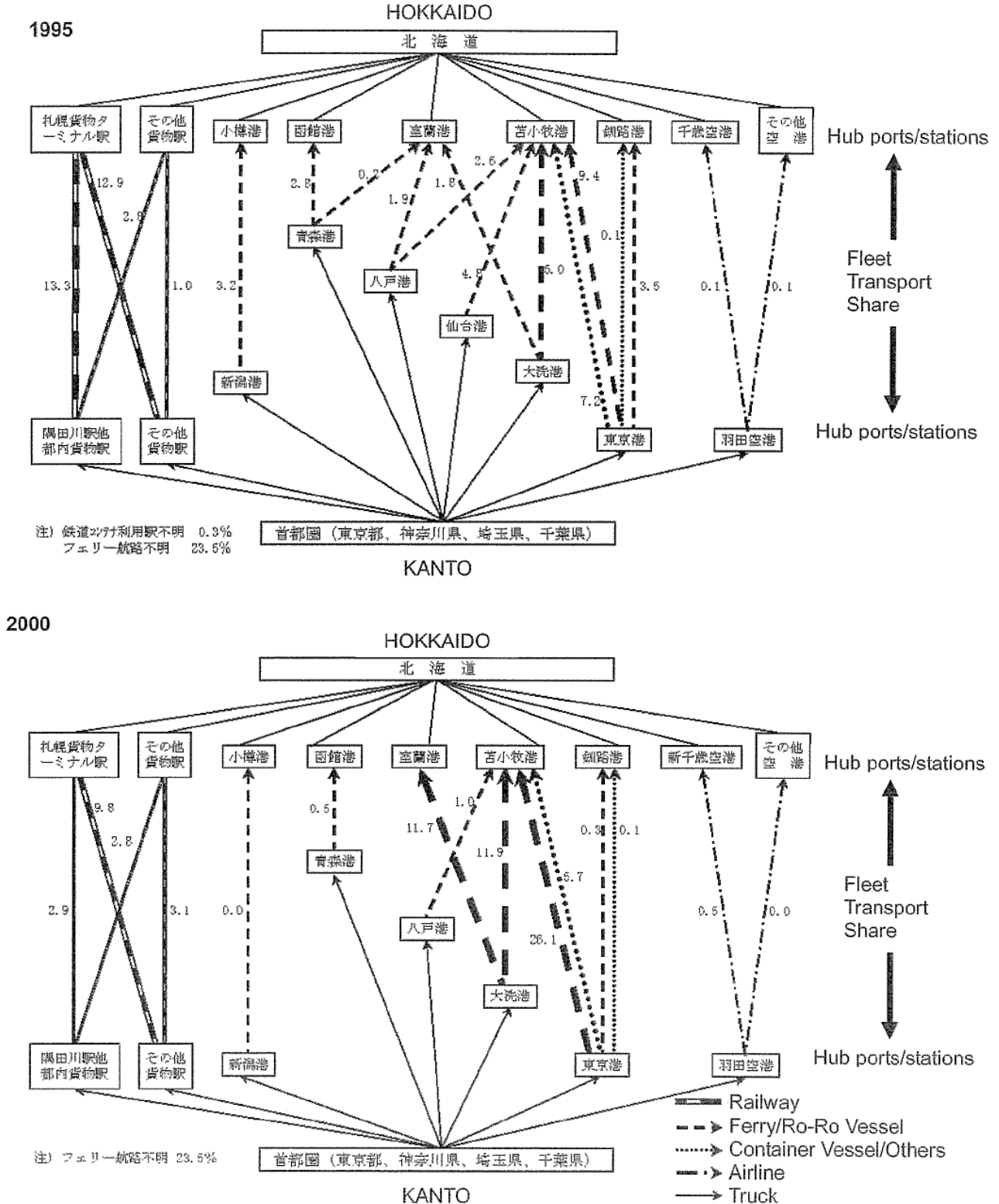


Figure 3.12 Change of Modal Share in Freight Transport from Kanto to Hokkaido

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 convention 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	<p>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.</p> <p>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.</p> <p>An amendment requiring supplementary emergency lighting for RO-RO passenger ships.</p>	<p>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.</p>
Apr 1990	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p>The capsizing of the European Gateway following a collision with another ship in 1982 marked the beginning of the work on developing this standard.</p>
May 1991	<p>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.</p>	
Feb 1992	<p>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.</p>	
Apr 1992	<p>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 <math>A/A_{max}</math> to assess the survivability characteristics of existing RO-RO passenger ships.</p>	
Jan 1994	<p>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</p>	

Date of amendment/ enter into force	Scope/objective of amendment	Remarks
	<p>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.</p>	
Nov 1993	<p>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.</p> <p>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.</p> <p>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".</p> <p>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.</p>	
July 1997	<p>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.</p> <p>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.</p> <p>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</p>	<p>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.</p>

Date of amendment/ enter into force	Scope/objective of amendment	Remarks
	<p>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.</p> <p>Amendments to include a requirement that all RO-RO passenger ships should have an established working language.</p>	
2009	<p>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.</p> <p>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.</p>	

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
<b>1 SOLAS 74</b>											
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
<b>2 MARPOL 73 / 78 Annex I</b>											
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	-	-	-	-	-	-	-
<b>3 MARPOL 73 / 78 Annex II</b>											
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	-	-
<b>4 MARPOL 73 / 78 Annex IV</b>											
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
<b>5 MARPOL 73 / 78 Annex V</b>											
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
<b>6 MARPOL 73 / 78 Annex VI</b>											
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
<b>7 Load Line 1966</b>											
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
<b>8 International Tonnage Convention 69</b>											
International Tonnage Certificate	Vessel ••24 m in Length	X	X	X	X	X	X	X	X	X	X
<b>9 International Convention on the Control of Harmful Anti-fouling Systems on Ships, AFS Convention</b>											
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
<b>10 STCW 1978 / 95</b>											
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
<b>11 Special Trade Passenger Ships Agreement (Pilgrim Trade)</b>											
Special Trade Passenger Ships Certificate	Special Trade Passenger Ships	X	X	-	-	-	-	-	-	-	-
<b>12 Space Requirements for Special Trade Passenger Ships (Pilgrim Trade)</b>											
Special Trade Passenger Ships Space Certificate	Special Trade Passenger Ships	X	X	-	-	-	-	-	-	-	-
<b>13 Gas Carrier Code (not mandatory)</b>											
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
<b>14 ILO Conventions</b>											
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	-	-
<b>15 Liability Convention</b>											
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	-	-
<b>16 International Health Regulations (IHR)</b>											
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
<b>17 International Telecommunication Union Conventions</b>											
Radio Station License	Vessel's Radio Station	X	X	X	X	X	X	X	X	X	X
<b>18 Convention on the Law of the Sea</b>											
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													
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			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			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				

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.

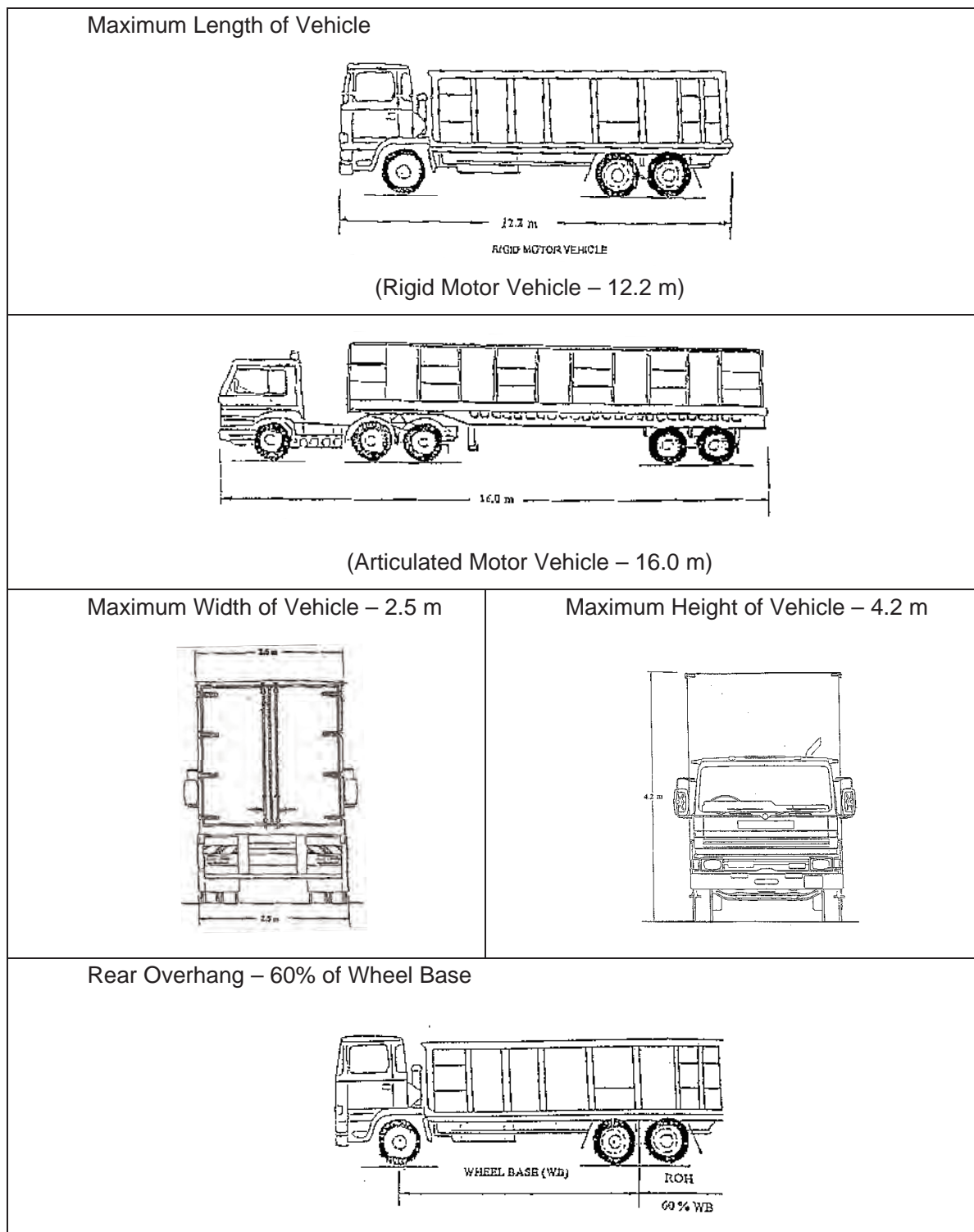
Such a complex set up demands strong leadership and coordination skills on the part of the lead agency (transport). Often, transport officials find it difficult to influence their customs counterparts in reaching quick solutions to the protracted impasses facing the finalization of Protocol 2 (Designation 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.



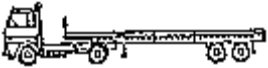
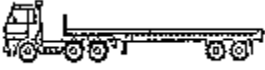
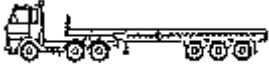
Protocol 3 (Types and Quantity of Road Vehicles) of AFAFGIT stipulates that the number of road transit transport vehicles for transit transport shall be no more than 60 vehicles per member country. However, seeing that such quantity would not be sufficient to serve the expected volume of transactions 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).



Source: Protocol 3, AFAFGIT

**Figure 4.1** Maximum Vehicle Specifications

Type of Vehicle	Maximum Permissible Gross Vehicle Weight (Tonnes)
 <p>3-Axle Rigid</p>	21.0 T
 <p>4-Axle Rigid</p>	25.0 T
 <p>4-Axle Articulated</p>	32.0 T
 <p>5-Axle Articulated</p>	36.0 T
 <p>6-Axle Articulated</p>	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	
<b>TRANSPORT FACILITATION</b>												
<b>ASEAN Framework Agreement on the Facilitation of Goods in Transit (AFAFGIT)</b>	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	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
<b>LAND TRANSPORT</b>													
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	N/A	Upon signing
<b>MARITIME TRANSPORT</b>													
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	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 TIICTD 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.