

Study on the Development of Domestic Sea Transportation and Maritime Industry in the Republic of Indonesia (STRAMINDO)

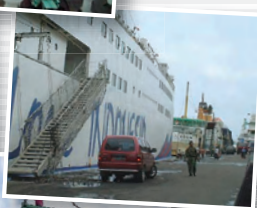
FINAL REPORT

Main Text Volume 1 Sector Achievements and Issues

March 2004

ALMEC Corporation
Japan Marine Science Inc.

STRAMINDO



JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

STRAMINDO

STUDY ON THE DEVELOPMENT OF DOMESTIC SEA TRANSPORTATION
AND MARITIME INDUSTRY IN THE REPUBLIC OF INDONESIA

FINAL REPORT

Main Text Volume 1
Sector Achievements and Issues

MARCH 2004

ALMEC CORPORATION
JAPAN MARINE SCIENCE INC.

COMPOSITION OF STRAMINDO REPORTS

Summary (English, Japanese and Indonesian)

Main Text

Volume 1: Sector Achievements and Issues

Volume 2: Integrated Master Plan and Action Plan

Technical Report No. 1: Maritime Traffic Database Development and
Demand Forecast

Technical Report No. 2: Social Environmental Survey on Traditional Shipping
Modernization

Technical Report No. 3: Participatory Approach in the Development of
STRAMINDO Plan

The exchange rate used in the report is:

J. Yen 115 = US\$ 1 = Indonesian Rupiah 8,600
(average in 2003)

PREFACE

In response to the request from the Government of the Republic of Indonesia, the Government of Japan decided to conduct the Study on the Development of Domestic Sea Transportation and Maritime Industry in the Republic of Indonesia and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a team to Indonesia between December 2002 and March 2004, which was headed by Mr. KUMAZAWA Ken of ALMEC Corporation (ALMEC) and was comprised of ALMEC and Japan Marine Science Inc (JMS).

The team conducted the study in collaboration with the Indonesian counterpart team including nationwide field surveys, traffic demand forecast, industrial analysis and planning works, and then held a series of discussions with the officials concerned of the Government of Indonesia. Upon returning to Japan, the team duly finalized the study and delivered this report.

I hope that this report will contribute to the development of domestic shipping and its maritime industry in Indonesia and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Indonesia for their close cooperation extended to the team.

March 2004

MATSUOKA Kazuhisa

Vice President

Japan International Cooperation Agency

March 2004

MATSUOKA Kazuhisa

Vice President

Japan International Cooperation Agency

Tokyo

LETTER OF TRANSMITTAL

Dear Sir,

We are pleased to formally submit herewith the final report of the “Study on the Development of Domestic Sea Transportation and Maritime Industry in the Republic of Indonesia”.

This report compiles the result of the study which was undertaken both in Indonesia and Japan from December 2002 to March 2004 by the Team, jointly organized by ALMEC Corporation and Japan Marine Science Inc.

We owe a lot to many people for the accomplishment of this report. First, we would like to express our sincere appreciation and deep gratitude to all those who extended their extensive assistance and cooperation to the Team, in particular the Ministry of Communications as well as the Ministry of Industry and Trade both in Indonesia.

We also acknowledge the officials of your agency, the JICA Advisory Committee and the Embassy of Japan in Indonesia for their support and valuable advice in the course of the Study.

We wish the report would contribute to the promotion and sustainable development of domestic sea transportation and maritime industries in Indonesia.

Very truly yours,

KUMAZAWA Ken

Team Leader

The Team for the Study on the Development of Domestic Sea Transportation
and Maritime Industry in the Republic of Indonesia

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ACRONYMS

ABS	American Bureau of Shipping
ADB	Asian Development Bank
ADPEL	Administrator Pelabuhan / Port Administration Office
AFTA	ASEAN Free Trade Agreement
AGR	Annual Growth Rate
AIS	Automatic Identification System
APBN	<i>Anggaran Pendapatan Belanja Negara</i> / National Government Budget
APCIS	Asia-Pacific Computerized Information System
APSEM	Asia-Pacific Shipbuilding Experts Meeting
ASEAN	Association of Southeast Asian Nations
BAPINDO	<i>Bank Pembangunan Indonesia</i> / Development Bank of Indonesia (now BMI)
BEMAC	Beam Metrical Alternative Creation, the brand name of Uzushio Electric Group
BIDA	Batam Industrial Development Authority
BKI	<i>Biro Klasifikasi Indonesia</i> / Indonesian Classification Bureau
BLT	<i>Berlian Laju Tanker</i> / An Indonesian Shipping Company
BMI	Bank Mandiri Indonesia
BOR	Berth Occupancy Ratio
BPS	<i>Biro Pusat Statistik</i> / Central Bureau of Statistics
BRI	Bank Rakyat Indonesia
BTN	<i>Bank Tabungan Negara</i> / National Saving Bank
BUMN	<i>Badan Usaha Milik Negara</i> / State-owned Enterprises
BV	Bureau Veritas
CGI	Consultative Group for Indonesia
CIF	Cost, Insurance and Freight
COLREG	Convention on the International Regulations for Preventing Collisions at Sea, 1972
CPI	Consumer Price Index
CPO	Crude Palm Oil
DBP	Development Bank of The Philippines
DGLC	Directorate General for Land Communication
DGMMEMI	Directorate General of Metal, Machinery, Electronic and Multifarious Industries
DGSC	Directorate General of Sea Communication
DKI Jakarta	<i>Daerah Khusus Ibukota Jakarta</i> / Special Capital City of Jakarta
DLKP	<i>Daerah Lingkungan Kepentingan Pelabuhan</i> / Important Port Environment Area
DLKR	<i>Daerah Lingkungan Kerja</i> / Work Environment Area
DLBS	Development Loan through Banking System
DNV	Det Norske Veritas
DOC	Document of Compliance
DPC	<i>Dewan Pimpinan Cabang</i> / Branch Heads Council
DPD	<i>Dewan Pimpinan Daerah</i> / Regional Heads Council
DPP	<i>Dewan Pimpinan Pusat</i> / Central Heads Council

DWT	Dead Weight Ton
DSMP	Domestic Shipping Modernization Program
ECDIS	Electronic Chart Display And Information System
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
ETA	Education and Training Agency
EXIM	Export and Import
FDI	Foreign Direct Investment
FIRR	Financial Internal Rate of Return
FOB	Free on Board
GAFEKSI	Gabungan Forwarders dan Ekspedisi Indonesia or INFA
GBHN	<i>Garis Besar Haluan Negara</i> / National Guidelines
GDP	Gross Domestic Product
GL	Germanischer Lloyd
GNP	Gross National Product
GOI	The Government of Indonesia
GOJ	The Government of Japan
GPS	Global Positioning System
GRDP	Gross Regional Domestic Product
GRT	Gross Registered Tonnage
GT	Gross Tonnage
HP	Horse-Power
HSC	High Speed Craft
IACS	The International Association Classification Societies
IBRA	Indonesia Bank Restructuring Agency
IDHS	Indonesian Demographic and Health Survey
IFCT	Industrial Finance Corporation of Thailand
ILLC	International Load Line Certificate
IMB	International Maritime Bureau
IMCO	Inter-Governmental Maritime Consultative Organization
IMO	International Maritime Organization
IMR	Infant Mortality Rate
INFA	Indonesian Forwarders' Association
INSA	Indonesian Shipowners' Association
IPERINDO	<i>Ikatan Perusahaan Industri Kapal Nasional Indonesia</i> / Indonesian Shipbuilding Industries Association
ISM-SMS	International Safety Management - Safety Management System
ISO	International Organization for Standardization
ISPS CODE	International Ship and Port Facility Security Code
IWT	Inland Waterway Transportation
ITP	<i>Indocement Tunggal Perkasa</i> / An Indonesian Cement Company
JBIC	Japan Bank For International Cooperation
JICA	Japan International Cooperation Agency
JMS	Japan Marine Science Inc.
KANPEL	<i>Kantor Pelabuhan</i> / Port Office
KFC	<i>Kapal Feri Cepat</i> / High Speed Ferry
KM	<i>Kapal Motor</i> / Motor Ship
KM	<i>Keputusan Menteri</i> / Minister Degree

KPI	<i>Kesatuan Pelaut Indonesia</i> / Indonesian Seamen's Association
L/F	Load Factor
LCT	Landing Craft Tank
LLASDP	<i>Lalulintas Angkutan Sungai Danau dan Penyeberangan</i> / River, Lake and Ferry Transportation
LLMC	Limitation Of Liability For Maritime Claims
LR	Lloyd's Register
MARINA	Maritime Industry Authority of the Philippines
MARPOL	International Convention for the Prevention of Marine Pollution from Ship
MISC	Malaysia International Shipping Corporation
MOC	Ministry of Communications
MOF	Ministry of Finance
MOT	Ministry of Transportation
MOU	Memorandum of Understanding
MSC	Maritime Safety Committee
MSOE	Ministry of State-owned Enterprises
MT	Metric Ton
MOIT	Ministry of Industry and Trade
NK	Nippon Kaiji Kyokai
NKK	<i>Nippon Koukan Kabushikigaisha</i> / A Japanese steel corporation
NM	Nautical Mile
NSL	Navigation and Signal Lighting Module
NOL	Neptune Orient Line / A Singapore shipping company
OD	Origin-Destination
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OECF	Overseas Economic Cooperation Fund (now JBIC)
OOF	Other Official Finance
P/F	Passenger Factor
PDCA	Plan-Do-Check-Action
PELINDO	<i>PT (Persero) Pelabuhan Indonesia</i> / Public Port Corporation
PELNI	<i>Pelayaran Nasional Indonesia</i> / A state-owned shipping company
PERTAMINA	<i>Perusahaan Pertambangan Minyak dan Gas Bumi Negara</i> / Indonesia State Oil and Gas Mining Company
Persero	<i>Perseroan Terbatas</i> / Publicly listed corporation
PISA	Philippine Inter-Island Shipping Association
PKT	<i>Pupuk Kalimantan Timur</i> / An Indonesian fertilizer company
PLTA	<i>Pembangkit Listrik Tenaga Air</i> / Hydraulic Power Plant
PLTG	<i>Pembangkit Listrik Tenaga Gas</i> / Thermal Power Plant
PROPENAS	<i>Program Pembangunan Nasional</i> / National 5 year Development Program
PMA	<i>Penanaman Modal Asing</i> / Foreign Capital Investment
PMDN	<i>Penanaman Modal Dalam Negeri</i> / Domestic Capital Investment
P&I	Protection and Indemnity
PSC	Port State Control
PT. ASDP	<i>PT. Angkutan Sungai Danau dan Penyeberangan</i> / Inland Waterways and Ferry Transportation Corporation
PT. Petroges	<i>PT. Pupuk Petrokimia Gresik</i> / An Indonesian fertilizer company

PT. PIM	PT. Pupuk Iskandar Muda / An Indonesian fertilizer company
PT. PKT	PT. Pupuk Kalimantan Timur / An Indonesian fertilizer company
PUSRI	Pupuk Sriwidjaja / An Indonesian fertilizer company
QA	Quality Assurance
RINA	Registro Italiano Navale
RLS	Regular Liner Service
RMS	Repairs, Maintenance and Supply
RO	Recognized Organizations
Ro-Ro	Roll on Roll off
SMC	Safety Management Certificate
SMHC	Ship Management and Holding Company
SOE	State-owned Enterprise
SOLAS	International Convention of the Safety Of Life At Sea
STCW	International Convention of the Standard Of Training, Certification And Watchkeeping for Seafarers
STRAMINDO	The Study on the Development of Domestic Sea Transportation and Maritime Industry in the Republic of Indonesia
SUA	Suppression of Unlawful Acts against the Safety of Maritime Navigation
SIUP	<i>Surat Izin Usaha Perusahaan</i> / Business Permit
SIUPAL	<i>Surat Izin Usaha Perusahaan Angkutan Laut</i> / Shipping Business License
SWL	Safe Working Load
SV	Senior Volunteer
TEU	Twenty Footer Equivalent Units
TFR	Total Fertility Rate
TLC	Ton Lifting Capacity
TOR	Terms of Reference
TQC	Total Quality Control
TSL	Two Step Loan
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
VDR	Voyage Data Recorder
WB	The World Bank

Chapter 1

INTRODUCTION

1. INTRODUCTION

1.1. Study Background and Objectives

1.1.1. Background

Indonesia is the largest archipelagic country in the world, comprising over 18,000 islands and islets. Owing to its geographic features and size, maritime transport is understandably one of the most important basic infrastructures for the Indonesian people and economy. However, the shipping industry has remained underdeveloped due to insufficient industrial effort and inadequate government support. Deficiencies in Indonesia's maritime transport are manifested in a low share of Indonesian flagged vessels in the domestic shipping market. Moreover, maritime sector deficiencies is a contributing factor in the increasing economic disparity among regions, and growing number of maritime accidents and increasing threats to marine environments.

Maritime transport is definitely one of the most strategically important sectors in Indonesia. A concerted effort is therefore necessary under a clear long-term perspective. Under this premise, the Government of Indonesia in June 2001 requested the Government of Japan, a nation with an extensive technical experience in shipping and related industries, to conduct a master plan study on Indonesian domestic shipping and maritime industry. In response to this request, a preparatory survey was undertaken by the Japan International Cooperation Agency (JICA¹). In August 2002, the Scope of Works for this Study was signed.

1.1.2. Objectives

The overall study objective is to increase the share of Indonesian flagged vessels in domestic shipping by providing improved shipping services to shippers and passengers on all domestic shipping routes. To realize this overall objective, the Study has three specific objectives:

- 1) To formulate a Master Plan (up to the year 2024) for the development of domestic sea transportation and its supporting maritime industry,
- 2) To prepare an Action Plan to implement priority projects which are part of the above Master Plan; and,
- 3) To facilitate technology transfer to counterpart personnel during the course of the Study.

1.1.3. Study Area

The study area includes all the territorial waters of Indonesia with particular attention to ports, seaways and other maritime transport facilities such as shipyards. The Study only covers domestic shipping and its related industries. Overseas shipping is studied only when and where they are closely related to domestic shipping.

¹ The Japan International Cooperation Agency (JICA), established in 1974 as a "special-purpose public institution" of the Japanese Government, will turn into an "independent administrative institution" as of the 1st of October 2003 in accordance with the Japan's administrative reform plan.

1.2. Study Implementation

The Study is being conducted in the typical scheme of Japanese technical cooperation. JICA organizes the JICA Advisory Committee and organizes and dispatches the JICA Study Team to Indonesia while the Indonesian Government organizes the Steering Committee and the Counterpart Team.

JICA appointed the Joint Venture between ALMEC Corporation and Japan Marine Science Inc. to undertake the Study. The Study commenced on December 2002 and is scheduled to conclude on March 2004. Major activities covered under the Study are illustrated in Figure 1.2.1. The activities can be grouped into (1) study mobilization, (2) site surveys, and (3) issues identification and demand forecasting, (4) preparation and discussion of Progress Report, (5) formulation of master plan, (6) preparation of Action Plan, and (7) study finalization. Specifics are as follows:

(1) Study Mobilization

The First Steering Committee was held on 17th December 2002. The meeting discussed the Inception Report which includes the study scope, methodology and implementation organization. The meeting adopted the Inception Report with some operational guidelines in the course of the Study.

The Introductory Workshop was convened on 19th December 2002. One hundred participants from the counterpart agencies, other government agencies and shipping and shipbuilding industries attended the one-day workshop. Participants also include delegates from ESCAP and the Maritime Industry Authority (MARINA) of the Philippines. The JICA Advisory Committee and the JICA Study Team were also in attendance.

The counterpart agencies consisting of the Directorate General of Sea Communication (DGSC) under the Ministry of Communications and the Directorate General of Metal, Machinery, Electronic and Multifarious Industries (DGMMEI) under the Ministry of Industry and Trade composed the Counterpart Team.

(2) Conduct of Site Surveys

The JICA Study Team, the Counterpart Team and the appointed local consultant (PT. Mitrapacific Consulindo International) conducted various site surveys nationwide as follows:

- Maritime Traffic OD Survey: OD data were collected at 23 of the 25 strategic ports. The collected data can represent 50% of the domestic freight shipping movements and 90% of the domestic passenger shipping movements in 2002.
- Shipping Industry Interview Survey: The survey successfully interviewed 80 domestic shipping companies regarding their operational, management and financial circumstances. The interview also includes information profile of 323 vessels owned or chartered by the interviewed companies.
- Ship Operation Survey: The survey team visited 14 of the 25 strategic ports and conducted on-board inspection on 48 vessels. On each vessel, the survey team interviewed its captain and engine officer, and, inspected the bridge, cabins,

equipments and facilities, deck, hull, engine room, etc.

- Shipyard Survey: The survey team visited 15 shipyards of various capacities. Every aspect of shipyard management and operation was inspected including, facilities and equipments, access channels, procurement of spare parts, quality of engineers and workers, management capability, etc.

(3) Issues Identification and Demand Forecasting

The multifaceted domestic maritime transport sector has been analyzed from the viewpoint of domestic trade and traffic, shipping operation services, shipping business management, ship safety and ship repairing. Maritime demand forecasting has been undertaken with consideration to existing maritime traffic patterns and the assumed future socio-economic framework. Finally, existing and future bottlenecks of domestic shipping have been specified and assessed.

(4) Preparation and Discussion of Progress Report

Progress Report was compiled with major findings of field surveys, development issues and traffic demand forecast. The Second Steering Committee was held on 14th July 2003. The meeting deliberated the Progress Report with a variety of comments to develop a master plan. The First Seminar was convened on 15th July. 115 participants from the counterpart agencies and shipping and shipbuilding industries, the JICA Study Team and the JICA Advisory Committee attended the one-day seminar; and, the JICA Study Team, industrial participants and the ASEAN Secretariat delivered presentations.

(5) Formulation of Master Plan

The JICA Study Team and the Counterpart Team made concerted efforts to formulate the master plan which is composed of five topic groups: institutional development, domestic shipping system, shipping business management, ship finance institution and ship repairing system. Since all the topics deal with fleet, the Study carefully confirmed the present fleet engaged in domestic shipping on both registration and operation basis.

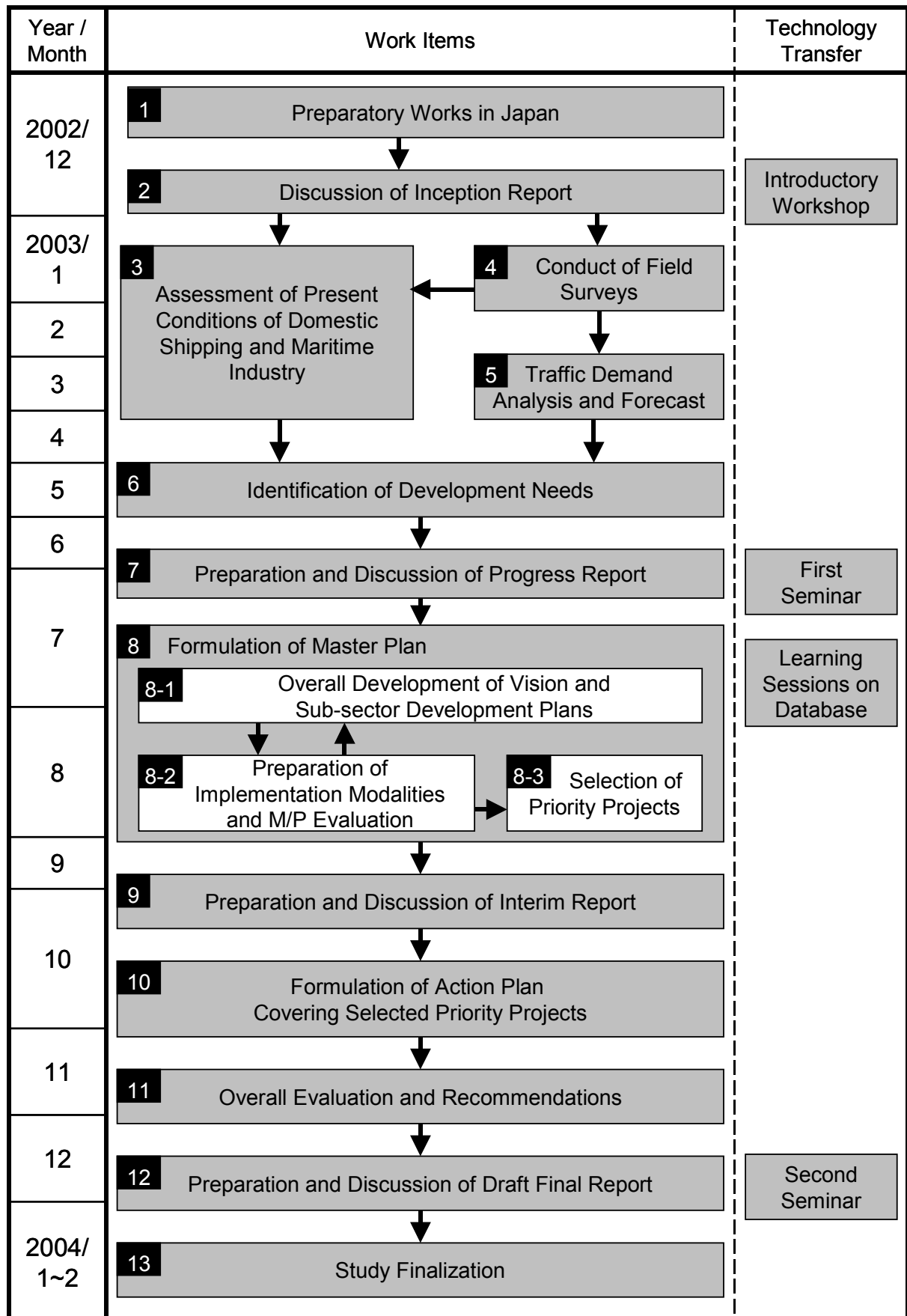
In the course of the master plan preparation, two workshops were held through the collaboration of the JICA Study Team and the shipping industries. The Workshop on Shipping Business Modernization was held on 11th August. INSA and INFA were eagerly involved in the workshop preparation, presentation and discussions. On 28th August, the Workshop on Traditional Shipping Modernization was held. The Pelra Association sent 25 participants including 10 from outside of Jakarta to the workshop.

(6) Preparation of Action Plan

As the next step, Action Plans were prepared to guide necessary immediate actions, while focusing on three priority areas: (1) expanding shipping investment channels towards Indonesian flagged vessels, (2) developing competitive domestic fleet through increasing investment and preventing accelerated asset devaluation, and (3) initiating capacity building undertakings.

In order to discuss the Master Plan contents and the Action Plan components, the JICA Study Team and the Counterpart Team held six technical meetings. In addition, the Workshop on Shipping Investment and Ship Finance was held on 22nd October where many industry representatives attended.

Figure 1.2.1 Overall Study Work Flow



(7) Study Finalization

Draft Final Report was compiled and submitted in early January 2004. The major outputs were intensively discussed at the Third Steering Committee Meeting on 13th January. Successively on 15th January, the Second Seminar was convened to disseminate the Study findings and proposals. Over 120 participants attended. As one of opening remarks, Mr. Son Damar, Special Expert to Bappenas Minister, reported the drafting progress of the Presidential Instruction on Shipping Industry Empowerment. After receiving Draft Final Report, the counterpart agencies prepared and submitted their official comments over 20 pages. This Final Report was prepared by the JICA Study Team with carefully examining those comments.

1.3. Structure of the Main Report

The Main Report has three volumes: ‘Volume 1 – Sector Achievements and Issues’, ‘Volume 2 – Integrated Master Plan’ and ‘Volume 3 – Action Plan’. In total, there are 18 chapters including this introductory chapter:

(1) Volume 1 – Sector Achievements and Issues

Chapter 2 Appreciation of the Study Area: This chapter shows the profile of the study area from the viewpoint of habitation and migration, economy and trade, maritime traffic and maritime safety and marine environment. Major findings of the maritime traffic OD survey are reported in this chapter.

Chapter 3 Overview of Maritime Transport System in Indonesia: This chapter characterizes the maritime transport system of Indonesia in terms of its major components such as fleet, human resources, shipping companies, ports and harbors and safe ship operation. Major findings of the shipping company interview survey (80 samples) and the ship onboard survey (48 samples) are detailed in this chapter.

Chapter 4 Existing Shipping Services: This chapter describes the existing shipping services in Indonesia which are categorized as follows: (i) inter-island freight shipping, (ii) inter-island passenger shipping, (iii) special shipping, (iv) pioneer shipping, (v) traditional shipping, (vi) overseas shipping and (vii) shipping related services.

Chapter 5 Maritime Related Industries: This chapter profiles the various maritime related industries which are indispensably supporting domestic shipping activities. The main focus is shipyards, particularly ship repairing services. The chapter also pays attention to ship-breaking yards.

Chapter 6 Institutional Development in the Maritime Transport Sector: This chapter discusses institutional aspects of the sector from a historical perspective and with comparison to international practice especially with ASEAN countries. The discussions cover legal framework, ship registration and inspection, and government interventions.

(2) Volume 2 – Integrated Master Plan and Action Plan

Chapter 7 Sector Development Vision: This chapter shows basic recognitions and strategies to formulate a Master Plan and designs its overall structure. Some preconditions and important elements to be incorporated into a Master Plan are

recognized, including the national development context, international development environments such as liberalized shipping, technology advancement towards competitive shipping services, discreet government interventions to commercial and non-commercial shipping, and rationales of national tonnage development.

Chapter 8 Traffic Demand Forecast: This chapter presents results in maritime traffic demand forecast for both freight and passenger demand. Demand forecast for freight is presented on a per package classification basis (i.e. containerized, break bulk, dry bulk and liquid bulk) as well as per key commodity basis. Demand forecast for passenger traffic concentrates only on inter-island domestic demand (i.e. excluding ferry) but with consideration to future modal shift between air and sea based modes. After analyzing actual ship assignment patterns, e.g., voyage reports, the existing domestic shipping fleet is confirmed on an operation basis. Future fleet in terms of ship type, unit and tonnage is projected in conformity with the traffic demand.

Chapter 9 Institutional Development Programs: This chapter discusses shipping related institutional development directions including investment promotion policies in shipping business and national flag vessels, changing policy environments of inter-island shipping such as contemporary cabotage and anti-monopoly debates and decentralization, and ship safety and environment protection requirements from global marine communities such as IMO.

Chapter 10 Domestic Shipping Development Programs: This chapter proposes institutional and physical domestic shipping development plans. Since a variety of shipping services are provided on Indonesian waters, development paths of five shipping types are explored separately. They are liner shipping, bulk shipping, passenger shipping, non-commercial tertiary shipping and traditional shipping.

Chapter 11 Shipping Business Management Programs: This chapter proposes to modernize shipping business management. It deals with shipping company structure such as business expansion patterns and more effective company structures through consolidation, modern shipping management featuring ship management company, and management education.

Chapter 12 Ship Finance Programs: This chapter provides an entire picture of available/possible ship finance schemes for today's Indonesian shipowners. While many problems have been identified, respective strengthening measures are also discussed in a comprehensive manner.

Chapter 13 Maritime Related Industries Development Programs: This chapter focuses on how to shorten ship repair time at local shipyards. Factors that prolong repair time are fully analyzed and measures to deal with identified problems are discussed in detail. The chapter also estimates dock space capacity needed to service the future domestic fleet for periodical repairs and maintenance, and discusses ship building capability at present and in future.

Chapter 14 Evaluation of the Master Plan: This chapter evaluates the Master Plan. Fleet is the focal point of shipping industry development due to its dominant share in investment in the industry and this chapter illustrates an aggregated fleet procurement plan. The fleet procurement plan is then assessed based on its anticipated economic

benefits and affordability. Finally, short-term priority projects and programs which form the STRAMINDO Action Plan are selected.

Chapter 15 Expanding Shipping Investment Channels: This chapter considers immediate actions to entice investment by focusing on two financial streams; namely, private finance and public funding particularly tapping ODA fund into fleet investment. Regarding private finance, necessary institutional arrangements particularly ratification of international conventions are explored. Regarding public funding, a strategic ODA loan package is explained.

Chapter 16 Modernizing and Maintaining Domestic Fleet: This chapter shows concrete actions to modernize the inter-island liner shipping system through unitization using originally designed locally-suited vessels; and, establishing a ship-management company.

Chapter 17 Capacity Building for Maritime Transport: This chapter proposes three capacity building programs: (1) advanced education program in shipping industry, (2) maritime administration database center, and (3) daily monitoring system for subsidized operation. Due to the long-term nature of each program, the programs include a phased development schedule.

Chapter 18 Conclusions and Recommendations: Based on all the findings and proposals in the Study, conclusions and recommendations are made. To effectively implement the Action Plan, implementation modalities are considered with an overall detailed schedule.

Study Organization

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• Capt. SAKURAI Takashi	Fleet Development Planning
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• Mr. NISHIDA Hiroyuki	Member (2003.7 – 2004.3)
• Mr. NAKAGAWA Takanori	Member
• Mr. MORI Hirotsugu	O-I-C from JICA HQ

