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NO. 3

THE REPUBLIC OF INDONESIA

FINAL REPORT
FOR
THE STUDY ON MARITIME SAFETY PLAN
CONCERNING
SEARCH AND RESCUE

SUMMARY

FEBRUARY 1989

JAPAN INTERNATIONAL COOPERATION AGENCY

THE REPUBLIC OF INDONESIA

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PREFACE

In response to a request from the Government of the Republic of Indonesia, the Japanese Government decided to conduct a study on the Maritime Safety Plan concerning Search and Rescue in the Republic of Indonesia and entrusted the survey to the Japan International Cooperation Agency (JICA).

JICA sent to Indonesia a survey team headed by Mr. Reijiro Shiobara from October to December, 1987 and Mr. Inehiko Yoshino of the Japan Association for Preventing Marine Accidents from July to September, 1988.

The team held discussions with concerned officials of the Government of Indonesia, and conducted field surveys.

After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the development of the Project and to the promotion of friendly relations between our two countries.

I wish to express my sincerest appreciation to the concerned officials of the Government of the Republic of Indonesia for their close cooperation extended to the team.

February, 1989

Kensuke Yanagiya

Kensuke Yanagiya
President
Japan International Cooperation Agency

February 21 , 1989

Mr. Kensuke Yanagiya
President
Japan International Cooperation Agency

Dear Mr. Yanagiya:

We have the honor to submit to you our final report for the Study on Maritime Safety Plan Concerning Search and Rescue in the Republic of Indonesia. It is a great pleasure for us that this Study has been completed under the close cooperation of two governments of Japan and Indonesia.

The final report was prepared during the past 18 months by the Study Team organized by members of Japan Association for Preventing Marine Accidents in association with Japan Life Boat Institution and Yachiyo Engineering Co., Ltd., and headed by Mr. Inehiko Yoshino. It comprises Summary, Long- and Short-term Development Plan, and Supporting Reports.

In preparing this Report, our Team benefited a great deal of the cooperation from officials and experts of Japan International Cooperation Agency and other authorities concerned of the Government of Japan.

On behalf of the study team, I would like to express my deepest appreciation to the officials concerned and other related agencies of the Republic of Indonesia for their enormous cooperation, assistance and warm hospitality extended to the study team members.

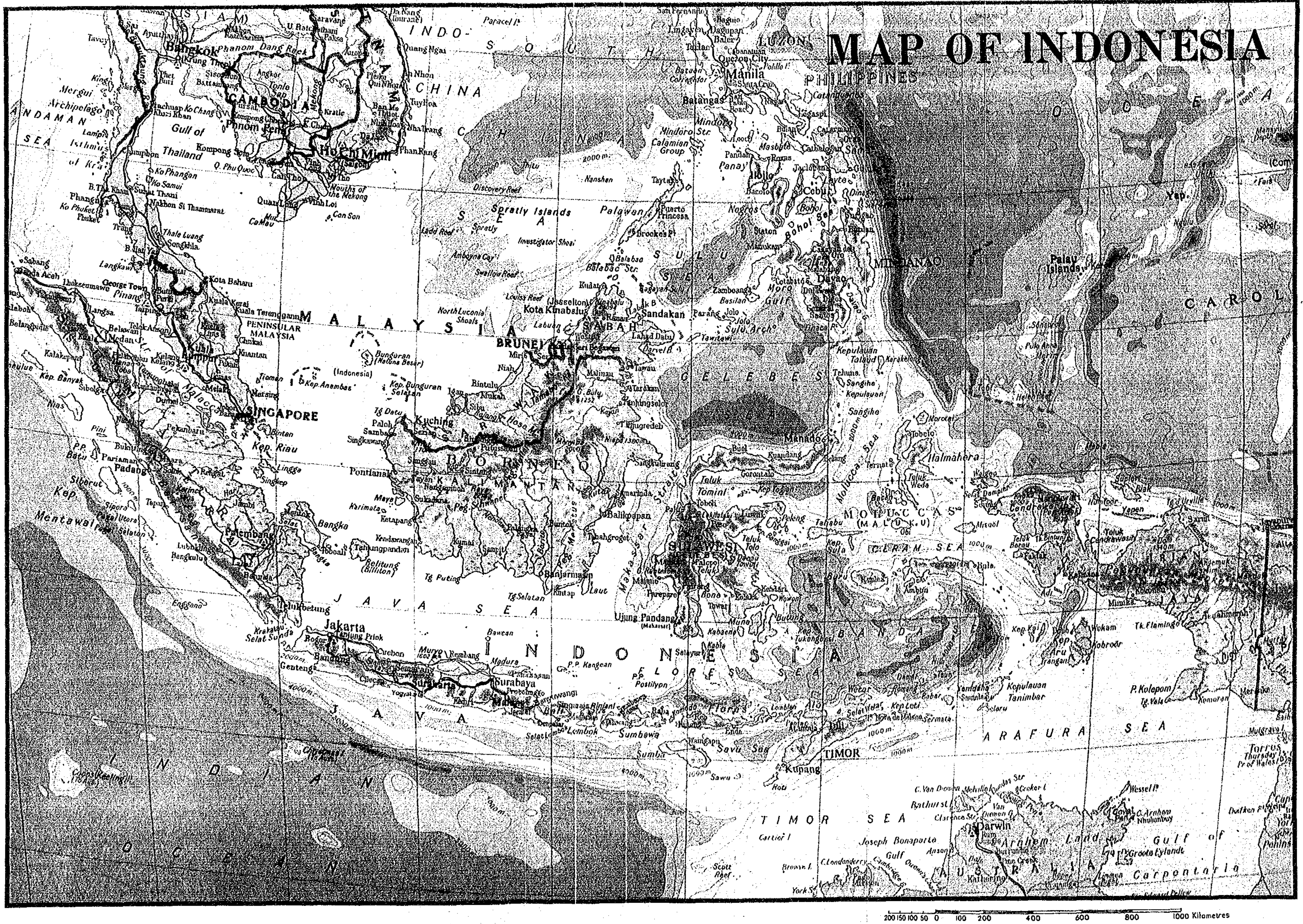
We sincerely hope that this Report will contribute to the further development of the Republic of Indonesia.

Sincerely yours,

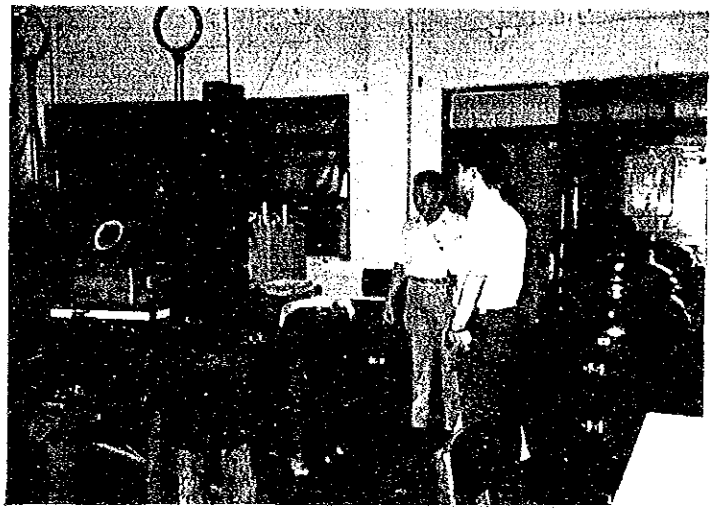
Tadayasu Kodama

Tadayasu Kodama
President
Japan Association
for Preventing Marine Accidents

TK/ma

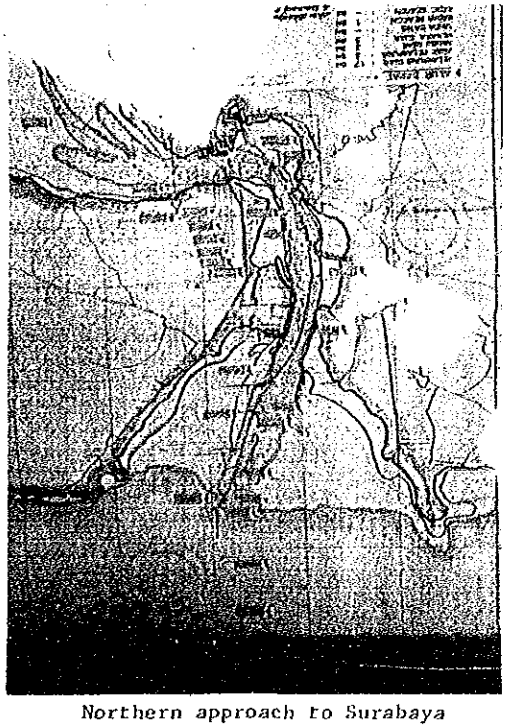

MAP OF INDONESIA
PHILIPPINES
LUZON
Manila
Quezon City
Batangas
Mindoro
Mindoro Str.
Calamian Group
Panay
Iloilo
Negros
Cebu
Bohol
Bohol Sea
Palawan
Puerto Princesa
Balabac Str.
MINDANAO
Davao
Zamboanga
Moro Gulf
Basilan
Jolo
Sulu Arch.
SULU SEA
Palau Islands
Yap
CAROL
SIAM
Bangkok
Phanom Dang Raek
CAMBODIA
Phnom Penh
Tonle Sap
Mekong
Ho Chi Minh
Saigon
Mouths of the Mekong
Gulf of Thailand
Isthmus of Kra
ANDAMAN SEA
Mergui Archipelago
INDO-
SOUTH CHINA SEA
Paracel I.
Spratly Islands
Discovery Reef
Nanshan
Investigator Shoal
Amboyna Cay
Swallow Reef
Louisa Reef
North Luconia Shoals
MALAYSIA
PENINSULAR MALAYSIA
Kota Baharu
George Town
Pinang
Kuala Lumpur
Kuala Terengganu
Kuantan
Melaka
Strait of Malacca
SINGAPORE
Kep. Riau
Lingga
Singkep
Bunguran (Natuna Besar)
(Indonesia)
Kep. Anambas
Kep. Bunguran Selatan
Kota Kinabalu
(Jesselton)
Sandakan
SABAH
Labuan
BRUNEI
Miri
Bintulu
Kuching
SARAWAK
Sibu
BORNEO
KALIMANTAN
Pontianak
Balikpapan
Samarinda
Banjarmasin
Makassar Strait
Sabang
Banda Aceh
Medan
Sibolga
Nias
Kep. Banyak
Padang
Pekanbaru
Jambi
Palembang
Bengkulu
Siberut
Kep. Mentawai
Enggano
SUMATRA
Bangka
Belitung (Billiton)
Telukbetung
Krakatau
Selat Sunda
Jakarta
Tanjung Priok
Bogor
Bandung
Cirebon
Semarang
Surakarta
Yogyakarta
Surabaya
Madura
Malang
JAVA
JAVA SEA
INDONESIA
Bali
Lombok
Sumbawa
Flores
Sumba
Savu Sea
Kupang
TIMOR
Dili
FLORES SEA
CELEBES SEA
SULAWESI (CELEBES)
Manado
Gorontalo
Teluk Tomini
Ujung Pandang (Makasar)
Kendari
Teluk Bone
Molucca Sea
Halmahera
Ternate
MOLUCCAS (MALUKU)
CERAM SEA
Buru
Ambon
BANDA SEA
Kep. Kai
Kep. Aru
Kepulauan Tanimbar
IRIAN JAYA
Biak
Yapen
Teluk Cendrawasih
Merauke
P. Kolepom
ARAFURA SEA
TIMOR SEA
INDIAN OCEAN
Christmas I.
Cocos (Keeling) Is.
Darwin
Arnhem Land
Gulf of Carpentaria
Joseph Bonaparte Gulf
AUSTRALIA
Torres Str.
Groote Eylandt
Melville I.
Bathurst I.
200 150 100 50 0 100 200 400 600 800 1000 Kilometres

Discussion with the Indonesian counterpart personnel on the Draft Final Report



Field survey at a marine educational institute

Rescue equipment



Northern approach to Surabaya

SUMMARY

[FINAL REPORT]

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ABBREVIATIONS

A		
	ADPEL	Port Administrator Office (Administrasi Pelabuhan)
	ARMADA KPLP	KPLP Fleet
B		
	BAG. UMUM	General Affair Division
	BASARNAS	National SAR Agency
	BPS	Central Bureau of Statistics (Biro Pusat Statistik)
D		
	DISNAV	District of Navigation
	Dit.	Directorate
	DGSC	Directorate General of Sea Communication
	DWT	Deadweight Tonnage
E		
	EIRR	Economic Internal Rate of Return
	EPIRB	Emergency Position Indicating Radio Beacon
	E & T Dept.	Equipment & Technology Dept.
F		
	FKSD	Regional SAR Coordination Forum
	F/S	Feasibility Study
G		
	GDP	Gross Domestic Product
	GHz	Giga Hertz
	G & R Dept.	Guard and Rescue Dept.
	G/T	Gross Tonnage
H		
	HB/ADPEL	Harbour Master Office
	HF	High Frequency
	HUKUM	Legal Division
I		
	ITV	Industrial Television
J		
	JASMAR	Directorate of Marine Service
	JICA	Japan International Cooperation Agency

K		
	KANWIL	Maritime District Office
	KAPPEL	Shipping and Marine Safety
	KEPEGAWAIAN	Personnel Division
	KKR	Rescue Coordination Center
	KPLP	Directorate of Sea and Coast Guard
	KPLP/ADPEL	Sea and Coast Guard Unit
L		
	LALA/ADPEL	Sea Transportation Unit
M		
	MES	Message Exchange System
	METEO	Meteorology
	MF	Medium Frequency
	MIS	Management Information System
	MSA	Maritime Safety Agency
	MSTC	Maritime Safety Training Center
N		
	NAVIGASI	Directorate of Navigation
	NAV/ADPEL	Navigation Unit
	NBDP	Narrow Band Direct Printing
	NM	Nautical Mile
O		
	O & M	Operation and Maintenance
P		
	Pelita/Repelita	Five-year Development Plan
	PELPENG	Port Dredging Division
	PERENCANAAN	Planning Division
	Pertamina	State-Owned Oil Company
	Perumpel	Public Port Corporation
	Perumpen	Public Dredging Corporation
	PUSDIKLAT	Education & Training Agency
R		
	R&D	Research and Development
	RDP	Radar Data Processor
	Rp	Rupiah

S

SAR	Search and Rescue
SAR Convention	International Convention on Maritime Search and Rescue, 1979
SKR	Rescue Coordination Sub-Center
SOLAS 1974	International Convention for the Safety of Life at Sea, 1974
SSB	Single Side Band
STCW 1978	International Convention on Standards of Training, Certification and Watchkeeping for Seafares of 1978

T

TDMA	Time Division Multiple Access
TDP	Traffic Data Processor
TTY	Teletypewriter

V

VHF	Very High Frequency

Section 1 Introduction

1.1 Background of the Study

Based on the Nusantara Outlook (outlook of the Indonesian archipelago), the Republic of Indonesia (hereinafter called "Indonesia") has been devoting itself to the development of its socio-economy and various resources, in order to improve the living standard of its people as well as to increase national prosperity.

Sea, land and air transportation of cargoes and passengers is considered as one of important factors for developing this nation consisting of a great number of islands. Considering the geographic condition of Indonesia, sea transport among these transportation plays an important role for national prosperity.

The maritime sector development plans have recently brought about the intensifying tendency of heavy traffic and an increase in marine accidents. However, the safety of human life and property needs to be secured.

On the other hand, the International Convention on Maritime Search and Rescue, 1979 (SAR Convention), has been in effect since 1985 and the international SAR activities in the surrounding sea areas need to be performed.

In view of the above situation, it is necessary to formulate the development plan for a Maritime Safety System in Indonesian waters, that is, a system which assures safe and efficient routes for marine transport and safe marine activities based on a philosophy for maritime safety in harmony with socio-economic and resource development.

1.2 Objective of the Study

The objective of the Study is to establish a Master Plan for Maritime Safety concerning SAR including the review of the organizational system, the education and training institute and investment plan (hereinafter called the "Master Plan") to run through the year 2005.

The Master Plan consists of a Long-term Development Plan and a Short-term Development Plan (hereinafter called the short-term plan) requiring urgent improvement. The short-term plan shall be fitted into the framework of the Fifth Five-Year Development Plan (Repelita V).

1.3 General Work Flow

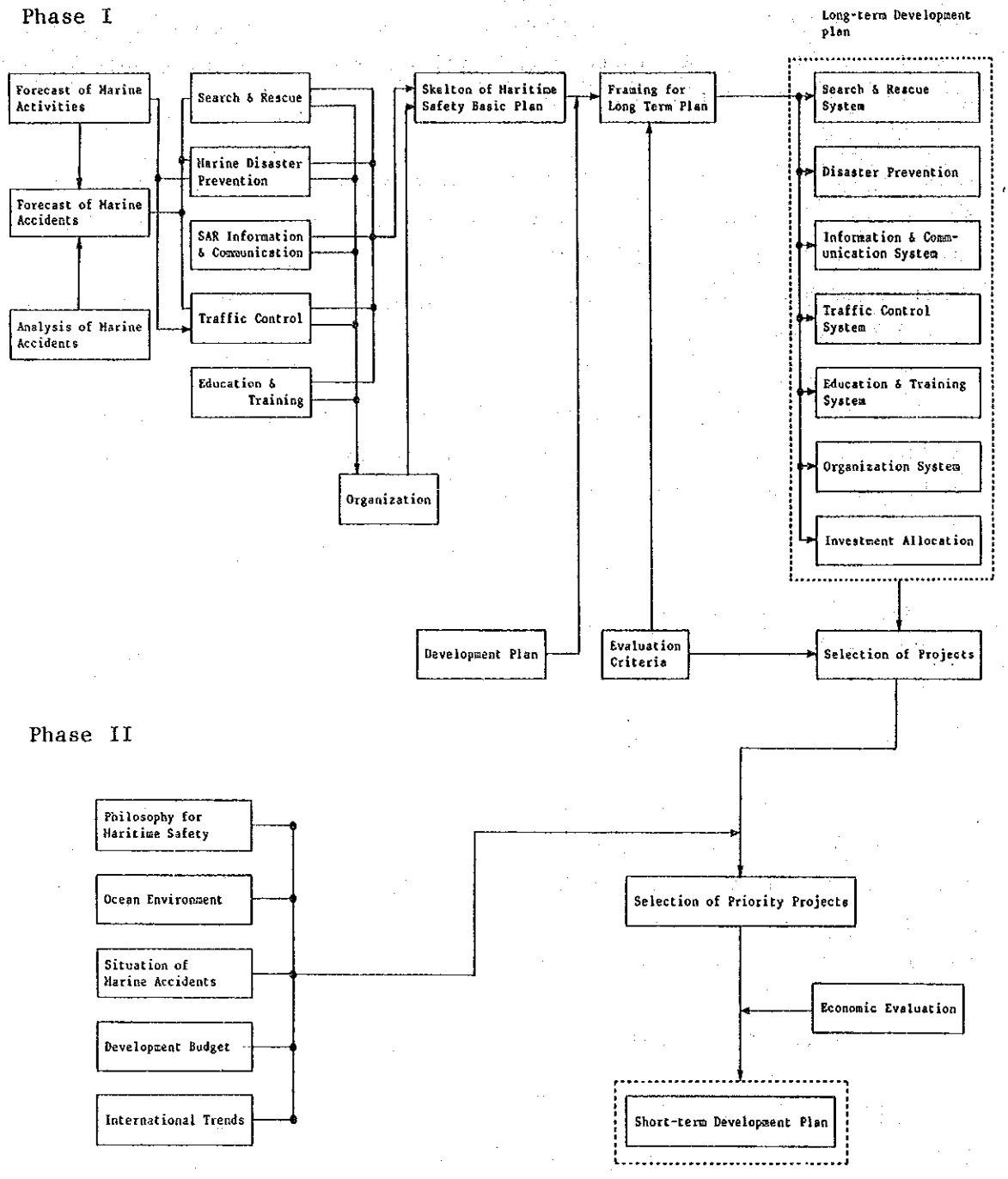

Fig. 1.3.1 General Work Flow

Section 2 Present Situation of Indonesia

2.1 Socio-economic Conditions

The following are a summary of the present socio-economic structure of Indonesia.

(1) Indonesia consists of about 13,700 islands within a north-south range of 1,800 km and an east-west range of 5,500 km. About 150 million people live in the area.

(2) The regional distribution of the people is very uneven. Jawa island, which occupies only 6.9% of the total land area, has 62% of the total population in Indonesia.

(3) The balance of payments has recently been negative due to excess imports. To improve this situation, Indonesia has to export more manufactured goods or to depend on foreign aid if the oil revenue keeps going down.

(4) Development plans in Indonesia started with the First Five-year Development Plan (Pelita I) in 1969, and have continued every five years. They are now being implemented in the Fourth Five-year Development Plan (Pelita IV).

2.2 Ocean Environment

(1) Sea Condition

Indonesia is located within the sea area of the Indian and Pacific oceans, and the South China and Jawa Seas. The Jawa Sea is most active in marine traffic and fishery activities.

The tropical monsoon climate in the Jawa Sea is typically characterized by rainy and dry seasons. The rainy season lasts from November to March during the prevalence of the north-west monsoon. Wind force during the prevalence of the north-west monsoon is in the range of 2 to 4 (Beafort scale). However, squalls frequently attack during that period, with wind

force reaching 6 to 7 (Beafort scale). Thus, wind direction tends to change suddenly, endangering small vessels. Generally, shallow sea areas tend to have high waves in spite of the small force of the wind.

The dry season is from June to September during the prevalence of the south-east monsoon. The wind force during the prevalence of the south-east monsoon is in the range of 2 to 4 (Beafort scale), and is more stable than that during the north-west monsoon. In particular, the wind force from July to September is most stable.

(2) Ports Condition

Many major cities in Indonesia are located along rivers and coastlines, and naturally function as port cities. About 300 large and small ports are distributed centering around the Jawa Sea throughout Indonesia.

In particular, as several Five-year Development Plan proceeds, domestic distribution of commodities and trade amount have increased and the improvement of domestic and international sea routes is promoted. In recent years the importance of improving and developing ports is being recognized in harmony with the promotion of regional development, transmigration policy, and so on.

On the other hand, in order to cope with the increasing amount of marine transport, improvement of a nationwide network of sea routes is planned to elevate the efficiency of marine transport in parallel with the improvement of the merchant fleet, and also the improvement of the function of each port is planned.

In order to rationalize the complicated system of domestic sea routes and improve the efficiency of marine transport, a gateway system is adopted in Pelita IV.

The four large ports of Belawan, Tanjung Priok, Surabaya (Tanjung Perak) and Ujung Pandang (Makassar) are selected as gateways to Indonesia to promote exports of commodities except oil. In addition to the above ports, 14 ports are selected as collector ports and 25 ports as trunk ports. Thus, 43 major ports are improved and developed.

(3) Situation of Marine Transport

Ships engaged in both domestic and international shipping service are strengthened. As a result, the quantity of freight transported is on the increase as a whole. The Directorate General of Sea Communication (DGSC) has introduced a management information system (MIS) to precisely understand the situation of commodities' transportation, and provides centralized management of data on the movement of cargoes at each port.

(i) International shipping

There are the following two types of international shipping service in Indonesia:

Special international shipping	Transport of crude oil, cement, fertilizer and lumber by carriers
General international shipping	Transport of other cargoes

Table 2.2.1 International Shipping Fleet by Service

(Unit: number of ships)

	1980	1981	1982	1983	1984
General service	58	61	62	51	58
Special service	89	96	96	88	88
Total	147	157	158	139	146

Source: Statistical Yearbook of Indonesia, 1986

(ii) Domestic shipping

Domestic shipping in Indonesia is classified into the following five forms of services according to role, operation form, etc.

Regular Liner Service (RLS)

Local Service

Traditional Service

Pioneer Service

Special Service

These services link about 300 ports throughout the entire area of Indonesia, and play a vital role as means of transporting people as well as commodities.

Table 2.2.2 Domestic Shipping Fleet by Service

(Unit: number of ships)

	1980	1981	1982	1983	1984
RLS	342	361	397	387	398
Local service	896	1,087	1,162	1,168	1,220
Traditional service	2,563	3,346	3,486	3,657	3,807
Pioneer service	33	35	36	31	26
Special service	2,039	2,302	2,597	2,633	2,669
Total	5,873	7,131	7,678	7,876	8,120

Source: Statistical Yearbook of Indonesia, 1986

(4) Maritime Fishing Activities

Fishing industries in Indonesia are operated in the inner sea area and the surrounding sea areas of the Indian Ocean, etc.

(i) Fishing boats

The number of fishing boats engaged in fishing industry in 1984 was 313,000. Out of this, the number of non-powered boats was 220,000, and the number of powered boats was only 93,000. The majority of such boats are small boats. Modernization of fishing boats and improvement of fishing methods, etc., are promoted to improve their performance.

As for the regional distribution of fishing boats, the percentage of powered fishing boats in the Surabaya and Jawa regions is high, and there are many large fishing boats in Bali, Maluku/(Moluccas) and Irian Jaya which function as a base for inshore fishery.

(ii) Fishing grounds

Important sea areas as fishing grounds are the north coast of Jawa Island, northeast coast of Sumatra and southwest coast of Selawesi. These areas account for about 75% of both total catch and total production price. In particular, the Sumatra sea area is first, accounting for 30% of the total.

(5) Other Marine Activities

(i) Marine development

Other marine activities include development of ocean resources, e.g., oil-drilling activities at sea in this oil-producing country. Oil and gas fields are widely distributed over the entire area of Indonesia. The sea of central Sumatra and east Kalimantan, and the Jawa Sea are the most important oil-producing areas. The construction of numerous oil rigs and boring facilities in these sea areas is now underway.

Although these facilities have a bad influence on marine traffic, lights for these facilities play an important role in helping safe navigation of large and small vessels which navigate the sea area.

(ii) Marine leisure

Indonesia has a high potential for tourism and leisure development from the viewpoint of geographic and natural conditions. Facilities for yachts, motorboats, trawling boats, etc., will be improved through tourism-attracting policies and investment activity for the future. Further development of marine leisure is forecast.