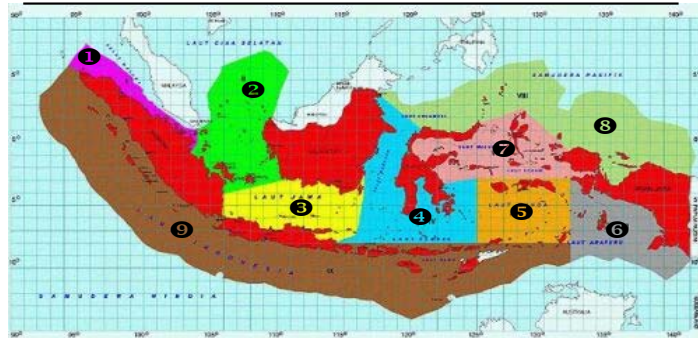


NATIONAL PLAN OF ACTION (NPOA) FOR THE MANAGEMENT OF FISHING CAPACITY



**DIRECTORATE OF FISHERIES RESOURCES
DIRECTORATE GENERAL OF CAPTURE FISHERIES
MINISTRY OF MARINE AFFAIRS AND FISHERIES
REPUBLIC OF INDONESIA**

I. INTRODUCTION

Fishing capacity management is endorsed to achieve optimum and sustainable resources utilization through (a) utilization of sustainable fish stock; (b) protecting oceanic environment by precaution approaches (minimize *by-catch*); and (c) environmental friendly fishing. Therefore, to achieve the goals, FAO has developed some guidance regarding implementation of fishing capacity managements, such as : (a) FAO *Fisheries Technical Paper* No. 433/1 regarding *Measuring and Assessing Capacity in Fisheries (Basic Concepts and Management Options of 2000*; (b) FAO *Fisheries Technical Paper* No. 433/2 regarding *Measuring and Assessing Capacity in Fisheries (Issues and Methods of 2000*); and (c) FAO *Fisheries Technical Paper`* No. 445 regarding *Measuring Capacity in Fisheries* of 2003. IPOA guidance for *The Management of Fishing Capacity* was implemented transparency based on article 6.13 FAO *Code of Conduct for Responsible Fisheries* (transparency in fisheries management mechanism and vote decision process).

Within national fishery management framework, fishing capacity management aims to: (1) Implementing Law Number 31/2004 regarding Fisheries and International fisheries management rules (UNCLOS, UNFSA, UNIA and IPOA *for the Management of fishing capacity*), (2) Describing strategy measures and fishing capacity management action to ensure optimum and sustainable capture fisheries activity.

Concerning the importance of fishing capacity for the world fishery and to ensure the sustainable management fisheries, therefore Indonesian government obliged to arrange National Plan of Action Plan *for the Management of fishing capacity* which is used as matters of fishing capture management. Concerning the NPOA *for the Management of*

Fishing Capacity, therefore the implementation of NPOA formulation carried out gradually in Fisheries Management Areas.

II. PLAN OF ACTION FOR FISHING CAPACITY MANAGEMENT

Fishing capacity management is main responsibility of Ministry of Marine Affairs and Fisheries (MMAF) as stipulated in article 7 Law Number 31/2004 regarding Fisheries.

2.1 Basic Act Plan of Action

Plan of action for fishing capacity management is formulated based on existing and implementing regulation, such as:

- a. Law Number 5 of 1990 regarding Natural Resources Conservation and Its Ecosystem
- b. Law Number 21 of 1992 regarding Navigation
- c. Law Number 23 of 1997 regarding Environment Managements
- d. Law Number 31 of 2004 regarding Fisheries
- e. Law Number 32 of 2004 regarding Local Government
- f. Presidential Regulation Number 15 of 1984 regarding Resources Management in IEEZ
- g. Presidential Regulation Number 54 of 2002 regarding Fisheries Business.
- h. Presidential Decree Number 39 of 1980 regarding *Trawl* Removal.
- i. Minister of MMAF Decree Number 17 of 2006 regarding Fisheries Business.
- j. Minister of Agriculture Decree Number 392/Kpts/Ik.120/4/99 regarding Fishing Zones

- k. Minister of MMAF Decree Number Kep.60/Men/2001 regarding Fishing Vessel Settlement in Indonesia Exclusive Economic Zone
- l. Minister of MMAF Decree Number 23/MEN/2001 regarding Fishing Vessels Productivities
- m. Minister of MMAF Decree Number 13/MEN/2004 regarding Fishermen Controlling Guidance for Fish Resources Management.
- n. Minister of Agriculture Decree Number 994 of 1999 regarding Establishment of Fish Resources Management Coordination Forum (FKPPS).
- o. Minister of Agriculture Decree Number 995 of 1999 regarding Fisheries Resources Potential and Total Allowable Catch in the Fisheries Area of the Republic of Indonesia.

2.2 Institution Authority in Fishing Capacity Management

The Authority of fishing capacity management is classified as follows:

- (a) Licensing
- (b) Research
- (c) Surveillance and Controlling
- (d) Reporting

2.2.1 Licensing

Based on the authorities, issuing fishing license is classified into three (3) aspects, which are:

- In central level is Directorate General of Capture Fisheries; issuing license for fishing vessels up to 30 GT
- In province level is Province of Marine and Fisheries Service; issuing license for fishing vessels 10-30 GT
- In regency level is District of Marine and Fisheries Service; issuing license for fishing vessels 5-10 GT and notes fishing vessels under 5 GT.

In central level, issuing license for fishing vessels is undertaken by Directorate General of Capture Fisheries - Directorate of Fishing Business Service. Based on Minister Decree Number Per 07/MEN/2005 regarding Organization and Working Structure of Ministry of Marine Affairs and Fisheries, Directorate Fishing Business Service has duties; (a) evaluating allocation; and (b) reporting documentation and verification of fishing business.

2.2.2 Research

Research activity supports to establish and evaluate fishing capacity and fish resources status in a region. Based on Minister Decree Number Per 07/MEN/2005 regarding Organization and Working Structure of Ministry of Marine Affairs and Fisheries:

- Capture Fisheries Research Centre (PRPT) is carried out strategic research and capture fisheries resources development, fishing gears and facility at oceanic and common waters.

Based on Minister of Marine Affairs and Fisheries Decree Number 26G/Men/2001 regarding Organization Structure of BBPPI Semarang:

- BBPPI Semarang is carried out standardization inspection, certification, accreditation and capture fisheries technical surveillance, infrastructure, fishing gears and fisheries information networking management.

2.2.3 Surveillance and Controlling

Surveillance and controlling activity intended to ensure standard implementation of input and output control in order to manage fishing capacity. Based on Minister of Marine Affairs and Fisheries

Decree Number Per 07/MEN/2005 regarding Organization and Working Structure of Ministry of Marine Affairs and Fisheries:

- Directorate of Fishing Vessels and Fishing Gears is having duty to evaluate fishing vessels and fishing gears (detail design, fishing vessel suitability, fishing gears suitability, fishing vessels registration, crew of fishing vessel, monitoring and calculate fishing vessel productivity)
- Directorate of Fish Resources Surveillance and Controlling is having duty on surveillance and controlling fish resources.
- Directorate of Fishing Port is having duty to evaluate fishing port development (redesign fishing port development, fishing port development requirement, fishing port operational standard, controlling fishing port development, harbourmaster of fishing port)
- Harbourmaster of port; issuing sailing permit (SIB)
- Fish auction management; noting production and marketing of fish product.

Minister of Agriculture Decree Number 31/Kpts/Org/V/1978 regarding Quality Inspection Laboratory, Agency of Fish Product Counselling and Inspection (BPPMHP) Jakarta:

- Agency of Fish Product Counselling and Inspection (BPPMHP) is having duty to publish test report and monitoring to fish product quality.

Law Number 6 of 1983 regarding General Provisions and Taxation, Directorate General of Taxes (Ministry of Finance) having jurisdiction to issue tax payer identification number.

2.2.4 Reporting

Reporting activity is endorsed to maintain the continuity of data flows from regional to central level in order to ensure collecting

data promptly according to the number and type of data required to support the evaluation of fisheries utilization level and fishing capacity management. The institutions to support basic data for fishing capacity management are:

- Fishing Ports and Fish Landing; takes note fishing vessel activities.
- Province and District of Marine and Fisheries Service; take note the volume of fish landing.
- Agency of Fish Product Counselling and Inspection (BPPMHP) ; reporting quality and values of fisheries product.

2.3 Working Group (POKJA) for Fishing Capacity

Working Group for fishing capacity is a working group which consist of experts in fisheries field, economy and captures fisheries resources management policy. POKJA was formed via *ad hock* in accordance with FKPPS activities and to evaluate the fishing capacity in the Fisheries Management Areas (FMA) based on reports submitted from district to central level. To increase accuration and the quality of fishing capacity data, POKJA conducted a research on the fishing capacity independently and utilizes observer program data.

POKJA membership comes from Governance and Non-Governance institution. Based on existing regulation as follows:

- a. Based on Article 7 Paragraph 3, Law Number 31 regarding Fisheries states that National Commission of Fish Resources Assessment recommend and consider the potential and total allowable catch to the minister.
- b. Based on Minister of Marine Affairs and Fisheries Decree Number Per 07/MEN/2005 regarding the Organization and Working Structures of the Ministry of Marine Affairs and Fisheries :

- ✓ Directorate of Fish Resources duties are: (a) evaluating fish resources; and (b) protection and expansion of fish resources.
- ✓ Research Centre of Captures Fisheries duty is to develop captures fisheries resources.

2.3.1 Meeting of Fishing Capacity Management

In fishing capacity management, data flows from reports in region level to Regency, Province, then evaluated by Working Group according to its group and management areas up to evaluation and study in fishing capacity meetings. Those meeting covers:

- I.** Fishing capacity management annual meeting per Fisheries Management Areas (FMA).
 - a. Basic data started from recording of fisheries logbook as landing declaration submitted by captain to officer at fish landing or fishing port.
 - b. Fishing Port collects logbook data based on fishing vessel type and fish species make monthly report to District/Province Marine and Fisheries Service and Port with higher status.
 - c. District Marine and Fisheries Service make a report per semester to Province Marine and Fisheries Service.
 - d. Province Marine and Fisheries Service hold annual meeting to synchronize all data at its region and evaluates status of fishing capacity management. This activity should be done on April every year which gives description management level from the previous year.
 - e. Province of Marine and Fisheries Service make an annual report for fishing capacity management to Directorate General of Capture Fisheries.

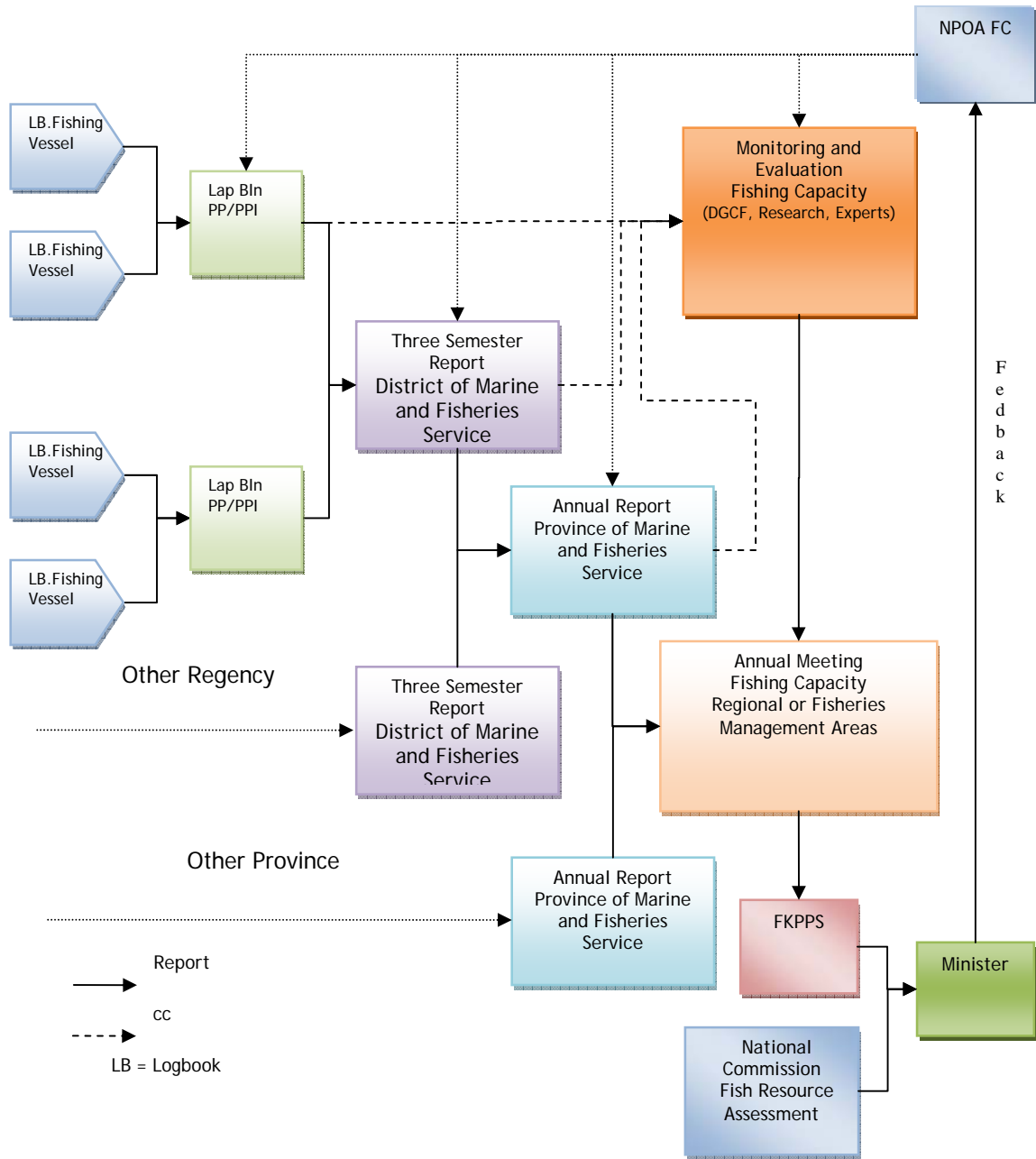
II. FKPPS Province, Regional and National

- a. Province of Marine and Fisheries Services collect a report based on fisheries management.
- b. Directorate General of Capture Fisheries hold first meeting to evaluate the status of fishing capacity management in every Fisheries Management Areas (FMA). This meeting has involved fishery capacity working group and related institution.
- c. First result of the evaluation process is followed up on Regional FKPPS which is performed at the latest of June on the following year. On Regional FKPPS, each province states and synchronizes every status and data in fishing capacity management.
- d. National FKPPS is performed on September on the following year every two (2) years.

III. National Commission of Fish Resources Assessment

- a. National FKPPS result is formulated by Directorate General of Capture fisheries. It contains a draft of fishing capacity management program, fish resources utilization status, and the alternative solutions of ensuring sustainable fisheries management.
- b. Based on the draft, National Commission of Fish Resources is carried out meetings to finalize the draft.
- c. The National Commission proposes fish resources potential to the Minister of MMAF.

Action Plan of Fishing Capacity



III. THE ASSESSMENT OF BASIC INFORMATION IN FISHING CAPACITY MANAGEMENT

A. Basic Information

Based on FAO recommendation in 2003, fishing capacity measurement method depends on available fishing data and information. Standard data and basic information required;

- Quantity of fishing vessels or fishing gears operate in Fisheries management areas
- Quantity of fishery landing
- Vessels size and/or engine power
- Fishing period
- Characteristic of fishing methods and fishing technology development
- Biological information
- Main characteristic power fishing determination.
- Information of types and sizes fishing gears, and important fish species.
- The composition of sizes and types exported fish.

B. The indicators of Fishing Capacity and Analyzing Methods

The indicators for managing fishing capacity management are

- *Catch Per Unit Effort* (CPUE).
- The ratio between operating vessels and quantity of vessel licences.
- The ratio between fish productions and Total Allowable Catch.
- Fishing and allocation levels.
- Fishing management.
- Total Allowable Catch (TAC).
- The period of TAC.
- Fishery biology status

Based on available data, fishing capacity measurement method as FAO recommendation, there are:

1. **Peak to Peak Analysis**

Peak to peak analysis is a simple method to study utilization capacity. Peak to peak analysis only uses input and output control. In theory, Peak to peak analysis is based on assumption that output is function of input and technology trends (FAO, 2003).

$$Y = \alpha V T$$

Y = output in time (t)

α = constant

V = index of input

T = technology trends that figured by changing productivity

The main difficulty in interpreting *peak to peak analysis result* is not concerning with changing of stock accessibility.

2. **Stochastic Production Frontiers (SPF)**

SPF is to account the capacity and utilization through input modification in the function of production. SPF model is shown as

$$\ln q = f(\ln \mathbf{x}) + v - u \quad (1)$$

q : production output,

x : input,

v : stochastic (as error)

u : error figuring *inefficiency*.

3. **Data Envelopment Analysis (DEA)**

DEA, Nonparametric method or mathematic approaches through some input, gives optimum solution on individual units. DEA aims to account economic efficiency, the capacity, utilization, and capital capacity in fishing capacity management.

4. **Production Surplus**

Production surplus estimates optimum effort or maximum sustainable Yield. Theories of production surplus are triggered by: Ricker (1975), Caddy (1980), Gulland (1983) & Pauly (1984).

Concepts of production surplus is

- ✓ A stock is a big biomass and does not depend on age and size of fish.
- ✓ Productions Surplus model is not assumed by age concepts for the first catch and is not influenced by mesh size of gears.

$$(Y/f) = y(i) / f(i)$$

$i = 1, 2, 3, \dots, n$

$f(i) =$ Effort in i - year

$Y/f =$ by-catch per effort in i -year

There are 2 popular models of MSY which are:

- Schaefer model (1954)
Figuring Linear model

$$Y(i)/f(i) = a. + b. f(i)$$

$f(i) \leq -a/b$

$a =$ Constantan

$b =$ slope

Schaefer model could be impossible if effort $f(i)$ smaller than $-a/b$; if effort $f(i)$ larger than $-a/b$, Y/f could be negative.

- Fox model (1970)
Figuring model Exponential

$$Y(i)/f(i) = \exp \{c + d \cdot f(i)\}$$

$$\ln Y(i)/f(i) = c + d \cdot f(i)$$

$Y(i)/f(i)$ larger than zero for all point f .

C. Type and Reporting Mechanism

To make a good analysis, it is needed data and information accurately from data resources which flowed precisely and continually from local to central government. Types of report required in fishing capacity management are:

- Field data collected by Fishing Port, fish landing are obtained from fishery logbook recapitulations from field officers. The data are classified as basic information and reported by District of Marine and Fisheries Services, Province of Marine and Fisheries Services and Directorate General Capture Fisheries (DGCF).
- Monthly report from fishing port and fish landing is collected and recapitulated by District of Marine and Fisheries Services as four semester report. The data are classified as basic information and reported every three month to Province of Marine and Fisheries Services and Directorate General Capture Fisheries (DGCF).
- The report from District of Marine and Fisheries Services is collected and recapitulated by Province of Marine and Fisheries Services as annual report. The data are classified as basic information and reported every year to Directorate General Capture Fisheries (DGCF).
- The report from Province of Marine and Fisheries Services is collected and classified as similar basic information in every

fisheries management areas (FMA). The fishing capacity report is reported every year as an analysis material by working group (POKJA).

- The Working group (POKJA) consist of some fisheries experts from research institution or university which facilitate to evaluate fishing capacity management.

D. Annual meeting

Directorate of Fish Resources and working groups hold annual meeting to discuss evaluation and monitoring result of action plan of fishing capacity management. Annual meeting are attended by:

- Directorate General of Capture Fisheries.
- Directorate General of Surveillance and Controlling Fish Resources.
- Marine and Fisheries Research Agency.
- Province of Marine and Fisheries Service in every FMA.
- University.

E. Annual Meeting Report

In annual meeting, the participants make a fishing capacity report which consists of some materials as follows:

1. Realization of fishing capacity indicator in every Fisheries Management Areas
 - Quantity of fishing vessels licence
 - Catch per Unit Effort (CPUE) per type of fishing gears.
 - The ratio between operating fishing vessels and quantity of fishing vessel licence.
 - Prediction between Maximum Sustainable Yield and Total Allowable Catch.
 - The ratio between fish production and Total Allowable Catch.

- The period of Total Allowable Catch.
- Fisheries biological status.
- Selectivity in using fishing gears in Fisheries Management Areas.
- Status of fish resources utilization

2. The Recommendation of Fishing Capacity Management

- Types of fishing vessels and fishing gears
- The Quantity of fishing vessel
 - ✓ The quantity of fishing vessel allowed to operate in fisheries management areas and its distribution in every area (district and province).
 - ✓ The Total allowable catch for each fishing vessels or per period.
 - ✓ The type of total allowable catch.
- Planning arrangement of Optimum Fishing Capacity
 - ✓ Precaution approach
 - ✓ Economic efficiency
 - ✓ Social factor
- Surveillance Focus and mechanism through specific fisheries commodities.
- For further research by PRPT and BBPPI Semarang relating to:
 - ✓ Minimum size of total allowable catch in every fisheries management areas
 - ✓ Fishing vessel and fishing gear standardization allowed to operate in every fisheries management areas.

3. Effect Estimation and Alternative Planning Solution.

One of fisheries management areas has *excess capacity* requires to be recovered by reducing fishing effort applied through limitation of fishing vessels quantity and/or determination quota of fishing vessel or fishing period.

It will involve society economics and source conflict among *stakeholders*. The solution of this condition could be the alternative livelihood or relocation of fishing area.

The result of Annual meeting as an input for regional and national FKPPS activity, also National Commission of Resource Assessment reported to Minister of MMAF.

IV. Recommendation Programs of Fishing Capacity Management Action Plan by Fish and Shrimp Trawl in Arafura Sea Fisheries Management Areas.

Action plan 01 : Ministry of Marine Affairs and Fisheries; District of Marine and Fisheries Service shall collect registration data of fishing vessel before 2008

Action plan 02 : Ministry of Marine Affairs and Fisheries; District of Marine and Fisheries Service shall determine synergy mechanism of fishing management, including comprehensive fishing vessel allocation to avoid *overcapacity*

Action plan 03 : Directorate General of Capture Fisheries (DGCF) shall arrange fishing logbook at the latest of 2007 through socialization activity to stakeholders

Action plan 04 : Directorate General of Capture Fisheries (DGCF) delegates observer at fish and shrimp trawl vessels in Arafura Sea at the latest of 2007

Action plan 05 : Directorate General of Capture Fisheries (DGCF) collaborates with Directorate General of Fishery Product Processing and Marketing and District of Marine and Fisheries Service in order to collect composition data of fish species exported from Quality Inspection Laboratory.

Action plan 06 : Central Research of Capture Fisheries (PRPT) to research the effect of trawl to demersal and shrimp resources before 2008.

Action plan 07 : Central Research of Capture Fisheries (PRPT) to do further research about *closed season* proposal for shrimp and demersal in Arafura before 2008.

Action plan 08 : Ministry of Marine Affairs and Fisheries (MMAF) collaborates with District of Marine and Fisheries Services in order to determine fishing vessel allocation.

Action plan 9 : Ministry of Marine Affairs and Fisheries (MMAF), Province and District of Marine and Fisheries Services and Directorate General of Sea Transportation to guarantee violation case of fishing vessel size not arise before 2008.

Action plan 10 : District of Marine and Fisheries Service shall limit the quantity of fishing license in order to reduce *over fishing* before 2008.

Action plan 11 : Directorate General of Capture Fisheries (DGCF) shall implement assessment result of fishing vessel identification marks in Indonesia at the latest of 2007.

Action plan 12 : Violation of provision in using Vessel Monitoring System (VMS) shall be punished if it is done regularly, the license will be deleted. This provision shall be implemented in the early of 2007.

Action plan 13 : Fisheries Moratorium should be implemented in the early of 2007 for three (3) years. The period is needed for assessment process as evaluation to Moratorium.

Action plan 14 : Directorate General of Capture Fisheries (DGCF) perform socialization activity of National Plan of Action for the Management of Fishing Capacity in Arafura Sea Fisheries Management Areas in 2007.

V. Indonesia' s 9 Fisheries Management Zones

9 fisheries management zone

