World Academy of Science, Engineering and Technology
International Journal of Economics and Management Engineering
Vol:7, No:8, 2013

# Increasing Fishery Economic Added Value through Post Fishing Program: Cold Storage Program

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Open Science Index, Economics and Management Engineering Vol:7, No:8, 2013 publications.waset.org/16210/pdf

***Abstract*—**The purpose of this paper is to guide the effort in improving the economic added value of Indonesian fisheries product through post fishing program, which is cold storage program. Indonesia's fisheries potential has been acknowledged by the world. FAO (2009) stated that Indonesia is one of the tenth highest producers of fishery products in the world. Based on BPS (Statistics Indonesia data), the national fisheries production in 2011 reached 5.714 million tons, which 93.55% came from marine fisheries and 6.45% from open waters. Indonesian territory consist of 2/3 of Indonesian waters, has given enormous benefits for Indonesia, especially fishermen. To improve the economic level of fishermen requires efforts to develop fisheries business unit. On of the efforts is by improving the quality of products which are marketed in the regional and international levels. It is certainly need the support of the existence of various fishery facilities (infrastructure to superstructure), one of which is cold storage. Given the many benefits of cold storage as a means of processing of fishery resources, Indonesia Maritime Security Coordinating Board (IMSCB) as one of the maritime institutions for maritime security and safety, has a program to empower the coastal community through encourages the development of cold storage in the middle and lower fishery business unit. The development of cold storage facilities which able to run its maximum role requires synergistic efforts of various parties.

***Keywords*—**Cold Storage, Fish, Regulation.

## I. Introduction

INDONESIA is currently a member of several Regional Fisheries Management Organizations (RFMO). By becoming member of RFMOs, Indonesia gained various benefits such as obtaining accurate fisheries data and information, obtaining fish resources allocation for straddling fish stocks and highly migratory fish stocks through the international quota. As a member of RFMOs, Indonesia received special treatment as a developing country such as financial assistance, technical assistance, technology transfer assistance, scientific research support, supervision assistance and support in the law enforcement [1].

In addition to the above benefits, there are also economic benefits that can be taken. The economics benefit is in the form of smooth export process of Indonesian fishery products to the destination country [2]. Fishery products commonly exported in processed form. For example, the value of tuna exports in 2011 to the composition of the top 10 destination countries: 19.79% fresh, frozen 24.63% and 55.58% processed (presentation by Ir. Erni Widjajanti, M.Ag.Buss in the national seminar Law of the Sea, Solo 2013). This composition is influenced by the nature of the fishery product durability.

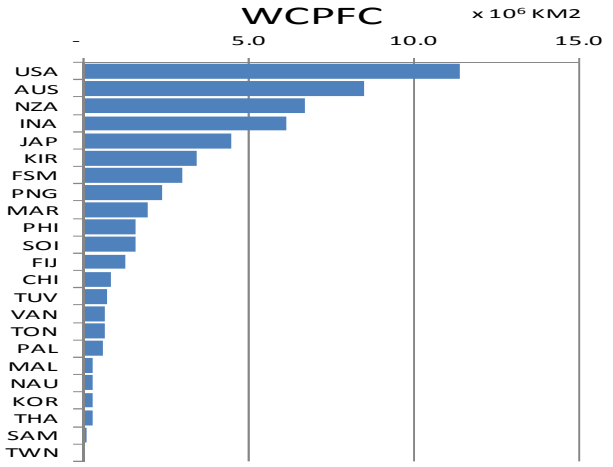



Fig. 1 EEZ Area WCPFC [3]

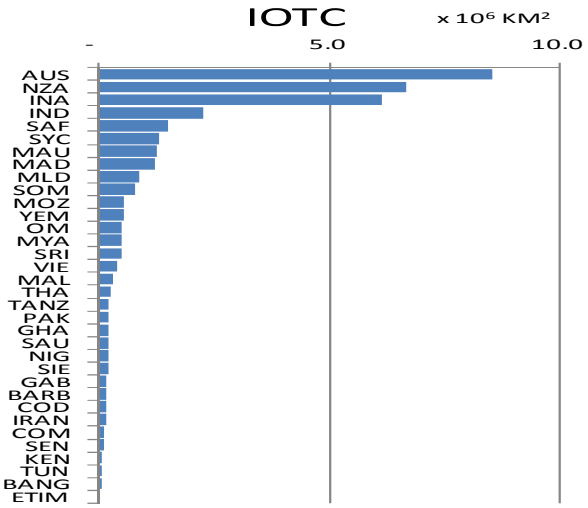



Fig. 2 EEZ Area IOTC [3]

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Indonesia has the fourth largest EEZ in the Western Central Pacific Fisheries Commission (WCPFC) and the third largest EEZ in the Indonesian Ocean Tuna Comission (IOTC). According to UNCLOS 1982, Indonesia has sovereign rights in its EEZ regarding the exploitation, conservation and management of fisheries. Fig. 1 and 2 show how large the potential of Indonesian fisheries.

Indonesia's fisheries potential has been acknowledged by the world. FAO (2009) stated that Indonesia is one of the tenth highest producers of fishery products in the world. Based on BPS (Statistics Indonesia data), the national fisheries production in 2011 reached 5.714 million tons, which 93.55% came from marine fisheries and 6.45% from open waters [4].

In terms of conservation, Indonesia has implemented a various of measures in order to control the exploitation of fishery resources. The measures are intended for realization of sustainable exploitation and conservation.

Indonesian territory consist of two third of the Indonesian waters , has given enormous benefits for Indonesia, especially fishermen. Fishermen are those whose livelihoods depend on fishing activities (at sea). Article 1 paragraph 11 of Act No.31/2004 about Fisheries gives the definition of fishermen with the term of small fishing. The article defines the small scope fishermen, whose livelihoods depend on fishing to meet their daily needs.

Fishermen are farmers who can harvest without planting, but from time to time fishermen have to accept the reality as the poor. This reality is a paradox about fishermen with their status as citizen of a maritime nation [5].

There are many factors caused the poverty of fishermen. Such factors includes the fluctuations of fishing seasons, limited human resources, limited capital and access, fish trading network which exploit fishermen as a producer, as well as the negative impact of fisheries modernization that encourage excessive depletion of marine resources [6].

## II. Cold Storage Program

To improve the economic level of fishermen requires efforts in developing fisheries business unit. One of them is a facility that able to strengthen the depletion of fish stocks and anticipating supply due to a number of factors such as extreme weather. The stocks continuity is required for consumption and fishery processing industry [7].

The development efforts by improving the quality of products that are marketed in the regional and international levels certainly need the support of the existence of various fishery facilities (infrastructure to superstructure), one of which is cold storage facilities.

TABLE I
Ocean Fishing and Nusantara Fishery Port Characteristic

| No | Ports Criteria | Ocean Fishing Ports | Nusantara Fishery Ports |
|---|---|---|---|
| 1 | Fishing Boat Operational area | Territorial Waters, ZEE and International waters. | ZEE and territorial water. |
| 2 | Dock Facility/Ship dock | >60 GT | 30-60 GT |
| 3 | Dock length and Pool Depht | >300 m and >3 m | 150-300 m and >3 m |
| 4 | Capacity | >6000 GT (equivalent to 100 vessels 60 GT) | >2250 GT (equivalent to 75 vssels 30 GT) |
| 5 | The volume of fish landed | 60 ton/day in average | 30 ton/day in average |
| 6 | Export | Yes | Yes |
| 7 | Port Area | >30 Ha | 15-30 Ha |
| 8 | Quality management facility for fishery products | Available | Available / Not Available |
| 9 | Lay Out (zoning) of fishery industry | Available | Available |
| 10 | Number of Ports | 6 ports | 14 ports |
| 11 | Ports with cold storage facility | 2 ports | 4 ports |

Cold storage is expected to serve as a central reservoir for fisheries production, which will be marketed nationally and internationally. Cold storage as an appropriate technology, also serves as a mean of processing and preserving fishery production especially in the freezing process, thus increasing the economic value added that can be enjoyed by the fish farm. By the enourmous numbers of the fish stocks and enhancement the durability of the fish, cold storage indirectly acts as prices stabilizer for fishery commodity.

TABLE II
Beach Fishery Ports and Fish Landing Bases Characteristic

| No | Ports Criteria | Beach Fishery Ports | Fish Landing Bases |
|---|---|---|---|
| 1 | Fishing Boat Operational area | Internal water, archipelagic water, territorial water, ZEE. | Internal water and archipelagic water |
| 2 | Dock Facility/Ship dock | 10-30 GT | 3-10 GT |
| 3 | Dock length and Pool Depht | 100-150 m and >2 m | 50-100 m and >2 m |
| 4 | Capacity | >300 GT (equivalent to 30 vessels 10 GT) | >60 GT (equivalent to 20 vessels 3 GT) |
| 5 | The volume of fish landed | - | - |
| 6 | Export | No | No |
| 7 | Port Area | 5-15 Ha | 2-5 Ha |
| 8 | Quality management facility for fishery products | Not Available | Not Available |
| 9 | Lay Out (zoning) of fishery industry | Available | Not Available |
| 10 | Number of Ports | 27 ports | 9 ports |
| 11 | Ports with cold storage facility | 2 ports | - |

Based on data of Ministry of Marine Affairs and Fisheries (MMAF) as per July 2013, there are only 2 (two) Ocean Fishing Ports have cold storage facilities out of total 6 (six)

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Ocean Fishing Ports in Indonesia. They are Belawan Port with 1.7m$^2$ cold storage and Jakarta Port with 2.514m$^2$ cold storage.

For National Fishery Ports, only 4 (four) ports have cold storage facilities out of the total 14 (fourteen) National Fishery Ports in Indonesia. They are Ambon port with 15m2 cold storage, Kejawanan port with 18m2, Sibolga port with 4.688m2 and Tanjung Pandan ports with 10.1m2 cold storage [8].

Given the many benefits of cold storage in the processing of fishery resources, Indonesia Maritime Security Coordinating Board (IMSCB) as one of the maritime institutions for maritime security and safety, has a program to empower the coastal community through encourages the development of cold storage in the middle and lower fishery business unit.

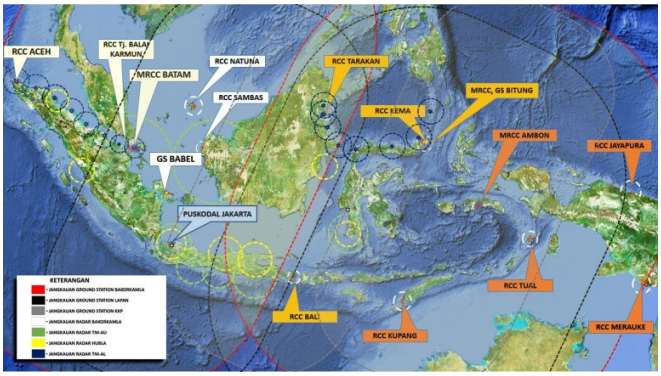



Fig. 3 RADAR coverage by Institutions in Indonesia, RCC and MRCC locations of IMSCB [9]

All RADAR (Radio Detection and Ranging) by institutions in Indonesia cover all land and sea area in Indonesia. With a comprehensive range, both fishery and non-fishery activities can be monitored. Thus the needs of fishermen can be accommodated, thus increasing the level of fishermen's prosperity. The concept is one of IMSCB's program that is empowerment of coastal community. By the increasing of fishermen's prosperity, indirectly Indonesian government will be fully supported for the realization of maritime security and safety.

Ministry of Marine Affairs and Fisheries (MMAF) has launched the National Fish Logistics Systems Program. The Program was initiated in order to optimize the fish distribution from production centers to markets that have not been optimal. Indonesian major fishery production center is located in the east of Indonesia, meanwhile major processing center is located in the west of Indonesia. Realization of the program includes the development of cold storage in National Fishery Ports [10].

## III. Recommendation: Financial Incentive

The development of cold storage facilities which capable to run its maximum role requires synergistic efforts of various parties. As the vast maritime nation, and many maritime institutions concerned, it is not easy to issue new regulations. IMSCB is an institution that coordinate 12 stakeholders in the maritime field, will encourage its stakeholders involved in directing its policy to support the development of cold storages.

IMSCB also would collaborate with the academics, research and development body of the MMAF as well as Indonesian Institute of Sciences in innovating cold storage with low investment costs but keep the high benefits. The technology should be able to meet both the economic aspects and technical aspects. The goal is to create an optimum cold storage. The technology created is expected to meet fishermen needs both on land and on ships. For cold storage on the ship, it should be able to keep the fishery product's quality during their fishing period. The traditional fishermen are usually at sea for 10-12 hours.

The first competent authority is the Ministry of Marine Affairs and Fisheries (MMAF). IMSCB will encourage the financial incentive through MMAF. IMSCB supports existing de-concentration funds that are distributed by the Ministry through local government for the development of the fishing industry, geared to the development of cold storage facilities, both on land and on ships.

The banks as the next leading party are expected to contribute to the development of the fisheries sector, given the constraints in the development of the fishing business is capital. IMSCB encourages banks through Ministry of Finance as member of IMSCB, to simplify lending process and light credit schemes for fishermen, especially for cold storage development. The simplification of administration process, low interest rates and flexible repayment period are expected to boost the productivity of traditional fishermen.

Banks should also realize that by supporting the fishing industry through cold storage program, they also encourage the fisheries production. It means the economic growth of fisheries industry will be increased. It also means indirectly promoting community economic development.

The provision of de-concentration funds and disbursement of bank loans require guarantee of the institution such as fishing cooperatives or Fishermen Business Group. In this part, IMSCB will support the banks with institutional coaching. IMSCB also encourage other competent parties to deliver socialization to fishermen to increase the role of institutions.

## Acknowledgment

The authors convey special thanks to Vice Admiral Bambang Suwarto for his guidance and opportunity to establish the paper.

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