ABSTRACT

In the coastal areas around Indonesia, the local fishers are engaged in various traditional fishing activities, in unregulated manners, without any consensus of sustainability for fisheries resource management. The living standard of local fishers’ households is still at low level, due to the long-term trend of the coastal stock decline. In order to stabilize the fisheries production level and to improve the fishing activities for coastal communities, it is important to formulate a development model of fishing communities for the sustainable resource management through the introduction of appropriate fishing technologies and the organization of local fishers. In Japan, the set-net fishing has been traditionally controlled under the community-based management system; so that, this “community-based set-net” is expected to be effective on the economical empowerment of fishing community and the environmental conservation of coastal fishing ground.

Our project aims to introduce the Japanese-type of set-net fishing system, which effectively maintains the fisheries resources under the local fishers’ consensus in coastal areas, to promote the cooperative works among individual fishers, to reduce the total fishing effort and to develop the optimal fishing ground use in coastal communities. In addition, the formulation of group activities among local fishers will effectively lead the fishing communities to stabilize their fishing incomes and revitalize their social and economic activities, through the improvement of marketing system and fish processing strategy. This project will be carried out at the designated fishing communities in Pallette village, Bone District; however, it can be also expected to formulate an effective development model of coastal community for sustainable fisheries and to disseminate such a “community-based set-net fishing” into other coastal communities around Indonesia.

Implementing organization of this project is composed of
Japanese side:
- Tokyo University of Marine Science and Technology
- IC Net Limited
- Himi City
and Indonesian side:
- Pallette Fishers’ Association
- Department of Fisheries & Marine Affairs in Bone District Gov.
- National Bone Fisheries High School
- Faculty of Marine Science and Fisheries, Hasanuddin University
- National Steering Committee for Set-net, Ministry of Marine Affairs and Fisheries

Technical staff of Department of Fisheries and Marine Affairs, Bone District Government and teaching staff of National Bone Fisheries High School can take the leading roles to supervise the Pallette Fishers’ Association, and to disseminate the community-based development model by the introduction of set-net fishing, through their positive participation of this project’s activities, under the academic cooperation given by the Faculty of Marine Science and Fisheries, Hasanuddin University, and the legislative supervision by the National Steering Committee of Ministry of Marine Affairs and Fisheries. Tokyo University of Marine Science and Technology focuses on education and research in fisheries and maritime fields and has accomplished many technical and research cooperation with universities or institutes in developing countries.
Through this project, the following outcomes are expected to be brought.
1) Local fishers can establish the group activities to introduce the small-scale set-net at a proper fishing ground, for establishing the community-based sustainable fisheries under the consensus of community.
2) Local fishers’ group can manage the set-net fishing operation, through their cooperative works for constructing and maintaining the gear under the co-management manner.
3) Local fishing community can establish the proper marketing channels for set-net catch, fresh or alive, and can take initiatives for the fish processing products, in order to increase its profitability through the value-adding and preservation.
4) The profit of set-net can be managed by the local fisher’s group, through the deposit management to establish the sustainable operation system, with the consideration of the profit sharing in the local community.

KEYWORDS
set-net, community-based, cooperative work, sustainability, fisheries resource management
Empowerment of Coastal Fishing Community in South Sulawesi, through Technology Transfer of Community-based Set-net for Sustainable Fisheries

Set-net of the fishers, by the fishers, and for the fishers

T. Arimoto and O. Baba (Tokyo Univ. of Marine Sci.&Tech) in collaborations with Himi City, IC Net, SEAFDEC/TD and UNHAS, SUPM Neg.Bone

Set-net (Teichi-ami) from Japan, via Thailand, to Bone in South Sulawesi

Set-net of the fishers, by the fishers, and for the fishers

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Set-net (Teichi-ami)
Otoshi-ami

Fish Court
(Surrounding net)

Entrance

Leader Net

50-1000m

Slope net

Trap net

Length
150-200m

Depth 15-25m

Final Trap net

Otoshi-ami

Nov. 2002

World Set-net Summit in Himi City, on Nov. 2002

In Thailand, since 2003, with JICA project on 2005-2007

In Bone, for 2007-2010
Process of Technology Transfer in Thailand

- 2002 Nov. World Set-net Summit in Himi City
- 2003 April SEAFDEC Project started
- 2004 Sep First Technical Support from Himi City & TUMSAT for Gear Installation
  - 2005 April Training Course in Himi City
    - Sep. Gear Installation, Dec. JSPS Seminar
  - 2006 April Training Course in Himi City
    - Sep. Gear Installation
    - Oct. International Seminar
    - Dec. 2nd Unit installation
  - 2007 April Training Course in Himi City
    - Sep. Gear Installation
    - Dec. Evaluation Seminar

First Version Design on 2003

Final version design since 2004
Yearly / Monthly Catch Trends

Operation can be only from October-April, due to Monsoon Season from May.

Daily Catch

Daily Profit (Baht)

y = 25.2 x

R² = 0.9

Average Unit Price (Kg)

y = 25.2 x

R² = 0.9
**Average Daily Catch**

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Profit = Catch Sale - Operation Cost
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**Operation Cost**

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Operation Cost = [No.of Fishers x Daily Salary x Operation Days] + [Ice] + [Fuel/Oil]
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**Catch Sell**

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Catch Sell = Average Daily Catch (kg) \times Unit Price (25 Baht) \times Operation Days
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**Yearly Profit**

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Yearly Profit = Profit \times 365
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**CONFLICTS**

- Over-fishing by Commercial Fisheries
- Community-based Co-Management by Coastal Fishers group
- Unregulated and intensive small-scale Coastal Fisheries

**Needs for Resource Conservation & Coastal Management**

- Processing & Marketing Initiatives
- Technical Development through linkages with Research Institute & Education/Training Centers
- Technology Transfer of Japanese-type Set-net
- Monitoring of Management & Self-development

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**2007 April Training Course both for Thailand and Indonesia**

- Model Promosi Proyek sebagai Perluasan teknologi
- Evaluasi pengelolaan & Pengembangan secara Mandiri
- Teknologi Transfer of SET NET (Japanese-type) at Pallette Waters, Bone Bay-INDONESIA

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**Diagram 1:**

- Catch vs. Operation Cost Graph
- Line chart showing the relationship between average daily catch and yearly profit.

**Diagram 2:**

- Flowchart illustrating the process of technology transfer and management strategies.

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**Diagram 3:**

- Banner promoting the Rayong Set-Net Fishing Group.
Why in Bone?

- Fisheries High School can supply the technical supports and space/facilities
- Graduates got the Training Course on Fishing Technology in Japan.
- Every year, 3 Ex-Trainees on 3-years Set-net course will return back to Bone.
- Both Local Government and UNHAS is willing to support the Project.
- Less conflicts in local community, due to the intensive activities on sea weed farming.

Needs of Pre-Survey

- Fishing Ground
  - Depth Contour, Current Speed / Direction
  - Fish Seasonal Migration
- Fishing Gear / Boat Designing
- Setting Site identification
- Socio-Economics
  - Fishing activities and Income Analysis
  - Marketing/Processing Analysis
Data collection for Temperature, Depth, Speed & Current Direction by: TD & EM measurement

Fishermen Activity in Pallette Waters, Bone Bay - INDONESIA

TEMPAT PENDARATAN IKAN PELABUHAN BAJOE, KAB. BONE

Sea Weed Cultures in Pallette Area
Needs for Precautionary Consideration

- What is Super Goal for Community Empowerment?
- What is the Success of ODA Project?
  - End of Project means End of Success…?
- Optimum level of Technology and Materials
- Initial cost optimization for Local fish price
- Negative Impact Analysis
- Special aspects for set-net tech.transfer
  - Preventing the conflicts, for fishing ground occupation
  - Any chance for higher price to fresh and live fish marketing
  - Big variation of catch amount….needs of marketing and processing for accidental big-catch cases

Needs for Technology Transfer of Set-net

- Social Acceptance and Fishing Licensing
- Acceptance and Willingness of Local Fishers
- Capability on Net works and Rope works
- Capability of Leadership and Team Working for Group Operation & Cost-Profit Management
- Technical Supports from Set-net Experts/Ex-Trainees
- Scientific Supports from Universities/Research Centers
- Extension Services from Local Government

Steps for Technology Transfer

- Fishing Ground Survey
- Gear Construction
- Gear Installation
- Fishing Operation
- Daily Gear Maintenance / Cleaning
- Periodical Gear Cleaning / Changing
- Marketing / Processing
- Financing for Profit Sharing & Money saving
Simulation of Profit Analysis in Bone Set-net 2007–2010

Profit = Catch Sale – Operation Cost

Minimum Required Profit as 50 Juta Rp.

→ 5 years Saving for New 1 Unit

Minimum Required Profit as 50 Juta Rp.

Fish price: 10000 Rp/Kg

Fish price: 10000 Rp/Kg

Fish price: 5000 Rp/Kg

Fish price: 5000 Rp/Kg

Daily Average Catch (Kg)

Best Pilot Model Approach for Set-net Technology Transfer

- Concentrated On-site Efforts
- Operational Cost Analysis
- Profit Analysis with Catch/Marketing
- Self- or Governmental-Regulation System
- Extension Activities in the region and to other regions
- Comparative study among regions with Profit analysis and Impact Analysis

Risk Analysis and Possible Solution

Gear Installation
- Gear Damage
- Re-Installation

Daily Operation
- Whole through year?
- Profit analysis for seasonal operation

Catch
- Not enough Catch
- Adjustment for location / gear design
- Processing Difficulties
- Direction Adjustment

Marketing
- Marketing Difficulties
- Direction Adjustment

Profit
- Not Profitable
- Adjustment of Profit Sharing System
- Less Benefit
- Adjustment of Profit Sharing System

Community Benefit

Research Needs for Monitoring and Evaluation

- Catch Trends by Current/Temperature
- Seasonal Trends of Catch Species/Sizes
- Current Speed/Direction and Gear Geometry
- Daily Catch Analysis
- Catch and Marketing according to Species/Size
- Profit Sharing System and Analysis, including Community Benefit
- Regulation System for minimizing conflicts

SET-NET, An Eco-Friendly Fishing Gear for the Future

Sunrise or Sunset…?