

*Project Terminal Report for*

# ENHANCING COASTAL COMMUNITY RESILIENCE FOR SUSTAINABLE LIVELIHOOD AND COASTAL RESOURCE MANAGEMENT

Brunei | Indonesia | Malaysia



Project Terminal Report for Enhancing Coastal Community Resilience  
for Sustainable Livelihood and Coastal Resource Management

By:

Mazalina Ali

Raja Bidin Raja Hassan

Abdul Razak Latun

Annie Nunis Billy

Ahmad Firdaus Siregar Abdullah

Adam Luke Pugas

Abdul Aziz Yusof

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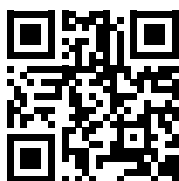
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# ENHANCING COASTAL COMMUNITY RESILIENCE FOR SUSTAINABLE LIVELIHOOD AND COASTAL RESOURCES MANAGEMENT

## INTRODUCTION

The Southeast Asian region is home to the largest Muslim population in the world (estimated to be more than 240,000,000), or 42% of the region's total population and about 25% of the total world Muslim population estimated at 1.8 billion. Majorities Muslim population are in Brunei Darussalam, Indonesia and Malaysia as well as in Pattani, Thailand and parts of Mindanao in the Philippines with Indonesia having the world's biggest Muslim population (88% of its total population). Most of the Muslim communities are in coastal areas with fishing as an ethnic occupation.

The coastal areas in the Southeast Asia provide livelihood to the coastal dwellers, where hundred thousand of coastal families are directly engaged in fishing activities and coastal aquaculture including related activities such as fish processing, marketing, boat building, net making, etc. The fishers over-dependence on the coastal fishery resources led to over-exploitation and degradation of the resources. Coastal communities are highly affected by the degradation of fishery resources, habitat and ecosystem, socio-economic conditions, and climate change. These make them more vulnerable, as well as make it more difficult to improve livelihood and fisheries management.

The conflicts resulted due to multiple use of resources threatened the livelihood of coastal fishing communities. Previously viewed as an inexhaustible and cheap source of animal protein for human consumption, there is growing concerns to increase protection and conservation of the coastal resources for sustainable livelihoods and food security of the coastal dwellers. Fishing related coastal communities often demonstrate high levels of vulnerability, with many small-scale fishing families are increasingly caught in poverty trap. This situation could be reasoned from a variety of factors including dependence on dwindling coastal resources, unpredictable nature of fishing, high occupational risk, sensitivity to macro-economic changes, exposure to natural disasters, high competition from multi-resource users; as well as social, economic and political marginalization. Impacts of climate change also add complexity to the problems that they are encountering.

Hence, community resilience needs to be enhanced by strengthening community or fisheries organizations and providing alternative livelihoods. For these reasons, ASEAN Member Countries should establish foundations for coastal communities through policies, institutions and good governance to ensure effective co-management in local government and the communities.

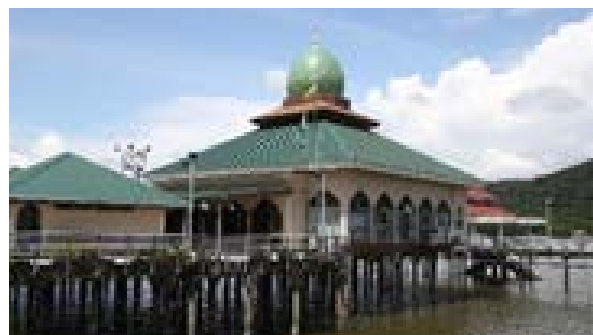


Figure 1: Mosque in Sg. Bunga Community, Brunei Darussalam

In Brunei Darussalam, the Brunei Bay and in-shore areas supports more than 50% of the employment and livelihoods among

artisanal fishermen and coastal fishing communities. Climate change and the downward landing trend of the coastal fisheries in Brunei Darussalam have been observed to have some impacts on the income derived from fisheries activities amongst the coastal fisheries communities.



Figure 2: Threatened of natural resources in Takalar District, Indonesia

The coastal communities in the eastern part of Indonesia is mostly involved in mariculture and seaweed farming as their main economic activities. South Sulawesi Province is the largest producer of aquaculture products, especially seaweed (wet/dry) in Indonesia. Many pilot projects with objective to provide alternative livelihood have been implemented in these areas and need to be improved. However, the increasing intensity of exploitation activity have threatened the preservation of natural resources. At the same time, the coastal

communities also face social-economic risks, such as poverty, social discrepancy, and lack of access to capital, technology and market.

Coastal communities in Terengganu, Malaysia consist of older generation (71%) with primary level education and only 4.75% owned real estates. Based on previous survey, most of the coastal fishers received income less than USD400 per month. Since 1970s, the federal government have embarked on several programs to eradicate poverty among fishers, especially in coastal areas and fishing communities. Over a 25-year period (1970–1995), the poverty level among fishers were reduced by 85 percent. However, the need to enhance existing and new programs are crucial to reverse the impact of climate change and resources depletion.

Enhancing coastal community resilience for sustainable livelihood and coastal resources management involved various cross cutting issues; require strong commitment and coordination from the national government, organizations and local institutions. This project is funded by Islamic Development Bank (IDB) aims to improve the socio-economic status of the coastal community including the community fisheries organization through capacity building programs. The coastal resources should be sustainably utilised by fishers and coastal communities as source of food security and livelihoods. The target beneficiaries of this project are the coastal Muslim communities in the IDB countries, namely Brunei Darussalam, Indonesia and Malaysia.

The Technical Assistance Grant Agreement for the “Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management” project was signed on 18 November 2015 between SEAFDEC and IDB with SEAFDEC/MFRDMD as the Lead Department. The project was started with an appointment of focal point and working teams for Brunei Darussalam, Indonesia and Malaysia, respectively.



Figure 3: Technical Assistance Grant Agreement



## Objectives of the Project

The overall goal of the project is to improve the socio-economic status of the coastal dwellers and to promote sustainable utilization and management of the coastal resources.

The specific objectives of the project are:

- To strengthen community fisheries associations
- To enhance the capacity and capability of fishers and women in the fishing community to improve their social well-being and contribute to poverty alleviation; and
- To build the capacity of the fishing communities to engage in sustainable livelihoods and improved coastal resource management.

## Focal Point and Working Teams

The list of focal point and working team are as follows:

*Table 1 : The list of focal point and working teams for Brunei Darussalam, Indonesia and Malaysia*

Position	Brunei Darussalam	Indonesia	Malaysia
Focal Point	Ms. Noorizan Haji Abd Karim	Dr. Zahri Nasution	Mr. Haji Mohd Sufian Haji Sulaiman
Working Team	Ms Hajah Rosinah Haji Yussof	Dr. Achmad Zamroni	Ms. Norlizawati Ibrahim
	Ms Hajah Hamidah Haji Ladis	Ms. Tenny Aprilliani	Mr. Mohd. Ridzuan Mohamad Mokhtar
	Mr Abdul Azim Jambol	Ms. Nendah Kurniasari	Mr. Abdul Rahman Kasim
	Mr Awang Abdul Hazman Awang Abdul Razak	Ms. Risna Yusuf	Mr. Rosdi Ambak
Community Leader	Mr. Haji Awang Zaini Haji Salleh	Mr. Muhammad Kasim	Mr. Musa Mamat

## Project Sites

The focal point and their working teams for every participating country have selected the project site for implementation of this project. The location of the project sites for Brunei Darussalam, Indonesia and Malaysia are as follows:

Table 2: List of Project Sites

Country	Project Sites
Brunei Darussalam	Kg. Sungai Bunga and Kg. Serasa, Brunei Muara District.
Indonesia	Laikang Village, Takalar District, South Sulawesi Province.
Malaysia	Tok Jembal Village, Kuala Nerus District, Peninsular Malaysia.

In Brunei Darussalam, Kampong Sungai Bunga is administrated by a Village Consultative Council (Majlis Perundingan Kampong, MPK) from 2013 with Mr. Haji Awang Zaini Haji Salleh as the community leader. The population of this village comprised of 800 people with 20 of them are members of MPK. The main economic activities are production of seafood crackers e.g. prawn and fish crackers, dried fish, liking and homestay.



Figure 4: Project site in Kg. Sungai Bunga, Brunei Darussalam

In Indonesia, the study was conducted in the eastern part of Indonesia, namely Takalar District in the South Sulawesi Province. South Sulawesi Province has abundant of natural resources and the region itself is the largest producer of seaweed (wet/dry) in Indonesia. However, the density of seaweed plots and unclear separation of farm ownerships led to conflicts among interested parties.



Figure 5: Project site in Takalar district, Indonesia

In Malaysia, Kuala Nerus District in Terengganu has been selected as study area. Kuala Nerus District generally covers the northern part of the Sungai Nerus up to the boundary of Setiu District with a total area of 39,752.13 hectares. It involves Mukim Kuala Nerus, Mukim Batu Rakit, Mukim Pulau Redang and Mukim Paloh. This district has an estimated population of 200,000 people and there are 105 Village Safety and Development Committees (Jawatankuasa Keselamatan dan Kemajuan Kampung, JKKK) in the Kuala Nerus district administration while there are 11 private jetties. According to the Terengganu State Fisheries Department, there are 303 registered fishing vessels with 959 fishermen are involved in fishing activities.

The coastal community in Tok Jembal, Kuala Nerus District is chosen as project site due to the main source of income is from fishing. Some of Tok Jembal's fishermen sell their fish near the beach. The number of registered fishermen in Tok Jembal is 114 with 57 registered fishing vessels. The main fishing gears used are hook and lines, driftnets, traps and squid jiggers. Kampung Tok Jembal is undergoing physical and structural development that is changing the coastlines and impacting the coastal habitat and resources. The fisheries community enthusiastically participated in this IDB program to enhance their capacity for sustainable livelihood.



Figure 6: Project site in Tok Jembal community, Terengganu, Malaysia

## MAIN PROJECT ACTIVITIES

### Inception Meeting

The Inception Meeting or First Regional Technical Consultation (RTC) on Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management was conducted at Furama Hotel Kuala Lumpur, Malaysia from 16-19 May 2016. The First RTC was attended by four (4) participants from Brunei Darussalam, Indonesia and Malaysia respectively; a representative from the Islamic Development Bank (IDB), Kuala Lumpur; one (1) resource person from Universiti Putra Malaysia (UPM); one (1) observer from German International Cooperation; and Chief, Special Departmental Coordinator (SDC), project coordinator, and officials from SEAFDEC/MFRDMD.



*Figure 7: The Chief of SEAFDEC/MFRDMD was officially opened the First RTC*

The First RTC was officially opened by the Chief of SEAFDEC/MFRDMD, Mr Ahmad Adnan Nuruddin. Objectives of this RTC were: (a) To discuss the planning of the project and selection of the community sites in Brunei Darussalam, Indonesia and Malaysia, and (b) To harmonize the draft questionnaire for needs assessment survey of selected coastal communities in Brunei Darussalam, Indonesia and Malaysia. A video conference with Mr. Mohammed Shahid Parwez

from IDB Headquarter in Jeddah was also conducted on the second day of the RTC at the IDB office Kuala Lumpur, Malaysia.

During the RTC, all focal point was presented their country reports and selection for the coastal communities in Brunei Darussalam, Indonesia and Malaysia. After that, discussion in detail on the draft of questionnaire for need assessment survey was conducted to finalize and harmonize the questionnaire. The harmonize of questionnaire for needs assessment survey shown in the [Annex 1](#).



**THE REGIONAL TECHNICAL CONSULTATION ON  
ENHANCING COASTAL COMMUNITY RESILIENCE FOR SUSTAINABLE  
LIVELIHOOD AND COASTAL RESOURCES MANAGEMENT  
16 - 19 MAY 2016 , KUALA LUMPUR, MALAYSIA**



Figure 8: The Regional Technical Consultation on Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management, Kuala Lumpur, Malaysia, 16-19 May 2016

## Community Surveys and Needs Assessment

The main objective of this activity is to collect baseline information of the community on demographic, economic and other indicators in order to formulate appropriate action plan and activities for sustainable management of coastal resources and livelihoods. The harmonization of the needs assessment questionnaires was discussed in detail during the First RTC. During the First RTC, all participants agreed that all participating countries will translate the questionnaires into their local dialect for easier understanding. The feedbacks from needs assessment surveys in Brunei Darussalam, Indonesia and Malaysia were analysed by their working teams and focal points. Based on the result of surveys, each participating country identified and prioritized the capacity building activities for technology transfer and human resource development.

### I. Community survey and needs assessments in Brunei Darussalam

The community survey on demographic and capacity building needs of the coastal communities in Brunei Darussalam was conducted from 25 July until 1 August 2016 at Kg. Sungai Bunga and Kg. Serasa, Muara District, Brunei Darussalam. The survey was conducted by focal person and four (4) officials from the Department of Fisheries, Brunei Darussalam. A total of 160 respondents from both communities participated in the surveys. Later, two (2) temporary staffs were hired from 10 – 17 September 2016 to key in the data and information from the surveys. After that, the focal point, working teams and temporary staffs analysed the feedbacks and prepare a draft report for the survey. The capacity building needs of the communities were identified and prioritized for technology transfer and human resource development.

### II. Community survey and needs assessments in Indonesia

The community survey on demographic and capacity building needs of the coastal communities in Indonesia was conducted in July 2016. Respondents comprised of fishermen/seaweed farmers, fishermen's wives, seaweed traders/collectors, seaweed exporters, seaweed processing companies, and local fishery officers. Staffs of the Marine and Fishery Office of South Sulawesi Province, the village head, and selected local Non-Governmental Organizations (NGOs) were also interviewed as key informants.

Interviews were conducted using in-depth and face-to-face interviews. Additionally, e-mail, phone, and online networks were used to obtain more detailed information. Group discussions were also conducted to explore the perceptions of fishermen. Feedbacks were collected from 42 fishermen/seaweed farmers; 20 respondents from local Fishery Officers; 15 seaweed collectors, traders, exporters, processing companies, coastal women/fishermen's wives and representatives of 11 relevant NGOs.

The result shows that coastal community livelihood in Takalar District include fishing, aquaculture and processing of the fishery products. These activities are supported by the geographical conditions and the availability of natural resources in the area. Fishing activities were carried out by fishermen using boats less than <5 GT and traditional fishing gears such as gillnets and fishing rods. Catches were sold as fresh products for local consumption and small portions were processed as fishballs, crab meat and fish crackers. There is a growing trend of aquaculture practices for seaweed commodities

particularly *Eucheuma cottonii* and *Eucheuma spinosum*, while for *Gracilaria* sp. and *Caulerva* sp. are just beginning to develop. Fresh seaweeds are sold in dry form with 40-45% moisture content to processing and exporter companies. Besides being sold in dried form, coastal communities also begin to produce seaweed products such as seaweed sticks, taffy and iced seaweed. However, these businesses run by coastal communities are still on a small scale.

Various problems are faced by coastal communities in running the businesses including limited skills in both production and marketing processes, limited capital and business infrastructure, low technology and tools, as well as limited information and access to markets. Efforts are being made to address all these problems such as capacity building to both trainers and coastal communities. Transfer of technology and training activities are expected to increase knowledge and skills of coastal communities to improve their incomes and alternative livelihood.

Figure 9: Need assessment surveys conducted in Indonesia



### III. Community survey and needs assessments in Malaysia

The community survey on demographic and capacity building needs of the coastal communities in Malaysia were conducted in district of Kuala Nerus and concentrated in the communities of Seberang Takir area i.e. Telaga Batin, Seberang Takir, Mengabang Telipot, Kampung Batin, Teluk Ketapang and Tok Jembal. A total of 207 respondents were interviewed in which 16 were female and 191 were male. The number of respondents involved in the community survey are as follows:

Table 3: The number of respondent involved in the need assessment survey, Malaysia

Most of the respondents were between 31-50 years old (79) and married (167). The

No.	Community	Respondent
1.	Telaga Batin, Seberang Takir, Kuala Nerus	23
2.	Seberang Takir, Kuala Nerus	40
3.	Mengabang Telipot, Batu Rakit, Kuala Nerus	53
4.	Kampung Batin, Seberang Takir, Kuala Nerus	41
5.	Tok Jembal, Seberang Takir, Kuala Nerus	44
6.	Teluk Ketapang, Seberang Takir	6
	<b>TOTAL</b>	<b>207</b>

education level is secondary school (122 person) and 10 persons are not attending school or not finishing their studies. Majority of the respondents are fishermen (145 person), fish processing (4 person), aquaculture (3 person) and others (55 person). From 145 fishermen, 57.2% fishermen are owners of fishing vessels, 37.2% are crews and the rest are skippers (5.6%). Most fishermen have at least 10 years of fishing experience. The main fishing gears used are hook and lines, drift nets and traps with average fishing trips are 11-24 trips per month and average monthly incomes around USD150-250 per month.



Figure 10: Need assessment surveys conducted in Malaysia

## Capacity Building of Fisheries Associations and Coastal Communities on Sustainable Livelihoods and Resource Management

This activity is intended to strengthen the fishermen associations / institutions and fisheries community to engage in sustainable livelihoods and coastal resources management. The community fisheries associations will be capacitated to take a leading role in promoting community food security, developing job opportunities and engaging in environment-friendly coastal management practices. The objectives of these activities are (a) to protect and enhance the existing fisheries related livelihoods and (b) to promote alternative opportunities outside the fisheries sector. There were more than 23 activities were conducted in participating countries involving more than 756 participants.

### I. Capacity building activities in Brunei Darussalam

There were more than ten (10) capacity building activities that have been successfully conducted throughout the project involving nearly 290 participants comprising of fishermen, seafood processors, head of communities / villages and DOF officials. The capacity building activities conducted were as follows:



**b. Basic maintenance training Yamaha outboard motor**

The objective of this training was (a) To provide basic knowledge on boat engine maintenance and hands-on experience, (b) Strengthen self-confidence in repairing boat engine and (c) Saving in engine maintenance cost. The training was conducted on 9-11 January 2017 at Department of Fisheries, Brunei Darussalam by trainer from Hai Hwang Trading company. A total of 40 participants (32 fishermen including head of community/village and 8 DOF personnel) were participated in this practical and hands-on training in basic maintenance of boat engine.

There was question and answer (Q & A) session at the end of the training. The trainees were actively participated in the session and thus the interaction between the trainer and trainees was very encouraging. Practical and hands-on training gave the participants more experience and knowledge in basic maintenance. Certificates were given to the trainees at the end of the training.

Good response from the participants indicated that they were very interested in this training. Several participants requested for more trainings or advance maintenance course such as maintenance of boat.



*Figure 11: Training on basic maintenance training Yamaha outboard motor in Brunei Darussalam*

**c. Training restoration/ maintenance of fishing nets**

The objectives of this training were (a) To provide basic knowledge net mending and repair and (b) Cost and time Saving. The training was conducted on 16-17 January 2017 at Department of Fisheries, Brunei Darussalam by the local trainer - Mohd Bin Mail. A total of 15 participants (12 DOF personnel and 3 fishermen) were participating in this training. The low number of fishermen due to most of the fishermen were unable to attend this training as it was fishing season. The participants were grateful to be given this opportunity to learn the restoration of nets.



*Figure 12: Training on restoration/ maintenance of fishing nets in Brunei Darussalam*

#### **d. Food processing technical training on surimi-based products**

The objective of this training was to provide basic knowledge and skills of processing technology and quality control to the seafood processing companies in the production of surimi-based products. The food processing technical training on surimi-based products was conducted on 23-27 January 2017 at Fish Processing Building, Department of Fisheries, Brunei Darussalam by trainers from Mscape Management Sdn Bhd, Malaysia.

There were 38 participants (6 DOF personnel and 32 seafood processors including head of communities/villages) in this training. The participants learned new technology and financial analysis in business plan during this training. The participants managed to produce high quality seafood products during the training. The participants also actively participated in the fish processing activities during practical works and lectures. There were good responses from the participants which indicated that they were very interested in this training. Some requested for more practices and trainings in financial analysis so that they can apply it to their business activities.



*Figure 13: Training on food processing technical training on surimi based product in Brunei Darussalam*

#### **e. Training of basic food hygiene - good manufacturing practices of fishery products at Small and Medium Enterprises (SME)**

The objectives of this training were (a) to enhance the understanding and gaining experience in designing and developing the basic food hygiene and (b) exercising plant assessment. The training was conducted on 17-20 April 2017 at Fish Processing Building, Department of Fisheries, Brunei Darussalam by a trainer from Indonesia; Mrs Novia Priyana. There were 49 participants involved in this training.

The training was conducted through (a) case study and group discussion for good exposure to the participants, (b) enhancing awareness on the importance of producing safe and good fisheries products, (c) understanding the requirement of product standards and regulations and (d) knowledge on the sanitation control. All participants have received basic knowledge on food hygiene which covers; good infrastructures, good manufacturing practices, sanitation control, food additives, traceability and labelling procedures.

There were good responses from the participants which indicated that they were very interested in this training. The participants will use the knowledge to review their infrastructure conditions and improving production processes to achieve the standards and comply to national regulations. All participants also agreed to plan and maintain sanitation control of their infrastructures.



Figure 14: Training on basic food hygiene – good manufacturing practices of fishery products at small medium enterprises in Brunei Darussalam

#### f. Book keeping

The objectives of this training were (a) to acquire the knowledge in book keeping and (b) to plan and manage their finances. The training was conducted on 4-7 December 2017 at Department of Fisheries, Brunei Darussalam by the local trainer; Puan Dr. Hj Rose Abdullah from UNISSA.

There were 50 participants trained in book keeping for daily businesses such as principles of accounting, journal-ledger, trial balance, profit and loss statement and balance sheet. All participants were able to practice book keeping and used the knowledge to review their business financial.

#### g. Mud crab culture in cages training

The objective of this training was to analyze the suitability of sites throughout Brunei river for livestock breeding. The mud crab culture training was conducted on 24-25 April 2018 at Brunei Muara River, Brunei Darussalam by specialist from Syarikat PRIME A&A PTE LTD Singapore; Mr Steven Wong. Four (4) persons were participating in this training. During this training, participants were able to perform and analyze suitable sites for mud crab culture in cages using relevant instruments for water temperature, pH, Iron (Fe) and water salinity. Participants also increasing their awareness on the importance of suitable sites for promoting and enhancing the socio-economic status of coastal communities.

During the training, the trainer found that all pre-selected sites were unsuitable for mud crab culture and all participants needed to expand the feasibility study in other marine cage locations. However, the pre-selected sites could be used as alternative for other species, especially during uncertain weather changes during the monsoon season.



#### **h. Seafood processing training**

The objectives of this training were (a) to learn the production of local seafood products such as modern and traditional fish 'sata' and snow fish and (b) the trained participants will become trainers to train their respective communities. The training was conducted in collaboration with Terengganu State Fisheries Department on 13-15 May 2018 at Pusat Pengembangan Teknologi Perikanan Seberang Takir Kuala Nerus, Terengganu. All trainers were from Terengganu State Fisheries Department; En Mamat bin Abd Rahman, Raja Noor Syuhada binti Raja Awang and Nor Azlinda binti Bakar. There were 14 participants (2 DOF Officers) involved in this training. During the training, the participants were trained on the importance of producing safe and good fisheries products. All trained participants were able to learn theory and practical of seafood production namely; fish ball, fish cake, fish nugget, 'keropok lekor', modern and traditional fish 'sata' and snow fish.

There were good responses from the participants which indicated that they were very interested to learn the new seafood production methods. All trained participants were planned to teach the knowledge to their respective communities. They also planned to produced new seafood products locally for sell.



*Figure 16: Training on seafood processing in Brunei Darussalam*

#### **i. Capacity development training on seafood processing**

There were three (3) series training program of Capacity Development Training on Seafood Processing for community conducted by the trained participants from the seafood processing training that was conducted at Terengganu, Malaysia. The trainings were conducted at three (3) different places i.e. (i) 4-5 July 2018 at Pusat Aktiviti Pelancong MPK Sungai Bunga by MPK Sg Bunga trained members, (ii) 6 and 8 July 2018 at Secondary school hall, Tutong ditrict by MPK Penabai Kuala Tutong and Sg Teraban trained members and (iii) 11-12 July 2018 at Department of Fisheries Brunei Darussalam by MPK Masjid Lama, Pekan Muara, Sabun and Pelumpong trained members.



*Figure 17: First training series on seafood processing in Brunei Darussalam*

The objective of this training was to provide skills to the coastal community on the production of various seafood products such as fish ball, fish cake, fish nugget, 'keropok lekor'. During this training, new seafood products such as modern and traditional fish 'sata' and snow fish were introduced to communities in Brunei Darussalam.



Figure 18: Second training series on seafood processing in Brunei Darussalam

There were 85 participants (2 DOF officers) involved in this training. The trained participants that previously trained in Terengganu, Malaysia were able to become trainers for their own respective communities. The participants involved gave encouraging responses and will be producing all those seafood products locally for sell to generate extra earnings and improve their livelihood.



Figure 19: Third training series on seafood processing in Brunei Darussalam

## X. Capacity building activities in Indonesia

The development of coastal communities must be executed in integration with other activities that will improve community security and managing coastal resources sustainably. The capacity building activities conducted are as follows:

### a. Coordination with local government and key persons in project sites

The Indonesia focal point and working team had prepared the matrix of Plan of Action (POA) for capacity building of the fishery associations and coastal communities in Takalar district, Indonesia. After that, on-site coordination and harmonization of the draft of POA matrix with local government (Dinas Kelautan dan Perikanan) and local leaders was held on 3-6 November, 2016 at Takalar district, South Sulawesi, Indonesia. It was a little bit complicated to coordinate the activities because of the need to harmonize between seaweed farmers, local government as well as the team agendas.

### b. Training on leaderships, advocacy and community development

The objective of the training is to improve the capacity and capability of coastal communities in supporting rural economic development. This was achieved by establishing Village Owned Enterprises (BUMDES). The training was conducted from 19th-20th of December 2016 at Teluk Laikang Meeting Hall, Laikang Village, District of Mangarabombang, Regency of Takalar. The training consisted of (a) SMEs Management and village holding business (BUMDES) Management, (b) Management of

Village Funds and Its Contribution to BUMDES, (c) Technical Guidance for Community Business Groups (Technical, Financial), (d) The Role of PPLH Puntondo in Guiding the Preservation of Coastal Resources in Takalar, (e) Cooperation Opportunities in Utilizing Coastal Resources in the Regency of Takalar, (f) Group Organization Techniques (proposal drafting, network establishment, communication) and (g) Team Building. A total of 46 (forty-six) participants of local key persons, community leaders, group leaders and extension services staffs were involved. The methods used for this training includes lectures, interactive discussion guided by moderators, games and practices guided by facilitators.



Figure 20: Training on leaderships, advocacy and community development in Indonesia

**c. Participatory planning on resource management and conflict management for sustainable livelihood**

The objective of workshop on coastal resource development program was to provide understanding of coastal communities so that there is an integrated unity in performing the development program. The workshop was held on December 21, 2016 at the PKK Hall (Aula Gedung PKK), Takalar District. Approximately, 40 people attended the event as stakeholders which include government representatives, academics and scientists, NGOs, local leaders and group leaders. The training was expected to improve knowledge and skills of coastal communities in planning economic development.

The implementation training about village fund management and contribution to BUMDes has positive response from participants. Participants agreed that topics are applicable and fit to the community needs and the lecturers have good communication skills to stimulate and encourage the participants. This project also encourages the research centre to disseminate technology in aquaculture to coastal communities in Laikang.

**d. Internship for seaweed product processing in central Lombok**

The internship for seaweed product processing was conducted in Bilebante Village, Central Lombok District, West Nusa Tenggara Province, Indonesia from 9 until 16 April, 2017. Three (3) female apprentices were selected, 1 (one) senior processor with long production experience; 1 (one) younger person with good marketing and skills; and 1 (one) very young, highly energetic, well-educated person with a good sense of business management.

The focus of seaweed-based production activities comprises of production, packaging, and marketing. The internship's knowledge relating to business management, starting from business planning to development business, has improved. The apprentice learnt

and practiced the production of 7 seaweed-based processed products. This exceeded the target set by the team, i.e. four (4) products. All seven (7) products that they generated have complied with the quality standards. From the results of internship, it is shown that the three (3) people with different characters have potential to cooperate in establishing the business of processing seaweed products.



Figure 21: Internship for seaweed product processing in central Lombok, Indonesia

**e. The training on seaweed processing for SMEs for fisheries product processing**

The result of The Training on Seaweed Processing for SMEs shows that the training on seaweed product processing attended by the women of Laikang Village, Takalar District, produced a variety of processed seaweed products. The processed product consists of four (4) types of processed products, namely seaweed ice cream, seaweed dodol, seaweed crackers, and sun-dried banana wrapped in seaweed. The training on these processed products can provide additional knowledge and skills of female trainees, in terms of processing products made from raw seaweed. This seaweed product training can encourage participants to develop and market the processed products for enhancing their livelihood.



Figure 22: The training on seaweed processing for SMEs in Indonesia

**f. Training on clamshell for SMEs of fisheries product processing**

The clamshells processing training was conducted on 25-26 April, 2017 at Laikang Village, Takalar District, South Sulawesi Province, Indonesia. The objective of this training was to train the female members of coastal communities about shellfish processing. A total of 20 participants were trained to make handicrafts from clamshells that available on the beach surrounding the communities.

Training methods were divided into two; (i) craft-making skills and (ii) business analysis. There are four (4) types of handicrafts: (i) decorative lights, (ii) tissue boxes, (iii) brooches and (iv) keychains. The stages of shell crafts making include washing

the shells, moulding fibre for lamps and tissue boxes, and attaching the shells. Shell crafts making is expected to generate positive impacts, such as reducing the number of seashells at the beach areas, providing jobs and alternative sources of income for the community, as well as its potential being the icon of Takalar.

The training was facilitated by the expert from P2MKP (Independent Training Center of Marine Fisheries) Bekasi, West Java. The facilities provided were not only for producing crafts but also for handicraft sales which produced by the trainees. The responses to the training were positive with good understanding of the material which resulting in marketable products.



Figure 23: Training on clamshell for SMEs in Indonesia

#### **g. Training of seaweed cultured with verticulture technique in Laikang Village**

Training was provided to Laikang Village coastal community with the aims: (1) to increase knowledge related to seaweed culture, (2) to optimize land used for seaweed culture and (3) to increase community income.

Seaweed cultivation method that have been mastered and implemented by the farmers so far is the longline method. The amount of seaweed production using this method is depending on the amount of land used. With this constraint, new technique is needed. One of the technique is the verticulture method which utilizes the water column for seaweed cultivation.

The training was conducted through theory and practical. During this time, a pilot study was also conducted to compare the production quantities of verticulture method and the longline method.

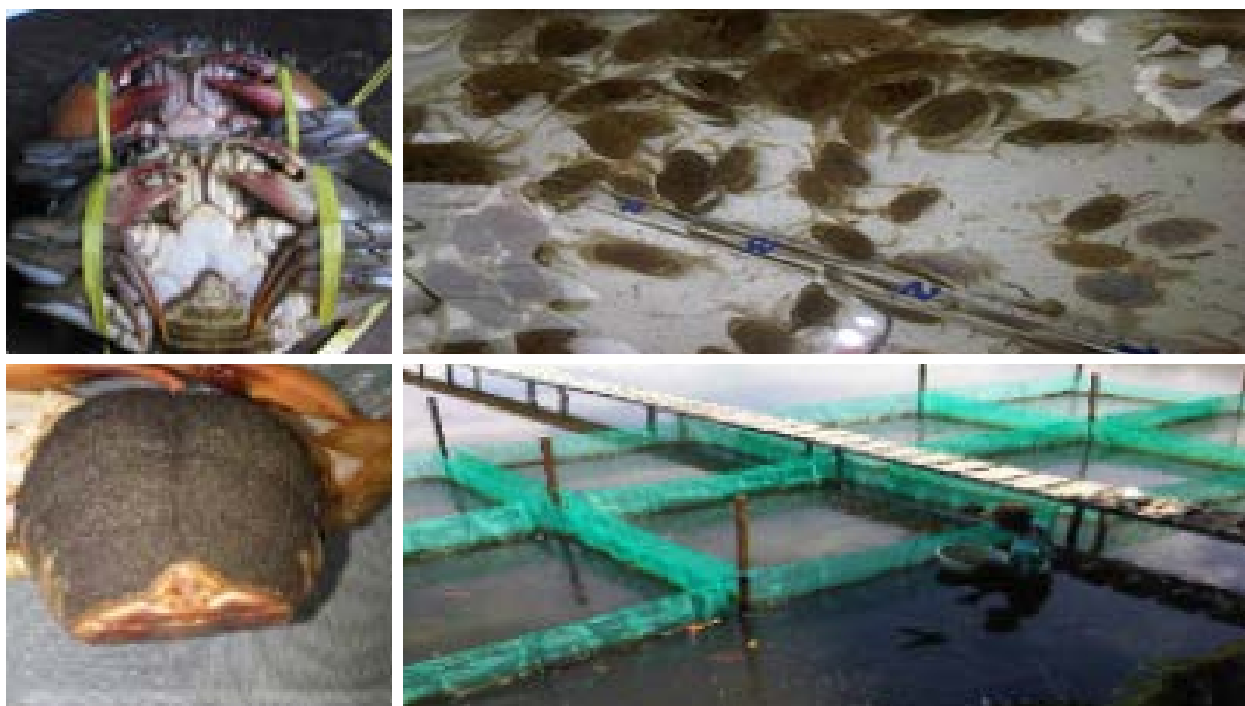


Figure 24: Training of seaweed cultured with verticulture technique in Laikang Village, Indonesia



#### **h. Training of mudcrab cultivation development model**

The training of development model of crab cultivation was facilitated by lead researcher from Research Center for Brackishwater Aquaculture and Fisheries Extension (BRPBAP3), Maros namely Drs. Gunarto. The 25 participants were mostly farmers and some fishermen from Laikang Village with different backgrounds such as age, education, skills and livelihood. Mudcrab (*Scylla serrata*) is one of fishery commodities with the strong potential to be cultivated. The population of mudcrabs in Takalar is shrinking. Therefore, crab hatchery and cultivation are developed to produce a cultivation technology which is effective, efficient and easily adopted by the community.



*Figure 25: Training of mudcrab cultivation development model in Indonesia*

The successful development of this technology is expected to provide an alternative livelihood for the community and eventually reducing poverty. The training of mudcrab development providing information related to cultivation technique of enlargement, spreading, maintenance, harvesting and business analysis.

#### **i. Strategic plan of coastal resource management of Laikang village 2018 - 2028.**

The workshop for coastal resource management of Laikang Village was held on 9 – 13 October, 2017 at Prima Hotel, Makassar, South Sulawesi involving 16 participants. The objective of this workshop was to develop the Strategic Plan of Laikang Village Coastal Resource Management 2018 – 2028. Some of the strategies are as follows;

- Implementation of programs and activities by utilizing existing fund in accordance to financing arrangement of APBDesa in parallel with the plans generated through Musrenbang village level.
- Implementation of programs and activities by utilizing the existing financing resources in government institutions either central, provincial or district governments that are tailored to their respective programs.
- Implementation of programs and activities by utilizing the existing financing

resources in private institutions, both national or local level which is tailored to the programs and policies in those institutions.

This strategic plan is a joint document between Laikang Village community with the facilitation of the village policy-makers. The Guidelines for Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management: Case of Indonesia Project Site comprising the ten (10) years strategic plan for the Laikang Village was developed as in the [Annex 2](#).



Figure 26: The workshop for coastal resource management of Laikang Village, Indonesia

## X. Capacity building activities in Malaysia

Based on need assessment survey conducted on the coastal community of Tok Jembal, various trainings and programs were suggested. Through the trainings, technology transfer, management skills and good governance were introduced to every coastal communities involved.

The courses were conducted at Seberang Takir Fisheries Technology Center, Kuala Nerus, Terengganu and fishermen's jetties and bases in collaboration with the Department of Fisheries Malaysia, the Malaysian Fisheries Academy and the Department of Marine Malaysia (eastern region). The capacity building activities conducted were as follows:

### a. In situ motivation program for the Tok Jembal coastal community

In Situ Motivation Program for The Tok Jembal coastal community, Kuala Nerus, Terengganu was attended by 35 participants. Motivation programs are important in fostering spirit of unity among the coastal communities. The objective of this program was to raise awareness on sustainability of fishery resources and strengthening cooperation among community members.



Figure 27: In situ motivation program at Tok Jembal Community, Malaysia

### **b. Ecosystem Approach Fisheries Management (EAFM) Training**

Ecosystem Approach Fisheries Management (EAFM) Training program was conducted on 13 November 2016 at Seberang Takir Fisheries Technology Center, Terengganu, Malaysia and attended by 83 participants. The objectives of this training were (i) to promote cooperation among community, (ii) to provide exposure and raising awareness to EAFM concept. Through this training, the participants were aware on the importance of sustainable fisheries.



Figure 28: Motivation and awareness program for the coastal community in Malaysia

### **c. Improving technical skills program - Global Positioning System (GPS) and echo sounder**

Improving Technical Skills Program - GPS and Echo Sounder was conducted on 14-15 November 2016 at Seberang Takir Fisheries Technology Center, Terengganu, Malaysia. It was attended by 21 participants. The objectives of this training were (i) to increase the usage of GPS and echo sounder among target groups and (ii) to produce skilled, viable and competitive manpower.

Participants were exposed theoretically and practically to navigation equipments such as compass, Radio Direction And Ranging (RADAR), GPS, echo sounder and Automatic Identification System (AIS). The utilizing of proper equipments can reduce operating costs, time saving, increase income and survival in the fisheries industry.



Figure 29: Training on usage of electronic equipment (GPS & echo sounder) training in Malaysia

### **d. Improving technical skills program - maintenance and repair of outboard engine**

Improving Technical Skills Program - Maintenance and Repair of Outboard Engine was conducted on 14-15 November 2016 and attended by 18 participants. The objectives of this training were (i) to increase engine efficiency and longevity and (ii)

to reduce maintenance cost. This program provides knowledge and skills related to the basic maintenance of outboard engine through theory and practice. At the end of the program, participants can maintain their own outboard engines which indirectly increases income by reducing the cost of maintenance up to 30%.



Figure 30: Maintenance and repair of outboard engine training in Malaysia

#### e. Improving technical skills program – processing fish-based product

There were two (2) series of programs involved, (i) the first was conducted on 14-15 November 2016 at Seberang Takir Fisheries Technology Center, Terengganu, Malaysia and was attended by 20 participants, (ii) the second was conducted in-situ at Community Tok Jembal, Terengganu, Malaysia on 20-21 January 2017 for 20 participants. The objectives of this program were (i) to introduce processing systems as well as techniques to diversify fish products in accordance to food safety standards, (ii) to provide value added fish-based products and (iii) to increase income.

This program provides participants with the knowledge and skills about otoshimi, surimi and surimi-based products making. Through this program, participants were able to identify the appropriate equipment for their respective premises as well as improving their business proposals.



Figure 31: Training on processing fish based product first series in Malaysia

#### f. Improving technical skills program - fiberglass boat repair and maintenance

Improving Technical Skills Program – Fiberglass Boat Repair and Maintenance was conducted on 20-21 January 2017 at Tok Jembal Community, Terengganu, Malaysia and attended by 20 participants. Participants were able to learn the usage of fiberglass materials, identify the causes of boat damage, patch techniques and boat repair. This program aimed to help fishermen to perform self-repairing and also building new boats and fiberglass products as additional source of income.



Figure 32: Training on fiberglass vessel repair and maintenance in Malaysia

**g. Fisherman's safety awareness program**

Fisherman's Safety Awareness Program including radio communication was conducted on 14-16 Mac 2017 at Seberang Takir Fisheries Technology Center, Terengganu, Malaysia involving 59 participants. The objectives of this program were (i) to expose the risk of accidents at sea, (ii) to provide first aids skills and (iii) to enhance the usage of radio as a communication tool.

The State Fishermen Communication Program is the only mean of communication by fishermen in Terengganu to curb the invasion of illegal fishing vessels hence indirectly protecting marine resources and assisting fishermen with emergency situations at the sea. It is hope that through this program fishermen are more aware about the importance of radio communication, first aid skills and accident at sea can be reduced.

Figure 33: Fisherman's safety improvement program in Malaysia



**h. Hellsman program [limited domestic mate course (500GRT)]**

Hellsman Program [Limited Domestic Mate Course (500GRT)] in collaboration with the Department of Marine Malaysia was conducted on 1-3 April 2017 at Seberang Takir Fisheries Technology Center, Terengganu, Malaysia involving 26 participants. The objective of this program was to provide alternative livelihood to coastal communities. Subjects taught in the program were (a) Chart Work (work marine charts), (b) Rules of The Road (legal sailing), (c) Seamanships, (d) Meteorological and (e) Port Rules.



Figure 34: Hellsman Course for coastal community in Malaysia

### i. Scuba diving

Scuba diving program was conducted on 4-7 September 2017 at Perhentian Island, Terengganu, Malaysia. A total of sixteen (16) participants have successfully obtained certification for open water diving. The objectives of this program were (i) to help the coastal communities to increase income through recreational fishing activities and (ii) to initiate competitive young coastal communities.



Figure 35: Scuba diving training for coastal community in Malaysia

## X. Progress and Terminal Meeting

A progress meeting with the Malaysian team was conducted on the 15 November 2016 at the Seberang Takir Fisheries Technology Center, Terengganu, Malaysia. The meeting was attended by Mr. Mohd Takyuddin Yahya from IDB Regional Center Kuala Lumpur, project coordinator and officials from SEAFDEC/MFRDMD, the Malaysian working team and Tok Jembal communities' leaders. A Question and Answer session by phone with Mr. Md Shahid Parwez, IDB Jeddah was held at the Islamic Center, Universiti Sultan Zainal Abidin, Kuala Terengganu since video conference was unsuccessful due to technical problem. He took note of the progress and problems faced by Malaysian team during implementation of the programs.

The progress or second RTC on Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management was organized by SEAFDEC/MFRDMD in collaboration with Ministry of Marine Affairs and Fisheries (MMAF) at Swiss-bel Hotel, Makassar, Indonesia from 24-27 August 2017. The RTC was attended by representatives from Indonesia and Malaysia, the Chief and officials from SEAFDEC/MFRDMD, officials from MMAF and local government. Unfortunately, due to unforeseen circumstances the representative from Brunei Darussalam was unable to attend this RTC. The objectives of this RTC were (a) to monitor the progress of projects in Brunei Darussalam, Indonesia and Malaysia, (b) to share experience of the selected

coastal communities in Brunei Darussalam, Indonesia and Malaysia and (c) to discuss follow up actions for each participating country after the project completion.

Mr. Burhanuddin Baharuddin the Head of Takalar District and Dr. Tukul Rameyo Adi Director of Research Centre for Marine and Fisheries Socio Economic delivered their welcome remarks while Mr. Raja Bidin Raja Hassan, the Chief of SEAFDEC/MFRDMD opened the RTC. The progress of projects has been presented by focal points of Indonesia and Malaysia while the community leaders have shared their experience of carrying out this project. For further information, please refer to the report of second RTC.



*Figure 36: The participants for the second RTC on 24-27 August 2017, Indonesia*

The Terminal RTC on Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management was organized by SEAFDEC/MFRDMD in collaboration with the Department of Fisheries (DOF) Brunei Darussalam at Badi'ah Hotel, Bandar Seri Begawan, Brunei Darussalam from 20 – 22 March 2018. The RTC was attended by representatives from Brunei Darussalam, Cambodia, Indonesia, Malaysia, Philippines, Thailand, Viet Nam, the Chief and officials from SEAFDEC/MFRDMD and officials from DOF Brunei Darussalam.



Figure 37: The participants for the terminal RTC on 20-22 March 2018, Brunei Darussalam

The objectives of this terminal RTC were (a) to evaluate status of the projects at selected communities in Brunei Darussalam, Indonesia and Malaysia, (b) to discuss outputs of the projects in Brunei Darussalam, Indonesia and Malaysia, (c) to share experience with other SEAFDEC Member Countries and (d) to prepare and discuss follow up actions after the project completion. During this RTC, progress, challenges and impact of the project to the coastal communities in Brunei Darussalam, Indonesia and Malaysia were presented and discussed. For further information, please refer to the report of terminal RTC.

## ISSUES AND CHALLENGES

There were several common issues and challenges faced by all participating countries. For examples, long Eid holidays contributed to time constraints for need assessment survey due to the fact that most of the officials and coastal communities were taking long breaks to celebrate Eid with their families. Another challenge was to obtain enough participants to participate in the program since most of them have work commitment. The details of issues and challenges faced by Brunei Darussalam, Indonesia and Malaysia and actions taken were shown in table below:



Figure 38: Training handled by MARDI, Malaysia for coastal community in Brunei Darussalam



**Table 4: The Issues and Challenges Faced by Brunei Darussalam**

Issues and Challenges	Actions
<p>During need assessment survey :</p> <ul style="list-style-type: none"> <li>• Elderly and non- educated individual find it difficult to understand the questionnaire even though staffs provided explanation.</li> <li>• Availability of fisherman due to their daily fishing activity.</li> <li>• Communities tend to be carried away during the interview.</li> <li>• Lack of cooperation from the communities.</li> <li>• Time consuming.</li> <li>• Not many fishing village and the number of fisherman are scattered throughout Brunei Darussalam.</li> </ul>	<ul style="list-style-type: none"> <li>• Explaining one by one of the question to the elderly and non- educated individual.</li> <li>• Make an appointment for the interview.</li> <li>• Requesting the assistance of village head to complete the questionnaire.</li> </ul>
<p>Difficulty to identify trainer/facilitator to conduct workshops or trainings</p>	<p>Requesting assistance from MFRDMD to identify trainer/facilitator to conduct training in Brunei Darussalam</p>
<p>Difficulty to contact the participants</p>	<p>Assistance from village head to convey program dates to the participants</p>
<p>Uncertain fishing seasons (e.g. acetes seasons)</p>	<p>Ensure convenient time / duration / location for fishermen to attend the programs</p>
<p>Lack of suitable equipment</p>	<p>Purchase small equipment and enquiring the assistance of facilitators to arrange for the others</p>

*Table 5: The Issues and Challenges Faced by Indonesia*

Issues and Challenges	Actions
Selection process for participants	Developed criteria for candidates' selection
Limited capital and marketing strategies	<ul style="list-style-type: none"> <li>Facilitate networking between coastal communities and banking sectors.</li> <li>Discover another potential source for business capital</li> </ul>

*Table 6: The Issues and Challenges Faced by Malaysia*

Issues and Challenges	Actions
Land ownership	Apply for land lease from local authority
Lack of proper equipment and insufficient capital	Need to apply for financial aid
Limited allocation scope that cover only for course/training. Its good if the scope cover up for equipment assistance input.	<ul style="list-style-type: none"> <li>Allow for flexibility usage of project allocation</li> <li>Rental for specific equipment</li> </ul>
Insufficient enforcement measures	Need to enhance cooperation with myKomuniti Perikanan (myKP, my fisheries community)
Threats from other communities competing for same resources	Organizing dialogue between different coastal communities to solve any related issues

## IMPACTS OF THE PROJECT

In general, the activities conducted under this program had succeeded to enhance the coastal community resilience for sustainable livelihood and coastal resource management. It has increased coastal communities understanding on conservation and management of fishery resources to improve their socio-economic status.

### Impact of the Project in Brunei Darussalam

The impact of capacity building activities under this project to the coastal communities in Brunei Darussalam especially the communities in Kg. Sungai Bunga and Kg. Sungai Serasa ranges from reduction of breakdown time, cost saving for repairing outboard engines, increased quality and quantity of surimi-based productions, increased women participation, better basic hygiene practices, quality and safety standards, better monitoring of sales, expenditures and incomes were summarized in the table 7.

**Table 7: Impacts of the project activities to the coastal community in Brunei Darussalam**

Activities	Impacts
Basic Outboard Motor Maintenance	Reduce breakdown time and 30% cost saving for repair and maintenance of outboard engine.
Repairing Net Workshop	Five of the trained participants were able to transfer the acquired skills to other community's member.
Surimi-based Processing Technology and Product Quality Control	<ul style="list-style-type: none"> <li>• Surimi-based productions were increased by three times.</li> <li>• Products quality were improved, standardized and complied with hygiene standard.</li> <li>• Increased women participation in community business activities.</li> </ul>
Basic Food Hygiene	Better basic hygiene practices, quality and safety standards.
Book Keeping Practices	Better monitoring of sales, expenditures and income.
Training for Mud Crab Culture in Cages	Transfer of knowledge and techniques for crab breeding in hatchery to cages.
Seafood Processing Training	<ul style="list-style-type: none"> <li>• Development of new products</li> <li>• Transfer of knowledge and techniques</li> <li>• Build up social relationship between communities in Brunei Darussalam and Terengganu, Malaysia</li> <li>• Improvement in socio-economic status</li> </ul>
Capacity Development Training on Seafood Processing	<ul style="list-style-type: none"> <li>• Twelve of the trained participants were able to transfer the acquired skills to other community members</li> <li>• New products development for local market</li> </ul>



**Figure 39: Introduction of new products to the coastal community in Brunei Darussalam**

## Impact of the Project in Indonesia

The impacts of the project to the community in Indonesia especially in Takalar District have been identified and summarized as in table 8 below.

*Table 8: Impacts of the project activities to the coastal community in Indonesia*

Activities	Impacts
On job training for seaweed processing products	<ul style="list-style-type: none"> <li>• Internship and training conducted under this project provide an alternative livelihood for coastal community</li> <li>• One of the seaweed products has been accredited and licensed by local authority.</li> </ul>
Seaweed processing training	Encourage small scale entrepreneurs in seaweed products
Training of shells craft making	Encourage small scale entrepreneurs in shells crafts making
Mud crab culture	Encourage small scale entrepreneurs in mud crab culture
Training for seaweed farming	Encourage small scale entrepreneurs in seaweed farming
Coastal resource management plan	Adoption of strategic plan for coastal resource management.



*Figure 40: Training on new techniques for seaweed and mudcrab farming in Indonesia*

## Impact of the Project in Malaysia

As a result of the “Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management” project, the fisheries community in Tok Jembal Village is able to enhance the sustainability of sustainable fishing practices. With the training and programs carried out and guidance from the Department of Fisheries Malaysia, the community is able to create a competitive fisheries community to face changes in the fisheries industry.

This project has a positive impact on the coastal communities after acquiring new skills from the various training and programs conducted enabling the communities to compete and take up new opportunities for alternative livelihood as in the table below.

**Table 9: Impacts of the project activities to the coastal community in Malaysia**

Activities	Impacts
Awareness program for Ecosystem Approach to Fisheries Management (EAFM)	Willingness of coastal communities to support and participate in the implementation of EAFM program.
Use of electronic equipment (GPS & echo sounder) training	Save time and cost for fishing.
Outboard engine maintenance and repair training	<ul style="list-style-type: none"> <li>• Save time, cost and better longevity of the engine.</li> <li>• Maintenance cost reduced for 30%.</li> </ul>
Processing fish based products	Additional income/revenue.
Fiberglass boat repair and maintenance	<ul style="list-style-type: none"> <li>• Reduced 50% of production cost.</li> <li>• Better longevity of the boats.</li> </ul>
Fisherman's basic safety-at-sea training	The number of accident at sea involving fishermen reduced.
Helmsman course [limited domestic mate course (500GRT)]	Additional income and increased confidents level for public using the community services.
Scuba diving	Additional income.



*Figure 41: The fresh fish at Tok Jembal coastal community, Malaysia was sold at a reasonable price due to decreasing of production cost*

## WAY FORWARD OF THE PROJECT

This program is proposed to be extended to other coastal communities in the region under different funding platform.

### Way Forward of the Project in Brunei Darussalam

The way forward planned for the project to the community in Brunei Darussalam especially the community in Kg. Sungai Bunga and Kg. Sungai Serasa have been summarized in the table below:

Table 10: The Summarized of Way Forward Project in Brunei Darussalam

Activities	Way Forward
Basic outboard engine maintenance	To establish one-stop centre for engine repair and maintenance
Repairing net workshop	To establish one-stop centre for repairing fishing net
Surimi-based processing technology and product quality control	<ul style="list-style-type: none"> <li>To commercialize quality seafood products</li> <li>Improve quality of the products using appropriate machineries</li> <li>To establish a new processing area</li> </ul>
Basic food hygiene	To comply basic hygiene standard and practices in daily food processing activities
Book keeping	To develop better financial management
Mud crab culture in cages training	<ul style="list-style-type: none"> <li>Vertical farming inland, soft shell crab farming</li> <li>Inland, ponds farming with suitable water quality.</li> </ul>
Seafood processing training	Twelve participants trained and expected to transfer the skills to their respective community.
Capacity development training on seafood processing	To commercialize quality seafood products

### Way Forward of the Project in Indonesia

As the way forward of this project, few program activities for development, environment management and ecotourism development were planned for Laikang Village as in the tables below.

Table 11: Program activities for 10 (ten) years for development for Laikang Village

Division	Scope	Program	Activity	Location	Activity/Program based year														
					1	2	3	4	5	6	7	8	9	10					
	Potential of Fisheries Development	Development of alternative livelihoods	1. Village market	Laikang					X										
			2. Development of coastal store	Puntondo															
			3. Establish village cooperative		X														
			4. Construction of fish auction place, belaying boat	Puntondo				X											
			5. Village regulations on retribution																
			6. Seaweed seedlings										X						
			7. Homestay																
			8. Rental of boat																
Community Economic Development	Non-Fishery Coastal Development Potency	Livestock development	1. Developing the potential of beef farms by bringing in superior cattle seeds	All of region		X					X								
			2. Making animal feed garden	Boddia, Laikang	X							X							
			3. Village regulations on livestock management		X														
			4. Arrangement of integrated livestock area	Dusun Boddia					X						X				
			5. Management of cattle manure waste	Dusun Boddia	X								X						
			6. Arrangement of farm space	Dusun Boddia	X										X				
			7. Establishment pilot farmer group formation		X	X													
Usage of Land Yard			1. Living pharmacy garden (family medicinal plants); and living kitchen ( <i>dapur hidup</i> )	All of region, Priority at Ongkoa)	X									X					
			2. Nursery plant		X											X			

Table 12: Program activities for 10 (ten) years for Environment Management for Laikang Village

Division	Scope	Program	Activity	Location	Activity/Program based year													
					1	2	3	4	5	6	7	8	9	10				
<b>Environment Management</b>	Waste Management		1. Training of recycling of plastic waste		X						X							
			2. Final waste disposal + Organic Waste Bank	Turikale			X											
			3. Building inorganic waste bank	Puntondo		X								X				
			4. Procurement of waste transporting motorbikes			X						X						
			5. Greening (mangrove planting, village park)	Coastal area of Puntondo		X						X						
			6. Movement of environmental love (ex: clean friday, signpost appeal lives clean, movement clean beach,)				X						X					
Movement of environmental love			1. Awareness / Socialization of waste management at the household level		X						X							
			2. Arrangement of public toilets	Puntondo, Bodia, Laikang		X						X						
			3. Arrangement of farm space	Boddia		X						X						
			4. Spatial arrangement of the sea (location of seaweed cultivation, fish cages, bagan, mooring boats)	Puntondo									X					
			5. Rule-making including sanctions for offenders			X							X					



Table 13: Program activities for 10 (ten) years for development of Ecotourism for Laikang Village

Division	Scope	Program	Activity	Location	Activity/Program based year																	
					1	2	3	4	5	6	7	8	9	10								
Development of Ecotourism	Provision of Tourism Services	Enhancing Human Resources	1. Training for tour guide (ex: english course)		X						X											
			2. Diving training	X							X											
		Provision of tourism support facilities	1. Provision of snorkelling and diving equipment	x	x																	
			2. Ecotourism Information Center (maps of tourist areas, etc.)			X							X									
			3. Homestay		X								X									
	Coastal spatial planning		4. Public area		X						X											
			5. Sea palace (Underwater Shop)							X												
			1. Trekking mangrove						X													
			2. Coastal bathing tour							X												
			3. Location of cultivation			X																
	Processing of marine products		1. Development of seaweed processed products		X											X						
			2. Souvenir handicraft (pandan leaf-mat)															X				
	Management of Non- Fisheries		1. Community garden tour/kebun rakyat (mango and lontar)		X												X					
			1. Coastal exploration (see seaweed fields, drying seaweed)														X					
	Natural scenery		2. Out bond															X				
3. Exploring the village (traditional transportation; bicycle, gigs, boats)																						
4. Healthy village																						
1. Maulid celebration				X																		
Culture and History		2. Rowing boats competition																				
		3. Cultural Art (gambus)																				
		4. Laikang's history																				
		1. Tourism karamba cultivation (Fishing in karamba, culinary)		X																		
Fish Cultivation		1. Tourism karamba cultivation (Fishing in karamba, culinary)		X																		
		1. Tourism karamba cultivation (Fishing in karamba, culinary)																				

## Way Forward of the Project in Malaysia

As a result of the “Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management” project, the fisheries community in Tok Jembal Village is able to enhance the sustainability of sustainable fishing practices. With the training and programs carried out and guidance from the Department of Fisheries Malaysia, the community is able to create a competitive fisheries community to face changes in the fisheries industry.

It is hoped that this project will have a positive impact on the fishermen community in order to be able to compete as well as to take and create new opportunities in the fishery industry as various training and programs have been conducted and planned with the coastal fisheries community.

Follow-up actions by the Department of Fisheries Malaysia:

1. Fisheries Coastal Communities involved will be monitored continuously.
2. The Department of Fisheries Malaysia also will strengthen the community development programs under the myKP brand.
3. Community follow-up needs to be identified.
4. Suitable assistance will be channelled based on community needs and requirements.
5. A Successful Community will be a community of examples to other fishery communities.
6. Suitable training series will be continue based on the community needs.

## ANNEXES

### **Annex 1: Harmonize Questionnaire for Needs Assessment Survey**

#### ENHANCING COASTAL COMMUNITY RESILIENCE FOR SUSTAINABLE LIVELIHOOD AND COASTAL RESOURCES MANGEMENT

#### SOAL SELIDIK KOMUNITI NELAYAN PANTAI DALAM PENINGKATAN DAYA TAHAN DAN PENGURUSAN SUMBER PERIKANAN MAPAN

#### PENGENALAN

Terima kasih kerana mengambil bahagian dalam kajian yang dijalankan oleh SEAFDEC dan IDB. Tujuan kajian ini adalah untuk mendapatkan maklumat serta pandangan anda bagi menilai serta menyediakan keperluan bagi meningkatkan daya tahan komuniti terbabit. Kerjasama anda amat diperlukan bagi kejayaan kajian ini. Kami berjanji bahawa maklumat yang diperolehi adalah untuk tujuan analisis kajian ini sahaja dan maklumbalas anda DIRAHSIAKAN.

#### ENUMERATOR

NAMA	
NO. KAD PENGENALAN / ID NUMBER	
ALAMAT	
DAERAH	
PANGKALAN / PUSAT PENDARATAN IKAN	
NO. TELEFON	

**BAHAGIAN A: MAKLUMAT RESPONDEN**

Sila tandakan (x) pada ruangan yang berkenaan

1. Umur  Tahun

---

2. Jantina / Gender  Lelaki  Perempuan

---

3. Bangsa / Etnik  Melayu  Cina  
 India  Lain-lain

---

4. Status  Kahwin  Bujang  
 Duda  Janda

---

5. Bilangan anak

---

6. Taraf Pendidikan tertinggi  Ijazah  Diploma  
 Tidak Besekolah  Lain-Lain (nyatakan)

---

7. Status Pekerjaan  Nelayan  Akuakultur  
 Pemprosesan  Lain-Lain (nyatakan)

a. Pekerjaan Utama

---

b. Adakah anda seorang  Pemilik  Krew/Pekerja  
 Tekong / Nakhoda / Kapten

---

c. Pekerjaan kedua (jika ada):

---

d. Berapa lama dalam pekerjaan utama?  Tahun

e. Keahlian Dalam Organisasi dan Kumpulan:

Bil	Persatuan / Pertubuhan / Organisasi / Kumpulan	Keahlian		Jumlah tahun terlibat
		Ahli	AJK	

**BAHAGIAN B: PENDAPATAN DAN TANGGUNGAN ISI RUMAH**

Sila tandakan (x) pada ruangan yang berkenaan

8. Komposisi isi rumah

Bil	Hubungan dengan Ketua Isi Rumah	Jantina	Tahun	Pendidikan	Status	Pekerjaan		Tempoh bekerja (tahun)	Pendapatan Bulanan
						Utama	Sambilan		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

**Nota: Status: 1-bujang, 2-berkahwin, 3-bercerai, 4-kematian pasangan**

9. Saluran pemasaran:

Jual Sendiri
  Pemborong/wholesale
  Runcit/Retailer

a. Sumber modal

Sendiri
  Pinjaman
  Bantuan kerajaan

b. Jika pinjaman: Pinjaman/hutang yang diterima dan tujuan pinjaman (yang masih mempunyai baki)

Bil	Sumber	Jumlah pinjaman/hutang (RM)	*Tujuan meminjam	Jumlah masih belum dibayar (%)
1	Pinjaman bank			
2	Pemborong ikan / taukeh			
3	Saudara mara			
4	Kawan / jiran			
5	a. Lain-lain (nyatakan)			
6	b. Lain-lain (nyatakan)			
7	c. Lain-lain (nyatakan)			

**Kegunaan pinjaman adalah untuk: 1-pelaburan dalam perikanan, 2-pelaburan perniagaan lain, 3-perubatan, 4-pembinaan rumah, 5- Sendiri, 6- Lain-lain (Nyatakan .....)**

10. Adakah anda berpuas hati dengan pendapatan yang diperolehi pada masa ini?  Puas Hati  Tidak

11. Jika TIDAK, sila nyatakan sebab-sebabnya (jawapan boleh lebih daripada satu):

- Sumber telah semakin berkurangan
- Saiz vesel dan kuasa kuda yang tidak mencukupi
- Kos operasi yang meningkat
- Vesel semakin banyak
- Nelayan semakin ramai
- Lain-lain (Nyatakan) :

\_\_\_\_\_

12. Apakah aktiviti-aktiviti ekonomi lain yang anda lakukan untuk menambahkan pendapatan?

- a. Jenis aktiviti: \_\_\_\_\_ Anggaran pendapatan/bulan: RM
- b. Jenis aktiviti: \_\_\_\_\_ Anggaran pendapatan/bulan: RM
- c. Jenis aktiviti: \_\_\_\_\_ Anggaran pendapatan/bulan: RM

**BAHAGIAN C: PERANAN DALAM PENGURUSAN SUMBER PERIKANAN**

Sila tandakan (x) pada ruangan yang berkenaan

13. Adakah anda tahu apa yang dimaksudkan dengan PENGURUSAN SUMBER PERIKANAN?  Tahu  Tidak Tahu

14. Jika TAHU, adakah anda bersetuju bahawa peranan kerajaan dalam PENGURUSAN SUMBER PERIKANAN di kawasan anda telah dijalankan secara efektif?

Setuju  Tidak Setuju

a. Sila nyatakan kenapa anda bersetuju / tidak setuju

b. Cadangan penambahbaikan

15. Nyatakan bagaimana anda berperanan dalam PENGURUSAN SUMBER PERIKANAN di kawasan anda?

.....

16. Siapa yang membantu anda dalam menguruskan sumber perikanan?

- Jabatan Perikanan  LKIM
- Kerajaan Negeri  NGO .....
- Lain-lain .....

17. Bagaimana anda memperoleh maklumat berkenaan PENGURUSAN SUMBER PERIKANAN?

- Bahan bercetak  Internet
- Media massa  Jabatan Perikanan: .....
- Lain-lain: .....

**BAHAGIAN E: JIKA ANDA SEORANG NELAYAN**

Sila tandakan (x) pada ruangan yang berkenaan

18. Bulan dan jenis ikan yang ditangkap

Bulan	Pelagik	Demersal	Udang	Sotong
Januari				
Februari				
Mac				
April				
Mei				
Jun				
Julai				
Ogos				
Spetember				
Oktober				
November				
Disember				

19. Musim nelayan ke laut

Bulan	Pancing	Bubu	Hanyut	Tunda
Januari				
Februari				
Mac				
April				
Mei				
Jun				
Julai				
Ogos				
September				
Oktober				
November				
Disember				

20. Kawasan menangkap ikan

---

---

21. Adakah anda berpuas hati dengan pendapatan sekarang sebagai nelayan?  Puas Hati  Tidak

22. Jika TIDAK, sila nyatakan sebab-sebabnya:

---

23. Adakah anda selesa menjalani hidup sebagai nelayan  Selesa  Tidak

24. Jika TIDAK, sila nyatakan sebab-sebabnya:

---

25. Adakah anda akan terus menjadi nelayan sehingga ke akhirnya?  Ya  Tidak

26. Jika TIDAK, bidang apa yang ingin diceburi

---

27. Adakah anda ingin melihat anak-anak anda menjadi nelayan?

28. Jika **YA**, kenapa:

---

---

29. Jika **TIDAK**, sila nyatakan sebab-sebabnya (jawapan boleh lebih daripada satu):

- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | Pekerjaan sebagai nelayan tidak menjamin masa hadapan |
| <input type="checkbox"/> | Pekerjaan sebagai nelayan penuh berisiko              |
| <input type="checkbox"/> | Pendapatan sebagai nelayan tidak menentu              |
| <input type="checkbox"/> | Lain-lain (Nyatakan)                                  |

30. Apakah cadangan untuk meningkatkan hasil tangkapan dan pendapatan anda?

---

---

31. Pada pendapat anda, apakah yang mungkin berlaku kepada sumber perikanan dan kehidupan nelayan di masa hadapan?

- |                          |                                     |
|--------------------------|-------------------------------------|
| <input type="checkbox"/> | Sumber akan berkurangan             |
| <input type="checkbox"/> | Sumber seperti biasa                |
| <input type="checkbox"/> | Nelayan sampan terlalu ramai        |
| <input type="checkbox"/> | Nelayan sampan akan berkurangan     |
| <input type="checkbox"/> | Pendapatan nelayan akan meningkat   |
| <input type="checkbox"/> | Pendapatan nelayan akan berkurangan |
| <input type="checkbox"/> | Nasib nelayan semakin senang        |
| <input type="checkbox"/> | Nasib nelayan semakin susah         |
| <input type="checkbox"/> | Lain-lain (sila nyatakan)           |
- 

#### BAHAGIAN F: KESAN PERUBAHAN IKLIM / BENCANA ALAM

32. Berikan persepsi pada pernyataan berikut:

- Adakah anda sedar tentang perubahan iklim?
- Adakah anda tahu tentang kesan perubahan iklim terhadap aktiviti menangkap ikan?
- Adakah anda tahu kesan perubahan iklim kepada kehidupan masyarakat anda?

Ya	Tidak
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

33. Bagaimanakah perubahan iklim dapat memberi kesan kepada kehidupan dan masyarakat nelayan?

- Membahayakan nyawa dan harta benda
  - Mengganggu aktiviti kehidupan
  - Mengurangkan hasil tangkapan
  - Lain-lain (Sila nyatakan)
- 

Ya	Tidak
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

34. Bagaimanakah risiko bencana alam yang berlaku setiap tahun memberi kesan kepada kehidupan?

- Memusnahkan harta benda seperti rumah, peralatan menangkap ikan
  - Menghalang nelayan pergi ke laut
  - Menyukarkan hasil tangkapan dipasarkan
  - Kehilangan nyawa
  - Lain-lain (Sila nyatakan)
- 

Ya	Tidak
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>



**BAHAGIAN G: KEPERLUAN KURSUS DAN LATIHAN**

Sila tandakan (x) pada ruangan yang berkenaan

35. Pernahkah anda mengikuti kursus atau latihan yang berkaitan dengan perikanan?  Pernah  Tidak Pernah

36. Jika PERNAH, nyatakan kursus atau latihan yang PERNAH anda HADIRI:

.....  
.....

37. Apakah kursus yang dihadiri membantu anda menambah pendapatan?  Ya  Tidak

38. Apakah kursus atau latihan berkaitan perikanan yang anda ingin HADIRI, dan nyatakan sebabnya?

Nama Kursus: .....

Sebab : .....

39. Apakah kursus atau latihan tidak berkaitan dengan perikanan yang anda ingin HADIRI, dan nyatakan sebabnya?

Nama Kursus : .....

Sebab : .....

40. Apakah masalah yang dihadapi oleh persatuan nelayan kawasan anda dan masyarakat nelayan?

Persatuan : .....

.....

Nelayan : .....

.....

**Annex 2: The Guidelines for Enhancing Coastal Community Resilience Through Sustainable Livelihood Development and Coastal Resources Management: Case of Indonesia Project Site**



**The Guideline for Enhancing Coastal Community Resilience Through Sustainable Livelihood Development and Coastal Resources Management:  
Case of Indonesia Project Site**



**THE GUIDELINE FOR ENHANCING  
COASTAL COMMUNITY RESILIENCE  
THROUGH SUSTAINABLE LIVELIHOOD  
DEVELOPMENT AND COASTAL  
RESOURCES MANAGEMENT:**  
*Case of Indonesia Project Site*



**Research Center For Marine And Fisheries Socio Economics  
Agency For Marine And Fisheries Research And Development  
Ministry For Marine Affairs And Fisheries  
Indonesia  
2018**

**THE GUIDELINE FOR ENHANCING  
COASTAL COMMUNITY RESILIENCE  
THROUGH SUSTAINABLE LIVELIHOOD  
DEVELOPMENT AND COASTAL  
RESOURCES MANAGEMENT:**  
*Case of Indonesia Project Site*

**Editor:**

Zahri Nasution

**Authors:**

Achmad Zamroni

Tenny Apriliani

Nendah Kurniasari

Risna Yusuf

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## Chapter 1.

# Purpose of The Guideline

The purpose of this guideline is to provide guidance for stakeholders such as local and national government, Non Governmental Organization (NGO), and others who have the same vision to enhance the resilience of coastal communities through their sustainability livelihood development and coastal resources management. Livelihoods development in this case is understanding and increasing knowledge and skill of the community in utilizing natural resources as a source of livelihood economy. The management and utilization of coastal resources is an effort to maintain the source of its livelihood both for the present and the future.

### 1.1. About The Guideline

The first part of guideline explains the developing livelihood as an alternative for rural economic development. The guideline was built from the planning activities, a plan of various activities all of which leads to an increase in community resilience. The second part was explore a general conditions of coastal communities in Indonesia, their life and resilience conditions are presented. The third section explain the methodology, objectives and scope of planning

for enhancing the coastal communities resilience. In this section described about coastal resource management planning process and its relation to the resilience of coastal communities. Then, also the process of obtaining data and information related to the profile of the local community and their needs related to the problems and constraints. It also includes matters relating to community participation and knowledge sharing process. Besides that, it is also proposed the process of establishing local institutions and their relation to the management and utilization of coastal resources. The sixth part show the results of case study in Takalar District, South Sulawesi Province. The discussion began from the profile of natural resources, human resources, facilities and infrastructure in the study area. The assessment of community needs related to efforts to increase the resilience of coastal communities both in terms of increasing livelihoods, management and utilization of coastal resources based on community participation. In addition, the institutional development process is also established, the process of sharing knowledge, developing livelihood activities, community-based coastal resource management planning.

## 1.2. Why Coastal Community Resilience is Important?

Climate change globally turned out to have a negative impact on almost all the world's population. Disaster events that have been experienced by individuals, received as a stimulus that provides experience and affect the level of readiness of a person in the face of disaster. Disaster will provide a learning process that is beneficial to the individual in shaping the readiness behavior. The learning process is reflected through the preparatory steps taken by the community, thus minimizing the victims and the psychological impact of the disaster, especially for coastal communities. This readiness behavior is also supported by the individual's ability to bounce back from the trauma events that have occurred. This ability is then referred to as resilience (Ariviyanti dan Pradoto, 2014).

Resilience is an illustration of the process and outcome of success adapting to difficult circumstances or challenges life experiences, especially those with high levels of stress or traumatic events. According to Reivich and Shatte as outlined in his book "The Resilience Factor" explains resilience is the ability to cope and adapt to severe events or problems that occur in life (Shaleh et al., 2014). Persisting in a state of distress, and even dealing with adversity or trauma experienced in his life. Resilience is an indicator of the sustainability of a person's life that lives in difficult situations. When a person is in a difficulty one tends to be depressed and at a critical time. Therefore, resilience becomes important for coastal communities. The simple meaning of resilience is to come back to the previous level of people's condition after being subjected to pressures. However, there are many arguments about resilience from many scientists. For instance, Holling (1973) argued that resilience is originally conceived in the ecological literature, which was re-defined as the relative persistence in complex dynamic systems such as socio-economics system (Levin et al. 1988). The final goal of various efforts in improving coastal communities is toward "resilience". There are two options of resilience's concept; first called "engineering" is the ability of the system to return to the equilibrium after agitation (Tilman et al., 1994). The other option referring to "ecological" resilience is the magnitude of disturbance that can be absorbed before the system re-defines its structure by changing the variables and processes that control behavior (Walker et al., 1969 and Holling, 1973).

There were many scholars also defined resilience in social, economy and ecology. Walker et al. (2004) argued that resilience is the capacity of a system to absorb disturbance and re-organize while undergoing change, so it will still retain essentially the same function, structure, identify and feedback. Exactly, community resilience is the capacity of a community to adapt to, and influence the course of environmental, social, and economic changes. Resilient communities need to be aware of their relation with and dependence on coastal

resources and to what extent the degradation of coastal resources puts them at risk. It is an aim for minimizing the loss and maximizing the protection for future uses and benefit (U.S. Indian Ocean Tsunami Warning System Program. 2007). In fact, there has been many ways conducted as individual, group or institution comeback to the resilience. In Indonesian fishing communities, the fluctuation of fisheries stocks, shifting fishing seasons, and climate change challenges the coastal communities to response to them continuously. The countries which based are natural resources exploitation and fisheries have played an important role for economic development in rural and coastal areas. If the coastal resources are degraded to the irreversible point to sustain coastal and fishery livelihoods, fishing communities which have heavy dependence on coastal resources are systematically denied access or displaced. However, people have not learnt from previous bitter experiences in coastal resource management and some of them still continue to exploit the resources without better control.

Due to above phenomena, many countries including Indonesia have improved the policy and regulation framework for community-based management of fisheries and coastal management. This is not an instantaneous work to change human behavior into environmentally friendly ones in coastal resources uses. Production demand, poverty, low level of education, law enforcement is some of the major constraints to set up long-term resilience of ecosystems and the economy.

### 1.3. Building Resilience Through Community Enhancement

Resilience, a concept originated within ecology, is also applicable in the realm of social systems (Gallopín, 2006). In a social context, the definition of resilience is explained by incorporating the capacity aspect of the individual, community, region, or country (Conner, 2005). In other words, Gallopín (2006) argues that resilience is the capacity of a social system to absorb disturbances and reorganize in times of change so as to maintain function, structure, identity, and input. An-

other definition describes social resilience as the ability of groups or communities to cope with external pressures and disturbances arising as a result of social, political, and environmental change (Adger 2000). Tuler et al., (2008) states that the resilience ability of social systems to recover from stresses or perturbations, including adaptation, coping, adaptive capacity, and adjustment. Furthermore, they explain that resilience arises from incidental or purposeful responses that occur after an exposure or in expectation of a future exposure.

Resilience arises suddenly or deliberately after a disaster. There are two categories of indicators proposed by Adger (2000) to read social resilience, i.e. indicators closely related to economic and institutional factors as well as demographic changes in the region. First, indicators are closely related to economic and institutional factors. One of key factors in this category is economic growth, the level of stability, and the distribution of income among the population. The next factor is the environmental variability that can be measured to what extent the population depends on a particular resource. Another important factor observed is the stability of livelihoods. Other important indicators in this category are cultural variables (Wahyono et al., 2014).





## Chapter 2.

# Coastal Community Resilience and Coastal Resource Management

## 2.1. Coastal Community in Indonesia

As an archipelagic state, Indonesia could gain much by effectively utilizing coastal and small island resources. In other considerations, Law No. 27/2007 jo Law No. 1/2014 on the management of coastal zones and small islands explain that coastal zone and small islands management consists of the planning, exploitation, controlling and management of community activities. This serves as a guide for community activity in the exploitation of coastal zone and small islands resource and done in a sustainable way, towards enhancing the community's prosperity and in guarding the unitary state of the Republic of Indonesia. However, fisheries management has to address the social context and the benefits and costs, not only for individual fishing boats and fishing fleets, but also for fishing communities as well (Jentoft, 2000). Management requires a broader understanding of human behavior and how people use and misuse marine commons (Ostrom *et al.*, 1999).



In coastal communities, fishing is not only for income generation and source of employment but also as a way of life and livelihood that could produce the food for the household (Pollnac and Poggie, 1988). Fishing may be a seasonal activity where small-scale fishermen are dependent on coastal resources for their livelihoods (Allison and Ellis, 2001). The building capacity of coastal community is important in recent years. This aims to improve capability and ability of coastal community to response to depleting coastal fishery resources and uncertainty. Capacity building aims to improve community participation in coastal management. Improved capacity can help coastal communities tackle adverse socio-economic pressures. These pressures are related to population instability, economic decline, unemployment and deprivation (Barker, 2005). Inter-community linkages should be encouraged and developed at the outset as this will result in more resilient local capacity (Wiber *et al.*, 2009).

In fact, there has been many ways conducted as individual, group or institution comeback to the resilience. In Indonesian fishing communities, the fluctuation of fisheries stocks, shifting fishing seasons, and climate change challenges the coastal communities to response to them continuously. Improving coastal livelihoods and coastal management are approaches to achieve resilience in the fishing communities of Indonesia. Diversifying livelihood activities includes diversifying fisheries activities particularly for women or family members and non-fishing activities. Diversification of fisheries activities could improve by developing for example seaweed farming, drying fishes, process value added product based on fishes or other fisheries material. Engaging in the fisheries marketing activity can be an alternative solution in improving livelihoods. During the period of resource decline or off-fishing, not all fishermen could survive in their community. Some of them try to find another job in the city to secure their monthly income. Migration of fishermen to urban areas is usually temporary. They will come back to the fishing community when off-fishing is over.

## 2.2. Coastal Community Livelihood in Indonesia

Livelihood development strategies established by the government in coastal communities are supposed to encourage and improve participation of coastal communities in diversified fisheries livelihood activities. These livelihood development and community empowerment activities are assisting to determine the success or failure of poverty reduction effort in the coastal areas. Since 2001, a systematic effort to transform and improve coastal communities well-being has been undertaken via a national program called economic empowerment for coastal community - *Pemberdayaan Ekonomi Masyarakat Pesisir* (PEMP) or Coastal Community Economic Empowerment Program. The PEMP Program had been carried out in three phases of empowerment during 2001-2008. There were 3 (three) steps on PEMP namely; Initiation, Institutionalization, Diversification (Kusnadi *et al.*, 2006). Since 2009, community empowerment programs in marine and fisheries are integrated into the National Program for Community Empowerment in Marine and Fisheries (PNPMM-KP) mechanism. Coastal communities and people are involved in this program to get support for improving their fishing activity and aquaculture, including milkfish, shrimp culture and seaweed farming.

The programs of livelihood development are also attached to other coastal projects that were implemented by the GoI, namely; Marine Resources Evaluation and Planning (MREP), Segara Anakan Conservation and Development Project (SACDP), Integrated Coral Reef Management Project (INTECOREEF), Coastal Resource Management Project (CRMP), Coral Reef Rehabilitation and Management Project (COREMAP) and Marine and Coastal Resource Management Project (MCRMP). These projects have been supported by international donor agencies. The MCRMP aimed to sustain livelihood, improve management, conservation of the environment by developing seaweed farming as main livelihood activity in fishery communities. Livelihood development was promoted by the policy for marine and fisheries (pro-poor,

pro-job, pro-growth, and pro-sustainability) to achieve resilience. A household livelihood strategy is taken to provide broader range of livelihood options. Women have long history of involvement in natural resource management. In many fisheries, they have traditionally participated in the pre and post-harvest sector, processing and marketing (Bennet, 2005). Moreover, traditionally, their focus has been less on the resource base and more on the down-stream aspects of the resource (processing, marketing, etc.).

As regards livelihood development in Indonesia, the involvement of women has provided an overview of the importance of economic improvement in the framework of coastal management in the local setting (Zamroni and Yamao, 2012). In their study, women in different group ages were very active in seaweed farming rather than men. It is not only in pre-production/planting but also in marketing too. As regard to this condition, Aldon (2011) emphasized that the smooth relationships of women with the outside community make them a stronger social and economic network than their husbands. This is proving that women have an important role in the diversification of fisheries activity, in order to improve household economy supported by effective communications. Weber *et al.*, (2009) stresses, that the true communication and collaboration among communities are important factors to drive integrated management as a holistic activity.

### 2.3. Coastal Resource Management in Indonesia

Research in commons issues has often sought the simplicity of community-based resource management cases to develop theory (Berkes, 2005). Ostrom (1990) expresses that her strategy has been useful for small-scale common property because self-organization and self-governance are easier to observe in this situation. The changing philosophies of the fisheries development process are reflected in changing approaches to fisheries resources management (Berkes *et al.*, 2001). Traditional and customary fisheries management regimes are typical management systems before colonialism

(Ruddle *et al.*, 1992). Governance of fisheries resources was transferred from communities to local and national government bodies during the colonial period (Pomeroy, 1995). Community based resource management is one of the concepts of co-management. Charter (1996) gives a definition of community based resource management (CBRM) as a strategy to achieve development which centers in human resource, where the center of decision making about utilization of resource continuously in an area depends on people's organizations in that area.

Indonesia has various kinds of culture in all areas and provinces. A wide variety of community based management in marine and coastal resources has developed differently from long time ago from one region to another. *Sasi* (Moluccas) is a traditional agreement about utilization of coastal resource composed by people and legalized through custom structural mechanism in the village level (Nikijuluw, 1994). *Hak ulayat laut* in North Sulawesi (Sea Tenure-North Sulawesi) divides local fishing ground into 3 areas; 1) waters area called "nyare"; 2) waters area called "inahe"; and 3) waters area called "elie" (Kusumastanto *et al.*, 2004). *Hak ulayat laut* in Papua (Sea tenure - Jayapura, Papua) regulates utilization of fishing grounds, fishing gears and punishment for violations. This regulation is led by three elements, they are; local government, custom leader and church leader (Kusumastanto *et al.*, 2004). Another example is the *Ladang berpindah* tradition of *Bajo* ethnic (migratory-tradition). *Bajo* people cut the trees in the forest to open new agriculture land. They have migrated from one place to another continually. They leave the old place after the planting process is complete. Then, they move to a new place and do cultivation, and finally they come back to their first place. They repeat the same process again. *Awig-awig* in Balinese, West Lombok and East Lombok is a custom regulation in Bali, West Lombok and East Lombok that regulates the management of coastal fisheries resources appointed by government at the village level, custom institution and elite figure of religion or

custom (Kusumastanto *et al.*, 2004). *Panglima laot* in Nangroe Aceh Darussalam (NAD) is a person who leads custom and habit valid in capture fisheries and quarrel resolution (Kusumastanto *et al.*, 2004).



## Chapter 3.

# Developing a Coastal Community Resilience Plan

### 3.1. The coastal community resilience and coastal resource management plan process

Common-pool resources in many parts in the world provide a critical support to the human and natural life in sustainable way. The countries which based are natural resources exploitation and fisheries have played an important role for economic development in rural and coastal areas. Production demand, poverty, low level of education, law enforcement is some of the major constraints to set up long-term resilience of ecosystems and the economy. Over decades, Indonesia has tried to implement better management in coastal resources. However, they still have problems with commitment and consistency of human behavior in implementing the policy and regulations. The collaboration system between community based management and decentralization systems have a power to become good governance in coastal management as long as there is strong commitment among stakeholders. Livelihoods strategy can be added into management system as a tool to improve community participation and capacity building of the fishing society.

In the fishing community, culture fishery can be an alternative when fishing production has been decreased, or collaboration between two activities, for examples culture fisheries and capture fisheries, fisheries activities and non-fisheries activities etc.

South Sulawesi Province has abundant natural resource which lasts to make the coastal societies prosperous, particularly in Takalar District. Nevertheless, it is exactly this increasing intensity of exploitation activity that threatens the preservation of natural resources. The growing dependence of fishing community in Takalar District to seaweed farming as a main income source will allow seaweed farming to develop more quickly, potentially resulting to greater prosperity in the coastal areas. The issues about foreshore claims should be addressed by village and government leadership in order to avert a socio-economic crisis in the future. Furthermore, ecological studies should be conducted on the carrying capacity of the coastal environment in Laikang Bay and how seaweed farming give impact on the environment, in an effort to strike a balance of social acceptability and positive ecological effects of this particular activity.

This guideline focus on preparedness and the role people can play at an individual, household and community level to improve their resilience. The following process will assist developers plan and prepare coastal community resilience and coastal resource management plan process and community engagement activities. Information provided in earlier chapters around building resilience through community engagement.

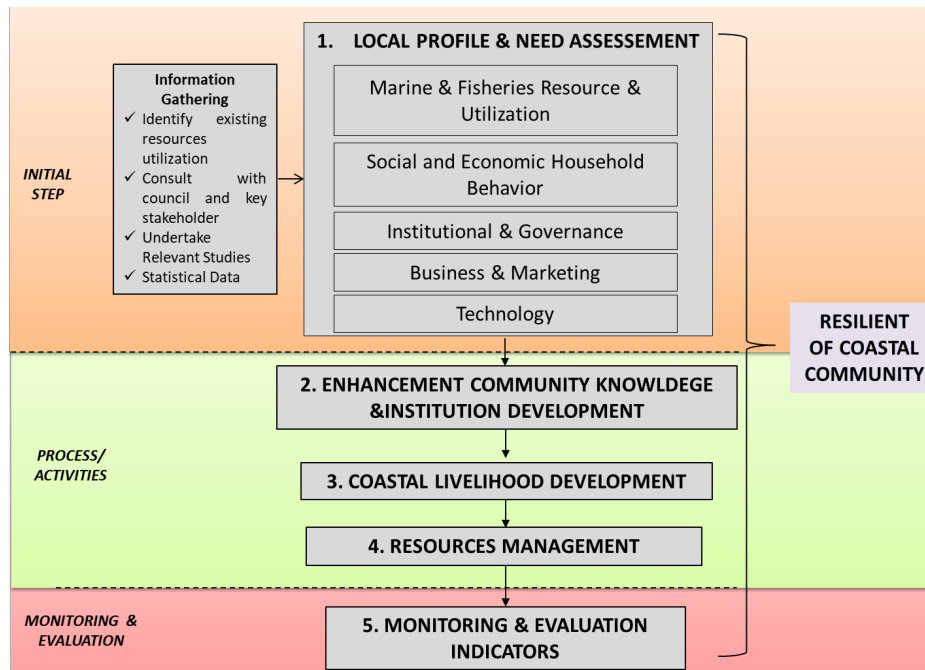


Figure 1.

Process of Enhancing Coastal Community Resilience

Source: Modified from Green Cross Australia, (2013)

Each phase of the process contains consultation actions, which should be undertaken with key local stakeholders e.g. council. Developers should consider using a communication expert to help them develop management plan and facilitate activities. Local council, emergency services and local non profit groups may be able to provide resources and assistance to community groups who do not have a consultation expert resource. If it is not available groups are still encouraged to attempt on their own. There are four activities to develop community resilience.

1. Prepare local profile and need assessment;
2. Enhancing community knowledge and strengthening institution;
3. Developing coastal livelihood based on local resources; and
4. Formulating, monitoring and evaluating resources management plan.



Based on those four phases than we formulate the guideline. The questions then were: how do they respond to existing of marine and fisheries resources management? How will current conditions change if the project is finished? What is the sustainability level of project activities in this districts? The project focused on 3 (three) main activities, namely; 1) community survey and needs assessment, 2) Building and Strengthening of Fisheries Associations, and 3) Capacity Building of Coastal Communities on Sustainable Livelihoods and Resource Management. Detail activity on each steps could be seen in Table 1, Table 2 and Table 3.

Table 1.

Detail components of community survey and needs assessment

No	Activities	Objectives
1	Need Assessment and Community Survey	<ol style="list-style-type: none"> <li>1. Identify baseline information comprising of demographic data, potential of natural resources, and socio economic indicators;</li> <li>2. Identify marine and fisheries activities, including production, processing, marketing; and roles of small scale entrepreneurs (SMEs).</li> </ol>

Table 2.

Detail components of Building and Strengthening of Fisheries Associations

No	Activities	Objectives
1	Coordination with Local government and key persons in project site	Coordination and harmonized the draft of PoA
2	Training on Leaderships, Advocacy and Community Development	To improve the capacity and capability of village communities in supporting rural economic development.
3	Workshop on Participatory Planning on Resource Management and Conflict Management for Sustainable Livelihood	To provide understanding of the mentors related to the coastal communities. It was expected that there is an integrated unit in performing the development program of village based coastal areas.

Table 3.

Detail components of capacity building of coastal communities on sustainable livelihoods and resource management

No	Activities	Activities
1	Mud crabs farming	<ol style="list-style-type: none"> <li>1. Training mud crabs farming technology</li> <li>2. Develop polyculture mud crabs and seaweed (<i>Caulerpa sp</i>) in traditional brackish water ponds.</li> <li>3. Developing monitoring indicator: household income from alternative livelihood, business growth, number of unemployment, business entity, number of new entrepreneurs etc.</li> <li>4. Developing monitoring instrument, human resources/enumerator, method</li> <li>5. Formulating follow-up strategy based on monitoring data to accelerate the objectives achievement.</li> </ol>
2	Packaging, Branding and Marketing.	<ol style="list-style-type: none"> <li>1. Training packaging, branding and marketing of fisheries products.</li> <li>2. Established "One Brand and Multiple Products)".</li> <li>3. Promoting and marketing of local brand</li> <li>4. Formulating recommendation based on evaluation data for Sustainable project activity.</li> </ol>
3	Various food processing product from seaweed and souvenir	<ol style="list-style-type: none"> <li>1. Training for financial management processing groups</li> <li>2. Various food processing product from seaweed and souvenir</li> </ol>
4	Advance workshop for revise the village regulation for MPAs, business, and governance	<ol style="list-style-type: none"> <li>1. Advance workshop for revise the village regulation for MPAs, business, and governance</li> <li>2. Formulating recommendation based on evaluation data for sustainable resource management.</li> </ol>

### 3.2. Phase 1 – local profile and need assessment

There are 3 steps to profiling coastal community and need assessment (Figure 2), namely; 1) Collecting Data and Information, 2) Analyzing and Understanding, 3) Presenting Community Portrait and Need. Develop a profile of the local area that includes the following information as a minimum:

- Local and regional environmental and built form profile (geography, natural hazards, towns/suburbs).
- Local and regional access and transport systems (e.g. road, rail etc.).
- Socio-economic profile (e.g. age, education, income and employment – including ageing population and culture to identify language barriers).

Governance profile (local council and government structure, list of key stakeholders such as community groups etc.).

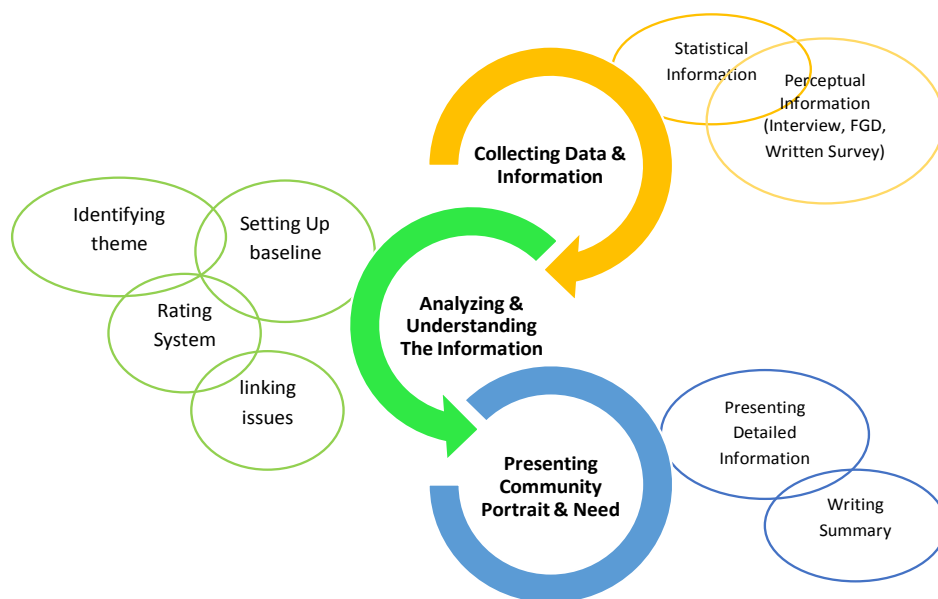


Figure 2.

#### Steps to Profiling Coastal Community and Need Assessment

Source: Modified from Canadian Centre for Community Renewal (2000)

The first step was conducted from statistical information and perceptual information by interviewed, focus group discussion or written survey related to coastal community profile. Each community will have a variety of sources of information available to it for creating a community portrait. Perceptions are also influenced by culture, income, age, gender and length of time in the community, so the representation of these factors must be considered on selecting respondents. Focus Group Discussion (FGD) is a way of dealing with issues that can be better understood by listening to a group discussion between people. As the discussion progresses, the attitudes and perception of the people in the group and the group as a whole become evident. Focus groups are less time consuming than individual interviews, but they do not elicit the same detail and of information from any one participant. This is one of the limitations of this method. In addition, you may find that that group discussion is difficult to keep on topics or focused on specific question.

The second step is analyzing and understanding the information. Your portrait of community resilience will present a snapshot of resilience at a point in time. The process of assessing resilience at different times over several years to create a series of portrait. Initial portrait can thus become the baseline from which you can assess changes in community resilience and get some measure of the results of community action.

The third step is presenting community portrait, once data has been collected and analyzed, it need to be organized and presented in form that can be readily understood and used for community priority setting. The power of portrait is its clarity and the degree to which it present information in an action-oriented and positive way.

### 3.3. Phase 2 – enhancing community knowledge and institution development

Enhancement community knowledge and institution development is an activity that aims to transfer knowledge about the concept and implementation of coastal community development, and strengthening the function and role of local institutions in order to develop resilience capacities of coastal communities. These activities include: 1) coordination with stakeholders, 2) Training on leadership, advocacy and community development, and 3) Workshop on participatory planning on resource management and conflict management for sustainable livelihood.

#### a. Coordination with stakeholder

Coordination with stakeholders is undertaken in the planning and implementation phase. At the planning phase, coordinating with stakeholders aims to coordinate and harmonize the draft of Plan of Action (PoA) with empowerment programs at related institutions in the target location. Coordination is done with local government, NGOs and key person. Local governments are represented by the Office of Marine Affairs and Fisheries, Regional Planning and Development Agency, and the Office of Cooperatives, Village Governments and Non-Governmental Organizations. While the key person consists of community leaders who understand the characteristics of coastal communities in the target location. Coordination can be done with FGDs or by direct coordination with stakeholders. The materials of PoA discussed are short-term, medium-term and long-term programs.

Coordination with stakeholders in the implementation phase is intended to establish cooperation in an effort to improve the understanding and skills of the target community in the context of enhancing coastal community resilience for sustainable livelihood and coastal resources management. At this

stage, the team coordinates with stakeholders involved in the planning stages, universities and business practitioners.

#### b. Training on leaderships, advocacy and community development

The purpose of training on leaderships, advocacy and community development is to improve the capacity and capability of village communities in supporting rural economic development. The content of this activities were includes: 1) SMEs Management and village holding business management, 2) Management of Village Funds and Its Contribution to village holding business, 3) Technical Guidance for Community Business Groups (Technical, Financial), 4) The Role of NGO in Guiding the Preservation of Coastal Resources, 5) Cooperation Opportunities in Utilizing Coastal Resources in the Regency, 6) Group Organization Techniques (proposal drafting, network establishment, communication), and 7) Team Building.

This training used the techniques of non-formal training, work instruction, and simulation. The Speakers present their materials individually, followed by interactive discussion with Participants guided by the moderator. The materials concerning the techniques for group organization, after the Speaker presented his material and interactive discussion was held, the Participants were divided into small groups. These groups were then assigned to draft a business start-up proposal (simulation). The speaker and participants then discussed these proposals. The material concerning Team Building was presented through several games. These games basically contain materials concerning leadership, cooperation in groups, task distribution in groups, and the decision making process.

### c. Workshop on Participatory Planning on Resource Management and Conflict Management for Sustainable Livelihood.

The objective this activity is to provide understanding of the mentors related to the coastal communities. It was expected that there is an integrated unit in performing the development program of village based coastal areas. The material of this activity consist of: 1) Coastal Development Plan and Policy, 2) Knowledge Management System Support Against Coastal Community Development, 3) The Role and Support of Cooperative in Improving the Public Welfare of Coastal Community, 4) Community Empowerment Program in Coastal Village, 5) Role of Faculty of Marine Science and Fisheries Support in the development of Coastal Village, 6) Institutional Strengthening to Support Coastal Communities Rural Economic and Dialogue, 7) Public Space and Collective Management of Coastal Resources.

This meeting was held in the form of Workshop. Workshop is an event wherein several people gathered in one place to solve specific problems and to seek common solutions. The meetings held a number dialogue with individual or working papers. Participant attended to this activity were representative of the following stakeholders; the local and central government officials, academicians and scientists, the Community leader, and Non-Governmental Organizations (NGOs). They discuss about concerning issues related to problem discussion both scientifically and practically was performed. Participants and facilitators were experts who have specific expertise in their fields. This meeting was divided into two sessions. In the first session, four materials were delivered from sources guided by the moderator, each speaker presented the material in parallel, followed by interactive discussion with participants. In the second session, three materials were delivered by the speakers, followed by interactive discussion with participants as guided by moderator.

### 3.4. Phase 3 – Coastal Livelihood Development

The development of marine and fishery communities must be in line with the development of the local socio-economic development characteristics, and putting community as a subject in development planning. The objective of the training is to improve the capacity and capability of village communities in supporting rural economic development. There were one of intership and four trainings that have conducted in order to develop coastal livelihood in Takalar (Table 4).

Table 4.  
Step and Method for coastal livelihood development

Method	Transfer material technique	Element participant	Output
Internship	Theory and practice	Fish/seaweed processors who have leadership and ability to transfer knowledge to communities.	Trainer
In house training	Theory and practice	Fisher, fish farmer, fish processor, Fisher's/fish farmer's wife, young generation.	Fisheries entrepreneur

Table 4 above show about how to develop coastal community by doing internship and in house training. There are two approaches namely internship and in house training where both of them using theory and practice as a basic to transfer material technique. The elements participant on this coastal livelihood are Fish/seaweed processors who have leadership and ability to transfer knowledge to communities on internship method and Fisher, fish farmer, fish processor, Fisher's/fish farmer's wife, young generation and in house training. The output of this coastal livelihood development are as trainer for internship and fisheries entrepreneur for in house training.



### 3.5. Phase 4 – coastal resource management

Coastal resources is covering natural resources contained in coastal areas covering land, coastal area and sea. Fishery resources, marine resources and other natural resources existed in coastal areas such as mangrove forest land, ponds and land areas that serve sustain the lives of people in the region. The management of coastal resources is one of the key in supporting sustainable village development that can ensure the livelihoods of people in the coastal rural areas. Therefore the Strategic Plan for Coastal Resources Management is an important document in supporting the running of coastal village development process. In addition, it is important to explore the current status of coastal resources in a coastal village both from the environmental, economics and social aspects. The condition of the coastal resources proposed may illustrate the dynamics of resource development, the existing problems and the action estimates that an alternative solution to the problems faced at the village level. Therefore, the roles and functions of each stakeholder (institution) in the village are need to be identified, so that the improvement of the roles and functions of each stakeholder can be done.

In order to involve the community in coastal village development, the current condition of coastal resources management from environmental, economic and eco-tourism point of view, it have been done through data collection in the form of filling in the matrix of strengths, weaknesses, opportunities and threats (SWOT) based on stakeholder's opinion of each of the institutions that exist within the scope of the countryside. The matrix of SWOT results of each aspect is expressed openly in the village institutional forums, so this opinion can be regarded as the opinion of coastal villagers. It is in this context that there is an intergovernmental (stakeholder) agreement regarding the SWOT outcome of an aspect, so that in whole, every aspect has been presented and discussed by all institutions representing coastal rural communities.

The purpose of the Strategic Plan for the Management of Coastal Resources in the village of Laikang is to provide documents that can be taken into account in the development process of Laikang village, especially in the planning phase during the short, medium and long term. Meanwhile, at the implementation stage can also be guided by programs and activities that need to be done within a certain period. At the evaluation stage can also be used as a guide in measuring the success of development in Laikang village. The objective of the Strategic Plan for the Management of Coastal Resources in Laikang village is to ensure the smooth process of planning, implementation and evaluation of development activities in Laikang village.

Focus Group Discussion (FGD) was conducted to identify basic community based natural resource management. This FGD aims to explore data and information related to existing or existing institutions and regulations relating to the utilization and management of natural resources and the environment within the scope of Laikang Village. The ultimate goal of the FGD results is further followed up in two more meetings at the Takalar District level that agreed on the rules formulated for the management of natural resources in Laikang Village. The scope of resource management was cover all potential resources of catch fisheries, cultivation, processing, and eco-tourism as well as the efforts undertaken by the villagers of Laikang.

Some of the existing Village Rules (*Perdes*) can be the capital for the management of natural resources and the environment in Laikang Village. For example, *Perdes* or regulations related to; 1) Village market services, empang (pond) utilization, 2) arrangement of lawi-lawi cultivation, 3) Seaweed cultivation, and those related to village economics. Existing institutions such as Village Governments, Community Monitoring Groups (*Pokmaswas*), PPLH (in the form of NGOs), Joint Business Group (*KUB*), Cultivation Group, Processing Group of all human resources are quite capable in their respective fields. So far, the existing regula-

tions of Laikang Village based on the conflicts that have occurred or have occurred in the community. For example, Perdes on livestock has been enforced; for example if there are cattle that enter the garden then the livestock owners are subject to fines. Then, the existence of village owned enterprises (*BUMDES*) which was formed 2 years ago, is currently still constrained to run because there is no implementation guidance or implementation rules from the district level. In principle, there have been several regulations related to the utilization and management of marine and coastal resources.

Development of eco-tourism for example is used to provide understanding and awareness to the village community in order to provide a decent house that will be able to functioning homes (homestay) for the tourists who will spend the night in Laikang village. Then, the problem of cleaning plastic waste in the village and at sea can be done in groups between communities through mutual cooperation. Hopefully, the 4,000 members of this village community can actively participate in this village development activity in the future and the potential of natural resources and environment in the village can be utilized as much as possible by the villagers themselves. Therefore, the strategic plan for the utilization and management of natural resources and marine and coastal environment in Laikang Village is indispensable for guidance in the implementation of this village development. Furthermore, socialization activities to the community are the main activities that can support the running of existing arrangements. For the future, it is necessary to promote such regulations;

- a. Village Regulations (Perdes) on Mangrove
- b. Perdes on SeaTransportation
- c. Perdes on the Utilization of Marine Waters and Coasts
- d. Perdes on the Use of Fishing Equipment Implementation, and others

Nowadays, some villagers who take advantage of Laikang Village potential do this through the purchase of pond. Related to the

problem of the utilization of this pond Laikang village community generally constrained by capital for business financing, so it is not utilized (neglected). The owners of these ponds assume that the limited capital is better sold. In this case the community felt the absence of the role of financial institutions that can help them. The pattern of financing would need to be cultivated can play a role. This could be lead to the mastery of the potential of natural resources, especially ponds can be controlled by the majority of people outside the village that directly or indirectly can affect to the resilience of the community in sustaining their household economy.

In the Village Development Forum, hereinafter outlines the role of informal institutions that need to be formed and mutually agreed upon whose main task is to assist the Head of Village in running the development of Laikang Village. The informal institution consists of several groups, for example;

- a. Institutions in charge of resources and the environment that should be of much NGO role. It includes dealing with matters relating to the regulation of utilization and management of marine and coastal resources including ecotourism. Thus, it is necessary to identify existing regulations relating to resources and the environment.
- b. Institutions in charge of business economics and village economics that should be more role boards who understand the functions of *BUMDES* institutions. This includes handling matters related to business such as Joint Business Group (KUB) and Micro Finance Institution (*LKM*). This forum needs to address existing regulations relating to the economic activities of marine and fisheries enterprises within the framework of economic development of rural communities.
- c. Institutions in charge of community oversight that should be more of a board role that understands the functions of the supervisory society group institutions both associated

with the utilization and management of marine and coastal waters. This includes winning matters related to the supervision of the Marine Protected Area (MPA), the zoning arrangements for the utilization of marine and coastal spaces and so on. The forum needs to address existing regulations relating to marine and coastal water use and management activities in Laikang village including Laikang Bay.

- d. In addition to the three institutions that may be able to walk and act properly there should be institutions that are included in the coordination of village heads or village institutions that have been structured in village apparatus. Institutions such as Community Empowerment Institutions (*LPM*), Village Representative Bodies (*BPD*), and others in accordance with the structure of village organizations. Those forum need to address existing regulations relating to rural activities outside the rules of the above three institutions including existing *RPJMD* documents, *Perdes*, and other rules formally enacted in relation to village development and official agency functions is in Laikang village.

Finally, the *FGD* agreed to discuss the plan of making the Strategic Planning (*RENSTRA*) to be discussed at the village level coordinated by Laikang Village Head to identify the advantages and/or shortcomings of existing regulations including all documents related to the above four areas. These village level discussions will then be used as arrangements to be enforced in the Laikang village in the form of a Strategic Plan (*RENSTRA*) of Laikang Village in the long term. In this document the Coastal Resource Management Strategic Plan addresses all the results of meetings and discussions of stakeholders (institutional) in the existing coastal areas of Laikang. This strategic plan begins with an overview of the potential of natural and human resources including the existing facilities and infrastructure in the coastal area of Laikang village. Then strategic issues in the utilization of coastal resources and

vision, mission, objectives and targets to be achieved in the management of coastal resources in the village of Laikang. Furthermore, the program and activities in every aspect of Laikang village development and success indicators are presented. It is hoped that this document will help the planning, implementation and evaluation process of Laikang village development in the future.





## Chapter 4.

# Pilot project case studies in Takalar - Indonesia

### 4.1. Local Profile and Needs Assessment

#### Local Community Profile

This pilot project located in Laikang Village, Mangarabombang Sub District, Takalar District. Local profile was conducted by interviewed 42 respondents consisting of 15 fishermen, 21 seaweed farmers and 6 fish processors. All respondents have a second job to make ends meet, both from fishery and non-fishery. Side jobs related to fishery such as fishing, seaweed farming, and fish processors. Whereas non fishery moonlighting include grocery store merchants, fuel retailers, construction workers, farmers and planters. The respondents' experience in their main jobs reached 20 years, especially for fishers. All respondents are Muslims, local residents born and raised in Takalar District which means they are of Makassar ethnicity. 37 respondents were married, 3 people are not married, one divorced and one widower.

Characteristics of respondents based on the age distribution showed that 95% of respondents are in productive age percentage: 15-64 years. The population age structure is considered young when



the proportion of young population as much as 40% or more, while older age groups is less than or equal to 5%. On the contrary, population age structure is considered old when the young group is less than or equal to 30% while its old age group is greater than or equal to 10%. Based on this, the age structure of fishermen mostly falls into young groups (productive age) who are able to work in order to produce goods or services to meet the needs of themselves and to community. Most respondents are less educated (38.10%) or only attended formal elementary education (30.95%). This is because the demands of the economy and the mindset of parents believing that every child should help parents to earn a living. Only up to 2.38% of the respondents have higher education on diploma level, it indicates that there is still a desire to receive capture technology seen in the respondents' efforts, to increase ability to innovate.

The next social and economic characteristics of respondents is the amount of revenue per year with a range of income of IDR 3 million to 8.65 million/year. 51% respondents' income is quite high at around IDR > 5 million/year, this shows that the fishing is not the only livelihood but they also have side jobs as farmers, self-employed, workers of fisheries, industrial workers, building porters, stone porters, village officials, or factory workers with an average income of IDR 750,000 per month. The respondents used the revenue to support their families of average 3-4 people.

The respondents' participations in the institutions are still very low in both institutions formed by the initiation of the government, NGOs and of the community itself. The results of the baseline survey showed that there are three institutions on the research sites namely seaweed farmer group, a fishermen group and fish processing group. Only 23% of 42 respondents were involved in business institutions both as administrators and members. The existence of business institutions is only to the dissemination of government assistance programs, while other functions have not run well.

Source of respondents' capital in running their business comes from their own of capital and loans. To start a business, of respon-

dents use their own capital, loan capital is generally used to run and develop the business. Most of loan capital came from seaweed collectors with loan size ranges between IDR 500,000 to IDR 5,000,000, the term of the loan and the amount of installment is very flexible depending on the respondent's ability to pay. This loan is more to seaweed traders' strategy to bind the respondents in order to sell seaweed. Respondents do not operate financial management of business properly, lacking the habit of recording income and business expenses. This resulted in mixing business finances with household finances. In terms of savings, the majority of respondents have no savings of any kind, only about 12% of respondents who have deposits of gold or savings.

### Capture Fisheries Activities

Catching fleet used by fishers are <5 GT traditional boats with pelagic fish, shrimps and crabs as the main commodities. Respondents are 'one-day fishermen' which means that the capture sites are between 0-4 miles of shoreline on the Puntondo coast up to Jenepondo coast. Fishermen's operational time generally starts in the afternoon at about 5 PM when the fishermen install nets, then pick up the nets the next morning around 8 am. They catch fish every day, except when they are sick or there is an urgent need. The fishermen still largely use traditional technology with fishing gear such as gill nets, fishing line, long line or trawl. Fishers have some ways sell the catch, like selling the catch themselves or through local retailers or collectors. Fishers sell their catch by themselves when they only caught a few, they sell the fish to the neighbors or restaurants. Sales through retailers and collectors are only for big number of catch.

Income from fishing is uncertain, depending on weather conditions. Income earned is just enough to meet the needs of everyday life. Therefore, all respondents have side jobs to make ends meet. Respondents will continue to survive and run the fishing effort due to limited skills and capital to start another business. All re-

spondents consider fishing is a job with bleak future. Respondents do not expect their children to work as fishermen; this is due to the high risks and uncertain incomes that rely heavily on seasons. Respondents have expectations to increase revenue from fishing effort is by increasing their resources like bigger boats, more fishing gear (more nets), capital support from the government as well as preserving the fish resources through the use of environmentally friendly fishing gear.

### Aquaculture Activities

Geographically, Takalar Districts is between the Makassar Strait and the Laikang Bay making the current in this region relatively calm. These conditions allow marine and brackish water aquaculture activities to thrive. Commodities cultivated by the people of Takalar District including the seaweed, milkfish, crab and tiger prawns. In addition, some people perform catfish and tilapia cultivation in the inland open waters. However, seaweed farming is predominant among the community.

Takalar District people rely on seaweed farming as their main livelihood. Therefore, total production continues to increase and it becomes a commodity for the region of South Sulawesi. In 2015, Takalar District as contributed 31.80% of total seaweed production in South Sulawesi. Meanwhile, when compared to national production, Takalar District seaweed made 23.04% contribution (Department of Marine and Fisheries, 2015). Seaweed being cultivated by Takalar District people is *Eucheuma cottonii* cultivated in marine waters, while *Eucheuma spinosum*, *Gracilaria sp* (Sakul) and *Caulerpa sp* (*lawi-lawi*) are cultivated in brackish waters (ponds). *Caulerpa sp* cultivation is still limited because it is relatively new so the market opportunity is still limited.

### Product Processing Activities

Marine and fishery products processing activity in Takalar District consists of boiled fish processing, seaweed sticks, seaweed

crackers, shredded seaweed, meatballs, dried fish, crab, and fish brains. Mangarabombang owns existing business processing for boiling crabs, fish meatballs, taffy, chips, seaweed sticks and mangrove tea. These skills to make processed products were obtained from several agencies, both government and NGOs. The agency is the Department of Marine and Fisheries Takalar, Center for Environmental Education (PPLH), Oxfarm (international non-profit organization), and The Clinic of science, technology and business (KIMBis). Most of the processors feel that their knowledge processing techniques are still limited, it makes them even less satisfied with the quality of processed products.

Seaweed sticks processors feel sufficiently proficient in technology mastering. This is possible because the equipment needed is available and easy to operate. While blue swimmer crab processing, meatballs, taffy and mangrove tea processors find the technology difficult. In the processing of blue swimmer crab and crab, processors require more modern stripping technology as manual process requires a long time. Similarly, in mangrove tea, the processing is still done traditionally so they need more modern dryers.

Processing is done in small processing building. Processing of fish sticks is only done in May to December when no binding of seaweed. Total seaweed raw material used is 2 kg per one production. They process other products every day. Crab processing capacity is 800 kilograms per month, while the mangrove tea is 2 kg per month.

Regarding the quality and packaging of processed products, that all the respondents were not satisfied, because the packaging is very simple. While in terms of quality, all processed products have good enough quality. Making these preparations are still small scale with the purpose of the local market. The local market such as stalls, school, travel, or accept orders directly. However, even local markets are slow because consumers only limited to the villagers, and tourist spots only have few visitors. The limitation in packaging and marketing techniques is the cause of underdevel-

opment in Takalar fishery and marine product processing activities especially in Mangarabombang.

### Fisheries Resources Management and Natural Disaster

The concept of fisheries resource management has not been socialized properly in the community. About 83% of respondents did not know how to manage resources sustainability although 40% of respondents feel the decline of fishery resources. The knowledge of respondents in managing fishery resources is limited to the use of fishing gear that does not cause any damage such as bombs and potassium as well as on programs and government assistance.

Based on the interview, the respondents said that the management of fisheries resources is the responsibility of the government (Department of Marine and Fisheries and the Ministry of Maritime Affairs and Fisheries), a group of fishers and fisher. The role of the respondent in the management of fishery resources include (1) engage in fishing activities in accordance with applicable regulations, (2) supervise the infringement and (3) do not pollute the sea. Knowledge in the management of fishery resources respondent obtained from the media, department of marine and fisheries as well as from friends or around the community.

Likewise, respondents' knowledge on climate change, only 40% of respondents know and understand better the impact of climate change on fishing activities, aquaculture and activities of coastal communities. The impact of climate change on coastal communities include reduced catches, raw materials production, fish processing and aquaculture. Respondents' perceptions of the impact of climate change include increased temperature, increased rainfall, increased sea levels, erosion, decline in fish resources and the increased incidence of hurricanes and typhoons. Meanwhile, respondents' perception of the impact of natural disasters towards coastal communities include loss of property, lives, inhibiting the activity of fishing, aquaculture, fish processing and marketing.

## Need Assessment

In interviews with the marine and fisheries department officials, chairman and group of respondents, the following Table 5 describes some training can be done to increase business revenue in coastal communities.

### 4.2. Enhancing Community Knowledge and Institution Development

Enhancement Community Knowledge and Institution Development is an activity that aims to transfer knowledge about the concept and implementation of coastal community development, and strengthening the function and role of local institutions in order to develop resilience capacities of coastal communities. These activities include: 1) coordination with stakeholders, 2) Training on Leadership, advocacy and community development, and 3) Workshop on Participatory Planning on Resource Management and Conflict Management for Sustainable Livelihood.

#### a. Coordination with stakeholder

Coordination with stakeholders are conducted at planning activities and implementation. The types of stakeholders involved are tailored to the goals of the phases to be achieved. In the case of Takalar, the stakeholders involved in the planning phase are the Takalar District Office of Marine Affairs and Fisheries and the Takalar Village Government as the representative of the government, PPLH Puntondo as the representative of the NGO, and the Community Leader as the representative of the community. The result of this activity is Plan of Action (PoA) which contains programs that will be implemented in order to increase resilience of coastal communities. The program plan consists of short-term, medium-term and long-term plans.

In the Implementation Phase, the stakeholders involved are tailored to the material to be submitted to the target

Table 5. Needs of Human Resources Capacity Building in Mangarabombang, Takalar District, 2016

Type of Training	Training Theme	Training Participants	Number of Participants	Duration	Location	Facilitator
Training to The Community	Packaging, processed products marketing and branding	processors and traders	10 Participants	2 days	Takalar District, South Sulawesi	DG of Competitiveness Intensification of the CTF Products
	Seaweed processing and shellfish waste utilization	processors and fishers	10 Participants	2 days	Takalar District, South Sulawesi	ToT Participants
	Financial management, and preparation of feasibility proposals	management group of aquaculture, fishers, fish processors /RL	10 Participants	2 days	Takalar District, South Sulawesi	Hasanudin University
	Cultivation Techniques and Handling seaweed diseases	seaweed cultivators	10 Participants	2 days	Takalar District, South Sulawesi	Seaweed Cultivation Research and Development
Internships	seaweed (tortilla, jelly, taffy) processing	Processors	3 Participants	5 days	Center of Lombok, NTB	KUB Putri Rinjani
	shellfish waste utilization	Fishermen and fishermen families	3 Participants	5 days	Bekasi, West Java	P2MKP (Training Center for Independent Marine and Fisheries)

stakeholders related to coastal village resource development. The stakeholders are academicians and scientists represented by PPSEKP and Hasanudin University of Makasar, government elements of DKP Takalar and Laikang village apparatus, Takalar District Cooperative Office, BPMPDK of Takalar District, BUMDES of Laikang village, and PPLH Puntondo. At this stage the results achieved are the accomplishment of knowledge on coastal resource-based coastal resource development techniques.

#### b. Training on Leaderships, advocacy and community development

In case at Takalar, training was held for 2 (two) days, at Teluk Laikang Meeting Hall, Laikang Village, District of Mangarabombang, Regency of Takalar. The first day consists of 2 (two) sessions, materials at first sessions are Small, Micro, and Medium Business (UMKM) Management and Village Holding Business (BUMDES) Management, and Management of Village Funds and Its Contribution to Village Holding Business. Materials of Second session are Technical Guidance for Community Business Groups (Technical, Financial), and The Role of NGO (PPLH Puntondo) in Guiding the Preservation of Coastal Resources in Takalar. Second Day was including 2 (two) Sessions. The materials at first sessions are Cooperation Opportunities in Utilizing Coastal Resources in the Regency of Takalar, Group Organization Techniques (i.e. proposal drafting, network establishment, communication). The material of second session is Team Building. The participant of this activity are about 46 (forty-six) people. The participant consisted of fishermen, seaweed farmers, fish and seaweed product processors, village officials, BUMDES employees, and community leaders.



The results of this activity are measured from two aspects: Participants Perception on Training Preparation and Participants Perception on Training Impact. The results of the evaluation of training preparation on training and workshop activities are shown in Figure 3.

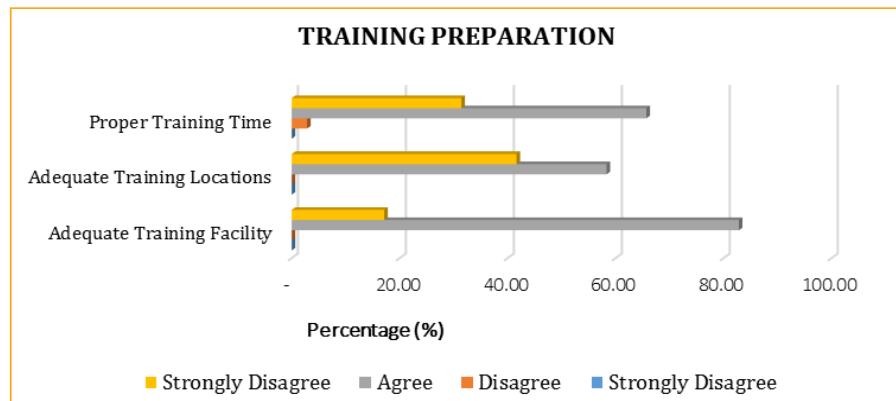


Figure 3.

Participants perception on training preparation in the regency of Takalar, 2016

It is seen that most participants feel good about proper training time, training location, and training facility. However, the perception of some participants who stated less agree, indicates that there are some things that has improved in terms of preparation of activities, especially on proper training time. Meanwhile, in terms of the impact of training activities, it shows different perspectives on each material. The image below shows this.

There are 6 (six) parameters to measure the training impacts. 1) Community are able to improve their knowledge and skill to work through the training material, 2) The introduced material can increase business productivity, 3) It might be improve the income, 4) Training could improve the relationship among the parties, 5) Create the relationship between the community members, 6) Improve the value added of the product (leadership, business management ability and etc). Based on these parameters above mentioned, more than 60%

participants agreed that the training would give positive impact to income revenue, business productivity, and knowledge and skills of participants. More than 50% of participants were also agreed that the training could improve added value, create new relationship among community members, and strengthen relationship between the parties (Figure 4).

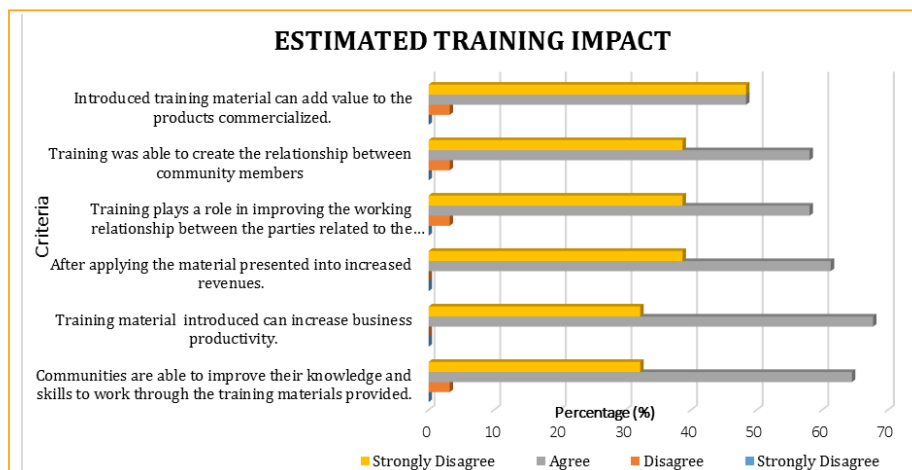


Figure 4. Participants Perception on training impact in the regency of Takalar, 2016

### c. Workshop on Participatory Planning on Resource Management and Conflict Management for Sustainable Livelihood.

In Takalar, workshop was held on at the *PKK* Hall (Aula Gedung *PKK*), Takalar District. Approximately 40 people attended the event as the representative of the following stakeholders:

1. The Government was represented by Marine and Fisheries Department, Takalar District, Community Empowerment Board and Village Authorities of Takalar District, Cooperatives, Industry, Commerce and Energy and Mineral Resources of Takalar District and the Laikang Village Apparatus.
2. Academics and scientists were represented by researchers from the Socio-Economic Research Centre of Marine and

Fisheries and Lecturer from Hasanuddin University.

3. The Community was represented by fishermen, farmers and fishery processors at Laikang Village in Takalar District and Administrator BUMDes (Rural-owned enterprise) Laikang.
4. Non-Governmental Organization was represented by PPLH Puntondo.

With this seminar and academic workshop on coastal villages-based coastal resource development program and dialogue between mentors and participants, it is expected that we will come to an understanding on the development program in village-based coastal areas. With the existence of coastal resources development program and policy, it is expected that activities of village-based coastal community empowerment can be implemented based on village's potential and other supporting resources, particularly the development of Science and Technology, and Human Resources. From session coastal development plan and policy in Takalar District, the participant became aware of the potential for seaweed resource development, the problems and the strategies required for the development of seaweed business in Takalar. Meanwhile from session of support for knowledge management system toward the development of coastal communities, participants became aware that Takalar is one of the villages considered to have implemented national resilience. To support it is needed a reliable and integrated data, which consists only one standardized data, standardized metadata and a data portal. One Map Indonesia is an effort to build a map as a way to communicate among parties, and therefore, this map must cater one reference, one standard, one database, and one geoportal. In addition to the Research Center, universities can contribute in providing data.

Session of The Role and Support of Cooperative in Improving the Welfare of Coastal Communities and the session of the

Community Empowerment Program, provides an understanding of the importance of village economic institutions to develop community welfare. Village Owned Enterprises (BUMDES) and cooperatives can perform the role. An institution/entity as a Cooperative or BUMDES is set up based on four factors: capital, natural resources, human resources and sales marketing (distributions and sales of goods). But the most important thing is human resource, because it will change the systems and styles.

Through The Prisoner's Dilemma of Game Theory in utilizing and managing Marine Fisheries Resources, participants become aware that the clarity of information from all resource users is very important to avoid prejudice that can lead to people acting individually and creating damages. Therefore, cooperative strategies through dialogue amongst users become a solution to determine measures to resolve problems within marine and fisheries sector. In consequence of the aforesaid, the objective of management, which initially was individuals' short term interest, has to be transformed into long term objectives determined collectively. Beside that, Community has the right to utilize Marine Fisheries Resources but they are also obliged to preserve the sustainable benefits of these resources. In relation to their rights, the community has to have position(s) on all levels, both in operational and decision maker. Implementation strategy of Managing Marine Fisheries Resources comprises of three aspects, i.e. 1) institutional strategy; 2) technical strategy; and 3) adaptive strategy.

As a follow up of activities from the seminar and academic workshop, it is expected that activity development within coastal areas can be executed on village-based in line with the available potential resources, both technically, social-economically and culturally. In practice, the implementations can be carried out in an integrated manner among the mentors, and all parts of stakeholders with community will go forward independently.

### 4.3. Coastal livelihood development

Table 6.  
The linkage among activities, participants and Teaching Methods

Activities	Participants	Teaching Method
<i>Internship</i>		
Internship for seaweed product processing in Central Lombok	There were 3 apprentices. They are 3 women selected from numbers of product processor from seaweed ingredient	Participants directly participated in the production process, then they practiced independently: starting from selecting ingredients, weighing, production, and packaging. Afterwards, the Facilitator evaluated the result of the participant's work at the end of the work day.
<i>In house training</i>		
a. Training on seaweed processing for fisheries product processing SMEs	25 participants consist of fishermen housewives, seaweed farmers, product processors	The teaching method used "Demonstration and Example". Demonstration shows and plans how a job or how something is done. This method involves breaking down and demonstrating something through examples. This method is very easy for the trainer to teach real activities through a planning stage of "how and why" in doing the works. This method is very effective, because it is easier to show the participants how to do a task, combined with learning aids such as pictures, material texts, lectures, and discussions
b. Training On Calmshell For SMEs of Fisheries Product Processing	20 participants consist of 17 men and 3 women. The participants work as fishermen, shipbuilders, seaweed farmers, and housewives.	
c. Training of Seaweed Cultured With Verticulture Technique	There were 25 trainees consisting of 17 men and 8 women. The livelihoods of the trainees are fishermen, seaweed farmers and seaweed binding women	
d. Training of Mudcrab Cultivation Development Model	25 fishermen and seaweed farmers	

## Seaweed Processing Internship

The purpose of the internship is to 1) transfer knowledge in the production of various seaweed products, 2) transfer knowledge in the management of small and medium businesses, 3) practice in production and packaging, 4) standardizing of the processed product produced by the apprentice. There were 3 apprentices selected from a number of product processor from seaweed ingredient. The practice or work was executed under the supervision of 2 facilitators. There were 7 types of products whose production was taught or practiced: 1) seaweed ice cream, 2) papaya and seaweed sweets/candy, 3) seaweed sticks, 4) sun-dried seaweed and bananas, 5) Seaweed crackers, 6) seaweed and corn tortilla, and 7) seaweed and cassava tortilla. Participants directly participated in the production process then they practiced independently: starting from selecting ingredients, weighing, production, and packaging. Afterwards, facilitator evaluated the result of the participant's work at the end of the work day.

The result show that the 3 apprentices selected from the ranks of seaweed-based product processors. Of these 3 apprentices, 1 senior processor with long production experience; 1 younger person with good marketing and skills; and 1 very young, highly energetic, well-educated person with a good sense of business management were selected. Therefore, these 3 were expected to form a strong team in establishing a business of processing seaweed-based products. Evaluation on the participants shows that their production result is initially good. However, there are several items pertaining to quality that need to be standardized. Participants work hard to reduce trials-and-errors until they reached the same quality standard with the products traded by "UD AZHARI" business trade. From the results of internship, it is shown that the 3 people with different characters have potential to cooperate in establishing the business of processing seaweed products. The suggested focus of business activities comprises of production, packaging, and marketing. These three segments cannot be performed by a single indi-

vidual all by herself: they need to cooperate according to their respective characteristics and interest. However, sales can be helped by their husbands, or fellow fishermen, or other villagers.

Finally, the internship's knowledge relating to business management, starting from business planning to development business, has improved. The facilitator transferred knowledge on the basics of establishing a business, in this case including business management and how the team can establish business by supporting each other. The apprentice learnt and practiced the production of 7 seaweed-based processed products. This exceeded the target set by the team, i.e. for 4 products. All 7 products that they generated have complied with the quality standards of UD AZHARI. Otherwise, the facilitators also shared their experiences for this business, both the successes and failures, and identified opportunities that can be developed in Takalar. In this case, mutual knowledge sharing is the key in developing a joint business.

### Seaweed Product Processing

Takalar District Government continuously seeks ways to improve the welfare of coastal communities, and entrepreneurs are also expected to participate both in business development and production and assistance to improve production quality. Training on processing products made from seaweed was carried out on 26-27 April 2017 in Laikang Village, Laikang District, South Sulawesi Province. The training on seaweed processed products was attended by 25 seaweed processors in Laikang Village. The teaching method used was "Demonstration and Example". This method is a demonstration that shows and plans how a job or how something is done. This method involves breaking down and demonstrating something through examples. This method is very easy for the trainer to teach real activities through a planning stage of "how and why" in doing the works. This method is very effective, because it is easier to show the participants how to do a task, combined with learning aids such as pictures, material

texts, lectures, and discussions. In applying this method, training on processing seaweed products is led by a trainer with the expertise in making processed seaweed products. The method used in this training is to practice directly how to process the product to the participants. It was taught by trainers who came from Lombok (West Nusa Tenggara).

The result show that, the training on seaweed product processing attended by the women of Laikang Village, Takalar District, produced a variety of processed seaweed products. The processed product consists of 4 types of processed products, namely seaweed ice cream, seaweed sweets/candy, seaweed crackers, and sun-dried banana wrapped in seaweed. The training on these processed products can provide additional knowledge and skills of women trainees, in terms of processing products made from raw seaweed. This seaweed product training can encourage participants to develop and market the processed products so that it can help increase family income. Training is an activity designed to develop human resources through a series of identification, assessment and planned learning process. Evaluation is an important stage in the implementation of training activities. There are several reasons why we need to evaluate the training. First, the evaluation of the training program can provide a diagnosis on the form of revision that must be made to the existing training program in order for it to be able to achieve the objectives. Second, the evaluation of training programs can provide beneficial legal implications. And the third, evaluations of the training program will influence the decision to determine the alternatives of the program and the participants to be prepared in the future. Therefore, funds that had been already invested for a training program creates the need for an evaluation process on the effectiveness of training program implementation. Evaluation was also made to the materials and facilitators. Some indicators used in evaluating the facilitators include materials delivery, materials mastery, and communication ability. The evaluation of participants based on the motivation in-



indicator, participation level, and the ability to material understanding. Evaluation of both the participants and facilitators was done through observation and interviews.

### Clamshell Product Processing

Seashells can be converted into basic handicraft materials, which will provide economic benefits to the community. With the creativity and innovation of the Takalar community, the seashells that were originally useless can be transformed into a household-based commodity. This will supplement income for the women and the unemployed of Laikang Village community, which is located not far from the coast. There were 20 participants consisting of 17 men and 3 women. The participants work as fishermen, shipbuilders, seaweed farmers, and housewives. The material was presented by the Manager of “Kerang Mandiri” Marine and Fisheries Training Center in Bekasi. Training is an important aspect for the quality and ability of existing human resources. It will enable them to compete and keep up with the times, especially in the era of globalization, where science and technology in various fields grow rapidly. Training materials were divided into two: craft-making skills and business analysis. There are 4 types of products: decorative lights, tissue boxes, brooches and keychains. The stages of making shell crafts include the processes of washing the shells, moulding fibre for lamps and tissue boxes, and attaching the shells.

Training on shell crafts to Takalar coastal community is expected to generate positive impacts, such as overcoming the adverse effects of the presence of waste shells, provide jobs and alternative sources of income for the community, as well as the potential of being the icon of Takalar. In short, improving community capacity to process the shells was the reason we conduct the training. The training was facilitated by the expert from P2MKP (Independent Training Center of Marine Fisheries) Bekasi, West Java, which has the capability of delivering the material, mastery of the material,

as well as excellent communication skills. The facilities provided are not only as resources for producing craft but also the facilities of handicraft sales which will be produced by the trainees. The participants' responses to the training were positive, from the attitude, knowledge and skill of the participants. All participants of the training showed great enthusiasm and seriousness, with quite good understanding of the material, resulting in marketable products.

Laikang Village is one of the tourist destinations in Takalar community, especially for coastal tourism. However, the tourism support businesses – such as lodging business, restaurant, and handicraft / souvenir business – are not optimally developed yet. This condition is one of the potentials for the development of seashell business by the community. The development of a handicraft business in Laikang Village should be directed in the form of clusters and groups. The groups that are formed are then segmented according to the expertise of the group members in the stage/ process of making the shell crafts.

The focus of suggested business activities includes the provision of raw materials for seashells, washing and shell cutting business, moulding / fibre manufacturing business, final product design business, and seashells marketing business. By segmenting the business in each community, the craft industry of waste shells, starting from upstream to downstream, can be controlled by the people in the Laikang Village. However, this does not rule out the possibility of engaging communities outside the Laikang Village.

### Seaweed Farming – using vertical longline technique

The purpose of the training is to optimize the utilization of the land, maximize seaweed production, which in turn, increase the income of the community. There were 25 trainees consisting of 17 men and 8 women. The livelihoods of the trainees are fishers, seaweed farmers and seaweed binding ladies. The ma-

terial was delivered by researcher from The Center of Brackish Water Aquaculture, Takalar, Directorate General of Cultivation, Ministry of Marine Affairs and Fisheries and the farming practice instructor.

Seaweed farming is the main livelihood of the community in Laikang Village, so the technology to increase the seaweed farming area productivity is indispensable. Seaweed farming method that have been mastered and implemented by the farmers so far is longline method. The amount of seaweed production using the longline method is very dependent on the amount of land used: the more farming land, the higher seaweed production. Limited seaweed farming is one of the obstacles faced by seaweed farmers in Laikang Village to increase seaweed production. With these constraints, new technologies are needed. One of the technologies that can be applied to increase seaweed production on limited land is the vertical long line method. The vertical long line method utilizes the water column for seaweed farming, of course with several water quality requirements that must be met.

The seaweed farming with vertical long line method was introduced to the seaweed farmers in Laikang Village through trainings: facilitator provided theory and instructor facilitated practice. These trainings were given to farmers with the aim that the seaweed production can be increased optimally. The adoption of technology by the community is generally rapidly imitated if there are successful examples. Therefore, in the trainings, pilot seaweed farming with vertical long line method was done so that the farmers could see directly the comparison of production quantities produced by vertical long line method. After the training is done, the thing that needs to be followed up is monitoring of the growth of seaweed on the pilot field so that land productivity by vertical long line method could be identified.

The training with vertical long line technique is an effort to improve the capacity of seaweed farmers to increase production.

In this series of training, trials of seaweed farming with vertical long line technique were also carried out. Through these trials, it is hoped that the community will soon implement the knowledge gained from the training after seeing the actual production.

### Mudcrab farming

Mudcrab is one of the important economic commodities in the region Asia Pacific. This type of crab is popular with consumers both national and abroad because of its delicious meat and high nutritional value that contains a variety of important nutrients such as minerals and fatty acids w-3. Crab exports increased in 2012 by 17,934 tons compared to 2011 of 23,089 tons. In 2013, one of the crab importing countries originating from South Sulawesi is Taiwan with a frequency of 4 tons/day. However, currently some people make intensive catching which damage mangrove and caused crab population declined. Therefore, Ministerial Decree of Ministry of Marine Affairs and Fisheries No. 2015 regulates that > 300 grams crabs may be caught but crabs which lay eggs may not.

Out of the four species of Mudcrab found in Indonesian waters, *Scylla olivacea* has potential to be developed. These crabs are widely found and have been farming in South Sulawesi. However, the main obstacle in the farming is the provision of crab seeds. So far, the needs of seeds are still largely dependent on catching in the wild so that the production continuity is difficult to maintain throughout the year. One way to overcome the limited seed supply is crab hatchery. Therefore, it is necessary to build seed units to supply the seeds for Mudcrabs farming.

To develop the potential of Mudcrabs is through improving human resource capacity with training activities of Mudcrab development held in Laikang Village on August 26, 2017. The activity was a follow-up of Letter of Intent (LoI) between the Research Center for Marine Affairs and Fisheries Human Resources in this case, the Research Center for Brackishwater Aquaculture and Fisheries Extension Maros and the Research Agency for Marine Affairs and Fisheries Socio Economic with

the Government of Takalar District. One of the scope of cooperation is in the field of farming. The training purpose is to help fishermen and farmers in breeding crabs so it can increase the family's economic income.

Mudcrab (*Scylla serrata*) is one of fishery commodities potential to be farmed. Mudcrabs are found in many brackish waters that are overgrown with mangrove plants. The availability of these sea crabs is actually increasingly shrinking in Takalar District. This happens because so far the fulfilment of the crab demands rely more on natural catches. According to a survey from the Brackishwater Aquaculture Center Takalar, the southern waters of Galesong Subdistrict shows an average drop of 10.35 kg of catches larger than 125 grams to 6.95 kg with a size range of 80 - 125 grams in the last 4 - 5 years. Therefore, crab hatchery and cultivation are developed aiming to produce a cultivation technology which is effective, efficient and easy to be adopted by community.

The successful development of this technology is expected to provide an alternative livelihood for the community and eventually reduce poverty. Ultimately, it can contribute to local revenue (PAD) and increase the value of non-oil exports. Moreover, it is also expected to provide raw material source of crabs. This condition is one of the potentials for the development of Mudcrab cultivation by community. The development of this Mudcrab farming should be directed in the form of clusters and groups based on farming stages starting from construction of ponds, and techniques of cultivation, maintenance, harvest and post-harvest.

#### 4.4. Strategic Issues of Coastal Resource Utilization in Laikang Village

##### Dinamics of Coastal Resources

Laikang Village Mangarabombang Sub-District Takalar Regency is one of the coastal villages that has a very diverse coastal resources ranging from fishery resources, mangrove forests, coral reefs, and seagrass that is still well preserved.

### Capture Fisheries Resources

Takalar is an area that has considerable fisheries potential. Central Bureau of Statistics (CBS) data in 2009 shows that the amount of fishery production in Mangarabombang sub-district contributes about 20% of the production of Takalar Regency (BPS, 2010). This shows that the potential of Mangarabombang sub-district fishery resources is good enough. Not only in the aspect of productivity, diversity of fish species became the mainstay of Mangarabombang community, such as grouper, shark, ray, scad, giant trevally, mullet, anchovy, *japuh*, flying fish, sardinella, mackerel, skipjack, shrimp, squid, mackerel, fish egg, catfish, and cuttlefish.

### Aquaculture Fisheries Resources

Geographical landscape of Laikang Village located at Laikang Bay causes the sea currents in this area is relatively calm. This condition enables livelihood activities of marine and brackish cultivation to develop well. Commodities are cultivated by takalar people such as seaweed, milkfish, crabs and tiger shrimp. In addition, in the mainland waters area some people do aquaculture activities of catfish and nila. However, seaweed farming is a dominant activity performed by the community.

The area of aquaculture in the Mangarabombang region is 963 hectares or about 20% of the total aquaculture area in Takalar Regency (BPS, 2010). The area of Mangarabombang aquaculture area is ranked second after Mappakasunggu. Nevertheless, this aquaculture is still in coastal area only has not developed aquaculture in marine area oriented to export fish commodity and high selling value.

The aquaculture commodity which is the main commodity in Mangarabombang region especially in Laikang village is seaweed. There is no official data related to the area of seaweed farming in Laikang, but the data on the area of seaweed farming in Mangarabombang is about 855 ha or about 25% of the total aquaculture area in Takalar is 3,389 Ha. While for the production reached 36% or about 96,150 kg of 263,844 kg of production in Takalar (BPS, 2010).

### *Mangrove Ecosystem Resources, Coral Reefs, and Seagrass*

The condition of mangrove ecosystem in Laikang Village in 2009 is 52 ha in good condition and 20 ha in damaged condition, total of mangrove ecosystem area of 72 ha. In Puntondo Hamlet there is a Center for Environmental Conservation, which responsible for environment conservation, on of it focused on mangrove ecosystem. Mangrove ecosystem in Puntondo is also s one of Takalar tourism object as well as marine biota which is still preserved.

### *Economy Dynamics of Laikang Village*

The existence of Laikang Village in the coastal area makes the economic characteristics in this region colored by the utilization of coastal resources where the dominant commodity becomes characteristic in the economic structure of the community. Various types of resources make people have a double livelihood, in addition beside seaweed farming, they also generally become fishermen and or farmers and ranchers. The data of CBS in 2010 recorded that there were 3,349 livelihoods in the fisheries sector, 1,449 people doing marine fisheries business, 1,465 people doing fishpond business, and 135 people doing freshwater fisheries business. This indicates that fishery sector, especially marine and fishpond is a sector that has potential to be developed to improve coastal community welfare.

### *Economic Activity Characteristics of Capture Fisheries*

Fishermen in Laikang Village are generally small fishermen with fishing fleet of traditional boat size <5 GT with main commodity of pelagic fish, shrimp and crab. Fishermen are dominated by 'one-day fishing' fishermen where the catch is between 0 and 4 miles from the coastline on the coast of Putondo to Jenepono. The operational time of the fishermen generally starts in the afternoon around 5 pm fishermen put up the net then the net will be lifted the next day around 8 am.

The number of boats used by fishermen in Mangarabombang is 789 pieces with details of 213 boats without motorcycles, 434 boats with

outboard motors, and 142 boats (BPS, 2010). The technology used by fishermen is generally still traditional with fishing gear such as fish hook, longline or net. Marketing of fishermen catches through several ways that are sold by fishermen themselves or through retailers or collectors. Fishermen sell their own catches when the catch is small, fishermen sell fish to neighbors or restaurants. Marketing through merchants both retailers and collectors are made by fishermen when the catch is relatively large. Income from fishing is uncertain, depending on weather conditions. Revenue earned by fishermen is just enough to meet the needs of everyday life. Therefore, fishermen usually have other side business to meet the needs of his life.

### *Economic Activity Characteristics of Culture Fisheries*

Seaweed cultivation is an activity relying on by the Laikang community as a major livelihood. Therefore, the number of production continues to increase and become a leading commodity for the region of South Sulawesi. In 2015, Takalar has contributed 31.80% of total seaweed production in South Sulawesi. Meanwhile, when compared with national production, seaweed production in Takalar is 23.04% (MMAF, 2015). Seaweed farming commodities by the Takalar community are *Euchema cottonii* grown in marine waters, while *Euchema spinosum*, *Gracilaria sp (sakul)* and *Caulerpa sp (lawi-lawi)* are developed in brackish waters (ponds). The type of seaweed that has the potential to be developed is *lawi lawi* (*Caulerpa sp*) or sea grapes. The way of farming is not complicated and done tamed, and more resistant to disease makes *lawi-lawi* production continues to increase. Some investors are beginning to be interested in developing *lawi-lawi* but post-harvest handling and transport technologies that have not been mastered by farmers cause this untapped market opportunity.



Table 7.

Expantion of Seaweed Farming (*Gracilaria* sp and *Eucheuma* sp) in Takalar District.

Year	Area (Ha)		Production (Ton)		Number of Farmer
	<i>Gracilaria</i>	<i>Eucheuma</i>	<i>Gracilaria</i>	<i>Eucheuma</i>	
2015	7.492	13.386	76.885	623.720	6.600
2014	5.500	12.299	47.990	491.958	6.500
2013	2.080	3.550	47.514	429.609	6.500

Source: BPS, 2015

Seaweed farming techniques used by the Takalar community is a longline technique both used in marine waters and ponds. This technique has been done since the 1990s and has undergone various modifications in accordance with the increase of knowledge of the farmer. The knowledge is largely derived from the experience combined with the training materials they once received. The ability to combine these basic experiences and knowledge is a form of creativity from the cultivators of the seaweed of Takalar. Dependence on natural conditions, demanding farmers to make a more efficient cropping pattern so that the availability of seaweed can be maintained. Formally, these farmers belong to several groups. Marine and Fisheries Office noted there are about 180 groups of seaweed farmers in Takalar District with a maximum membership of 10 people. However, only a few groups are well managed, others still require intensive coaching. These groups received guidance from the Research Center for Marine and Fisheries Socio-Economic, Ministry of Marine Affairs and Fisheries.

### *Agricultural and Livestock Economic Activity*

The advantage of Laikang Village is its geographical condition which is not only suitable for marine and fisheries sector development as well as for the development of agriculture and livestock sector. The diversity of agricultural commodities cultivated is highly dependent on the season. In the rainy season, people plant rice crops, while in the dry season the land is planted with horti-

cultural crops such as watermelons, melons and chili. The purpose of rice farming is more to fulfill the needs of household consumption. As much as 70 percent of the harvest is consumed by farmers' households, while 30 percent is sold to meet daily needs and pay the production cost (RPJM Desa Laikang, 2011). Meanwhile, the planting of horticultural crops is more oriented to be sold. Melon and watermelon farming is a great effort to help the family economy. While red chilli planting requires intensive management intensity with a very fluctuating price so that farmers have to go through a very mature planning both in terms of planting time and technical cultivation.

In addition to agriculture, the community also conducts livestock business such as cattle, goats and poultry. Cattle are a livestock commodity that can be a measure of one's welfare. People who are able to have cattle above 7 tails can be said to be a person who has a fairly high level of welfare. While goats and poultry is a livestock commodity that much in demand because in addition does not require intensive care as well as procurement and maintenance capital is very affordable.

### Ecotourism Dynamics

Laikang Village has a very diverse coastal tourism potential, including the beautiful nature beaches of Puntondo Beach, mangrove tourism that is thick enough in Puntondo and Bodia, coral reefs are still preserved, and the procession of religious ritual *Maudu Lompoa* that reflects the characteristics of the religious Laikang.

Table 8.  
Internal and External Factors

SECTOR	STRENGTH	WEAKNESS	OPPORTUNITY	TREATH
ECONOMY	<p><b>Institutions:</b></p> <ol style="list-style-type: none"> <li>1. BUMDES, if properly managed</li> <li>2. Product, if able to adapt to market demand</li> <li>3. Cooperative, if working actively</li> <li>4. Economic Unit for Savings and Loans</li> </ol> <p><b>Human Resource</b></p> <ol style="list-style-type: none"> <li>1. Human resources in the productive age</li> <li>2. Available skilled personnel for exploiting the potential marine and fisheries resources</li> </ol>	<p><b>Capital;</b></p> <ol style="list-style-type: none"> <li>1. Budget limitations</li> <li>2. Limited facilities / infrastructure</li> <li>3. Less available market</li> </ol> <p><b>Human resource:</b></p> <p>Limited skills of processing marine and fisheries products</p>	<ol style="list-style-type: none"> <li>1. Potential abundant resources in fisheries, livestock, agriculture, services</li> <li>2. The existence of business partners with other parties for the utilization of resources</li> <li>3. Various government assistance programs related to facilities and infrastructure</li> <li>4. Supported by village regulations (3)</li> <li>5. Infrastructure is adequate</li> </ol>	
ECOTOURISM & ENVIRONMENTAL	<ol style="list-style-type: none"> <li>1. Potential resources: coral reefs, mangroves, seagrasses</li> <li>2. The beauty of the beach</li> <li>3. Laikang unique position, located at the most end location in Takalar District</li> <li>4. Potential location for seaweed seedlings</li> </ol>	<ol style="list-style-type: none"> <li>1. Less public awareness of the environment</li> <li>2. Lack of government programs related to environmental management</li> <li>3. Policy is not pro-environment</li> <li>4. Waste management does not exist yet</li> <li>5. Drying room Seaweed is not set up properly</li> <li>6. There is no arrangement of land and sea</li> <li>7. Environmental institutions do not yet exist</li> </ol>	<ol style="list-style-type: none"> <li>1. Become the location of the tourist destination</li> <li>2. Location close to Makassar (towncenter)</li> <li>3. Natural resources are still pure</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of public access to market the products of environmentally sourced creation</li> <li>2. No garbage dumps yet</li> <li>3. Planting of mangrove is not sustainable</li> </ol>

## Vision and Mission of Coastal Resources Management

### VISION



*The realization of an independent, advanced and dignified Laikang Village through sustainable community-based coastal resource management in 2027*



### ***Vision:***

The realization of an independent, advanced and dignified Laikang Village through sustainable community-based coastal resource management in 2027

### ***Mission:***

1. Optimizing community-based integrated and sustainable coastal resource management.
2. Encourage the improvement of the welfare of the people of Laikang Village through economic development in utilizing responsible coastal resources.
3. Utilizing the potential of coastal resources for ecotourism activities that uphold the values of local and religious wisdom.

## Aims and Purposes

### Short Term

The goal to be achieved in the short term (up to 5 years) is the implementation of development activities that become the basis in the development of coastal resources, especially facilities and infrastructure to support the livelihood of the community in the whole area of the village of Laikang.

The targets to be achieved are the establishment of facilities and infrastructure and pioneering economic activities of Laikang villagers through the development of integrated coastal resources between marine and fisheries and non fisheries sectors.

In this short-term period the priority programs and activities that need to be implemented are:

*Field of Coastal Economy Development*

This field has two programs namely the development of livelihood alternatives and livestock development. The scope includes the development of fisheries potential and non-fishery coastal resources. The priority of activities to be carried out within the first 1 to 5 year period of this strategic plan is presented in Appendix 1.

*Field of Environmental Management*

This field has two programs, namely the development of matters related to waste management and matters related to the environmental love movement. The priority of activities to be carried out within the first 1 to 5 year period of this strategic plan is presented in Appendix 2.

*Field of Ecotourism Development*

This field has two programs namely the development and provision of tourism services, processing of marine products and management of non-fishery potential. In addition, including the development of natural scenery, culture and history, fish and culinary cultivation. The priority of activities to be carried out within the first 1 to 5 year period of this strategic plan is presented in Appendix 3.

## Mid Term

The objective to be achieved in the medium term (up to 10 years) is the implementation of development activities that form the basis for the development of coastal resources to support the livelihoods of the community in the whole of Laikang village.

The target is the creation of economic activities of Laikang villagers through the development of integrated coastal resources between marine and fishery and non-fishery sectors. In the

medium term period ni programs and priority activities that need to be implemented is:

*Field of Coastal Economy Development*

The priority of activities to be carried out within the period of 5 to 10 years in this strategic plan.

*Field of Environmental Management*

The priority of activities to be carried out within the period of 5 to 10 years in this strategic plan.

*Field of Ecotourism Development*

The priority of activities to be carried out within the period of 5 to 10 years in this strategic plan.

## Long Term

The goal to be achieved over the long term (after more than 10 years) is to create a foundation and development activity that develops coastal resources in support of community livelihoods in the whole of Laikang village. The targets to be achieved are the creation of Laikang villagers' economy through integrated coastal resource development between marine and fishery and non-fishery sectors. In this long-term period, priority programs and activities that need to be carried out continue the development of the Laikang village economy through the implementation of socio-economic activities that have an impact on the people of Laikang. Evaluation of the impact of these activities is carried out after 10 years of implementation of activities to be carried out in accordance with this strategic plan.

Based on the FGD results, program activities that can be conducted for 10 (ten) years based on the three fields are as follows:

*Field of Coastal Economy Development*

The field of coastal economic development has 3 (three) programs: a) development of livelihood alternatives, which include village market development activities, kiosk development, establishment of village cooperatives, procurement of fish auction places and boat moorings, making Perdes on retribution, seaweed seed garden, homestay, renting sea transport; b) the development of breeders, which includes developing the potential of cattle ranches by bringing in superior cattle seedlings, making livestock feeds, Perdes on livestock management, structuring integrated livestock areas, managing livestock waste, structuring livestock, establishing a group of breeder farmers; c) the utilization of yard area, which includes the garden of live pharmacy (family medicinal plant) and living kitchen, plant seedling.

*Field of Environmental Management*

Environmental management is focused on 2 (two) main objectives namely; a) waste management, which will be realized in the activities diantaranta Training waste plastic waste recycling, landfill waste (TPA) + Organic Waste Bank, Build anorganic Trash Bank, Garbage Motor Procurement, Greening (mangrove planting, village park), Love of the Environment Movement (ex: clean Friday, motto pannels / persuasion to live clean, clean beach movement) and b) love of environment movement.

*Field of Ecotourism Development*

Ecotourism development is focused on 6 main programs; a) the provision of tourism services, which include Tour Guide activities (English speaking training, Diving Training, Provision of snorkeling and diving equipment, Ecotourism Information Center, Homestay Preparation, Open Space, Sea Palace (Underwater Warung), Traking Mangrove, Bath Tour, b) Seaweed Processing, which includes Seaweed Products and Souvenir Products (pandan laut-mat); c) Management of Non Fisheries Potential, which

is developing Tourism People's Garden/*Kebun Rakyat* (Mango and Lontar); d) Natural Panorama, Marine Cruise (see RL land, Para2), Outbound, Village exploration (traditional means of transportation-bicycle, *dokar*, boat), Healthy Kampong/Kampung Sehat; e) Culture and History, namely *Mawlid* Celebration, Rowing Boat Competition, Cultural Art (gambus), Historical Laikang; f) Fish Cultivation, the Tourism Cultivation of *karamba* (fishing in *karamba*, culinary).

### Strategies

The strategy intended in this regard is how the program put forward in this strategic plan can be realized in the form of activities that support the economic development of Laikang villagers. Some of the strategies that can be taken are as follows;

- a. Implementation of programs and activities by utilizing existing funding sources and in accordance with the existing financing format in Village Income And Budget (*APBDesa*) so that concretely can be implemented in accordance with the plans generated through Development Plan Meeting at Village Level (*Musrenbang*).
- b. Implementation of programs and activities by utilizing the existing financing sources in government institutions either central government, provincial government or district governments that are tailored to their respective government programs.
- c. Implementation of programs and activities by utilizing the existing financing sources in private institutions both private National or local or local which is tailored to the programs and policies contained in such institutions.



## Institution of Coastal Resource Managers (Structures, Tasks and Functions)

In managing coastal resources and exploiting the potential of coastal resources in Laikang Village, representatives of institutions in Laikang agreed to form a forum called “LAIKANG COASTAL RESOURCES DEVELOPMENT FORUM” with the structure as figure 5.

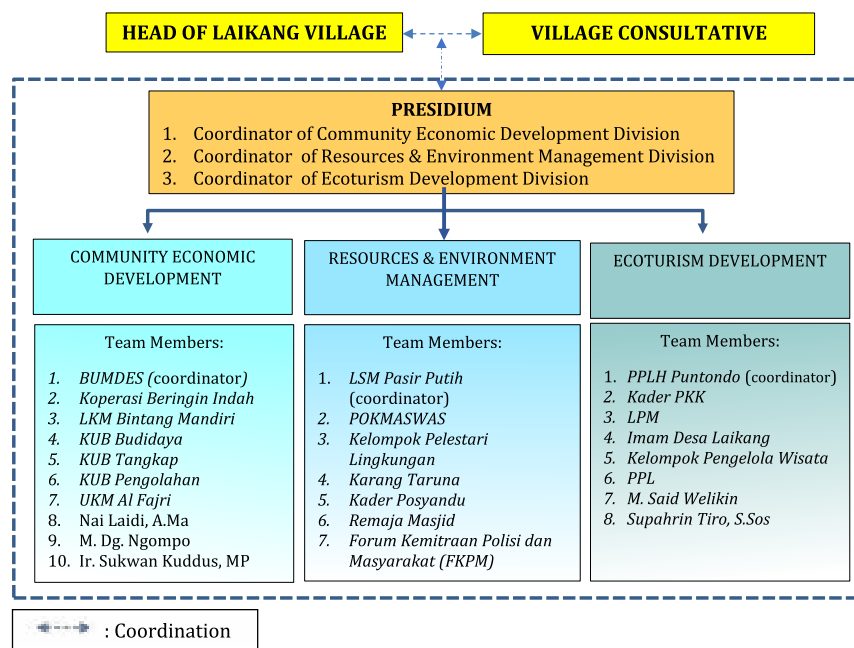


Figure 5.  
Coastal Resources Development Forum at Laikang Village

The forum above basically wants to help Laikang Village Chief in providing ideas and inputs to the village head in preparing the program up to running the program.

Tasks and Functions:

### Coastal Economy Development

*Tasks:* Develop and implement programs related to the development of coastal economy of Laikang Village based on

fisheries, agriculture, animal husbandry, marine tourism services and other potentials that can be used as economic resources for Laikang Village community. In carrying out its duties, the field coordinator always coordinates with the village head in the process of formulating and implementing the village program.

*Functions:* as initiators, catalysts and voluntary controls in encouraging the development of the coastal economy in Laikang Village.

### Coastal Resources Management

*Tasks:* Prepare and implement programs related to the management of coastal resources of Laikang Village based on fisheries, agriculture, animal husbandry, marine tourism services and other potentials to maintain controlled utilization and sustainment. In carrying out its duties, the field coordinator always coordinates with the village head in the process of formulating and implementing the village program.

*Functions:* as initiators, catalysts and voluntary controls in encouraging coastal resource management in Laikang Village.

### Ecotourism Development

*Tasks:* Prepare and implement program activities related to ecotourism development of Laikang Village that utilize the potential of fishery, agriculture, animal husbandry, and other potentials that can be used as tourist services in Laikang Village. In carrying out its duties, the field coordinator always coordinates with the village head in the process of formulating and implementing the village program. *Functions:* as the initiator, catalyst, and voluntary control in ecotourism in Laikang Village.





## Chapter 5. Closing Remarks

This guideline built based on the results of field experiences in increasing the resilience of coastal communities conducted in rural areas of Takalar District, South Sulawesi Province. The effort to increase communities resilience was done within 2 years. Initial activity planning was done through literature study on the efforts in order to increase resilience of coastal communities in Indonesia, and Takalar Regency, South Sulawesi in particular. At regional meetings, it was discussed and formulated into a joint questionnaire to obtain a profile of socio-economic conditions and community needs related to efforts to increase community resilience. Based on the social economic profile then composed the activities plan to increase resilience of people in Takalar District.

Various meeting, training, and internships aimed to provide better understanding for community about the economic development and institutional development at the village level. In addition, meetings were also conducted to improve the skills of the community related to product processing and handicraft at household level. Other meeting was arrange the management plan and

### Closing Remarks

utilization of natural resources of rural area can be done by community participatory approach.

Finally, this guideline might be apply to area that has characteristics similarity include natural coastal resources and human resources with project location in Takalar District, South Sulawesi Province, in Indonesia. Beside the guideline limitations, we kindly hope that this guideline could be adopt to coastal villages in surrounding Southeast Asia coastal area.

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**Appendix 1.**  
**Questionnaire list of local profile and need assessment**



**ENHANCING COASTAL COMMUNITY RESILIENCE FOR SUSTAINABLE LIVELIHOOD AND  
COASTAL RESOURCES MANGEMENT**

**SOAL SELIDIK KOMUNITI NELAYAN PANTAI DALAM PENINGKATAN DAYA TAHAN DAN  
PENGURUSAN SUMBER PERIKANAN MAPAN**

**PENGENALAN**

Terima kasih kerana mengambil bahagian dalam kajian yang dijalankan oleh SEAFDEC dan IDB. Tujuan kajian ini adalah untuk mendapatkan maklumat serta pandangan anda bagi menilai serta menyediakan keperluan bagi meningkatkan daya tahan komuniti terbabit. Kerjasama anda amat diperlukan bagi kejayaan kajian ini. Kami berjanji bahawa maklumat yang diperolehi adalah untuk tujuan analisis kajian ini sahaja dan maklum balas anda **DIRAHASIAKAN**.

ENUMERATOR	
Tanda tangan	: _____
Nama	: _____
Pekerjaan	: _____
Tanggal	: _____

**Nama Responden:** \_\_\_\_\_

**NO. KTP** : \_\_\_\_\_

**ALAMAT** : \_\_\_\_\_

**PROPINSI** : \_\_\_\_\_

**TEMPAT PENDARATAN IKAN (TPI)/,**

**LOKASI BUDIDAYA/PENGOLAHAN**

**NO. TELP:** : \_\_\_\_\_

## Appendix

### BAGIAN A: INFORMASI RESPONDEN

Berikan tanda (x) pada tempat yang disediakan

1. Umur: \_\_\_\_\_ Tahun
2. Jenis Kelamin:  Laki-laki  Perempuan
3. Etnis:  Makassar  Bugis  
 Bajo  Lain-lain (sebutkan) \_\_\_\_\_
4. Status Perkawinan:  Kawin  Tidak Kawin  
 Duda  Janda
5. Jumlah anak:  Orang
6. Tingkat Pendidikan terakhir:  Sarjana  Diploma  SMA  
 SMP  SD  Lainnya \_\_\_\_\_
7. Status pekerjaan:
  - a. Pekerjaan utama (*Pekerjaan utama= pekerjaan yang memberikan kontribusi terbesar pada pendapatan rumah tangga*)  
 Nelayan  Pembudidaya  Pengolah  Lainnya \_\_\_\_\_
  - b. Apakah anda seorang:  
 Pemilik  Nakhoda  Pekerja  Lainnya \_\_\_\_\_
  - c. Pekerjaan Sampingan (jika ada): \_\_\_\_\_
  - d. Berapa lama pengalaman pada pekerjaan utama? \_\_\_\_\_ Tahun
  - e. Keterlibatan dalam organisasi:

No	Nama organisasi	Kedudukan		Pengalaman (Th)
		Pengurus	Anggota	

**BAGIAN B: PENDAPATAN DAN PENGELUARAN RUMAH TANGGA**

Berikan tanda (x) pada tempat yang disediakan

## 8. Anggota keluarga

No.	Hubungan dengan kepala keluarga/Status dalam keluarga	Jenis Kelamin	Umur (tahun)	Tingkat Pendidikan	Status*	Pekerjaan		Pengalaman bekerja (tahun)	Pendapatan per Bulan
						Utama	Sampingan		
1.	Kepala Keluarga								
2.	Istri								
3.	Anak								
4.									
5.									
6.									

Nota: Status: 1-tidak kawin, 2- kawin, 3-duda, 4-janda

## 9. Saluran pemasaran:

Jual sendiri     Pedagang besar     pedagang kecil  
 Pabrik     Lainnya \_\_\_\_\_

## 10. Sumber modal

Sendiri     Pinjaman     Bantuan Pemerintah     Lainnya \_\_\_\_

Jika pinjaman,

Pinjaman/Hutang yang Diterima dan Tujuan Pinjaman

No	Sumber	Jumlah pinjaman/ hutang (Rp)	*Tujuan meminjam	Jumlah yang belum dibayar (%)
1	Pinjaman bank			
2	Pengumpul ikan/ toke			
3	Kerabat/keluarga			
4	Teman/tetangga			
5	a. Lain-lain (Sebutkan)			

\*Tujuan meminjam: 1-investasi untuk perikanan, 2-Investasi non perikanan,

3-kesehatan, 4-pendidikan, 5-konsumsi, 6-lain-lain (sebutkan \_\_\_\_\_)

## 11. Apakah anda merasa cukup dengan pendapatan yang diperoleh saat ini?

Cukup     Tidak

12. Jika **TIDAK**, sebutkan penyebabnya (jawaban boleh lebih dari satu):

## Appendix

<input type="checkbox"/>	Sumber pendapatan semakin berkurang
<input type="checkbox"/>	Ukuran kapal (GT) dan kapasitas mesin (PK) yang tidak sesuai kebutuhan
<input type="checkbox"/>	Biaya Operasional yang semakin meningkat
<input type="checkbox"/>	Kapal semakin banyak
<input type="checkbox"/>	Nelayan semakin banyak
<input type="checkbox"/>	Lain-lain (sebutkan)

---

---

13. Apakah ada kegiatan ekonomi lain yang anda lakukan untuk **menambah** pendapatan?

Jika **IYA**,

Jenis kegiatan: .....

Jumlah pendapatan/bulan: Rp.....

### BAGIAN C: PERAN DALAM PENGELOLAAN SUMBER PERIKANAN

Berikan tanda silang (x) pada tempat yang tersedia

14. Apakah anda tahu SISTEM PENGELOLAAN SUMBERDAYA PERIKANAN di kawasan ini?

Tahu

Tidak tahu

15. Jika **TAHU**, apakah anda setuju bahwa peran pemerintah dalam PENGELOLAAN SUMBERDAYA PERIKANAN sudah efektif ?

Tahu

Tidak tahu

Sebutkan alasan anda kenapa setuju/tidak setuju:

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Sebutkan SARAN untuk perbaikannya:

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16. Apa peran ANDA dalam PENGELOLAAN SUMBERDAYA PERIKANAN di kawasan anda?

17. Siapa saja yang berpartisipasi dalam mengelola sumberdaya perikanan?

<input type="checkbox"/>	Dinas Perikanan	<input type="checkbox"/>	Pemerintah Pusat
<input type="checkbox"/>	Pemerintah Daerah	<input type="checkbox"/>	Lembaga Swadaya Masyarakat
<input type="checkbox"/>	Lembaga Adat	<input type="checkbox"/>	Kelompok Nelayan
<input type="checkbox"/>	Lainnya (Sebutkan) _____		

18. Bagaimana anda memperoleh informasi terkait dengan PENGELOLAAN SUMBERDAYA PERIKANAN

<input type="checkbox"/>	Media Cetak (Leaflet dll)	<input type="checkbox"/>	Internet	<input type="checkbox"/>	Lainnya _____
<input type="checkbox"/>	Media massa (Koran, Majalah dll)	<input type="checkbox"/>	Dinas Kelautan dan Perikanan		

**BAGIAN E: JIKA ANDA SEORANG NELAYAN**

*Berikan tanda silang (x) pada tempat yang tersedia*

19. Bulan dan jenis ikan yang ditangkap

Bulan	Jumlah Trip/bln	Jenis Ikan (Kg/Trip)							
		Pelagis	Demersal	Udang	Sotong	.....	.....	.....	.....
Januari									
Februari									
Maret									
April									
Mei									
Juni									
Juli									
Agustus									
September									
Oktober									
November									
Desember									

**Appendix**

20. Penggunaan alat tangkap berdasarkan bulan

Bulan	Pancing	Bubu	Gillnet	Sero	Purse seine	Bagan	Muroami	.....	.....	.....
Januari										
Februari										
Maret										
April										
Mei										
Juni										
Juli										
Agustus										
September										
Oktober										
November										
Desember										

21. Lokasi penangkapan ikan/fishing ground (FG):

Bln	Jan	Feb	Maret	April	Mei	Juni	Juli	Agust	Sept	Okt	Nov	Des
FG												

22. Apakah anda merasa CUKUP dengan PENDAPATAN yang berasal dari pekerjaan NELAYAN?

Cukup

Tidak

23. Jika **TIDAK**, sebutkan alasannya:

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24. Apakah anda sudah berhenti sebagai nelayan?

Ya

Tidak

25. Jika **TIDAK**, sebutkan alasannya:

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26. Apakah anda ingin menjadi nelayan untuk selamanya?

Ya  Tidak

27. Jika **TIDAK**, pekerjaan apa yang ingin ditekuni?

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28. Apakah anda mengharapkan anak-anak anda menjadi nelayan?

Ya  Tidak

29. Jika **YA**, sebutkan alasannya (jawaban lebih dari satu):

Pekerjaan sebagai nelayan menjamin masa depan  
 Pekerjaan sebagai nelayan *high profit*  
 Pendapatan sebagai nelayan stabil (*jika dikelola secara tepat*)  
 Lain-lain (sebutkan) \_\_\_\_\_

30. Jika **TIDAK**, sebutkan alasannya (jawaban lebih dari satu):

Pekerjaan sebagai nelayan tidak menjamin masa depan  
 Pekerjaan sebagai nelayan berisiko tinggi  
 Pendapatan sebagai nelayan tidak menentu  
 Lain-lain (sebutkan) \_\_\_\_\_

31. Apa saran anda untuk meningkatkan hasil tangkapan dan pendapatan anda?

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## Appendix

32. Menurut anda, apa yang akan terjadi pada sumberdaya perikanan dan kehidupan nelayan di masa depan?

- Sumberdaya akan berkurang
- Sumberdaya sama dengan saat ini
- Jumlah nelayan kecil bertambah
- Jumlah nelayan kecil akan berkurang
- Pendapatan nelayan akan meningkat
- Pendapatan nelayan akan berkurang
- Nasib nelayan semakin baik
- Nasib nelayan semakin susah
- Lain-lain (sebutkan)

**BAGIAN F: PERUBAHAN IKLIM / BENCANA ALAM**

Berikan tanda silang (x) pada tempat yang tersedia

33. Berikan persepsi anda pada pernyataan berikut:

- a. Apakah anda memahami tentang perubahan iklim?
- b. Apakah anda tahu tentang dampak perubahan iklim terhadap aktifitas penangkapan ikan?
- c. Apakah anda tahu tentang dampak perubahan iklim terhadap kehidupan masyarakat pesisir?

Ya	Tidak

34. Sejauh mana perubahan iklim dapat mempengaruhi kehidupan masyarakat pesisir?

- a. Membahayakan nyawa dan harta benda
- b. Mengganggu aktivitas kehidupan
- c. Mengurangkan hasil tangkapan
- d. Lainnya, sebutkan \_\_\_\_\_

Ya	Tidak

35. Sejauh mana pengaruh bencana alam yang terjadi setiap tahun terhadap kehidupan?

- a. Memusnahkan harta benda seperti rumah, peralatan menangkap ikan
- b. Menghambat aktifitas nelayan untuk melaut
- c. Hasil tangkapan susah dipasarkan
- d. Kehilangan nyawa
- e. Lain-lain, sebutkan:

Ya	Tidak

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## Appendix

### BAGIAN G: KEBUTUHAN PELATIHAN

Berikan tanda silang (x) pada tempat yang tersedia

36. Pernahkah anda mengikuti pelatihan yang berkaitan dengan perikanan?

Pernah

Tidak Pernah

37. Jika ya, sebutkan pelatihan yang PERNAH anda ikuti:

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38. Apakah pelatihan yang anda ikuti membantu anda menambah pendapatan?

Ya

Tidak

39. Apakah jenis pelatihan dibidang perikanan yang ingin anda IKUTI, dan sebutkan ALASANNYA?

Nama Pelatihan: Alasannya:

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40. Apakah jenis pelatihan dibidang non-perikanan yang ingin anda HADIRI, sebutkan ALASANNYA?

Nama Pelatihan: Alasannya:

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41. Apakah masalah yang dihadapi oleh kelompok nelayan dan masyarakat nelayan dalam mengembangkan usahanya?

Kelompok:

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Nelayan:

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## Appendix 2.

## Evaluation check list of knowledge sharing and capacity building

## QUESTIONNAIRE COMMUNITY PERCEPTION ON TRAINING IMPLEMENTATION

In an effort to optimize the performance of the Community Empowerment Program in order to better function, we ask your willingness to fill in the list of questions below. In accordance with the code of conduct of research, then all data and information we guarantee confidentiality. We hope you will respond honestly and openly according to your knowledge, observations, opinions and expectations. We highly appreciate your participation and sincerity in answering this questionnaire, therefore we thank you very much.

Please provide answers by crossing (X) on one of the available answer options. Only one answer is possible for each question.

### A. PREPARATION PHASE

No	Question	Answer				Score
		Strongly Disagree	Disagree	Agree	Strongly Agree	
1	The Training Facilities are adequate					
2	The training location is adequate and easily accessible					
3	The timing of the training is appropriate					

## Appendix

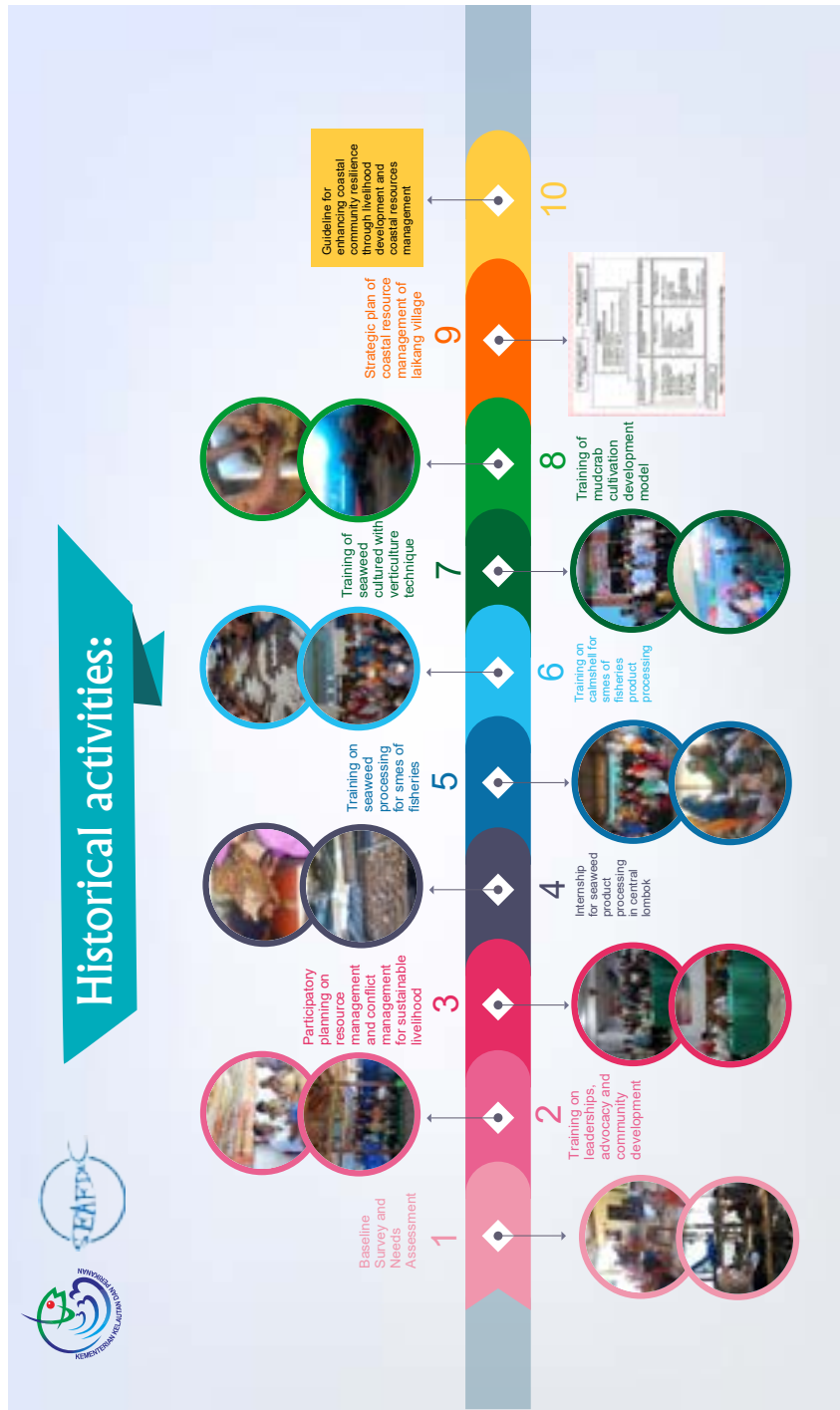
### B. IMPLEMENTATION PHASE

No	Question	Answer				Score
		Strongly Disagree	Disagree	Agree	Strongly Agree	
1	Material in accordance with the needs of the community					
2	Materials given during the training can be applied by the community					
3	Timing of training activities in accordance with community needs					
4	Ability to provide information and provide real advice related to the program.					
5	Able to assist the community in learning and understanding new skills in community empowerment efforts.					
6	Able to establish good relationships among community members					
7	Able to act as facilitator connecting between information sources and government (policy-makers) with communities being targeted by the program.					
8	Able to stimulate and encourage people to discover and recognize community's potential					
9	The training presenters are skilled in the art					
10	The presenters have good skills in the delivery of the material					

## C. ESTIMATE OF IMPACT OF IMPLEMENTATION OF TRAINING

No	Question	Answer				Score
		Strongly Disagree	Strongly Disagree	Strongly Disagree	Strongly Disagree	
1	The community is able to improve their knowledge and business skills through the training materials provided.					
2	The training materials introduced can improve business productivity.					
3	After applying the material submitted income business becomes increasing.					
4	Training plays a role in improving the working relationship between the parties related to the business being undertaken.					
5	Training can create closeness of relationships among community members					
6	The training materials introduced can increase the added value to the product being cultivated.					

Appendix 3.  
 Historical documentation for developing guideline of Enhancing Coastal Community Resilience Through Livelihood Development and Coastal Resources Management – case of Indonesia



Appendix 4.  
Program activities for 10 (ten) years for development for Laikang Village

Division	Scope	Program	Activity	Location	Activity/Program based year													
					1	2	3	4	5	6	7	8	9	10				
Community Economic Development	Potential of Fisheries Development	development of alternative livelihoods	1. Village market	Laikang				X										
			2. Development of coastal store	Puntondo														
			3. Establish village cooperative		X													
			4. Construction of Fish Auction Place, belaying boat	Puntondo				X										
			5. Village regulations on retribution															
			6. Seaweed seedlings	Puntondo Bay, Idle shrimp ponds							X							
			7. Home stay	Easstern coast of Puntondo														
			8. Rental of boat	Western coast of Puntondo														



Continue Appendix 4.

Division	Scope	Program	Activity	Location	Activity/Program based year															
					1	2	3	4	5	6	7	8	9	10						
	Non-Fishery Coastal Development Potency	livestock development	1. Developing the potential of beef farms by bringing in superior cattle seeds	All of region		X					X									
			2. Making animal feed garden	Boddia, Laikang	X					X										
			3. Village regulations on livestock management		X															
			4. Arrangement of Integrated Livestock Area	Dusun Boddia				X						X						
			5. Management of cattle manure waste	Dusun Boddia	X							X								
			6. Arrangement of farm space	Dusun Boddia	X							X								
			7. Establishment Pilot farmer group formation		x	x	x													
		Usage of Land Yard	1. Living Pharmacy garden (family medicinal plants); and Living Kitchen ( <i>Dapur Hidup</i> )	All of region, Priority at Ongkoa)	X								X							
			2. Nursery Plant		X								X							

### Program activities for 10 (ten) years for Environment Management for Laikang Village

Division	Scope	Program	Activity	Location	Activity/Program based year												
					1	2	3	4	5	6	7	8	9	10			
Environment Management	Waste Management		1. Training of recycling of plastic waste		X					X							
			2. Final waste disposal + Organic Waste Bank			X											
			3. Building anorganic waste Bank		X						X						
			4. Procurement of waste transporting motorbikes			X					X						
			5. Greening (mangrove planting, village park)			X					X						
			6. Movement of environmental love (ex: clean friday, signpost appeal live clean, movement clean beach, )									X					
	Movement of environmental love			7. Awareness / Socialization of waste management at the household level		X						X					
				8. Arrangement of public toilets		X						X					
				9. Arrangement of farm space									X				
				10. Spatial arrangement of the sea (location of seaweed cultivation, fish cages, bagan, mooring boats)								X					
				11. Rule-making including sanctions for offenders		X								X			

Program activities for 10 (ten) years for Environment Management for Laikang Village

Division	Scope	Program	Activity	Location	Activity/Program based year														
					1	2	3	4	5	6	7	8	9	10					
Development Of Ecotourism	Provision of Tourism Services	Enhancing Human Resources	1. Training for tour guide (ex: english course)		X					X									
			2. Diving training	X					X										
		provision of tourism support facilities	1. Provision of snorkeling and diving equipment	x															
			2. Ecotourism Information Center (maps of tourist areas, etc.)			X							X						
			3. Homestay		X							X							
	Coastal spatial planning		4. Public Area		X					X									
			5. Sea Palace (Underwater Shop)						X					X					
			1. Traking Mangrove						X						X				
			2. Coastal Bathing Tour					X								X			
			3. Location of cultivation														X		

Program activities for 10 (ten) years for Environment Management for Laikang Village

Division	Scope	Program	Activity	Location	Activity/Program based year														
					1	2	3	4	5	6	7	8	9	10					
processing of marine products			1. Development of Seaweed Processed Products	Puntondo	X					X									
			2. Souvenir handicraft (pandan leaf-mat)	Laikang and Puntondo		X							X						
Management of Non Fisheries Potential			1. Community Garden Tour/ kebun rakyat (Mango and Lontar)	Bodia, Laikang		X						X							
Natural scenery			1. Coastal exploration (see seaweed fields, drying seaweed)	Puntondo			X							X					
			2. Outbond	Pandala				X							X				
Culture and History			1. Exploring the village (traditional transportation;bicycle, gigs, boats)	Puntondo, Ongkoa		X					X								
			2. Healthy Village	Ongkoa	X								X						
Culture and History			1. <i>Maulid</i> celebration	All sub district	X						X								
			2. Rowing Boats Competition	Turikale and Puntondo		X						X				X			
Fish Cultivation			3. Cultural Art ( <i>gambus</i> )	Turikale	X						X								
			4. Laikang's History	Turikale	X							X							
			1. Tourism Karamba Cultivation (Fishing in karamba, culinary)	Puntondo	X				X									X	

Information is available:

Research Center for Marine and Fisheries Socio Economics  
Agency for Marine and Fisheries Research and Development  
Ministry for Marine Affairs and Fisheries  
Indonesia