



## Sustainable Community Development for Developing of Coastal Areas in Alor Regency, East Nusa Tenggara, Indonesia

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### ABSTRACT

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Community empowerment activities are carried out in Alor Regency-East Nusa Tenggara through the application of fish-based food processing technology in 2018 & 2019, aimed at improving the community's economy in the coastal area of Alor Island and building the concept of sustainable empowerment. The intervention stage is approached by the Community Capacity Building method. Community empowerment carried out through the transfer of knowledge and technology with continuous assistance has implications for improving coastal communities' skills and the use of technology to increase added value to get better income. In order for community empowerment to be sustainable, LIPI and the local government of Alor Regency have developed a community empowerment concept that local governments can implement to develop their areas and communities in a better and more competitive direction. By collaborating between R & D institutions, local governments, and business actors (*triple helix*) and the market, it is hoped that the economy of the people in the coastal area of Alor Island will run well and can be a lever in the development of areas based on the use of technology in the community.

## Introduction

The gap in Indonesia's regional development, especially between the western and eastern regions, has been continuing for



a long time. Eastern Indonesia is generally left behind from western Indonesia. It can be seen from the Human Development Index (HDI). The lowest HDI was at 60.06 in Papua Province, 64.39 in East Nusa Tenggara (NTT), while the highest HDI was in DKI Jakarta (80.47) and DI Yogyakarta (79.53).<sup>1</sup>

The regional (development) gap is also shown by the people's high poverty rate in Eastern Indonesia. In NTT Province, there are more than one million people, or 21.35% of the poor, and one of the districts with a relatively high poverty rate is Alor Regency, which is 21.63%, or around 44 thousand people in 2018. The poverty rate in Alor Regency is so high, even though Alor has many natural resources, especially capture fisheries. It is quite concerning.

To solve the problem, it is necessary to empower communities on the coast of Alor Island, aiming to improve the community's economy (Goal-1). Community empowerment in Alor Regency is carried out by implementing knowledge and technology for fish-based food processing. Empowerment with knowledge and technology interventions is essential to implement so that the poor on Alor Island can properly process their resources (fish) based on science and technology and get the added value and an increase in income from the results of this processing. It will reduce the poverty rate by improving the excellent quality of life and making a significant contribution to economic growth.<sup>2</sup> Moreover, Alor Island has wealthy marine resources that have the potential to be developed.

Currently, community empowerment often stops when the program is finished. What kind of concept should be developed by The Indonesian Institute of Sciences (LIPI) and the Regional Government of Alor Regency so that community empowerment activities can be

<sup>1</sup> BPS. *Indeks Pembangunan Manusia (IPM) 2018*. (Jakarta:BPS, 2018)

<sup>2</sup> Bloom, D.E., D. Canning, and J. Sevilla. "The effect of health on economic growth: theory and evidence." Working Paper 8587(2001), National Bureau of Economic Research. Accessed October 19, 2020. Retrieved from <https://www.nber.org/papers/w8587.pdf>.

carried out sustainably to lead to community development in Alor Island's coastal area (goal-2)?

Several methods are used for community empowerment activities in Alor Regency, more specifically on Alor Island. It is done by collecting secondary data by reviewing reports from BPS and the Department of Fisheries and Marine Affairs to identify the potential. Primary data collection was carried out through Focus Group Discussions (FGD) with representatives from relevant local governments, chosen as the data collection method because it took advantage of the various advantages of FGD.<sup>3</sup> The Community Capacity Building (CCB) approach is also used as an intervention stage so that the community as a community has the commitment and ability to build and develop themselves.<sup>4</sup> The collected data were analyzed qualitatively using content analysis to answer the research objectives, following Bengtsson's steps.<sup>5</sup>

### Improving economy on the community of the Alor Island Coastal Area

Why is the poverty level of the people on Alor Island so high even though the island is rich in fishery resources? Various causes can be predicted. First, fishery natural resources do not provide added value because the use of technology in fish processing is still low. According to Saparita et al.,<sup>6</sup> the use of technology in the agricultural sector is still under expectation. Second, the

<sup>3</sup> Masadeh, M.A. "Focus Group: Reviews and Practices." *International Journal of Applied Science and Technology* 2, no. 10 (2012): 63-68; Bennett, N. J., Roth, R., Klain, S. C., Chan, K., Christie, P., Clark, D. A., Wyborn, C. "Conservation social science: Understanding and integrating human dimensions to improve conservation." *Biological Conservation* (Elsevier) 205: 93-108 (2017).

<sup>4</sup> O'Neill, Peterson, Rode & Smith. "Community Capacity Building and The Adaptive Challenge." (2011) Accessed September 26, 2019. Retrieved from <https://www.alignab.ca/wp-content/uploads/2011/11/Learning-Our-Way-Presented-by-Liz-O%E2%80%99neill-Nancy-Pet.pdf>

<sup>5</sup> Bengtsson, Mariette. "How to plan and perform a qualitative study using content analysis." *NursingPlus Open* 2, (2016): 8-14. <https://doi.org/10.1016/j.npls.2016.01.001>.

<sup>6</sup> Rachmini Saparita, Savitri Dyah, Akmadi Abbas, and Elok W. Hidajat, *Membangun Sistem Inovasi Untuk Kesejahteraan Masyarakat*. (Jakarta: LIPI Press, 2015).

accessibility of science and technology is challenging for people.<sup>7</sup> Third, science and technology institutions are still not working optimally.<sup>8</sup> Fourth, technology providers have not applied much of their development results to society.<sup>9</sup> The community also has not seen many sources of technology providers for the completion of their lives.<sup>10</sup> Fifth, it is suspected that community empowerment activities are not accomplished sustainably so that the community is still not empowered enough to improve their lives independently. If the empowerment is carried out sustainably, it is hoped to improve the quality of life and encourage its community. Sail & Abu-Samah explains that community development is a continuous process that aims to improve the community's quality of life.<sup>11</sup>

Fishery production in Alor Regency is spread across all districts. The total fishery production in Alor Regency, almost all fishery production (99.99% of the total 18415 tonnes) comes from marine fisheries.<sup>12</sup> This potential has the opportunity to increase the economic growth of the people of Alor Island. Therefore, through the implementation of marine fish-based food processing technology (marine fish processing), community empowerment activities are carried out in Alor Island's coastal communities, to be precise, in Kalabahi, Teluk Mutiara District. To reduce the level of poverty in coastal areas, empowerment activities in 2018 began with evaluating

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<sup>7</sup> Rachmini Saparita, Savitri Dyah, Akmadi Abbas, and Elok W. Hidajat, *Membangun Sistem Inovasi Untuk Kesejahteraan Masyarakat*, (Subang: B2PTTG LIPI, 2011).

<sup>8</sup> Wijayanti, F., Dyah, S., Saparita, R., Abbas, A. "Institutional Transformation of Local Innovation Systems in Farmer Community of Belu, Nusa Tenggara Timur." *Journal of Sc&TI (Science Technology Innovation) Policy and Management Journal* 1, no. 2 (2016): 137-151.

<sup>9</sup> Zuhail, *Knowledge and Innovation: Platform Kekuatan Daya Saing*. (Jakarta: PT.Gramedia Pustaka Utama-Jakarta, 2010).

<sup>10</sup> Rachmini Saparita, Savitri Dyah, Akmadi Abbas, and Elok W. Hidajat, *Membangun Sistem Inovasi Untuk Kesejahteraan Masyarakat*,

<sup>11</sup> Sail, Rahim M., and Asnarulkhadi Abu-Samah. "Community Development through Community Capacity Building: A Social Science Perspective." *Journal of American Science* 6, no. 2 (2010): 68-76.

<sup>12</sup> BPS Kabupaten Alor. *Indikator Pertanian Kabupaten Alor 2016/2017*. (Kalabahi: BPS Kab. Alor, 2017); BPS Kabupaten Alor. *Kabupaten Alor dalam Angka 2018*. (Kalabahi: BPS, 2018)

2005-2006 activities and coordinating with the PMD and BP4D Services, responsible for community empowerment activities in Alor Regency. Reporting activity plans to the Regent of Alor (Figure 1). It is necessary as an effort to maintain the sustainability of activities in the community.

Figure 1. Coordination with various parties in the Alor District Government: (a) The Head of PMD service and staffs; (b) The Head of BP4D and staffs; (c) The Regent of Alor



Source: Fieldwork, 2019.

Apart from the local government, coordination was also carried out with the WWF coordinator in Alor District and with the research group from the Tribuana University, Alor Regency, so that similar activity targets do not overlap. There are four stages of implementing the CCB method for community empowerment in the Alor Regency. The stages carried out to follow the four steps recommended by Ubert et al. (2017),<sup>13</sup> adjusted to the conditions and capacity of the Alor Regency area so that there are: (1) recognizing the problems; (2) carry out fish processing training for target communities and local government staff who serve as trainers; (3) carry out assistance (technical and business); (4) building a concept for the sustainability of community empowerment programs.

Only the first three stages were carried out from four stages to improve the community's economy (goal-1). In stage, I in CCB, identifying the problems and determining how to solve these problems is done by capturing information through FGD, and the

<sup>13</sup> Ubert, T., Forberger, S., Gansefort, D., Zeeb, H., Brand, T. "Community Capacity Building for Physical Activity Promotion among Older Adults—A Literature Review." *International Journal Environmental Research and Public Health* 14 (2017) (1058). <https://doi.org/10.3390/ijerph14091058>.

data collected is analyzed by content analysis. The first FGD (6 March 2018) was held together with representatives from related agencies (PMD Office; Fisheries and Marine Service; Industry and Trade Service; Agriculture and Plantation Service, and BP4D). While the second FGD (7 March 2018) with fish processing business actors as representatives of coastal communities. The two FGDs were held at the BP4D office in Alor Regency (Figure 2).

Figure 2. Implementation of FGDs with the Local Government (a) and the Coastal Community (b) in Alor District



Sources: Fieldwork, 2019.

Analysis of the FGD I (with related agencies) contents informed that fish processing business in the community as a way of community empowerment in Alor Regency is challenging to develop because guidance and assistance to the community and MSMEs have not been running sustainably. It makes only four fish processing business groups out of 10 groups formed, and of the four running groups, only one business group is growing. From FGD I, it was informed that the regional government still felt that there were bureaucratic obstacles, and frequent employee transfers had disrupted the smooth running of activities. The content analysis of FGD I also revealed that most of the fish caught from the sea are still sold raw. The availability of raw materials (fish) in the community continuously is also uncertain. The fish caught is quite a lot during certain seasons and none (less)

when the weather is not good.

Content analysis on the marketing aspect, so far, the local government does not have a sales center for MSMEs. The local government has also not yet conducted business meetings with professional buyers. The role of BUMDes (Village-Owned Enterprises) has not been implemented optimally. So far, people who try to do business are limited to local markets.

Some hopes have been expressed that the local government wishes to develop the community by developing superior commodity household businesses. In this case, the caught fish, community empowerment is expected to be carried out in a sustainable manner, helping to open the marketing of community products, providing capital or providing access to financial institutions, ensuring the existence (continuity) of raw materials, opening access to information, and increasing promotion and market access.

The FGD with the community (FGD II) was represented by the “*Mawar Indah*” business group based in Binongko Village, Kalabahi District, Alor Regency. The Mawar Indah Business Group is a community representative who was the target of community empowerment in the previous LIPI activities (in 2005-2006) by implementing fish-based food processing technology. From 2005-2006, various technology utilization pieces of training were conducted for 60 people in two years (2005-2006)<sup>14</sup>. Amount of 60 people, ten business groups, were formed based on the use of fish processing technology, but in 2018 only four groups were still active (to become MSMEs), and the Mawar Indah Group was the most developed business group among the fish processing business groups in Alor

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<sup>14</sup> Sukarwanto, A., Erwan C., Triyanto, B., and Jaelani, N. “Teknologi Pengolahan Hasil Laut dan Pemberdayaan Ekonomi Masyarakat Pesisir di Kabupaten Alor.” In *Pembangunan Kabupaten Alor melalui Teknologi Tepat Guna*, by W.E. Hidajat, Tasaro and A. Abbas, (Subang: LIPI Press, 2007), pp. 115-132.

Regency<sup>15</sup>. Therefore LIPI chose Mawar Indah Business Group as a representative in the community and explored acceptable practices that were carried out for the learning of other communities on Alor Island.

According to members of the Mawar Indah group, fish processing activities are very dependent on the weather. When the weather is good, they can catch fish. When the weather is terrible, fish is hard to find; they (MSMEs) do not operate. Another problem is insufficient support or electrical facilities to carry out the government's equipment assistance.

Mawar Indah Group faced various challenges. When there is a fish problem occurring, the Mawar Indah Group runs other businesses, such as making banana and corn chips which LIPI also trained in 2004 (before receiving fish processing training). However, when fish was easy to find in lots quantity, the Mawar Indah group processed fish, such as shredded fish and fish crackers. The products of shredded fish and fish crackers have received P-IRT from the Alor District Health Office so that groups can more freely market their products.

In Phase II of the CCB, training on fish processing results was carried out again by LIPI as a refresher and updating of fish-based food processing technology for the "Mawar Indah" business group in 2018 (9 and 10 March 2018). LIPI realizes that the Mawar Indah Group's fish processing technology still uses old technology (introduced by LIPI in 2005-2006), both the equipment and the processing process. Therefore, in 2018 LIPI again carried out community empowerment activities to further increase added value according to developing technology. From the introduction of new fish processing technology and equipment, it is hoped that the target business group can increase product quality and improve the surrounding community's economy by absorbing labor and

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<sup>15</sup> Head of Appropriate Technology Division, Alor Regency Village Empowerment Service, Interview, 5 February 2018.



opening up markets for the products they produce.

Nine members attended the training. The training materials are making fish floss, *dendeng* fish roll, fish crackers, and introduction to packaging technology (Figure 3). The training also provided additional material on monitoring and improving the quality of the products produced.

Figure 3. Fish Processing Training in Alor Regency (9 - 10 March 2019); (a) fish roll, (b) fish crackers, (c) introduction to packaging technology



Sources: Fieldwork, 2019.

Fish processing training (knowledge transfer) is an intervention tool used in community empowerment on Alor Island. In addition to knowledge transfer, it is also supported by technology transfer of fish processing equipment. Based on the exploration of Gopalkrishnan and Santoro (2004), that in activities aimed the implementation of change, knowledge transfer should be directed to understand “why-question” in the change, while technology transfer explains the specific target in the form of tool for changing targeted-environment. Asheim et al. (2007) emphasize that combining the capacity to create and utilize knowledge is an essential resource in developing regions. Meanwhile, Saari & Haapasalo explained that local social capital (community) is the determinant of necessary and environmental conditions that allow the knowledge transfer process to exist.

Transfer of knowledge and technology through training is the preferred means of intervention and an effort to develop

business product innovations. Several references explain that the learning process from the various parties involved is highly emphasized in fostering product innovation. Some of the parties that are usually involved are business actors (in this case, fish processing MSMEs), consumers (the community), research institutions (LIPI), public institutions (local government) through the science transfer process (knowledge transfer process).

In Phase III, the business assistance and technology monitoring activities are introduced continuously by the PMD Office. Business development and assistance activities are part of the community needs side intervention, namely to increase income (economy). Referring to Datta et al. (2018), the need side intervention (business development) is an effort to open jobs, one of the community empowerment goals to increase community income.

When LIPI trained MSMEs (Mawar Indah), staff from the PDM Office of Alor Regency accompanied and attended the training. This purpose is to trained staff to become food processing trainers in other similar business groups in other regions. Training and skills developments are quite important to face current challenges, as Harding et al. (2018) explained. Apart from training, several staff from the PMD Office also assisted the assisted groups' business progress. Business assistance has been proven to provide very significant results for businesses (MSMEs), explained by Harventy et al. (2020).

Increasing the PMD Office staff's capacity has greatly helped implement community empowerment programs in the coastal areas of Alor Island.

Besides accompanying the business's running, the trained staff actions monitor disseminated technology, equipment, and food processing technology. The involvement of several staff from

the PMD Office during the training has strengthened the PMD Office's position as a technology intermediary institution for the target community. The existence of an intermediary institution in the regions (Alor Regency) makes it easier for LIPI to transfer technology to MSMEs. The absence of LIPI in the field does not prevent the transfer of technology to the community. The PMD Office can bridge communication between LIPI and UMKM. The involvement of the local government of Alor, represented by the PMD Office fully, encourages a fair empowerment process. It is in line with Cattaneo and Chapman (2010) thinking that empowerment is mastery, participation in advancing social goodness and achieving goals.

Another effort of the Alor Regency PMD Office is to provide outlets as a business place for the assisted MSMEs. The outlets supplied by the local government of Alor Regency are located in the Central Inpres Market so that UMKM products can be marketed to the broader community. With a market for training products, Mawar Indah's group felt an increase in income. The results of fish processing can be marketed (sold) and generate money. The importance of producing goods to the market is in line with Ponniah et al. (2008)

Policy support from local, central government, and the private sector in market development is needed so that people can sell processed products properly. It will increase a welfare community. The involvement of the community and trainers from the local government helps implement the dissemination of technology. It is expected to increase understanding of the technology being introduced quickly. The technical and business assistance also can encourage innovation and creation in the community, and the program's sustainability continues.

Referring to O'Neill, Peterson, Rode & Smith's explanation, the CCB approach can be used to build community strength, identify common aspirations, and raise problems facing the community. CCB

is used to strengthen the community's capacity to act in improving common welfare. With this CCB method, it is hoped that the people in Alor Island's coastal areas will be empowered. According to the CCB approach, strengthening the community's capacity is encouraged through participatory activities by involving the community to find solutions to overcome the problems they face to achieve shared prosperity.

Capacity building (via training) carried out by LIPI for the community is also part of participatory action research (PAR). Referring to Fletcher et al. PAR's explanation has the power to engage (diffuse) technology in actual (time) conditions. Meanwhile, Balakrishman and Claiborne explained that PAR could solve problems through changes for the better. Training as a way to develop community capacity to involve the community in the PAR process as recommended by Makosky et al. Community capacity building is a strategy recommended by Ubert et al. because it promotes local knowledge, skills, commitment, structure, and leadership for the communities involved.

### **Developing the Concept of Community Sustainability Empowerment in Coastal Areas**

To follow up on the wishes of local governments in finding a way out in developing communities and increasing the value of excellent regional commodities, LIPI and local governments held a dialogue on the concept of community empowerment (Diagram 1), jointly involving local governments, the private sector (market), universities and LIPI (R & D), as well as the central government. The concept of community empowerment (Diagram 1) is communicated to the Regional Government as the "regional owner" and who can execute "community empowerment activities in the region." Communication of concept development is carried out through dialogue (Diagram 1) to agree on the concept of applied community empowerment.

Diagram 1. The concept for Community and Regional Development in Alor District, NTT

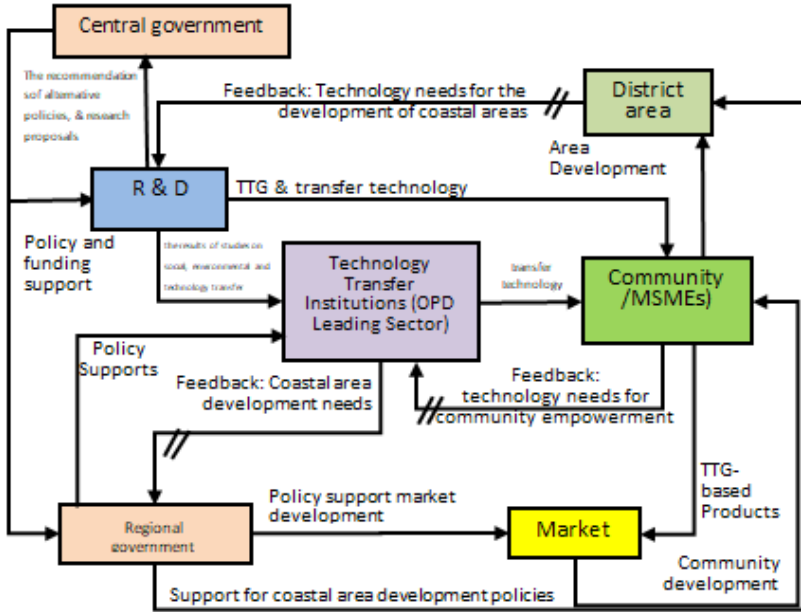


Figure 3. Dialogue Process between DPOs in Alor Regency assisted by LIPI; (a) Dialogue Process 1 and (b) Dialogue Process 2.



Sources: Fieldwork, 2019.

The dialogue revealed that the Regional Apparatus Organization (OPD) in Alor Regency, which is the most active in community empowerment activities, is the PMD Office. Therefore, the PMD Service was agreed to be the leading sector and technology transfer agency in Alor Regency. The PMD office is very concerned about and refers to the

development of local products in Alor Regency. Meanwhile, BP4D is the coordinator for all development activities in Alor Regency.

The dialogue also agreed on the Plantation and Agriculture Office's role in fostering communities in providing agricultural and plantation commodities as a source of raw materials. Meanwhile, through the Public Works Office, the Transportation Agency is tasked with arranging transportation facilities in Alor Regency. This transportation is urgent enough to be addressed so that the supply of raw materials for agricultural products can be controlled in terms of quality and quantity.

The UMKM Cooperative Office is still conveying problems/constraints on funding as working capital. Market development policy support is still an obstacle to the local government of the Alor Regency. Some of the issues in the development of MSMEs conveyed were insufficient processing or processing technology, certification was still not done, packaging was always simple, and promotion for their product market was still limited.

The role of BP4D is to provide support for regional development in Alor Regency through the development of superior commodities. Mapping potential, data on raw materials for commodities, and follow-up on the management of local product cultivation are the work of BP4D and are planned to be outlined in the Alor Regency RPJMD going forward. The development of the selected excellent commodities is the agreement to be developed with the local government and LIPI. LIPI, in this case, is the organizer of technology transfer to the community. The dialogue discussed technical and coordinative OPD (BP4D) together to support community empowerment programs through pro-community empowerment policies.

BP4D supports the activities of the PMD Service, and technical OPDs related to community empowerment, through budget approval for OPD for mentoring activities, coaching, visits to assisted

MSMEs, the inclusion of MSMEs at exhibitions, production houses, cultivation training, food process training. BP4D is expected to be the coordinator of OPD activities' synergy in community empowerment in Alor Regency by monitoring the implementation of OPD functions facilitated by the budget's approval for the development of MSMEs in the community. The dialogue resulted in an agreed concept of community empowerment, as shown in Diagram 2.

Diagram 2. The recommendation of concept Community Development in Alor Regency

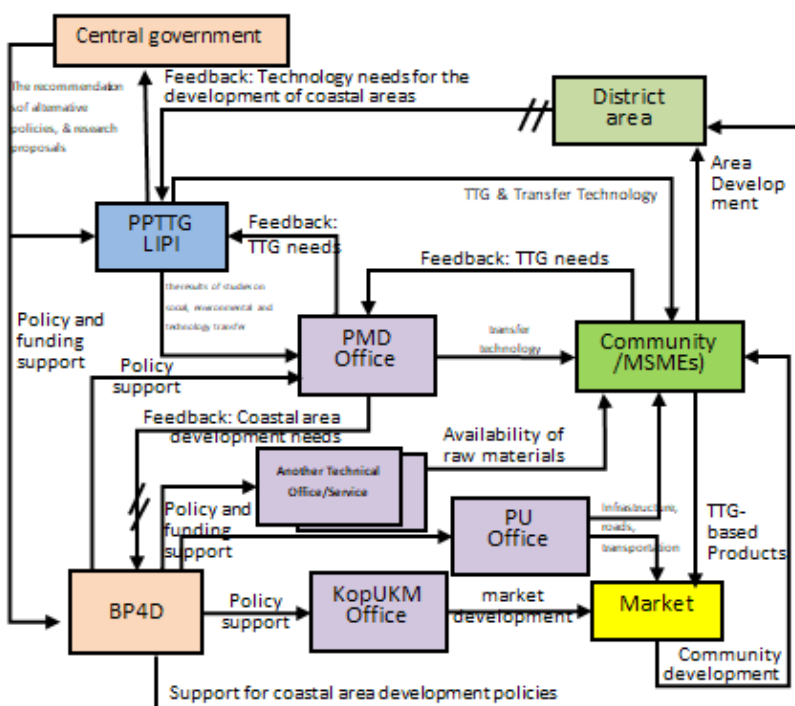


Diagram 2 shows that the function of LIPI is to be a technology provider for the community, especially for fish processing MSMEs in the coastal area of Alor Island, also training of trainers for technical service staff who are the leading sector in the regions. As an intermediary institution continues community empowerment

activities when LIPI cannot be not in the field or require activities.

The involvement of local governments (Alor Regency), LIPI, and business actors (MSMEs) in community empowerment (Diagram 2) is an effort to strengthen the innovation system that the government is currently promoting.<sup>16</sup> When referring to the innovation system theory developed by experts, a collaboration between the triple helix (research institutions, business actors, and local government) can become the basis for developing a knowledge-based economy (science and technology).<sup>17</sup> The technology transfer approach with an innovation system (in agriculture) according to Spielman et al. (2011) is a radical change compared to the transfer of conventional technology approaches, linear, and top-down.<sup>18</sup>

Meanwhile, the position of the intermediary institution is imperative to the innovation system in the agricultural sector.<sup>19</sup> Besides, it has been proven to be the leverage for the operation of the innovation system in the regions, which can encourage the improvement of people's welfare.<sup>20</sup> In the case of community empowerment in Alor Regency, an intermediary institution has been implemented by the PMD Office (Diagram 2).

To support the market for MSME products, the Alor Regency Government needs to provide a place to sell (shop) LIPI-assisted UMKM products together with the Alor Regency government. Currently, the local government of Alor has provided outlets in the

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<sup>16</sup> Undang-Undang Nomor 11 tahun 2019 tentang Sistem Nasional Ilmu Pengetahuan dan Teknologi (*Law number 11 of 2019 concerning the National System of Science and Technology*).

<sup>17</sup> Leydesdorff, Loet, *The Knowledge-Based Economy and the Triple Helix Model*. Amsterdam: University of Amsterdam, 2012. Accessed January 15, 2020. Retrieved from <https://www.leydesdorff.net/arist09/arist09.pdf>.

<sup>18</sup> Spielman, David J., Kristin Davis, and Martha Negash. "Rural Innovation Systems and Networks: Findings from a Study of Ethiopian Smallholders." *Agriculture and Human Values* 28, no 2 (2011): 195–212. <https://doi.org/10.1007/s10460-010-9273-y>.

<sup>19</sup> World Bank, *Enhancing Agricultural Innovation: How To Go Beyond The Strengthening of Research System*, (Washington DC: World Bank, 2007).

<sup>20</sup> Rachmini Saparita, Savitri Dyah, Akmaidi Abbas, and Elok W. Hidayat, *Membangun Sistem Inovasi Untuk Kesejahteraan Masyarakat*. p. 102.



Kalabahi City Inpress Market. The existence of outlets and their inclusion at various regional exhibitions and other supporting policies, then fish processing MSMEs in particular and other MSMEs can sell their products and increase production even better.

The existence of a market is significant for improving the economy of business actors and society to carry out many marketing strategies for MSMEs.<sup>21</sup> Therefore, in the dialogue, several things were agreed upon. The Kop UKM Office programs must be in line with market development, capital, and business management for MSMEs. While the facilities and infrastructure for developing markets and roads are the Public Works Service program, the transportation facilities are the Transportation Service task. BP4D coordinates all activities.

The evaluation was carried out in 2019 on the PMD Service function as the leading sector and the Agriculture Service role as a provider of raw materials in the agricultural sector. So far, the PMD Office is still carrying out business assistance activities for LIPI-assisted MSMEs together with the Alor Regional Government, while the Agriculture Office is trying to carry out its primary duties as a provider of food commodities in the Alor Regency area.<sup>22</sup>

From the evaluation results, various things need to be addressed so that community empowerment is for fish processing business actors and fishing communities who become fish suppliers. Exploiting the potential of marine fisheries resources must, of course, be accompanied by an increase in the provision of supporting facilities and infrastructure, such as fishing facilities for small fishermen (people in coastal areas). Therefore, they also feel the impact of

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<sup>21</sup> Utama, Iston Dwija. "Analisis Strategi Pemasaran Pada Usaha Mikro Kecil dan Menengah (UMKM) Pada Era Digital di Kota Bandung." *EQUILIBRIUM* 7, no. 1 (2019): 1-10. <https://doi.org/10.25273/equilibrium.v7i1.3829>; Mandasari, Dewi Jayanti, Joko Widodo, and Sutrisno Djaja. "Strategi Pemasaran Usaha Mikro, Kecil dan Menengah (UMKM) Batik Magenda Tamanan Kabupaten Bondowoso." *Jurnal Pendidikan Ekonomi* 13, no 1 (2019): 123-128. <https://doi.org/10.19184/jpe.v13i1.10432>.

<sup>22</sup> Head of the Agriculture Office of Alor Regency, *Interview*, 11 December 2019.

community empowerment through fish processing businesses. In addition, fishers should not be marginalized by middle/large class fishery entrepreneurs. The small of catching fish by fishers should be encouraged to provide raw materials for fish processing businesses that LIPI and the local government have empowered.

In anticipating the entry of medium and large companies to supply fish raw materials for assisted business actors (LIPI and Alor District Government), various policies from the local government need to be addressed, including:

First, policies related to socio-cultural aspects: Ecological policy: the local government must stop the use of worse facilities and infrastructure that potentially damage the marine and coastal ecology; Second, socio-economic policy: Local governments must limit the operation of large vessels owned by medium / large companies in the Alor Island area to prevent gaps in marine income (total production and productivity) between medium / large companies and traditional fishermen; Third, socio-cultural policy: local governments must encourage various facilities for traditional fishermen. It is to erase the large modern investors dependency and to reduce the poverty gap.

## Conclusion

Community empowerment that is carried out in a sustainable manner through the transfer of knowledge and technology has implications for improving skills in coastal communities and the use of new fish processing technology, both equipment, and processing technology, so that the community can increase added value to get a better income.

Community empowerment carried out through the use of fishery product processing technology in Alor Regency accompanied by business assistance that the PMD Office continuously carries out

makes the business run in a sustainable manner. It is expected that it will impact community development in Alor Island's coastal area in the long term.

For community empowerment to be sustainable, LIPI and the Alor Regency local government have developed a community empowerment concept that local governments can implement to develop their areas and communities better and more competitively. By collaborating between R & D institutions, local governments, and business actors (triple helix), the community's economy is expected to run well. It can be a lever in developing areas based on the use of technology in the community.

Community empowerment is aimed at household scale businesses (micro) and coastal communities (small fish suppliers). To anticipate the entry of medium/large companies to become fish suppliers for the fostered MSMEs, various policies must be issued immediately by the local government to encourage empowered traditional fishermen through the continuity of fish supply to the assisted MSMEs. Community empowerment carried out in a sustainable manner through the transfer of knowledge and technology has implications for improving coastal communities' skills and using new fish processing technology, equipment, and processing technology to increase added value as better income.

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