

EMPOWERMENT OF FISHERY CULTIVATOR GROUP (POKDAKAN) SEPAKAT AT SIANJUR MULAMULA DISTRICT, SAMOSIR REGENCY

Evy Sinaga*

Public Administration Study Program, Department of Administration Science, Faculty of Social
and Political Sciences, University of Riau, Pekanbaru, Indonesia
sinagaevy10@gmail.com

Adianto

Public Administration Study Program, Department of Administration Science, Faculty of Social
and Political Sciences, University of Riau, Pekanbaru, Indonesia

Keywords

Empowerment,
Awareness Stage,
Ability
Transformation
Stage, Intellectual
Ability
Enhancement
Stage.

Abstract

Community empowerment is an effort to make the community independent through the realization of the potential capabilities possessed by the community. As the Fisheries Division of the Agriculture Service of Samosir Regency did to a group of people in Singkam Village who are members of the fish cultivator group (Pokdakan) to improve the community's ability to cultivate fish as an effort to improve the community's economy. This study aims to describe the implementation of empowerment and the inhibiting factors for implementing pokdakan in Singkam Village, Sianjur Mulamula District, Samosir Regency. This type of research is a descriptive research with a qualitative approach. Data was collected using field observations, interviews, and documentation of both primary and secondary data. The results of this study indicate that: 1) The implementation of the empowerment of the fish cultivator group (pokdakan) Sepakat in Singkam Village has not been able to lead group members to independence. 2) The inhibiting factor for implementing pokdakan empowerment is the lack of capacity in the Fisheries Division of the Samosir Regency Agriculture Service as an empowerer both in terms of human resources and budget. Different characters and thoughts become obstacles in group development. Selfishness and laziness are still often encountered in group members, so they do not actively participate in group activities.

INTRODUCTION

Samosir Regency is often called Samosir Island because it is located in the middle of the waters of Lake Toba and is surrounded by hills. Based on conditions, geographical location, potential destinations and natural beauty and cultural wealth, and supported by the "dalihan na tolu" philosophy of life, Samosir Regency has the potential to be developed into a tourism district supported by the stipulation of Lake Toba as a world heritage.

The economy of the Samosir community is an economy driven by the agricultural and fishery sectors. Because most of Samosir's territory consists of agricultural lands and waters, and because agriculture and fishing have been the main livelihoods of Samosir residents for generations. The Government of Samosir will increase the productivity of agriculture and fisheries through extensification, intensification, provision of seeds and seeds, fertilizers, feed, implementation of extension services, development of information systems, and implementation of research to support the development of agriculture and fisheries in Samosir. This is stated in the Rencana Strategis (Renstra) Dinas Pertanian Kabupaten Samosir 2016-2021.

Based on tourism and agriculture, it means prioritizing the tourism and agriculture sectors as the leading sectors in economic development, which means the utilization of sufficient quantities and types of resources to make tourism and samosir agriculture the mainstay sectors in economic development. The economic development of the Samosir community is focused on building linkages between systems, production, distribution and services that are based on the agriculture, plantation, animal husbandry and fishery sectors according to their potential. Through sustainable and controlled management of natural resources to meet the availability of food by developing agribusiness and utilizing unused land into productive land, it has considerable leverage in developing the community's economy, as well as in realizing Samosir with sufficient food and nutrition. This policy can be implemented through programs to improve agricultural infrastructure facilities and infrastructure, programs to increase agricultural production, aquaculture development programs, capture fisheries development programs as well as optimizing the management and marketing of fishery production as a minapolitan area that has been determined by the Kementrian Kelautan dan Perikanan (KKP).

Agriculture can be interpreted narrowly as the cultivation of plants into a land to meet human needs. Meanwhile, agriculture can also be interpreted broadly to include all agricultural activities (agriculture and horticulture), plantations, forestry, animal husbandry and fisheries. By working in this sector maximally, it can improve the welfare of the community.

Fish farming business according to Undang-Undang Peraturan Pemerintah Republik Indonesia Nomor 28 Tahun 2017 namely fish farming is an activity to maintain, raise, and or breed fish and harvest the results in a controlled environment, including activities that use ships to load, transport, store, cool, handle, manage and/or preserve. So cultivators are

actors or people who breed fish and harvest them to meet their needs while still controlling their environment and being able to manage them fully, such as managing and or preserving.

In Samosir Regency, aquaculture in the fishery sector is one of the programs from the Department of Agriculture through the Fisheries Sector by providing facilities for people who form groups of fish cultivators (POKDAKAN). In the implementation of the utilization of fish cultivation potential, it can be done through the capture fisheries sub-sector and the aquaculture sub-sector. The superiority of the aquaculture sub-sector compared to the capture fisheries sub-sector is that it is better able to preserve nature, avoid overfishing (overfishing), and can produce continuously because fish are conditioned to breed well.

Table 1.1 Potential of Fishery Sector in Samosir Regency

No.	Type	Type Of Fish Commodity	Production (Ton)	Cultivation Location
1.	Fish Pond	Nila	168,35	Mainland Of Samosir
		Mas	22,06	
		Lele	29,75	
2.	Net Cages (KJA)	Nila	2.696,70	Lake Toba
		Mas	57,92	
		Lele	3,51	

Source: Samosir District Agriculture Office

Then to facilitate technical and non-technical guidance for fish cultivators in increasing the knowledge and ability of the fish cultivating community, the pokdakan needs to be stipulated in a Fisheries Group Decree. In addition, the Decree is needed in the context of orderly administration and ensuring community participation in order to strengthen support for local governments in order to overcome problems in the implementation of grants and social assistance sourced from the Central Government and Regional Governments as well as strengthen support for local government administration in increasing income public welfare.

Table 1.2 Fishery Cultivator Group (POKDAKAN) in SK Kepala Dinas Pertanian

No	Group Name	Since	AD/ART	Number Of Members	Village	Districts
1.	Rap Taruli	2016	✓	9	Tanjung Bunga	Pangururan
2.	Rap Ikaha	2016	✓	12	Hatoguan	Palipi
3.	Bersama	2016	✓	10	Sibonor Ompuratus	Nainggolan
4.	Sepakat	2016	✓	14	Sipinggan Lumbansiantar	Nainggolan
5.	Dosroha	2016	✓	10	Tomok	Simanindo
6.	Sinta	2016	✓	12	Cinta Dame	Simanindo
7.	Nila Jaya	2016	✓	11	Sangkal	Simanindo

8.	Adil Marsiadu	2016	✓	7	Maduma	Simanindo
9.	Sepakat	2016	✓	24	Singkam	Sianjur Mulamula
10.	Melati	2018	✓	10	Singkam	Sianjur Mulamula
11.	Saudur	2018	✓	13	Huta Ginjang	Simanindo
12.	Matahari	2018	✓	7	Habeahan Naburaham	Sianjur Mulamula
13.	Saroha	2019	✓	8	Parsaoran	Sitio-tio
14.	Sipinggan Nauli	2019	✓	10	Sipinggan	Nainggolan

Source: Samosir District Agriculture Office

Based on the table above, it can be concluded that the people of Samosir began to Fishery Cultivator Groups in 2016 as many as 9 pokdakan. After that, in 2018 3 pokdakan were formed and in 2019 2 pokdakan were formed. Pokdakan in Samosir itself is spread over 6 sub-districts namely Pangururan, Palipi, Nainggolan, Simanindo, Sitio-Tio and Sianjur Mulamula. Simanindo sub-district is the sub-district that dominates the existence of pokdakan, namely as many as 5 pokdakan, this is because most of the sub-district locations are close to the waters of Lake Toba. The 14 pokdakan have accommodated as many as 157 members. And there are 3 sub-districts that do not have pokdakan, namely Onan Runggu, Harian and Ronggur Nihuta. Onan Runggu itself has a Joint Business Group, namely in the field of arrests, while in the other 2 sub-districts there are no pokdakan or KUB at all.

Samosir Regency itself has been designated as a minapolitan area by the Ministry of Maritime Affairs and Fisheries (KKP). Therefore, the development of fisheries, both aquaculture and capture, needs cross-sectoral support and remains based on a regional zoning plan. Based on this, as a fishery area, 1% of the total water area of Samosir Regency or about 6.26 km² is regulated in Presidential Regulation Number 81 of 2014 concerning Spatial Planning for the Lake Toba and Surrounding Areas. There are 5 pokdakan in Simanindo sub-district that use floating net pond (KJA) cultivation, but 3 of them cannot produce fish optimally because the cultivation location is located outside the Lake Toba fishery area, so since 2017 the Department of Agriculture (Fisheries) has stopped the assistance to the pokdakan.

Fish production in several fish farming groups has been maximized, although it has not met the target target set by the Department of Agriculture (Fisheries) which was budgeted in 2020 as much as 300 tons but only reached 147.81 tons. Most pokdakan members agree to work as farmers and do not have a fixed monthly income. From the fish farming business carried out by Pokdakan, members get an average income of around Rp. 300,000., - R.500,000., per month assuming a count of working hours in fish farming enlargement, and members can consume the fish so as to improve community nutrition.

RESEARCH METHOD

This research was conducted in Sianjur Mulamula, Samosir Regency in Singkam Village. Singkam village was chosen as the research location because the concept of fishery development is oriented to the use of local resources which is carried out in an integrated manner, namely synergizing the agricultural, plantation, fishery and livestock sectors to provide organic and competitive food production results, namely fish cultivation in rice fields (minapadi). Respondents in this study were head of fisheries section, fishery staff, functional staff, pokdakan members and the surrounding community. The selection of respondents was carried out by purposive sampling. The method used in this study is a survey research method with a descriptive analysis approach to obtain clear information on a particular problem in a study. The research data consisted of primary and secondary data, and was collected using interview techniques.

After collecting data, reducing data and presenting data, the next step the researcher takes is drawing conclusions. Drawing this conclusion becomes a very important process in a study because in the conclusion there are the final results of the study. The stages in the data analysis above are an inseparable part, so that they are interconnected between one stage and another. The analysis was carried out from the beginning to the end of the study, to find out how to empower groups of fish cultivators in Sianjur Mulamula District, Samosir Regency.

RESULTS AND DISCUSSION

Empowerment is not permanent, but until the target community is able to be independent, although from a distance it is maintained so that it does not fall again (Sumodiningrat, 2000 in Ambar Teguh, 2004: 82). Judging from this opinion, it means empowerment through a period of learning process until it reaches independent status, however, in order to achieve this independence, it is still necessary to maintain the spirit, condition and ability continuously so that it does not experience further setbacks.

As stated above, the learning process in the context of community empowerment will take place in stages. The stages that must be passed include:

1. The awareness stage and the stage of forming behavior towards conscious and caring behavior so that they feel they need self-capacity.
2. The stage of transformation of abilities in the form of knowledge insight, skills skills to open insight and provide basic skills so that they can take a role in development.
3. The stage of increasing intellectual abilities, skills skills so that innovative initiatives and abilities are formed to lead to independence (Ambar Teguh, 2004: 83).

Based on the theoretical explanation above, to discuss the three stages in community empowerment which are related to this research, namely the empowerment of the group of fish cultivators (pokdakan) in Sepakat in Singkam Village, Sianjur Mulamula District, Samosir Regency, researchers conducted direct research using interview techniques to

several informants. Below the author will discuss the results of interviews conducted directly to obtain information about the empowerment of the fish cultivator group (pokdakan) in Sepakat in Singkam Village, Sianjur Mulamula District, Samosir Regency.

1. Awareness Stage and Behavior Forming

The stage of awareness and behavior formation is the first stage in empowerment. At this stage the empowerment actors try to create a climate or atmosphere that can facilitate the empowerment process effectively. Giving a touch of awareness will grow the desire and awareness of the community about the current condition, so that it can stimulate their awareness of the need to improve these conditions to get better conditions in the future.

Thus, through this touch it will bring the community to grow, then they will consciously and enthusiastically carry out activities that can improve their abilities or capacities as well as their environment. So that people will be more open and feel the need for knowledge and skills to improve existing conditions.

At this stage, the first awareness-raising was carried out by Mr. Luster Habeahan as the head of the pokdakan who at that time had carried out fish farming on a small scale. Mr. Luster sees that this is a great potential that can be done together with the local community, namely the Singkam Village community. In addition, Mr. Luster's concern for the economic problems of the Singkam Village community also made him want to make a change by making people aware of the importance of utilizing the potential of natural resources in Singkam Village.

The awareness stage carried out by Mr. Luster was conveyed through the Singkam Village government which carried out socialization as an effort to invite the Singkam Village community to participate in developing the fishery potential of inland ponds and tarpaulin ponds in the village. It is hoped that in addition to helping increase income, it is also expected to help explore the potential that exists within the community. Then the support from the Singkam Village government continued until there was support from the Fisheries Division of the Samosir Regency Agriculture Service who acted as an empowerer. At this awareness stage, people who participate in the socialization of freshwater fish farming go through several more stages before joining the Fish Cultivator Group (pokdakan).

The level of participation and enthusiasm of the community in participating in the training and those who are members of the pokdakan at this stage make the Dinas believe that the empowered object will be able to reach the independent stage. In this stage, the Fisheries sector of the Agriculture Service is categorized as empowering the mindset, skills and capital for the Singkam Village community, especially those who are members of the Agreed pokdakan. However, there are several obstacles at this stage, namely the reduced participation of group members, the involvement of group members is decreasing and there are only a few active members left. So it is necessary to review the active status and

involvement of each member in fish farming.

2. Ability Transformation Stage

The ability transformation stage is the second stage in empowerment. At this stage, the community who had previously opened themselves up to improve themselves as expected will undergo a process of learning about knowledge and skills that are relevant to what these needs demand. Then, this situation will increase open-mindedness and master the required skills.

Simply put, at this stage it is necessary to learn various knowledge and skills which will later support the empowerment activities carried out. With this knowledge, the target of empowerment will have the knowledge, abilities and skills that support their potential. So that later empowerment can run according to the expected goals. However, at this stage the community can only provide development participation roles at a low level. In other words, that is, just being a follower or an object of development, has not been able to become a subject in development.

In supporting the capability transformation process, what is being done at this stage is involving the community to learn new knowledge, namely cultivating tarpaulin fish, inland ponds, mining and making fish feed. At this stage the community is still only an object because it is still at the stage of knowing and learning new things. Of course this requires technical guidance and training to provide good knowledge to the community.

Based on the results of interviews and field observations, the authors analyze that Minapadi cultivation is a more effective and efficient cultivation to be carried out by members of the agreed pokdakan. The method of cultivating Minapadi based on observations and interviews conducted by the author can be described below:

1. Soil processing, which is in the form of plowing the land using hand tractors or other agricultural tools aimed at loosening the soil.
2. Making caren, caren serves as a crossing and fish shelter.
3. Natural fertilization, fertilization is carried out with the aim of increasing soil fertility and growing planktons as natural fish food.
 - Basic fertilization, manure/chicken manure
 - Follow-up fertilization, this fertilization is in the form of 50 kg/ha Urea
4. Rice cultivation, rice varieties suitable for the Minapadi system are rice that has the following characteristics:
 - Deep rooting, so that the planted rice does not easily collapse so that it inhibits the movement of fish.
 - Quick to give birth or sprout, to avoid delays in shoot growth due to stagnant water.
 - The stem is strong and does not fall easily, to avoid weak stem growth due to the high

water absorption of the plant.

- Resistant to waterlogging at the beginning of growth. The leaves are erect to increase the sunlight that can be received by the leaf surface, so that the photosynthesis process is better and the growth of rice will increase.
 - Rice varieties resistant to pests and diseases.
5. Spreading seeds, the right time to spread fish seeds is when the rice plants are 30 days after planting, namely after the first weeding and basic fertilization. Stocking can be done in the afternoon or early morning. It aims to avoid drugs or fertilizers.
 6. Maintenance, feeding fish can be given 3 days fish seeds are stocked in the fields. Feeding was stopped after the fish lost their appetite.
 7. Harvesting, harvesting of fish is done by drying the rice fields. After the water recedes, the fish will collect in the kamalir / ditch. The fish in the kamalir are then herded into a holding tank, then the fish are caught using a tanggok. The caught fish are then accommodated in a reservoir filled with clean water.

Based on the descriptions above, the author analyzes and draws the conclusion that the empowered community has followed the process from the initial stage to completion in fish cultivation, both by means of land ponds, tarpaulins and minapadi. At this stage, the programs and activities of the empowering parties are always welcomed by the community and when viewed from the level of participation the members of the pokdakan are also very enthusiastic.

3. Intellectual Ability Improvement Stage

The third stage is enrichment or the stage of increasing intellectual and skill skills needed so that they can form the ability of independence. This independence will be marked by the ability of the community to form initiatives, give birth to creations and carry out innovations in their environment. If the community has reached this stage of enrichment, the community can independently carry out development, it can be said as the subject of development and the government only as a facilitator.

At this stage the improvement of intellectual abilities is carried out to form community initiatives and the ability to innovate to lead the community to independence. So the level of community knowledge in fish farming is very necessary so that community independence in fish farming can be easily achieved. So that later, the empowerer acts as a facilitator only and has given trust to the pokdakan (the empowered) to carry out what has been learned.

Based on field observations and interviews conducted, the authors conclude that after the awareness stage and the ability transformation stage have not been found success in the last stage. The community as an object of empowerment in research has not been able to be independent and give birth to new innovations in fish farming, and still requires

intense assistance and monitoring from the empowering party.

The ultimate goal of this empowerment process is to make the community independent which will improve their standard of living and optimize their resources. As the initial goal of establishing Pokdakan Sepakat was to create a productive, independent community so that they do not depend on others for their lives, but based on field observations and interviews with members of Pokdakan Sepakat have not shown the existence of such empowerment. However, the presence of Pokdakan Sepakat in Singkam Village to have a good impact on the surrounding community.

4. Inhibiting Factors for Empowerment of Fish Cultivator Groups (Pokdakan)

Based on the results of the study, the information and facts found in the field by the researchers, namely regarding the empowerment of fish cultivator groups (pokdakan) agreed, there were several inhibiting factors. Namely as follows:

a. Limited Capacity of The Fishery Sector as an Empowerer

The ability or capacity of the Fisheries Sector is still limited, both in terms of facilities, human resources, and operational funds. This is one of the obstacles to carrying out its duties and functions optimally, especially with the wide scope of fishery areas in Samosir Regency, which of course requires a strong fisheries operational capacity. Moreover, currently the flow of funds and energy is still greater in controlling the floating net cages. There are only 10 Human Resources in the Fisheries Sector for the distribution of the Samosir Regency area, almost all sub-districts need monitoring. Based on the results of an interview with one of the staff in the Fisheries Division of the Samosir Regency Agriculture Office, at least now they need 3 more people to realize the maximum performance of the sector.

b. Lack of Community Participation

The community is the determinant of the success or failure of an empowerment that is carried out. If community participation is reduced, the empowerment will experience a setback. Different characters and thoughts sometimes become obstacles in group development. Selfishness and laziness are still often encountered in group members, so they do not participate actively in group activities.

CONCLUSION

a. The empowerment process carried out at Pokdakan Sepakat includes awareness and behavior formation, transformation of knowledge and skills, as well as increasing intellectual abilities. Based on the results of the study, the empowerment of pokdakan was good, indicated by the formation of a group of fish cultivators (pokdakan) in agreement. Community participation in fish farming training resulted in new knowledge among the Singkam Village community who participated in cultivating land pond fish,

tarpaullins and minapadi. However, these efforts have not shown the ability of the community to improve intellectual abilities, which is marked by the monotony of cultivation activities carried out so that the expected community independence has not been achieved. The empowerment has not been able to deliver group members to independence, this is caused by several inhibiting factors, especially in the third stage of the intellectual development stage due to economic demands that must be met immediately and conflicts that occur between members. So that the aspect of creating independence has not been optimal in Pokdakan Sepakat.

- b. Empowerment of Fish Cultivator Groups (Pokdakan) in Singkam Village has not been able to lead group members to independence, this is caused by several inhibiting factors as follows: 1) Lack of capacity in the Fisheries Division of the Samosir Regency Agriculture Office as an empowerer both in terms of facilities, human resources and operating costs. This causes less than the maximum empowerment carried out both in terms of funding and monitoring. 2) Different characters and thoughts become obstacles in group development. Selfishness and laziness are still often encountered in group members, so they do not actively participate in group activities.

REFERENCES

- Adi, Isbandi Rukminto. (2008). *Intervensi Komunitas Pengembangan Masyarakat Sebagai Upaya Pemberdayaan Masyarakat*. Jakarta: Rajawali.
- Afifulloh, Muhammad. (2017) *Skripsi: Pemberdayaan Masyarakat Desa Sukadamai Kecamatan Natar Kabupaten Lampung Selatan Melalui P2MKP Citra Mina Lestari*. Jurusan Ekonomi Syariah Fakultas Ekonomi dan Bisnis Islam. Institut Agama Islam Negeri
- Afrianto, Eddy & Evi Liviawati. (2011). *Beberapa Metode Budidaya Ikan*. Yogyakarta. Konisus
- Ayuningtyas, Yunia N. (2014). *Skripsi: Keefektivan Program Gapoktan (Gabunga Kelompok Tani) Dalam Meningkatkan Produksi Hasil Pertanian Sebagai Upaya Pemberdayaan Masyarakat Petani*. Prodi Pendidikan Luar Sekolah. Fakultas Ilmu Pendidikan. Universitas Negeri Yogyakarta.
- Badan Pusat Statistik Jakarta Pusat, (2015). *Indikator Kesejahteraan Rakyat 2015 (Welfare Indicators 2015)*. Jakarta Pusat : Badan Pusat Statistik.
- Bambang Iryana, Asep (2018). "Pemberdayaan Masyarakat Petani Dalam Meningkatkan Kesejahteraan Hidup Di Kecamatan Comprang Kabupaten Subang". *Jurnal Academia Praja* Vol.1 No.2.
- Dermansah, Aris. (2016) "Pemberdayaan Masyarakat melalui Pengembangan Polikultur Bandeng dan Udang di Desa Karangsong, Indramayu, Jawa Barat". *Jurnal Ilmiah Pengabdian Kepada Masyarakat* Vol 1.
- Fajriah Nurul, Affifuddin. (2018). *Skripsi: Peran Karang Taruna dalam Pemberdayaan Masyarakat di Desa Slamparejo Kecamatan Jabung Kabupaten Malang*. Prodi Administrasi Publik Fakultas Ilmu Administrasi. Universitas Islam Malang.
- Hamid, Hendrawati. (2018). *Manajemen Pemberdayaan Masyarakat*. Makassar: De La Macca

- Iswadi. (2019). *Pemberdayaan Masyarakat Melalui Pembinaan Kelompok Perikanan Dalam Meningkatkan Kesejahteraan Masyarakat Jurnal At-Taghyir*. Jurnal Dakwah dan Pengembangan Masyarakat Desa Volume 2 Nomor 1.
- Nurul Mualifah, Sri Roekminiati. (2018). "Pemberdayaan Masyarakat Kampung Inggris Sebagai Destinasi Wisata Edukasi Di Kecamatan Pare Kabupaten Kediri". JMPKS Vol. 2 No.1
- Pasolong, Harbani. (2013). *Metode Penelitian Administrasi Publik*. Bandung: Alfabeta
- Putri, Saras. & Gusti, Ririn. (2021). *Pemberdayaan Masyarakat Melalui Kelompok Tani Jeruk Kalamansi*. Journal Lifelog Learning Vol. 4 No.1.
- Saparinto, Cahyo. (2008). *Panduan Lengkap Gurami*. Jakarta: Swadaya
- Siti Hadudaidah. (2017). "Pemberdayaan Masyarakat melalui Pengembangan Budidaya Ikan Lele Teknologi Bioflok di Kelurahan Pinang Jaya, Bandar Lampung, Lampung". Jurnal Pengabdian Kepada Masyarakat Vol. 2.
- Sjafari, Agus. (2014). *Kemiskinan dan Pemberdayaan Kelompok*. Yogyakarta: Graha Ilmu
- Sugiyono. (2004). *Metode Penelitian*. Bandung: Alfabeta
- Suharto, Edi. (2014). *Membangun Masyarakat Memberdayakan Masyarakat*. Bandung: PT. Refika Aditama.
- Sulistiyani, Ambar Teguh. (2004). *Kemitraan dan Model-Model Pemberdayaan*. Yogyakarta: Gava Media
- Susuri, Agmad. (2017). *Pemberdayaan Masyarakat Melalui Program Pembangunan Infrastruktur Pedesaan Dalam meningkatkan Kesejahteraan Masyarakat Kecamatan Wanasalam Kabupaten Lebak*. Jurnal Administrasi Negara Volume 3 Nomor 2.
- Tampubolon dkk. (2006). *Pemberdayaan Masyarakat Melalui Pendekatan Kelompok (Kasus Pemberdayaan Masyarakat Miskin melalui Pendekatan Kelompok Usaha Bersama (KUBE)*. Jurnal Penyuluhan Vol. 2, No. 2
- Wahyu, Tri (2016). *Skripsi: Pemberdayaan Pemuda Melalui Program Usaha Ekonomi Produktif oleh Karang Taruna Jaya Kusuma di Desa Singosaren Banguntapan Bantu*. Universitas Wijaya Putra
- Yanti, Delvi. (2016) "Pemberdayaan Masyarakat Tani Melalui Pengembangan Produk Olahan Ikan di Nagari Tarung-tarung, Kecamatan Rao Kabupaten Pasaman, Sumatera Barat". Jurnal Ilmiah Pengabdian kepada Masyarakat Vol 2. No.2.
- Undang-Undang RI No.7 Tahun 2016 Tentang Perlindungan dan Pemberdayaan Nelayan, Pembudidaya Ikan dan Petambak Garam
- Peraturan Menteri Kelautan dan Perikanan RI No. 49/Permen/2014 Tentang Usaha Pembudidaya Ikan
- [Samosirkab.go.id/potensi-unggulan-kabupaten-samosir-perikanan/](http://samosirkab.go.id/potensi-unggulan-kabupaten-samosir-perikanan/)
<https://samosirkab.go.id/sejarah-singkat-kabupaten-samosir/>
<https://referensi.data.kemdikbud.go.id/index11.php?kode=072000&level=2>
<https://samosirkab.bps.go.id/publication/2017/08/11/67a17e9554abe0b078efe20f/kabupaten-samosir-dalam-angka-2017.html>
<http://www.bibitikan.net/potensi-budidaya-ikan-air-tawar-besar-di-samosir/>