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Strategy for Optimizing Coastal Village Communities in Supporting the Protection of Essential Ecosystem Areas in Gresik Regency

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ABSTRACT

This study aims to (1) identify the behavior of local communities in the use of mangrove forests, (2) analyze the factors that influence the utilization of mangrove forests, and (3) develop strategies for optimizing the use of mangrove forests in the context of empowering coastal communities and preserving the environment. The research location was determined purposively, namely in Ujung Pangkah District, Gresik Regency as one of the areas designated as Essential Ecosystem Areas (KEE). The analytical method used is descriptive analysis. The results showed that (1) the characteristics of the damage to mangrove forests in the area were changes in the function of the area due to the conversion of community functions into cultivation areas, (2) the factors that influenced the success of mangrove conservation as KEE, namely: (a) socio-economic conditions and the culture of the community is the same, namely the level of education and income of the community is relatively low, (b) the function of community institutions is not optimal (c) local wisdom and local resilience, (d) community perceptions of the mangrove ecosystem are less positive on sustainability, (3) strategies that can be implemented among others (a) Increasing the quantity and quality of human resources (b) socio-economic development of the community, (3) optimizing the functions of formal and non-formal institutions of society, and (4) procuring laws and regulations

Keywords: Strategy, mangroves, optimization, Essential Ecosystem Areas (KEE)

1. INTRODUCTION

Indonesia is an archipelagic country located between two large oceans, namely the Indonesian Ocean and the Pacific Ocean so that oceanographically the role of the sea in Indonesia is strongly influenced by the two oceans. Most of the people who live in coastal areas have a profession as fishermen. Beach conditions on various islands in Indonesia are generally sloping but are faced with large ocean waves. One of the efforts made to secure the beach from the blows of big waves is by planting mangroves or often referred to as mangrove forests. Technically the existence of mangrove forests can prevent abrasion, but biotically mangrove forests will create coastal ecological conditions that are needed for the life and breeding of fish. However, efforts to plant mangroves to create mangrove forests in Indonesia have not been carried out intensively, so

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the hope of the program is the creation of environmental sustainability which in turn will improve the welfare of coastal communities.

Mangroves as part of the ecosystem of the entire coastal ecosystem never stand alone, as is the essence of the existence of this entire nature. It is often forgotten that humans are part of the presence of a natural formation, which in fact has the greatest influence . When various environmental problems have emerged in the last few decades, humans initially forget that the source of the problem is humans. It is humans who have to utilize and preserve natural resources, as well as cause damage to nature and the environment.

As a result, the management of environmental damage does not rely on the root cause itself but rather tries to overcome the side effects. Likewise, efforts to utilize, conserve, or re-handle (rehabilitate) mangrove forests. Without placing humans as the focus of attention, as active actors of utilization and conservation (as well as acting as active actors of destruction), efforts to optimize the use and conservation of mangrove forests in the context of empowering coastal communities will be in vain.

For the benefit of the environment, in environmental management, mangrove forests have a special position, namely as a buffer for environmental balance, which also involves millions of other types of biological and non-biological organisms, as well as a "microenvironment" which also determines the environmental balance (Hariyadi et al., 2017). The contribution of the forestry sector to GRDP shows the importance of the role and opportunities for the development of forest products and benefits. The sense of belonging and maintaining the security of the mangrove forest by the local community has finally become an inseparable part of the life of the mangrove forest. Besides their role in the economy, mangrove forests are also an important part of job creation, the growth of forest product processing industries such as sawn wood, molding, pulp, paper, and processed goods industries. In this case, the linkage and linkage effects between the forestry sector and the industrial sector are important because they are suppliers of raw materials and other auxiliary materials.

Based on the results of studies in several coastal areas, it shows that the existence of mangrove forests is very beneficial to coastal communities, both obtained through increased catches, the acquisition of mangroves that have high export value and coastal security. The success of creating mangrove forests is evidence of support from The success of the community towards government programs can also be seen in the coastal area of Gresik Regency, East Java.

Based on the activities of preserving coastal areas in the Gresik area which is still being carried out. To support good success, it is necessary to conduct an in-depth study of the optimization strategy of the Coastal Village community in supporting the protection of the

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Essential Ecosystem Area (KEE) in the Gresik Regency. So that this study aims to: (1) identify the behavior of local communities in the use of mangrove forests, especially regarding the pattern of activity and intensity of mangrove forest utilization, (2) analyze the factors that influence the utilization of mangrove forests, (3) develop strategies for optimizing the utilization of mangrove forests. in the context of empowering coastal communities and preserving the environment.

2. MATERIALS AND METHODS

The analytical method used is descriptive analysis. The research area was determined purposively, namely in Ujung Pangkah District, Gresik Regency with the reason for its determination is because it is one of the areas designated as Essential Ecosystem Areas (KEE). With its various potentials, problems, opportunities, and challenges, it is hoped that it can be a representation of the mangrove forest conservation strategy. However, efforts to protect and conserve mangroves need to be improved with various policy efforts. The respondents in this study amounted to 55 people who were determined intentionally.

3. RESULTS AND DISCUSSION

Activity Pattern and Intensity of Mangrove Forest Utilization

The Mangrove Essential Ecosystem Area (KEE) in Ujung Pangkah is the first KEE outside a conservation forest and is a Wetlands Convention known as the Ramsar Convention. This is an intergovernmental environmental agreement with UNESCO since 1971 and entered into force in 1975. This recognition requires the participation of coastal village communities in supporting the protection of Essential Ecosystem Areas (KEE). The land area and condition of the mangrove land in the Gresik sub-district can be seen in Table 1.

The condition of the area of mangrove land in Ujung Pangkah District is spread over 3 villages with a total area of 12.68 Ha, but currently experiencing damage of 0.36 Ha. Based on the data obtained, it shows that there was a decrease in the area of mangrove land from 2000, 2004, 2010, and 2017, but increased again in 2020 in line with government and international programs in maintaining mangrove conditions, especially in the Banyu Urip Village as shown in the following Tabel 2.

Table 2 shows that the mangrove area in Banyuurip Village in 2000 was 5.9 ha and decreased in 2004 by 0.29 ha and continues to move from a decline of 1.26 ha in 2010 and in 2017 a decrease of 1.26 ha, but conservation efforts successful in 2020 with various programs and in the village of Banyu Urip is a pilot effort for the other two villages which are expected to have the same progress and even increase in efforts to maintain the international site.

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The results of the study indicate that there are several things that need to be considered in an effort to maintain the area of mangrove land in Ujung Panggah. This is because the conservation program is more directed at government and international projects that do not optimize efforts to empower coastal village communities. It is feared that it will decline again if the conservation program or project stops or in other words there is no disbursement of funds for special coastal villages to maintain mangrove conditions.

This condition can be seen from the conversion of mangrove land into ponds, especially in Pangkah Wetan Village and Pangkah Kulon Village. The need for aquaculture land in the form of ponds has become the main trigger for land conversion in the form of mangrove forests and raised land in Ujung Pangkah District since the last several decades. Degradation and loss of mangrove land will continue if there is no effort from various interested parties to maintain the integrity of the mangrove forest and the preservation of the mangrove ecosystem. The decline in the mangrove forest area that occurs is generally related to the following problems:

1. There is no clarity on spatial planning and development plans for coastal areas, so there is a lot of overlap in the utilization of mangrove forest areas for various development activities.
2. Deforestation of mangroves for firewood, building materials, and other uses exceeds the ability to recover.
3. Pollution due to the disposal of waste oil, industrial, and household waste.
4. Sedimentation due to poor management of land activities.
5. Information data and science and technology related to mangrove forests are still limited, so they cannot support policies or programs for spatial planning, development, and sustainable use of forests

Given the enormous potential of resources, the human resources living in this area as well as those originating from the rapid growth of development and the dense population growth in coastal and marine areas, generally the following problems occur:

1. Insufficient human resource potential

The low level of education of the population will affect the low level of knowledge and skills. This situation causes the lack of development of the verified business during the famine and the lack of development of post-harvest technology. This situation causes the income of fishermen and the community cannot to increase. In addition, the lack of trained human resources in its management causes other resources to not be planned optimally.

2. Lack of information on natural resource development

Lack of understanding and understanding of the community about the function of mangrove forest resources, fish, and coral reefs causes the exploitation of these resources to be carried out

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excessively. For this reason, it is necessary to educate people about the importance of maintaining coastal ecosystems and their functions for human life.

3. Conservation of threatened coastal ecosystems

The threat to the sustainability of coastal ecosystems is caused by several things, namely:

a. Physical degradation of coastal habitat

Physical damage to coastal and marine habitats results in a decrease in the quality of mangrove forest ecosystems, coral reefs, and seaweed. Conversion of mangrove forests into various uses, excessive sedimentation due to poor land management, extraction of coral reefs and ornamental fish using explosives and potassium, waste pollution from home industry activities cause damage to this ecosystem habitat.

b. Sedimentation and coastal abrasion

On critical soils in the rainy season, there will be puddles of surface water which results in increased processes of erosion, sedimentation, and siltation of rivers. During the rainy season, there will be flooding/inundation in coastal areas, especially at the same time as the tide.

c. Pollution

Sources of pollution in coastal and marine waters generally come from residential liquid waste, urban stom water, mining, shipping, agriculture, and aquaculture (in the form of excessive sedimentation of fertilizers and insecticides). The impact of this pollution is usually chronic and cumulative which can be felt after several years. The negative impacts that arise not only endanger human health, biota life, and the marine environment but can also cause death, reduce or damage the aesthetic value of the coastal and marine environment as well as social and economic harm.

d. Critical land and mangrove forest conversion

Critical land is found in some sub-districts located along the coastline. Efforts that can be made to save critical land are by rehabilitating and converting land with reforestation because it can reduce erosion and sedimentation in various rivers and able to create jobs for poor farmers in critical land areas as an effort to increase income and restore the function of absorption for water sources of Panggah.

4. There is a conflict of interest between the private sector, community, sector, and local government

This conflict of interest is caused by the absence of clear boundaries of authority and power between interested parties in coastal and marine areas. In addition, there is no coordinating agency or institution responsible for the management of this area. Each party has its own role and authority, so efforts to overcome this problem must be able to involve all relevant parties.

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Influential Factors in Mangrove Forest Utilization

Factors that influence the utilization of mangrove forests in Ujung Pangkah include:

1. General Characteristics of Coastal Rural Households

Considering that resources in coastal areas are very diverse, rural households in coastal areas have livelihoods as capture fishermen, chart fishers, fish farmers, and farmers. In general, the characteristics of households located in rural coastal areas are as follows:

Households in coastal rural areas, as well as in peasant societies, generally have the following functions:

a. Production unit
b. Unit consumption
c. Reproductive unit
d. Unit of socio-economic interaction

The main purpose of households in rural areas is to meet the needs of their members. This goal is a condition for determining economic decisions and behavior, especially in the production business.

Lack of capital is a common problem in most rural households, especially in densely populated areas. So that to increase their income, the community can only add labor input as the only economic source that is relatively not scarce. This has several implications that help in analyzing the socio-economic behavior of the community, including:

a. Landless farming or fishing households that only rely on their own labor or hard work to increase production or income.
b. Small farmer households or fishermen who do not own a boat with other non-agricultural jobs, even though the yield is lower than farming or fishing.
c. Farmer or fisherman households that do not have their own boats or fishing gear tend to show the characteristic of self-exploitation which is controlled as a tendency to work for lower wages than the wages of a wage laborer.

In a state of lack of land, lack of capital, lack of fishing gear, no boat, lack of work productivity, and lack of work, the work of adults is not able to generate income that meets the needs of their family.

Household Economic Behavior of Coastal Communities

Coastal communities are rural communities that have a tendency not to dare to take risks, the contributing factor is the household economic pressure they face in the form of lack of land, lack of capital, lack of fishing gear, or even not having a boat. Farmers having got access to

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financial institutes as well as being village officials will be more willing to take risks, for example participating in taking Farming Business Credit (KUT) or fishing boat motorization credit.

Therefore, it can be understood that poor households in rural areas tend to be safety first. These poor households are generally not immediately enthusiastic about the introduction of new technologies or credit patterns which according to development planners or implementers can increase their income in a short time. They are generally more waiting and making observations in advance about how the influence of technology and credit on the security of fulfilling their lives. The principle of safety first has implications for the social-economic behavior of rural households. The economic decisions of poor households in rural areas are colored by the goal of minimizing business failures as far as possible rather than seeking maximum profit. This principle can be seen in several ways of adaptation of poor households in rural areas, namely in agricultural cultivation techniques; social institutions; and Response to development programs.

Existence of Mangrove forest

Mangrove forest in Ujung Pangkah belongs to the community so that any effort in its management is carried out by the community itself as the owner of the condition which is a characteristic that is not owned by other regions so that its preservation efforts will require special handling that provides awareness to the owner community about the importance of maintaining the condition of the mangrove itself.

When fishermen's lives are in a state of urgency, the side business that can be done usually refers to other resources, namely looking for firewood in mangrove forests and efforts to convert the land into ponds. For coastal communities, the mangrove forest ecosystem is considered a valueless area, even considered as wasteland which is one of the driving factors for the conversion of mangrove ecosystems into other uses that are considered more economical.

When community land ownership is still extensive, this is not so big of an impact. However, along with the times, each land-owning family will divide the land to their descendants and cause the land ownership of each community to become increasingly narrow so that the use of mangrove forests causes the tragedy of commons. Mangrove forest is actually one of the biological natural resources that can be recovered naturally or planted, but if the damage exceeds its recovery capacity, the forest will be destroyed.

The interaction between the community and the mangrove forest is influenced by the development of the “external” formal economic sector, the substitution of activities inside and outside the mangrove ecosystem and socio-economic conditions. Economic development that expands wages in the economic sector will reduce the level of community dependence on mangrove forests. For example, substitution of activities outside the mangrove ecosystem that can

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increase wages will reduce community dependence on mangrove forest resources. On the other hand, the substitution of activities in the mangrove ecosystem into other uses (conversion of mangroves into ponds or housing), results in the loss of coastal productivity so that it will increase pressure on fisheries without community participation. In addition, problems that need to be considered are the rapid regional economic growth driven by a smooth transportation system and the availability of potential forest and marine resources, resulting in changes in the socio-economic structure and the increasingly consumptive needs of the population.

The socio-economic conditions of the people living in the forest and/or around the mangrove forest are a matter of principle in an effort to save the mangrove forest. Communities are usually aware that sustainable use is in their favor, but often over-harvest. The poor socio-economic conditions of the community (fishermen) will result in increased dependence to utilize mangrove forests. The increasing need for life and the high population growth has resulted in the exploitation of existing resources, including mangrove forests by ignoring ecological principles.

Community Participation

The emergence of problems in the management of natural resources and the development of the environment requires a new orientation from government officials and the community at both the central and regional levels. Active and constructive participation from the community is very much needed in overcoming environmental problems and managing natural resources for the benefit of development in achieving a just and prosperous society.

In the management of coastal areas in an effort to deal with the problem of managing coastal areas and oceans, it is necessary to carry out a development strategy based on a social approach, namely:

a. The concept of coastal village development is structured democratically, especially by the coastal communities themselves based on a thrifty and productive attitude for the prosperity of all community members by building self-help community institutions that are able to manage resources in a planned manner.
b. Management of socialization of needs, especially management of consumption in a directed and not excessive manner, strictly a social-economic system in which a sense of self, self-respect, and self-confidence are fostered and developed. Human resources as a whole must be developed, including their creativity, and be actively involved in various development activities and community life to create their own future that is always better,
c. Developed awareness of the causes of the emergence of problems and their underdevelopment and willingness and commitment to solving them. For this, population

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and information systems that form positive attitudes and views are indispensable as the main force for social change in the desired direction.

d. Develop a situation of togetherness and cooperation to replace situations of conflict, tension, and injustice, through dynamic groups capable of launching development operations.

In realizing an integrated coastal and ocean area management program, the highest and as precise as possible community participation is required. Communities living along the coast have traditionally used resources and may be affected by new regulations and procedures. Therefore, the community must be involved in the formation of new coastal policies and regulations on resource use, if these regulations are made to support progress for the community.

In order for the community participation community to want to participate in activities, it is necessary to empower the community. Empowerment of coastal communities includes two main things, namely : 1) increasing the ability and skills of the community to be able to utilize coastal and marine resources, as well as community skills in utilizing coastal and marine resources and efforts to increase community participation in coastal and marine resources and efforts to increase community participation in conservation. the function of marine resources as a support for life in the area, 2) increasing the accessibility of coastal communities to economic activities that can encourage the ability of coastal communities to cultivate marine resources optimally.

The empowerment of coastal village communities is shown for the ability of human resources, utilizing the potential of natural resources and artificial resources in coastal areas as well as available facilities and infrastructure for the benefit of the welfare of coastal village communities. Efforts to empower coastal village communities are a process of changing or bringing the current condition of coastal village communities into a condition of expected coastal village communities.

In relation to the development of community participation, there are factors that influence, there are three things that affect community participation, namely:

1. Socio-Economic Society

The socio-economic conditions of the surrounding humans greatly affect the mangrove forest ecosystem. The increase and decrease in the level of the human economy has the same impact on the area, namely in the form of pressure on the ecosystem that composes it. Basically, economic and ecological considerations for the use of mangrove forest ecosystems cannot be separated in evaluating management options. However, the choice of sustainable mangrove forest management is one of the main goals. So we need a guideline that can evaluate and classify

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mangrove forest areas in the form of their current functions, conditions and trends, especially on their biological value, economic and socio-economic value for humans.

In order to realize the existence of sustainable management in relation to human socio-economic conditions, an integrated strategy for improving human socio-economics from various development sectors is needed. The increase in community income is carried out in line with the conservation of mangrove forest areas, so it is hoped that the economic value will be utilized and its ecological value can be maintained. This is a guarantee that the mangrove ecosystem that makes up the mangrove forest area will grow sustainably and human pressure on the area can be minimized. The approach taken is to enclave land that has been cultivated by humans and plant border plants with tree species for life and have economic value.

Humans are directed to intensive cultivation efforts, both brave and farmers. One of the ideal activities that are directed to be developed is increasing the multi-function of mangrove ecosystems through fishery ponds. This form is an effort to optimally increase the productivity of fisheries and mangrove forest products. In its implementation, in order to provide ecologically and economically satisfactory results and consider the number of human members involved, this embankment entrepreneur is planned with a small business scale but in large numbers (spread) along the mangrove forest buffer zone. The exploitation of the embankment in the location where the mangrove vegetation is still intact, the ideal ratio between mangrove forest and pond is 80%: 20%, where 80% of the managed land area is still in the form of mangrove forest, while 20% is in the form of ponds. This comparison is based on the assumption that the aspect of forest sustainability is more than the expected result. For mangrove areas that are already open, the ratio of mangrove forests to ponds is 30%: 70%, where mangrove forests are 30% while ponds are 70%. Comparison is more aimed at providing opportunities for humans to increase their production. Meanwhile, for mangrove forest products in the form of fish, shrimp, and shellfish, it is directed to the agro fishery industries pattern. It is hoped that the existence of this marine and pond processing industry will be sufficient for the surrounding humans so that the pressure on the mangrove ecosystem in the preparation of the mangrove forest area can be minimized.

2. Quantity and Quality Improvement of Human Resources

Human resources play an important role in the management of mangrove forests. Human resources, in this case, include 2 (two) groups, namely humans who live around mangrove forest areas and government officials in institutions/organizations with an interest in mangrove forest management.

The need for forestry technical personnel, especially in the field of natural resource management, is absolutely necessary, considering that this mangrove forest area is one of the areas

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that has been defined in the Ramsar Conservation. Likewise the human condition around the mangrove forest area, in general, these humans have a low level of education as well as skills and knowledge levels and this is still supported by the difficulty of information flow. Therefore, it is necessary to increase human capability through intensive extension activities and activities that can improve human skills and knowledge such as training on mangrove conservation and utilization. This improvement in the quality of human resources should also be balanced by improving the existing facilities and infrastructure for mangrove forest management, especially human resources and posts and their facilities.

For the first step, the task of increasing the knowledge of government officials related to mangrove forest management is achieved through in-house training, such as workshops, seminars, attending short courses held by the world of education such as universities and scientific institutions (LIPI). The increase in educational awareness of local people can be started from education and training specifically designed in mangrove forest management. This program can be carried out by the relevant agencies at the provincial and district levels with the assistance of local NGOs and LKMD. Educational objectives are directed to:

a. Increasing human awareness about the importance of conservation and management of mangrove forests in the management of mangrove forest areas in a sustainable manner.
b. Designing special programs that lead to women in development (WID) and poverty eradication, especially in the use of buffer zones in mangrove forest areas.
c. Ensure community participation in the planning and implementation of project activities.
d. Monitoring of benefits for beneficiaries and sensitive groups and the impact on them.

3. Institutional

Mangrove forest management institutions operationally should be integrated and there should be clarity in the authority and duties between various related agencies/services. Likewise, the form of coordination and cooperation between agencies and the delegation of tasks from the central government to regional governments must be clear. To better determine humans, it is necessary to develop a social institutional system that involves active human participation in the context of sustainable mangrove forest management. In addition, the institutional system should also provide business opportunities and improve human living standards.

Forms of social organizations/institutions that can be developed in mangrove forest areas such as the Mangrove Forest Farmers Group (KTH Mangrove), as well as the re-activation of young generation institutions that respond to environmental conservation such as the Nature Conservation Cadre (KKPA). The establishment of these institutions can be done by conducting comparative studies in other areas that have succeeded in managing mangrove forests. In addition,

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written evidence (certificate) should be provided, so that with this evidence this human social institution has a strong basis for self-development and there is a sense of responsibility for the preservation of mangrove forest areas. This is due to the strong desire of humans to get endorsement with the proof of the certificate.

4. Structuring the Legislation

Efforts to regulate the implementation of laws and regulations include the socialization of laws and regulations relating to mangrove forest management, as well as the implementation of strict sanctions against violating activities. Efforts to regulate these laws and regulations are carried out after socialization and dissemination to all levels of humanity and are carried out in a comprehensive and coordinated manner both to humans and government officials.

Strategy for Optimizing Coastal Villagers on Mangrove Forest Conservation

The optimization strategy of coastal village communities towards mangrove conservation at the end of Pangkah includes:

1. Quantity of Human Resources

The development of the number of human resources, especially those directly involved in the management of the mangrove forest area, is aimed at obtaining a proportional amount (the ratio of officers/area) to the field and assistance. For mangrove forest management, additional personnel must be carried out as well as supporters. The addition of this personnel is adjusted to the shape of the group's mangrove forest area on rivers which are the basis of mangrove forest-agriculture. The number of manpower resources for managing mangrove forests can be increased through education programs on nature conservation management and resource management.

This program can be in the form of training (training) and research equivalent to a Diploma, especially for managers in the field (placed in Resort Sub BKSDA). As for policy makers, it is carried out with a higher education level such as the Bachelor level or even Post Graduate level.

This program can be in the form of training and research equivalent to a Diploma, especially for managers in the field (placed in Resort Sub BKSDA). As for policymakers, it is carried out with a higher education level such as the Bachelor level or even Post Graduate level. This increase in the number of management personnel must also be balanced with the number of members and human groups who are directly involved in the preservation of mangrove forests. Cooperation between managers and human organizations, especially the younger generation, needs to be developed and involved in every decision-making regarding the conservation efforts of these protected areas. With the increasing number of human resources, both from technical and human

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agencies who respond to the mangrove forest, it is hoped that the ecological and economic conservation functions of the area can be maintained and maintained.

2. Quality of Human Resources

The development of the quality of human resources aims to obtain human resources who have sufficient skills and knowledge in managing mangrove forests that makeup mangrove forest areas, both from relevant technical agencies and from local communities. Improving the quality of human resources is prioritized for local communities whose lives both directly and indirectly depend on mangrove forests. By increasing the knowledge, education, and skills of the local community, there will be a dynamic interaction between the behavior of the community and its environment.

Thus the sustainability of this mangrove forest ecosystem can be realized, considering that the existence of this mangrove forest ecosystem has enormous benefits for people's lives today and in the future. To achieve this goal, education and training tools are needed as well as integrated counseling to the community that is routine in nature. The training materials cover aspects of mangrove forest protection and preservation, planting, maintenance, and utilization techniques as well as aquaculture. In addition, it is necessary to conduct comparative studies to other areas which can be said to have been successful in managing mangrove forests.

The initial target of education and training is technical personnel who are directly involved in management activities, namely the head of farmer groups as well as community leaders and youth organizations. Furthermore, it is hoped that the material that has been obtained from the education and training can be developed in their respective villages with the Training of Trainers system. In the implementation of education and training activities, the main concerns are 1) Number of participants, 2) Material, 3) Weight, 4) Time, 5) Teaching and learning patterns, and 6) Coordination.

To increase the participation and perception of the community as a whole on the efforts to protect and conserve mangrove forests, it is also necessary to intensify outreach activities as a follow-up by means of information media, contact fisherman farmers in the form of discussion forums and socialization of programs and the government, create demonstration plots to the general public. These activities are coordinated by other relevant agencies and local NGOs.

3. Socio-Economic Society

One of the obstacles faced in improving the socio-economic conditions of the community in the research area is the low level of education. The limited knowledge possessed by the community results in dependence on one form of business, both plantation agriculture and ponds.

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As already explained that at the time this research was conducted, the level of human income increased fantastically due to the high prices of agricultural and marine products and this was the impact of the economic crisis.

However, this condition will not run continuously and in fact, has a very bad impact on mangrove forest resources in the mangrove forest area. Therefore, it is necessary to develop efforts to increase the economy which will support community income in a sustainable manner and on the one hand sufficient to secure the conservation area, so that it is clear that the economic and ecological functions of the mangrove forest area can be optimally utilized. Alternative activities that will have an impact on improving socio-economic conditions should apply now and in the future. For the initial stage, considering that the community around the mangrove forest is currently experiencing an increase in income, it is necessary to develop cooperatives, both KUD, and existing Fishermen's Cooperatives.

The planning and establishment of mangroves, it involves the role of community groups, both those who work as farmers and fishermen as the economic unit of the community. Of course, the planning and implementation are based on the will and needs of the community with a bottom-up approach. In addition, it is also necessary to conduct counseling on welfare in old age for both parents and family members by promoting saving activities at state banks such as BRI units in each sub-district. This is done with the hope that later when the community needs funds, they can still use the funds stored in the Bank without having to carry out mangrove forest encroachment activities to open new business areas. Thus, the security of the mangrove forest area can be maintained. For the next stage, in order to provide income levels in the long term and oriented to conservation efforts, the alternative activities developed are Silvofishery and Aquaculture development. Silvofishery is a fishery cultivation system in a mangrove forest area which is a combination system between ponds and mangrove forests. The advantages obtained from this activity are that socio-economically it will be able to expand employment opportunities and increase community income continuously, ecologically it will be able to maintain microclimate stability and soil conservation and be able to preserve the mangrove forest area that makes up the area.

In order to anticipate the occurrence of violations of the law, in this activity, it is necessary to organize the mangrove forest area so that the core zone, development zone, utilization zone, and buffer zone are clear. For this Silvofishery activity, the implementation is directed at the buffer zone of the mangrove forest area. By utilizing this buffer zone, it is hoped that the core zone, development, and utilization are ecologically safe. Meanwhile, the use of the buffer zone will have

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an impact on increasing people's income and with this utilization automatically the management of the buffer zone will be more secure.

This silvofishery system will encourage people to plant, protect and utilize mangrove forests optimally without destroying conservation and without reducing the functions of mangrove forests. Therefore, people who are directly related to the protection of mangrove forests in the preparation of mangrove forest areas are motivated to actively participate in their conservation. The pattern of approaches carried out both formally and non-formally aims to:

a. Continuous expansion of employment opportunities,
b. Increasing the income of the community around the mangrove forest,
c. Development of human resources, especially people whose lives are very dependent on mangrove forest ecosystems,
d. Reducing the security disturbances of mangrove forests from encroachment activities,
e. Securing the source of germplasm, especially mangrove species,
f. The establishment of a harmonious relationship between the mangrove forest management and the community,
g. Improved coordination between relevant technical agencies in the management and utilization of mangrove forests.

4. CONCLUSIONS

Damage to the mangrove forest that occurs is characterized by changes in the function of the area caused by the conversion of the community into aquaculture areas and Factors influencing the success of mangrove conservation in Ujung Pangkah as KEE area: (a) The socio-economic and cultural conditions of the community are generally uniform, namely the level of education and income levels of the community is relatively low and accessibility is difficult, (b) the function of community institutions is not yet optimal (c) Local knowledge and local resilience, (d) community perceptions of mangrove ecosystems are less positive for sustainability. Optimizing strategies for coastal village communities towards the preservation of mangrove forests include:

a. Increasing the quantity and quality of human resources through the development of human resources to improve the ability to manage conservation areas, especially mangrove ecosystems
b. Socio-economic development of the community to improve the standard of living of the community by opening up accessibility, developing local economic infrastructure,
c. Optimizing the functions of the formal and non-formal institutions of society
d. Laws and regulations

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SUGGESTION

Based on the status of the mangrove forest area, if it is maintained as a whole, it is feared that damage will still occur, this is based on the criteria for causing the damage which is very complex. For this reason, a re-evaluation of the status of the mangrove forest area should be carried out. The need for clear boundaries and determination of zoning for the conservation area. Land that has been utilized by the community should be enclaved and carried out guidance for its exploitation activities. The zoning of the area is needed for the establishment of guidance for its business activities. The zoning of the area is required for the determination of the determination and rescue of the core zone and the determination of the buffer zone area whose management can be given to the community with a Land Use Permit. Involving local communities in various activities, especially those concerning the determination of policies for the area. It is hoped that by involving the community in the management stages, the potential can be avoided.

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LIST OF TABLE

Tabel 1. Area and Condition of Mangrove Forest Land in Gresik Regency in 2000

No	Location	Area (Ha)	Condition (Ha)		
			Great	Grave	Damaged
1	Desa Banyu Urip	5,90	5,65	-	0,25
2	Desa Pangkah Wetan	2,60	2,60	-	-
3	Desa Pangkah Kulon	4,18	4,00	-	0,11
		12,68			

Tabel 2. Growth of Mangrove Ecosystem Land Area in Banyu Urip Village, Ujung Pangkah District, Gresik Regency

Year	**Area (Ha)**	**Growth (%)**
2000	5,90	-
2004	5,61	-4,92
2010	4,35	-22,46
2017	3,09	-28,97
2020	5,90	90,94