

# Arrangement Concept of Fishermen's Settlement in Wonorejo Surabaya to Support the Mangrove Ecotourism

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**Abstract**— Coastal area has strategic as well as the excellence and value of geographical area that has the potential to become an ecotourism. A fishermen's Settlement in Wonorejo Surabaya including Surabaya East Coast and nearby with the existing tourism object, namely a Mangrove Ecotourism. However, the Government of Surabaya is still not pay full attention to the settlement in order to support the Mangrove Ecotourism. Therefore, it is needed a concept of arrangement utilizing the fishermen's settlement with mangrove as an ecotourism elements. The aims of this research are to analyze the potentials of the settlement and to determine the arrangement concept of the fishermen's settlement in Wonorejo Surabaya based on ecotourism. Thus expected to support the economy of the city in terms of tourism coastal region.

This research uses descriptive qualitative research methods. Data obtained by direct observation and interviews with a number of respondents that can provide accurate data and facts. In addition, the used of literature and documents are to obtain supporting data on this fishermen's settlement. Furthermore, the potential of the fishermen's settlement in Wonorejo Surabaya is analyzed by using SWOT analysis technique.

Outcomes of this research is the arrangement concept of Wonorejo fishermen's settlement-based ecotourism as one of the supporters of the existence of Mangrove Ecotourism in Surabaya. This study is expected to be a reference to the Surabaya City Government to develop the concept of structuring the fishing village-based ecotourism.

**Keywords**— *Ecotourism, Coastal region, fisherman settlement of Wonorejo, Mangrove Wonorejo Ecotourism*

## I. INTRODUCTION

Minister of Settlement and Regional Infrastructure (2003), explained that Indonesia had many coastal areas. No less than 110 million people or 60% of the Indonesian population residing within a radius of 50 km of coastline. Furthermore, coastal areas also have potential to become a strategic value as the prime mover development of the national territory. In addition, the coastal area has been functioning as a community center because of their physical and geographical advantages.

According to Pramudji (2002), the development of marine tourism has been became one of the tourism object that are quite interesting. In addition, the utilization of coastal

ecosystem services can also sustainable, especially for the development of tourism and shipping. Coastal area is closely linked to the fishing village that has a lot of potential, such as abundant natural resources and beautiful natural scenery that can be developed to be some kind of attractions. As written in the online magazine as "Detiknews", that the Mayor of Surabaya stated a fishing village can be the one of tourist attractions. It is also reinforced by the construction of Outer East Ring Road plans that will support a fishing village into a one of tourism object.

East Coast region of Surabaya (Pamurbaya) has been designated as protected areas based on RTRW Surabaya 2013. According to Nugrahati (2012), East Coast region has huge natural resources potentially, like a mangrove forests, farms and poultry species. There is also an eco-tourism facilities in Surabaya East Coast. As the launching of the ecotourism program that aims to consolidate the East Coast region of Surabaya, the settlement of fishermen in this area should be an integral and important part of the development of Surabaya (Darmiwati, 2001 in Nugrahanti, 2012). One of the fishing settlement that was included in this area is the fishermen's settlement in Wonorejo Surabaya.

The fishermen's settlement of Wonorejo has been chosen, because of the location that adjacent to mangrove forests. Actually, it has tourism potential that should be further developed and supported each other to become a tourist attraction. In addition, the distinctiveness of this settlement is an artificial canal that connects among the fishing's settlement, Mangrove Ecotourism and the sea. However, at present, the potentials have not been optimized by the community of Wonorejo and the Government of Surabaya.

Arrangement means a process, a way, to organize actions, preparation (Lukman, 1995). The arrangement is required in the fishermen's settlement of Wonorejo Surabaya, that expected to further develop this settlement for mutual support with the presence of Mangrove Ecotourism. Therefore, the research is needed to determine the potentials that can be developed as well as the settlement development strategy that can be beneficial to the surrounding community. Hopefully, by the arrangement of the fishing village-based

ecotourism, can provide benefits for the community and be able to support and preserve the Mangrove Ecotourism.

#### Research objectives:

From the background described above, it obtain the research problems, that needs an arrangement of the fishermen's settlement in Wonorejo that can support the existence of Mangrove Ecotourism. The research objectives are:

- a. Analyze the potential of fishermen's settlement in Wonorejo Surabaya that can support the existence of Mangrove Ecotourism
- b. Determine the arrangement concept of fishermen's settlement Wonorejo Surabaya based on an ecotourism that support the existence of Mangrove Ecotourism

## II. THEORY

### A. The fishing settlement

According to the Law Of Management of Coastal Areas and Small Islands Article 1 ayat 7 of coastal region is a sea that adjacent to the land as far as 12 miles measured from the coastline, which connects the islands, estuaries, bays, shallow water, brackish marshes and lagoons. The coastal ecosystem is divided into two areas, namely land (mangrove) and water. Surabaya coastal region includes eleven districts and divided into four units of coastal development. The coastal city of Surabaya is divided into two, namely the East Coast of Surabaya (Pamurbaya) and the North Coast Surabaya (Pantura). Based on coastal region zoning plan of Surabaya in 2011, Wonorejo including on Pamurbaya that located in the eastern part of Surabaya and directly adjacent to the Madura Strait.

The characteristics of fishing settlement according to Suprijanto (2002), the characteristics of economic, social and cultural rights of the seaside town, where the development of the fishing settlement are:

1. Having the advantages of the location that can be the center of economic growth.
2. Residents have socio-economic activities oriented to water and land.
3. The average population of economically weak groups with relatively limited educational background and knowledge of the environment tends to be less healthy.
4. There was no environmentally conscious habits and tend to pay less attention to hazards and risks.
5. There is a relic of history / culture such as maritime museum, etc.
6. There are communities that have traditionally used to live (in fact can not be separated) above the water.
7. There are also culture / tradition utilization of water as a main means of transportation.
8. An open area (direct access), 1 to security, such as smuggling, infiltration (defense and security) and so on.

### B. Tourism area

According to Marpaung (2002), tourism is a temporary displacement by humans with the purpose out of the routine

jobs and his place. Activities carried out during their stay at the destination and the facilities are created to meet their needs.

A tourist attraction can be interesting to be visited by tourists, if it fulfill the requirements for the development of the region and according to Maryani (1991) the requirements are:

#### a. What to see

In these places there must be an objects and sights are different to the other regions. In other words, the area should have a special appeal and cultural attractions that can be used as "entertainment" for tourists. "What to see" include landscapes, activities, arts and tourist attractions.

#### b. What to do

The places should be provided recreation facilities that could make tourists comfortable for a long stay in that place. Besides, there are a lot of attractions that can be seen.

#### c. What to buy

A tourist destination should be provided facilities for shopping, especially souvenirs and handicrafts to take home.

#### d. Where to arrived

These include accessibility, how we visited the tourist attraction, the vehicle that are used and how long to arrive to the tourist destination.

#### e. Where to stay

Tourist spot will stay for a while during a vacation. It will be required accommodation and so on.

In addition, according to Spillane (1987, in Budi, 2013), a location used as a tourism activity (destinations) because it has five essential elements which are:

- a. Attractions, which forms the interesting attractions offered by object of tourism
- b. Facilities, that support the convenience of tourists when visiting the sights.
- c. Infrastructures, such as public roads and support buildings.
- d. Transportations, the ease of accessibility and availability of transportation to tourism object.
- e. Hospitality, which is an added value of a tourist attraction and provide a sense of comfort and security for tourists.

### C. Mangrove Ecotourism

The Ecotourism society in 1991 (in Wood, 2002), produced one of the earliest definitions that ecotourism is responsible travel to natural areas that conserves the environments and sustains the well being of local people. The World Conservation Union states in 1996 (in Wood, 2002), that ecotourism is environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features- both past and presents) that promote conservation, has low negative visitor impact, and provides for beneficially active sosio- economic involvement of local populations. At this time, ecotourism became an important economic activity that provides an opportunity to tourists to gain experience about nature and culture to learn and understand the

importance of biodiversity conservation and local culture. Additionally, ecotourism can provide income for conservation and economic benefit to the communities living in the vicinity of ecotourism.

In the development of ecotourism, it needs to consider some principles (Suhandi, 2005), which are:

1. The principle of conservation

Ecotourism can emerge of awareness, responsibility and commitment to nature conservation and ecological development that must follow the rules.

2. The principle of community participation

Basically, knowledge about nature, culture, region and tourist attraction that is owned by the local community. Therefore the involvement of the community in a participatory can be absolute, starting from the planning up to the management level.

3. The principle of economic

Ecotourism provides an opportunity to earn a profit for the organizers, governments and local communities, through the activities of non-extractive and non-consumptive thus boost local economies. Implementation of the attention to the rules of ecotourism, realizing sustainable economy of Provincial and even national.

4. The principle of education

Ecotourism activities provide added value to visitors and the local community in the form of knowledge and experience. The added value of this influence changes in behavior of visitors, community and tourism development in order to be aware and more appreciative of nature, the values of historical and cultural relics.

5. Principle of travel

It creates a sense of safety, comfort and satisfaction as well as the experience for visitors.

Mangrove forests are spread in several regions in Indonesia. One of them is in the city of Surabaya, which is known as Mangrove Ecotourism. This mangrove eco tourism has a potential rescuers were able to save the environment. This tourist area is developed to utilize the reservoir so that it can control floods. The existence of mangrove forest is also a habitat for many species of birds, including migratory birds and protected birds. In addition, the scenic beauty of the beach and the exotic flora and fauna in the region adds to the potential of this tourist area.

Mangrove Ecotourism in Rungkut initiated by the district head, the village chief executive of Wonorejo along FKPM Nirvana and legalized by Decree headman Wonorejo number: 556/157 / 436.11.15.5 / 2009 dated July 1, 2009. It also confirmed by the former Mayor of Surabaya Drs. Bambang DH on August,9th,2009, in conjunction with the inauguration mangrove gazebo. Ecotourism is managed by FKPM aka Police and Community Partnership Forum - Nirvana Executive. Besides FKPM, mangrove planted by groups of Wonorejo farmers.

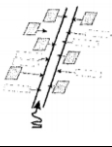
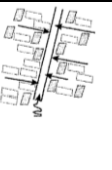
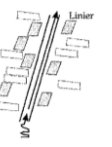


Mangrove Ecotourism has a mission to restore the mangrove forests due to illegal logging. Mangrove ecotourism's concept, in addition to maintaining and restoring mangrove forests,

there is also the education, training and sustainable management of mangrove forests. Mangrove Ecotourism agencies make efforts towards conservation of mangrove forests, in cooperation with the police in preventing illegal logging and destruction the conservation area and to build facilities for tourist activities. In addition Ecotourism Institute also serves as a source of information on mangrove forest ecosystems.

D. The pattern of settlement arrangement

Arrangement is an object forming activity, energy, and the process leading to a need and desire that owned by a person or group of people (Ryn, 1996 in Bahri, 2010). The development is a creative activity or create something from existing potential with the aim to produce more. A development process generally begins with analyzing the potential of a person or the environment and objects in it because of the potential that have an influence on all around.

TABLE 1. The arrangement pattern of fishing settlement

Pattern of settlement	Information	The sketch
A. The pattern of fisherman settlement	Pattern of linear arrangement between residential units along the settlement and laying activity centers, such as boat moorings, drying room, auctions and so on.	
• Face to face		
• Sub- group community	A cluster pattern of multiple units or several groups of residential units, focuses on important space such as drying spaces, public open space, the mosque, the leader of the group, and so on.	
B. The structure space of the fisherman settlement	Laying a simple pattern of settlement units (houses, social facilities, public facilities, etc.) are constantly on the edge of the river. In this pattern density is not high and the tendency of expansion of settlements, but the use of the land has not varied.	
• Linier		
• Clustered	This pattern is developed by the needed of the land and the emergence of the spread of residential units. The tendency of this pattern leads to a grouping of residential units that are considered to have significant value or binders such as open space groups, leaders and so on.	
• Combination	The combination of the two patterns above shows that in addition there was growth also illustrates the expansion of space for other purposes (business development). In this pattern has shown a gradation of intensity field and hierarchy of micro space in general.	

(Source: Taylor,1980 in Vidyabrata, 2002)

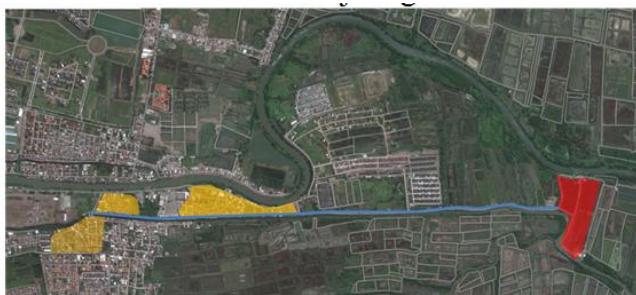
### III. RESEARCH METHODE

This research used a qualitative descriptive method. A qualitative approach is more emphasis on the depiction variable descriptions through in-depth interviews to determine the condition of the settlement in the fishermen's settlement Wonorejo Surabaya. This approach is used for the absorption of information, the identification of tourism potential in the study area to the analysis stage of ecotourism management. At the end of the approach used to formulate management strategies ecotourism potential of existing and strategies outlined in the SO strategy (Strength-Opportunity), the WO strategy (Weakness-Opportunity), the ST strategy (Strength-Threat), the WT strategies (Weakness-Threat).

### IV. OVERVIEW THE RESEARCH LOCATION

Based on coastal region zoning plan of Surabaya in 2011, the fishermen's settlement of Wonorejo Surabaya is included in Rungkut District, that located in Pamurbaya region which the eastern part of the city of Surabaya. This settlement has an area that ranges from 648.453 ha. The geographic condition of Wonorejo which stand in 4.6 m above sea level. Geographically, the topography of the Wonorejo Kampong is medium area and its average temperature of 32C. The fishermen's Settlement of Wonorejo Surabaya has boundary as follows:

North	: Wonokromo river
East	: Madura Strait
West	: the settlement of Medokan Ayu
South	: the settlement of Penjaringan Sari



Caption :  
■ : Mangrove Wonorejo Ecotourism  
■ : Wonorejo Kampong  
■ : The Artificial Canal

Fig1. The location of The fishermen's Settlement Wonorejo Surabaya

Source: Google maps, 2015

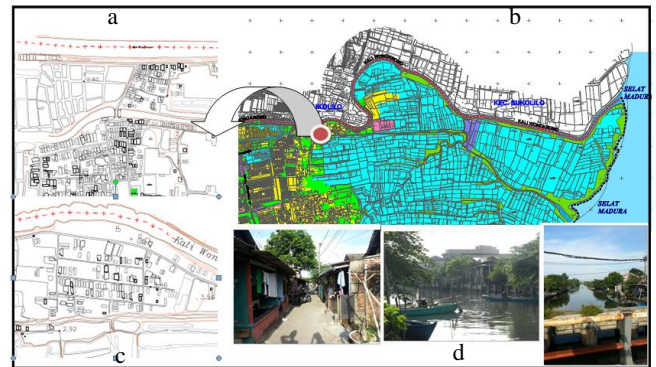


Fig2. (a) The siteplan of Wonorejo Kampong Rw 1 (b)The location of The fishermen's Settlement Wonorejo Surabaya. (c) The siteplan of Wonorejo Kampong Rw 7. (d) the existing condition of Wonorejo. Source: Rungkut Spatial Planing (RDTRK Surabaya ,Rungkut 2010-2030), documentation

From the research title and the area of existing location, this research has boundaries as follows:

#### a. Boundary of location

The object of observation focused on the fishermen's Settlement Wonorejo Surabaya, especially in RW 01 and RW 07. It is based on the existence of people who work as a fishermen, that most living in RW 01 and the presence of home based industries in RW 07 and the location of settlements are quite close to Mangrove Ecotourism.

#### b. Boundary aspects

The research focuses on the physical conditions that include housing conditions, the facilities and infrastructure, as well as non-physical conditions which include the social, economic and cultural aspect in the fishermen's Settlement Wonorejo Surabaya and the potentials that support Mangrove Ecotourism.

### V. DISCUSSION

#### A. Identification of the potential of the fishermen's Settlement Wonorejo Surabaya

To determine the arrangement strategies, first, it will be analyzed the potentials of the fishermen's settlement Wonorejo Surabaya. The potentials can be developed and optimized, so that it can be combined with the theory. The Potentials of this settlement which are :

##### 1. Aspects of natural resources

The potential of the fishermen's settlement Wonorejo Surabaya is quite large. The fishermen's settlement in Wonorejo Surabaya is a settlement that the income of many people still rely on aquaculture and fisheries. A lot of farms, owned by community of Wonorejo Surabaya. In addition, the existence of Mangrove Ecotourism nearby of the fishermen's settlement in Wonorejo Surabaya also provide many benefits, which is the availability of natural resources such as mangrove trees, that also serves as a refuge for some species like, shrimp, crabs and fish that can be a source of catches for the fishermen

## 2. Aspects of Human Resources

From the population data from Surabaya, this kampung consist of a lot of people, that can be the other potential that can be developed.

## 3. Tourist attraction

The most powerful attraction is Mangrove Ecotourism. There is also a Home-Based Enterprise (HBE) that using mangrove, such as batik mangrove and mangrove syrup. However, batik mangrove hasn't developed as well as mangrove syrup because, it needs a good skill to make a batik mangrove, so that there are only few people who pursue this profession in Wonorejo.

## 4. Availability of adequate facilities and infrastructures

Public facilities in this area consists of worship places that is praying, trading markets, shops / stalls, government facilities and open space that is often used by citizens can be considered quite good and adequate. Likewise with the existing infrastructure of this settlement. According to residents, the distribution of electricity and water, as long as it is not susceptible to interference. Therefore, facilities and infrastructure in the fishermen's settlement in Wonorejo Surabaya will be able to support the development of this kampung into a tourism.

## 5. Accommodation

The fishermen's settlement of Wonorejo Surabaya is very easy to find, because there is a connect road namely MERR (Middle East Ring Road) that connecting the settlement with the other place. This settlement has developed quite rapidly. To access this settlement, we can use any modes of transportation. Unfortunately, the quality of the road to access this settlement is severe damage because there was a construction of pedestrian.

## 6. Hospitality community

Public participation also be another potential possessed of Wonorejo Settlement, because there are many groups of environmental conservation, especially farmers who helped preserve mangrove and mangrove planting around the region. In addition, this settlement still have a fishing activity that can become more unique than the others settlement.

threat. Results of analysis of IFAS and EFAS can be seen in Table 5.5. and 5.6

TABLE 2. The Internal factor strategy

<b>Internal Factor Strategy (STRENGTHS)</b>	<b>rating</b>	<b>Weight</b>	<b>score</b>
The influence of the presence of Wonokromo River and the artificial canal that connect the fishermen's kampung Wonorejo Surabaya.	3.13	0.07	0.21
The influence of the presence of Mangrove Wonorejo Ecotourism towards the fishermen's kampung Wonorejo Surabaya.	3.43	0.07	0.25
The level of public awareness of the environment in The fishermen's kampung Wonorejo Surabaya.	3.03	0.07	0.20
The influence of the existence of a connecting road (MERR) to the fishermen's kampung Wonorejo Surabaya	3.00	0.06	0.19
The condition of lighting facilities.	3.20	0.07	0.22
The condition of water supply facilities.	3.07	0.07	0.20
The condition of drainage facilities	2.97	0.06	0.19
The condition of education facilities.	3.07	0.07	0.20
The condition of places of worship facilities	3.20	0.07	0.22
Ease in accessibility towards the fishermen's settlement in Wonorejo Surabaya	3.07	0.07	0.20
The community role of fishermen's kampung Wonorejo Surabaya about development activities	2.97	0.06	0.19
The fishing activities in the Wonorejo Kampung	2.60	0.06	0.15
			<b>2.43</b>
<b>(WEAKNESS)</b>	<b>rating</b>	<b>weight</b>	<b>Score</b>
The coordination among people in the fishermen's settlement in Wonorejo Surabaya	2.17	0.05	0.10
The developments of Home Based Industries in the fishermen's settelement in Wonorejo Surabaya	1.60	0.03	0.06
Inadequate road infrastructure	1.73	0.04	0.06
Knowledge of ecotourism village	1.93	0.04	0.08
The condition of facilities and infrastructure of tourist accommodation	2.37	0.05	0.12
<b>TOTAL</b>	<b>46.54</b>	<b>1</b>	<b>0.42</b>

### B. The Analysis of the Internal and Exsternal factors using Internal Factor Analysis Summary (IFAS) dan Eksternal Factor Analysis Summary (EFAS).

There are steps in drafting table Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) to determine the factors that became strength and weakness. Then, give the weight of each factor on a scale ranging from 0 (not important) to 1.0 (very important) where in all the weights not exceeding a total score of 1.00. Calculate the rating for each factor by providing a scale ranging from 1 (very bad) to 4 (excellent). Strength and Weakness rating value is always contradictory, as well as opportunity and

TABLE 3. The Eksternal factor strategy

External Factor Strategy	rating	weight	Score
(OPPORTUNITY)			
The willingness of people to participate in development efforts as a tourism Kampong	3.67	0.12	0.44
The artificial canal which has functioned as a pathway connecting the kampong to the sea.	3.2	0.10	0.34
The existence of Mangrove ecotourism towards the fishermen's kampong Wonorejo Surabaya.	3.43	0.11	0.38
The existence of a connecting road (MERR) towards the fishermen's kampong Wonorejo Surabaya.	3.76	0.12	0.46
The importance of community role for development activities in the fishermen's kampong Wonorejo Surabaya	3.8	0.12	0.47
The importance of government supported for the activities of the fishing village	3.4	0.11	0.38
The importance of the presence of fishing activities.	3.1	0.10	0.31
TOTAL			2.79
(THREAT)			
Availability nature diminishing due to activity in the fishing village Wonorejo Surabaya	2	0.07	0.13
The government is more concerned with the conservation than ecotourism in Mangrove Ecotourism	2	0.07	0.13
The low participation of people who are involved in the activities of Ecotourism.	2.2	0.07	0.16
TOTAL			0.42

TABLE 4. The calculation of IFAS and EFAS

IFAS	STRENGTHS	WEAKNESS
EFAS		
OPPORTUNITIES(O)	STRATEGY SO 2.43 + 2.79 = 5.22	STRATEGY WO 0.42 + 2.79 = 3.21
TREATHS(T)	STRATEGY ST 2.43 + 0.42 = 2.85	STRATEGY WT 0.42 + 0.42 = 0.84

The table above shows that the strategy used is SO (strength-opportunities) strategy, because it has the greatest value among other strategic. SO (strength-opportunities) is a strategy that utilize all the power to seize and exploit opportunities as possible. The strategy needs to be done is a development strategy of rural tourism, maintain the existing attractiveness and promotional strategies. Strategy development of rural tourism is done by designing a tourist route. Designing the route map for visitors. Maintaining the attractiveness that there are existing conservation which is owned by the region with diverse appeal held that attract tourists. Elaboration of strategies to be carried out can be seen in the following SWOT matrix:

TABLE 5. The concept of development strategy

IFAS	Strength (S) :	Weakness (W) :
EFAS		
Opportunity (O):	Strategy (SO): <ul style="list-style-type: none"> <li>Utilizing waters, particularly the artificial canal as an alternative to connecting the tourist path.</li> <li>The local governments should support local citizens by facilitating money or the tools to support the activities of citizens.</li> <li>Build a cooperative community especially for fishermen</li> </ul>	Strategy (WO): <ul style="list-style-type: none"> <li>Improving the pedestrian way and the main road for the convenience of residents and visitors.</li> <li>Support local authorities for non-physical development is carried out through coaching, training courses or tourism services in order to increase human resources and increased promotion.</li> </ul>
Threat (T)	Strategy (ST): <ul style="list-style-type: none"> <li>Doing an approach to the citizens for environmentally conscious</li> <li>strategy of outreach to local communities around the region and strategies to improve and maintain security in the fishing village Wonorejo Surabaya</li> </ul>	Strategy (WT): <ul style="list-style-type: none"> <li>more attention from policy makers (stakeholders) in order to improve the potential of the region / kampong</li> <li>Good relations need to be established between society and the government to create a culture of trust</li> </ul>

From the table of IFAS and EFAS above, we can describe it the quadrant matric as the figure 2 below :

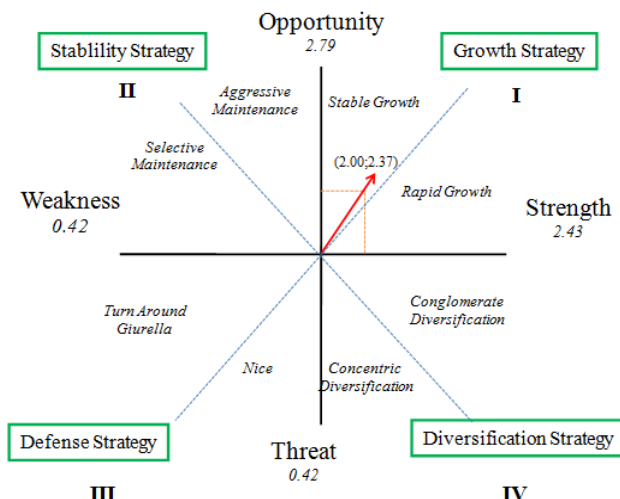


Figure 3. the Quadrants of SWOT analysis

Based on the quadrant matric above, so we can determine the strategic development by counting between the strength - opportunities, weakness- opportunities, strength - threats, and weakness- threats.

C. The arrangement concept of the fishermen's settlement of Wonorejo Surabaya.

At this time the settlement patterns of Wonorejo Kampong are the combined between linear patterns and clusters. The concept of arrangement will not change the

existing condition too much, but it will improve the existing settlements. For the detail of the concept, it will explained in figure below

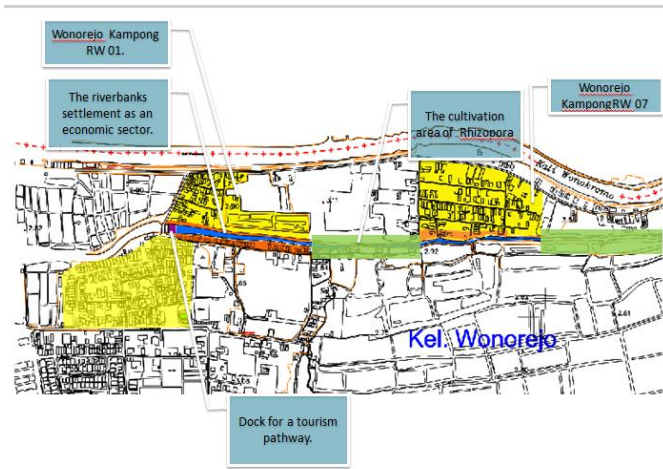


Figure 4. The arrangement plan of the Fishermen's settlement Wonorejo

Based on the existing condition of Wonorejo RW 1, that the arrangement of their settlement followed the pattern of the street. The Artificial canal connect the fishing settlement to the sea, that it will become the uniqueness of this region. Because of this reason, the artificial canal, should be utilized as well as possible, by making a dock as tourism pathway. Riverbanks housing can support the peculiarities of this canal, by making this area as an economic sector that sells the cottage industry such as batik mangrove and fruit syrup mangrove. For the greenery area of this settlement, in the riverside area, it will plant a *Rhizophora* mangrove types.

The arrangement concept of village-based ecotourism is apply the principles of ecotourism, such as:

1. Principles of travel

The main concept is to utilize the artificial canal that connected the fishermen's Settlement Wonorejo and Mangrove Ecotourism. The artificial canal used as a tourist route that can be the main attraction for this settlement. The artificial canal can take advantage of the small port near the village (figure 5), so it can also increase the income of fishermen.

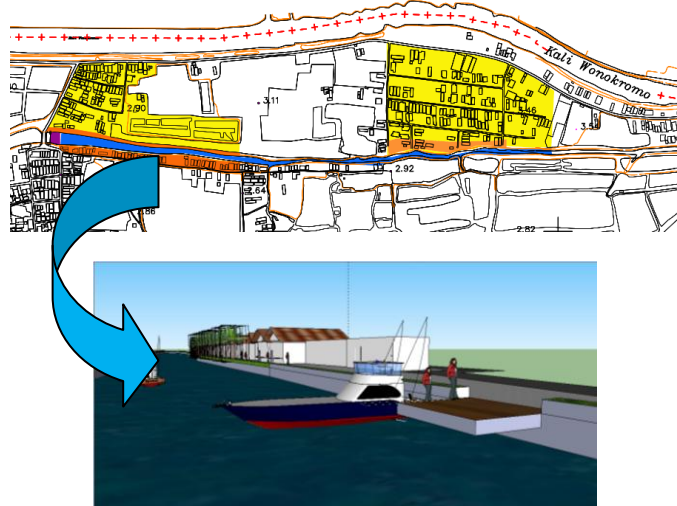


Figure 5. The illustration of dock area as the alternative tourist track

In the existing condition, to get into the mangrove eco-tourism attraction, visitors pass through the main road of Wonorejo, but in this concept, visitors will be passed prior to the entrance of the village Wonorejo and then use the travel lane of river (through the canal) to be able to get to the mangrove eco-tourism.( fig6)

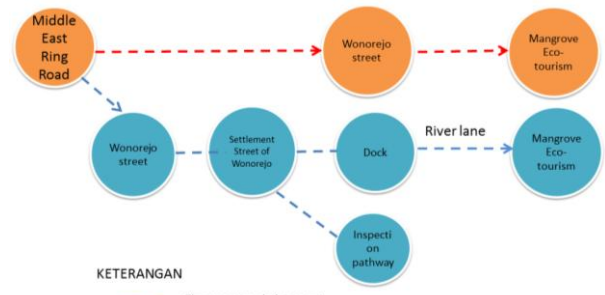


Figure 6. The concept of the tourism route

2. The principle of economic and participation of community

Tourism sector and the economy is a unity that can not be separated, so that by making the artificial canal as the travel lane riverside settlements, also can be used as an area of economic sectors. Riverside settlement can be used community of Wonorejo settlement to help their economic, for example by selling the catch or effort crafts such as batik mangrove and mangrove syrup. Communities can play an active role in improving their economies.

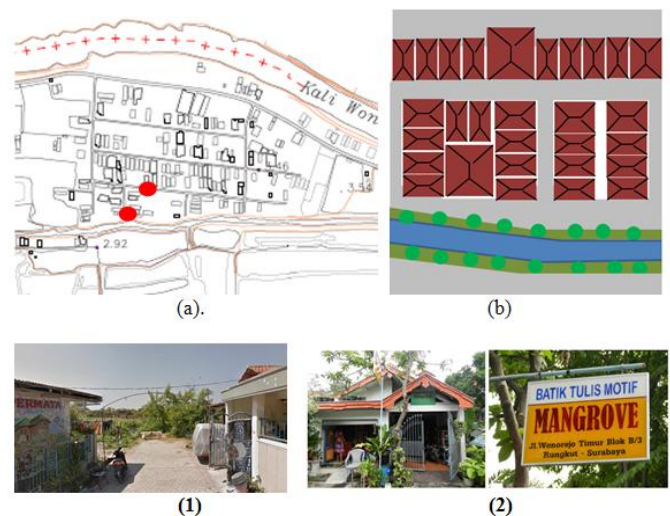


Figure 7. (a)The siteplan of Wonorejo Kampong RW 7. (b)The settlement pattern of Wonorejo Kampong RW 7. (1) The existing condition. (2). The Home Based Enterprise in Wonorejo.



Figure 8. The illustration of inspection way

In the existing condition, the settlement is still relatively slums, because the housing is very close to the river bank. So, the arrangement is to make the inspection path as wide as 3-5 meters. Hopefully with this pathway can further curb settlement in this settlement and also can provide public space so that people in this settlement can socialize to the others.



Figure 9. The illustrated of the riverbanks housing in Wonorejo

The figure.9 shows that the condition of the fishermen's settlement of Wonorejo. In the existing condition, the housing is backward the river. The new concept that suggested is the housing is going to facing the river so that there are space between the river and the housing. It will reduce the danger of living in riverbanks and also it can made the settlement well-organized.

### 3. The principle of conservation and principles of education

The artificial canal can be planted with mangrove types *Rhizophora*, that given the mangrove roots of this

kind can prevent the erosion and also good to filter water that will enter the area of aquaculture ponds. According to Muharram (2014), the model types rhizophora mangrove roots are very distinctive, so even if planted on grooves along the river, the river will not quickly run into maintenance and planting silting along nicely arranged. This area can also be the area of conservation and education, so that it will be provide information about the mangrove types *Rhizophora*. (fig.10)



Figure 10. The illustrated of planting Rhyzopora as the conservation way

## VI. CONCLUSION

The conclusions of this research are based on the analysis of internal and external factors identified that the potential of the fishing village of Wonorejo Surabaya are:

- The strength of the fishermen's settlement Wonorejo Surabaya had seen from the availability of human resources, the location factors, the availability of facilities and infrastructure are adequate, the convenient access and fishing activities.
- The weakness of the fishermen's settlement Wonorejo Surabaya had seen from accommodation infrastructure, the development of Home Based Enterprise (HBE), the lackness of public knowledge about ecotourism village.
- The opportunities of the fishermen's settlement Wonorejo Surabaya had seen from the strategic location with other tourist attractions, the participatory of community and government support.
- Threats owned by the fishermen's settlement Wonorejo Surabaya had seen from environmental contamination as well as the lack of involvement of the public towards the activity of ecotourism in mangrove Wonorejo ecotourism.

Based on the SWOT matrix, so that the priority that can be done is to develop Wonorejo Settlement as a one of tourism village and maintain the attractiveness / particularities of Wonorejo Surabaya which in this case is utilizing the artificial canals as alternative tourist track and arrangement of the region.

The arrangement concept in the fishermen's Settlement Wonorejo Surabaya to do are:

- Repairing the dock area and make the artificial canals as alternative tourist route. Using fishing boats to take



visitors to the mangrove eco-tourism area, so that it can also increase the income of fishermen.

- b. Paving inspection ways 3-5 meters, to reduce the danger of the river bank and make this area as public space and can be used as an area planting / reforestation.
- c. Making riverside housing as an area of economic sectors. Communities can sell their creativeness from mangrove or fish catches in order to increase their incomes.
- d. Planting mangrove types *Rhizophora* at some point at the banks river can extents the greening area and also the implementation of mangrove conservation in the fishermen's Settlement Wonorejo Surabaya.

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