Suitability of space utilization of settlement in coastal areas of abeli and nambo sub-district, Kendari City using spatial and non-spatial methods

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Abstract. Land use for settlements needs to be regulated properly so that it is suitable with the city spatial plan by considering ecological balance aspect so that there is no deterioration in the land quality. Environmental damage can also occur because of the pattern of settlement development that exceeds the carrying capacity of the environment such as density, size and shape of settlements. Abeli and Nambo Sub-Districts, cover an area of 43.85 Km² or 16.40% of the total area of Kendari city. it is a strategic area for urban development because it has a relatively wide location and it is directly facing the Banda Sea. This study aimed to: (1) analyze the level of suitability of land for settlements in the coastal areas of Abeli and Nambo Sub-Districts; (2) figure out of community perspective in the selecting the location of settlements in Abeli and Nambo Sub-Districts. The study used qualitative and quantitative research methods with descriptive qualitative analysis and spatial analysis. This study consisted of 8 variables namely slope, distance from the coast boundary, distance from river boundary, distance from tsunami prone location, distance from flood location, distance from mangrove ecosystem, sea tide fluctuations, and high ROB flood inundation. The results showed that (1) suitability land in the settlement in Abeli and Nambo Sub-Districts that were included in the very suitable criteria were 2,382.87 Ha or 80.44 %, suitable criteriawere 15.56 Ha or 15.56 %, the criteria for Less Suitable was 114.26 or 3.86 %, and Not Suitable criteria was 4.24 hectares or 0.14 %; (2) Respondents' reasons for selecting a settlement location were influenced by consideration of house price (11 %) location or access to workplaces and public facilities (34 %), security against natural disasters (19 %), environmental health (21 %), convenience (11 %), and others (3 %) while the reasons for respondents choosing the location of settlements based on residential Land Suitability were Very Suitable (40 %), Suitable (37 %), Less Suitable (21 %) and Not Suitable (1 %).

1. Introduction
Abeli and Nambo Sub-Districts located in the east of Kendari City has an area of 43.85 Km² or 16.40% of the vast area of Kendari City [1, 2], which is a strategic area for urban development because it has a relatively wide location directly with the Banda Sea. This is indicated by the number of activities along the coastal area ranging from residential activities, coastal tourism, to the industrial sector.

Abeli and Nambo Sub-District are relatively undeveloped Sub-Districts compared to other sub-Sub-Districts in Kendari, but both Sub-Districts have many potential resources. The potential of the
existing resources is tourism potential in Bungkutoko Sub-District which has a 2 ha mangrove forest which is being developed into a tourist mangrove forest and Nambo Coast and Bungkotoko Island which also has the potential for coastal tourism development. Another activity that can also be developed is mariculture business. Another cultivation business is seaweed, which is quite rapidly developing in Sambuli and Tondonggeu Villages [9].

The development in Abeli and Nambo Sub-Districts, especially in land use for settlements must pay attention to the natural and physical condition of the land. This is intended to make the development of existing settlements does not cause environmental problems in the future. The unsuitability of land use with a natural physical condition can cause environmental problems such as floods, erosion and landslides.

These environmental problems can cause material (property) and non-material (soul) losses. Placement of settlement construction locations needs to be harmonized with Land Suitability in the coastal areas of Abeli and Nambo Sub-Districts. Environmental balance and staying awake from negative impacts that can cause long term losses can be avoided. Based on these problems, this study aimed to 1) analyze the level of suitability of land for settlements in the coastal areas of Abeli Sub-District and Nambo Sub-District; (2) figure out of community perspective in the selecting the location of settlements in Abeli and Nambo Sub-Districts.

2. Methodology

2.1. Location and Time
This research was conducted in Abeli and Nambo Sub-Districts located in the east of Kendari city. It started in August - October 2017 using the research variables namely : land slope (%), distance from the coast boundary (m), distance from the river boundary (m), distance from tsunami prone location (m), distance from flood location (m), distance from mangrove ecosystem (m), tidal fluctuation (m), and height of flood inundation (m.dpl). The location of the study is shown in Figure.1

*Figure 1. Research location*
2.2. Data Collection
This study used two types of data analysis, namely spatial analysis and non-spatial analysis. Spatial data derived from analysis of satellite images and GPS surveys, satellite imagery used consists of 2 (two) types, namely DEM type image (Digital Elevation Model) S 30 meter 2009 RTM product and SPOT-6 Year Satellite Imagery in 2015. DEM-STRM image is to obtain altitude and slope data and SPOT-6 images to obtain coastline data and land cover. DEM data that has been processed is then corrected using BIG Topography Data with Scale of 1: 25,000 in 2013 while coastline data and land cover and the highest tide boundary were observed through field surveys using GPS. DEM-SRTM imagery can be obtained by downloading through the Earth Explorer-USGS website (https://earthexplorer.usgs.gov). Source of non-spatial data from questionnaires containing a list of questions about the conditions and situations faced in the community settlement to find out the perceptions of the people living around the area and the location of suitable settlements.

2.3. Data Analysis Technique
Land suitability for settlement using overlay technique and scoring showed by Figure 2

![Diagram](image)

**Figure 2.** Technique overlay for land settlement
Based on the results of land suitability assessment, a map of land suitability is made by using GIS technology. The level is divided by four suitability classes namely S1, S2, S3 and N, namely:

- **S1 Class: Very Suitable** that island that does not have a heavy barrier for certain use in a sustainably or only has a barrier that is less meaningful and does not significantly affect the production of the land and will not add input from the business.

- **S2 Class Suitable**, that is land that has rather heavy restrictions for certain sustainable uses. The Boundary will reduce land productivity and the profits obtained and increase input to cultivate the land.

- **S3 Class: Less Suitable** that is land that has a very heavy Boundary level, but it is still possible to overcome/repair, it means that it can still be improved to be suitable if repair is carried out with a high level of technology introduction or can be done with additional treatment with rational costs.

- **N Class: Not Suitable**, that is land that has very heavy/permanent, so it is impossible to be used as sustainable use. As for the parameter and indicator used can be seen in Settlement land suitability as seen in Table 1.

**Table 1. Operational Definition**

| No. | Variable | Indicator | Suitability Class |
|-----|----------|-----------|------------------|
| 1.  | Slope (%) | 0 – 8     | S3 Very Suitable |
|     |          | 8 - 15    | S2 Suitable      |
|     |          | 15 - 25   | S1 Less Suitable |
|     |          | > 25      | N Not Suitable   |
|     | Distance from Coast Boundary (m) | > 100 | S3 Very Suitable |
|     |          | 50 - 100  | S2 Suitable      |
|     |          | 0 – 30    | N Not Suitable   |
| 2.  | Distance from River Boundary (m) | > 10   | S3 Very Suitable |
|     |          | 5 - 10    | S2 Suitable      |
|     |          | 0 – 3     | N Not Suitable   |
| 3.  | Distance from Tsunami Prone Point (m) | > 1.000 | S3 Very Suitable |
|     |          | 500 - 1.000 | S2 Suitable   |
|     |          | 0 – 500   | N Not Suitable |
| 4.  | Distance from Flood location (m) | > 100 | S3 Very Suitable |
|     |          | 50 – 100  | S2 Suitable      |
|     |          | 0 - 50    | N Not Suitable   |
| 5.  | Distance from Mangrove ecosystem (m) | > 200 | S3 Very Suitable |
|     |          | 100 - 200 | S2 Suitable      |
|     |          | 0 – 100   | N Not Suitable   |
| 6.  | Seawater Fluctuation (m) | 0 | S3 Very Suitable |
|     |          | 0.5 – 2   | S2 Suitable      |
|     |          | > 2       | N Not Suitable   |
| 7.  | High flood inundation (m.dpl) | 0 | S3 Very Suitable |
|     |          | 0 – 1     | S2 Suitable      |
|     |          | > 1       | N Not Suitable   |

Source:  
1) = (FAO,1976), 2) = (Dirjen PR, 2010), 3) = (Dahuri, 2002),  
4) = (BNPB, 2012), 5) = (Ward P.J, 2011), 6) = (BadanRiset DKP, 2009)
3. Results

3.1. Land Suitability Variable for Settlement
Land suitability process for settlement can be done based on variables that can be Boundary of land use. As for the variables are:

3.1.1. Slope
Based on the results of the study, the areas with slopes of 0 - 8% (Very Suitable) in Abeli Sub-District were 785.96 Ha or 49.33%, while in Nambo Sub-District they were 947.31 Ha or 38.31%, the areas with slopes were 8 - 15% (Suitable) in Abeli Sub-District that covers an area of 272.73 Ha or 15.73% while in Nambo Sub-District an area of 440.60 Ha or 17.88%, an area with a slope of 15-25% (Less Suitable) in Abeli Sub-District with an area of 254.00 Ha or 15.94% while in Nambo Sub-District covering 535.84 Ha or 21.75%, and areas with slopes> 25% (Not Suitable) in Abeli Sub-District covering an area of 310.59 Ha or 19.49% while in Nambo Sub-District covering an area of 540.05 Ha or 21.92%. The results of slope analysis in Abeli Sub-District and Nambo Sub-District are showed in Table 2.

| No  | Suitability     | Abeli Sub-district | Nambo Sub-district | Total |
|-----|-----------------|--------------------|--------------------|-------|
|     |                 | Ha | %    | Ha | %    | Ha | %    |
| 1   | Very Suitable   | 785.96 | 49.33 | 947.31 | 38.45 | 1.733.27 | 42.72 |
| 2   | Suitable        | 242.73 | 15.23 | 440.60 | 17.88 | 683.33 | 16.84 |
| 3   | Less Suitable   | 254.00 | 15.94 | 535.84 | 21.75 | 789.84 | 19.47 |
| 4   | Not Suitable    | 310.59 | 19.49 | 540.05 | 21.92 | 850.64 | 20.97 |
|     | Total           | 1.593.29 | 100.00 | 2.463.80 | 100.00 | 4.057.09 | 100.00 |

Source: Analysis results, 2018

3.1.2. Distance from Coast Boundary
Based on the results of the study, the condition of the available land in Abeli and Nambo sub-districts, which is more than 100 meters wide, az quite wide, covering an area of 3,857.39 Ha or 95.08%. The wide distribution of land in Abeli and Nambo sub-districts was based on the suitability of distance from the coastal Boundary as presented in Table 3.

| No  | Suitability     | Abeli Sub-district | Nambo Sub-district | Total |
|-----|-----------------|--------------------|--------------------|-------|
|     |                 | Ha | %    | Ha | %    | Ha | %    |
| 1   | Very Suitable   | 1,544.80 | 96.96 | 2,312.58 | 93.86 | 3,857.39 | 95.08 |
| 2   | Suitable        | 21.77 | 1.37 | 73.44 | 2.98 | 95.21 | 2.35 |
| 3   | Less Suitable   | 10.07 | 0.63 | 30.41 | 1.23 | 40.48 | 1.00 |
| 4   | Not Suitable    | 16.65 | 1.04 | 47.37 | 1.92 | 64.02 | 1.58 |
|     | Total           | 1,593.29 | 100.00 | 2,463.80 | 100.00 | 4,057.09 | 100.00 |

Source: Analysis Results, 2018

3.1.3. Distance from River Boundary
Based on the overall results of the study, in Abeli and Nambosub-district it was dominated by Very Suitable condition with an area of 3,987.89 Ha or 98.03%, then suitable conditions with an area of...
34.65 Ha or 0.85%, and the smallest land suitability was the variable distance from the river border, namely in the Not Suitable category that is 20.69 Ha or 0.51%. It can be seen in Table 4.

Table 4. Distribution of land area in Abeli and Nambo Sub-district from river boundary

| No | Suitability   | Abeli Sub-District | Nambo Sub-District | Total   |
|----|--------------|--------------------|--------------------|---------|
|    | Ha           | %                  | Ha                 | %       |
| 1  | Very Suitable| 1.572,99           | 98,73              | 2.414,90| 98,02   | 3.987,89 | 98,30   |
| 2  | Suitable     | 10,16              | 0,64               | 24,49   | 0,99    | 34,65    | 0,85    |
| 3  | Less Suitable| 4,06               | 0,25               | 9,77    | 0,40    | 13,83    | 0,34    |
| 4  | Not Suitable | 6,07               | 0,38               | 14,62   | 0,59    | 20,69    | 0,51    |
|    | Total        | 1.593,28           | 100,00             | 2.463,78| 100,00  | 4.057,09 | 100,00  |

Source: Analysis Results, 2018

3.1.4. Distance from Tsunami Prone Area

Based on the results of the study, overall in Abeli and Nambo Sub district the distance from tsunami-prone areas was dominated by very suitable conditions with an area of 3,611.99 Ha or 89.03%, then the conditions were Not Suitable with an area of 161.11 Ha or 7.00% and the smallest Land Suitability in the distance variable from Tsunami-prone area that was in the Suitable category as large as 161.11 Ha or 3.97%. It is shown in Table 5.

Table 5. Distribution of land area in Abeli and Nambo sub-district from tsunami prone location

| No | Land Suitability | Abeli Sub-District | Nambo Sub-District | Total   |
|----|-----------------|--------------------|--------------------|---------|
|    | Ha              | %                  | Ha                 | %       |
| 1  | Very Suitable   | 1.593,28           | 100,00             | 2.018,71| 81,93   | 3.611,99 | 89,03   |
| 2  | Suitable        | -                  | -                  | 161,11  | 6,54    | 161,11   | 3,97    |
| 3  | Not Suitable    | -                  | -                  | 283,99  | 11,53   | 283,99   | 7,00    |
|    | Total           | 1.593,28           | 100,00             | 2.463,81| 100,00  | 4.057,09 | 100,00  |

Source: Analysis Results 2018

3.1.5. Distance from Flood Location

Based on the results of the study, the area that was not suitable for the overall settlement in Abeli and Nambo sub-districts was an area of 311.40 ha or 7.68% because it is an area very close to the river flow. The data can be seen in Table 6.

Table 6. Distribution of land area in Abeli and Nambo sub-district from flood location

| No | Land Suitability | Abeli Sub-District | Nambo Sub-District | Total   |
|----|-----------------|--------------------|--------------------|---------|
|    | Ha              | %                  | Ha                 | %       |
| 1  | Very Suitable   | 1.247,02           | 78,27              | 2.318,59| 94,11   | 3.565,61 | 87,89   |
| 2  | Suitable        | 116,26             | 7,30               | 63,84   | 2,59    | 180,10   | 4,44    |
| 3  | Not Suitable    | 230,02             | 14,44              | 81,38   | 3,30    | 311,40   | 7,68    |
|    | Total           | 1.593,3            | 100,00             | 2.463,81| 100,00  | 4.057,09 | 100,00  |

Source: Analysis Results 2018
3.1.6. Distance from Mangrove Ecosystem

Based on the results of the study, it showed that overall in Abeli and Nambo Sub-districts the distance from the mangrove ecosystem was dominated by very suitable conditions with an area of 3,764.68 Ha or 92.79%, then not suitable condition for settlements with an area of 177.61 Ha or 4.38% and the smallest Land Suitability on the distance variable from the mangrove ecosystem was in the suitable category that was an area of 114.78 Ha or 2.83% as shown in Table 7.

| No | Land Suitability | Abeli Ha | % | Nambo Ha | % | Total Ha | % |
|----|------------------|----------|---|----------|---|----------|---|
| 1  | Very Suitable    | 1,546,86 | 97,09 | 2,217,82 | 90,02 | 3,764,68 | 92,79 |
| 2  | Suitable         | 23,93    | 1,50 | 90,85    | 3,69 | 114,78   | 2,83 |
| 3  | Not Suitable     | 22,49    | 1,41 | 155,12   | 6,30 | 177,61   | 4,38 |
|    | Total            | 1,593,28 | 100,00 | 2,463,79 | 100,00 | 4,057,09 | 100,00 |

Source: Analysis Results 2018

3.1.7. Tidal Fluctuation

Based on the results of the study, it was shown that overall in Abeli and Nambo Sub-districts the sea tidal fluctuation was dominated by very suitable conditions with an area of 3,869.59 Ha or 95.38%, then the suitable condition for settlements with an area of 187.49 Ha or 4.62% as shown in Table 8.

| No | Land Suitability | Abeli Ha | % | Nambo Ha | % | Total Ha | % |
|----|------------------|----------|---|----------|---|----------|---|
| 1  | Not Suitable     | -        | - | -        | - | -        | - |
| 2  | Suitable         | 47,47    | 2,98 | 140,02   | 5,68 | 187,49   | 4,62 |
| 3  | Very Suitable    | 1,545,80 | 97,02 | 2,323,79 | 94,32 | 3,869,59 | 95,38 |
|    | Total            | 1,593,27 | 100,00 | 2,463,81 | 100,00 | 4,057,08 | 100,00 |

Source: Analysis Results 2018

3.1.8. High floodwaters ROB

Based on the results of the study, Overall, Domination in the very suitable category was 3,869.59 Ha or 95.38%, the suitable category was 167.64 Ha or 4.13%, whereas in the not suitable category for settlements was 19.86 Ha or 0.49% as shown in Table 9.

| No | Land Suitability | Abeli Ha | % | Nambo Ha | % | Total Ha | % |
|----|------------------|----------|---|----------|---|----------|---|
| 1  | Very Suitable    | 1,545,80 | 97,02 | 2,323,79 | 94,32 | 3,869,59 | 95,38 |
| 2  | Suitable         | 41,33    | 2,59 | 126,31   | 5,13 | 167,64   | 4,13 |
| 3  | Not Suitable     | 6,15     | 0,39 | 13,71    | 0,56 | 19,86    | 0,49 |
|    | Total            | 1,593,28 | 100,00 | 2,463,81 | 100,00 | 4,057,09 | 100,00 |

Source: Analysis Results 2018
3.2. Analysis of Land Suitability for Settlement in Abeli and Nambo Sub-district

Based on the overlay results with forest areas, land suitability in Abeli and Nambo Districts is dominated by the very suitable category with a land area of 2,382.87 Ha or 80.44%. The conditions in the not suitable category were 0.21 Ha or 0.01% in the Lapulu Village, while in the Nambo Subdistrict it was 4.24 Ha or 0.14%. Land suitability for settlements in the coast area of Abeli and Nambo Sub-District as shown in Table 10 and Figure 3.

Table 10. Land suitability of settlement in Abeli and Nambosub-district

| No | Land Suitability   | Abeli  | %   | Nambo  | %   | Total  | %   |
|----|-------------------|--------|-----|--------|-----|--------|-----|
| 1  | Very Suitable     | 978,73 | 85.09 | 1,404,14 | 77,48 | 2,382,87 | 80,44 |
| 2  | Suitable          | 161,00 | 14.00 | 300,01 | 16,56 | 461,01 | 15,56 |
| 3  | Less Suitable     | 10,48  | 0.91  | 103,78 | 5.73  | 114,26 | 3.86 |
| 4  | Not Suitable      | 0,01   | 0.00  | 4,23   | 0.23  | 4,24   | 0.14 |
|    | Total             | 1,150,22 | 100.00 | 1,812,16 | 100.00 | 2,962,38 | 100.00 |

Source: Analysis Results 2018

3.3. Analysis of People Argumentation at Coast of Abeli and NamboSub-District

The results of the interview illustrated that generally, people who occupy coastal areas were in middle-income groups that prioritize accessibility that is close to the transportation routes, the location of public facilities, and accessibility to markets. In addition, most people chose to live in coastal areas because of environmental safety factors and according to them people in the coastal areas they were still quite safe. Reasons to choosing a place of residence include the price of a house, location or access to a workplace, public facilities, security for natural disasters such as floods, environmental
health (clean air), comfort (shady, cool, etc.) then 34% respondents chose their place of residence by reason of access to workplaces and public facilities, 21% of respondents chose because of environmental health reasons, 19% of respondents chose because of security from natural disasters, 11% of respondents chose because of house prices and convenience, 3% others. The reasons for choosing a place to live based on the sub-district can be presented in Table 11 and Figure 4.

**Table 11.** The main requirement in selecting settlement location in Abeli and Nambo Sub-District.

| No. | Requirement          | Abeli Freq. | Abeli % | Nambo Freq. | Nambo % | Total Freq. | Total % |
|-----|----------------------|-------------|---------|-------------|---------|-------------|---------|
| 1   | House Price          | 6           | 10      | 5           | 13      | 11          | 11      |
| 2   | Location             | 16          | 27      | 18          | 46      | 34          | 34      |
| 3   | Safety               | 12          | 20      | 7           | 18      | 19          | 19      |
| 4   | Environmental Health | 18          | 30      | 3           | 8       | 21          | 21      |
| 5   | Convenience          | 7           | 12      | 4           | 10      | 11          | 11      |
| 6   | Others               | 1           | 2       | 2           | 5       | 3           | 3       |

Total 60 100 39 100 99 100

Source: Analysis Results 2018

**Figure 4.** Map of the reason for selecting a place to live in settlement Land Suitability While the reason for choosing a place to live based on Land Suitability can be seen in Table 12.
Table 12. Respondent reason in selecting house to land suitability

| No. | Reason in Selecting House | Very Suitable | Suitable | Less Suitable | Not Suitable | Total | %  |
|-----|---------------------------|---------------|----------|--------------|-------------|-------|----|
| 1   | House Price               | 5             | 2        | 4            | -           | 11    | 11 |
| 2   | Access to office          |               |          |              |             |       |    |
|     | and public facilities     | 13            | 12       | 9            | -           | 34    | 34 |
| 3   | Safe from Natural Disaster| 7             | 10       | 2            | -           | 19    | 19 |
| 4   | Environmental Health      | 8             | 8        | 5            | -           | 21    | 21 |
| 5   | Convenience               | 7             | 3        | 1            | -           | 11    | 11 |
| 6   | Others                    | -             | 2        | -            | 1           | 3     | 3  |
|     | Total                     | 40            | 37       | 21           | 1           | 99    | 100|

Source: Analysis results 2018

4. Discussion

The results of overlaying land suitability parameters for settlement was then overlaid with maps of forest areas because settlements must be outside of protected forests. Land Suitability in a suitable category for residential areas in Abeli sub-district generally also spread to the same coastal area as in the very suitable area. Area with this category is characterized by the following characteristics: 8-15% slope, 50 - 100 meters from the coastal border, 5-10 meters river boundary, 500-1,000 meter from tsunami prone location, 300-500 m distance from flood location - 500, 100-200 meters distance from mangrove ecosystem 100 - 200 meters, tide fluctuation is 0.5 - 2 m, and high floodwaters ROB is 0 - 1 mdpl

Suitability land in the not suitable category was also spread in the same coastal areas as in the area with a very suitable category. Area with this category is characterized by the following characteristics: slope> 25%, 0-30 meters distance from coastal boundary, 0-3 meters distance from river border, 0 - 500 meters distance from tsunami-prone locations, 0-300 meters distance from flood location, 0-100 meters distance from mangrove ecosystem, having sea tide fluctuations> 2 m, and high floodwaters ROB (> 1 mdpl). The development of settlements in the coastal areas of Abeli and Nambo Sub-districts should be a part of the development process and the overall use of coastal areas where development of facilities and development infrastructure is also related to the development of settlements.

It refers to the definition of settlements, that is land use used for the development of housing, public facilities and infrastructure, trade, offices, recreational facilities and other interest related to community life activities [3]. Residents who have been domiciled in coastal areas, generally use the land only based on aspects of ease in utilizing natural resources only. It is also accompanied by limited facilities and infrastructure as well as adequate information about the use of natural resources and the environment, thus encouraging the use of territories and natural resources that are not suitable with their designation and benefits.

This phenomenon encourages the growth of settlements and the efforts to handle and manage natural resources by prioritizing distances that are easily accessible and close to the market, but it is carried out in an uncontrolled and unplanned manner. As a result, the development of regional spatial planning is not integrated and not directed and still traditional and slum. Exiting conditions in the area were partly located in the area of mangrove forests and agricultural areas. In Abeli and Nambo Sub-districts, the land function of ±300 hectares had been managed by the community to become housing, tombs, places of worship, including fish ponds, aquaculture and industry.

The form and nature of settlements and urban area in coastal areas must be an integral part and do not conflict with the overall ecological processes and coast phenomena[4]. The principle thing is that
the increasing need for settlements, demands an integrated spatial layout in coastal areas that is environmentally sound. Settlement in coastal areas that are chaotic and not environmentally sound will cause environmental degradation, namely erosion, sedimentation, environmental pollution and flood.

The policy-making process and the alternative development of the coastal area of Kendari City for the designation of residential areas should pay attention to various aspects related to this policy so that the development and sustainable utilization of the coastal area of Kendari City can be achieved optimally. Alternative regional development must also pay attention to the aspirations and opinions of various parties, especially those who are competent in the use of this region, so that conflict in spatial use between sectors can be avoided which in itself will have a good influence on the utilization of natural resources in the coastal areas of the Kendari.

The results showed that the community in selecting settlement locations is more influenced by factors of easy to access the source of livelihood so that they prefer the locations close to the coast because most respondents worked as fishermen, besides that it is also due to limited available land. Traditionally fishermen communities on the coast can adapt to natural conditions, but because of lack of good arrangement, the settlement environment becomes increasingly slum and creates other social problems such as health, social environment and discomfort.

5. Conclusion
Based on the results it can be concluded that:

- Land suitability criteria of settlement in Abeli and Nambo Sub-District that were very suitable 2,382.87 Ha (80.44%), suitable 461.01 Ha (15.56%), less suitable 114.26 Ha (3.86%) and not suitable 0.14 Ha (0.14%).

- In selecting the settlement location of the community living in Abeli Sub-District, it was affected by consideration of housing price (10%), consideration of location or access to workplaces and public facilities (27%), consideration of security against natural disaster (20%), consideration of environmental health (30%), consideration of comfort (12%), and others (2%). Whereas in Nambo Sub-District it was affected by considerations of 13% house prices, consideration of location or access to workplaces and public facilities 46%, consideration of security against natural disasters 18%, consideration of environmental health 8%, consideration of convenience 10%, etc. 3%. For people who live in locations that were not suitable (N) that the Government needs to conduct socialization so that they no longer live in that location.

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