CHAPTER V
CONCLUSION AND RECOMMENDATION

5.1   Research Findings

Some findings found from the research entitled "Relocation Destination Model for Merapi Eruption's Impacted Settlement in Balerante Village, Kemalang Sub-District, Klaten District.":

1. The selection of the relocation area from the GIS relocation model based on natural physical, governmental and community aspects was divided into four categories: not available, available with low accessibility, available with medium accessibility, and available with high accessibility. This classification provides information about the area that is considered as available or not available for relocation action.

2. GIS Relocation Model for impacted settlement of eruption consists of three aspects, *i.e.* natural physical aspect, governmental aspect and community aspect. Each aspect has several variables:

   a. Natural physical aspect: land slopes, geology condition, hydrology condition, and soil type condition.

   b. Governmental aspect: conservation and riverbanks area, existing settlement area, and volcano hazard zones

   c. Community aspect: existing road, evacuation route, shelter point, electrical tower *(sutet)* and public facilities.

3. Output models are the result of the scoring of overlay variables. Scoring value for each variable ranged from 0 to 5 in which the greater the score, the more land available and suitable for relocation.

4. Weighting process is executed in addition to scoring method. In this model, the weighting process is done two times. First, on the aspect of natural physical sub-models, the weighting was given to each variable with the provision of 40% for land slopes variable, and 20% for the other variables (geology, hydrology and soil type). The second weighting process was done on the overlay process of natural physical and governmental aspect. In this

process, the greatest weighting is given to the governmental aspect by 75%, and the natural physical aspect by 25%. The weighting value for natural physical aspect is relatively small compared to the value of governmental aspect.

5. 68% of the land from the GIS relocation model belong to "not available" category while 21% of land is categorized as "available with low accessibility," 6% as "available with medium accessibility" and 5% as "available with high accessibility" category.

6. It is known from the analysis that most of the relocation areas found in the model output is can be found or available in real situation. The result of validation test obtained 0.95 as value point in the scale of 0-1, which means that the model is valid.

5.2 Conclusions

By referring to the findings, some conclusions from the overall study can be drawn as follows:

1. Good settlement relocation model should integrate at least three aspects: governmental, community and natural physical aspects. Those aspects have strong relations one and another. Without those variables relocation model becomes less accurate because in reality the process will involve government as the regulator and community as the object. Moreover natural condition is a basics factor because it is related to the conditions of an area.

2. Governmental aspect becomes a priority in relocation model because it is related to the policies and regulations. Policies and regulations were made by the government through a complicated process of assessment with various considerations. Regulations about a restriction were made because in fact, inadequate conditions have been found in the field.

3. Analysis on community aspect is very important. The object of relocation is communities, so the fulfillment of their needs, comforts and securities on the new settlements or environments should get more attention.

4. The total available areas with each level of accessibility that approved by governmental aspect in every village are elaborated as follows:

a. Available with low accessibility: Bawukan (67.59 ha), Bumiarjo (56.70 ha), Dompol (76.33 ha), Kemalang (33.45 ha), Kendalsari (118.71 ha), Panggang (60.90 ha), Sidorejo (110.30 ha), Talun (102.74 ha), Tangkil (103.04 ha), Tegalmulyo (125.02 ha), and Tlogowatu (233.93 ha).

b. Available with medium accessibility: Bawukan (47.32 ha), Bumiarjo (7.24 ha), Dompol (5.39 ha), Kemalang (40.37 ha), Kendalsari (9.05 ha), Kaputran (41.17 ha), Panggang (72.49 ha), Talun (11.71 ha), Tangkil (97.95 ha), and Tegalmulyo (3.64 ha).

c. Available with high accessibility: Bawukan (6.65 ha), Bumiarjo (21.76 ha), Dompol (21.94 ha), Kemalang (16.43 ha), Kendalsari (39.13 ha), Panggang (14.90 ha), Sidorejo (15.59 ha), Talun (32.82 ha), Tangkil (21.77 ha), Tegalmulyo (53.66 ha), and Tlogowatu (26.22 ha).

5. The total available area with each level of accessibility that approved by community aspect in every village are elaborates as follows:

a. Available with low accessibility: Bawukan (67.59 ha), Bumiarjo (56.70 ha), Dompol (76.33 ha), Kemalang (33.45 ha), Kendalsari (118.71 ha), Panggang (60.90 ha), Sidorejo (110.30 ha), Talun (102.74 ha), Tangkil (103.04 ha), Tegalmulyo (125.02 ha), and Tlogowatu (233.93 ha).

b. Available with medium accessibility: Bawukan (47.32 ha), Kemalang (40.37 ha), Kaputran (41.17 ha), Panggang (72.49 ha), and Tangkil (97.95 ha)

c. Available with high accessibility: Bumiarjo (21.76 ha), Dompol (21.94 ha), Kendalsari (39.13 ha), Talun (32.82 ha), Tangkil (21.77 ha), Tegalmulyo (53.66 ha), and Tlogowatu (26.22 ha).

6. The priority relocation areas that are approved by the natural physical, governmental and community aspects are Tegalmulyo as the first priority with 35.9 ha area, Kendalsari as the second priority with 20.1 ha, and Talun as the third priority with 26.8 ha.

7. Geographic Information Systems Modeling in settlements relocation research can be well applied in the study area of Klaten District, specifically in Kemalang Sub-District. However, some shortcomings are still found. The deficiencies are related to the incomplete and out-of-date data. Therefore, if the data that were used are better, the output will also be better.

5.3   Recommendations

1. The selection of settlement relocation area should not only be directed at the area that is approved by the natural physical and governmental aspect, but also to society aspect.

2. The accuracy of the GIS model output will depend on the factors of criteria, weighting, and also completeness of the data. For upcoming research, the data validation is expected to be performed on the input and output models. It is recommended to use multiple data sources to make a comparison between one and another. Using various data sources increases the possibilities on getting more suitable data for the research.

3. A map of settlement's relocation as a GIS model output can be used as an input for the spatial plan.

4. This study can be developed into another similar research such as determining settlement's relocation for other disaster-prone areas or relocation for settlements located in conservation areas and river banks.

5. Improvement and accuracy of the model can be developed by updating the model with more detailed variables.

6. Conducting socialization on government's policy regarding the existence of settlements in restricted areas by describing spatial planning regulations clearly and firmly.

7. Conducting a community-based socialization on the importance of living in a secured area by explaining the dangers and consequences if communities are dwelling in the areas that are prohibited by law.