Sustainable and participatory society for the realization of urban settlement (Case study: Green kampong, Malang City)

W D Purnamasari, V Kirana, and D K Wardhani
Department of Regional and Urban Planning, Faculty of Engineering, Universitas Brawijaya, Malang, Indonesia

wulanralando@gmail.com

Abstract. Green Kampong is one of the participatory development to conserve our environment. RW 03 Sukun, Malang City has chosen by researcher become case study because it has be successful to obtain a predicate as “Green Kampong” by following environmental management contests through the participatory society. There was some purpose of this study. The first aim was to find out the level of participation at every kind of the social activities such as waste separation for households, bio-pores project, stone massage therapy on the road, and other greening acts. The second aim was to evaluate the level for sustainable society which consists of: the leadership, the social capital, the internal controls activity, the use of technology, and also the finance of physical development in green kampong. The researcher has used the scoring and schema methods in this study. The result showed that the activity that has reached the maintenance phase are sorting waste and greening, whilst the activity that only reached the stage of control are bio-pores development and stone therapy. The social activities with highest participation was taken by greening act and the lowest was taken by bio-pores project. The sustainability of the community rw 03 Sukun known that of the five components aspects the sustainability of, three of whom were have achieved good progress toward the sustainability of the aspects leadership, social capital, and technology facilities and infrastructure while two aspects of whom were still achieved a good start toward sustainability of the aspects monitoring and evaluation and financing.

1. Introduction
Kampong in the city also has its own characteristics which still appears on the social and cultural system. A form of development that is participatory involving all elements of the community by participating devoting thought and resources owned [1]. The form of participatory development can be exemplified through the middle of a program of green action especially those residing in urban areas. Green programs organized through the green kampong movement aims to improve and preserve the environment of the settlement [2]. While according to Environmental Management Council (BPLH) Jakarta (2013), green kampong movement is a form of environmental management efforts.

RW 03 Sukun is a kampong that got many achievements of race-based environment and preserve sustainability of kampung by applying Green through participation carried out by communities since 2009 to 2015. However, although this RW 03 has been conducting green kampong activities there are still people that have had low participation and will affect the level of sustainability. So that this research conducted to find out how public participation in green activities and discover the level of kampong
sustainability community. Participation and sustainability community can be used as an example or picture for other kampongs to actualize the green kampong.

2. Research Methods
This research use the type of qualitative and quantitative research approach. Qualitative research which describe and concern the analysis of the public participation by using scoring. Likewise, to know the level of sustainability of the community is carried out by using the method of scoring.

![Figure 1. Research Location RW 03 Sukun, Malang City](image)

2.1. Sampling Methods
The population is the community of RW 03 Sukun with classification 15-65 years old with a population of 750 inhabitants. The sample in this study using a purposive sampling technique. Calculation of the sample using Isaac and Michael through the Krejcie table so that the retrieved sample are 199 respondents.

2.2. Analysis Methods
2.2.1. Community Participation Analysis. The analysis of participation is used to find out the levels of participation by identify the process of community. The following level is a stage of participation [3], [4].

1. Planning level
   Participation at this stage means a person's involvement in the preparation of plans and budgets on an activity/project. The community participated by giving the proposals, suggestions and criticism through meetings and then do the decision making based on mutual agreement.
2. Doing Level
   Participation in the implementation phase (implementation stage). Participation at this stage means the involvement of the implementation of the work of a project. Community can give you staff or money as one as form of participation.
3. Controlling Level
   Participation consists of monitor and evaluate the development. Monitoring and evaluation of the development was done, not only to achieve a purpose but also to obtain feedback from the problems and constraints that arise in the implementation of development is concerned.
4. Actuating Level
   Participation at this stage means a person's involvement in the maintenance of the project after completing of the project. Public participation at this stage is the form of manpower and money
to operate and maintain the project that has been built from the existence of control by the community in order to be well maintain.

2.2.2. Scoring Analysis. Scoring analysis is a method of analysis by awarding a score in assessing the answers of respondents to obtain a quantitative data needed in the analysis of the perceptions of the respondents based on criteria and indicators [5]. The scoring method is a technique for quantitative analysis of data used to provide value to each characteristic parameters of subcategories a variable so that its value can be calculated and can be rated [6]. The level of public participation is determined based on the total score of the participation of each the respective levels, which are high, medium, and low. So, the minimum score \((4 \times 1)\) is 4, maksimum score obtained \((4 \times 3)\) is 12. The following is a calculation to determine the class interval:

\[
\text{Interval Class} = \frac{\text{Highest Score} - \text{Lowest Score}}{\text{Total Class}}
\]

Thus retrieved the value of the classification level of community participation are divided into three classes, namely:
1) Low levels of participation = 4-6.6
2) Medium = 9.2-6.7, and
3) High = 9.3

Valuation and division class to determine the value of the community sustainability aspects referring to the review of Prabasena (2010). The following is a calculation to get the interval class [7]:

\[
\text{Interval Class} = \frac{\text{Highest Score} - \text{Lowest Score}}{\text{Total Class}}
\]

\[
\text{Interval Class} = \frac{25-5}{3} = \frac{20}{3} = 6.6
\]

The assessment was conducted by five variables, to determine the condition of the sustainability community. Then, five variables summed and averaged to obtain the value of community sustainability in each RT with the following classifications:

| Values       | Parameters                                      |
|--------------|-------------------------------------------------|
| 18.4 to 25   | Show an excellent progress toward sustainability |
| 11.7 to 18.3 | Indicate a good start toward sustainability      |
| 5 to 11.6    | Show a low progress to make a sustainability    |

2.2.3. Radar Charts. Radar charts are often referred to as diagram of the nest of spiders (Spider Graph). The radar chart is a graph that is described with many axes. Each axis represents a category. This diagram is depicted with existential points placed in the intersection of the lines. These points form a line resembling a Spider Web. Radar charts are used to facilitate the visualization in evaluating the various categories. This chart also makes it easy to observe a logical separation between variables are compared [8]. Research on radar charts, will be used to illustrate the results of the assessment of social aspects of sustainability in RW 03 Sukun at each RT

3. Results and Discussion
Community participation which deliver it to success starting from 2009 to 2015 in which participation is visible from the involved of community in a series of activities of green kampong. In addition to the
carrying out of activities by the community, also coupled with follow the race starting from the city to the national scale.

3.1. Identification of Society Sustainable Aspects
According to Halwatul and Iwan (2012) community sustainability aspects include leadership, social capital, monitoring and evaluation, technology and infrastructure, and financing [9]. The following aspect of community sustainability in RW 03, which are:

1. Leadership
   Leadership in this case defined by the attitude of the leaders in receiving and responding to the aspirations of the community without any limits in delivering it. Leadership by community leaders include Chairman of the RT, RW, and organizations. In addition, based on public perception regarding the support of leaders in innovation as well as the public perception about the influence leader in enhancing community involvement to participate activities.

2. Social Capital
   Social capital can be described of the mutual values, meetings are routinely made through a work program of the Organization, as well as meeting level RT and RW so it can be a very effective communication are created in the execution of a program. On the research of visible from community engagement in the following institutional, community presence in the preparation of the plan of activities and work program, as well as community involvement in activities that overall.

3. Monitoring and Evaluation
   Activities that are performed to see, monitor the operations of the organizations or activities, and assess reached goal. In monitoring can be done with the data collection and analysis results were analyzed, interpreted and explained as input to make improvements. Monitoring and evaluation required in community participation in order to obtain the best results for long term.

4. Technology and infrastructure
   Simple technology that is easily applied by the citizens as well as environment-friendly in order to make the citizens willing to perform and evolve. In this research, technology and infrastructure that's located in the green kampong include availability of technology used in each activity.

5. Finance
   Financing comes from a source of funding comes from dues, cooperation of outside parties, and creativity in the provision of funds. On research, the financing of this relates to the existence of the availability of local banks such as capital and loan-save cooperatives from PKK, as well as the presence of kampong programs related to the development of creativity that can add income as garbage sorting activity results through the development of creativity making crafts.

3.2. Scoring
The value of the classification level of community participation are divided into three classes, namely:
1) Low levels of participation = 4-6.6
2) Being = 9.2-6.7, and
3) High = 9.3
Table 2. Values score of participatory sorting waste

| RT | Planning | Implementation | Control | Maintenance | Total |
|----|----------|----------------|---------|-------------|-------|
| 01 | 1.0      | 1.2            | 1.0     | 1.3         | 5     |
| 02 | 1.0      | 1.2            | 1.1     | 1.2         | 5     |
| 03 | 1.4      | 1.6            | 1.3     | 1.6         | 6     |
| 04 | 1.2      | 1.4            | 1.1     | 1.5         | 5     |
| 05 | 1.4      | 1.5            | 1.3     | 1.7         | 6     |
| 06 | 1.0      | 1.3            | 1.0     | 1.4         | 5     |
| 07 | 1.3      | 1.7            | 1.3     | 1.8         | 6     |
| 08 | 1.0      | 1.4            | 1.1     | 1.5         | 5     |
| Total | 9.3 | 11.4          | 9.1     | 12.0        | 42    |

Classification: High High Moderate High

Table 3. The calculation value result of participation development activities bio-pores

| RT | Planning | Implementation | Control | Maintenance | Total |
|----|----------|----------------|---------|-------------|-------|
| 01 | 1.2      | 1.4            | 1.1     | 1.0         | 5     |
| 02 | 1.0      | 1.5            | 1.2     | 1.0         | 5     |
| 03 | 1.3      | 1.5            | 1.4     | 1.0         | 5     |
| 04 | 1.2      | 1.3            | 1.3     | 1.0         | 5     |
| 05 | 1.0      | 1.5            | 1.4     | 1.0         | 5     |
| 06 | 1.1      | 1.3            | 1.2     | 1.0         | 5     |
| 07 | 1.3      | 1.8            | 1.5     | 1.0         | 6     |
| 08 | 1.0      | 1.3            | 1.0     | 1.6         | 5     |
| Total | 9.1 | 11.6          | 10.1    | 8.6         | 39    |

Classification: Moderate High High moderate

Table 4. The calculation value result of participation greening activities

| RT | Planning | Implementation | Control | Maintenance | Total |
|----|----------|----------------|---------|-------------|-------|
| 01 | 1.1      | 1.2            | 1.1     | 1.0         | 4     |
| 02 | 1.3      | 1.7            | 1.4     | 1.0         | 6     |
| 03 | 1.4      | 1.8            | 1.4     | 1.0         | 6     |
| 04 | 1.2      | 1.5            | 1.2     | 1.0         | 5     |
| 05 | 1.3      | 1.7            | 1.5     | 1.0         | 6     |
| 06 | 1.1      | 1.3            | 1.2     | 1.0         | 5     |
| 07 | 1.0      | 1.5            | 1.3     | 1.0         | 5     |
| 08 | 1.1      | 1.3            | 1.1     | 1.0         | 5     |
| Total | 9.5 | 12.0          | 10.4    | 8.0         | 40    |

Classification: moderate High High moderate

Table 5. The calculation value result of participation greening activities

| RT | Planning | Implementation | Control | Maintenance | Total |
|----|----------|----------------|---------|-------------|-------|
| 01 | 1.2      | 1.4            | 1.2     | 1.4         | 5     |
| 02 | 1.2      | 1.4            | 1.3     | 1.5         | 5     |
| 03 | 1.4      | 1.7            | 1.5     | 1.7         | 6     |
| 04 | 1.2      | 1.3            | 1.2     | 1.3         | 5     |
| 05 | 1.4      | 1.6            | 1.4     | 1.7         | 6     |
| 06 | 1.2      | 1.4            | 1.2     | 1.5         | 5     |
| 07 | 1.2      | 1.3            | 1.3     | 1.5         | 5     |
| 08 | 1.2      | 1.3            | 1.3     | 1.4         | 5     |
| Total | 10.1 | 11.4          | 10      | 12.0        | 44    |
Overall of the four activities that have the lowest value is bio-pores activities. This bio-pores development activities gained less attention from the public because these activities do not impact and does not give any sense the community directly so that make the community's lack of enthusiasm to get involved. Furthermore, at the planning stages, the presence and aspirations of society is also very low compared to other activities. In the process of preparing a plan to build this bio-pores done with top-down approach so that the role of the community in the preparation of the plan of this activity is still lacking, especially in the delivery of the aspirations of the community. This activity also doesn't need such a huge space and not much involve the role of the community from various institutional, just the Chairman of RT, RW, as well as a bevy of fathers who was instrumental in this activity so that the community in utilizing the results of development after the project completed is also low. It will certainly have an impact on the treatment and the control carried out by the community against the condition of bio-pores.

3.3. Sustainable Community Scoring Analysis

Based on the results of survey through questionnaire that was given to the community, the results of the recapitulation is then performed using a skoring analysis of the calculation refers to the research of Prabasasena (2010) [7]. The assessment was conducted on five variables, to determine the condition of the sustainability of community, then from five variables result divided by the sample at each of the RT, then summed up the value of all variables and averaged so that the community's sustainability values obtained at each RT.

| Table 6. Classification aspects of community sustainability |
|------------------------------------------------------------|
| **Values** | **Parameters** |
|-------------|----------------|
| 18.4 to 25  | Show an excellent progress toward sustainability |
| 11.7 to 18.3| Indicate a good start toward sustainability |
| 5 to 11.6   | Show a low progress to make a sustainability |

The following below is the result of the calculation of the questionnaire given to the community related to the components of the social aspects of sustainability of community leadership, social capital, monitoring and evaluation, technology and infrastructure, and financing.

| Table 7. The calculation value result of participation greening activities |
|-------------------------------------------------------------|
| **Aspects**                  | **RT** | **Total** | **Classification** |
|-------------------------------|--------|-----------|-------------------|
| Leadership                    | 2.4    | 2.5       | 2.5               | 2.6               | 3.6               | 2.4               | 23.9 Excellent Progress toward sustainability |
| social capital                | 1.9    | 3.7       | 3.7               | 2.4               | 3.7               | 2.4               | 2.8               | 2.4               | 23.1 Excellent Progress toward sustainability |
| Monitoring and evaluation     | 2.1    | 2.2       | 2.9               | 2.2               | 2.9               | 2.2               | 2.1               | 2.1               | 18.3 Good start toward sustainability |
| Technology and infrastructure | 2.4    | 2.5       | 3.3               | 2.6               | 3.3               | 2.5               | 3.3               | 2.4               | 22.3 Excellent Progress toward sustainability |
| Financing                     | 1.9    | 2.1       | 2.4               | 2.1               | 2.7               | 2.1               | 2.2               | 2.2               | 17.5 Good start toward sustainability |
| Total                         | 10.6   | 13.0      | 16.2              | 11.6              | 16.7              | 11.6              | 14.1              | 11.3              |

Based on the analysis of the assessment of the sustainability of the community can be aware that all the components of community sustainability has been toward sustainability. There are three of these two...
components that shown good progress towards the sustainability of the community, which are the components of leadership, social capital, as well as the technology infrastructure while the two of them achieved a good start toward sustainability, namely monitoring and evaluation as well as financing. Besides, it can also be noted that the highest rated RT is RT 05 with value 16.7 and RT who get the lowest value is RT 01 with 10.6 value. The results of the analysis of the sustainability of the community is also depicted with a radar graph that is as follows below:

![Figure 2. Graphic Radar of Results Analysis sustainable society aspect](image)

The highest value on the five components of community sustainability aspect is leadership. Leadership styles reflect the effectivity of leader that is able to create a sense of trust from the community, persistence (unanimous determination) to achieve the goal, the ability to communicate, willingness to hear, and objective in receiving and running the aspirations of the community. In addition, with the implementation of innovation as a method or manner that can enhance the progress of repair green kampong. In this case, the value of which RT has most highy value are RT 03, 05, and 07 while the RT that had a lower value when compared to the other RT.

Social capital also described mutual value as well as a large number of joint activities on a regular basis, such as the community service, RT and RW gathering of thus nurtures communication. Communications society looks upon society as well as the large number of Community institutional following is involved in an activity that's located in the green kampong. In this case RT that has the highest value are RT 02, 03, and 05. While the RT that have the lowest value is RT 01.

In addition, due to the lack of a society incorporated in the institutional community, the percentage on the RT in attending gatherings as well as meetings and community service still less on any activities of the green kampong.

Public participation also relates to how the control and evaluation of community in follow up the activities that have been held up. Monitoring and evaluation in RW 03 was performed by the entire community itself without any oversight of government agencies. Communities are more likely to be involved in the activities of the evaluation compared the monitoring activities. Although in terms of knowledge and community cooperation is already good, but in terms of the monitoring and evaluation of community involvement in average on the whole less except on RT RT 03 and 05. That is because most of the people depend on the apparatus RW mainly on the president of organization.

The technology and infrastructure that can make the public wants to make green kampong support. Look on the main activities of green kampong organic waste segregation, i.e. construction of bio-pores, stone therapy development and greening.

Technology and infrastructure other than intended so that the community wants to do activities, also so that the community can improve their knowledge in managing and preserving the activities that have been implemented as there are mowers organic waste, the presence of bio-pores as catchment area so
that it can reduce surface run off water on rainy days because previously there was the problem of flooding in the RW 03 so as solution the community build the bio-pores, stone therapy development, utilizing part of the middle of the road as one of the efforts of maintaining health with reflection stone therapy, as well as the provision of water treatment by utilizing river water for watering the plants. In this component, RT who has highest value is RT 03, 05, and 07. The third society at RT this often make use of technology and infrastructure mowers organic waste to produce fertilizer as the fulfillment of a need for the plants in our daily lives.

The Sustainable community in carrying out activities of green kampong is not only seen from how big the community is willing to get involved from all existing activities, but also in terms of financing. As a whole the existence of local banks (cooperative), help from third parties, as well as dues community is already adequate. However, help from third parties also had a limit time, so as community to be able to keep running the activity and is not dependent in terms of financing to third parties, society also needs to be independently develop activities of the creativity of the community associated with the economy so that it can be a source of financing for the next activity. Creativity development activities already found in RW 03 but people's interest to follow institutional and matters related to the development of the independent business community is also still low. Moreover, interests of the society which is still low, it is also due to a lack of motivation, training, and yet there is a clear brand product to be developed by the community. So, the results of sales from products that have been created by the public is limited and the results of their sales were not so much. This financing component that has the highest value is RT 05.

Community sustainability aspects which include leadership, social capital, monitoring and evaluation, technology and infrastructure, and financing for all components already shows that there is a good progress toward sustainability except on aspects of monitoring and evaluation as well as financing. If community sustainability percentage showed RW 03 by 60%. So, it can be known that for 40% of the components are still not achieving good progress towards sustainability but has achieved a good start toward sustainability. Thus, to achieve sustainability of the community, the need for community efforts to improve the community’s component is still lacking.

4. Recommendation

Recommendations for communities based on the results of the analysis that has been done to increase participation and community sustainability through activities that have been implemented. These recommendations are (a) Increasing the awareness of people from greening activities through empowering the youth organization, (b) Socialization related to the manufacture handicraft products processed from trash to woman organization in green kampong, (c) Procurement partnerships with others as one as source of financial aspect in order to make all programs can be realized.

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