Stakeholder's involvement in the successful development of ecovillage Cibodas, Bandung - Indonesia

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Abstract. The success of sustainable development, especially in rural areas, is strongly influenced by the involvement of stakeholders from the early stages (planning). Several studies in Europe show that stakeholder participation can be relied on in further management by facilitating the fulfillment of stakeholder expectations or needs. The acceleration of rural development by the government in Cibodas Village, Bandung towards an Eco-village requires stakeholder involvement. The purpose of this research is to provide a reference on the expectations/expectations of the facilities and infrastructure needed by stakeholders and the involvement of stakeholders for efforts to improve the village economy through Eco-village development. Location of research, in the area of “Rukun Warga” (RW) 12. This research uses qualitative observational and descriptive methods. Then quantified on a Likert scale. The data collection instrument used a questionnaire through purposive sampling. The results showed that stakeholder expectations were very high, as seen from the number of responses that demanded infrastructure improvements related to the development of an Eco-village in RW 12. These findings could become the basis for the design and development framework of the Eco-village in RW 12, Cibodas Village, Bandung.

1. Introduction
Law No. 32 of 2009 on Environmental Protection and Management, which states that the environment is a spatial unit with all objects, power, conditions and living things, including humans and their behavior that affect nature itself, the continuity of life and the welfare of humans and other living creatures, giving birth to thoughts on effective environmental management actions. The effectiveness of an environmental management is greatly influenced by the efforts and behavior of the community towards the environment. One of the Indonesian government’s efforts in this regard, is to organize the Eco-village program, which is a government program that develops villages with an environment culture, with the aim of creating an environmentally friendly society that is sustainable, ecologically intelligent, cooperative, and independent. Eco-village is also an alternative settlement with a lifestyle that is healthier, friendly to nature and in line with the needs of ecological life [1].

The first program carried out in Indonesia in 2015, is a concept of village development and development that pays attention to the environment through efforts to reduce damage that occurs in the environment [2]. In addition, Eco-villages helps strengthen the idea of increasing individual and collective well-being based on emotional involvement that creates closeness, sharing and creative expression of environmental and ecological sensitivity to be able to achieve food sustainability [3], because through it citizens become more appreciative of the practice as a community that is together
participate, discipline individuals and independently manage their village [4]. Therefore, the Eco-village program should involve all stakeholders, which can be grouped into [5]: 1) key stakeholders, who have legal authority in terms of decision making (local government officials); 2) primary stakeholders, are stakeholders who are directly affected by the development plan and have direct interest links (religious leaders, youth and local communities); and 3) supporting stakeholders, are stakeholders who do not have a direct interest in the development plan, but have great concern for the development process (academics, non-governmental organizations (NGOs), entrepreneurs, and humanists), to jointly participate in its management [6].

The involvement of stakeholders to participate in development aims so that stakeholders, especially local communities can be actively involved in identifying problems, formulating plans and implementing decisions for their own lives [7]. Involving more people in the planning process provides access to multiple perspectives and ideas. With the active involvement of stakeholders, the utilization of the village environment can be in accordance with the expectations of the desired Eco-village form, in line with prevailing cultural norms and the ideals of a living space that is beneficial to the community [8].

Cibodas Village, West Java plans to develop a village with an ecovillage program, in accordance with the 2016-2036 Bandung Regency Spatial Plan which plans Cibodas Village as a center for home industry areas, trade in services and the environment, nature and cultural tourism, forest conservation, and agriculture and the farm. This village has an integrated agricultural system with a management system that combines agricultural components, such as plants and animals, in one unit which is managed by the local community to produce products and improve the community's economy [9].

Currently, the management system is managed by a community group in coordination with the local government (Village Head). Its existence is a potential for Eco-village development and will be focused on RW 12. The direction of development is adjusted to cultural norms and landscape characteristics and local wisdom, namely the Sundanese cultural tradition with four categories [10] the relationship between the Sundanese people and God, the relationship with nature, the relationship with society and relationships with individuals (Table 1).

| Relationship of Sundanese with Life | Vessels                        | Vessels Description                          |
|-----------------------------------|--------------------------------|----------------------------------------------|
| Human and God                     | Ritual vessel aspect           | Stilt house, mosque, black rock, cemetery    |
| Human and Nature                  | Production-reproduction vessel aspect | Field, ricefield, pond, *lewit*, *saung lisung*, *jemur* |
| Human and Society                 | Social vessel aspect           | Contour, footpath, pavement, moor, yard, field, bamboo fence, trees, hall, *pancurian* |
| Human and Himself                 | Daily vessel aspect            | Pantry, *parako*, the house center, *golodog*, *blik*, hall, stage, room. |

This action involves the placement of facilities and infrastructure, circulation patterns, forms and materials of buildings/structures, selection of vegetation, and utilization of views or vistas in a village spatial organization to meet the needs of an Eco-village. This research views it as a project, so stakeholder involvement must be done early on. Stakeholders must be identified before the project starts, plan their management/involvement with good communication skills and can be done through meetings / meetings, interviews, or through Focus Group Discussion (FGD) to obtain expert judgment [11].

This series of activities is to evaluate existing facilities and infrastructure against the needs of an Eco-village. The result is a description of the needs, expectations / expectations of stakeholders related to Eco-village development which will be further analyzed to be used as a basis for an Eco-village development design framework for RW 12, Cibodas Village, Bandung.
2. Methods
This study used descriptive qualitative method. This method is complemented by distributing quantitative questionnaires by determining the score for each answer based on a Likert scale with a range of rating scales: Strongly Disagree: 1, Disagree: 2, Doubt: 3, Agree: 4, and Strongly Agree: 5 [12]. The sequence of steps taken regarding the use of stakeholder involvement is as follows: 1) Socialization of the ecovillage program to stakeholders, especially to primary stakeholders from RW 12, which is then followed by distributing questionnaires; 2) In-depth interviews with key stakeholders and representatives of primary stakeholders; and 3) Focus Group Discussion (FGD) with key stakeholders, representatives of primary stakeholders and representatives of supporting stakeholders to obtain expert judgment regarding the preparation of development plans. The operational variables of this study are shown in Table 2.

| Ecovillage Aspects | Dependent Variables | Independent Variables | Indicators |
|--------------------|---------------------|-----------------------|------------|
| Ecological Aspect  | Ritual Vessel, Production-Reproduction Vessel, and Social Vessel | Circulation | View, movement, and space impression |
|                    |                     | Vegetation            | Vegetation type and function suitabilities |
|                    |                     | Building/Structure    | Space formation and function |
|                    |                     | Cultural Tradition    | Assessment of local tradition |
|                    |                     | Space Organization    | Shape and function of space, space impression, and inter-field relationship |
| Social Cultural and Economic Aspects | Ritual Vessel, Production-Reproduction Vessel, and Social Vessel | View and Vista | Road shape, scoping degree, trees on the roadside, architectural pattern, and activity pattern |
|                    |                     | Circulation           | View, movement, and space impression |
|                    |                     | Vegetation            | Vegetation type and function suitabilities |
|                    |                     | Building/Structure    | Space formation and function |

The distribution of questionnaires was carried out using purposive sampling technique to a number of respondents who were determined based on calculations by the Slovin formula [13]:

\[
n = \frac{N}{1 + N \alpha^2}
\]

(1)

n is the specified sample size, N is the population size, and \( \alpha \) is the level of significance. With a population (N) of the total population of RW 12 Cibodas Village of 8,391 people and the significance level (\( \alpha \)) used so that the results of the study can be generalized with very minimal errors of 0.1%, the number of samples is:

\[
n = \frac{N}{1 + N \alpha^2} = \frac{8,391}{1 + 8,392 (0.1)^2} = 98.82
\]

(2)

Based on the calculation results, the total sample who will fill out the questionnaire is 100 respondents, with the following criteria: 1) RW 12 residents who are active in social, environmental, socio-cultural and economic activities in their RW, can be community leaders, youths, who take part in the event outreach (primary stakeholders); 2) RW 12 village officials who have an inventory of data and knowledge about environmental, socio-cultural and economic developments (key stakeholders); 3) Entrepreneurs, non-governmental organizations (NGOs), and academics who are interested in or have been involved in the chain of economic activities in Cibodas Village (supporting stakeholders). The assessment analysis was carried out using calculations on each questionnaire question based on the number of participants who answered with a certain score.
3. Results and discussion
The results of the analysis from interviews and distributing questionnaires to stakeholders provide input for the design framework for ecovillage development, especially on ecological aspects as well as socio-cultural and economic aspects. Indicators from these two aspects combined with the cultural foundation of Sundanese village will become a reference for measuring the existence of ecovillage that has been developed in RW 12, Cibodas Bandung.

Three containers in the Sundanese village as a foundation according to the RW 12 environment, namely: 1) Ritual containers, in the form of an imah (housing area), a mosque (an area of worship), and a grave (burial area); 2) Production-Reproduction Containers, in the form of an area in the Sundanese village, consisting of a garden (plantation area), rice field (rice field area), and balong (fish pond or swamp) which if matched in RW 12 is an integrated agricultural system area that already exists there, consisting of plantation areas, livestock areas, and rice fields; and 3) Social Containers, in the form of areas in the Sundanese village which are used as places for residents to conduct social interactions, consisting of footpaths, fields, and bales.

Table 3. Recapitulation of questionnaire filling results.

| Vessels | Shaping Elements | Utility | Ecolog | Ritual: Imah (house) | Mosque (worship place) | Cemetery | Production-Reproduction: Integrated Farming System (Farming, Ricefield, and Cattling areas) | Social: Footpath | Field | Hall |
|---------|------------------|---------|--------|----------------------|-----------------------|----------|----------------------------------------------------------------------------------------|-----------------|------|------|
| Ritual  |                  |         |        |                      |                       |          |                                                                                       |                 |      |      |
|         |                  |         |        |                      |                       |          |                                                                                       |                 |      |      |
| Production-Reproduction |          |         |        |                      |                       |          |                                                                                       |                 |      |      |
| Social  |                  |         |        |                      |                       |          |                                                                                       |                 |      |      |
|         |                  |         |        |                      |                       |          |                                                                                       |                 |      |      |

- Vehicle circulation as director, pedestrian as director and shade, and activity vessels as areal functions
- The existence of facility and infrastructure is related to activities in each area, especially for:
  - Farming Area: balong (fish pond or marsh), Ricefield Area: balong (fish pond or marsh), Cutting Area: Waste recycling facility
- Area utilization adjusted with the existing function and activities
  - 84,1% - 100% Highly agree, 68,1% - 84% Agree, 32,1% - 68% Neutral/doubtful, 36,1% - 52% disagree
  - 20% - 36% Highly disagree
Based on the results of the interview, stakeholders wanted RW 12 to become an Eco-village model for villages around Cibodas Village, as well as an ecotourism area which is one of the tourist destinations. However, based on the Focus Group Discussion (FGD) [1], the important thing to remember is that Eco-village is based on three basic activities, namely organic agriculture, ecological architecture, and renewable energy, which are aimed at making villagers' lives independent and friendly nature. That in the end the village developed into a tourist destination is another potential that can be developed after the three activities above have been carried out. Eco-village that develops into ecotourism will spur increased local community participation. Furthermore, ecotourism can be further developed into tourism. This development is expected to provide information to the government as the key stakeholder present at the FGD to make policies that support these activities for the welfare of the community [14].

In its further development, the principles of ecotourism must be widely promoted and socialized, including about environmental awareness and education on conservation, culture, and economic benefits [15]. The questionnaire was distributed to 100 respondents. Ecotourism is natural tourism and a man-made environment integrated with an informative and participatory culture. Ecological village development in RW 12 must also focus on natural or ecological sustainability, provide economic benefits, and be psychologically acceptable in the social life of the community [16]. A recapitulation of the results of distributing questionnaires is in table 3. From the results of the recapitulation, there is still much that needs to be improved and perfected for the development of Eco-village at RW 12, Cibodas Village, Bandung. Nearly 80% of respondents answered between doubt and disagreement that the Eco-village program was in line with local wisdom (Sundanese culture). The main activities required are repairing and improving infrastructure arrangement to support the existing integrated agricultural system.

| Stakeholders Group | Roles | Activities |
|--------------------|-------|------------|
| Key Local Government | Coordinator | Hold a meeting between stakeholders regarding Eco-village development to evaluate existing and activities implementation. |
|                    | Facilitator | 1. Supporting funding for Eco-village development efforts |
|                    |           | 2. Support facilities providing and infrastructure to eco-village development. |
| Implementation | 1. Empowering local farmer group and society |
| Primary Village Community | Executor | 1. Providing land to develop related facilities and infrastructures regarding integrated farming system |
|                    |           | 2. Involved in Eco-village activities development leading to tourism attraction provision based on daily life that reflects Eco-village implementation. |
|                    |           | 3. Homestay formed to provide accommodation in the form of homestay for tourists or researchers. |
|                    |           | 4. Developing businesses that utilize products produced by the integrated farming system |
| Supporting Academician (Community Service Grant) | Coordinator | Coordinating with other stakeholders, such as the society, local government, farmers group, and farm, curling, and waste recycling owners. |
|                    | Facilitator | 1. Facilitate stakeholder to conduct a study on ecovillage development effort in RW 12 to obtain a picture of their hope/expectation |
| Related Agencies | Facilitator | Provide training regarding information requirements about Eco-village development effort in RW 12. |

An integrated agricultural system that is well organized, supported by the understanding of the people who use it, provides optimal management and good product yields. This can improve the community...
and village economy. Furthermore, it can be used for improved management or other efforts to make RW 12 a tourist destination. Stakeholders can also be involved according to their respective authorities and responsibilities in supporting the development of the Eco-village in RW 12. An overview of the powers and duties of each stakeholder group is shown in table 4. The results of distributing questionnaires and elaborating activities from stakeholders related to Eco-village development are expected to realize the success of the overall life structure of RW 12 as a model for Eco-village to be used as a tourist destination.

4. Conclusion
The expectations of stakeholders regarding the development of Eco-village in RW 12, Cibodas-Bandung, West Java are generally to make improvements and increase the completeness of infrastructure that can support the implementation of the independence of the local community in managing their environment. Through this research, it is hoped that it can provide input for the design framework for improvement and improvement, so that the management of an integrated agricultural system which is the potential of Cibodas Village can be optimized. The authority and responsibility of the stakeholders give rise to suggestions on roles and activities to support this framework, so that assistance and guidance to the implementation of this development can ensure the achievement of the goal of making RW 12 an Eco-village pilot.

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