Neighbourhood management in sloppy mountain areas

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Abstract. Special character of slope areas demands more efforts from the inhabitants to live. The way people live and organize their living space is the learning process products in adapting to the unique conditions of slope areas. Using collaborative model, this study aims to develop a management strategy for mountainous rural slope area. Interactive and Internal-External Environmental Analysis were used to understand human-nature interactions in mountainous slope area of Mount Lawu located in Karanganyar Regency, Central Java, Indonesia. The results signify that the management strategy of the sloppy mountain areas is dependent factor of the behaviour and perceptions of the community and government programs. Community knowledge, their participation and commitments, synergized actions and policies, and the existence of supervision and control system are the key factors that can be accommodated through collaborative model in neighbourhood management.

1. Introduction

The neighborhoods or settlements are formed by various combination of sites, building, events, signs, and other physical elements that are very typical and context-specific (Rossi, in Agung Budi \textsuperscript{1}). Its shape and composition are influenced by cultural and physical factors \textsuperscript{2,3}. The community responses in the way they built their neighbourhood reflect their culture, values, social, economic, and technology capabilities in adapting to the environment or physical condition. Thus, the form and pattern of neighbourhood and settlement is the accumulated product of human culture and environment interactions.

The environment has its own capacity to support human activities. The finding research of Dwita Hadi Rahmi and Bakti Setiawan \textsuperscript{4} suggests that nature does not actually have an environmental crisis. Nature has because nature always reacts to balance. Nature has its own capacity to reverse negative environmental conditions (Scheffer and Carpenter in Dwita and Setiawan \textsuperscript{4}). However, population growth and the associated increase of human-nature interaction have created changes in the structure and function of the environmental condition which, in turn, affects the environmental services (Goudie 1981; Scheffer 2009; Steffen 2009; Will, Paul & John 2007 in Rahmi and Setiawan \textsuperscript{4}). To develop the region in a sustainable way requires an understanding of their environment. The development of Eco-Architecture in the last few decades has highlighted the need to acknowledge human-nature interaction in physical development. Frick \textsuperscript{5} pointed out our four principles of Eco-Architecture, that is a holistic approach, learning process of human experience in coping with the problem and adapting to a changing condition, development is a process, and balance human-nature interactions.
In tropical countries such as Indonesia, erratic weather, heavy rainfall is the condition that needs to be accounted for in managing sloppy mountain areas. The decreasing number of trees in the upper part affects the level of soil adhesion [6]. It makes the land becomes increasingly loose when it contains more water and creates a higher possibility for a landslide. Instead of acknowledging the risks, in practice, little has been attempted to implement the principles of eco-architecture in managing the slope areas. Ngargoyoso district, Karanganyar is located in the Mount Lawu sloppy area. Like other mountain areas, it becomes the central point in the hydrological cycle. It provides a source of surface water for its surrounding area [3], in this case Karanganyar, Sukoharjo, Wonogiri, Sragen, Magetan, Ponorogo, and Madiun. It is a home for typical fauna-flora and Pilgrimage Centre for traditional Javanese culture [6]. However, population growth and increased activities has rapidly replaced the nature into built environment. Having vulnerability, human interventions in sloppy mountain area need to be managed to minimize its pressure on nature. This study is aimed to develop a management strategy for sloppy mountain areas by considering local social values and its unique environmental physical conditions.

2. Methods
As nature condition is the product of human learning process to cope with changing condition and problem, managing specific sites, in this case sloppy mountain area, requires understanding of how social system influences nature, and in turn have been shaped by them. Developing a management strategy, the research investigated their interactions. Different forms of interventions inform different problems and challenges. We used primary data, through site observation, in-depth interviews, focus group discussion, to gather information regarding to community and the nature they live. Data collection was conducted document study. The key actors representing the community, the local government, the private sectors were selected using purposive sampling and snowball sampling methods. Information gathered were examined through Internal-External Environmental Analysis (ALI-ALE) to identify human-nature interactions in managing sloppy mountain areas.

3. Results and discussion
Analysing the form of human nature interactions of neighbourhood management in Mount Lawu, we identified two approaches are conducted by the community to adapt with nature in the sloppy mountain areas.

3.1. Approach based on culture
The traditional knowledge and local wisdom owned by the community in the Mount Lawu areas are reflected in traditional ceremonies, customs, mindset, and behaviour of the people in the area. As cultural manifestations, the traditional ceremonies have been held periodically related to protect the environment. The traditional ceremony represents the community beliefs and knowledge regarding human nature interactions. Four traditional ceremonies are identified as the form of human closeness with nature. They are (1) Julungan ceremony, (2) Dalungan ceremony, (3) Dawuhan ceremony, (4) Sopo Nandur Ngunduh ceremony.

3.1.1. Julungan ceremony. The ceremony is a ceremony aimed to clean the village and the earth as the expression of community gratitude for the grace given by the Almighty through the form of various crops. The Julungan ceremony is held monthly, every Tuesday Kliwon in Javanese calendar.

3.1.2. Dalungan ceremony. Dalungan Ceremony is a traditional ceremony held in Dalungan Hamlet, Macanan Village, Kebakkramat District, Karanganyar Regency located in the bottom of the mountain. The term of Dalungan is adopted from the name of the place where the ceremony occurs for the first time, the Dalungan Hamlet. The ceremony, which is held once a year, on Friday Legi in Ruwah month in Javanese calendar, is intended to invoke the prosperity, safety, peace and security blessings from the Goddess of Prosperity.
3.1.3. Dhawuhan ceremony. The same intention with Julungan Ceremony, Dhawuhan ceremony is a traditional ceremony specifically intended to clean the water resources. Community understanding of the need to maintain water resource sustainability is expressed in this ceremony.

3.1.4. Sopo Nandur Ngundhuh ceremony. Similar with Julungan ceremonies, this ceremony is the form of community expression to gratitude for the generosity of the earth and water to support their life. This finding suggests that there is necessity to promote community understanding of the importance of protecting the nature instead of treating nature only as a resource.

3.2. The collaborative model for sloppy mountain area
Collaborative model is implemented as a strategy for managing sloppy areas of Mount Lawu. Through community-based rural management, the planning and decision making process in the area involves various stakeholders from community, government and researcher or academian. Four reasons have been identified the need of collaborative model is used as a strategy in managing this specific site, that are:

3.2.1. The knowledge of natural condition. Every place has their own characteristics which is context specific to its location. How problems are defined and how solutions are prescribed are related to the knowledge about them. Thus, it becomes important to have depth understanding of problem and their context in planning and decision-making process. To do that, educated community related to the human nature interactions is required. To increase community understanding, counselling activities and technical guidance have been conducted by involving various stakeholders that both formally or voluntarily appointed to give community assistances to understand the casual-effects of human nature interactions, the emergence of various problems and alternative solutions.

3.2.2. Participation and commitment. Sustainable condition requires sustainable community who understand the importance and actively contribute in environmental management. In neighbourhood management, community is the key actors in obtaining local information which is unique context specific. As their behaviour is the key success factor in promoting sustainable condition, the way of their thinking and the acceptance of sustainable program will decide the nature conditions. Encouraging community participation is one of the reasons of the use of collaborative model.

3.2.3. Synergized human activities and policies. Nature condition is the product of accumulated actions conducted by various actors which give both direct and non-direct impacts on nature. As nature is a close system, the condition of one condition affects the other conditions. In practice, the multiple actors through their incremental actions contribute to the nature condition. Further, the growing number of actors involved create more challenges in synchronizing their actions. Apparent overlap, counterproductive, and incompatibility actions among actors are one of the reason why collaborative model is chosen in neighbourhood management of sloppy area of Mount Lawu.

3.2.4. Community supervision and control. Examining neighbourhood has been managed, it found that supervision and monitoring in practice is a key factor in neighbourhood management. To make this happens, community must be involved as they are the local actors. However, it found that monitoring system only can be effectively conducted when the communities have full awareness that negative actions will have a significant impact to reduce their life quality in long-term period and wider sectors. Hence, supervision and monitoring in the research area do not only involve elements of the government but also the community supported by other related community elements such as non-governmental organizations (NGOs) and academicians.
4. Conclusion
In the sloppy mountain area, nature is highly vulnerable to human actions. It is vital that the management strategy understand human-nature interactions in their specific context. Thus, community understanding of the importance of protecting the nature and their contributions are the key success of its management strategy. The research found that collaborative model can fit because it can promote community knowledge’s and their commitment and participation instead of minimizing non-synergized actions and programs.

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