Environmental engineering for social resilience and tourism in Plajan Village Jepara Central Java Province

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Abstract. We investigate the suitable model to carry out environmental engineering primarily in aspects of social resilience and tourism in Plajan Village Jepara Central Java. Using a mixed method, this study shows that social and tourism resilience can be developed by involving stakeholders in the village consisting of communities, entrepreneurs and local governments, as well as academic groups; these forces are communities that work together synergistically and coordinative. "The necessary conditions" for local environmental engineering towards social and tourism resilience in a sustainable manner is the need for village infrastructure, especially for tourist sites or spots that are still lacking in information. This infrastructure can be divided into two things: "gray infrastructure" and "blue infrastructure". Gray infrastructure is public infrastructure that can disrupt community activities and tourism, such as roads, bridges, social infrastructure, while Blue infrastructure is directly related to local environments such as protected forests and water resources.

1. Introduction
Distance Plajan Village with the town square of Jepara Central Java Province, which is only 17 Km or can be reached by road trip for 30 minutes; should not make Plajan minimal information about the village and its inhabitants. This is more due to the lack of data provided by institutions and individuals as well as inaccurate location maps. In fact, in almost all domains of Global Change Research, the role of humans is a key factor as a driving force, impact subject, or agent in reducing impacts and adapting to change [1].

While progress has been made in the conceptualization and interdisciplinary practice of Global Change Research in various fields, efforts to engineer the environment for social resilience and sustainable tourism activities are important to provide opportunities and active participation of indigenous and local communities, as well as increasing the ability of communities to manage resources sustainably. In this connection, community experience is seen as important as a result of collaborative
social practices so the need to find satisfying synthesis for academic and industrial perspectives [2], which ultimately supports the realization of the management of potential human resources and village environmental resources, village tourism data systems, as well as patterns to support the acceleration of the village economic system. And related to this, a community that has social security is needed [3].

As for the broad understanding, social resilience can still be categorized into the meaning of ecological social security, namely a system that is integrated from nature and humans with reciprocal relationships. The social-ecological resilience approach described here is an approach where humans and nature are studied as a whole, not as separate parts [4]. And it is able to reduce the rate of environmental disturbances that have been exacerbated for a long time by the Industrial Revolution, as well as subsequent technological innovations from the Green Revolution, and related socio-economic dynamics. Not only climate change but also processes related to changes in land use and land cover - such as deforestation, large-scale irrigation, and dam construction - have changed the water cycle strongly [5–12]. The social-ecological system can also be described as the dynamics and the growing number of people that continue to grow which affect the pattern of settlements, so that in the context of tourist destinations, the proportion of tourist visits also increases in number [13]. In this analysis, Samadi and Dwi looked at the importance of environmental education for social and ecosystem resilience that affected the construction of environmental education models in the management of carrying capacity of natural and environmental [14].

Within the social system, governance and environmental management frameworks can lead to environmental risks, so that if these problems occur, then diversification of resource use patterns and community lifestyle alternatives in utilizing resources should be able to maintain ecosystem services [15]. This is what gave rise to the term of social sensitivity in the framework of environmental response. Social sensitivity, which has been defined as the ability to accurately perceive and comprehend the behaviour, feelings and motives of other individuals, is generally viewed by personality theorists, social psychologists and clinicians a like to be a psychological variable of major importance for the understanding of such basic phenomena as the development of a conception of self, the acquisition of roles and the interaction within and between groups [16].

More specifically, these findings indicate that in order to promote responsible environmental behavior, the environmental education and interpretation systems need to focus on changes occurring in the internal locus of control. Locus of control according to Rotter, is an action in which individuals relate events in their life to actions or forces beyond their control [17]. Locus of control is a concept that refers to individual beliefs about events occurring in life. Locus of control illustrates how far a person views the relationship between actions done with an outcome. Locus of control relates to the characteristics / attitudes and work attitude of a person both internally and externally [18]. The study aims to get a suitable model to carry out environmental engineering primarily in the aspects of social security and tourism.

2. Method
This research uses a mixed method [19], were involved in depth interview for key informant. We believe that a broad interpretation and use of the word methods (in mixed methods) allows inclusion of issues and strategies surrounding methods of data collection (using interviews and observations). In our view, each of the three major approaches to research include assumptions, principles, and values about these kinds of methodology and practice-related issues as parts of the research paradigm [20]. Interviews and observations in this research were conducted in Plajan Village Jepara Central Java.

3. Results and discussion
In the research location, as a tourist village, the development is quite rapid and is of concern to many parties. This development certainly must be addressed by how to develop it, arrange it, manage it, and pay attention to the benefits for the community and the surrounding environment. The development of tourist villages will certainly encourage productive economy carried out by the villagers themselves. And therefore, an alternative tourism development approach in the tourist village of Plajan Village
should have made tourists close to the atmosphere and local residents. The main ingredients of the tourist village must be manifested in the lifestyle of the community. The authenticity of the village's face is also maintained without abandoning efforts towards the prosperity and welfare of the village community, both those affected by economic, physical and social conditions; for example space, cultural heritage, agricultural activities, stretches of nature, services, historical and cultural tourism, as well as unique and exotic experiences of the region, in addition to striving for forms of integration between attractions, accommodations and supporting facilities presented in a structure of community life that is integrated with applicable procedures and traditions.

Table 1. Tourism development component matrix in Plajan Village, Jepara.

| Development of Tourism Destinations | Institutional | Tourism Industry Development | Marketing |
|-------------------------------------|--------------|-------------------------------|-----------|
| Physical development of tourist attractions | Encourage the active role of local institutions (local governments and villages) | Development and strengthening of tourism businesses | Promotion of Tourism Village destinations as tourist attractions and tourism products |
| Increased supply of basic facilities | Encouraging the strengthening of community institutions | Improving product quality and competitiveness of the tourism industry | Promotion of local tourism industry products |
| Accessibility and availability of tourist information | Increasing the role of Tourism Awareness Groups | The existence of regional regulations in the development of village economic-based enterprises | Organizing promotional events |
| Development of supporting infrastructure (grey and blue infrastructure) | Increased human resources | Strengthening networks between tourism businesses | Increased collaboration promotion (within the Village or with other tourism destinations) |
| Improved accessibility | Regional regulations related to incentives and disincentives | The increasing of Human Resources quality | |
| Increased accessibility to other destinations in a wider area | Provision of capital loan facilities | | |
| Increased community participation in the development process | Provision of tourism facilities based on people's businesses | | |

Table 1 shows the structural change of the system as can be seen through pair distribution function for Development of Plajan Village. Tourism Village development policy at the research location, if based on tourist events and locations, is very necessary to have the perception of stakeholders in determining cross-sectorial programs that suit their needs. The context of sectorial integration discussed from the results of this study refers to the capacity of communities, social institutions or social communities associated with managing coastal ecosystems to survive and be able to cope with change due to various social and economic activities [21].

In addition, village officials as the local government also need to have a common understanding of the development of Tourism Village so that policy making related to the development of Tourism Villages can focus more on basic matters, such as the integration of government programs (district, provincial and central levels). Thus the resulting policy can be directed to the development of integrated tourism, including the understanding of the factors of development of tourism villages in the research location.

3.1. Understanding the main factors of tourism village development
Through good understanding of the important factors of managing and developing tourism villages, it will usually be able to shape the behavior of the community and tourists to take part and maintain the environment. Specifically, Archibald P. Sia, Harold R. Hungerford and Audrey N. Tomera [22], outlined eight relative contributions in predicting responsible environmental behavior.
Seven of the eight variables found to be statistically significant are: Environmental sensitivity level, perceived knowledge of environmental action strategies, perceived skills in using environmental action strategies, classification of the role of psychological sex, Individual focus control, Locus of control group, and Attitudes towards pollution.

3.2. Identifying natural values and cultural heritage
Villages with natural beauty and interesting cultural heritage are key assets of tourism. Its unique qualities and values are very important for tourism businesses and are the main selling point. Every business must have a Unique Selling Proposition (USP), which differentiates products or services from other competitors.

By having USP, the products and services offered are special. By having USP every Tourism Village can improve its position in the market. USP consists of three elements, namely:

- Unique, this makes products and services different from others,
- Selling, persuading customers to buy products or services offered,
- Proposition, is a proposal or proposal to be accepted.

The values in Tourism Village are very important to understand because they are needed for effective product development, planning, marketing, management and interpretation. It is also important to consider whether the activities carried out in an area of cultural heritage are appropriate and appropriate. This understanding helps to ensure that the development of Tourism Village in the future is commensurate with respect for existing values. It is characterized by a combination of self-interest and concern for others, species, or ecosystems; including talking with others about environmental issues, encouraging families and friends to behave in a responsible way to the environment [23].

3.3. The model’s
The models that are suitable for environmental engineering in the village of Plajan Jepara Central Java Province, especially in the aspects of social security and tourism are in the following figure:

![Environmental engineering model for social and tourism resilience in Plajan Village](image)

**Figure 1.** Environmental engineering model for social and tourism resilience in Plajan Village.

Based on figure 1 above, it can be seen that:

- Together with the private sector, the Forum can encourage the development of business partnerships in the form of utilizing corporate social responsibility (CSR) funds by involving the community in existing business processes;
- Together with the government, the Forum can develop work plans related to the duties and functions of Ministries / Institutions and SKPD (relevant government sector). The work plan can be in the form of infrastructure development, training, or promotion;
- Together with tourism business actors (hotels, tourist huts, restaurants, tour guides and others), the Forum can discuss and encourage the realization of the green economy concept and encourage the formation of strong value chains including; and
Together with other business actors the forum can strengthen the inter-business value chain to expand the multiple-impact benefits of the business both directly and indirectly.

The analysis of the list of needs and desires can be seen from factors such as intent to act, prior knowledge of problems encountered, and the desire to act more likely to lead to the actual action of the individual [24].

4. Conclusion

Using a mixed method, this study shows that social and tourism resilience can be developed by involving stakeholders in the village consisting of communities, entrepreneurs and local governments, as well as academic groups; these forces are communities that work together synergistically and coordinative. From observations, field interviews and Focus Group Discussions, "the necessary conditions" for local environmental engineering towards social and tourism resilience in a sustainable manner is the need for village infrastructure, especially for tourist sites or spots that are still lacking in information. This infrastructure can be divided into two things: "gray infrastructure" and "blue infrastructure". Gray infrastructure is public infrastructure that can disrupt community activities and tourism, such as roads, bridges, social infrastructure (schools, health centers, etc.), while Blue infrastructure is directly related to local environments such as protected forests, water resources, etc.

Acknowledgements

We acknowledged financial support from Research Institutions and Community Service (LPPM) State University of Jakarta.

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