

ecobehavior in the riverbank management

by Nurlita Pertiwi

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ECOBHAVIOUR IN THE MANAGEMENT OF RIVERBANKS AT SOPPENG REGENCY

Nurlita Pertiwi

Engineering Faculty of Makassar State University

nurlita.pertiwi@yahoo.com

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ABSTRACT

The purpose of this study was to determine the behavior of community in the management of riverbanks and strategy of ecobehaviour in the management of riverbanks. Primary data about people's behavior obtained from the answers of 60 respondents as land managers in border rivers and analyzed by quantitative descriptive method. While the primary data from the expert opinion analyzed using Analytical Hierarchy Process (AHP). The results showed that ecobehaviour society in the management of river banks in the low category. Furthermore ecobehaviour development policy strategy is to prioritize the interests of farmers. The goals of policy focused at economic development and the best-case scenario is the provision of facilities and infrastructure as effort to increase the economic value of land.

Keyword : Riverbanks, management, ecobehaviour

A. Introduction

The excessive water volume in the river causing floods and inundated settlements and farmland. Floods which caused loss of property and lives due to high rainfall and declining river capacity. River management should be done in an effort to flood control and protection of the quality of the river. One kind of river management is protection of riverbanks quality. Riverbanks protection is a very important part of overall river stabilization to protect life and property. Many infrastructure has built to protect river and its bank such as riprap, gabions, or concrete lining. It increasingly common in agricultural, rural, and urbanizing areas, where its usual purpose is to limit land loss and associated hazards and damages. The other side, the hard material

of infrastructure can increase the flow velocity and erosion of bank. Channel complexity tends to be reduced by the changes that channel bank infrastructure produces: elimination of bank irregularity and channel-width variations, homogenization of near-bank flow velocity, loss of access to side channels, loss of natural bank substrate, and limitation of geomorphic adjustments are used (Florsheim, at al. 2008).

The riverbanks management can be done by integration of ecology and hydraulic of river with making *riparian buffer strips* or planting the appropriate vegetation in riverbank. The advantage of vegetation are make well environment or Aesthetically pleasing and improve the quality habitat for water species. As theoretical, vegetation

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with plant canopy will reduce the flow velocity to the ground. By reducing the speed of water in the river, then the problem of flooding in downstream areas can be reduced.

Specifically, the regulatory of riverbank written in Government Regulation No. 38 of 2011 on the River. The riverbank is border buffer space between the river ecosystem and the land. The function of border is function of rivers and land are not mutually disturbed. The other name of riverbanks is riparian. Definition of riparian areas is a virtual line in left and right riverbed or the boundary river protection.

Furthermore, in ⁶ Government Regulation No. 26 of 2008 on the National Spatial Plan Article 52 paragraph 2 of that border the river is one of the local protected area. Understanding the protected area is an area defined by the main function protecting environmental sustainability which includes natural and artificial resources. The criteria for riparian areas in the policy is; 1) land along the banks of the river width bertanggung with at least five meters from the foot of the embankment next to the outside; 2) The land along the river banks are not bertanggung outside the settlement area with a width of at least 100 (one hundred) meters

from the river bank; and 3) land along the banks of creeks is not bertanggung outside the settlement area with a width of at least 50 (fifty) meters from the river bank. Based on the policy, the management of riverbank should involve the community.

Community involvement is strongly associated with behavior. In the Theory of Planned Behavior (TPB) developed by Ajzen described that behavior is influenced by interest (intention) and self-control (perceived behavioral). Attitudes that exist in man and norms prevailing in a region as well as self-control can lead to intention (Barua, 2013). Public behavior that supports environmental sustainability also commonly referred to as behavioral ecology or ecobehaviour.

B. Material and Methods

This research is using survey method with a quantitative approach which is located in Soppeng Regency. Research activities take place in January and July 2014. Respondents are the people who manage the riverbanks were 60 people who are land managers in border rivers and selected by accidental sampling. Respondents expert for data policy strategy as many as seven people were determined by purposive sampling technique. Ecobehaviour instrument determines the



form of a questionnaire containing 15 questions with three indicators of behavior for protect the riverbanks from erosion, behavioral protection of vegetation on riverbankss and the behavior of sustainable utilization. Policy instrument contains nine possible answers for each question. Data analysis was performed using Analytical Hierarchy Process (AHP) is the preparation

of pairwise comparison matrix that describes the relative influence or the influence of each element on each goal level above it. Comparison based on judgment of stakeholders to judge the importance of the element compared to other elements. (Marimin, 2006). To quantify the qualitative data used comparative value scale 1-9 by Saaty scale shown in Table 1.

Table 1. Scale pairwise comparisons

Scale	Definition
1	Both are equally important elements to the destination
3	Elements that one a little more important than other elements (<i>moderately importance</i>)
5	Elements which one is more important than other elements (<i>strongly importance</i>)
7	Elements which one is obviously more important than other elements (<i>very strongly importance</i>)
9	Elements which one is more important than the absolute other elements (<i>extremely importance</i>)
2,4,6,8	Values between two adjacent values considerations (<i>intermediate value</i>)
1/(1-9)	If for activity i got a point when compared with activity j, then j has the opposite value compared with i

Source: Saaty (1991)

C. Result and Discussion

Characteristics of Respondents

Characteristics of respondents are supporting data collected in this study.

These characteristics are described in Table 2 were revealed about gender, school and home study programs undertaken at this time.

Table 2. Characteristic of Respondent

Identity	Criteria	Frequency	%
Gender	Male	51	85
	Female	9	15
Age (years)	20 – 30	0	-
	30 – 40	9	15
	40 – 50	19	32
	50 – 60	27	45
	> 60	5	8
Main job	Civil Servant	5	8
	Teacher	6	10
	Farmer	43	72
	No job	6	10
Side job	Rice Farmer	1	2
	Dry land farmer	17	28
	Raising	4	7
	Trading	2	3
	No job	36	60
Manage land since.. Years ago	0 -5	2	3
	5 – 10	9	15
	> 10	49	82
Land use	No manage dry land	0	-
	Rice field	14	23
	settlement	34	57
	Forest	12	20
		0	-

Based on Table 2, it appears that the majority of respondents gender are male (51%) with age between 50 – 60 years. Most of respondent are farmers as main job with long of managing the riverbank over than 10 years. They manage the land as rice field.

Community Ecobehaviour in Riverbank management

There are three indicators in this research to find the community

ecobehaviour that of behavior for protect the riverbankss from erosion, behavioral protection of vegetation on riverbankss and the behavior of sustainable utilization. The instrumen of each indicator contain five question and respond of respondent quantified as in table 3. Category of behaviour analyzed with four category. The highest score is 20 and the lowest is 5.

Table 3. Quantification Analysis

Respond	Quantification	Category	Score
very often	4	Very high	17 - 20
Often	3	High	13 - 16
Rarely	2	Low	9 - 12
Never	1	Very Low	5 - 8

The result of analysis in three indicators are shown in figure 1,2 and 3.

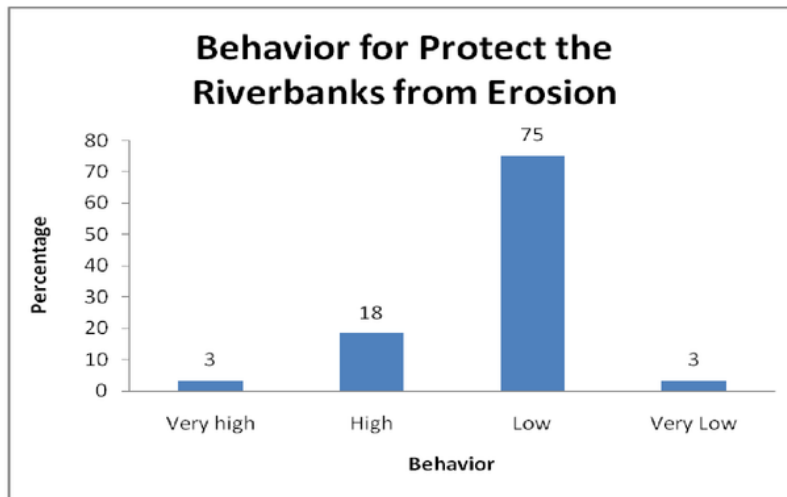


Figure 1. Ecobehavior for protect the erosion of riverbankss

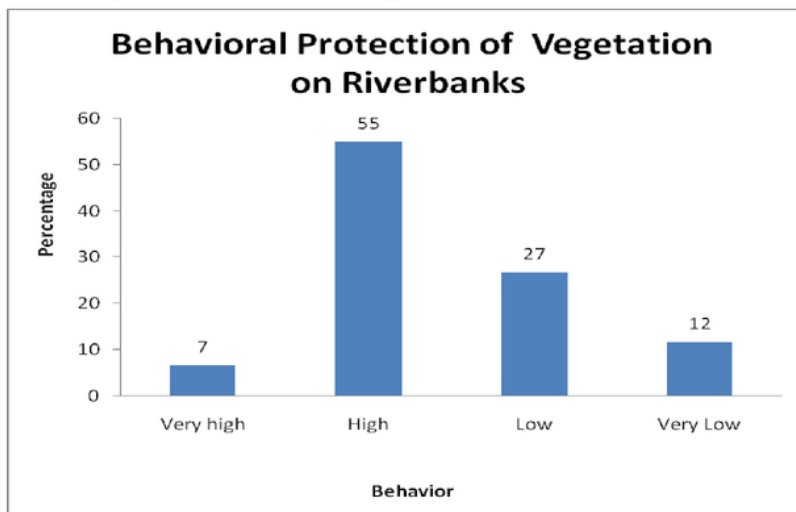


Figure 2. Ecobehavior to protect vegetation

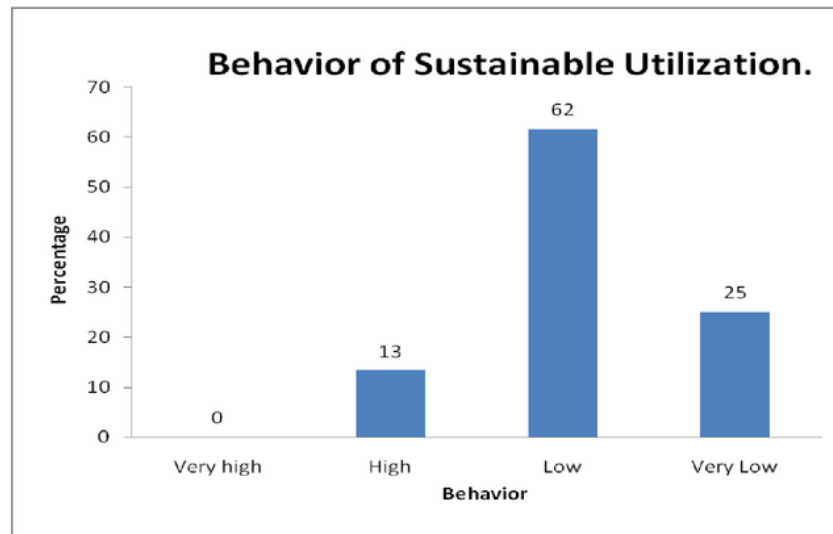


Figure 3. Ecobehavior of Sustainable Utilization

The figure 1 and 3 shown that community has low ecobehavior for protect the erosion of riverbankss and the action for sustainable utilization. Furthermore they have high performance to protect the vegetation. In general, the ecobehaviour of community in management of riverbankss is low. Many kinds of vegetation on the riverbankss are maintained to sustain the economic needs of society. Vegetation is a plant cultivated fruits and industrial plants. Other plants also grow on the riverbankss is bamboo diameter of 50 cm to 100 cm are cultivated. In public life in Soppeng, bamboo is used as a building material and industrial use of small craft. In addition, new trees grow (bamboo shoots) are made of vegetable. Bamboo is also used in the social life of the community, for example, in

traditional ceremonies, marriage ceremonies and funerals.

Budinetto in Maryono (2005) outlines that the plant proposed for the protection from erosion is *Vetivera zizanioides* (vetiver grass), *Ipomoea Carnea* (karangkungan) and bamboo. Bamboo plants commonly found growing on river banks and not cultivated so that clumps and planting distances showed no regularity. In ekohidrolik concept, to obtain optimum results flood reduction, the maintenance of vegetation diameter should be maintained.

Behavioral protection against the erosion of river banks is still very minimal. Society in general expect government programs for infrastructure development. On the other hand, people are not willing to



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expend considerable cost in erosion protection.

Strategy for Enhance the Ecobehavior in Banj River Management Analytical Hierarchy Process (AHP) is a tools to draw up priority of the various options by using several criteria (multi-criteria). The main equipment in the model of decision-makers are functional hierarchy whose input is derived from human perception. The goals of strategy listed on the first level of the hierarchy or level 1. The goals is sustainable riverbanks management model through the development of community participation. Furthermore, on level 2 were analyzed contributing factors that can determine the success of a program. In this study obtained five supporting factors, namely human resources, technology, policy, institutional of government and community institutions.

At level 3 analyzed stakeholders involved in the management of river basins, namely local governments, farmers, landowners and public agencies. The criteria used in determining the most responsible stakeholders in the management of the riverbank. In determining the priority programs selected on two criteria, namely the management riverbanks as flood prevention and management of flood plains

in the economic development of society. Scenarios are arranged in the implementation of the program is determined based on the analysis level 5 which consists of five scenarios that increase the capacity of community institutions, financial incentives for communities, giving seeds and counseling, monitoring and maintenance as well as the provision of facilities and infrastructure for the economic improvement of the land.

Human resource capacity in the management of bank rivers is the capacity of the farmers to participate, the capacity of counselor and capacity of government staff to make programs. All of these factors must be considered as a result of human resources is the dominant factor in this strategy. Furthermore, the priority of stakeholder is farmers with score 0.588. It indicates that the government should pay attention to the capacity of farmers to engage in the management of river banks. Results of the analysis of the level of program shown that the high category is management riverbanks as flood prevention. It means that the ability and motivation of communities must be enhance. The last hierarchy is scenario. Figure 5 shown that the government should provide the facilities and

infrastructure in improving the economic value of land.

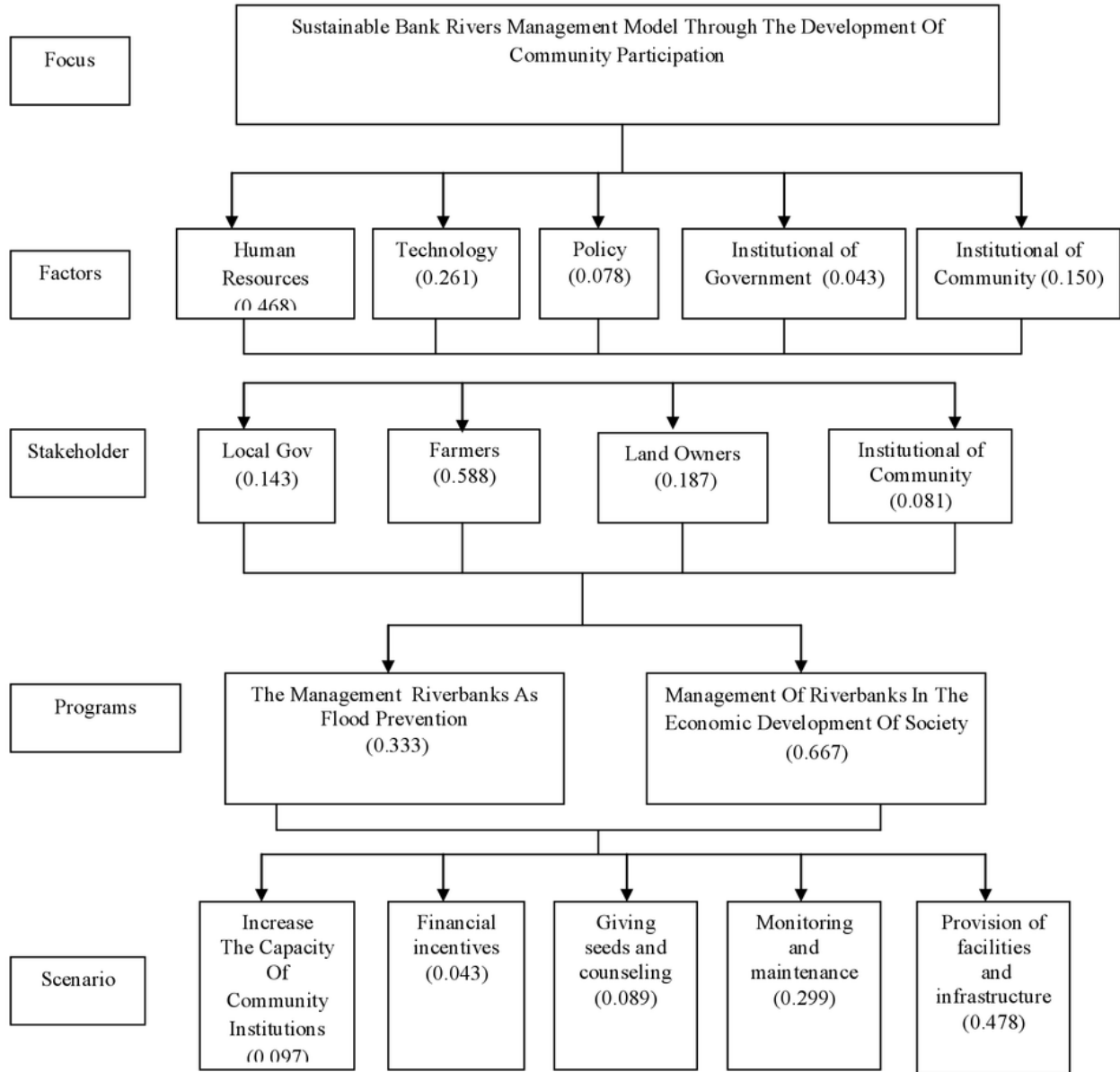


Figure 4. Hierarchy Structure of Strategy

Conclusion

1. Ecobehaviour society in the management of river banks in the low category. The

behavior for protect the riverbankss from erosion and behavior of sustainable utilization in low category and



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behavioral protection of vegetation on riverbankss is high category.

2. The goals of policy focused at economic development and the best-case scenario is the provision of facilities and infrastructure as effort to increase the economic value of land.

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