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### The level of society's participation in critical land rehabilitation in DAS Randangan Pohuwato Regency

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**Abstract.** The aim of this study is to analyze the level of participation of the society and analyze the correlation of internal and external factor with the level of participation from the society. This research was done in Randangan watershed in Pohuwato district, Gorontalo Province from February to April 2017. The population of the research is 150 people with 60 respondents that is chosen through random sampling. The data were collected through structured interview with questionnaire. The data were analyzed with class interval analysis (low, average, high), with spearman rank correlation analysis, and with descriptive analysis. The result of the research showed that the participation of the society is in low category in terms of determining the rehabilitation location (65.0% not participated) and evaluation for planting monitoring (58.3% does not participate), and average participation on implementing seeding (55.0% participated), seeding (58.3% participating). Among the internal and external factors of the society, the one that has a significant relation is  $\alpha = 0.05$  is the level of program socialization is in implementing seeding (0.299). This indicates that the better the socialization the better the knowledge of the society in participating in implementing seeding.

#### 1. Introduction

Trustee act Number 41 year 1999 on forestry states that forests can be used for a wider audience fully for the welfare of the people of Indonesia, also contributed to enhance Watersheds (DAS) support and maintaining the adequacy of the forest at least 30% of the watershed with a vast proportion. However it does not mean the exclusion of environmental aspects, which can then perform logging freely towards natural resources. Because the main function of the forest is not only as the economic underpinning of society, but keeping ecology and maintaining social harmony in society.

Using agricultural-land without many conservation gave the negative impact on the rate of land degradation in the watershed area. The more the breadth of a degraded watershed area will form a critical land. The impact also occurs at the DAS in Gorontalo Province, one of which was DAS Randangan. DAS Randangan is located in the Regency of Pohuwato. The watershed has an area that is 268,078 Ha. The Randangan watershed conditions progressively worsen with increasing critical land-marked and its damage to the environment. Critical Land area to the DAS Randangan reached 91,494 Ha, comprising 18,832 Ha outside the forest area, and 72,662 Ha located in the forest area. This indicates that the high land degradation and soil erosion that occurred in the region of DAS Randangan [1].

Current conditions indicate that participation of the community to participate maintaining environment is still low. But when examined more deeply that maintaining the sustainability of nature

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*by* Mohamad Ikbah Bahua

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### 1. Introduction

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Current conditions indicate that participation of the community to participate maintaining environment is still low. But when examined more deeply that maintaining the sustainability of nature

provides benefits that will return to the community itself both directly and indirectly. It is less comprehensible and certainly needed an input policy strategy adopted by the Government to local communities.

## 2. Materials and Methods

This research was conducted in DAS Randangan, Pohuwato Regency, Gorontalo Province. The study was conducted from April to June 2017. Design the research using the survey approach. The population in this research is the community that rehabilitated critical land in DAS Randangan. The population in question is directly exposed to the impact of the farmers rehabilitation programs critical land. The population was 150 farmers. The sample is determined using the formula proportionately Taro Yamane cited in Riduwan (2013) with a precision of 10%, that is:

$$n = \frac{N}{N \cdot d^2 + 1} \quad \text{Where : } \begin{array}{l} n = \text{number of sample} \\ N = \text{number of population} \\ d = \text{stipulated precision} \end{array}$$

So that the number of sample is 60 people that was chosen by systematic random sampling. This study uses two types of data namely, primary data and secondary data. While the primary data is data that is retrieved directly from the field, which is the results of the interviews with respondents/community. The technique of data collection performed is through structured interview, and questionnaires as a tool in the collection of the data. To find out the level of community participation in both stages of the planning, implementation and evaluation of rehabilitation activities on critical land in Randangan Watershed using scale analysis. The scale in question is to determine the interval class at each level of participation (low, medium, high). Determination of interval class categories low, medium and high that it can be calculated by using the formula [2], namely as follows:

$$k = \frac{R}{I} \quad \text{Where: } \begin{array}{l} k = \text{class interval} \\ I = \text{number of interval classes} \\ R = \text{range of relationship} \end{array} \quad (1)$$

Examines the correlation between internal and external factors against the level of public participation used Spearman rank correlation formula (Riduwan, 2013):

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)} \quad \text{Where: } \begin{array}{l} r_s = \text{Sperman Rank correlation Values, i.e., the correlation coefficient ranking by size for the relationship between the variable Y (the level of community participation) and the free variable X (internal and external factors)} \\ d^2 = \text{difference between the ranking of X and Y} \\ n = \text{number of data pairs} \\ \text{The trust level used is } \alpha = 0.05 \end{array} \quad (2)$$

Analysis description used to describe the factors internal and external in the communities, describe the level of its public participation from the field data obtained, as well as to describe the depiction of relationships that occur between them.

## 3. Result and Discussion

Study of community participation is inseparable from related factors related to individual communities. These factors can be derived from the inside (internal factor) or outside (external factors) of each individual in society. In the study presented the community's internal factors such as: (a) the level of education, and (b) the level of people's income. While external factors are presented is the level of outreach/dissemination by the Government received by the community.

### 3.1. Internal and External Factors Of Critical Land Rehabilitator Community



*3.1.1 The Level of Community Education.* The level of public education will have an effect on the level of participation in critical land rehabilitation. Qualified education level will have an impact both on the critical land rehabilitation activities, because of the level of education will determine the level of understanding, knowledge, admission information, intellect, participation, public perception against the critical land rehabilitation program. The reason is still the magnitude of public education at the primary school level (43%). As compared to Junior High/Secondary Schools (35%), Senior High School (20%). Especially on the college level, indicating that the level of education is still low (2%). Low levels of education are correlated at the low level of community participation in programmes planned by the Government. Soekartawi in Jariyah [3], those who are highly educated to be faster and instead they build low bit hard to receive the technology quickly.

*3.1.2. Income level of farmers.* The income of farmers is measured on the basis of income from farm and non-farm. Category income levels are divided into three categories, namely: <Rp.500,000/mths, Rp.500,000 – Rp.1,000,000/Mth, and > Rp. 1,000,000/Mths. The results showed that 66.7% of society have a range of income level of Rp.500,000 - Rp.1,000,000/month, compared to communities that have income >1,000,000/month (only 10%). The level of the income will affect the life of the community to better participate in critical land rehabilitation program. This indicates that between the people's income and participation in critical land rehabilitation will positively correlated to the success of the program. So does Erwianto [4] says with a better income level/high can encourage someone to participate better/higher. Besides the internal factors external factors in the community, the community is also very influential towards the level of participation. External factors are defined as factors that affect the public who come from outside himself.

*3.1.3. The level of Outreach/socialization on critical land Rehabilitation.* Extension Program is the involvement of someone doing a conscious communication of information [5]. The success of the rehabilitation programs can be determined from the intensively extension is given. The level of the frequency extension is received by the community revolves around the 1-2 time extension (amounting to 75%). This means that the level of outreach done by the Government is in the medium category. The level of extension will be indicated on the abundance of information received by the community. Such information may include: (1) how to do a good soil for planting trees, (2) maintenance of measures including planting distances, (3) integration patterns that can be applied between the annuals crops, in utilizing critical land, and (4) include re-evaluating of activities that have been carried out by the community. The competence of the extension officers is dynamic. Competencies need to be adapted to the changes and development of science, technology and the changing profile of extension audiences.

### *3.2. levels of community participation in critical land Rehabilitation*

*3.2.1. The form of community participation in the planning of the critical land rehabilitation.* Program of planning in other early indicators is not for the achievement of an objective of the program. Auliyani *et al* [6], are planning aims to prepare everything systematically so that the result is able to serve as a reference in the implementation of activities. The results of research in planning rehabilitation of critical land can be seen in Table 1.

Table 1 shows that the participation of the community in the rehabilitation of critical land classified as low (65.0%), this is included in category of nonparticipation. In this case the community is less or do not even play an active role in planning for the determination of the criteria for land rehabilitated. The community is on target with instant received information from the Government. Thus, the participation of the community in planning low indeed because of the dominance of the Government in the determination of the location and criteria can land rehabilitated.

**Table 1.** The form of planning public participation in the determination of the criteria and the location of critical land rehabilitation in DAS Randangan Pohuwato Regency

Category (Value)	Form of the Community's participation on Planning Stage
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	Number (People)	Percentage (%)
1-2 (Low)	39	65.0
3-4 (Middle)	13	21.7
>4 (High)	8	13.3

6 3.2.2.6 *Forms of public participation in the implementation of the program of rehabilitation of critical land.* Community participation in the implementation phase of the rehabilitation of critical land includes several forms of activities like: nursery seed (Table 2) and planting the seeds of the plant (Table 3). More detailed explanations are presented as follows:

**Table 2.** The form of the implementation of the participation of the community in the nursery seed plants for critical land rehabilitation

Category (Value)	Form of the Community's participation on Implementation Stage	
	Number (People)	Percentage (%)
1-2 (Low)	14	23.3
3-4 (Middle)	33	55.0
>4 (High)	13	21.7

The level of participation of the Community belongs to the moderate level (55.0%); community participated in program implementation stages of critical land rehabilitation in DAS Randangan Pohuwato District. It means that the society should be its driving force of the implementation of the rehabilitation program. Thus the program launched by the Government will not be limited solely to project related service program. Furthermore, besides the shape of the seed of the plant breeding activities, community participation is also measured through their participation in the planting of the seed plants in the rehabilitation activities. Public participation on planting the seeds of the plant is presented in Table 3.

**Table 3.** Implementation of the public participation in the form of planting seedling plants for critical land rehabilitation

Category (value)	Form of the Community's Participation on Implementation Stage	
	Number (People)	Percentage (%)
1-2 (Low)	9	15.0
3-4 (Middle)	35	58.3
>4 (High)	16	26.7

11 The level of participation of the Community belongs to the medium (58.3%) community participation program implementation stages of critical land rehabilitation in DAS Randangan Pohuwato District. This indicates that the community could have been invited to negotiate and willing to get down in doing planting seedling plants, but still in the category of being. The wastewater treatment plant needs an extensive land, high investment and operational cost, technical trained persons, and a long time in the planning and implementation. The wastewater treatment plants are however inadequate to serve the need of urban sanitation as they only serve 10% of the Indonesian population. On the level of community participation, they heard and allowed to argue, but they don't have the ability to gain guarantee that their views will be considered by decision makers [7]. Some of the results of the study as reported that the level of public participation at the stage of implementation is generally classified as moderate (46.8%). Furthermore that in the implementation of most of the community participation program is active at the position (64.5%) [8].

### 3.2.3. Form of public participation in the evaluation of the critical land Rehabilitation

Evaluation of participation is systematically analysis with project management and a member of the group, assign the policy/institutional rearrangement, objectivity, or redevelopment of resources [9]. Characteristics of complex activities resulted in the rehabilitation of the evaluation process needs to be done carefully, systematic, and thorough [10]. In this form of research activity on evaluation of critical land rehabilitation that is seen from the activity monitoring/checking of planting that have been implemented. In more detail are described in Table 4.

**Table 4.** The form of the evaluation of the community participation in the activities of monitoring/checking planting on critical land rehabilitation

Category (Value)	Form of the Community's Participation on Evaluation Stage	
	Number (People)	Percentage (%)
1-2 (Low)	41	68.3
3-4 (Middle)	13	21.7
>4 (High)	6	10.0

The level of public participation in the evaluation of critical land rehabilitation program in the category of low (68.3%) community participated. This illustrates there are several factors why the society did not play an active role in the evaluation phase of the rehabilitation program, namely: (1) they are not included in the Member's overall evaluation, the dominant moves in the evaluation is the core of the rehabilitators Group, (2) overflow duties and authorities are not evenly on each Member, the overflow concentrated on the task group Chairman the most widely received information from the Government (3) voice/opinion from members usually rarely found represented in decision-making, so that sometimes members reluctant to comment in the evaluation of the program, and (4) lack a sense of the community's own call to check continuously the plants that have been grown.

### 3.3. The correlation of Internal and external factors to the level of public participation

In the study of closeness relations it takes the variable X (internal and external factors), and the variable Y (the level of community participation). Research results about the relationship on the critical land rehabilitation consist of: (a) internal factors; the level of education and income, external factors; the level of extension, and (b) the level of participation of the stages of planning, implementation and evaluation. Described in more detail in Table 5.

**Table 5.** The correalltion of internal and external factors with the level of participation in the rehabilitation program of critical land in DAS Randangan Pohuwato Regency

Factors	Form of the Community's Participation			
	Planning	Implementation		Evaluation
	Criteria Location	Seed Plants	Planting Seedling	Monitoring
	(r)	(r)	(r)	(r)
Internal :				
Education Level	0,012	0,344**	0,152	-0,162
Income Level	-0,090	-0,192	-0,219	-0,213
External:				
Frequency	0,344**	0,299*	0,376**	0,428**
Extension				

Description: r: Correlation's (CC)

\*\* Extent significant at  $\alpha = 0.01$

\* Level significant at  $\alpha = 0.05$

3.3.1 The correlation between level of education with community participation in stages of planning, implementation and evaluation. From the analysis results spearman rank (Table 5), the level of education



with community participation in the determination of the location of the rehabilitation ( $r = 0.012$ ), planting the seeds ( $r = 0,152$ ), and monitoring ( $r = -0.162$ ) does not indicate a real relationship. This indicates that there is a very weak correlation values between these elements. Whereas, in the activities of nursery seed ( $r = 0,344$  \*\* level  $\alpha = 0.01$ ) shows a real correlation with the level of participation of the community, and the value of the correlation is positive. This shows that there is a strong link between educations with an understanding of farmers in sowing seeds in the nursery. Thus, the higher the education of a person then the knowledge and understanding of the community will be better in doing seed nursery in critical land rehabilitation.

*3.3.2. The correlation between the level of income with the public participation phase of planning, implementation and evaluation.* In Table 5, the results of the analysis spearman rank indicate that income level with the participation of the public in the determination of the location of the rehabilitation ( $r = -0.090$ ), nurseries ( $r = -0.192$ ), planting the seeds ( $r = -0.219$ ), and monitoring ( $r = -0.213$ ), the entire show is not a real touch of the participation elements of the land. This illustrates the existence of weak correlation values of the element, and the correlation coefficient is negative. This correlation indicates that not always the level of income of the community will always be affected in participating. On the other hand, that income is not a major factor in society participate. Because when communities have the time, opportunity, knowledge and ability then it is certain that society will want to participate.

*3.3.3. The correlation between level of outreach with the public participation phase of planning, implementation and evaluation.* From the analysis results of spearman rank (table 5) shows that the level of counseling at the stipulation of site rehabilitation ( $r = 0,344$  \*\*), planting the seeds ( $r = 0,376$  \*\*), and monitoring ( $r = 0,428$  \*\*) associated with the level of participation of the community at significant levels  $\alpha = 0.01$ . While in the nursery of the seed ( $r = 0,299$  \*) shows a real relationship with the level of participation of the community at significant levels  $\alpha = 0.05$ . This is indicated that the value of the correlation has a strong relationship between the participation elements, and is positive. It means that the better the outreach conducted by the Government and accepted by the community, it will also better public participation in critical land rehabilitation in DAS Randangan. Therefore, public awareness is a persuasive approach put forward measures and upholding the norms of participatory [11]. The existence of extension will be able to raise the curiosity and community participation are quite high, fueled by the presence of the Government as well as coaching from the activities of study appeals to some areas [4].

#### 4. Conclusion

The level of community participation in rehabilitation programs in critical land DAS Randangan Pohuwato District for planning activities in the determination of the location of the rehabilitation (65.0% not participating), and evaluation for monitoring farming (68.3% did not participate) in the low category. On the implementation of the nursery (55.0% participated), planting the seeds (58.3% participating) so that it enters the category of participation are. Among the internal and external factors of the community, which has a real connection on a significant level  $\alpha = 0.05$  is the level of outreach program with the level of community participation in the activities of nursery seed plants (0.299 \*). This indicates that the better the guidance provided will improve knowledge, understanding of the community to participate in the breeding of seed plants.

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