An Analysis of Public Participation on Critical Land, in Randangan Watershed, Pohuwatoregency

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Abstract. The aims of this study are to identify the public participation level in the planning, implementation stages and evaluation on the activity of critical land rehabilitation of Randangan watershed as well as to examine the association of internal and external factors with public participation level on the critical land rehabilitation activity at Randangan watershed. This study was conducted at Randangan watershed, Pohuwato regency, Gorontalao province from September to November 2015. The study was used survey approarch and purposively determined. There were 60 samples from 150 population collected through systematic random sampling. The data were analysed with internal and external factors associated with the public participation level. The result indicated that the public participation level on the critical land rehabilitation on Randangan watershed in Pohuwato regency at the level of planning is low, while on the implementation stage is moderate and the factors that related to the critical land rehabilitation covered internal factors such as age, education, land width and earning level. Meanwhile, the external factors are intensity of socialization program, the role of companion and availability of rehabilitation infrastructure. The internal and external factors had strong correlation with public participation level is significant, a=0.05, consisted of land width at implementation stage (-0.283*), and intensity of program socialization at evaluation stage (0.293*).

I. INTRODUCTION

The natural resource conservation in Indonesia became major challenge and main responsible for both government and society. The agricultural lands utilization without conservation has negative impact on the land degradation rate in the watershed area.

Randangan watershed is located in Pohuwato regency with 268, 078 hectares of watershed area.

The worse watershed condition is influenced by increasing in the critical land and rate of environmental damage. The critical land was due to several factors such as drought, infertile soil, soil contamination, farmer cropping pattern and erosion.

The critical land in the watershed in Gorontalo province were 693,801 hectares which 332, 493 hectares are located outside forest area and 361, 381 hectares are within the forest area. Meanwhile, critical land area for Randangan watershed were 91, 494 hectares consisted of 18,832 hectares outside forest area and 72,662 hectares within forest area. This indicated high land degradationand soil erosion occurring in Randangan watershed area.

The effort to stabilize the watershed is rehabilitation of forest and critical land. National Movement for Forest and Land Rehabilitation (GNRHL) is a coordinated activity by utilizing all potential and capabilities of government, provincial government, district/ city government, business entities and communities in the context of forest and land rehabilitation in priority of river basin. The critical land rehabilitation is not successful as expected since failed to achieve the target. The main reason for achievement failure is due to poor community participation in the critical land rehabilitation. The communities are living in Randangan watershed with low socioeconomic conditions such as poor home infrastructure, low education level and small land area. The successful of critical land rehabilitation is determined from community participation level. The communities' participation in the critical land rehabilitation is defined as community involvement in all activities or programs launched started from planning, implementation, monitoring, assistant and evaluation. Therefore, the aims of this study are to identify the public participation level in the planning, implementation stages and evaluation on the activity of critical land rehabilitation of Randangan watershed and as well as to examine the association of internal and external factors with public participation level on the critical land rehabilitation activity at Randangan watershed.

II. METHODOLOGY

Study Type

The study design was used survey approach. The primary data was collected through interviews and questionnaire.

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The data were obtained on description of the phenomena occurring in the critical land tenure communities, providing relationship between study variables through hypotheses, predicting events, recommending useful and implicated the discussed issues based on the evaluation of the program.

Location and Time

The study was conducted in Randagan watershed, Pohuwato regency, Gorontalo province, which shown in Figure 1 and Figure 2.The study site was purposively chosen with main consideration that the site was previous critical land rehabilitation activities since 2010. In additions, another consideration are to observe the Randangan watershed area increasingly, increased erosion of Randangna watershed and declining in water quality in the river basin of Randangan watershed, characterized by cloudy river water, river sedimentation, reduced discharge flow (at dry season) and addition of drastic discharge (in the raining season).

The expansion of critical lands in Randangan watershed also increased based on the increasing distribution of regency in Randangan basin. This study had been conducted for 3 months starting from September to November 2015.

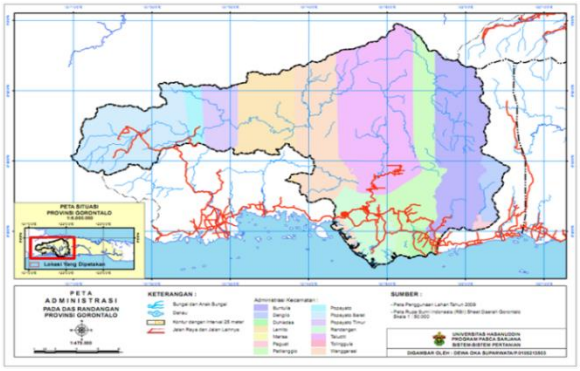

Fig. 1 Map of Administration (Location)

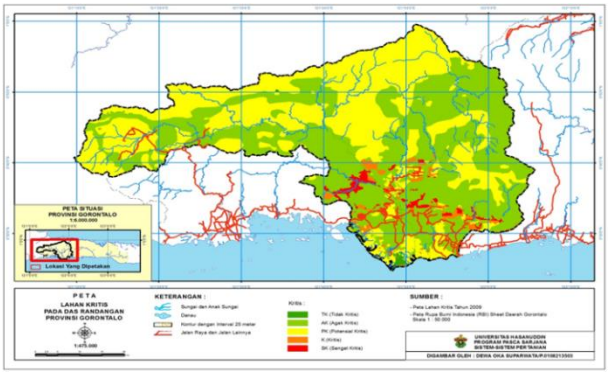

Fig. 2 Critical land map on Randangan watershed

Population and Sample

The study population were all farmers' communities in Randangan basin area. The study population was community who involved directly in the critical land rehabilitation activities in Randangan watershed. The number of population was 150 people. The sample sizes were 60 respondents which obtained by using systematic random sampling.

Data Collection

The primary data had been obtained from interviews and questionnaire, while secondary data were obtained from collection of existing data, documents in the offices, state of study area (geography and administration) and other sources such as journals, articles, thesis and dissertations which related to community participation in critical land rehabilitations.

Data Analysis

The data was analysed by using SPSS software program. The data were analysed with internal and external factors associated with the public participation level.

III. RESULT

Internal factors

Table 1 shows that most respondents are aged ranged between 41 years and 60 years. There is no respondent aged less than 20 years and only 1 respondent (1.7%) are aged more than 61 years old. There are 26 respondents (43.3%) had completed primary school level, 21 respondents (35.0%) had completed junior high school and 12 respondents (20.0%) had completed high school.

The land area owned by the 42 respondents in the rehabilitation of critical land ranged from 0.5 hectare to 1 hectare, 12 respondents (20.0%) are owned more than 1 hectare and 6 respondents (10.0%) are owned land area less than 0.5 hectare. There are 40 respondents (23.3%) had monthly income between Rp. 500,000 and Rp. 1,000,000 and only 6 respondents (10.0%) had monthly income more than Rp. 1, 000,000. In general, the respondents worked in the agricultural sector and some respondents had another jobs. There are 44 respondents (73.3%) are relied only on agricultural resources and 10 respondents (16.7%) had more than one jobs.

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Table. 1 Respondent characteristic based on internal factor

Respondent characteristic	Category	Total	Percentage (%)
Age	<20 years	0	0.0
	21-40 years	24	40.0
	41-60 years	35	58.3
	> 61 years	1	1.7
Education level	No attend schools	0	0.0
	Primary school	26	43.3
	Junior high school	21	35.0
	High school	12	20.0
	Academy/ Diploma	1	1.7
Land Area (hectares)	<0.5 hectare	6	10.0
	0.5-1 hectare	42	70.0
	>1 hectare	12	20.0
Income level (per month)	<Rp. 500,00	14	23.3
	Rp. 500,000 – Rp. 1,000,000	40	66.7
	>Rp. 1,000,000	6	10.0
Revenue source category	Agriculture	44	73.3
	Plantation	2	3.3
	Farms	1	1.7
	Fishermen	3	5.0
	>1 jobs*	10	16.7

* >1 jobs included: agriculture and self-employed/entrepreneur
Fishermen and planters
Agriculture and village officers
Agriculture and driver
Agriculture and plumbers

External factors

Based on Table 2, about 47 respondents (78.3%) were involved in socialization program and 13 respondents (21.7%) were never involved in socialization program. There are 54 respondents (90.0%) claimed extension program to critical land rehabilitation program and 6 respondents (10.0%) claimed no extension program in critical land rehabilitation program. Meanwhile, 34 respondents (56.7%) had attended the training and 26 respondents (43.3%) did not attended training program. There were 48 respondents (80.0%) had companion from the government and 12 respondents (20.0%) claimed no any companion for their critical land rehabilitation program. In additions, 52 respondents (86.7%) claimed government had provided rehabilitation facilities and 8 respondents (13.3%) claimed no rehabilitation facilities provided for their critical land rehabilitation activities.

Table. 2 Respondent characteristic based on external factor

External factors	Respondent characteristic	Total	Percentage
Socialization program	Yes	47	78.3
	No	13	21.7
Extension program	Yes	54	90.0
	No	6	10.0
Training program	Yes	34	56.7
	No	26	43.3
Companion activities	Yes	48	80.0
	No	12	20.0
Rehabilitation facilities	Yes	52	86.7
	No	8	13.3

The result shown in Table 3 indicates that about 70% of respondents claimed poor participation level in the planning stage. Meanwhile, 4 respondents (6.7%) are highly in the participation level in planning stage.The result shows that about 63.3% of respondents claimed moderate community participation at implementation stage. Table 3 also highlights that the community participation is low (71.7%) at evaluation stage in critical land rehabilitation program.

Table. 3 Study result of community participation level in the planning stage, implementation stage and evaluation stage of critical land rehabilitation program

Category (value)	Planning stage		Implementation stage		Evaluation stage	
	Total (n)	Percentage (%)	Total (n)	Percentage (%)	Total (n)	Percentage (%)
1-2 (Poor)	42	70.0	15	25.0	43	71.7
3-4 (Moderate)	14	23.3	38	63.3	13	21.7
>4 (High)	4	6.7	7	11.7	4	6.6
Total	60	100.0	60	100.0	60	100.0

There are 56 respondents (93.3%) still want sustainability of critical land rehabilitation program and 4 respondents (6.7%) did not agreed sustainability of critical land rehabilitation program.Based on Table 4, the correlation coefficient value at the planning stage was 0.165, 0.166 at implementation stage and 0.128 at the evaluation stage. Meanwhile, correlation coefficient for education level was

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0.108 at planning stage, -0.075 at implementation stage and 0.087 at the evaluation stage.

The correlation coefficient value for land area were 0.005 at planning stage, -0.2283* at the implementation stage and 0.072 at evaluation stage. In additions, the correlation coefficient of income level was 0.049 at planning stage, 0.005 at implementation stage and 0.041 at evaluation stage.

In additions, correlation coefficient value for intensity of program socialization were 0.354** at planning stage, 0.067 at the implementation stage and 0.293* at evaluation stage. The correlation coefficient for companion role at planning stage were 0.333**, 0.360** at implementation stage and 0.394** at the evaluation stage. Besides, correlation coefficient for availability of rehabilitation facility was -0.056 at planning stage, -0.158 at implementation stage and -0.043 at evaluation stage.

Table. 4 Relationship between internal and external factors with community participation level

Factors	Community participation					
	Planning		Implementation		Evaluation	
	CC	Sig	CC	Sig	CC	Sig
Internal:						
Age	0.165	0.209	0.166	0.204	0.128	0.330
Education level	0.108	0.413	-0.075	0.571	0.087	0.291
Land area	0.005	0.969	0.969	0.028	0.072	0.585
Income level	0.049	0.713	0.713	0.677	0.041	0.753
External factor:						
Intensity of program socialization	0.354**	0.005	0.067	0.293*	0.023	0.023
Companion role	0.333**	0.009	0.360**	0.394**	0.002	0.002
Availability of rehabilitation facility	-0.056	0.668	-0.158	-0.043	-0.043	0.744

IV. OVERALL DISCUSSION

In this study, age of the respondents was measured from birth to age at the study period, which rounded up when the age of more than five months and above once the study is completed. Based on World Health Organization (WHO), adult is defined as person who aged more than 19 years old unless national law defined person is adult at earlier age [1]. Most productive period is among age ranged between 41 years to 60 years and more than 61 years old is considered as old age. These results found community did rehabilitation of critical land in Randangan watershed during productive period which affected better community participation in the rehabilitation of critical lands to protect the environment. Erwiantono (2006) had explained most people in the productive age are very supportive of their participation in the development activities [2]. The person at young age had high productivity and more receptive to the new thing for their own progress.

In this study, no respondent who never attended school or did not completed primary school. The community had awareness in important go to school at least primary school. The education had good impact in the critical land rehabilitation activities since education level had determined understanding level, knowledge, information acceptance, power thinking, participation and public perception of critical land rehabilitation program. However, the education level among respondents is still relatively low because most respondents had only completed primary school. The low education level is correlated with low community participation level in government-linked program. The education level is very influential on the thinking way for better future in behaviour and information absorption [3].

The land is one of the main resources in development program implementation especially in agricultural sector [4].

The land area is defined as total amount of land cultivated by the community or farmers. In this study, most respondents had a land area between 0.5 hectare to 1 hectare and cultivated by the farmers in the rehabilitation of critical land either owned, tilled or leased.

The farmers' income depended on the cultivated agricultural products. In additions, revenue is also influenced by market, supply demand and production. IN this study, income is measured by the revenue from agriculture and other sectors. The respondents' income level is still moderate. The income level affected farmers 'participation in the critical land rehabilitation program. The education and income level are among factors affected community participation in managing environment.

The main source income is from agricultural sector since limitation in available land, low education level and potential of development in the agricultural sector. The socialization is defined process of shaping personality characteristic that described by the required and status by the society [5]. The result found still have some respondents are not received socialization about critical land rehabilitation program. The frequent of socialization affected community participation in critical land rehabilitation program.

The agricultural extension is purposed to increase farmer's technical knowledge, farm management skills, effective information system and promote agricultural product through institutional support for farmers, allowed farmers to complain their production and marketing problems and ensure sustainable agriculture development [6].

In this study, the extension is a process in which farmers had received knowledge, information, motivation and insight on the critical land rehabilitation activities. The study indicated the extension intensively conducted by the government and only few farmers did not participate in the critical land rehabilitation extension program.

These results showed most farmers are enthusiastically followed this extension program.

The training activities are process which farmers are improved their skills in the critical land rehabilitation activities in planning, managing plants and land, program implementation and evaluation programs. The result showed some farmers did not attend any training program provided in critical land rehabilitation program.

The companion role is purposed to support the program achievement. The companion role in this program consisted of extension program staffs which from related government agencies such as Forestry Agency. The monitoring and guidance had been given to the farmers for their critical land rehabilitation program.

The participation principle is required the community to be empowered, given opportunity and involvement in bureaucratic processes in planning and implementation stags of supervision or public policy. Sandyatma and Hariadi (20120, participation level at the planning level is low with 27.33% of total participation [7]. The poor communication participation level is caused by lack of socialization and companion on the critical land rehabilitation activities conducted by relevant agencies. In additions, low education level also affected planning process. In farmer's association meetings, most farmers tended to be silent rather than participated in sharing their opinion for their improvement. Besides, their poor involvement in the planning stage also lead misunderstood on the critical land rehabilitation program.

The community participation in the implementation stage for rehabilitation of critical land rehabilitation program included land preparation, seedling, planting and maintenance, material contribution and making irrigation channels. The participation in the implementation stage is generally higher than planning and evaluation stage [8]. The high community participation are due to socialization and influence by community had increase motivation community in joining the critical land rehabilitation program.

The low community participation in the evaluation stage is due to not all members in the farmer groups are not involved but only small farmers involved in the evaluation. The program evaluation is only completed by the farmer group leader, secretary and head of program evaluation. The result found most respondents want sustained the critical land rehabilitation program. Several reasons given by the farmers such as optimal to restore land, reduced the critical land, agriculture and housing demand, increased in number of surface runoff and erosion, rehabilitation improved their socioeconomic status and restored forest function as water reservoir.

Based on spearman rank correlation test showed age did not showed significant relationship with the community participation level at planning, implementation and evaluation stages. Damanik and Tahitu (2007) indicated age differences did not influenced community participation level in the rural development program [9].

The education level showed no significant relationship with community participation level. The high education level did not influenced community to participate the critical land rehabilitation program since correlation coefficient is negative at the evaluation stage. Meanwhile, land area did not show a significant relationship with community participation in the planning and evaluation stages. These results indicated that no necessary for large land owner to participate in the critical land rehabilitation program. At implementation stage, the land area had significant relationship with community participation level with negative value. This result indicated more small land owners are higher participated in the critical lad rehabilitation program. The small land owner is more intensive, easier to manage and maintained their rehabilitation land. In additions, small land ownership allowed farmers to cultivate intercropping between seasonal and annual crops. Moreover, most farmers with rehabilitated critical land are in low income level. Thus, farmers with small land area are better in rehabilitation management and increasing participation level. The correlation coefficient indicated income level factors did not showed significant relationship with community participation level. The community participation is not based on farmer's income level but rather to encouragement, willingness and farmers participating in their critical land rehabilitation program.

Besides, intensity factor of program socialization had significant relationship with community participation level in the planning and evaluation stage. However, the intensity factor of program socialization had no significant relationship with community participation level in the implementation stage. The socialization provided by the government at the planning and evaluation stages had increased community participation level. In the implementation stage, the assistance and guidance had been provided to the farmers by the government.

In additions, companion role had significant relationship with community participation level. This result indicated more socialization from related agencies, more community participation level in all stages. The availability of rehabilitation facilities did not have significant relationship with community participation level. The less rehabilitation facilities provided by the government had influenced community participation in the critical land rehabilitation program.

V. CONCLUSION

In conclusions, community participation level in the critical land rehabilitation in Randangan regency, Pohuwato province at the planning and evaluation stage is low, while implementation stage is classified as moderate. The factors related to the critical land rehabilitation included internal factors such as age, education level, land area and income level.

Meanwhile, external factors such as intensity of program socialization, assistant role and availability of rehabilitation facilities. The land area at the implementation stage (-0.283) and intensity of program socialization at evaluation stage (0.293) had strong relationship with community participation level.

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