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SOCIAL CAPITAL IN THE RESTORATION OF PEATLAND ECOSYSTEMS: A CASE STUDY OF PULANTANI VILLAGE, SOUTH KALIMANTAN, INDONESIA

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ABSTRACT

Social aspects such as coordination, cooperation, trust, concern, information flow affect the success of restoration activities. These elements are part of the social capital. The research aims to analyze the characteristics of individuals and social capital of the community in peatland restoration efforts. The object of this case study was the community of Pulantani village. Six indicators were used to assess individual characteristics, while 75 indicators were used to assess social capital. The number of respondents was determined using the Slovin formula. Data were analyzed using individual characteristic and social capital analysis. The individual characteristics obtained in Pulantani village fall into the moderate (>10 – 14). The indicators of age and length of residence have high values. This indicates the availability of a highly productive workforce and that they are locals, making this strength of the village. The level of social capital in Pulantani village is moderate (score= 233.59). The community of Pulantani village has strengths in trust, social norms, and sympathy and reciprocal action.

KEY WORDS

Individual characteristics, peat land ecosystem, restoration, social capital.

The peatlands in Indonesia are experiencing widespread degradation and loss of function. Kalimantan Selatan is an area in Indonesia that has experienced peatland degradation. The degraded area of peatland in South Kalimantan is 227,857 hectares (Directorate General of Pollution and Environmental Damage Control Decree No. 40, 2018). The degradation of the peatland ecosystem is mainly caused by agricultural activities, plantations, forestry industry, forest and peatland fires (PRA, 2019; MEF, 2021). Other factors that affect the degradation of peatland ecosystems include rapid social and economic changes with development projects that ignore community participation and self-reliance (PRA, 2019).

Efforts to prevent damage and preserve the function of peatland ecosystems are outlined in Government Regulation No. 57 of 2016 concerning the protection and management of peatland ecosystems. Restoration of the peatland ecosystem function is an activity to restore the nature and function of peatland ecosystems as close as possible to their original state through natural succession, restoration (efforts to restore the function of peatland ecosystems as before), vegetation rehabilitation (efforts to restore the function and improve peatland ecosystems through revegetation), and/or other methods in accordance with the development of science and technology (IG, 2016).

Peatland ecosystem restoration efforts in some locations have not yet shown satisfactory results. The "economic revitalization of communities" activity for the restoration of peatland ecosystems in several locations shows that the activities cannot yet be continued independently by the community in the following year (the business is not yet sustainable). Assistance in the form of business capital such as poultry, processed food products, and fish farming (in some locations) has not been well established. The success of revegetation activities (measured by growth success) is also still low. The function of rewetting activities (bore hole drilling or canal blocking) is not yet optimal in some cases.



All peatland ecosystem restoration efforts are closely related to the community as the subject/actor in peatland ecosystem restoration efforts. This activity must be viewed from a broader aspect and adjusted to the characteristics of the local community. Community readiness to accept and implement programs is one of the elements that must be considered. The level of community readiness can be seen from the interactions established within the community. This is done by exploring the trust that is formed within the community both with residents inside and outside the village.

The relationship between human activities (social system) and nature (ecological system) is a key factor that influences changes in forest cover in tropical peatland ecosystems. The complexity of socio-ecological factors is still poorly understood (Medrilzam *et al.*, 2014) and therefore needs further study. Peatland ecosystem restoration activities also need to consider aspects of coordination and cooperation within the community to carry out the activities. This is the basis for exploring the social capital of the community in peatland ecosystem restoration activities. Social capital will describe everything related to cooperation within the community, which provides mutual benefits to achieve a better quality of life. Social capital is supported by elements such as trust, networks, norms, proactive and caring actions, coordination, cooperation, reciprocity, institutions, sympathy, and information channels (Fukuyama, 1995; Hasbullah, 2006; Putnam, 1993; Robinson *et al.*, 2002).

The community cannot solely rely on external aid to overcome economic difficulties; they must collectively think and take the best steps to address these issues by utilizing all of their potential and resources. Thus, social capital emphasizes the need for self-reliance in addressing social and economic problems, while external aid is considered a complement to trigger initiatives and productivity that arise from within the community.

One of the villages that has participated in the peatland ecosystem restoration activities in South Kalimantan is the village of Pulantani. This village has participated in the Rewetting, Revegetation, and Revitalization activities, which are peatland ecosystem restoration programs. Pulantani is a village that has peatland and is part of the Peat Hydrological Area of Sungai Utar - Sungai Serapat. This research seeks to combine social aspects with a social capital approach to the community based on the perspective of social capital elements with the characteristics of the community as an inseparable part of peatland ecosystem restoration activities. This study aims to analyze the characteristics of individuals and social capital in the Pulantani community in the effort to restore the peatland ecosystem.

METHODS OF RESEARCH

This research was conducted in the village of Pulantani, Haur Gading District, Hulu Sungai Utara District, South Kalimantan. The time for the research was from May to November 2022. The objects of this research were the characteristics, behaviors, activities, opinions, appraisal views, pro and con attitude, and sympathies of the people of Pulantani village.

Data collection was done by interview technique. Selection of respondents using random sampling method. Respondents are villagers in Pulantani village. Data collection used a questionnaire and then observation and interviews were carried out using a structured interview technique. The number of respondents was determined based on the Slovin formula approach. The calculation of the sample of respondents based on the Slovin formula (Umar, 2004) is as follows:

$$n = \frac{N}{1 + N \cdot d^2}$$

Where: n =sample size; N =population size; d = standard error.

The number of family in Pulantani village is 183 families (Central Bureau of Statistics HSU, 2021). The standard error value (d) used is 8%, so the number of respondents used is 85 respondents.

Individual characteristics in Pulantani village were analyzed by using 6 indicators, namely age, formal education, non-formal education, income level, length of residence and



social status in the community. The number of classes for individual characteristics was 3 classes. Description of the individual characteristics indicators of Pulantani village is presented in Table 1.

Table 1 – Indicators for individual characteristics of Pulantani village

Indicators of Individual Characteristics	Information
Age	Not yet productive, productive and unproductive.
Formal Education	Elementary School, Junior High School, Senior High School, Diploma/Bachelor
Informal Education	Frequency of participation in non-formal education such as training or technical guidance and others.
Income Level	Income each month refers to the level of income from Central Bureau of Statistics
Long stay/lived	Judging from the original population or the duration of residence
Social Status	The position seen from the social aspect in society is for example village officials, religious leaders, community leaders, skippers, landlords and others.

The class width in individual characteristics using the Supranto 2000 equation is as follows:

$$\text{Class width} = \frac{\text{The highest observation value} - \text{The lowest observation value}}{\text{Number of class}}$$

The values used to assess individual characteristics for each indicator are low (score 1), moderate (score 2), and high (score 3). The categories for individual characteristic values used the following approach:

Table 2 – Interval value of individual characteristics

Level of individual characteristic	Based on sum of score	Based on Percentage
Low	≤ 6 – 10	≥ 33,33% - 55,55%
Moderate	>10 – 14	55,56% - 77,77%
High	>14 - 18	≥ 77,78% – 100%

Social capital will be seen from 11 elements with 75 indicators. The number of classes in social capital is four classes (minimum, low, medium, and high). The elements and the number of indicators in each element can be seen in Table 3.

Table 3 – Elements and indicators of social capital

Variable	Number of Indicators	Variable	Number of Indicators	Variable	Number of Indicators
Trust	12	Concern/caring	3	Reciprocity	4
Social Networking	6	Coordination	3	Information Flow	13
Norms	6	Cooperation	9	Institutionalization	6
Proactive	10	Sympathy	3		

The class width in social capital using the Supranto 2000 equation is as follows:

$$\text{Class width} = \frac{\text{The highest observation value} - \text{The lowest observation value}}{\text{Number of class}}$$

The values used for assessing each indicator of social capital are 4 categories. The categories of social capital values use the following approach (Uphoff, 2000):

Table 4 – Interval value of social capital

Level of Social Capital	Based on sum of score	Based on Percentage
Minimum	≥ 75 – 131,25	≥ 25% - 43,75%
Low	> 131,25 – 187,5	> 43,75% - 62,5%
Moderate	> 187,5 – 243,75	> 62,5% - 81,25%
High	> 243,75 - 300	> 81,25% – 100%



RESULTS AND DISCUSSION

The results of the assessment of individual characteristics in Pulantani village are as follows:

Table 5 – Individual Characteristics in Pulantani Village

Variable Individual Characteristics	Sum of Score	Mean of Score
Age	253	2,98
Formal Education	145	1,71
Informal Education	168	1,98
Income Level	139	1,63
Long stay/lived	252	2,96
Social Status	120	1,41
Total Score	1077	12,67

The individual characteristics of the community in Pulantani village fall under the category of moderate value (>10 - 14). The individual characteristics listed in Table 1 explain that the indicators of age and length of residency have high values. The majority of the population (92.59%) falls under the productive age category (15 to 65 years old) and the rest (7.41%) fall under the elderly category (>65 years old).. The length of residency of the respondents also has a high score, which indicates that the respondents are either local residents or migrants who have been living there for more than 31 years. This indicates a high availability of productive labor and a local workforce, which is a strength in Pulantani village.

The indicators that have low values are formal education level, informal education level, income, and social status of the community. Individual characteristics can be improved by increasing non-formal education. Informal education can be provided through training, socialization, and workshops on peatland ecosystem restoration efforts. Increasing skills or knowledge to obtain better income is also necessary for the community. This is expected to increase the income of the community. Based on the level of individual characteristics, the Pulantani village community has sufficient potential to support peatland ecosystem restoration activities.

The social capital assessment in this research uses 11 elements with a total of 75 indicators. Each social capital element has its own indicators that are used to measure the value of the community's social capital. The results of the assessment of individual characteristics in Pulantani village can be seen at Table 6.

Table 6 – Social capital in Pulantani Villager

Variable	Number of indicators	Social Capital Calculation			Level
		Sum of score	mean of score	mean of percentage	
Trust	12	3.455	41,63	86,72	High
Social networking	6	1.389	16,73	69,73	Moderate
Social norms	6	1.792	21,59	89,96	High
Proactive	10	2.327	27,38	68,44	Moderate
Concern/caring	3	790	9,29	77,45	Moderate
Coordination	3	642	7,55	62,94	Moderate
Cooperation	9	2.369	28,54	79,28	Moderate
Sympathy	3	836	9,84	81,96	High
Reciprocity	4	1.123	13,21	82,57	High
Information flow	13	3.425	40,29	77,49	Moderate
Institutionalization	6	1.490	17,53	73,04	Moderate
Total	75	19.638	233,59	77,24	Moderate

The results presented in Table 6 indicate that social capital in the form of trust within the community is classified as high with a score of 41.63. Overall, the average level of trust among the community of Pulantani is 86.72%. The high level of trust in the village of Pulantani is also reflected in the way the community welcomes guests. They have a very open and welcoming attitude towards outsiders and try to facilitate the needs of guests who come to their village.



The community of Pulantani village has strengths in the elements of Trust, Social Norms, sympathy, and Reciprocal Action. The value of trust among the community of Pulantani is presented in Figure 1.

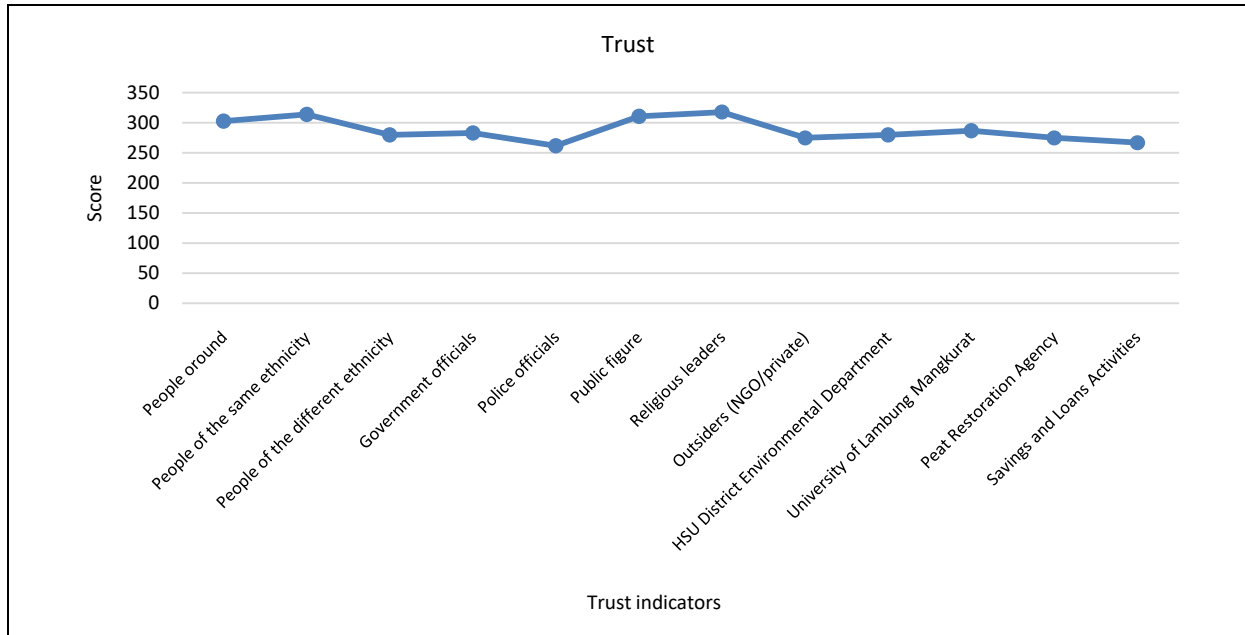


Figure 1 – Score of trust indicators among community of Pulantani Village

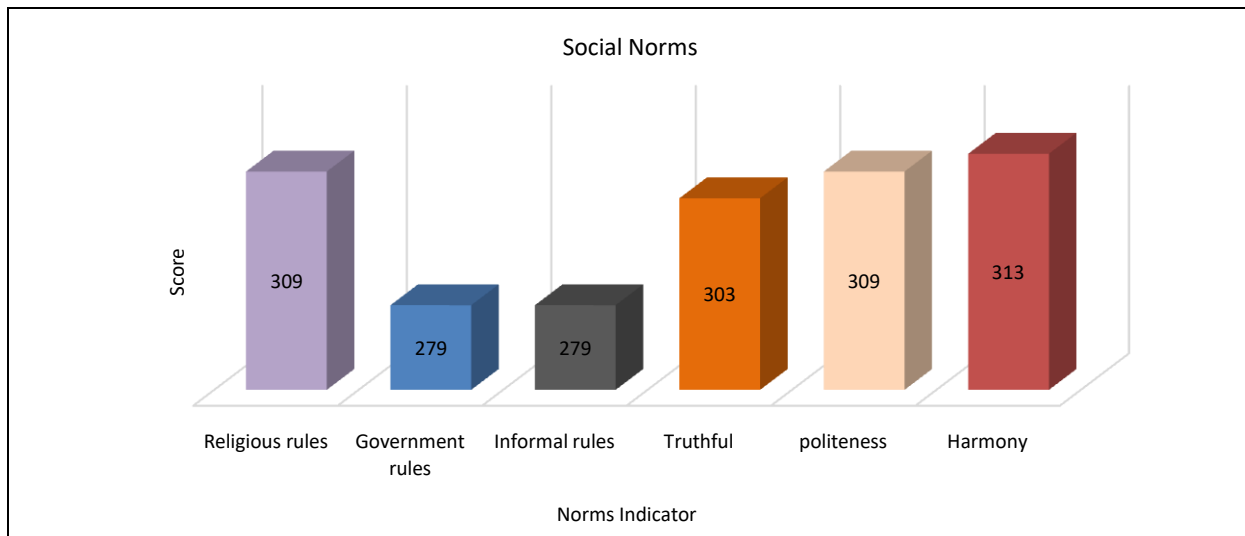


Figure 2 – Score of social norms indicators among community of Pulantani Village

The people of Pulantani village have very high levels of trust towards religious figures (in Islam) and towards people from the same ethnic background (Banjar tribe). The community also has high levels of trust towards local community leaders. The result shown in Figure 1 explain that the elements of trust in the community of Pulantani village indicate that 8 or equivalent to 66.67% of the indicators used have high values, while the other 4 indicators (33.33%) are moderate. This indicates that the community has high trust in the surrounding community (both those of the same and different ethnicities), high trust in community leaders, religious figures, and academic institutions. This trust is influenced by strong religious values and noble societal values that emphasize respecting the "elders of the village". The people of Pulantani village also do not easily become suspicious of outsiders



and are willing to cooperate with them while maintaining a sense of kinship. This is a good asset to support peatland ecosystem restoration activities.

The community of Pulantani Village has strength in the aspect of social norms. There are 6 indicators used in the social norms aspect. the average level of social norms among the community of Pulantani is 89.96%. The value of norms elements in society is presented in figure 2.

Social capital is often a by-product of religion, education, tradition, and historical experience that are outside the control of the state. One of the strong foundations of community norms is the indicator of compliance with Islamic rules as a norm for the community, which influences the honesty of the community (Figure 2). The community's harmony is high and can be seen from the fact that deliberation is always conducted as the basis for decision-making.

The community in Pulantani village adheres to religious rules, government regulations, and community norms. The Pulantani village community also has a high value in the element of sympathy. Figure 3 presents the element of sympathy in Pulantani village.

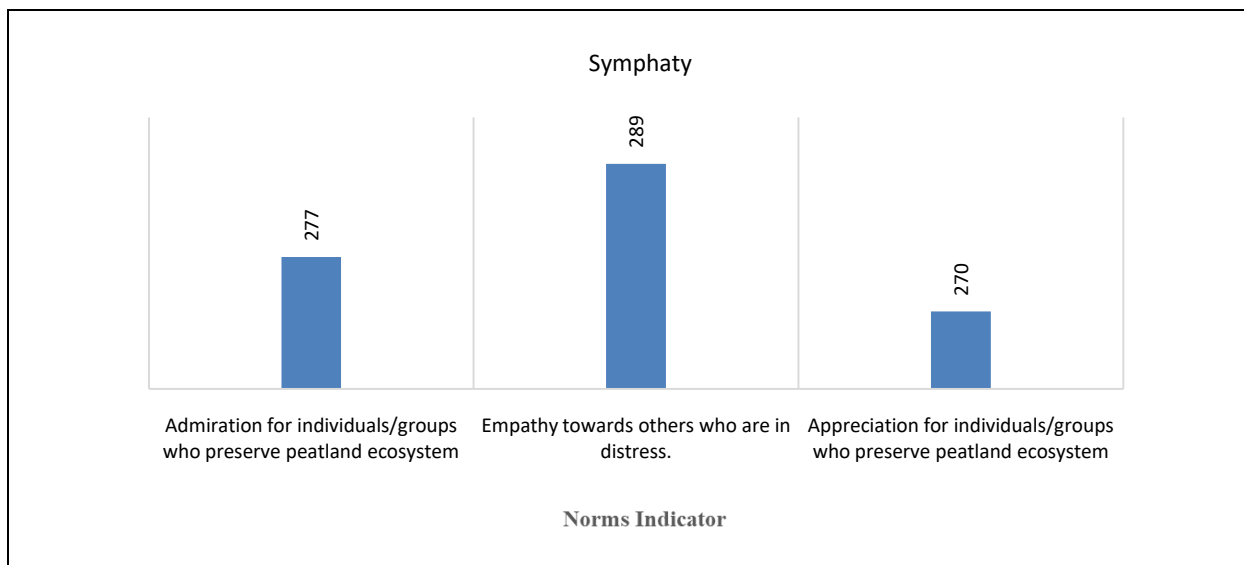


Figure 3 – Score of sympathy indicators among community of Pulantani Village

The community has a high level of admiration for groups that are willing to preserve peatland. The Pulantani community also has a high level of empathy, meaning they feel the hardships of those around them. The level of the mutual exchange (reciprocity) element of social capital in Pulantani village is high. The element of mutual exchange among villagers in daily life can be seen in several activities such as exchanging food, borrowing goods, or providing small assistance (Figure 3). The Pulantani community provides each other with both physical and mental support in daily life as well as during events with a level of 87.35% to 88.53%.

There are no elements of low social capital in the community of Pulantani village. The value of social capital is dominated by a moderate value. There is only a small weakness in the Pulantani village community, which lies in the coordination sub-indicator such as taking the initiative to hold formal or non-formal meetings for coordinating activities.

Based on its level of social capital, the Pulantani village has several strengths (elements of trust, norms, sympathy, and reciprocal actions) that have great potential for receiving and implementing peatland ecosystem restoration programs. The social capital possessed by Pulantani village is expected to influence attitudes and beliefs that affect trust and concern, which will drive cooperation in the community to achieve the goal of restoring the peatland ecosystem. Furthermore, with sufficient social capital support (moderate level), the Pulantani village community is expected to develop together with relevant stakeholders to create and succeed in joint activities aimed at peatland ecosystem restoration.



Social capital in Pulantani village is expected to be used as a unifying tool for harmony and cohesion in the community, thereby minimizing gaps, promoting voluntary and independent values for community development, and becoming a tool for encouraging community participation in collective action for common goals

CONCLUSION

The characteristics of individuals in Pulantani village fall into the medium level category (>10 -14). The indicators of age and length of residency have high values that become strength for community of Pulantani village. The indicators that are low include formal education, non-formal education, income, and social status. Increasing formal and non-formal education is needed to increase the knowledge and skills of the community, which is expected to change the mindset of the community in solving problems. Alternative income needs to be developed to improve the welfare of the community and at the same time reduce pressure on peatland so that the community can be part of peatland restoration efforts. The level of social capital in Pulantani village is in the medium category (233.59). Pulantani village has strengths in Trust, Social Norms, and Sympathy. Pulantani village does not have any elements with low values. The value of community social capital can be used as a driver for collective action to achieve the goal of peatland restoration. The community's social capital in Pulantani village needs to be improved, especially in terms of coordination and the initiative to hold formal or non-formal meetings as a means of coordination. Strengthening coordination, institutions, and networks of cooperation is needed to form a community with strong participation in achieving common goals. Strengthening various social capital elements can be done through community empowerment mechanisms so that they have independence. The individual characteristics and the social capital of the Pulantani village support peatland restoration efforts. The community's social capital is part of the determining factors for the success of peatland restoration efforts

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