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Promoting Spatial Partnership and Community Perception for the Preservation of Orang Kayo Hitam Grand Forest Park (GFP) in Jambi Province, Indonesia

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Abstract. The Orang Kayo Hitam Grand Forest Park is located in Jambi Province, Indonesia, and is currently threatened by illegal logging and natural fire forest that has burned 7,984.78 hectares. Therefore, this research aims to improve community perceptions of the conservation function of the Orang Kayo Hitam. This can be achieved by providing conservation books on the Orang Kayo Hitam to the community, creating a demonstration video, and increasing community income through a partnership pattern by planting in utilization zones. The non-parametric statistical difference T-test was used, which involved a survey and training approach on 93 households living near the Grand Forest Park. This method was used to assess changes in the perception of the community after reading books, watching videos, and collaborating on counseling. The results showed that the perception of the community changed significantly after receiving knowledge from books and watching videos about the Grand Forest Park. There was also a shift in public perception regarding the use of the conservation zone at the Grand Forest Park location via collaboration counseling.

1. Introduction

The Grand Forest Park (GFP) is a forest area with a conservation function. In Indonesia, conservation areas are grouped into two categories, namely (1) nature conservation areas and (2) nature reserve areas. The GFP is categorized as a nature conservation area with ecotourism, research, and education functions (Forest Service, 2020). In Jambi Province, there is *Orang Kayo Hitam* GFP with an area of 18,140 hectares, located between Muaro Jambi Regency and Tanjung Jabung Timur Regency. The GFP is characterized by a peat swamp forest area and is managed by the Jambi Provincial Forestry Service. The *Orang Kayo Hitam* GFP faces several challenges such as recurrent forest fires in 1997, 2007, 2011, 2014, 2015, and 2019, as well as illegal logging, occupation of the area by the community, and conflicts over boundaries within the community.

In Indonesia, the management of conservation areas experienced a paradigm change in the 1990s, following the adoption of the Integrated Conservation and Development Program (ICDP) by the Director General of Nature Protection and Conservation. The ICDP program was funded by USAID, the World Bank, and several international NGOs that linked conservation programs with the development of alternative economic activities for communities around the area by embracing all stakeholders and accommodating all dimensions of development which are common goals (Wells *et al*. 1998). However, the community was still positioned as the object of the activity implementation (Soekmadi *et al*, 2010), leading to continuous deforestation and degradation in conservation areas.

Community interests have been taken into account in the management of the Grand Forest Park under Indonesian government regulation number 28, Year 2011 concerning the Management of Nature Reserves and Conservation Areas. Under these conditions, it can be assumed that by providing knowledge through reading books, watching videos, as well as collaborating, and counseling, there will be a change in the perception of the community. The partnership opportunities are built for the surrounding community to sustain the *Orang Kayo Hitam* GFP by changing the public perception.

The objectives of the research are (1) To determine whether distributing the *Orang Kayo Hitam* GFP conservation book to the community can change their perceptions of the conservation function, (2) To perform a video demonstration of the function of the *Orang Kayo Hitam* GFP in the community on changing the perceptions of the people (3) To analyze whether the promoting spatial partnership pattern approach can increase community income in the utilization block in the *Orang Kayo Hitam* GFP.

2. Methods

The research site is the location of a conservation feature, namely peatland protection, as recognised by the government of the Republic of Indonesia as the site of *Orang Kayo Hitam*

GFP. The *Orang Kayo Hitam* GFP is located in Muara Jambi Regency, and the western half of the *Orang Kayo Hitam* GFP is a communal hamlet with farmers and fisherman earning $1.25 per day. The research site are shown in Figure 1.

The stages carried out in this research included, first initial data on the perceptions of respondents were needed (A0), second, respondents were given reading books about the functions and regulations of the *Orang Kayo Hitam* GFP (A1), and then FGDs were conducted and videos were shown to respondents about the conservation of the GFP and the importance of the *Orang Kayo Hitam* GFP (A2), In addition

of that, the respondents were collaborating on counseling, to partner with the *Orang Kayo Hitam* GFP in the utilization zone (A3), lastly, one month after the interviews with the respondents, the data obtained revealed whether there was a change in perception and uses of the *Orang Kayo Hitam* GFP for partnership zone. The research framework used was briefly described figure 2.

Hypothesis: Giving adoption of innovations to community, will have a positive effect on changes in community perceptions (Supporting Adoption of Innovation Theory). This research was conducted in Jambi Province at the sample location of
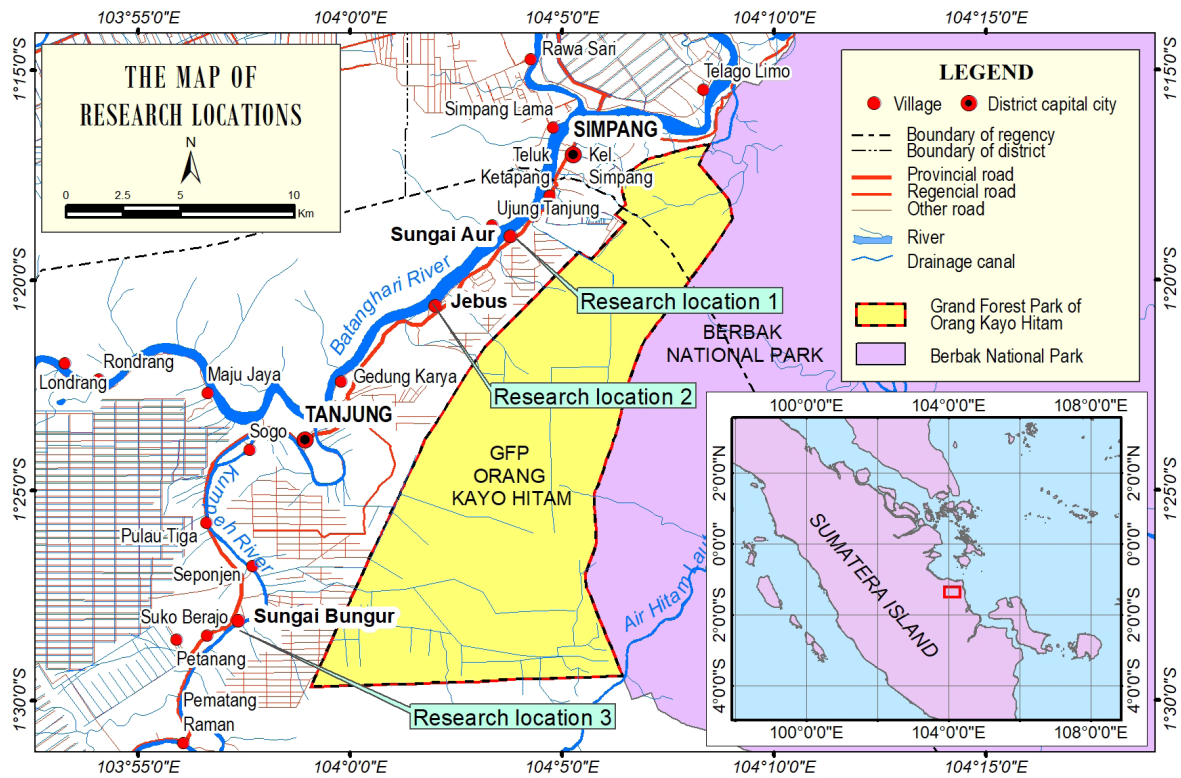

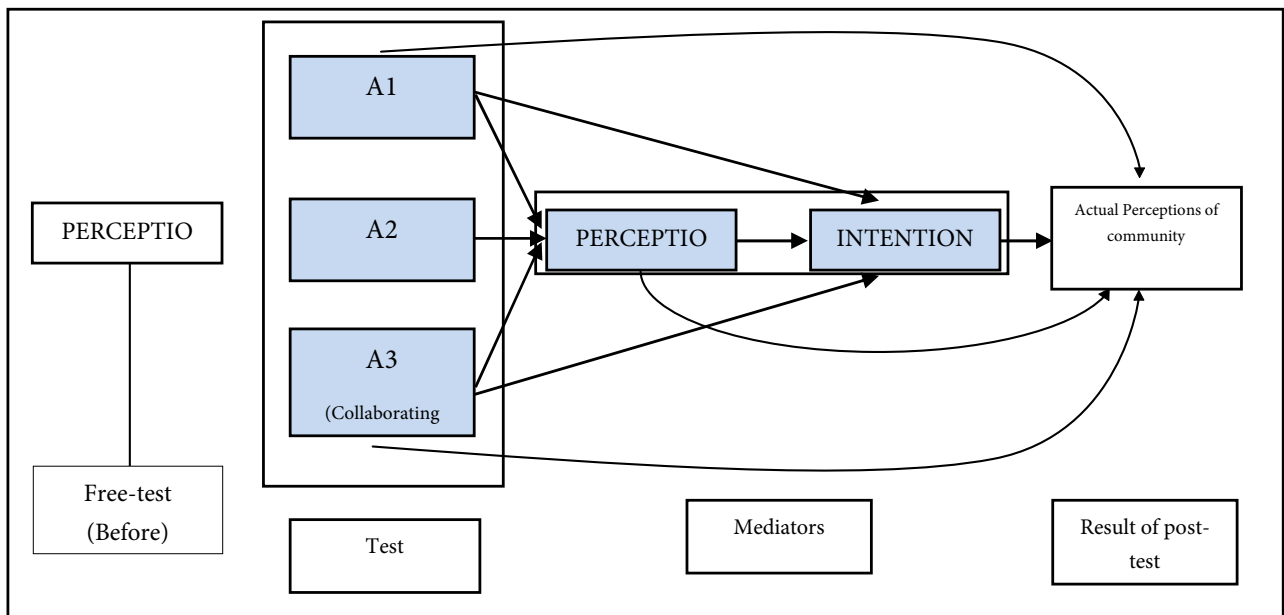Figure 1 . The Map of Research Location.

Figure 2. Research framework used, before and after community perception of the *Orang Kayo Hitam* GFP before and after being given treatment (A).

the *Orang Kayo Hitam* GFP, where training was given to the community members from the nearest village. The training was attended by 93 community members surrounding the GFP. Respondents were people within the three villages closest to the GFP, which included *Sungai Aur, Jebus*, and *Sungai Bungur* with 528, 256, and 603 households, respectively, making a total population of 1,387 households (Forestry Service, 2020).

The sample size was determined using the Slovin approach (Riduwan, 2009, as expressed in the formula below:

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

Where :

n   = total number of samples
N   = Number of population
d^2   = Level of Precision (set to 10%)

Based on the formula above, the number of samples is obtained as follows:

$$n = \frac{N}{N.d^2+1} = \frac{1.387}{1.387(0,1)^2+1} = \frac{1.387}{14.87} = \textbf{93 respondent}$$

The method of analysis used in this research was the pre-test and post-test factors (Nasir, 2014). The method effectively described changes that occurred in community perceptions after being given training on the preservation of the *Orang Kayo Hitam* GFP. Further data from survey results were cross-tabulated and analyzed using T-test.

Formula: H_o dan H_1

H_0 : $\mu_0 = \mu_k$
H_1 : $\mu_1 \neq \mu_k$

Description:

μ_0 = Community perception before getting training
μ_1 = Community perception after getting training
H_0 = There is no difference in perception before and after getting training
H_1 = There are differences in perceptions of the community before and after getting training
   a. Set a critical point (α) or the level of trust found in table "t"

b. Determine the critical area or test area with db = n – 1
c. Determine the t count using the formula.

$$T = \frac{[\overline{\mathcal{X}_1} - \overline{\mathcal{X}_2}]}{\sqrt{\frac{(n_1-1)Sd_1^2 + (n_2-1)Sd_2^2}{(n_1+n_2)-2}\left[\frac{1}{n_1} + \frac{1}{n_2}\right]}}$$

Information:

$\overline{\mathcal{X}_1}$ = The average community perception of GFP *Orang Kayo Hitam*
preservation treatment before training

$\overline{\mathcal{X}_2}$ = The average community perception of GFP *Orang Kayo Hitam*
Preservation after training

Sd_1^2 = Variant of perception before training
Sd_2^2 = Variant f perception after
n_1 = Number of the community before training
n_2 = Number of the community after training

Perform a significance test by comparing the amount of "t" count with the "t" table with the following criteria
a. if t count > t tabel, then community perceptions before and after training are different
b. if t count ≤ t tabel, then community perceptions before and after training are no different (Sugiono, 2014).

3.   Result and Discussion
Orang Kayo Hitam GFP's Concerns for Biodiversity in Peatlands

The *Orang Kayo Hitam* GFP was designated as a forest area of 18,140.32 hectares in line with the Minister of Environment and Forestry Decree 1973/menlhk-pktl/kuh/pla.2/4/2017. This area played a critical in preserving the diversity of peatland forests.

The land cover area in the *Orang Kayo Hitam* GFP, primary peat swamp forest was only 11.6%, located on the border of Berbak National Park on the east side, while the remaining 88.4% consisted of secondary plants, such as grasses and ferns. The land was being deforested due to fires and community occupations. The figures below showed a picture of the condition of the *Orang Kayo Hitam* GFP when the research was carried out in 2021.

Figure 3. *Orang Kayo Hitam* GFP after Forest Fire 2015-2019 (Source: Rosyani, 2021).

The satellite image of May 1998 (Giesen, 2004) showed early indications of local people from *Sungai Kumpeh* villages moving north of the GFP to engage in agriculture and establish tree plantations. New forest clearing in the areas affected extended from *Sungai Aur* Village to the north of the GFP area up to the top of the *Air Hitam Dalam* River. The small fire plots began along the "*Air Hitam Dalam*" River in the middle of the GFP and spread to the GFP area.

Problems faced in the restoration of regional ecosystems included the condition of the area that was not fully supported and agreed upon by the parties. This caused an incomplete boundary delineation process and the need for land due to the increasing population. Generally, agriculture and plantations were a challenge for the *Orang Kayo Hitam* GFP to restore ecosystems.

The main occupations of the people around the *Orang Kayo Hitam* GFP in *Sungai Aur, Jebus,* and *Sungai Bungur* Villages, included farming, ranching, fishing, laboring, trading, crafting, and wage labor. The surrounding community had a low standard of living with an average daily income of less than $1.25 (Bappenas, 2020). Therefore, after the forest fires in 2015 and 2019, the community occupied an area of 902 hectares due to their ignorance of the *Orang Kayo Hitam* GFP regulations and the benefits. The pressure of poverty also forced people to engage in these occupations.

According to the statement, the factors that influenced the occurrence of forest and land fires in Riau Province were classified as 1) environmental biophysical, 2) socioeconomic, and 3) spatial policy factors. Previous research in the tropics had revealed a similar grouping of these driving factors (Barber and Schweithelm, 2000, Geist and Lambin, 2002; Chowdhury, 2006; Miettinen and Liew, 2010).

Perceptions Before and After Receiving Knowledge (Reading Book) and Watching a Video About Orang Kayo Hitam GFP.

Table 1 showed the results of the pre-test and post-test conducted to assess the perception of the *Orang Kayo Hitam* GFP. The pre-test revealed that the knowledge of the public and their perception was low. However, after a month of post-test, there was a very significant change in perception.

There has been a shift in the community surrounding the *Orang Kayo Hitam* GFP due to their understanding of the significance of the GFP as a Pearland conservation site. Additionally, the community became aware of the types of protected fauna and flora found at the conservation site and understood the importance of protecting the plant species. The community also recognized that protecting the *Orang Kayo Hitam* GFP was critical to the long-term viability and the community surrounding the peat ecosystem. Table 1 showed the difference in the public perception of the GFP *Orang Kayo Hitam* before and after being given books and videos. The results indicated a strong perception of forming a partnership in the GFP partnership zone. The differences in public perception before and after treatment were shown in Table 1.

The deforestation that occurred in the *Orang Kayo Hitam* GFP in 2015 and 2019 was caused by forest fires due to natural factors and human negligence. Land Management Without Burning is a concept of sustainable land management, where the land clearing and post-harvest stages are carried out without burning (Widarti, *et al*, 2022). However, this concept should not be applied to the *Orang Kayo Hitam* GFP location, because the occupied land is in a conservation location. The second cause was illegal logging, carried out by people outside the village who entered through the river channel. Lastly, the

Table 1. Differences in public perception before and after treatment

Differences in public perception before and after treatment	Value Sig.	Value-T	Correlation
Reading book	0.00	15.22	0,05
Watching Videos	0.00	11.47	0,15
Collaboration on counselling	0.00	11.49	0,77

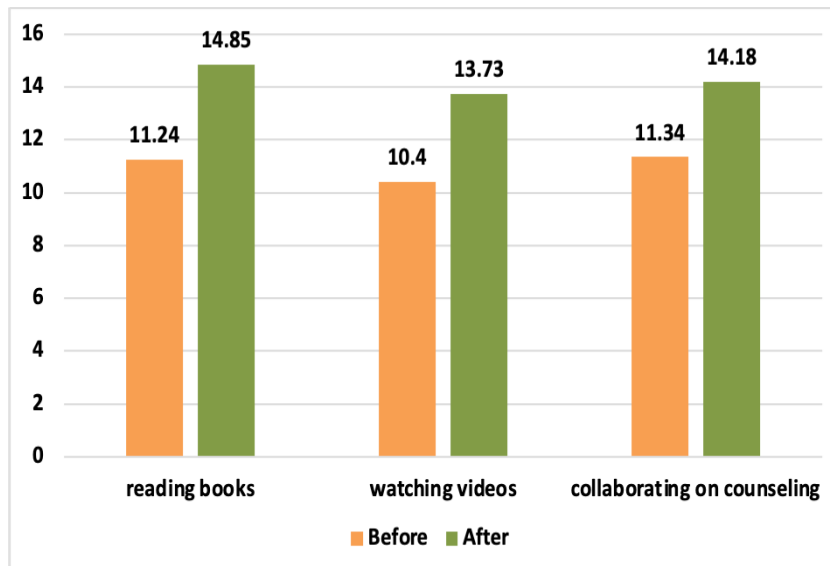Source : Result of Primary data processing, 2022

Figure 4. Changing local community perceptions before and after treatment (T-Test)

community has occupied the land, using it to plant rubber and oil palm trees (Anonymous, 2019). The analysis output showed that the average acquisition value of public knowledge on the *Orang Kayo Hitam* GFP before being given a book and watching a video was 11.24, while the post-test had a value of 14.85.

The results of this research were related to the theories of Blaus (1998) and Harper (1989). When the community had good knowledge and understanding of the *Orang Kayo Hitam* conservation function and additional income, the GFP can be maintained and sustainable. According to Harper (1989), social change was inevitable and significantly occurred in social structure based on the cycle of time travel. Blaus (1998) explained that there were two types of structural change parameters, namely nominal and gradual. The nominal parameters distinguished members of the population into discrete categories, such as gender, ethnicity, and religion. Meanwhile, the gradual parameters distinguished members by a certain development level, such as income, age, wealth, power, socioeconomic status, and prestige. Heterogeneity or diversity was defined as a social differentiation based on nominal parameters. Therefore, human civilization will also always grow and develop dynamically in line with the changes that occurred in the social system (community). As a creature that constantly searched for perfection, humans always strived and struggled to fulfill the necessity of life to exist and survive in the middle of togetherness in society. This condition motivated humans to optimally use their minds. In a previous report, it was discovered that treatment of knowledge, videos, and giving special land partnerships, farmer households were found to change perceptions of farmers (Romero, *et, al* 2019. Teuscher, *et al*, 2016).

The perceptions theory has been linked to this research because of its importance in the psychological aspect of humans in responding to the presence of various aspects and symptoms in their environment (Sarlito, 2010). Parsons also proposed an evolutionary theory that explained the movement of primitive societies to modern ones through four major structural change processes, namely differentiation, adaptation upgrading, inclusion, and generalization of values (Parsons, 1985). The structural differentiation and developmental processes associated with influencing evolutionary processes such as the emergence of social stratification systems, bureaucratic organizations, the money system, impersonal market networks, and the patterns of democratic associations were called evolutionary universal, which played a significant role in enhancing the capacity of people in their adaptation.

The pattern of community evolution, according to Parsons, historically had passed through primitive, intermediate, and modern stages. Parsons rejected the old notion that society will experience change and development in a uniform shape. However, the theory stated that the history of human development showed an evolutionary change, leading to an increase in adaptive capacity.

The social groups that existed in the society were not static or fixed, but always evolved in line with the changes required by the group. This was revealed by Auguste Comte (Sztompka, 2007), a sociologist, who stated that the social life of society will run dynamically. The change was necessary because the social group was no longer compatible with the situation and conditions that existed.

Human beings are dynamic creatures who are not always satisfied or sufficient with the present circumstances. Through interactions with other humans and the natural surroundings, humans begin to realize and discover opportunities for personal growth and development. Naturally, this is tailored to the development of mindset and capabilities.
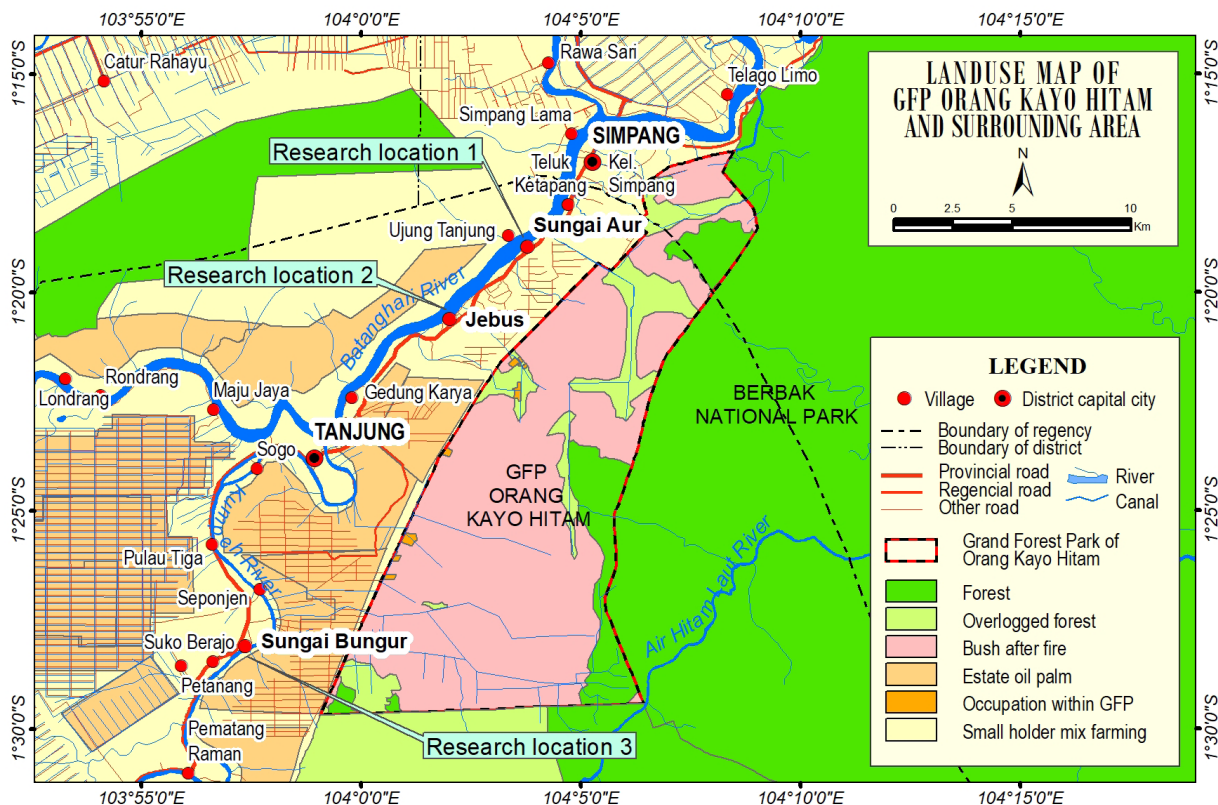

Figure 5 . *The Landuse map of GFP Orang Kayo Hitan and Surrounding Area*

Promoting Spatial Partnership and Community Perception for the Preservation

According to research findings, after reading a book about the functions of *Orang Kayo Hitam* GFP and watching the GFP video, the community and the GFP reached an agreement to manage part of the space in the GFP to be used by the community for farming. Planting crops first, then forestry plant. Simultaneously, a pledge to safeguard and maintain the GFP Orang Kayo Hitam. Earlier of studies conducted in Vietnam, the promoting better farming practise can contribute to achieving higher yields while at the same time ensuring environmental protection (Nyuyen, *et, al* 2019,);(Gunawan, *et, al*, 2022); IFCC (2021). Figure 5 indicates that the space at the west of the Orang Kayo Hitam GFP is an ideal location for community agricultural development.

Change is a social phenomenon experienced by every society and tends to progress and develop, along with the advancement of mindset and level of ability. Barry, (2007), and Culture is human creative product associated to perceptional and behavioral perception. Inheritance of culture across society involves continuous process of socialization and communication that is crucial in character building process (Waluya, *et, al* 2023); Kunz, *et, al* (2017). The theory related with the results of this research and the statement of the theory were used as parameters for the protection of the *Orang Kayo Hitam* GFP from the threat of occupation and forest fires. Although there were other opinions that fires on peatlands were not only caused by human negligence, but also by physical conditions, such as the long summer or dry season. (Putra, 2019) and Miettinen (2010) analyzed that the deforestation of peatlands in Southeast Asia had endangered the peatland ecosystems. Therefore, changes in the knowledge of the community around the *Orang Kayo Hitam* GFP and their positive perception to cultivate part of the land with a partnership pattern were needed to protect the deforestation of the conservation area from occupancy and forest fires. This partnership pattern will increase the community income, considering their limited land availability, with an average of 0.5 hectares of land per community. Sugandi (2013) reported a socio-economic influence of the community on participation in conservation, which indicated an additional community income. Sibhatu, *et, al*, (2022), Romero, et, al, (2017), and Prastyo and Kliwon Hidayat, (2016) stated that two partnership patterns between communities surrounding the Pinus forest led to changes in incomes and maintained forest conservation. A previous report also showed that the perceptions and willingness of people to collaborate will change, this made it necessary to motivate the community to protect the *Orang Kayo Hitam* GFP (Jumanto and Darsono. 2020). Forestry for Social Good *LMDH* (Forest Village Community Institution) *Rimba Mas Sejahtera's* forestry partnership scheme also affected forest sustainability. For three years, 2017, 2018, and 2019, there had been a reduction in Illegal logging, forest fires, and the success of Perhutani's staple crops. This demonstrated that by providing space for the surrounding community, there can be an increase in income and preservation of the *Orang Kayo Hitam* GFP peatland. (GIZ, 2021); (Gatiso, 2017).

The state had also improved the procedures for more effective protection and efficient use of agricultural land. This was carried out by enhancing spatial planning and land management practices at local and national levels, resulting in the creation of legally binding land use plans and efficient monitoring systems.

4. Conclusion

This research showed a significant shift in the perceptions of the respondents on the management and partnership of the Orang Kayo Hutan GFP. The results indicated that community partnerships can be carried out successfully by empowering community knowledge through reading books, watching videos, and collaborating on counseling. Furthermore, these results can assist the GFP managers in considering a partnership process for surrounding communities, using the partnership zone in the *Orang Kayo Hitam* GFP for protection and provision of additional income opportunities for local communities.

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