Land conflict resolution strategy in Solok Buntu Resort, Berbak-Sembilang National Park

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Abstract. Land conflicts at Solok Buntu Resort, Berbak-Sembilang National Park (BSNP), have occurred since 1995. Land conflicts occur due to the encroachment of forest areas by the community for fish farming. Farm activities do not only damage their natural vegetation but also increase pressure upon the wildlife in the area. This study aims to find the best solution to resolve community land conflicts at Solok Buntu Resort. The study was conducted in December 2018 using qualitative methods. Field observations combined with a household interview and community discussions were conducted to examine opportunities for harmonizing between the interests of access to farm management with ecosystem sustainability based on the principles of justice, prosperity and sustainability. The results showed that migrants dominated the majority of the occupation from Lampung Province. Easy access, lack of public awareness, and economic needs had become the triggering factors of land occupation at Solok Buntu Resort. Two strategies can be done to resolve the conflict. The first is to move the community from the forest area (resettlement) to their original villages. The second is to establish collaboration between BSNP with the community to restore the conservation area.

1. Introduction

Berbak-Sembilang National Park (BSNP) is a conservation area with an area of 268,793.40 hectares. It is a merger of Berbak National Park and Sembilang National Park, which was carried out in 2016 through the Decree of the Minister of Environment and Forestry Number: P.07/Menhk/Setjen/OTL.01/2016 dated 10 February 2016, concerning the Organization and Work Procedure of the National Park Technical Implementation Unit. The decree stated that the management of Berbak National Park is joined with the management of Sembilang National Park, and it became Berbak-Sembilang National Parks, which is then domiciled in Jambi Province. The merger was done because the two national parks have similar landscape characteristics; hence they are expected to improve their function to become the leading institution in the management of conservation areas on the East Coast of Sumatra Island.

The land-use conflicts in the National Park have been the main challenge faced by almost all National Park that must be resolved [1 - 3]. One of the problems in BSNP is community access at Solok Buntu Resort. Communities occupy Solok Buntu Resort since 1995 when Sembilang National Park was still in the form of Nature Reserve Forest (Hutan Suaka Alam/HSA). Community activities
at Solok Buntu Resort have changed the function of the land to become an area for fish farming. Land occupation in the national park has caused conflict between the community and BSNP. Farm activities do not only damage its natural vegetation but they also increase pressure upon the wildlife in the area. This is not in accordance with the function of national park as a protected area or conservation area. The act No 5/1990 on Conservation of Forest Resources and Ecosystems states that national park is natural conservation area which has natural ecosystem, managed by a zoning system that is used for research purpose, science, education, culture, tourism, and recreation [2].

Conflict resolution in the management of national parks cannot be made just through law enforcement [4]. An alternative approach for conflict resolution (APK) needs to be done. Conflict needs to be managed because, in reality, it can produce constructive and positive outcomes, depending on the way how people control it [5]. [6] explained that conflict resolution is a process to achieve conflict output with management conflict methods based on two dimensions that are cooperation and assertiveness. Conflict resolution addresses the causes of conflict and seeks to establish new and lasting relationships between hostile groups [7].

The purpose of the study is to find the best solution to resolve land conflicts at Solok Buntu Resort. The study was conducted to determine the actual conditions of land conflicts in the area and to find out the opportunities for harmonization of the interests of access to farm management and ecosystem sustainability in order to formulate the best strategy in resolving conflict at Solok Buntu Resort.

2. Methodology

2.1. Research location

Solok Buntu Resort is one of the resorts located in Region II of Berbak-Sembilang National Park (Figure 1.). Solok Buntu Resort is located at between 2° 0' 35.194" – 2° 14' 58.531" South Latitude and 104° 44' 8.182" - 104° 54' 27.395" East Longitude with the total area is 30,069.25 Ha. Solok Buntu Resort can be accessed via Sungasang from Palembang for ± 1.5 hours and continued through the waterway for ± 1 hour. Easy access to Solok Buntu Resort allows the surrounding community to have more opportunities to enter the National Park.

![Figure 1. Research location.](image_url)
In the Zonation of Berbak-Sembilang National Park, Solok Buntu Resort is located in the utilization zone. The primary ecosystem is mangrove covering an area of 6,558.7 hectares or 22.7% of the total area. Solok Buntu Resort has a rich biodiversity, both flora and fauna, that is potential for tourism, research and education activities.

Nine rivers are flowing at Solok Buntu Resort, where each river has a different characteristic. Solok Buntu River, Barong Kecil River, Barong Besar River, and Soak River are affected by tides. To be able to explore the river, we must be attentive to the tide schedules so that it can be passed by speed boat without any obstacles. Whereas Bungin Kanan River, Apung River, Siput River, Diding River, and Jentolo River are rivers that are not affected by tides, so they can be explored at any time.

2.2. Data collection
The study was conducted in December 2018 using qualitative methods with triangulation techniques. Field observations combined with household interviews and community discussions were conducted to examine opportunities for harmonizing between the interests of access to farm management at one side with ecosystem sustainability based on the principles of justice, prosperity, and sustainability on the other side.

Interviews by using questionnaires were conducted for 49 farmers at Solok Buntu Resort. In-depth interviews were conducted involving seven key informants who were considered to know the initial history of land conflict at Solok Buntu Resort. Those key informants were selected based on information obtained from discussions with the managers of Berbak-Sembilang National Park, which were then continued by snowball techniques.

2.3. Data analysis
The data were analyzed descriptively by using social analysis (collected, grouped, combined, and interpreted) [8]. Data grouping and tabulation are done to facilitate understanding of the facts occurring in the field. The phenomena obtained in the field were then validated and deepened through focus group discussions, interviews, and field observations. The relationship between facts is then analyzed through data obtained and associated with the concepts used in the research to understand the phenomena that occur and draw conclusions from it.

Conflict is analyzed as a practical process for reviewing and understanding the reality in many different perspectives [2]. Conflict resolution was analyzed using SWOT analysis to determine the types and causes of conflict and formulate strategies for resolving land conflicts in Solok Buntu Resort.

3. Result and discussion
3.1. Characteristics of farmers at Solok Buntu Resort
Analysis of the characteristics of farmers is done to learn the influence of farmer's characteristics on land management characteristics. Farmer's Characteristics analyzed were age, education, income and farm area (Table 1.).

| Characteristics | Unit     | Percentage |
|-----------------|----------|------------|
| Age             | 15 – 24 years | 4.35 %     |
|                 | 25 – 34 years | 26.09 %    |
|                 | 35 – 44 years | 28.26 %    |
|                 | 45 – 54 years | 21.74 %    |
|                 | > 55 years   | 19.57 %    |
| Average         |          | 40 Year    |
Based on the results of the study, the age of farmers in Solok Buntu Resort ranged from 22 years to 65 years, where approximately 80% of farmers are at productive age (15-55 years old). Productive age is closely related to work productivity. Productive age indicates that farmers are at the maximum condition to utilize all of their resources. The average age of farmers is 40 years, implying that farmers have enough experience in managing their ponds, according to their previous experience in Lampung.

Most farmers have only primary education, i.e., elementary school level. Low education indicates a low level of farmer’s knowledge. Because farmers usually having a low level of education, an increase in their knowledge is only based on experience and learning from other farmers who have succeeded before. Therefore, in implementing a new program, an introduction phase is needed to increase farmers’ knowledge beforehand; hence the purpose of the program can be well adopted by farmers.

The average land management for the fish farm is 4 hectares or two plots for each household, although some farmers manage to land up to 10 hectares. Fish farm that is more than 10 hectares is carried out by farmers having enough capital. Some of the farms managed by these farmers are fish farms that have been abandoned by their previous owners. For this large fish farm that is not affordable by the farmers themselves, the management is given to other people with a profit-sharing system.

A community expenditure approach is used to identify the community’s income. This is due to uncertainty in the community’s income that depends on the harvest of the fish farm. The average income of the community is three million rupiahs, which is obtained from the harvest of fish farms and other on-farm activities such as looking for crabs and shrimp. On-farm activities, such as looking for crabs and shrimp, are done while waiting for the harvest of their farm. In general, the harvest of fish farming can be done around six to nine months, but sometimes longer, it depends on the growth of the fish.

3.2. History of land conflicts by the community

Land conflicts in the Solok Buntu Resort had occurred since 1995 at the time when Sembilang National Park was still in the status of a Nature Reserve Forest. The encroachment was carried out by migrant communities from Lampung due to social conflict between farmers in Tulang Bawang Regency, Lampung and PT. Central Pertiwi Bahari (PT. Bratasena). The social conflict caused the communities to lose their livelihoods and start occupying Solok Buntu Resorts. Solok Buntu Resort is one of the resorts in BSNP where the community can get access easily. Lack of information and understanding about the status of the Solok Buntu Resort, which is a nature reserve forest and less participation of local officials, has induced the community to occupy land in the area.

Land encroachment was done in groups, and the group leader gradually arranges it. Land clearing was done manually by creating a small river for water conditioning and access to the main river. Fish farms were built after the construction of small rivers was completed. Coordinated land clearing
instigates well organized of fish farms at Solok Buntu Resort with an average fish farm is 2 hectares per household (Figure 2).

The coordination of land clearing at Solok Buntu Resort showed that land clearing was done in a structured and organized method. According to public recognition, their arrival at Solok Buntu Resort was led by Mr. Giman under the auspices of the Widhi Waluyo Foundation originating from the Central Lampung Regency. The location of Solok Buntu Resort was determined based on communication between Mr. Giman and local officials.

Initially, land clearing at Solok Buntu Resort in 1995 had converted ± 500 hectares of the land into a fish farm for 400 households. However, in 2000 there were 1,042 households with fish farm conversion area of ± 3,000 hectares (letter from the Governor of South Sumatra to the Regent of Musi Banyuasin Number: 593.6/2006/I dated 02 June 2002).

The reason for most farmers open the land at Solok Buntu Resort was easy to access to enter the area. They got information from previous pioneers having kinship relations, ethnic similarities, and similar background in dealing with conflict at PT. Bratasena. However, from 2000 until now, there has been a very significant decline in the number of farmers. Based on the results of inventory done by the BSNP and Sriwijaya University teams, in 2012, found there were only 101 households with an area of ± 860 hectares of the fish farm. Based on the information from the community, the decline in farms occurred because many farmers experienced capital difficulties. Therefore they decided to leave their fish farm. Also, people start to realize that the area they occupied was state forest that should not be cultivated. Furthermore, various planting programs that had been carried out had the potential to reduce their fish farm products; hence it also influenced the community's decision to leave their farm in Solok Buntu Resort.

3.3. Land conflicts and community livelihoods at Solok Buntu Resort
Aquaculture activities done by the community at Solok Buntu Resort are still ongoing. However, the conversion of land to fish farm area has been reduced, and even the existing fish farm area tends to decline gradually. This is due to the growing awareness of the community that the area they occupy is located in BSNP, thereby rehabilitation programs in the area are needed. Some rehabilitation programs that have been running in order to reduce the degraded area are presented in Table 2.
Table 2. Planting program that has been implemented at Solok Buntu Resort.

| Program                        | Years     | Area (Ha) | Total Area (Ha) |
|--------------------------------|-----------|-----------|-----------------|
| JICA – RECA                    | 2010-2015 | 200       |                 |
| RAMSAR SITE                    | 2011      | 2         | 2               |
| PT. SHP                        | 2012      | 2         | 584             |
| Forest and Land Rehabilitation (RHL) | 2013      | 380       |                 |

Source: BNSP, 2018

The planting program is carried out in areas that have been utilized by the community. The Restoration of Ecosystem in Conservation Area (JICA – RECA) program is carried out in the Green Belt area. The priority area for planting in open areas, which is 500 meters from the shoreline and located at the rehabilitation zone. The Forest and Land Rehabilitation (Rehabilitasi Hutan dan Lahan/RHL) program were carried out to continue the JICA-RECA planting program aimed to rehabilitate all areas that had been utilized by the community. The program is carried out gradually in several areas of Solok Buntu Resort. For 2013, the planting area reached 380 hectares, where 174 hectares was carried out in Solok Buntu Area, 149 hectares in Barong Kecil Area, and 68 hectares in Barong Besar Area.

Figure 3. Map of the rehabilitation program at Solok Buntu Resort.
(Source: BSNP, 2018)

Planting programs have succeeded in reducing land openings by the community. At present, some fish farms which were previously unproductive have become productive again as a result of the success of mangrove rehabilitation. However, its scale is still limited due to time and cost constraint.

Also, other constraints related to the behavior of some farmers who assumed that planting mangroves in the pond area will reduce their fish product. Mangroves plants will reduce the sunlight that can affect the growth of algae needed for milkfish growth. Therefore they cut the mangroves
when the plants begin to grow bigger (Figure 4.b). However, the majority of farmers can accept planting activities on their farms even though it has the potential to reduce fishery yields as they hope to get permission to continue doing fish farming activities at Solok Buntu Resort.

![Figure 4. Planting on the farm fish area (a), plants cut by the farmer (b).](image)

Milkfish farming is the main livelihood of the community at the Solok Buntu Resort. The choice of milkfish cultivation is mostly due to land suitability. Besides, milkfish cultivation is relatively easy and could provide considerable advantages for farmers. In the past, milkfish cultivation was only carried out by a few farmers, while the rest of the farmers preferred to cultivate tiger prawns.

### 3.4. Conflict resolution strategy that can be implemented in Solok Buntu area

Conflicts happen when there is a relationship between two or more parties (individual or group) who feel that they have not aligned goals [7]. The complexity of natural resource conflicts is often due to the original issues hidden amongst the differing perceptions of the situation [9]. Land conflicts generally occur between the government and the community; therefore, resolving land conflicts is also becomes the responsibility of the government. In order to resolve and to provide legal protection for community rights in forest areas, the government issued a policy to settle land conflicts through the Republic of Indonesia's Presidential Regulation No. 88 of 2017 concerning Solution of Land Conflicts in forest areas. Resolving land conflicts in a conservation area is one of the aspects regulated in the policy. For area occupied and utilized after it is designated as forest area with conservation functions, it has to be resolved through resettlement [10].

The Government, through the Minister of Environment and Forestry Regulation Number, P.43 / MenLHK /Setjen /Kum.1/6/2017, about Community Empowerment in Nature Reserve and Nature Conservation Areas. It is strengthened by the Regulation of the Director-General of Conservation of Natural Resources and Ecosystems Number P .6/KSDAE/ SET/kum.1/6/2018, which also tried to provide solutions to resolve land conflicts by establishing conservation partnership scheme. One of the requirements needed to establish a conservation partnership between Forestry Government with the community is they should be the local community, proven by resident identification card, domicile letter, or other letters from the Local Village Head.

The situation showed that fish farmers in Solok Buntu Resort came from South Sumatra, Lampung and Java (the majority of fish farmers come from Lampung). Therefore the conservation partnership cannot be established because the communities in the forest area in Solok Buntu Resort are not local people.
Most farmers come to Solok Buntu Resort after getting information from previous farmers about the possibility of occupying the forest area. Lack of knowledge in environmental protection, driven by economic needs and land conditions, which at that time had not been intensively managed by national park managers, became the main factors to occupy this area. Having a chance for farming is the main reason for the people to occupy Solok Buntu Resort. This is similar to the case of conflict that occurred in the Costa Teatina National Park. Two main factors are contributing to the conflicts: 1) a lack of consensus between the need for environmental protection and a sustainable economy, and 2) the absence of an overwhelming, pressing need for the park that would override potential conflict and opposition [11].

The results of the study also show that most farmers have their own homes in their origin areas. This shows that the resettlement program can be done by returning farmers to their original place. However, the sustainability of the livelihoods of people in their original place must be considered as well. The community is willing to leave the forest area as they realize that it is located in a state forest. However, they hope that the Government can ensure the sustainability of their livelihoods by providing job alternatives or place them on areas where they can develop fish farming. This situation has caused resettlement to become challenging to implement.

Conflicts in the management of natural resources need to be resolved to avoid it getting worse. It should be a win-win solution. Hence, those who have a weak position in a conflict do not need to be marginalized but should be given space for dialogue [12]. The first step taken to resolve the conflict is to know the types and causes of a conflict that was carried out by SWOT (Strengths, Weakness, Opportunities, Threats) analysis and then formulate a strategy for resolving land conflicts at Solok Buntu Resort. Strategy formulation is done by identifying the strengths and weaknesses, utilizing potential opportunities and avoiding threats. Based on SWOT analysis, strengths, weaknesses, opportunities, and threats in land conflicts in Solok Buntu are as follow:
**Table 3. SWOT analysis in resolving land conflicts in Solok Buntu Resort.**

| Internal Factors | Strengths | Weakness |
|------------------|-----------|----------|
| Farmers realize that the area they occupy is located in a state forest. | 1. Farmers believe that fish farming will not damage the forest area. | 1. Farmers realize that the national park is a conservation area that should not be used for fish farming. |
| Farmers realize that the national park is a conservation area that should not be used for fish farming. | 2. Some community believes that they had occupied the area long before it was designated as a national park, so they assumed they had the right to the land. |

| External Factors | Opportunities | Threats |
|------------------|---------------|--------|
| Collaboartive Cooperation between Farmers and BSNP | Special zone development | Resettlement |
| Developing Solok Buntu Resorts as one of the tourist destinations | | |

**Collaboration** is a process where two or more stakeholders with different interests in the same problem explore and work through differences to seek solutions for mutual benefit [13] jointly. Collaborative management is also known as one of the non-adversarial approaches for conflict resolution. In practice, collaboration is widely used to resolve disputes between stakeholders in multi-stakeholder conflicts [14]. The collaboration of multiple actors is a taken-for-granted aspect in many discussions about forest governance, while scant attention is being paid to how the more complex arrangements needed to make collaboration work come into being and develop a life of their own [15].
Collaboration between National Park and the Community is one of the best ways to resolve the conflict. Collaboration is carried out by involving various stakeholders who are also supported by the available policies. As the results of research from [16] that demonstrates the several contextual factors, it might be critical to successful collaboration. These include enabling institutions (e.g., alternative policy arenas) and favorable discourses that shape actors’ ideas about available policy options. In this study, such institutions and discourses were present in the case concerning the management of protected areas, but not in the one involving commercial forestry.

Some collaborations that have been carried out by the National Park with the community is a collaboration of reforestation activities in the Bantimurung Bulusaraung National Park [17]. Collaboration between farmers and BSNP is established to implement restoration with specific schemes; hence farmers do not directly lose their land, but it is done gradually. One restoration scheme that can be done is a tree adoption scheme. Tree adoption is one of the planting model designs aims to rehabilitate the land in former community farm areas and to provide an alternative income for people who still live in BSNP. However, it needs to be emphasized that the ultimate goal of the cooperation is to restore the area back to its natural habitat. By implementing the scheme gradually, people have the time to find other potential sources of income so that they are ready to prepare their capital before leaving the BSNP area.

4. Conclusion
The land encroachment by the community at the Solok Buntu Resort had occurred since 1995 when the status of Sembilang National Park was still Nature Reserve Forest (HSA). Migrants from Lampung Province dominate the majority of occupations in the area. Easy access, lack of public awareness, and economic needs had become the triggering factors for land encroachment at Solok Buntu Resort. Two strategies can be done to resolve the conflict. First is to relocate the community from the forest area (resettlement) to their original villages under the Republic of Indonesia’s Presidential Regulation No. 88 of 2017 concerning the Settlement of Land Conflicts in forest areas. Second, is to establish collaboration between BSNP with the community to restore the conservation area.

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