



Community Resilience Related to Community Resources Access to Peatland in Political Ecological Perspectives: A Case Study of Purun (*Eleocharis dulcis*) Craftmen in Ogan Komering Ilir, South Sumatera, Indonesia

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ABSTRACT

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Community resilience is widely used in managing natural resources and the environment as a means of system capacity to cope with stress. However, our findings show that resilience is not easily applied to common-pool resources (CPRs) such as peatlands, which are open access and full of importance. This is experienced by the community of purun craftsmen (*Eleocharis dulcis*) in Ogan Komering, Ilir Regency, South Sumatra, Indonesia. This paper was conducted to determine the community's social resilience in overcoming pressures originating from environmental, socio-economic, and political changes. We used a qualitative research method with a descriptive approach and obtained data through observation, in-depth interviews, and documentation. Our findings suggest that community resilience on peatlands is influenced by mechanisms to gain and maintain access to the resource. This mechanism is relatively limited, so it can be said that it is less robust, mainly if three threat scenarios co-occur, such as massive activity by companies, weak rules for managing, utilizing, and protecting resources, and extreme weather conditions. In conclusion, from these findings, we show that "access politics" and policy implications also play an essential role in increasing the resilience of socio-ecological systems in important peatland areas.

1. INTRODUCTION

Indonesia's peatlands have undergone many rapid changes in the last few decades. These changes are caused by the fast pace of development that aims to improve the community's standard of living so that it cannot be separated from various activities of utilizing peatland resources. Basically, the higher the rate of development, the higher the level of resource utilization and changes that occur in the environment. However, the utilization of these resources can put pressure on the environment so that it threatens the resilience (resilience) of the social-ecological system contained in it [1].

Based on Presidential Regulation of the Republic of Indonesia Number 1 of 2016, the Peatland Restoration Agency (*Badan Restorasi Gambut*) was formed to facilitate and coordinate peatland restoration in Indonesia, particularly in priority provinces such as South Sumatra, Jambi, South Kalimantan, West Kalimantan, Central Kalimantan, Riau, and Papuans. The approaches used by BRG to restore peatlands are rewetting, revegetation, and revitalization of livelihoods.

Livelihood revitalization is an approach that focuses on improving the welfare of people living in or around peat ecosystems through sustainable peat management. This approach ensures restoration success in the long term, considering that local communities will certainly maintain and

protect the ecosystems they consider valuable for life. Livelihood revitalization also aims to enable local communities to use peatlands as a source of income and livelihood. In many peatland villages in Indonesia, one of the sources of livelihood is the use of long-standing local peat commodities. One of them is the Purun plant (*Eleocharis dulcis*) in South Sumatra.

Purun is a plant that has economic value and is often found in peat swampland [2]. Purun grows in water depths of up to 0.8 meters and reproduces vegetatively through rhizomes. The community uses the stem of the purun as a raw material for weaving [3].

Purun has been used as a raw material for woven crafts by communities around peatlands in Ogan Komering Ilir (OKI) Regency, South Sumatra, Indonesia, since the 1970s [4]. This is evidenced by the Pedamaran District, known as the "Town of Mats." The culture of purun weaving has been rooted in and taught from generation to generation, especially to girls. The craftsmen use purun as additional income and even regular income to meet household needs, and in case they are no longer able to access other limited livelihood options [5].

However, what is happening now is that people complain that the raw material for purun is increasingly difficult to obtain. This was caused by several factors, namely the decreasing area of Lebak Purun land due to conversion to oil

palm concessions, land fires, and floods with high intensity that occurred in 2004 and 2018 [6]. Therefore, the development of the use of purun as a community livelihood on peatlands requires a unique approach. Apart from increasing access to markets, other factors such as good use of resources, community resilience, and inheritance to the next generation are also needed [7].

2. LITERATURE REVIEW

Resilience is the ability of the community's socio-ecological system to withstand all forms of threats or information disturbance [8]. In the context of social systems, these abilities can come from a particular community in their efforts to overcome various external pressures resulting from environmental, social, and political changes [9].

Indications of resilience can be seen from the emergence of social, physical, and economic dysfunctions, which indirectly make resilience high [10]. This can be seen from the various damages to peatlands, such as damage to the hydrological system, land degradation due to fires, climate change issues, poverty problems, illegal logging, and carbon trading.

Yet, the effort to establish or maintain the resilience of a system is a complex matter because future changes themselves are very difficult to predict and even tend to be surprising, so they have the potential to continue to disrupt system stability [11]. Especially if it is related to the resilience of social-ecological systems in the context of common-pool resources (CPRs) such as peatlands, which have a high level of resource utilization, this becomes even more complicated because CPRs are shared resources that are limited and tend to be used wisely free and uncontrolled by individuals with their respective interests so that they have the potential to be degraded [12].

Gareth Hardin (1968) has long described the tendency to manage CPRs in his paper entitled "Tragedy of The Commons." Hardin (1968) [13] mentions that if valuable CPRs are allowed to be open access, overexploitation can occur and be degraded. To avoid this, he then offered the idea of imposing full private property rights or state property rights on CPRs to aim that the utilization rights of "the common" can be allocated and managed effectively [14].

Nevertheless, this idea does not always work well because many of the efforts to manage CPRs tend to be colored by conflicts between stakeholders [15] which eventually triggers the "Tragedy of Enclosure", that is caused by the frequent practice of appropriation of control over resources such as from traditional communities by the state with commercialization or conservation motives regardless of their rights and access. After that, the community became victims and marginalized, either because of the loss of access to resources or the emergence of a situation where they had to continue to survive in a degraded environment. The community cannot do much because of its weak power and position against the "dominant actor" of the state or market [16].

Communities around peatlands in Ogan Komering Ilir Regency, South Sumatra, are one of many examples of cases in Indonesia that illustrate how the pace of development has so quickly eroded the resilience of social-ecological systems. For more than three decades, Indonesia's wetlands, such as Sumatra and Kalimantan, have been logged, drained, and

converted into plantations [17] by corporations and small-scale plantations [18] or left abandoned in a degraded condition [17]. As a result of large-scale peatland management for oil palm plantations, mining, and industrial forest plantations, local communities such as purun craftsmen who depend on peatlands for their livelihoods have been disturbed. Not infrequently, the interests of local communities are considered not in line with the interests of large-scale plantation and mining business entities.

The "Tragedy of Enclosure" phenomenon can indirectly affect social resilience and, to a certain extent, trigger the social vulnerability. This is because social resilience can be seen from how a community group obtains, controls, and maintains access to resources critical for their survival [19]. Without guaranteed access to resources, social resilience will weaken and eventually make them vulnerable and even marginal. Social resilience can be established and maintained only by securing access to resources [20]. Yet, this is certainly not easy to realize, considering that the problem of access to resources is strongly influenced by complex changes and not only from the local social-ecological system but also by socio-political arrangements on a wider scale.

3. MATERIALS AND METHOD

This study uses a political ecology perspective to explore issues related to access and management of peatland resources (in this case, purun plants) related to resilience theory. The basis for determining the research location refers to the peatland area in Ogan Komering Ilir Regency, South Sumatra Province, where the site is a physiographical type of peat swamp that is not affected by both river tides and sea tides. According to Wildayana et al. [4], The research peatlands are located in the Pedamaran River and Komering River Hydrological Units (KHG), where the widest part is in Pedamaran District, East Pedamaran District, and Pangkalan Lampam District (Figure 1).

The location division is Pedamaran Subdistrict 40 people, Pangkalan Lampam Subdistrict 30 people, and Pedamaran Timur Subdistrict 30 people. We took groups of purun craftsmen in each of these sub-districts by first considering the representation of the group of craftsmen. In addition, the three regions also have communities where most of the residents are active groups of purun craftsmen.

We chose a qualitative descriptive approach to maximize the acquisition of data and information even over a long time. By interviewing the informants directly, an overview of community resilience is obtained by first knowing the starting point of the cultural-ecological crisis, threats to sustainability, and policy implications for supporting the community's resilience of purun craftsmen.

Data was collected using several techniques, including observation, focus group discussions (FGD), in-depth interviews, and related document searches. Researchers collect data in photo files, videos, and sound recordings related to the required data.

The unit of analysis in this study is the community of purun craftsmen, but the information obtained comes from individual community members. Therefore, we conducted structured interviews with 100 informants representing groups of purun craftsmen in each sub-district.

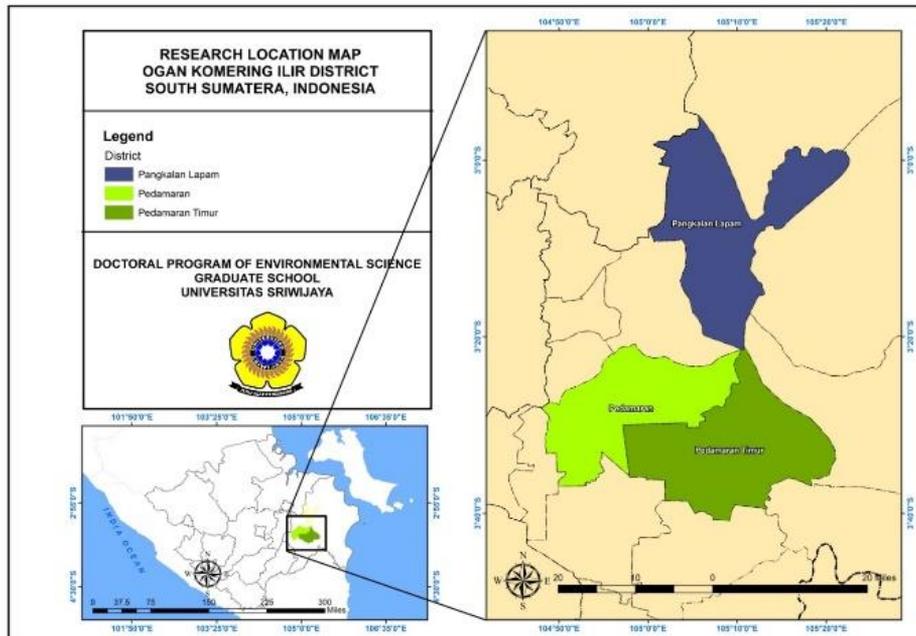


Figure 1. The study area in South Sumatera, Indonesia

Here, we mostly hear and observe the conversations of the informants and observe the activities of the craftsmen for some time in carrying out their daily routines. The implementation of a short FGD was to divide the group into three groups, consisting of 10 craftsmen. Then we offer a theme to discuss, then each group will respond to each other. Then we recorded and re-evaluated some of the questions so that the informants agreed on the conclusions.

We took several key informants from several craftsmen for data collection through interviews to strengthen the data. We did audio recordings using audio and then combined them into a single document at the end of the interview. In addition, we also appointed several expert enumerators to help interview informants who were equipped with adequate knowledge.

Meanwhile, each informant has several core questions and is accompanied by several follow-up questions. The main question relates to the resilience of the craftsman community in overcoming pressures from environmental, socio-economic, and political changes. All informants have also agreed to be resource persons in this study. We also have official research permits registered as research procedures from local government agencies.

4. RESULTS AND DISCUSSION

4.1 The starting point of the ecological and cultural crisis

At the beginning of the forest exploitation regime, peatland was not attractive for timber business entities or plantations. Business entities seem to be more interested in exploring mineral lands. Because, in economic calculations, mineral land is more efficient and profitable. However, mineral areas are decreasing over time, and some of the economic potentials of peatlands are starting to emerge. Finally, various business entities are growing rapidly and massively. The operation of the activities carried out by these different actors impacts the disruption of the peat ecosystem.

Since the 1980s, peatlands have been divided by large

concessions. Peatlands are considered to be an alternative commodity for capital accumulation [21]. The operation of business entities in line with various non-legal activities carried out by various actors has greatly impacted the disruption of the metabolism of the peat ecosystem. The global market is more interested in products based on natural resources, such as industrial forest plantations, palm oil, and mining, which significantly impact the sustainability of the peat ecosystem. However, we can conclude that the emergence of the ecological crisis in the peat ecosystem is no longer an assumption and a predictive calculation but an empirical fact in several places, including at the research site.

The use of purun as a people's livelihood cannot be separated from the cultural and traditional values contained in the purun weaving activities. Culture is also one of the reasons why they carry on these activities from generation to generation. As explained by one respondent, every girl should be taught to weave purun because weaving is a hereditary tradition.

We interviewed Erni (Figure 2), a woman who is a purun craftsman who has been doing purun weaving since she was a child. Erni has been weaving since she was ten years old and said that her grandmother was the first to teach her to weave purun. At first, Erni only learned to weave by imitating by observing her grandmother and then slowly trying and getting used to doing it easily. She is also a skilled mother and can pass down the practical and technical rules of purun weaving that her grandmother has taught.



Figure 2. Erni is weaving purun to make a mat

Here we highlight how expertise shapes certain types of co-production and the interconnectedness of society and nature using literature from rural sociology [22], environmental anthropology [23], and technological philosophy [24, 25] can be one of the sustainability factors of the use of purun as a livelihood in our research location.

The craftsmen use the income from weaving purun mats as additional income in their household, such as buying food, providing pocket money for children, or fulfilling their own needs. The income from purun weaving is also a precaution, especially when they can no longer work on the plantation or when other livelihood options become limited.

However, based on the results of interviews with informants, it is shown that the raw material for purun nowadays is increasingly difficult to obtain. This is due to several factors, namely the reduced area of lebak land due to conversion to oil palm concessions. In addition, the flood disaster is also an obstacle. These disasters prevented the purun takers from going to the peat swamps to harvest purun because it made the rice fields in the village unable to be planted with rice and other crops.

Based on these findings, we have the same opinion as the environmental sociologist Ulrich Beck [26] in his book "Risk Society Towards New Modernity", he asserts that there are three real impacts of the presence of extractive corporations for communities living on peatlands, namely: psychological, physical and social impacts (see Table 1).

The psychological impact occurs because of the fear of society, especially women who struggle with purun to support their families. Erni and other women in her community face a problematic situation because the peat ecosystem that supports the purun habitat is increasingly being threatened by various extractive businesses. Its presence was also followed by the narrowing of the living space of the purun and forcing some craftsmen to become part of the low-paid means of production.

This is in line with the emergence of social impacts where at this time, they increasingly need extra energy to collect purun because of its location, which is increasingly far from where they live. Gradually this will lead to potential conflicts such as communities and business entities such as oil palm companies and industrial forest plantations.

The physical impact of the existence of extractive companies is the drying up of rivers in the dry season, which is usually used as a means of public transportation to get to purun on peatlands. In addition, water drainage in peatlands also causes the quality of purun plants to decline.

"If the peat is dry, the purun is no longer fresh. Purun will be hard and difficult to shape because its development is very dependent on water" (R-2021).

Table 1. Impact of the presence of extractive corporations for communities in peatlands

Impacts	General Characteristics
Psychological	fear and anxiety of losing their livelihoods for various communities, including the purun craftsmen who fulfill their household needs.
Physical	Many droughts and floods have destroyed peatland resources, including purun.
Social	There are various land conflicts on peatlands between communities, companies, and local governments.

Data Source: Primer Documentation, 2022

Therefore, if there is no policy change to save the peat

ecosystem, purun and its habitat will be increasingly scarce. Communities are predicted to lose access to justice for natural resources. The community will also be threatened with losing social relations and the tradition of weaving purun.

4.2 Sustainability threat scenario

The ecological and cultural crises caused by the development efforts that have been described have presented a real threat. This situation also creates a deep sense of concern for the sustainability of the availability of natural resources. Here we make a sustainable threat scenario analysis that aims to explore the possible threats to the craft of purun in the future. Therefore, we try to propose and identify three pressure scenarios that can trigger threats to the sustainability of the pruning business for communities around peatlands.

The general assumptions are described in Table 2. The first scenario assumes that company massive business entities and non-legal activities impact the disruption and loss of purun areas on peatlands. This indication can be seen from the presence of extractive corporations around peatlands and affecting the lives of the surrounding communities, especially the purun craftsman community. We found this based on interviews with purun craftsmen around peatlands.

"We were once forbidden to take purun where we used to take it around the palm oil company area, they said it was their territory, we were not allowed to take purun there, then we were given Rp 20,000 in money and told to go home," (L-2021).

In addition, the weavers and purun takers are also worried about the purun resources, which are increasingly being threatened due to the various activities of extractive business entities.

"Purun has become part of our tradition, a place for us to find food and livelihood; we cannot live without purun, please don't disturb our purun" (Y-2021).

This scenario can be overcome by referring to the Regulation of the Minister of Environment and Forestry of Indonesia No. 34 of 2017 concerning the recognition and protection of local wisdom in managing natural resources and the environment. The regulation discusses traditional knowledge, which is part of local wisdom that exists in a community in the form of skills, innovations, and practices that can be given access to develop from generation to generation. Thus, it is hoped that the enforcement of these regulations can reduce or stop the entities of oil palm companies on peatlands so that the purun craftsmen are not worried and feel threatened by the loss of the purun area.

Table 2. Scenarios threatening business sustainability

Scenarios
Scenario 1: Massive business entities and non-legal activities by companies that impact the disturbance and loss of purun areas on peatlands.
Scenario 2: Weak rules for the local government's management, use, and protection of purun on peatlands.
Scenario 3: The influence of extreme weather conditions causes water to dry in peatlands and reduces the quality of purun plants.

Data Source: Primer Documentation, 2022

The second scenario is indirectly related to the first scenario. Here we assume there is a threat from existing regulations. Still, they cannot run as they should because the local government has weak regulations for the management, utilization, and protection of purun on peatlands. The rush of

investment taps opened by the local government will have a huge impact on the peatland area that is the habitat of the purun.

Based on the secondary data findings, we received information that in 2017 and 2018, people who worked as purun takers and weavers at the research site had held demonstrations at the OKI regent's office to demand a regional regulation (*Perda*). In addition, they also requested that the purun peatlands, which are included in the company's concessions, be immediately removed because, according to them, the purun peat ecosystem will continue to be eroded so that later it will have an impact on the livelihoods of the purun takers and craftsmen.

"We are aware that the threat of damage to the peat ecosystem is getting narrower in the purun area. Unfortunately, until now the local government has not provided a policy in the form of a binding regulation," (S-2021).

The third scenario assumes that the influence of extreme weather conditions causes the water in the peat to dry out and reduces the quality of the purun plants. As a result, purun tends to be brittle, hard, and difficult to weave. When a forest fire occurs, purun will also burn. This indication is felt by craftsmen who say that purun is very dependent on the condition of the peatland.

"Since there has been a lot of oil palm expansion, the condition of the peatlands has become drier and more easily burned. As a result, the purun also burns, so it becomes dry and not fresh, the purun will also be hard when pounded and difficult to weave." (M-2021).

4.3 Policy implications

The status of purun craftsmen classified as small communities makes them free to take purun resources on peatlands. This means that the right to access purun on peatland (right-based access) itself is de jure guaranteed, although the freedom itself must still be by applicable regulations. From time to time, they use a series of mechanisms to maintain and control access, including technology, capital, markets, and knowledge passed down from generation to generation. For them, these mechanisms can be said to be sufficient if they only make a small profit from extracting purun on peatlands (see Table 3).

However, if these three scenarios occur simultaneously and then reduce the availability of purun resources on the one hand and the income of the craftsmen community on the other, it seems that it will be a very difficult thing for them. This is because it is known that their access mechanisms are limited, as can be briefly seen in Table 2, thus providing little resilience to pressures due to a decrease in purun resources and income for daily needs.

Table 3. Relation of resilience to access

Access Indicator	Condition
Technology	Small scale (post-traditional)
Capital	The small and limited scale
Market	Subsistence for the domestic market
Labor	Individual, community, and limited to the local level
Knowledge	Internalized from the local knowledge system for generations but without scientific expertise
Resilience	Weak, because there is no form of access
Potential	guarantee

Data Source: Primer Documentation, 2022

The description of social resilience or the ability of purun craftsmen in the OKI Regency to cope with and adapt to pressures that threaten the sustainability of their business is indirectly influenced by a series of mechanisms to obtain, control and maintain access to resources. Basically, in ideal conditions, access to good resources directly strengthens social resilience. However, let's look at our findings. This is the opposite, where the community's social resilience is weak due to limited access and tends to get weaker, especially if the three stress scenarios occur.

The scenario that most threatens access, and so does the resilience of the artisan community, is related to regulations and policies on the protection of the purun area as expected by community members. However, they could hardly do anything to anticipate the scenario. This is evident from the community of craftsmen who were banned from taking purun in the company's concession area. The absence of policies or local regulations that protect them makes them vulnerable and most likely to be marginalized. Sooner or later, they lose their tradition and purun habitat but also their right of access to justice and natural resources.

This case study of purun craftsmen explains important findings of the relationship between resilience and access to resources. Both explain that local communities can recover from pressures due to socio-ecological changes and the importance of dominant political access to increase resilience. Policy as a central and strategic role can be an effort to increase community resilience in "commonly owned" areas.

Therefore, the policy that will be born is expected to accommodate all actors interested in peatland areas, including community groups in the surrounding areas. Of course, the policy must align with the concept of integrated management and sustainable development. In other words, the emphasis on policy in this research is expected to support the resilience of the socio-ecological system by the sustainable management paradigm, which is not only to protect the environment but also to improve the standard of living of the community or local community so that social justice can be realized.

5. CONCLUSION

The presence of extractive companies impacts the eradication of the conservation regime that has been carried out by local communities for years, especially in the purun craftsman community in the research location. Those who have been using peat swamps while maintaining the preservation of their original ecosystems must be shifted to using peatlands by extractive corporations that use peat swamps and change their original ecosystems.

Community resilience plays an essential role in understanding natural resource management decisions and their changes, especially changes that affect and disrupt livelihood systems that arise in communities due to changes in access to resources.

The results of this study indicate that the picture of the community's resilience of purun craftsmen is closely related to their ability to access resources that can be considered critical for the sustainability of their businesses and lives, namely access to resources in peatlands. This access is influenced by various pressures due to environmental, social, economic, and political changes that occur on a local scale.

Our findings show that the resilience of the purun craftsman community is currently at a weak level due to the limitations

of several mechanisms such as technology, capital, and markets. However, other instruments such as social identity and authority to maintain and control access are not followed.

In addition, this study illustrates that the level of resilience of purun craftsmen can weaken if the scenario of a large-scale extractive corporation, extreme conditions, and no follow-up on management regulations by the local government co-occur. Access and resilience provide contemplation to recover from the pressures of socio-ecological change and access politics, which is very important for local communities to strengthen the level of community resilience.

Therefore, along with changes in the ecology of peatlands that are felt and experienced, purun craftsmen at the community level are expected to start developing adaptation strategies and other livelihood strategies to maintain resources as livelihoods that have been cultivated from their ancestral heritage.

We suggest that the government and relevant stakeholders, especially universities, can collaborate scientifically to explore the factors of livelihoods and community resilience that are strengthened by encouraging socially acceptable best practices, maintaining social memory, and undertaking policy initiatives and measures. Measures to increase the flexibility, adaptation, and resilience of the livelihoods of artisanal communities who rely heavily on natural friendliness in their livelihood systems so that communities become more resilient in facing and responding to change.

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REFERENCES

- [1] Gowing, J.W., Tuong, T.P., Hoanh, C.T. (2006). Land and Water Management in Coastal Zones: Dealing with Agriculture, Aquaculture, Fishery Conflicts. No. 612-2016-40614. <https://doi.org/10.1079/9781845931070.0001>
- [2] Giesen, W. (2015). Utilising non-timber forest products to conserve Indonesia's peat swamp forests and reduce carbon emissions. *Journal of Indonesian Natural History*, 3(2): 17-26. <http://jinh.fmipa.unand.ac.id/index.php/jinh/article/view/66>.
- [3] Brotonegoro, S., Wessel, M., Brink, M. (2000). Areca catechu L. dalam Van der Vossen HAM, Wessel M (Eds.). 2000. *Plant Resources of south-East Asia No. 16. Stimulants*. Backhuys Publishers, Leiden, the Netherlands, 51-55.
- [4] Wildayana, E., Adriani, D., Armanto, M.E. (2017). Bottom-up approach to purun craft development in peatlands. *Prosiding National Seminar Sub-Optimal Land*, pp. 978-979.
- [5] Azni, U.S., Alfriti, A., Yunindyawati, Y., Riswani, R. (2021). The impact of the COVID-19 pandemic on the community of purun craftsmen (*eleocharis dulcis*) in ogan komering ilir regency, Indonesia. *Jurnal Analisa Sosiologi*, 10(2): 417-432. <https://doi.org/10.20961/jas.v10i2.50433>
- [6] Goib, B.K., Fitriani, N., Wicaksono, S.A., Yazid, M., Adriani, D. (2019). Woven crafts from purun as a form of sustainable business in ogan komering Ilir (Oki) regency, South Sumatra. *Jurnal Analisis Kebijakan Kehutanan*, 16(1): 67-87. <https://doi.org/10.20886/jakk.2019.16.1.67-87>
- [7] Poulton, C., Kydd, J., Dorward, A. (2006). Overcoming market constraints on pro-poor agricultural growth in Sub-Saharan Africa. *Development Policy Review*, 24(3): 243-277. <https://doi.org/10.1111/j.1467-7679.2006.00324.x>
- [8] Aldrich, D.P., Meyer, M.A. (2015). Social capital and community resilience. *American behavioral scientist*, 59(2): 254-269. <https://doi.org/10.1177/0002764214550299>
- [9] Adger, W.N. (2000). Social and ecological resilience: are they related? *Progress in Human Geography*, 24(3): 347-364. <https://doi.org/10.1191/030913200701540465>
- [10] Adger, W. (1997). Sustainability and social resilience in coastal resource use. London, CSERGE Working Paper.
- [11] Holling, C.S. (2001). Understanding the complexity of economic, ecological, and social systems. *Ecosystems*, 4(5): 390-405. <https://doi.org/10.1007/s10021-001-0101-5>
- [12] Wade, R. (1987). The management of common property resources: Collective action as an alternative to privatisation or state regulation. *Cambridge Journal of Economics*, 11(2): 95-106. <https://doi.org/10.1093/oxfordjournals.cje.a035024>
- [13] Ostrom, E. (2002). Common-pool resources and institutions: Toward a revised theory. *Handbook of Agricultural Economics*, 2: 1315-1339. [https://doi.org/10.1016/S1574-0072\(02\)10006-5](https://doi.org/10.1016/S1574-0072(02)10006-5)
- [14] Feeny, D., Berkes, F., McCay, B.J., Acheson, J.M. (1990). The tragedy of the commons: twenty-two years later. *Human Ecology*, 18(1): 1-19. <https://doi.org/10.1007/BF00889070>
- [15] German, L., Keeler, A. (2009). "Hybrid institutions": Applications of common property theory beyond discrete tenure regimes. *International Journal of the Commons*, 4(1): 571. <https://doi.org/10.18352/ijc.108>
- [16] Adger, W.N., Benjaminsen, T.A., Brown, K., Svarstad, H. (2001). Advancing a political ecology of global environmental discourses. *Development and Change*, 32(4): 681-715. <https://doi.org/10.1111/1467-7660.00222>
- [17] Giesen, W., Sari, E.N.N. (2018). Tropical peatland restoration report: The Indonesian case. *Berbak Green Prosperity Partnership, MCA-Indonesia*. <https://doi.org/10.13140/RG.2.2.30049.40808>
- [18] Miettinen, J., Liew, S.C. (2010). Status of peatland degradation and development in Sumatra and Kalimantan. *Ambio*, 39(5): 394-401. <https://doi.org/10.1007/s13280-010-0051-2>
- [19] Langridge, R., Christian-Smith, J., Lohse, K.A. (2006). Access and resilience: analyzing the construction of social resilience to the threat of water scarcity. *Ecology and Society*, 11(2): 18. <https://doi.org/10.5751/ES-01825-110218>

- [20] Ratner, B.D. (2011). Common-pool resources, livelihoods, and resilience: critical challenges for governance in Cambodia. IFPRI Discuss. <https://hdl.handle.net/20.500.12348/1101>.
- [21] Handoyo, D., Rochmayanto, Nurfatriani, N., Charity. (2018). Mapping of Impacted Hidden Populations and their Economic Valuation of Disadvantages: A Political Economy Overview of Land and Forest Resource Tenure Practices in Indonesia. Bogor.
- [22] van der Ploeg, J.D. (1997). On rurality, rural development and rural sociology. In *Images and realities of rural life. Wageningen Perspectives on Rural Transformations*, pp. 39-73. <https://library.wur.nl/WebQuery/wurpubs/fulltext/359507>.
- [23] Ingold, T. (2000). *Culture, Perception and Cognition. Book: The Perception of the Environment*.
- [24] Crawford, M.B. (2009). *Shop class as soulcraft: An inquiry into the value of work*. Penguin.
- [25] Hoquet, T. (2018). *Cyborgs, Between Organology and Phenomenology: Two Perspectives on Artifacts and Life*. In *French Philosophy of Technology*, pp. 257-277. Springer, Cham. https://doi.org/10.1007/978-3-319-89518-5_16
- [26] Beck, U., Lash, S., Wynne, B. (1992). *Risk Society: Towards a New Modernity*. Sage Publication.