Implementation of Agrosilvopasture and MSME Incubation to Support Sustainability Development Goals: A Multidisciplinary Perspective on Economic Enhancement

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Abstract. This research aims to examine the influence of Agrosilvopasture Implementation and Incubation of MSMEs on the Sustainable Development Goals (SDGs) in the Tebat Benawa Customary Forest Area, Pagar Alam City, South Sumatra Province. The research adopts an applied approach with quantitative data. Data collection techniques encompass questionnaires and literature review. The sample comprises leaders and staff of institutions involved in customary forest management, indigenous community facilitators, indigenous communities, women, and vulnerable community groups in the vicinity of the customary forest. The analysis employs the Structural Equation Modeling (SEM) analysis. The findings of this study reveal that both Agrosilvopasture Implementation and Incubation of MSMEs significantly influence SDGs within the context of the Tebat Benawa Customary Forest.

Keywords: Incubation of MSMEs; SDGs; Economic Enhancement

1 Introduction

Indigenous people manage the customary forest in Indonesia according to local wisdom and have an important role in maintaining biodiversity and the welfare of indigenous peoples [1]. Recognition of indigenous people's rights to customary forests is regulated by Law No. 41 of 1999, but it still faces challenges in the process of recognition and protection. Customary forest also supports sustainable development and achievement of SDGs, including increasing the welfare of indigenous peoples, conserving biodiversity, mitigating climate...
change, and managing natural resources sustainably [2]. The government launched the Agrarian Reform and Social Forestry Program in 2020 to recognize indigenous peoples' rights and encourage economic and social empowerment [3]. Nonetheless, the challenges to protect and manage customary forests, including conflicts with other interests, deforestation, and illegal activities still exist [4]. Non-timber forests have great potential to support the industrial sector and biodiversity, provide added economic value, and support SDG achievement [6]. Examples of non-timber forest products include tropical fruits, spices, medicinal plants, rattan, bamboo, and ornamental plants. Customary forest problem includes inaccurate recognition of customary forest rights, conflicts with third parties, deforestation and ecosystem damage, and inequality of access and welfare of indigenous peoples. Based on the problems above, the focus of the study can be observed is related to customary forest management. The form of customary forest management can be done by implementing the agro silvopasture technology and the initiation of MSMEs. Through the implementation of agro silvopasture and the initiation of MSMEs, the impact on the SDGs can be seen.

Agrosilvopasture, also known as agroforestry or silvopasture, is a land management system that integrates agriculture (crop cultivation), forestry (tree cultivation), and livestock grazing in a mutually beneficial way [5]. In agro silvopasture, crops, trees, and livestock are integrated with one customary forest area. In the context of customary forest, agro silvopasture can provide various benefits. First, by combining agriculture, forestry and animal husbandry in one system, agrosilvopasture can increase land productivity and indigenous peoples' incomes. The combination of crops, trees and livestock can create beneficial synergies, such as natural weed control, increased soil fertility, and diversification of income sources [6]. Agrosilvopasture in customary forests can also contribute to biodiversity and nature conservation. By integrating agricultural crops and trees in one system, agrosilvopasture can help maintain biodiversity in customary forest areas and minimize environmental degradation. MSME initiation refers to the steps or efforts to support and encourage the development of Micro, Small and Medium Enterprises (MSMEs). The initiative is to strengthen the MSME sector in various aspects, such as marketing, funding, access to technology, training and network development. MSMEs have an important role in a country's economy, including creating jobs, reducing poverty, and increasing economic growth. Therefore, the initiation of MSMEs is important to ensure the sustainability and progress of the MSME sector. SDG in customary forest is purposed to achieve sustainable development by considering indigenous peoples' rights and customary forest management. The SDGs focus on conserving biodiversity, mitigating climate change, managing natural resources sustainably, and improving the welfare of indigenous peoples. Recognition of indigenous people rights to customary forests is important in reducing deforestation. The participation of Indigenous people in decision-making and economic and social empowerment is also required. Preservation of biodiversity and ecosystems in customary forests through sustainable management becomes an important focus.

Studies on the implementation of agro silvopasture (integration of agriculture, forestry, and animal husbandry) and the incubation of MSME forest products supporting the Sustainable Development Goals (SDG) are important in achieving SDGs in customary forests. Agrosilvopasture can increase productivity, balance ecosystems, food security, and support natural resource management and the welfare of indigenous peoples. MSME incubation of sustainable forest products can provide economic value and support biodiversity conservation and natural resource management. An in-depth study of these two concepts is important to identify best practices and strengthen the contribution of indigenous forests to achieving the SDGs. This study aimed to determine the impact of the implementation of agrosilvopasture and MSMEs incubation on the Sustainability Development Goals in Tebat Benawa Customary
Apart from this, it is expected to contribute theoretically and practically to the development of customary forests.

2 Literature Review

2.1 Agrosilvopasture

A literature study on agro silvopasture involves research conducted by [7]. This research examines the benefits of agro silvopasture in increasing land productivity, ecosystem balance, and farmers' income. Agro Silvopasture can also reduce deforestation and conflicts of interest in customary forest areas. [8] investigate the use of native trees and shrubs in tropical ranch rehabilitation to increase productivity and sustainability. [9] reviews developments in agroforestry in the last decade, highlighting applications, management practices, and potential benefits. [10] Look at agroforestry in Europe, including its current status and prospects and its environmental impact and role in rural development. [11] presents information on carbon sequestration in agroforestry systems and their enhancement strategies for climate change mitigation. [12] provides an overview of agroforestry systems, including applications, management practices, and examples of case studies in various contexts. This reference provides a broad understanding of the application of agro silvopasture and its benefits in the context of customary and social forests. Previous research on agrosilvopasture has shown that this approach can increase land productivity, balance ecosystems and farmer incomes, and reduce deforestation and conflicts of interest in customary forest areas, with positive implications for sustainability and the environment.

2.2 MSMEs

The study of MSMEs covers various important aspects such as economic and social contribution, innovation, sustainability, and marketing. Pattimahu, et al highlighted the contribution of MSMEs to economic growth and poverty alleviation [13]. [14] Pay attention to the factors that influence the adoption of innovation in SMEs. The role of MSMEs in sustainable development needs to be explored more deeply [15]. MSMEs’ marketing strategies through digital platforms can improve MSME performance [16][17]. These references provide important insights about MSMEs in the context of economics, innovation, sustainability, and marketing.

The development of natural resource-based MSMEs around customary forests has an impact on people's welfare. [18] analyze the model of sustainable MSMEs incubation in social forests and the factors influencing its success. Community involvement in MSME incubation in customary forests or social forests, including participation in decision-making and management of natural resources is an important[19]. This literature study provides insight into the importance of MSME incubation in this context. Incubation can develop MSMEs around customary forests, with a focus on skills development, mentoring, and access to markets. MSMEs incubation programs in social forests have the potential to improve community welfare and natural resource management [20]. The study showed that MSME incubation can provide significant social, economic, and environmental benefits. Based on various points of view on MSMEs, shows that MSMEs have an important contribution to economic growth, poverty alleviation, innovation, sustainability, and marketing, as well as the importance of developing natural resource-based MSMEs around customary forests and social forests to improve community welfare and natural resource management.
2.3 Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs) are efforts to achieve comprehensive sustainable development goals. The integration of SDGs into development policies and practices, with a focus on environmental, social, and economic aspects, is an important point in sustainable development [21]. The challenges of implementing SDGs in various sectors are related to environmental management, social inequality, and climate change [22]. Besides that, [23] highlights the importance of global partnerships in achieving the SDGs and tackling complex global problems. These studies provide a deeper understanding of the SDGs and provide a basis for sustainable policy formulation. The SDGs on customary forests emphasize the importance of recognizing and protecting the rights of indigenous peoples over customary forests to reduce deforestation and forest destruction. Indigenous people's participation in customary forest management decision-making and economic and social empowerment is also important in achieving SDGs. Preserving biodiversity and ecosystems in customary forests is a key SDG focus [24]. Previous research, SDGs called a comprehensive approach to achieving sustainable development goals by taking into account environmental, social, and economic aspects, while implementing SDGs in customary forests requires recognition of indigenous peoples' rights, participation in decision-making, and preservation of biodiversity and ecosystems.

3 Methods

The type of research used was applied research. This research aimed to find a solution to a problem directly faced by the community. This research aimed to answer specific questions about solving practical problems. This applied research is referred to as empirical, because it looks for the application of knowledge gained to consolidate knowledge to solve a situation. It means that the results of the research are expected to be immediately used for practical purposes. This type of applied research design is evaluation research, this research is research with the objective of conducting an assessment at each stage carried out in the research, starting from planning, implementation, to results.

3.1 Data Collection Method

This research used a questionnaire. To analyze the need and utilization of customary forests for leaders and staff of institutions related to customary forest management, assistants for indigenous peoples, indigenous peoples, women, and vulnerable community groups in areas around customary forests. Literature study was a data collection method carried out by researchers. This stage was used to consolidate previous knowledge with community problems. This stage was carried out by examining the theories of opinion and main ideas contained in the printed media, especially books that support and are relevant to the problems in the research.

The data in this study were analyzed using SmartPLS software which is considered suitable for estimating path models that use latent constructs with multiple indicators. PLS can help get latent variable values for prediction purposes. Evaluation in SmartPLS consists of evaluating the inner model (structural model) and outer model (measurement model).

3.2 Statistical analysis

The sample in this study were leaders and staff of institutions related to customary forest management, assistants to indigenous peoples, indigenous peoples, women, vulnerable
community groups in the area around customary forests totaling approximately 100 people, carried out by census or total sampling. The list of questions contains indicators related to the variables of Agrosilvopasture and MSME Incubation on Sustainability Development Goals on the natural and social aspects of the Tebat Benawa Customary Forest. The analysis of this research uses Structural Equation Modeling (SEM) Analysis, operated through the Lisrel Program.

3.3 Study Limitation
The limitations of this study include limited comprehensive and representative data, contextual variability among indigenous forest communities that may affect the generalizability of findings, limited time and resources on the research scale, influence of social and political factors within customary forests, and general limitations of research related to design and data interpretation.

4 Result and Discussion

4.1 Result
The following is an overview of the research model:

4.1.1 Evaluation of the Measurement Model (Outer Model)
Evaluation of the Measurement Model is used to evaluate the relationship between constructs and their indicators. This step is divided into two, namely convergent validity and discriminant validity. Convergent validity can be evaluated through 3 (three) stages, namely: validity indicators, construct reliability, and average variance extract (AVE) values. While discriminant validity can be carried out through 2 (two) stages, namely by looking at the cross-loading value and then comparing the correlation between the construct and the AVE root.

4.1.2 Validity Indicator
Factor loading and t statistics result from SmartPLS output after eliminating factor loading that was less than 0.7.
From the output of SmartPLS for Outer Loading above, it can be seen that there were several values of variable Z less than 0.7, so modifications were made, namely by removing indicators that were less than 0.7.

After modification by removing indicators whose value was less than 0.7, the validity test results can be seen in the figure above. There were no more indicators with a value less than 0.7. It means that all dimensions and indicators have been declared valid.

### 4.1.3 Construct Reliability

Cronbach’s alpha from the output of SmartPLS is as shown in the following table

<table>
<thead>
<tr>
<th></th>
<th>Cronbach's Alpha</th>
<th>rho_A</th>
<th>Composite Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of Agrosilvopast</td>
<td>0.934</td>
<td>0.941</td>
<td>0.940</td>
</tr>
<tr>
<td>Incubation of MSMEs</td>
<td>0.856</td>
<td>0.923</td>
<td>0.868</td>
</tr>
<tr>
<td>Sustainable Development Goals</td>
<td>0.901</td>
<td>0.922</td>
<td>0.915</td>
</tr>
</tbody>
</table>
The Cronbach's Alpha output results in the table above showed that all research variables had a Cronbach's Alpha value above 0.7. Thus, all variables were included in the reliable criteria.

### 4.1.4 Structural Model Evaluation (Inner Model)

After the measurement evaluation is fulfilled, an evaluation of the structural model was carried out by looking at the R-square, a Goodness-fit model test (to see the magnitude of exogenous variables together/simultaneously can explain endogenous variables). Furthermore, to see the significance of the (hypothesized) effect is by looking at the parameter coefficients and the t-statistical significance value.

### 4.1.5 Structural Model Testing

Testing the structural model is by looking at the R-square, the SmartPLS output results using the calculate-PLS algorithm can be seen in the table below:

<table>
<thead>
<tr>
<th>Sustainable Development Goals</th>
<th>R-square</th>
<th>R-square adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.981</td>
<td>0.980</td>
</tr>
</tbody>
</table>

The R-square results in the table above showed that the simultaneous effect of the Implementation of Agrosilvopasture (X1) and Incubation of MSMEs (X2) variables on the Sustainable Development Goals (Y) variable was 0.981.

### 4.1.6 Influence Significance Test

The output of SmartPLS using calculate-PLS Bootstrapping is as follows:

| Implementation of Agrosilvopasture | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics (|O/STDEV|) | P values |
|-------------------------------------|---------------------|-----------------|---------------------------|----------------|----------|
| Sustainable Development Goals        | 0.434               | 0.518           | 0.139                     | 3.111          | 0.002    |
| Incubation of MSMEs -> Sustainable Development Goals | 0.565 | 0.481 | 0.141 | 4.018 | 0.000 |

### 4.2 Discussion

#### 4.2.1 Effect of Agrosilvopasture Implementation on Sustainability Development Goals

The results of the study showed the effect of the implementation of agrosilvopasture on the Sustainability Development Goals. Research states that agrosilvopasture, if implemented in traditional villages, can affect the realization of the points in the sustainable development goals. The same thing was also revealed by research [25]. This study showed that the agrosilvopastoral farming system had a positive impact on the economy of the farming community in Sumanik Village as indicated by the business feasibility with NPV, IRR, ROI, RC, PBP, and BEP values, it is in accordance with Goal 1 and goal 8. The agrosilvopastoral system can increase the productivity of oil palm plantations, contribute to environmental preservation, increase livestock productivity, and harmonize the relationship between industry and society, as well as the sustainability of oil palm plantations [26]. This research is in line
with goal 9, goal 13 and goal 15. From a socio-economic perspective, agroforestry has the potential to increase smallholder farmer incomes, improve food security, promote gender equality, and stimulate cultural activities in rural areas [27].

4.2.2 Effect of Incubation of MSMEs on Sustainability Development Goals

The research found that the Incubation of MSMEs influenced the Sustainability Development Goals. It happens because MSME incubation activities are a stimulus for MSMEs, especially in rural areas. It is because the capability of human resources in rural areas is still relatively low and requires intensive assistance. Other studies reveal that MSME development can provide access to people experiencing poverty in rural areas so that they can engage in productive business activities and encourage entrepreneurship, especially in less profitable areas, one of which is through Baitul Mal wat Tamwil (BMT) as a microfinance institution [28]. BMT has the potential to develop small industries in villages, but BMT only focuses on financing distribution, so many small industry entrepreneurs still lack marketing knowledge.

Furthermore, research [29] revealed that the main research results were divided into two stages, taking into account 101 and 318 companies respectively. Correlation and regression analyses in this study showed no gender differences in terms of entrepreneurial activity and business operations. Furthermore, technological innovation positively affected job creation in small businesses and acted as a driver for economic development [30]. The effective use of information technology in small businesses significantly impacts their competitiveness and access to international markets. Therefore, it is suggested that the government needs to develop a technology innovation strategy for small businesses to realize their company performance and increase job creation.

5 Conclusion

The results of this study can be concluded that the implementation of agrosilvopasture and MSME incubation can encourage the achievement of SDGs in the Mude Ayek Tebat Benawa Customary Forest area, Pagar Alam City, South Sumatra Province. Research with a similar theme in the future can be developed with a larger research variable by adding the variable intelligence in business for rural areas. This variable can add to the acceleration of sustainable development goals.

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References


