

Name	Counterpart	Title
Dodik Ridho Nurrochmat	Z01	Policy studies and model development of agro-forestry in Jambi, Sumatra

Background and Objectives

Agro-forest management policy is one of the most trending issues in Indonesia under the dynamics circumstances of regional autonomy. Regional autonomy has been recognized in the formal government system of the Republic of Indonesia through Regional Governance Law 5/1972. The existing Regional Governance law has shifted all authorities in forest management from the regency to the province and associated with the new established Law 11/2020 on job creation that introduced a single liaison of multi-purpose forest utilization, which included agroforestry that would potentially reduce deforestation and improve the community welfare. This study evaluates the key elements of local development goals, risks and barriers, and the basic capitals for agro-forest management.

The study aims to identify and understand the transformation of agro-forest management policies as a consequence of local development goals, risks and barriers as well as basic capitals for agro-forest management after two decades of regional autonomy in Tebo Regency, Jambi Province in Indonesia

Methods

In this study, the Interpretive Structural Modelling technique is applied. The technique is used to evaluate interrelated elements associated to complex issue. In the second stage, three categories for agro-forest management are discussed in focus group discussions (FGDs) in the Tebo Regency. The FGDs were attended by six key participants (experts) representing institutions related to agro-forest management, namely Jambi Provincial Forestry Service, Tebo Regency Development Planning Agency, Jambi Natural Resources Conversation Unit, East Tebo forest management unit, Jambi University and a Jambi forestry observer.

Results and Conclusion

Research began by finding relevant documents and consulting relevant experts. FGD were conducted to list the local development goals, risks and barriers, and basic capitals for agro-forest management. Interpretive Structural Modelling technique were then used to identify the key elements of the local development goals, risks and barriers, and basic capitals for agro-forest management. From those discussion, figures were derived showing the hierarchy of levels of the elements of interest, with the lowest level representing the key elements. Figure 1 shows that the increased environmental quality (A12), increased stability of public order, legal, and political awareness (A13); and increased social and community protection (A14) are the key elements.

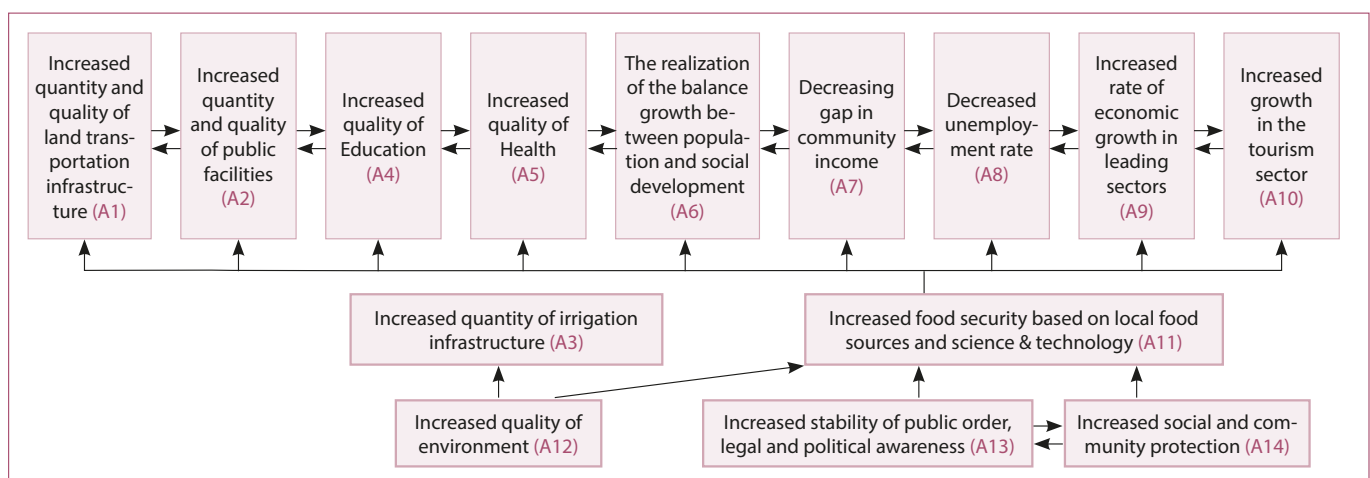


Figure 1. Diagram of local development goals

This study concludes recommendations to address issues pertaining local development goals, risks and barriers to forest management and provisions of basic capitals. All the recommended solution were summarized in table 1:

Table 1. Recommendation to address the issues.

Local development goals (LD)	Risks and barriers to forest management (RB)	Basic capitals (BC)
1. Improve the environment quality	1. Assess the need and quality of human resources for managing the forest areas	1. Education and human resources
2. Increase the stability of public order, political and legal awareness	2. Strengthen coordination between relevant institutions and groups	2. Effective leadership role
3. Improve social and community protection	3. Enhance communication between stakeholders	3. Improve social capital
	4. Improve forest management financing	4. Governance including rule of law and multistakeholder engagement
	5. Increase public awareness and understanding of the importance of forests	5. Partnerships

From an ecological perspective, the financial feasibility of oil palm monoculture plantation and oil palm agroforestry was analyzed (Table 2). The data on costs and revenue were obtained from the interviews with key persons. Both the financial analysis are shown in table 3 and table 4 respectively.

Table 2. Financial feasibility analysis of monoculture oil palm plantation

Indicators	Result
NPV	IDR 62,644,836 (US\$ 4,476.84)
BCR	1.39
IRR	20,77%

Table 3. Financial feasibility analysis of oil palm agroforestry

Indicators	Result
NPV	IDR 209,221,212 (US\$ 14951.76)
BCR	1.79
IRR	24,42%

In general, oil palm agroforestry is more profitable compared to monoculture-oil palm cultivation. The selection of agroforestry intercrops is an important factor in increasing the likelihood of successful implementation. Table 4 below provides recommendations for cropping pattern to achieve financial feasibility.

Table 4. Comparison of the financial feasibility with income and profit potential of each cropping pattern

Financial Feasibility Criteria					
Pattern	Plant combination	BCR	IRR (%)	Potential Income (IDR (US\$))/ hectare/ month)	Potential Profit (IDR (US\$))/ hectare/ month)
I	Oil Palm monoculture	1.39	20.77	2,371,069 (168.60)	986,874 (70.17)
II	Oil Palm and <i>jengkol</i>	2.01	25.83	6,022,434 (428.24)	3,861,744 (274.60)
III	Oil Palm with <i>petai</i>	1.56	22.94	3,763,134 (267.59)	2,161,076 (153.67)
IV	Oil Palm and <i>durian</i>	1.65	23.5	5,364,493 (381.45)	3,119,061 (221.79)
V	Oil Palm and <i>sungkai</i>	1.33	19.2	3,008,877 (213.95)	1,668,908 (118.67)
VI	Oil Palm and <i>meranti</i>	1.21	17.94	2,367,420 (168.34)	1,035,996 (73.67)
VII	Oil Palm with <i>jelutong</i>	1.34	19.73	2,826,627 (200.99)	1,342,595 (95.47)

In the implementation, table 4 shows a comparison of the financial feasibility with income and profit potential of each cropping pattern. The table shows that all oil palm agroforestry patterns are financially feasible. All financial criteria (NPV, BCR, and IRR) meet the threshold of financial feasibility where $NPV > 0$, $BCR > 1$, and $IRR > i$.