Community forest management of Arabica coffee based on local and modern ecological knowledge

A C Tridakusumah, D Supyandi, M Arari, Y Sukayat
Department of Socioeconomic of Agriculture Faculty of Agriculture Universitas Padjadjaran
E-mail: ahmad.choibar@unpad.ac.id

Abstract. Coffee farmers, members of Kramatjaya Forest Farmers Group in Garut Regency West Java, use Perhutani's land to cultivate Arabica coffee. Apart from being a conservation area, this land is also arable volcanic soil and requires proper management that prioritizes coffee agribusiness aspects as well as ecological aspects, based on local and modern knowledge. This study implemented a knowledge management approach to reveal an understanding of local and modern ecological knowledge management in community coffee business practices. Empirical data were obtained through in-depth interviews and FGD. The research results show that for the last 10 years farmers have been utilizing Perhutani's land to cultivate Arabica coffee by implementing modern coffee equipment and also adopting local ecological knowledge in each sub-system. Local knowledge in the production sub-system is demonstrated by terracing systems. In the sub-processing system, local knowledge is used in coffee processing using traditional methods, along with uses modern equipment. The study also shows that knowledge generation derived from external and internal sources, knowledge transfer came from the role of community leader and field school training, and knowledge application of coffee processing used modern technology through community leader networks.

1. Introduction
Community forest management is an activity that is closely related to the involvement of rural communities around the forest in making decisions [1] and forest utilization that can provide economic, social, and conservation benefits for the community. Community-based forestry (CBF) is the current trend in forest management that has been implemented in the last 40 years, some of these trends include optimizing community forest management, commercializing forest plantations, and strengthening relationships between communities, companies [2], and the government.

The Indonesian government launched a community forest management program plan, by allocating 12.7 million hectares of forestry land for the community between 2015 and 2019, which is known as the Social Forestry program [3] or “Program Perhutanan Sosial (PPS)”. This forest management policy opens opportunities for rural communities around the forest to play an active role in forest management which definitely can provide benefits for these communities [4]. On the other hand, this policy emphasizes the need to increase opportunities for the commercialization of forestry plants for the community and affirms access to [5] optimization of forestry land use.

The PPS which is expected to be better than the forest management program in the previous period, which was less targeted and did not appear to have succeeded in improving the welfare of the community. However, leaving forest management completely to the community alone will not achieve sustainable forest management. The role of community leaders and Forest Village Community Institutions needs to be improved for the implementation of sustainable joint community forest management, as well as ensuring equality and justice for communities [6] who use forests for their survival. PPS is currently being implemented as an effort to achieve the goal of sustainable forestry sector development. In
practical terms, rural communities around the forest gain socio-economic benefits from the coffee plant, as well as receive a positive impact on forest sustainability and conservation in forests state authority (Perhutani).

Sustainable community forest management carried out by the community, apart from preserving local coffee varieties, also provides short-term economic benefits [7], such as the case of coffee farmers in Kramatjaya Forest Farmers Group using Perhutani’s land to cultivate Arabica coffee. Apart from being a conservation area, this land is also an arable volcanic soil and requires proper management that prioritizes coffee cultivation on local aspects as well as ecological aspects, based on local and modern knowledge. This study implemented a knowledge management approach to reveal an understanding of local and modern ecological knowledge management in coffee agribusiness practices.

2. Material and methods

This research was conducted in Cisurupan District, Garut Regency, West Java Province, Indonesia, which lasted for 10 months from July 2019 to March 2020. This research implemented a knowledge management approach to reveal an understanding of local and modern ecological knowledge management in coffee agribusiness practices. Qualitative research was used in this study. Empirical data were obtained through in-depth interviews and FGD. Informants in this study were 34 people, including 21 members of the Forest Farmers Group (FFG), 4 FFG administrators, 5 community leaders, 1 village head, 2 people from the local forestry office, and 2 from NGO.

3. Result and discussion

3.1. Forest farmers groups, coffee and joint forest management

FFG was formed in 1997. Initially, FFG members planted vegetables on Perhutani’s land because they thought the land was very fertile and suitable for growing vegetable crops to increase their family income. However, on one side, vegetable plants are not conservation plants, so the Government through Perhutani in 2005 held a forest joint management or PHBM program aimed at preserving the environment as well as socio-economic benefits for people living around the forest.

The Arabica coffee plant was chosen because, in addition to being a national program, Kramatwangi Village also has coffee fields that have been planted since the colonial period. The coffee plant is also considered a conservation plant as well as providing economic benefits to the surrounding community. During the period from 2005 to 2010, there were 4 FFGs with members of up to 260 farmers who planted coffee in 195 hectares of Perhutani area as well as members who had long cultivated coffee on land owned by the farmers themselves, which reached 20 hectares.

Starting in 2010 until now there have been many knowledge transfers and institutional and technological introductions. The transfer is also accompanied by education and training to improve coffee farmer’s business in the form of field-school. Cultivation, marketing, information technology, and barista training have been done frequently over the past 10 years. An exchange among coffee farmers is also often carried out for the purpose of knowledge transfer.

In 2015 a Village-Owned Enterprise or BUMDES was formed, one of which is a coffee processing business using modern equipment. Modern equipment such as roasting machines, pulper, and drying beds owned by BUMDES, can accommodate the production of member farmers which reaches 1,000 tons per harvest time. In addition, to improve the welfare of farmers, in 2017 an agro-tourism park was built to support Papandayan mountain tourism on the land belonging to Kramatwangi Village, and in 2020 the construction has reached 65%. In the same year, FFG and BUMDES seriously began to expand the market both online and offline, so that the demand for the coffee market increased. In 2019 there was also a collaboration with coffee exporting companies for the European and American markets.

However, since March 2020, the COVID-19 pandemic has resulted in the sale of coffee through various marketing channels that have been built by FFG and BUMDES to suddenly decrease drastically, which is indicated by the price of coffee beans at the end of 2019 reaching IDR 5,000 to IDR 7,000 per kg, and in July 2020 the price received by farmers was only around IDR 4,000. According to farmers, if the price of coffee beans is only IDR 2,000 per kilogram, then they agree to replace the coffee plants that have been planted for years to be replaced with other more valuable crops, even though on one side a good coffee farming system and an open market have been built. Full struggle collectively by the
farmer, members of FFG Kramatjaya. This shows that for the last 10 years farmers have been utilizing Perhutani’s land to cultivate Arabica coffee by implementing modern coffee knowledge and also adopting local ecological knowledge both in terms of production, processing to marketing. Local knowledge in the production sub-system is demonstrated by terracing systems that utilize local knowledge. In the sub-processing system, local knowledge is used in coffee processing using traditional methods, along with uses modern equipment such as grinder, pulper, and drying beds. The use of local knowledge and modern equipment in the management of Arabica coffee has been proven to increase the quality and quantity of coffee, which of course can meet market demand and also improve farmers’ welfare.

3.2. The flow of knowledge in the forest farmers groups

Traditional knowledge on the ecological side shows useful experience in coffee cultivation that also shows the sustainable community contact with their environment [8]. In addition, knowledge management dimensions are generation, transfer, and application [9]. Based on these two studies, a knowledge management analysis was developed in this study to reveal an understanding of local and modern ecological knowledge management in coffee agribusiness practices.

Knowledge generation is derived from external and internal sources that are reflected in the search and use of opportunities by the FFG members to improve their lives while preserving the environment both socially and economically through dynamic institutions. On the internal side, knowledge generation is a reflection of the FFG administrators and also the role of local institutions in the form of prominent community leaders. However, the portion of local knowledge is smaller than the portion of knowledge generation that comes from external, because it cannot be denied that the initiation of PHBM comes from the government through the state forest authority, which is then supported by Village officials, West Java FFG association networks, exporters and cafes.

The transfer of knowledge about forest management with the community emphasizes participation and togetherness in implementing decision-making to use forests collectively. It is also an effort to improve the welfare of communities around the forest coming from the role of community leaders and FFG management (internal) and field school training, and coffee farmers exchange (external). The knowledge application revealed in the improvement of the products such as traditional coffee processing that has been existed for a long time and a network built by the community leaders (internal). The external side of application knowledge is the presence of modern equipment in the form of coffee processing machines owned by farmers such as roasting machines, pulpers, grinders, and drying beds.

Based on this description, the flow of knowledge is starting with knowledge generation, then followed by knowledge transfer to all members of the FFG. The flow is then ended with a knowledge application both in the production system, processing of products, and marketing distribution. The flow of knowledge in this case is a hybridization of local and modern knowledge in terms of the community coffee business collectively from downstream to upstream.

4. Conclusion

Local knowledge in the production sub-system is demonstrated by terracing systems that utilize local knowledge. In the sub-processing system, local knowledge is used in coffee processing using traditional methods, along with uses modern equipment. Knowledge generation derived from external, knowledge transfer came from the role of community leader and FFG management and field school training, and knowledge application of coffee processing used modern technology through community leader networks.

References

[1] Bowler D, Buyung-Ali L, Healey J, Pullin A, Jones J, and Knight T 2010 The Evidence Base for Community Forest Management as a Mechanism for Supplying Global Environmental Benefits and Improving Local Welfare: A STAP advisory document Centre for Evidence-Based Conservation UK 08-011 1-76

[2] Gilmour D 2016 Forty years of community-based forestry - a review of its extent and effectiveness FAO 1-140
Acknowledgement
We would like to thank the International Collaboration Office (ICO) and Center for Transdisciplinary and Sustainability Sciences (CTSS) of IPB University to support funding for this publication.