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Momosad Values in Agroforestry Land Management for Green Economic

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ABSTRACT

This study investigates the cultural significance of *momosad* in promoting sustainable agroforestry land management and a green economy in Bolaang Mongondow, North Sulawesi. Although agroforestry has been acknowledged for its environmental and economic benefits, research on the incorporation of local cultural values into sustainable land management within rural agricultural communities is limited. This research employed a qualitative ethnographic method, conducted in-depth interviews and field observations with 15 agroforestry producers on the site. The data were evaluated thematically to discover *momosad* values that are still applied in land management. The findings indicate that values such as togetherness, social agreement, dependency among farmers, and cultural motivation are still prevalent in agroforestry practices, particularly among nuclear families and close relatives. These behaviors are expressed in communal effort, shared resource utilization, and the forging of social bonds among farming communities. These findings show that local cultural values are still important in promoting sustainable farming practices and community-based agroforestry management. This study emphasizes the need of incorporating local knowledge into the creation of green economy strategies in rural farming communities.

Keywords: agroforestry, green economy, local wisdom, *momosad*, sustainable land management

INTRODUCTION

Agroforestry has long been acknowledged as a sustainable land management strategy capable of promoting environmental conservation and rural community well-being (Muhtar *et al.* 2023). This approach blends forestry and agricultural crops into a unified land management unit, increasing production, preserving ecological functions, and promoting community food security (Triyogo *et al.* 2022). Agroforestry is also thought to be related to green economy principles in terms of sustainable development since it enhances resource efficiency, production diversity, and more adaptive land use in response to environmental changes (Pancholi *et al.* 2023).

However, most agroforestry research continues to focus on biophysical and economic issues rather than the socio-cultural dimensions that influence land management practices at the community level. In reality, in many rural areas of Indonesia, agroforestry methods are inextricably linked to local values, social norms, and traditional knowledge systems passed down through generations (Baydoun *et al.* 2024), and green economic transformation remaining insufficiently understood in depth (Singh *et al.* 2023; Castle *et al.* 2022).

One of the native values that persists in land management methods in the Bolaang Mongondow community is *momosad*, a cooperation value that promotes teamwork, communal responsibility, and social solidarity in agricultural activities. Historically, this value has served as the basis for labor division, land management, and farmer social connections (Mokoginta *et al.* 2014). However, socioeconomic changes, modernization, and shifting community interaction patterns have begun to have an impact on the long-term viability of *momosad* practices in rural communities (Mokoginta & Suparwata 2026; Li *et al.* 2023; Zhang & Huang 2026).

Previous research has been restricted in its examination of how local social values such as *momosad* contribute to the preservation of agroforestry techniques, as well as how these values relate to green economy principles at the community level. Most studies have focused on the technical aspects of agroforestry, with little emphasis paid to socio-ecological features based on local culture. As a result, the purpose of this research is to investigate the role of *momosad* in agroforestry land management and to examine their link to green economy principles in Bolaang Mongondow Regency.

Land management practices based on *momosad* have been passed down through generations in this area, which covers 148.99 km^2 in Bilalang Subdistrict and 937.55 km^2 in Lolayan Subdistrict, with each subdistrict having its own superior crop types. Bilalang

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Subdistrict is a mountainous area dominated by plantation crops such as candlenut, cocoa, coconut, and various fruits, whereas Lolayan Subdistrict is a lowland area dominated by rice paddies, some plantation crops, and vegetable crops such as chili and tubers.

Differences in superior plant kinds amongst small-scale family *momosad* groups in land management strategies from harvest to post-harvest (Kotamobagu dalam Angka 2024). This community not only focuses on agriculture, but it also improves farmer social relationships through knowledge and resource sharing (Shemshad *et al.* 2025; Bellanthudawa *et al.* 2025). Crop diversification allows them to help one another while dealing with fluctuating weather and market conditions. However, modernity, the flow of globalization, and economic pressures have all contributed to the decline of *momosad* values. Individualistic, pragmatic, and market-oriented labor patterns are becoming more prevalent, affecting social cohesion and leading to a drop-in mutual help practices in land management (Mokoginta *et al.* 2014).

Several studies indicate that conserving local values like *momosad* might boost socio-ecological resilience and aid in the transition to a green economic system (Asmanidar 2024). Thus, a thorough understanding of the dynamics of *momosad* values in agroforestry practices is essential (Cao *et al.* 2025), particularly when developing strategies to revitalize cultural values for sustainable development. The purpose of this study was to investigate how *momosad* ideals are still embodied in agroforestry land management methods in the Bolaang Mongondow region, as well as how they contributed to the realization of green economy principles, with a focus on the Bilalang and Lolayan subdistricts. To discover this, an anthropological approach was employed.

METHODS

This study was carried out from February to July 2025 in Bolaang Mongondow Regency, North Sulawesi Province, notably in Bilalang and Lolayan subdistricts. The sites were purposefully chosen because both places still practice community-based agroforestry practices combined with the local knowledge value of *momosad*, and they exhibit mixed farming systems dominated by collective work based on family relationships.

This research employed a qualitative method with an anthropological design to gain a thorough understanding of the meanings, social behaviors, and cultural values of *momosad* in community agroforestry management. The study involved 15 informants, including agroforestry farmers, community leaders, and agricultural extension agents, who were chosen based on at least 10 years of expertise in agroforestry management, participation in *momosad* practices, and knowledge of local farming systems. The snowball sampling technique was used to choose informants, beginning with key informants and progressing along the list until data saturation. Semi-structured interviews, participatory observation, and documentation, including field notes, activity photographs, and local institutional documents, were used to gain a comprehensive understanding of collective work practices, *momosad* values, and farming communities' socioeconomic dynamics.

Data were analyzed qualitatively using Miles *et al.* (2014) interactive model, including data reduction, data display, and conclusion drafting and verification. During reduction step, the data were categorized based on *momosad* values, agroforestry practices, and their relevance to green economy principles such as cooperation, social agreement, social interdependence, cultural motivation, and mixed agroforestry practices.

Subsequently, the data were presented in narrative and thematic matrices to discover patterns of correlations between *momosad* values and green economy variables such as resource efficiency, social engagement, environmental sustainability, and livelihood system resilience. The analysis method was strengthened by using open coding, axial coding, and selective coding to create *momosad*'s key theme of social capital in sustainable agroforestry management. The relationship between *momosad* and the green economy was investigated by examining patterns and conceptual meanings drawn from the field data. Data validity was guaranteed through source triangulation, technique triangulation, and time triangulation, as well as member checking to verify research interpretations were accurate.

RESULTS AND DISCUSSION

Momosad Values in Agroforestry Land Management

Momosad ideals are still being implemented in community agroforestry land management in Bolaang Mongondow, as evidenced by four major themes: cooperation, social agreement, social interdependence, and cultural incentive (Table 1). These factors reveal that *momosad* is more than just a local cultural icon; it also serves as a social mechanism that supports the long-term viability of communal agroforestry initiatives. The empirical data show that cooperative methods are still used in planting, weeding, and harvesting operations, notably among family members and close relatives. These techniques increase communal engagement while decreasing reliance on external labor, suggesting that local cultural values remain vital in maintaining social bonds and rural agricultural activities in the face of increasing socioeconomic change. Altieri *et al.* (2024), Wilson (2014), and Bijalwan *et al.* (2024) revealed similar

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findings, stating that local agricultural knowledge and culture-based social activities continue to be vital in the sustainability of rural farming systems. Furthermore, Seftiani *et al.* (2025) and Reed *et al.* (2025) stressed the importance of local cultural values in developing social interactions and promoting collective engagement in community-based agriculture management.

The feature of social agreement given demonstrates that informal agreements amongst farmers are still utilized to govern labor division, planting timetables, and the usage of common resources. These agreements demonstrate that social norms and collective values continue to impact decision-making processes in community agroforestry management. However, the findings also reveal that communal work practices that used to involve larger village groups have gradually reduced as labor has become more commercialized and market-oriented agricultural systems have expanded. Several respondents replied that wage-based labor arrangements are currently viewed as more efficient in achieving agricultural production demands. This condition confirms that rural socioeconomic revolution has prompted a shift in community social ties away from communal working methods and toward market-based economies.

Lu *et al.* (2025) reported similar findings, stating that agricultural modernization and market integration are likely to shift traditional labor relations into wage-based economies. Likewise, Liu *et al.* (2026) and Balongo (2024) noted that rural socioeconomic transition has a substantial impact on changes in social interaction patterns and collective agriculture methods. Nonetheless, kinship-based cooperation persists because it is founded on trust, familial duty, and mutual help among family members. Trust-based connections are therefore still vital in sustaining rural agricultural activity. Lin *et al.* (2021), Chaudhuri *et al.* (2021), and He *et al.* (2022) revealed similar results, stating that kinship-based social networks contribute greatly to community-based resource management and farm household resilience.

Table 1 also presents a pattern of social interdependence that farmers continue to support community agroforestry operations by exchanging labor, seeds, agricultural information, and land management knowledge. These mutually beneficial partnerships aid farming households in overcoming labor shortages, fiscal constraints, and agricultural output concerns. The prevalence of reciprocal interactions among farmers suggests that social relationships continue to play an important role in enhancing rural communities' adaptive capacity in the face of economic pressures and agricultural obstacles.

Farming households with greater access to social networks are often better equipped to sustain agricultural productivity and deal with resource constraints. Tang *et al.* (2025) and Gonzalez-Gamboa *et al.* (2025) observed similar outcomes, explaining that reciprocal social connections increase socioeconomic resilience and adaptive capacity in the face of environmental and market shocks. Furthermore, Khairussalam *et al.* (2024), Dey *et al.* (2024), and Singh *et al.* (2020) highlighted the importance of social networks, reciprocal relationships, and social capital in ensuring the long-term viability of community-based resource management. Hence, *momosad* values continue to serve as social capital, enhancing social cohesiveness, collective resilience, and the viability of community agroforestry systems.

The cultural motive discovered in this study suggests that farming operations are not just viewed as economic pursuits, but also as cultural and family duties passed down through generations. Several respondents reported that they continue to grow food crops, vegetables, bananas, and small-scale livestock to meet their household subsistence requirements. This condition suggests that local cultural values continue to affect community agroforestry management systems and assist the preservation of traditional farming practices. The transmission of agricultural expertise, family work traditions, and land management responsibilities exemplifies the survival of local cultural systems within rural communities. Rajak *et al.* (2026) and Wang *et al.* (2023) revealed similar outcomes, explaining that intergenerational transmission of agricultural knowledge and cultural values plays an important role in the viability of traditional farming systems.

Furthermore, Negi and Maikhuri (2013), Adefila *et al.* (2024), and Fenetiruma and Kamakaula (2023) noted that culture-based agricultural techniques have a substantial impact on ecological sustainability, food security, and the continuity of rural livelihoods. These findings suggest that local culture functions not only as

Table 1 Thematic relationship between *momosad* values and agroforestry management

Values	Empirical findings from Interviews	Socio-ecological relevance
Mutual cooperation	Farmers work together in planting, weeding, and harvesting activities within family groups	Strengthens collective participation and reduces dependence on external labor
Social agreement	Informal agreements regulate labor division, planting schedules, and shared resource use	Supports local coordination and collective responsibility
Social dependency	Exchange of labor, seeds, agricultural information, and market information among farmers	Strengthens social cohesion and reciprocal support within farming communities
Cultural motivation	Farming is perceived as a cultural and family responsibility passed down across generations	Supports the continuity of traditional farming practices and household food availability

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social heritage, but also as an adaptive strategy for maintaining the interaction between communities, land, and natural resources.

Overall, the results show that the sustainability of community agroforestry management is influenced not only by economic and ecological factors, but also by the interaction of cultural systems, social relationships, and local communities' adaptive capacity in responding to rural socioeconomic changes. This study's outcomes on collaboration, social agreement, reciprocal relationships, and cultural motivation suggest that *momosad* ideals continue to play a key role in community agroforestry management. These are consistent with Toledo and Argueta's (2024) explanation that the link among culture, local knowledge, and the environment creates an adaptive system that allows rural communities to strike a balance between economic requirements and environmental sustainability.

Berkes (2009) made similar ideas, emphasizing the importance of traditional ecological knowledge and local social structures in promoting sustainable community-based natural resource management. As a result, this study supports Steward's (1955) cultural ecology hypothesis, that culture evolves as a type of community adaptation to environmental and socioeconomic situations. Therefore, the capacity of local culture to create social and ecological adaptive mechanisms within rural communities has a significant impact on the long-term viability of human-environment linkages.

Analysis of the Relationship between Momosad Values and the Green Economy

The study's results show that the *momosad* value in agroforestry management serves as a socio-ecological mechanism that promotes the sustainability of community-based production systems (Table 2). The *momosad* values of cooperation (GR-1), social agreement (KS-1), social interdependence (KT-1), and cultural motivation (MV-1) have been demonstrated to form the primary social structure that integrates economic, social, and ecological dimensions in agroforestry management based on coffee, clove, candlenut, banana, and other food crops.

In terms of collaboration (GR-1), the data indicate that production tasks such as planting, maintenance, and harvesting are carried out collaboratively within nuclear family groups, with little reliance on outside labor. Within the context of the green economy, this condition shows resource efficiency by optimizing local labor and reducing reliance on more expensive external inputs with a larger environmental footprint. This pattern also suggests that the community-based agroforestry system promotes economic efficiency while reducing reliance on external resources, which is consistent with Li *et al.*'s (2024) assertion that the green economy prioritizes improved human well-being through efficient and low-emission resource use.

Regarding social agreement (KS-1), agricultural management is based on informal obligations without financial compensation, such as labor division, planting schedules, and community resource management. From a green economy standpoint, this condition symbolizes inclusive government based on social capital. Khoso *et al.* (2025) put forward trust and reciprocity standards that improve coordination efficiency and lower transaction costs, resulting in more sustainable community-based economic systems. In this setting, social agreement serves as a non-market mechanism that improves production system stability while minimizing economic and environmental costs. In terms of social interdependence (KT-1), the study discovered that farmers exchange agricultural

Table 2 Relationship between *momosad* values and green economy

Aspect	Field practice description	Economic pillar (Efficiency)	Social pillar (Inclusion & equity)	Environmental pillar (Sustainability)
Cooperation (GR-1)	Collective family labor in agroforestry planting, maintenance, and harvesting	Cost efficiency using local labor; reduced dependence on external labor	Strengthening family solidarity and cooperation in production systems	Reduced reliance on intensive external inputs that may increase environmental pressure
Social agreement (KS-1)	Informal commitments in labor division, planting schedules, and land management without formal contracts	Reduced transaction costs and improved production coordination efficiency	Strengthening social capital, trust, and community-based governance	More stable and well-organized land management, supporting sustainable land use
Social interdependence (KT-1)	Exchange of tools, seeds, labor, and information based on reciprocity	Efficient resource distribution through resource-sharing systems	Strengthening social networks and farmer community resilience	Supporting local circularity in agricultural resource utilization
Cultural motivation (MV-1)	Farming as ancestral heritage and intergenerational responsibility	Long-term production sustainability through non-economic commitment	Preservation of cultural values, social identity, and local knowledge	Conservation of agroforestry practices based on local wisdom and ecological balance

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implements, seeds, labor, and information through reciprocal mechanisms. Within the green economy concept, this pattern exemplifies social circularity, which improves resource distribution efficiency and community resilience. Khodaparast *et al.* (2025) underline that common resource systems are sustainable when supported by strong social networks and robust reciprocity mechanisms, which in this context help to reduce resource waste and improve socio-ecological systems' adaptive ability.

Viewing cultural motivation (MV-1), the data display that farming activities are viewed as an ancestral heritage comprising moral values, social identity, and intergenerational duty. From a green economy standpoint, this cultural motive reflects social sustainability, which fosters the transmission of local knowledge and community attachment to the land. Das (2026) emphasizes that the preservation of traditional knowledge is critical to the sustainability of food systems, whereas Chen & Ma (2023) emphasize that cultural values play an important role in ensuring the stability of ecologically based farming systems and minimizing environmental degradation.

Overall, the four dimensions of *momosad* values form an adaptive socio-cultural system that represents the three main pillars of the green economy at the same time: economic efficiency through local resource optimization, social inclusion through strengthened social capital and reciprocity, and ecological sustainability through the stability of agroforestry systems founded on local knowledge. Thus, *momosad* principles serve not only as a local cultural system, but also as a catalyst for a community-based green economy that blends economic, social, and ecological sustainability in agroforestry management systems.

This finding is consistent with Niwalkar *et al.* (2023), who define the green economy as an economic system that improves human well-being and social fairness while considerably lowering environmental dangers. Furthermore, the ability of a society to manage resources collectively through social rules and trust determines the sustainability of socio-ecological systems (Ostrom 2009). Putnam (1993) declared that robust social capital built on trust networks and reciprocity norms is a critical foundation for improving institutional performance and the long-term viability of community-based development. Thus, *momosad* values can be regarded as a local manifestation of green economy principles based on the enhancement of sustainable socio-ecological systems.

CONCLUSION

Momosad ideals continue to have an important socio-cultural role in agroforestry management in Bolaang Mongondow Regency. Although their practice has become more concentrated within nuclear families and kinship networks, fundamental values like cooperation, social agreement, social interdependence, and cultural motivation continue to shape farming practices, resource sharing, and community-based agricultural activities. These qualities help to preserve group activity and sustain agroforestry systems at the household level. In addition, agroforestry methods in the research area are distinguished by mixed-cropping systems that include perennial crops, food crops, and plantation crops on a single land unit. This approach is maintained because it is compatible with local natural circumstances and household livelihood requirements. The findings show that *momosad* values are closely related to participatory and community-based sustainable agriculture, and they are relevant to the local green economy approach, particularly in terms of strengthening social capital, promoting shared resource utilization, and increasing farming households' resilience.

In theory, this study demonstrates that the sustainability of agroforestry systems is governed not only by ecological and economic considerations, but also by the presence of local social institutions and cultural values that guide collective behavior. It contributes to the socio-ecological systems perspective by demonstrating how social norms, kinship relationships, and cultural values interact with ecological land-use practices to support rural production systems. In practice, the findings imply that reinforcing and renewing local cultural values like *momosad* might be a strategic starting point for supporting sustainable agroforestry growth. Policy interventions should therefore support community-based institutions, strengthen kinship-based collaboration, and incorporate local expertise into rural development projects to improve both ecological sustainability and rural livelihood resilience.

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