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From Mining to Agriculture: Livelihood Transformation and Socioeconomic Vulnerability of the Community Following the Closure of Illegal Gold Mines in Bakan Village

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ABSTRACT

This study aims to analyze changes in livelihoods and the socioeconomic conditions of the community following the closure or restriction of unauthorized gold mining activities in Bakan Village, Lolayan District, Bolaang Mongondow Regency. A descriptive qualitative approach was employed, with data collected through observation, interviews, and documentation involving individuals who had previously worked in or been involved with illegal gold mining. The data were analyzed through the processes of data reduction, data presentation, and conclusion drawing. The findings indicate that, prior to the restrictions, some community members combined farming specifically the cultivation of cloves and coconuts with gold panning to generate supplementary income, particularly during the periods between harvests. Following the implementation of these restrictions, the community returned to relying solely on agriculture and plantation activities, thereby losing a source of income that had previously helped meet household needs. The study also reveals that some residents face limited access to alternative employment within formal mining companies due to a lack of necessary skills or an inability to meet specific job requirements. These findings demonstrate that changes in the management of mining activities have impacted the livelihood strategies and economic adaptability of a portion of the community. Consequently, there is a need to strengthen the agricultural and plantation sectors, provide vocational skills training, and expand access to alternative employment opportunities to support the sustainability of community livelihoods following the closure of mining operations.

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INTRODUCTION

Gold mining is a form of natural resource utilization that carries consequences for the lives of surrounding communities. For some rural residents, mining serves as a source of income that helps meet household needs particularly when agricultural yields fail to provide a steady stream of earnings. At the same time, however, such activities are linked to issues concerning occupational safety, environmental degradation, legal status, and the uncertain long-term viability of the work. In their study on artisanal and small-scale gold mining in Indonesia, Meutia, Lumowa, and Sakakibara explain that while these activities offer employment opportunities and income for the community, they simultaneously give rise to various environmental, health, safety, and governance challenges (Meutia et al., 2022). These findings indicate that gold mining is not merely about the utilization of mineral resources, but also involves changes in the living conditions of the people who rely on such activities for a portion of their income.

Community involvement in mining can be understood through the relationship between livelihood sources, the availability of employment, and household needs. Hilson explains that small-scale mining and agriculture can be interconnected within the lives of rural communities (Hilson, 2016;

Hilson et al., 2025). Income from mining can be used to support household needs when agricultural produce is not yet available, while agriculture remains an essential source of livelihood. This relationship demonstrates that people do not necessarily abandon farming when they enter the mining sector; rather, they may engage in both activities simultaneously to align with their income patterns and living requirements. Although Hilson's research focuses on sub-Saharan Africa, the concept of the interlinkage between mining and agriculture can serve as an analytical framework for understanding the livelihood patterns of rural communities in Indonesia, while accounting for the specific local characteristics of each region.

Robert Chambers and Gordon Conway explain that a livelihood encompasses the capabilities, assets, and activities that an individual or household uses to sustain their life (Chambers & Conway, 1992). Sustainable livelihoods are determined not only by the ability to generate income, but also by the capacity to cope with pressures, recover from shocks, and maintain the resources necessary for the future. This perspective helps explain why the loss of an income source can create problems that extend well beyond the mere loss of a job. When an economic activity ceases, individuals and communities must adapt their use of available assets, skills, and employment opportunities to ensure that household needs continue to be met.

Ian Scoones developed a sustainable livelihoods analytical framework, positioning natural resources, human capital, social capital, and economic capital as elements that influence people's livelihood strategies (Scoones, 1998). This framework suggests that an individual's or household's ability to cope with change depends not only on their willingness to seek new employment but also on the resources and opportunities available to them. Meanwhile, Frank Ellis explains that livelihood diversification serves as a strategy for rural households to navigate uncertainty and reduce their reliance on a single source of income (Ellis, 2000). Thus, the combination of agricultural and mining work can be understood as a form of livelihood adjustment, while the cessation of either activity may alter the balance of income sources that previously sustained the household.

Anthony Bebbington's thinking also emphasizes the importance of people's assets and capabilities in determining their livelihood choices (Bebbington, 1999). Assets serve not only as a source of income but also enable communities to develop strategies for navigating change and expanding their life choices. In the context of communities previously dependent on the mining sector, such assets may include agricultural land, work experience, technical skills, social networks, and access to alternative employment opportunities. If the available assets are limited or do not align with the requirements of alternative jobs, a community's capacity to adapt following a mine closure may be constrained. Therefore, any transition in livelihoods must be examined by considering the specific conditions and capabilities of households, rather than focusing solely on the change in the type of work performed.

This issue is significant in the context of illegal gold mining (PETI). Mining activities that do not comply with licensing requirements can give rise to legal, environmental, and occupational safety problems (Kerebungu et al., 2020, 2022; Kerebungu & Fathimah, 2022). Siegel and Veiga explain that small-scale mining, which takes place outside the formal system, has a complex relationship with people's livelihood conditions and formalization policies (Siegel & Veiga, 2009). Spiegel also points out that the governance of informal mining is linked to issues of institutional arrangements, resource rights, and regulatory complexity (Spiegel, 2012). These two studies show that handling informal mining cannot be separated from the conditions of the communities involved in it. Although enforcement is necessary to support resource governance and environmental protection,

changes in access to mining activities can also affect the income sources of communities that previously depended on this work.

In Indonesia, regulations concerning mineral and coal mining are governed, among other things, by Law of the Republic of Indonesia Number 3 of 2020 concerning Amendments to Law Number 4 of 2009 concerning Mineral and Coal Mining (Republik Indonesia, 2020; Undang-Undang Nomor 4 Tahun 2009 Tentang Pertambangan Mineral Dan Batubara, 2009). Thus, mine closure needs to be studied not only as a change in the status of mining activities, but also as an event that can change community livelihood strategies.

This situation can be observed among the community of Bakan Village, in the Lolayan District of Bolaang Mongondow Regency, North Sulawesi. According to the thesis by Yusran Mokoginta the primary source for this article the residents of Bakan Village engage in diverse livelihoods, including farming, plantation work, and gold mining. Many residents who work as miners also participate in agricultural or plantation activities, specifically by cultivating clove and coconut trees. Mining serves as a supplementary source of income while they await their harvests. This indicates that, for some residents, mining is part of a broader livelihood strategy rather than a complete replacement for agricultural work. Income from mining helps some households meet their daily needs during periods when plantation yields are not yet available.

Following the restriction or closure of illegal gold mining activities, individuals who previously derived income from such operations have faced changes in how they meet their household needs. Research findings presented in this thesis indicate that some informants are no longer able to engage in mining as they once did, forcing them to rely once again on agriculture or plantation-based livelihoods. This shift is significant because income derived from agriculture follows a different pattern than that from mining; agricultural yields are contingent upon harvest cycles and production conditions, whereas mining previously served as a source of supplementary income outside of harvest periods. Consequently, the cessation of mining activities affects not only the total income received but also the timing and regularity of the cash flow available to cover family expenses. This situation highlights the challenges involved in adapting one's livelihood after the loss of a key income source.

In addition to shifts in income sources, the thesis highlights that some members of the community face limited access to employment within the mining companies operating in the region. Several informants indicated that they lack the skills required by these companies. They expressed a desire for job opportunities and training that would enable them to meet the specific requirements of available positions. These findings demonstrate that the presence of a mining company in an area does not automatically guarantee employment access for the entire local population. Factors such as technical skills, work experience, recruitment criteria, and the ability to adapt to different types of work can all influence an individual's prospects for securing alternative employment. Consequently, limited access to formal jobs is a critical aspect that must be considered when analyzing a community's capacity to adapt following the cessation or restriction of illegal mining activities.

In the framework of Chambers and Conway, Scoones, and Ellis, this condition can be understood as a challenge in maintaining livelihoods when sources of income change. Households that have productive land, diverse skills, social networks, or alternative sources of income may have different adjustment options than households that are more dependent on mining income. However, the existence of assets does not in itself guarantee that people can immediately restore their living conditions. Access to markets, employment opportunities, training, and institutional support may

also influence the choices available. Therefore, the experiences of the Bakan Village community need to be studied by paying attention to the relationship between changes in sources of income, the condition of household assets, and community opportunities to develop alternative employment.

Research on small-scale gold mining has discussed the link between mining and livelihoods, agriculture, environmental conditions and community welfare. In several of Hilson's writings, he examines the relationship between small-scale mining and agriculture in the lives of rural communities (Hilson, 2011, 2012; Hilson & Hu, 2022). Meutia et al. outline various issues associated with small-scale gold mining in Indonesia, including impacts on the environment, health, safety, and governance. Meanwhile, Ardikoesoema and Karuniasa examine the transformation of livelihoods within illegal gold-mining communities in Poboya, Palu City (Ardikoesoema & Karuniasa, 2025), by considering economic, social, and environmental assets, as well as the motivations behind shifts in livelihoods. This research serves as a relevant point of comparison, as it similarly explores the relationship between illegal mining activities and changes in people's livelihoods.

Nevertheless, the experiences of the community in Poboya cannot be directly equated with the conditions faced by the community in Bakan Village. Differences in livelihoods, agricultural patterns, skill sets, access to companies, and engagement with policy frameworks can lead to distinct processes of adjustment. Furthermore, research on illegal gold mining must also consider the situation following the cessation or restriction of such activities specifically, how households reorganize their income sources and navigate limited employment opportunities. As highlighted in the thesis under review, the core issue in Bakan Village extends beyond the loss of income from mining; it encompasses the complex interplay between a reliance on mining revenue, the seasonal nature of agricultural earnings, and restricted access to alternative forms of employment. This perspective allows for a nuanced understanding of the community's experiences, grounded in their specific local context.

Based on the preceding discussion, this article aims to analyze the transformation of livelihoods and the socio-economic vulnerability of the community in Bakan Village following the closure or restriction of illegal gold mining activities. The analysis focuses on shifts in household income sources, the interlinkages between mining and agricultural activities, limited access to alternative employment, and the efforts made by the community to adapt and meet their basic living needs. Drawing upon the theoretical frameworks of Chambers and Conway, Scoones, Ellis, and Bebbington, this article seeks to explain how changes in access to livelihood resources relate to the assets and capacities of the community in navigating and responding to such transformations (Bebbington, 1999; Chambers & Conway, 1992; Ellis, 2000; Scoones, 1998). It is hoped that the results of the study will enrich research on changes in people's lives in mining areas and become consideration for stakeholders in formulating steps to handle mining that pay attention to law enforcement, environmental protection, improving skills and expanding alternative livelihood opportunities.

METHOD

This study employs a qualitative approach (Creswell & Clark, 2011) this study employs a descriptive research design to understand the shifts in livelihoods and the socioeconomic conditions of the community following the closure or restriction of unauthorized gold mining activities in Bakan Village, Lolayan District, Bolaang Mongondow Regency. This approach was selected because it allows the researcher to explore the experiences, perspectives, and living

conditions of the community based on the situations they have encountered. Data collection was conducted through observation, interviews, and documentation. Observation was used to examine the community's living conditions and the livelihood activities pursued after the mining operations were closed or restricted. Interviews were carried out to gather information regarding changes in income sources, strategies for meeting household needs, transitions in livelihoods, and the challenges faced by the community. Documentation served as supplementary data to enrich the information obtained through observation and interviews. The research informants included residents of Bakan Village specifically those with experience working in or being involved in illegal gold mining, as well as individuals who experienced a change in their livelihood following the restriction or closure of such activities. The collected data were analyzed qualitatively through the processes of data reduction, data presentation, and conclusion drawing. To ensure the validity of the data, information gathered from interviews was cross-referenced with findings from observations and documentation. The analysis focuses on shifts in livelihoods, household income conditions, community adaptation strategies, and the socioeconomic vulnerabilities that emerged following the closure or restriction of illegal gold mining.

RESULT AND DISCUSSION

Livelihood Transformation and Changes in Community Income Following the Closure of Illegal Gold Mines

The community of Bakan Village, in the Lolayan District of Bolaang Mongondow Regency, relies on livelihoods linked to agriculture, plantations, and gold mining. Research findings indicate that while some residents work as clove and coconut farmers, they also engage in gold panning to earn supplementary income. Mining serves as an alternative source of revenue, particularly during the periods when residents are waiting for their plantation crops to be harvested. This situation suggests that, for some informants, mining activities do not entirely replace their work as farmers; rather, they function as part of a household strategy to meet economic needs.

This is illustrated by the first interview question in the thesis: “Are you one of the individuals involved in mining activities in Bakan?” In response, informant S.M. explained that he has been working in mining for approximately five years. He noted that, in addition to working as a farmer, he engages in mining activities while waiting for his crops to reach harvest time. Meanwhile, informant R.M. stated that while his primary occupation is clove farming, he has also been involved in illegal mining for about four years. The accounts from both informants reveal a connection between agricultural and mining activities within the community’s economic life. Agriculture and plantation farming provide a seasonal livelihood, whereas gold panning offers an opportunity to generate income outside of the harvest season. Consequently, the community’s decision to work in mining is inseparable from their household needs and their efforts to capitalize on the economic opportunities available within their local environment.

However, once illegal gold mining activities were curtailed and the mining site was taken over by PT J Resources Bolaang Mongondow, the local community could no longer engage in gold panning as freely as they once had. This shift affected household income patterns, particularly for residents who had previously relied on mining as a supplementary source of earnings. Some community members have since refocused their efforts on managing their gardens and agricultural produce to meet their families' needs. This impact is reflected in the second interview question: “Has your family been affected by the government’s closure of the Bakan mine?” One informant identified by the initials D noted that the economic impact was palpable, as they previously earned

a monthly income even outside of the harvest season. Following the mine's closure, they have had to focus on managing their agricultural output more effectively. Another informant, M.D., explained that their family's socioeconomic situation has shifted, as the income that was once readily available has now become limited.

This information indicates that the primary impact of mining restrictions lies in the reduction of available income sources. When gold panning activities can no longer be carried out as they once were, the community must rely on the agricultural and plantation sectors activities that do not necessarily yield returns on a monthly basis. This situation highlights the discrepancy between the availability of livelihood sources and the capacity of those sources to meet household needs in a sustainable manner. These findings can be interpreted through the framework of Ian Scoones (1998) regarding livelihood strategies. Scoones emphasizes the importance of understanding how people utilize resources and combine various activities to sustain their lives. In the case of Bakan Village, the combination of agriculture and mining can be understood as a form of livelihood diversification. When one of these income sources becomes inaccessible, a household's ability to maintain its economic standing depends on the other resources that remain available.

Frank Ellis's (2000) perspective on livelihood diversification is also relevant for explaining this situation. While diversification can help households cope with income uncertainty, its benefits depend on the availability of and access to employment options. The experience of the community in Bakan Village demonstrates that having multiple income sources previously provided households with the means to meet their economic needs. Conversely, restrictions on mining activities have deprived some residents of one of the income streams they had relied upon. Nevertheless, these shifts in livelihoods cannot be generalized to the entire population of Bakan Village. This thesis primarily describes the experiences of informants who were directly involved in mining activities. Therefore, these findings are best understood as reflecting the experiences of a specific group those who have directly faced a reduced ability to earn income from mining rather than as evidence that all households have experienced the same degree of economic decline.

Overall, the changes taking place in Bakan Village represent more than just a shift in employment from mining to agriculture; rather, they reflect a transformation in the mix of household income sources. Prior to the restrictions, some community members combined earnings from agriculture and plantations with income derived from mining. Once access to the mines was restricted, they were compelled to readjust their livelihood strategies by optimizing the resources still available to them. This situation underscores the critical importance of having alternative income sources to ensure the economic sustainability of rural communities.

Socioeconomic Vulnerability, Access to Alternative Employment, and the Need for Community Empowerment

The changes following the restrictions on illegal gold mining involve not only a decline in income but also a limited range of alternative employment options for some members of the community. Once the mining sites came under the management of PT J Resources Bolaang Mongondow, those who previously engaged in artisanal gold panning no longer had the same freedom to utilize these locations as a source of livelihood. At the same time, transitioning to formal employment with the company has proven difficult, primarily due to gaps in the necessary skills and requirements for such roles.

This issue is reflected in the fourth interview question presented in the thesis: "In your view, what should the community do if they wish to engage in or manage mining activities again?" In response, informant M.D. noted that he had previously applied for a position with a company that manages mining operations, but felt that access for local residents to secure employment remained limited. This account highlights the community's aspiration to gain job opportunities through formal channels, even as they face significant barriers in accessing such prospects.

This challenge is further elaborated upon by informant E.D., who explained that they have not been employed by PT J Resources because they are considered to lack the skills required by the company. E.D. expressed a hope that the government would provide local residents with opportunities to work at the company, while also offering training to ensure they acquire the necessary skills. E.D.'s statement highlights that the issues following a mine closure extend beyond the loss of previous income sources; there is also a gap between the skills possessed by the local community and the requirements for alternative employment. Experience in traditional gold panning does not automatically confer the qualifications needed to work for a mining company. The thesis also notes that a lack of proficiency in operating equipment, along with age-related factors, serves as a barrier for some residents in meeting the company's job requirements.

This situation demonstrates that the presence of a mining company in a given area does not necessarily guarantee employment opportunities for the local community. A shift in mine management can alter the community's access to economic resources, while access to formal employment is often contingent upon specific requirements and competencies. Consequently, individuals who lose the opportunity to engage in artisanal gold mining cannot always immediately transition to other forms of work that provide a comparable income. In this context, socio-economic vulnerability can be understood as a state in which a household's ability to sustain its livelihood becomes constrained due to a decline in income sources and the difficulty of accessing alternative employment. This vulnerability is not solely a result of mine closures; rather, it is also linked to the conditions that existed within the community prior to such changes including a heavy reliance on mining activities, the specific nature of income derived from plantations, and a lack of the skills necessary to pursue alternative forms of employment.

The ideas of Robert Chambers and Gordon Conway (1992) regarding sustainable livelihoods help shed light on this issue. Livelihood sustainability concerns the ability of a community to maintain its means of living, cope with pressures, and utilize resources to meet its needs. In the case of Bakan Village, the capacity to adapt is determined not only by the community's willingness to return to farming, but also by the extent to which income from agriculture and plantations can satisfy family needs, and whether there are other accessible employment opportunities available to them.

The informants' expectations regarding job training represent a significant finding, as they indicate that the community requires support to adapt to shifts in the local economic structure. Relevant training, coupled with access to information and employment opportunities, has the potential to broaden livelihood options for those who can no longer rely on mining activities. Furthermore, strengthening the agricultural and plantation sectors could also serve as part of an empowerment strategy, given that these sectors were a source of livelihood for the community before mining activities were restricted.

However, the interview results must be interpreted with appropriate perspective. The statements made by informants regarding the difficulty of securing employment at the company reflect the

personal experiences and perceptions of those interviewed. Such data are insufficient to conclude that the entire local population is being rejected by the company, or that the company does not hire local residents at all. Furthermore, this study has not provided a measurable indication of the extent to which job training might increase household income. Therefore, these findings are best understood as highlighting a need for capacity building and the expansion of access to alternative employment opportunities.

From a social perspective, changes in livelihoods also show the relationship between natural resource management policies and the economic needs of society. Restricting illegal mining activities is related to controlling activities that do not have permits, but this change also affects groups of residents who previously earned income from these activities. Therefore, mining management and community empowerment need to be understood as two interrelated issues, even though they have different goals and mechanisms.

Based on these findings, the development of alternative livelihoods in Bakan Village could focus on enhancing agricultural and plantation productivity, providing vocational training tailored to market demands, and expanding access to information and employment opportunities. Such efforts must account for variations in age, work experience, existing skills, and the resources available to each household. Consequently, empowerment programs should not merely center on training provision, but also on ensuring that community members have a realistic opportunity to apply these skills to generate income. Overall, the experience of the people in Bakan Village demonstrates that restricting illegal gold mining has implications for livelihood sustainability particularly for residents who previously combined farming with artisanal gold panning. A decline in income sources, coupled with limited access to alternative employment, has forced some households to adjust their economic strategies. These findings underscore that successful natural resource management must be accompanied by attention to the community's adaptive capacity and the availability of viable livelihood options.

CONCLUSION

Research findings indicate that the closure or restriction of illegal gold mining activities in Bakan Village, Lolayan District, Bolaang Mongondow Regency, has led to shifts in the livelihoods and socio-economic conditions of some residents who were previously involved in mining. Prior to these restrictions, many residents combined farming specifically the cultivation of cloves and coconuts with gold panning to generate supplementary income, particularly during the periods between harvests. Following the restrictions on mining, these individuals have returned to relying solely on agriculture and plantation work, yet they have lost a vital income stream that once helped meet their household needs. This situation demonstrates that a shift in livelihood involves more than just a change in occupation; it also entails limited options for income generation and challenges for households in maintaining economic stability. Furthermore, the research reveals that some residents face obstacles in securing alternative employment within formal mining companies due to a lack of necessary skills or a failure to meet specific job requirements. Consequently, the post-closure impact extends beyond a reduction in income to include restricted access to alternative means of subsistence. Nevertheless, these experiences cannot be generalized to the entire population of Bakan Village, as conditions and adaptive capacities vary from one household to another. Based on these findings, three recommendations are proposed. First, the local government should strengthen the agricultural and plantation sectors by providing guidance, enhancing productivity, and supporting the marketing of agricultural produce, thereby ensuring more sustainable income sources for the community. Second, the government and mining

companies should foster skills development and expand access for local residents to alternative employment opportunities that align with their capabilities and the labor market's needs. Job training initiatives should be accompanied by clear information regarding job requirements and realistic placement prospects. Third, empowerment programs should be tailored to the specific conditions and needs of individual households, particularly for those who previously relied on mining as a supplementary source of income. Future research is advised to examine in greater depth the variations in economic impact based on livelihood type, the degree of dependence on mining, and household adaptive capacity. Such an analysis is essential for formulating community empowerment strategies for the post-mine-closure period that are more targeted and well-aligned with local conditions.

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