

Cultural and Environmental Dynamics in Social Transformation: The River-to-Land Transition in Central Kalimantan, Indonesia

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Abstract

This study investigates the socio-cultural transformation of the Bakumpai community in Tumbang Samba, Central Kalimantan, driven by a major shift from river-based to land-based life. Traditionally reliant on riverine systems for livelihood, mobility, and identity, the community has undergone fundamental changes due to infrastructure development and the prohibition of illegal logging and mining. The objective of this research is to explore the dynamics of social change in this context, particularly how internal resilience and external pressures intersect to shape new social patterns. Employing a qualitative research design, the study used interviews, observations, and applied grounded theory through open coding procedures to generate conceptual categories. The findings reveal five key domains of transformation: spatial reconfiguration, occupational transition, technological integration, reorganization of social relations, and cultural reinterpretation. These shifts mark a profound redefinition of identity, economy, and interaction—from water-bound collectivism to land-based functional differentiation. The adoption of mobile technology, the relocation of settlements and trade centers, and the diversification of economic activities signify a move toward a digitally connected land society. In conclusion, the study offers a substantive theory of transition from river dependency to networked land adaptation, demonstrating how communities co-produce change by blending traditional values with modern modalities in response to policy, infrastructure, and ecological restructuring.

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INTRODUCTION

Development plays an ambivalent role in society. On one hand, it can bring about profound social change; on the other, development can empower communities by fostering local potential toward independence and improved well-being. Development not only results in physical transformation but also generates positive values that motivate communities to continually strive for welfare, both individually and collectively. Development that is empowerment-oriented not only transforms the material conditions of society but also strengthens their socio-cultural foundations. As highlighted, development initiatives focused on marginalized groups can enhance their dignity and capacity to escape poverty while instilling essential values such as hard work, responsibility, and mutual cooperation. These values act as catalysts for community self-reliance and active participation in the development process (Farida & Qabandiya, 2022; Hikmawati, 2022). Ideally, successful development reduces communities' dependence on regional or central governments. Essentially, development is a process of change directed toward improving the social, cultural, and economic conditions of a community (Zaipa & Matemba, 2023; Zdenek, 2021). The government plays a central role in this process by creating policies and programs aimed at enhancing people's quality of life. Sustainable development involves efforts to improve the quality of life and welfare of local communities through the enhancement of various aspects of life. Within the participatory development paradigm, the community acts not only as the object but also as an active subject contributing to community development, which ultimately supports national development (Das & Mukhopadhyay, 2024; Jiang, 2020; Olakunle, 2019).

The Bakumpai community (sub-ethnic of Dayak) residing in the Tumbang Samba area, Katingan Regency, is one of the local communities with significant potential in regional development. Located at the confluence of the Samba and Katingan Rivers, this community mainly comprises Dayak Katingan, Banjar, and Bakumpai ethnic groups, with minorities of Javanese and Batak people. The Katingan River, also known as the Mendawai River, is one of the main rivers in Central Kalimantan Province, Indonesia. It flows from the mountains in the north and empties into the Java Sea in the south, forming a vital ecosystem and serving as a transportation route and a source of livelihood for the surrounding communities. Approximately 650 km, the Katingan River plays a crucial role in supporting the social, economic, and ecological life of Central Kalimantan. From its forested headwaters to its fertile downstream areas, the river stands as a symbol of natural and cultural wealth that must be preserved.

The Bakumpai people rely heavily on the river. It is central to their daily lives, from transportation, fishing, and floating cage aquaculture or floating net fish farming system (*keramba*), to small household businesses such as shops and mini gas stations. Their economic and social livelihoods are strongly shaped by access to and use of this water resource. Rivers serve as vital resources for human life, the environment, and development, significantly impacting local communities. They provide water, support agriculture, and shape urban landscapes, yet are increasingly threatened by pollution and urbanization, necessitating restoration efforts for sustainable use (Gupta & Kesarwani, 2022). Without them, local communities would face serious challenges in carrying out everyday activities. The use of river is influenced by various factors such as river characteristics and local economic conditions. Rivers provide critical ecosystem services—including water supply, recreation, and biodiversity—that underpin local economies. For instance, the Cagayan de Oro River Basin delivers an estimated \$5.0–6.1 million annually in services, sustaining sectors like fisheries and tourism (Palanca-Tan et al., 2018). Moreover, rivers hold cultural and social significance; urban residents often prioritize ecosystem services aligned with local values—such as spiritual or communal uses—which may diverge from market logic but remain economically impactful (du Bray et al., 2019). Despite their strong river-based traditions, the Bakumpai community is increasingly confronted with socio-economic and environmental changes triggered by regional development policies, ecological degradation, and shifting livelihood patterns. However, limited scholarly attention has been given to how riverine communities in Kalimantan—particularly the Bakumpai—adapt to these transitions. Understanding their strategies for adaptation is crucial to ensure that development interventions remain culturally grounded and socially inclusive.

Changes in government policy, particularly the prohibition of illegal logging and mining activities, have had a significant impact on the social and economic conditions (Bösch, 2021), as at the Bakumpai community. Activities such as gold mining and logging, which once served as major sources of income, are now no longer legal (Geng et al., 2020; Reboredo, 2013; Widyawati Boediningsih & Tjoe Kang Long, 2023). This has reduced employment opportunities, making it difficult for people to meet their basic needs. The consequences include declining educational levels, increasing poverty rates, and decreasing health quality and human resources overall (Bösch, 2021). This economical contradiction reflects an ongoing process of social change (Miller, 2022). Such changes not only affect the community's economic structure but also alter patterns of social interaction, cultural values, and long-standing norms. In this context, social change can be understood as a phenomenon that continuously influences societal conditions. While often expected to bring improvements, social change can also cause disruption, such as weakened social cohesion and community solidarity (Rahman & Al-Azm, 2023). Therefore, the dynamics of change must be understood within the local context, taking into account the needs and values embedded within the community (Ismunandar, 2020).

Islamiah (2022) emphasize that social change is a continuous process, not a one-time event. The sustainability of social change is a key requirement for the success of development. This change is often interpreted as a mechanism for improving life quality and economic welfare

(Cusack, 2019; Selvakumar, 2025). Communities under pressure due to changing social and economic environments tend to seek new alternatives to sustain their livelihoods (Buechler & Lutz-Ley, 2020). This shift is clearly evident among the Dayak Ngaju community in Central Kalimantan. Traditionally reliant on rivers for economic activities, transportation, and social interaction, the community has gradually relocated and built settlements along newly constructed roads developed through infrastructure projects. Increased accessibility has not only accelerated the movement of people and goods but also driven a spatial and economic transformation in their way of life. This adaptation illustrates that social change is not a singular event but a continuous process shaped by the interaction between environmental conditions, development policies, and economic needs. In this context, the Dayak Ngaju have sought new alternatives to sustain their livelihoods by capitalizing on economic opportunities along road networks and reconfiguring their social structures to align with life that is increasingly integrated with emerging growth centers. This transformation reinforces the idea that the sustainability of social change is a crucial element in the success of development and reflects the community's resilience in navigating pressures brought by shifting socio-economic and environmental landscapes (Pratiwi, 2021).

Based on the background described above, this study aims to explore the phenomenon of social transformation within the Bakumpai community of Tumbang Samba, Katingan Regency, focusing on the transition from river-based to land-based livelihoods. This transformation is not merely economic but also involves profound shifts in social practices, cultural values, and community identity. Few studies have specifically examined how river-based communities in the interior regions of Central Kalimantan—such as the Bakumpai—adapt to the combined pressures of environmental degradation, policy shifts, and infrastructural modernization. This study addresses that gap by proposing a substantive theory of transition from river dependency to a digitally connected land-based society (networked land society). It also highlights how local wisdom, social resilience, and cultural continuity dynamically intersect with structural forces, resulting in new, adaptive social configurations. Thus, this research contributes to the broader discourse on development by demonstrating how local communities actively co-produce and renegotiate their socio-economic realities in response to ecological and policy change.

METHODS

This study focuses on the Bakumpai ethnic community residing in four villages—Samba Katung, Samba Bakumpai, Samba Danum, and Samba Kahayan—located at the confluence of the Samba and Katingan Rivers. This area holds a strategic geographical position as the center of economic and social activity for the Bakumpai people. The villages of Samba Katung and Samba Bakumpai are predominantly inhabited by the Bakumpai, comprising approximately 97% of the group's total population. In contrast, the other two villages—Samba Danum and Samba Kahayan—have a more ethnically diverse population, including Dayak Ngaju, Banjar, and a small number of Javanese residents. The research site falls within the administrative region of Tumbang Samba, which also serves as the governmental center of Central Katingan District. Understanding this geographical context is crucial, as it provides the structural and ecological backdrop for the ongoing social transformation—particularly in relation to infrastructure access, economic shifts, and changes in settlement patterns (Huberman & Miles, 2002).

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The study population includes all members of the Bakumpai community residing in the four selected villages, with a focus on individuals or groups who have directly experienced the dynamics of social change. This research employed purposive sampling, a technique in which informants are selected based on specific criteria relevant to the study's objectives. This method was considered most appropriate for capturing the depth of experiences and insights from social actors directly involved in the transition from river-based to land-based livelihoods. Informants were drawn from diverse backgrounds, including youth leaders, river transport workers, riverside traders who had relocated inland, former timber workers, local entrepreneurs, and rubber and oil palm farmers. By deliberately selecting participants, the researcher was able to obtain a range of perspectives that reflect the complexity of the ongoing social transformation. Selection also took into account geographical distribution, age, and their engagement in the community's economic and cultural activities.

Data collection was carried out over a three-month period, from March to May 2024, using two main methods included observation and semi-structured interviews (Huberman & Miles, 2002). Observation enabled the researcher to witness the community's daily life and gain a contextual understanding of their socio-cultural environment. Semi-structured interviews allowed for in-depth exploration of information while maintaining focus on key themes. A total of 10 interviews were conducted with selected informants. All interviews were conducted in person, recorded with participants' consent, and transcribed for further analysis. Ethical considerations, such as informed consent, confidentiality, and the right to withdraw at any time, were strictly upheld. The researcher's presence in the field was established through a reciprocal approach that respected local values and cultural norms.

Data analysis was conducted using a grounded theory approach, specifically through open coding procedures, which allowed for the construction of categories from the ground up based on data emerging from the field. The analysis process involved three main stages. First, identifying concepts from raw data and grouping them based on similar phenomena to form initial categories. Second, connecting these categories by examining their properties, dimensions, and interrelations. Third, developing abstract conceptual categories from the coding results that could comprehensively explain the processes of social transformation. This approach enabled the researcher to capture patterns of change that may not be immediately visible but hold significant social meaning. As such, grounded theory goes beyond descriptive findings to generate a local theory that explains the dynamics of change within the specific context of the Bakumpai community. This study adopted an emic perspective, an approach aimed at understanding social reality from the viewpoint of the community members themselves, rather than through external assumptions or theoretical frameworks imposed from outside. This perspective allowed the researcher to explore cultural meanings, lived experiences, and values considered important by the Bakumpai people in navigating change. As a result, the findings reflect how the community interprets its own reality—in terms of identity, social relations, and adaptation strategies. The emic approach is especially vital in studies of social transformation, as it prevents ethnocentric bias and fosters an authentic, contextual, and culturally sensitive understanding of local dynamics. At the same time, it enhances the validity of the findings by grounding them in the lived realities of the social actors themselves (Creswell & Creswell, 2018).

RESULTS AND DISCUSSION

The River-to-Land Cultural Transition in Bakumpai, Central Kalimantan, Indonesia

The transformation from riverine to land-based culture within the Bakumpai community of Tumbang Samba, Katingan Regency, constitutes a profound sociocultural shift. Five key thematic categories emerged: occupational transition, lifestyle adaptation, technological integration, social relational change, and cultural reinterpretation.

Occupational Transition from River-based to Agrarian Economy

One of the most prominent findings is the community's occupational shift from river-dependent activities to land-based livelihoods. Previously, river transportation services—using *jukung*, *klotok*, and speedboats—formed the backbone of the local economy. As one informant, R1, -45-year-old male, former boat operator- noted, *“In the past, all our activities took place on the river — transporting goods, selling fuel, even running floating food stalls. But now, we mostly work on land as rubber or oil palm farmers”* (R1, 2024). The shift was not only economic but also emotional. Several informants described a sense of loss associated with leaving the river. A former floating shop owner, R3, 50-year-old female- reflected, *“I grew up on a floating house—our shop had been on the river for two generations. Now everything has moved to the roadside. It feels like losing a home”* (R3, 2024). The implementation of government policies banning illegal logging and unregulated mining further accelerated this transition. As a result, river transport businesses declined sharply. Residents who once relied on transporting timber or ferrying gold miners were forced to seek alternative livelihoods. A former timber handler, R6, 49-year-old male- recalled, *“Since the ban on mining and logging, many of my friends went back to Java with no work left. I myself had to switch to working on an oil palm plantation”* (R6, 2024).

Many community members shifted to managing small rubber or oil palm plantations, often combining farming with trading. Others diversified into market-based trade near newly constructed land transport terminals. The diversification process required rapid adaptation, as illustrated by a young trader, R8, 48-year-old male, *“I used to transport timber by klotok. Now I sell fertilizers and farm tools in the land market. It was hard to start, but now I have regular customers”* (R8, 2024). The transition from river-based to land-based economic activities illustrates a significant shift in livelihood strategies. The informant's move from timber transport via *klotok* to selling agricultural supplies in a land market reflects broader patterns of social and economic adaptation. Despite initial challenges, the establishment of a stable customer base demonstrates resilience and the successful navigation of changing cultural and economic landscapes in Central Kalimantan.

Lifestyle Adaptation and Spatial Realignment

Lifestyle change followed closely on the heels of economic transformation. The Bakumpai previously lived in *lanting*—floating houses used for both residence and commerce. However, the growth of road infrastructure and improved land access encouraged permanent settlement on dry land. This change affected not only the physical structure of dwellings but also daily routines and social interactions.

Participant observation revealed that traditional activities such as bathing and cooking in the river have been replaced by indoor water facilities. A community elder, R4, 50-year-old woman- shared, *“In the pas, we cooked, bathed—everything was done in the river. Now we have bathrooms in our homes. But still, we miss the atmosphere of the river”* (R4, 2024). Domestic spaces now contain permanent infrastructure: piped water systems, tiled kitchens, and concrete bathrooms. Cooking, which was once done over firewood on the deck of a floating house, is now performed using gas stoves inside structured kitchens. These infrastructural changes have also affected gender roles. Several women noted that the shift to land-based living had increased their domestic workload, as convenience came with higher standards for cleanliness and home maintenance.

In terms of settlement patterns, homes are no longer aligned linearly along riverbanks but are distributed in clusters around crossroads, markets, and roads. This spatial reorganization affects

social visibility and surveillance. As one male elder, R9, 57 years old- remarked, “*In the past, when someone passed by on the river, everyone noticed. Now, with houses set back from the road, it's harder to keep up with the neighbors*” (R9, 2024).

The spatial realignment of the community is further reinforced by the growing use of motorcycles and land vehicles. These have become not just transportation tools, but symbols of status and independence. Ownership of motorbikes allows for faster access to markets, schools, and religious gatherings—redefining the radius of daily life from water-bound proximity to land-based connectivity.

Technological Integration and Information Access

Another major finding is the deep integration of telecommunications into community life. In the past, limited signal coverage meant reliance on word-of-mouth communication and radio. Since the expansion of Telkomsel and Indosat coverage, however, mobile phones have become ubiquitous, even among older adults.

This shift has had measurable social effects. Mobile phones facilitate faster trade, maintain familial ties across regions, and serve as primary tools for accessing information. A youth informant, R7, 33-year-old male trader explained, “*I can sell goods outside the village through WhatsApp. It used to be difficult—we had to ride a klotok just to send a message. Now, it only takes a click*” (R7, 2024).

Social media has also reshaped community interaction norms, with younger Bakumpai often preferring digital engagement over traditional forms of communal gathering. This marks a generational divergence in communication behavior, where youth embrace digital culture while elders remain attached to face-to-face sociality.

Social Relation Changes from Collectivism to Functional Solidarity

The communal trait of *handep*—mutual cooperation—was once the defining social glue of the Bakumpai. While it persists among older community members, interviews suggest a decline among youth, particularly those immersed in plantation work or digital economies. The traditional ethos of *gotong royong* is increasingly being replaced by functional, transactional interactions.

Despite this, community solidarity remains relatively intact. Respect for religious and cultural leaders continues to serve as a moral anchor. Weekly religious events still draw intergenerational participation. One religious leader (R5) observed, “*Young people rarely take part in handep anymore, but many still attend religious gatherings. So, religious values remain strong*” (R5, 2024). These findings indicate that although the traditional practice of *handep* is experiencing a decline, particularly among younger generations engaged in modern economic sectors, the foundational principles of communal solidarity and moral cohesion are being maintained through enduring religious and cultural frameworks.

Cultural Reinterpretation and Linguistic Hybridization

Cultural change among the Bakumpai is not solely a consequence of shifting material conditions, but also entails significant symbolic and linguistic transformation. A notable example is the gradual attenuation of the Bakumpai language, driven by increasing exposure to Banjar, Dayak Ngaju, and Javanese linguistic environments. This has resulted in the emergence of a hybrid dialect, particularly among children and adolescents, reflecting broader processes of cultural amalgamation and identity negotiation in a multi-ethnic setting. Lexical substitutions—such as the replacement of *jida* (good) with *dada*, and *yaweh* (yes) with *aweh*—illustrate the ways in which language functions as both a medium and marker of socio-cultural change. Parallel to these linguistic shifts, traditional practices rooted in riverine life are being reimagined and spatially reoriented; for instance, customary fishing festivals have evolved into land-based community fairs. Collectively, these developments underscore the dynamic interplay between cultural continuity and adaptation in the face of ongoing social transformation.

Spatial Reconfiguration and the Decline of Riverine Ecology

The transformation in the Bakumpai community's culture from a river-based to a land-based lifestyle reflects a significant spatial reconfiguration, which can be understood through a social ecology approach. Changes in spatial structures and knowledge can continue to evolve, even leading to social exclusion and spatial concentration among marginalized groups (Kesteloot, 2005; Löw, 2020). The river, which was once the axis of social, economic, and cultural activities—such as transportation, trade, and habitation—has experienced a decline in its ecological and social functions alongside the development of land-based infrastructure and restrictions on forest-based economic activities. The river, which previously served as the spatial focal point of the community, has now been replaced by highways and land-based markets. This shift reflects a transformation in spatial usage, from a linear system based on water flow to a nodal system connected by roads and terminals. As a result, settlement patterns are no longer oriented along riverbanks but are instead dispersed around land transport hubs. In Giddens' structuration theory, this change illustrates the dialectical relationship between structure and agency, where society actively (not statically) reconfigures its living spaces in response to shifts in accessibility structures. Thus, agency and structure are interdependent, mutually influencing each other in complex and complementary ways, leading to continuous transformation within the social system. Through their actions, individuals can influence and reshape these structures, highlighting the inseparability of agency and structure—much like two sides of the same coin (Chatterjee et al., 2019; Stones, 2017).

Spatial transformation also impacts social dynamics and the forms of community interaction by altering communal spaces that facilitate interpersonal connections into several or other forms (Dwiki Putrawan et al., 2021; Surya et al., 2020; Xie et al., 2024). Previously, social openness and visibility were very high—since activities along the river could easily be monitored by all residents—but now houses are located far from main pathways, leading to a decline in informal social oversight. Meanwhile, in riverine communities, floating houses not only serve as residences but also as a means for intensive social interaction (Zain & Putro, 2019). This change contributes to the decline in face-to-face communication intensity and an increasing reliance on communication technologies such as mobile phones. From the perspective of modernization theory, as proposed by Inglehart & Baker, the shift from open social spaces to private spaces reflects a transition toward a society that is more socially fragmented yet more individualistic and functionally efficient (Şeker, 2020; Sukhov, 2022).

Additionally, spatial reconfiguration accelerates the process of losing riverine cultural ecology. In the past, rivers provided various ecosystem services—from clean water and fish to trade routes. Now, declining water quality and reduced river-based economic activities serve as concrete indicators of the weakening river ecology. This aligns with the slogan emphasizing the importance of balancing river utilization and environmental conservation (Brierley, 2020; Jorda-Capdevila & Rodríguez-Labajos, 2017; Yousry et al., 2022). Diminishing community interaction with the river, not only does environmental degradation occur, but there is also an erosion of cultural and spiritual values tied to the river. Therefore, this spatial change cannot be understood merely as a physical shift but rather as a multidimensional transformation encompassing social, cultural, and ecological aspects simultaneously.

Occupational Transition and Economic Modernization

The shift in the occupations of the Bakumpai people from a river-based economy to an agrarian and land-based service economy is a concrete manifestation of economic modernization, marked by a transition in economic sectors toward increased productivity and efficiency, ultimately leading to higher incomes (Gordon, 2023). Previously, jobs such as *klotok* 'boat' operators, floating shop owners, and timber transporters were the pillars of the local economy. However, the ban on illegal mining and logging led to the collapse of this traditional economic structure. Within the framework of modernization theory, communities were forced to diversify and innovate economically to survive (Eva et al., 2022). This change represents an adaptation to structural

pressures, where modernization was imposed by policy shifts and infrastructure development rather than through organic value changes. With the emergence of road access and markets, people began engaging in oil palm and rubber farming, trade centers, and land transportation services. This signifies a shift from a subsistence economy to a commercial economy more integrated with the national market system.

Occupational transition also marks a change in labor structures and social relations. In the past, work was collective and family-based, as seen in floating shops or boat businesses. Now, jobs have become more individualistic and competitive, evident in the trade of fertilizers, farming tools, and transportation services, indicating role heterogeneity, functional differentiation, and the beginnings of job specialization. This reflects a transformation from mechanical solidarity to organic solidarity (Ferreira de Vares, 2013). Society is no longer bound by shared functions but by labor differentiation and specialization. In this context, occupational change also means a shift in social identity—from "river people" living in communal relations to "land-based economic actors" operating within an individualistic value system. Economic modernization has created a new working class more connected to market logic and production efficiency while simultaneously experiencing alienation from their river-based cultural roots.

The occupational shift has significant implications for social stratification and economic mobility. Those who adapt quickly—for instance, by opening small businesses or becoming small-scale farmers—gain new economic opportunities and even experience improved living standards. However, for those lacking capital or adaptive skills, this change creates new inequalities. This aligns with reports suggesting that social change does not always bring uniform benefits and can generate new disparities in opportunity distribution (Kumari, 2023; Yuraitis et al., 2022). Economic modernization risks in Bakumpai widening the gap between successful economic actors and those marginalized by the new system. Therefore, while occupational transformation reflects successful adaptation, it also presents serious challenges regarding social equity and the preservation of communal work culture.

Technological Integration and Information Access

The social transformation of the Bakumpai community cannot be separated from the role of rapidly advancing information and communication technology (ICT) in the past decade. Before the advent of telecommunication networks, communication between individuals was limited to direct oral exchanges or mediated through *klotok* 'boats'. Today, however, the use of smartphones and social media has radically altered social interaction structures and communication patterns. Within the framework of Cartells (1996) technological modernization theory, the Bakumpai exemplify a network society, where social and economic relations depend on ever-evolving digital infrastructure. Technology is no longer just a tool but also a medium shaping new social identities—particularly among the younger generation, who integrate social media into their daily lives.

Smartphones have acted as catalysts in expanding economic and social networks. Local entrepreneurs can now sell goods via WhatsApp, access agricultural information on YouTube, or track market prices through Facebook groups. This accelerates information mobility, broadens economic opportunities, and reduces reliance on traditional distribution channels. The Bakumpai's adoption of technology demonstrates that, despite their traditional roots, they are early adopters in leveraging technology for economic benefit. Digital adoption has significantly transformed markets, enhancing efficiency and competitiveness (Chintalapati, 2021). Nevertheless, a digital divide persists between older and younger generations, as well as between those with capital and those without, creating disparities in access and participation in the digital economy.

Beyond economics, technology has also reconstructed social values and interpersonal relations (Satata, 2023; Yakushina, 2023). Social activities once conducted face-to-face have shifted to online interactions. Younger generations prefer engaging via platforms like WhatsApp, TikTok, and Instagram rather than through physical gatherings. This reflects *disembedding*—a concept

introduced by Giddens—where social relations no longer rely on geographic proximity but on virtual connectivity, which enhances global ties while simultaneously challenging the depth of interpersonal relationships (Echavarría et al., 2023; Mabruroh, 2023). Despite this, the community maintains religious rituals and physical meetings as acts of cultural resistance against digital dominance. Thus, the integration of technology into Bakumpai society does not merely signify progress; it also introduces a new paradox between connectivity and social alienation.

Social Relation Changes from Collectivism to Functional Solidarity

The social transformation of the Bakumpai community extends beyond economic and spatial dimensions to encompass shifting social relations—from collectivism toward functional solidarity. Historically, Bakumpai social structure was anchored in the principle of *handep*, which fostered communal bonds, mutual respect, and social harmony. This principle reinforced cooperation and collective support, crucial for peaceful coexistence and community resilience (Aryaningsih et al., 2024). *Handep* reflected a strong collective consciousness, where social actions were driven by kinship, shared responsibility, and communal values. However, economic modernization and occupational diversification have given rise to new, functionally oriented relationships, where social interactions are increasingly shaped by pragmatic goals and economic efficiency. This phenomenon aligns with studies noting that social change often erodes communal values, replacing them with interest-based relations (Echavarría et al., 2023; Mabruroh, 2023).

This shift is evident in the Bakumpai's daily social practices. Younger generations working in trade, transportation, or plantations often have limited time and social commitment to collective rituals or *gotong royong* 'mutual aid'. Even *handep* now persists primarily among older generations or in specific religious contexts, such as prayer gatherings '*pengajian*' and remembrance ceremonies '*tahlilan*'. Such changes mark a transition from emotionally and culturally grounded relationships to those based on social contracts and labor division—a concrete manifestation of the mechanical-to-organic solidarity framework proposed by Durkheim, as well as Tönnies' theory of *Gemeinschaft* (community) and *Gesellschaft* (society). Today, solidarity is forged through professional needs, information access, and logistical efficiency rather than emotional ties or geographic proximity. While religious values remain a unifying force, their influence is no longer as homogeneous as in the past, reflecting the social complexity and fragmentation of a transforming community (Kildyushov, 2023; McNeill & Dawson, 2023).

Transition from collectivism to functional solidarity also reshapes power structures and authority within Bakumpai society. Where traditional leaders and religious figures once held significant sway over social norms, their influence now competes with new forces: local entrepreneurs, land transport operators, and government officials. Drawing on Giddens' structuration theory, Bakumpai social relations are transforming not only due to structural pressures but also through the agency of new social actors who consciously reproduce relational structures in a modern context. This underscores that social transformation is not linear but dialectical—a negotiation between enduring values and emerging necessities (Stones, 2017). Thus, the evolution of solidarity among the Bakumpai must be understood as a transition from culturally rooted affiliation to functionally adaptive communities, realigned with contemporary politico-economic realities.

Cultural Reinterpretation and Linguistic Hybridization

The cultural transformation among the Bakumpai people is not merely material or structural but also symbolic, manifesting in the reinterpretation of cultural values and linguistic hybridization. This process reflects what Appadurai terms *cultural flows*—transboundary currents of culture that generate new forms of identity and practice through the interplay of locality and globality. In Tumbang Samba, intensive social contact with the Dayak Ngaju, Banjar, and Javanese communities has given rise to hybrid cultural expressions, where traditional Bakumpai language, values, and practices undergo diffusion and modification. Lexical shifts, such as *jida* becoming *dada* or *yaweh*

evolving into *aweh*, are not merely linguistic changes but symbols of an increasingly fluid and fragmented collective identity. However, the persistence of the mother tongue suggests these cultural flows have not fully optimized, a phenomenon corroborated by studies showing how cultural backgrounds influence the efficacy of such flows (Pang et al., 2022).

This aligns with the concept of *glocalization* in cultural studies, where local communities adapt external elements without entirely abandoning their roots, as local cultures dynamically evolve in response to global influences (Volkman, 2006). For the Bakumpai, despite linguistic diffusion and the weakening of river-based cultural symbols, the community retains certain local elements, such as religious practices and respect for elders. Yet this reinterpretation of values also creates social ambiguity, particularly among youth steeped in digital technology and social media. They experience a form of *cultural in-betweenness*—caught between traditional norms they still honor and modern lifestyles shaping their transformation. Such in-betweenness often arises from delayed cultural shifts, moral cohesion, resistance, intergroup dynamics, and societal participation (Montero, 2013; Sztompka, 1998).

Moreover, cultural shifts reshape symbolic consumption and identity expression. Language, for instance, transcends communication to become a marker of social affiliation and upward mobility. In modernizing communities like the Bakumpai, hybrid language use or formal Indonesian is often tied to education, economic status, and technological access, reflecting *linguistic capital*—the symbolic value of certain languages in specific social markets (Galelli & Rocha, 2022). Cultural reinterpretation and linguistic hybridization in Tumbang Samba signify not just change but also shifting power dynamics in symbolic representation. This underscores that cultural transformation is not merely a process of loss but one of meaning-making within an evolving social landscape.

The following table presents the results of grounded theory categorization based on five thematic sub-segments previously discussed. Each coding stage represents the conceptual abstraction process from empirical indicators to the formulation of core concepts explaining the occurring social transformation.

Table 1. Categorical Grounded Theory of Bekumpai Community Social Transformation

Open Coding (Empirical Indicators)	Axial Coding (Categories)	Selective Coding (Core Concepts)
Shift in settlement orientation—from riverbanks to roadsides; houses no longer built over water.	Spatial restructuring and loss of the river's role as a life center.	Spatial change reflects the ecological and social transformation from a riverine to a land-based community.
Occupational transition from boat operators and river traders to rubber/oil palm farmers and terminal traders.	Economic modernization and land-based livelihood diversification.	Occupational shifts demonstrate economic restructuring and market-driven vertical mobility.
Decline in <i>handep</i> practices among youth; rise in individual economic activities.	Transition from mechanical to functionally based solidarity.	Changing social relations mark a shift from collective norms to function-oriented interactions.
Lexical changes in Bakumpai due to Banjar/Dayak/Javanese influences; mixed-language daily conversations.	Cultural hybridization and linguistic diffusion as identity reflections.	Cultural transformation entails not just loss but the re-creation of social meaning.

Use of WhatsApp and Facebook for transactions; digital divide between older and younger generations.	Communication structure transformation and digital stratification.	Digital technology acts as a key catalyst in social and economic restructuring.
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Emerging Substantive Theory: From River Dependency to Networked Land Society

The integration of the five identified thematic categories—spatial reconfiguration, occupational transition, shifting social relations, cultural hybridization, and technological integration—suggests the emergence of a localized theory of socio-ecological adaptation. Based on grounded theory analysis, this transformation can be conceptualized as a shift from a river-dependent communal identity to a networked land society, wherein modern infrastructural, technological, and occupational changes redefine identity, authority, and kinship. This emerging theory posits that communities undergoing forced ecological and economic transitions develop hybrid systems of social organization that blend residual traditions with emergent digital and land-based modalities. In line, Spatial reconfiguration is evident in shifting settlement patterns and the more productive use of space (Sediri et al., 2022), while occupational transitions reflect a move away from traditional livelihoods such as fishing toward the service and technology sectors (Baillargeon & Taylor, 2022; Zain & Azrianto, 2024). Changes in social relations have given rise to new authority structures and networks, shaped by technological integration and economic transformation (Ita Minarti et al., 2024; Selje et al., 2024). Cultural hybridization illustrates the community's capacity to blend local knowledge with digital technologies in everyday practices (Njeru, 2024). Ultimately, technological integration enhances the community's adaptive capacity in the face of structural and ecological change (Hossain et al., 2024). These findings support local theories of socio-ecological adaptation, in which communities construct hybrid social systems that integrate residual traditions with emerging terrestrial and digital practices. Thus, environmental and economic changes do not merely result in loss, but also catalyze the formation of new, resilient social configurations.

The socio-cultural reconfiguration observed in Tumbang Samba is not isolated but reflects broader patterns documented across riverine communities. Similar spatial reconfigurations have been noted in northern Russia, where road and rail development disrupted traditional river-based orientation, prompting residents to redefine their understanding of geographic space (Istomin, 2020). Likewise, in urban settings such as Highland Creek in Toronto, infrastructure expansion and river channelization have transformed land use from rural to urban, altering both morphology and social relationships (Ashmore et al., 2025). Occupational transitions in Tumbang Samba also mirror the experiences of women in Altamira, Brazil, whose displacement due to development projects significantly reshaped their socio-economic roles (Maia Patchineelam & van Eerd, 2022). Shifting social relations, triggered by resettlement and spatial transition, are similarly reported among Mexican villagers who relocated to Southern California, requiring them to integrate familiar rural practices with urban norms (Pader, 1994), and among populations in migration flows between rural and urban areas, where social dynamics are restructured (White, 2023). Cultural hybridization—central in the Bakumpai case—is also evident in the Prazero of Africa, who combined indigenous customs with European influences during maritime expansion (Isaacman & Isaacman, 1975), and among Aboriginal and Vietnamese communities in Australia, where hybrid identities emerged from dynamic engagements with changing landscapes (Goodall, 2017). Lastly, technological integration plays a parallel role across diverse geographies: dam and canal construction globally has disrupted traditional water cycles and cultural rhythms, necessitating new technological adaptations (Wantzen, 2024), while geomorphic restoration efforts in urban Toronto illustrate how technology is now embedded in riverine ecosystem management (Ashmore et al., 2025). These global parallels affirm that the transformations experienced in Tumbang Samba are part of a wider trajectory of

socio-ecological adaptation shared among river-dependent communities undergoing modern infrastructural and economic change.

While the transition from river to land-based livelihoods has yielded improvements in infrastructure, economic diversification, and communication access, it has also introduced social contradictions. The dissolution of spatial proximity and traditional communal forms like *handep* 'mutual labor' has fragmented social cohesion, especially between generations. As younger Bakumpai immerse themselves in digital economies, elders often experience marginalization within both economic and symbolic domains. This reflects what Beck terms the individualization of risk, wherein traditional structures no longer provide sufficient scaffolding for meaning and security in rapidly transforming contexts (Krippner, 2023). Multicultural societies resulting from the process of modernization often experience identity fragmentation, as individuals navigate the complexities of maintaining cultural heritage while integrating into a modern social framework. This can lead to increased interpersonal conflict and challenges in social cohesion (Martinez, 2011).

This study offers both theoretical insight and practical guidance. Theoretically, it expands grounded theory in the context of post-riverine communities by linking infrastructural transformation with shifts in symbolic, spatial, and communicative systems. It suggests that modernization is not merely material but ontological—altering what it means to belong, to speak, to relate. Practically, the findings underscore the need for context-sensitive development policy that does not marginalize indigenous ecological epistemologies. Planners and policymakers should consider the relational loss experienced in cultural disembedding and support integrated cultural infrastructures, such as hybrid communal spaces or digital literacy programs for elders. Furthermore, revitalizing selective river-based traditions within modern contexts—such as eco-tourism or ceremonial water festivals—can mitigate cultural erosion while embracing modernization. Hence, any model of transformation must reconcile technological integration with social regeneration and cultural continuity.

CONCLUSION

The socio-cultural transformation experienced by the Bakumpai community in Tumbang Samba illustrates a complex, multilayered shift from a river-based communal identity to a land-oriented, networked society. Grounded theory analysis has identified five interrelated domains of change: spatial reconfiguration, occupational transition, shifts in social relations, cultural reinterpretation, and technological integration. These categories emerged not from theoretical imposition but from inductive engagement with the lived realities of the community. The Bakumpai, once deeply reliant on rivers as physical, economic, and cultural lifelines, have adapted to infrastructural and ecological disruption by reorienting their daily practices around land-based mobility, plantation economies, and digital communication networks. Rather than resisting change, they engaged with it selectively, combining traditional values—such as communal resilience, religious orientation, and entrepreneurial adaptability—with new forms of work, social structure, and cultural expression. This case affirms the core tenet of grounded theory that social meaning and organization are fluid, context-dependent, and continually renegotiated by social actors navigating structural constraints and opportunities. The transformation was catalyzed by both internal capacities and external pressures, resulting in a hybrid social system that is neither fully traditional nor entirely modern, but situated at the intersection of both. Internally, the Bakumpai people drew upon their high work ethic, multi-sourced livelihoods, and flexible kinship-based economic strategies to cope with the collapse of river-based industries. Externally, the state's ban on illegal logging and mining, combined with road and bridge construction and the arrival of mobile communication networks, restructured access, interaction, and exchange. These changes prompted the relocation of marketplaces, the decline of river transport, and the strengthening of long-distance communication and trade. The result is a redefined socio-spatial logic, where identity and economy are no longer tied to the river but extend across nodes of land-based infrastructure and digital connectivity. Thus, the Bakumpai's experience offers a substantive contribution to theories of

peripheral modernization and indigenous adaptation, demonstrating how transformation is not simply imposed from above but co-produced from within.

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