

Economic Impacts of Land Acquisition for the Development of the PASIGALA Raw Water System in Sigi Regency

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ABSTRACT

This qualitative phenomenological study examines how residents of Pakuli Village, Sigi Regency, experienced and were economically affected by land acquisition for the PASIGALA Regional Raw Water System, carried out while the community was still recovering from the 2018 earthquake, tsunami, and liquefaction disaster. Data were gathered through in-depth interviews with fifteen informants affected landholders, village officials, and a river-basin agency representative and analyzed using Cernea's impoverishment risk model, the Sustainable Livelihoods Framework, and Schutzian phenomenology. Findings show that responses ranged from cash acceptance to land-replacement requests and consignment, mostly driven by short-term economic pressure, while the resulting economic impacts were negative and cumulative, eroding asset value, credit access, livelihood adaptation, and economic security.

INTRODUCTION

Infrastructure development is widely regarded as a cornerstone of post-disaster economic and social recovery. Following the earthquake, tsunami, and liquefaction that struck Central Sulawesi on 28 September 2018, the rehabilitation and reconstruction of the region's basic infrastructure became a central government priority, since the disaster had disabled much of the local economy alongside physical infrastructure (BNPB, 2019). Within this recovery agenda, the Government of Indonesia, supported by the Asian Development Bank through the Emergency Assistance for Rehabilitation and Reconstruction (EARR) program, initiated the Regional Raw Water System for Palu, Sigi, and Donggala (PASIGALA). Administered by the Ministry of Public Works and Public Housing (PUPR), the project was designed to rehabilitate critical facilities such as the Saluki Dam and its transmission pipeline network in order to secure sustainable access to clean water for the affected region (Kementerian PUPR, 2022).

Because the PASIGALA pipeline network runs underground across a wide area, its construction inherently required extensive land acquisition, through which the state represented by the Ministry of PUPR via the Sulawesi III River Basin Organization assumed formal control over land previously held by local communities. Project documents indicate that a total of 97,538 m² of land across eight villages in Sigi Regency was required for the project, with Pakuli Village in Gumbasa District, selected as the site for a Pressure Release Tank the most extensively affected, encompassing 17,242 m² of land belonging to 42 landowners (Kementerian PUPR, 2022).

The significance of this process is amplified by Pakuli's character as an agrarian community whose economic life still depended heavily on land at the time the acquisition began. Rachmah & Sudiro (2024) note that land acquisition undertaken while communities are still recovering from disaster is frequently complicated by unresolved legal uncertainty over land tenure. In Pakuli, although residents retained the right to cultivate the acquired land, the loss of formal ownership over productive assets did not constitute a single, isolated economic shock; rather, it represented a compounded shock layered atop unresolved socioeconomic vulnerability inherited from the 2018 disaster.

At the community level, this process triggered a fundamental transformation of asset rights. Formal ownership of agricultural land the community's principal productive asset was converted into a financial asset in the form of compensation funds, while cultivation rights were preserved. Although this transformation followed the legal procedure established under Law No. 2 of 2012 concerning Land Acquisition for Development in the Public Interest, it was far from a simple economic transaction: community responses to the compensation mechanism varied considerably, ranging from cash acceptance, to requests for replacement land, to refusal followed by consignment of funds to the court (Irawan et al., 2024).

International evidence on how compensation money is subsequently used offers a cautionary picture. In Vietnam, Tuan (2021) found that although household income tended to rise following land acquisition, compensation funds were frequently directed toward consumptive purposes such as home renovation

rather than productive investment. In Uganda, Aboda et al., (2022) reported the more striking finding that households compensated in cash were the least adaptive group relative to those relocated or hosted, pointing to underlying challenges of financial literacy and money management when households face large, sudden financial decisions (Prabandari et al., 2021).

A further and arguably more consequential impact concerns the loss of the primary livelihood base itself. Losing agricultural land severs households from the economic activity in which their skills are most concentrated, pushing them into an uncertain process of livelihood adaptation. Using a multinomial logit model, To-The et al., (2024) found that household head education and the proportion of land lost significantly shaped the transition of farming households into non-farm employment, a process that Wicaksono et al., (2024) argue can heighten long-term household economic vulnerability when it is not supported by adequate skill development.

Existing Indonesian literature on land acquisition impacts has tended to emphasize quantitative and legal-formal dimensions. Silvia et al., (2021), examining the Jakarta-Bandung high-speed rail project, found that weaknesses in the formal acquisition process translated directly into economic and psychological losses for affected residents. By contrast, Halidy (2023), studying the Randugunting Dam in Blora, documented the emergence of new enterprises and rising local income following land acquisition. This divergence underscores a persistent gap in qualitative understanding of how communities themselves interpret the experience of losing land, the local rationality behind their economic decisions, and the trajectories of adaptation that follow.

This gap is especially pressing in the specific context of the PASIGALA Raw Water System project in Pakuli Village, where no prior study has closely examined the social and economic dimensions of the land acquisition process. Understanding residents' narratives and adaptation strategies is important not only for a more holistic evaluation of the project but also for informing future policy, particularly given Otsuyama et al., (2024) comparative finding that the underlying purpose of post-disaster land acquisition can differ substantially across contexts, from risk mitigation to the preservation of community continuity.

Building on this context and the identified gap in the literature, the present study sets out to describe how the community of Pakuli Village responded to the land acquisition process for the PASIGALA Raw Water System and to analyze the economic impacts they experienced in its aftermath, giving particular attention to how residents themselves interpreted and made sense of these changes.

THEORETICAL REVIEW

Land Acquisition as a Social Process

Land acquisition in this study is treated not merely as a technical-administrative procedure but as a complex social event with far-reaching implications. In Indonesia, the process is formally governed by Law No. 2 of 2012 concerning Land Acquisition for Development in the Public Interest, which

represents a state perspective prioritizing infrastructure development as a route to collective welfare, and which requires compensation to be “proper and just.” According to Soemardjono (2008), these two terms are complementary rather than synonymous: “proper” refers to compensation commensurate with independently appraised market value, while “just” refers to a condition in which no party is left significantly worse off meaning that the living conditions of those who lose land should be no worse, or at least equal, to conditions before acquisition. In practice, this standard is often contested because the state and the affected community frequently hold different perceptions of land value, one that extends beyond price to encompass social, historical, and emotional dimensions that resist quantification.

Beyond this formal framing, land acquisition can also be read through a dual paradigm. On one hand, it functions as an indispensable instrument of collective development, a small sacrifice by some for the larger benefit of many, justified through the narrative of “public interest.” On the other hand, critical development literature frames it as a subtler form of dispossession. Harvey (2004) argues that under contemporary capitalism, capital accumulation frequently proceeds not through production but through the appropriation of existing assets—land, water, and other resources even when this occurs through legally sanctioned procedures. This study draws on both readings to examine the tension between the “public interest” narrative surrounding PASIGALA and the lived sense of loss reported by residents of Pakuli.

To analyze the negative consequences of this process systematically, the study employs Cernea (2000) Impoverishment Risks and Reconstruction (IRR) Model, developed from extensive research on World Bank-financed resettlement projects. Cernea identifies eight interrelated risks of impoverishment associated with involuntary displacement; the risks most directly relevant to this study are landlessness (loss of the primary economic base), joblessness (loss of employment matched to existing skills, particularly acute for agrarian households), marginalization (economic, social, and psychological displacement from prior community standing), food insecurity, and social disarticulation (the erosion of kinship networks and informal support systems).

Sustainable Livelihoods Framework

The Sustainable Livelihoods Framework (SLF) provides the study's main analytical lens for understanding how households respond to and manage change. Emerging in the late 1990s as a critique of income-and-consumption-centered development approaches, and associated with Chambers & Conway (1992), Scoones (1998), and the UK's Department for International Development (DFID, 1999), the SLF adopts a people-centered view in which communities are active agents managing their assets, rather than passive victims of external change. The framework comprises five interrelated components: the vulnerability context (shocks, trends, and seasonality outside household control); livelihood assets, comprising five forms of capital—human, natural, financial, physical, and social; structures and processes, referring to the institutions, policies, and laws that shape access to assets; livelihood strategies, the combinations of activity households

pursue to meet their goals; and livelihood outcomes, such as improved income, wellbeing, food security, and reduced vulnerability. In this study, the SLF is used operationally to trace the transformation of natural capital (agricultural land) into financial capital (compensation funds) and to examine how this transformation ripples through other forms of capital and through household livelihood strategies.

Phenomenology and the Lifeworld

Because the research questions center on subjective meaning and lived experience, the study adopts social phenomenology as its interpretive lens. Phenomenology, rooted in Edmund Husserl's call to return "to the things themselves," seeks to describe a phenomenon richly and faithfully as it is experienced, rather than to explain it causally (Creswell & Poth, 2018). Schutz et al., (1967) extended this philosophical tradition into social inquiry through the concept of the lifeworld (Lebenswelt) the taken-for-granted world of everyday experience sustained by what he termed "stocks of knowledge," the accumulated repertoire of past experience that allows individuals to interpret new situations without deliberate reflection. For the agrarian households of Pakuli, whose lifeworld was historically organized around land, agricultural cycles, and kinship, land acquisition represents a rupture that destabilizes this taken-for-granted order and compels residents to renegotiate the meaning of security, ownership, and belonging.

These three bodies of theory land acquisition policy and critique, the Sustainable Livelihoods Framework, and Schutzian phenomenology are integrated in the conceptual framework presented in Figure 1, which traces the pathway from the community's post-disaster vulnerability context through land acquisition as a compounded shock, the transformation of livelihood assets, the resulting diversity of community responses, and the livelihood outcomes that these responses ultimately produce, all interpreted through the lens of residents' own subjective meaning-making.

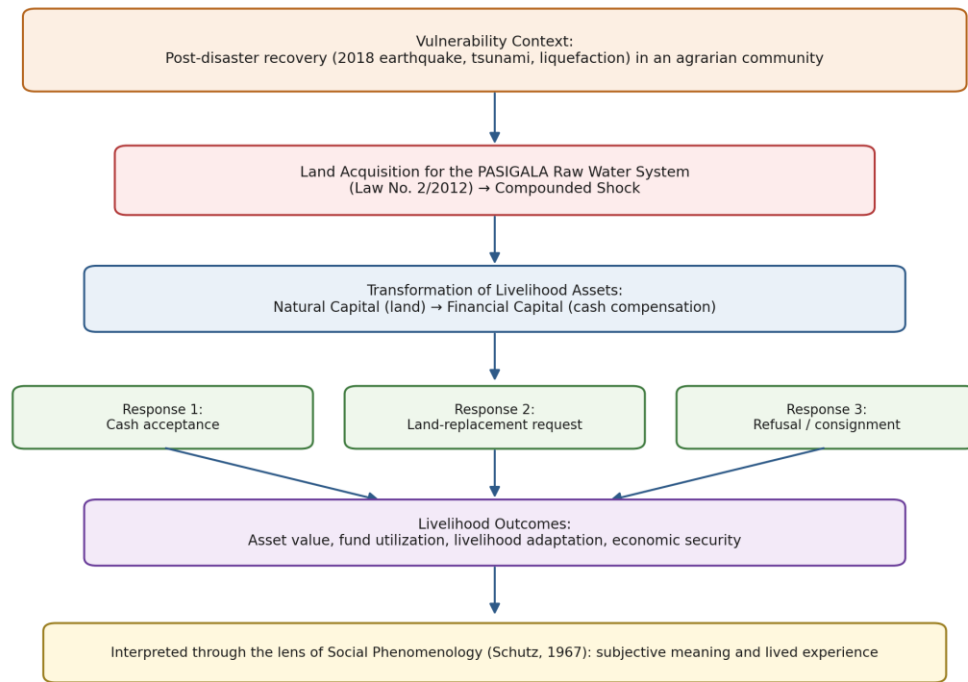


Figure 1. Conceptual Framework

METHODOLOGY

This study employed a qualitative phenomenological design, appropriate given that both research questions required an in-depth understanding of subjective experience and meaning that could not be captured through numerical measurement alone: how residents interpreted and lived through the land acquisition process, and how they experienced and made sense of the resulting economic impacts, including asset loss and changes in livelihood structure. The study adopted a retrospective stance, since the land acquisition activities for the PASIGALA project had already been completed at the time of research; data therefore consisted of informants' narratives, memories, and observable present-day economic conditions rather than an ongoing process.

The research was conducted in Pakuli Village, Gumbasa District, Sigi Regency, Central Sulawesi Province, the village most extensively affected by the PASIGALA land acquisition, encompassing 17,242 m² of land across 42 landowners (Kementrian PUPR, 2022), and a site where no prior qualitative study of the acquisition's social and economic impacts had been undertaken.

Fifteen informants were selected through purposive sampling. Twelve key informants were affected landowners, selected using a maximum-variation strategy to capture diversity in the type of compensation received (cash, land replacement, or consignment) and in the economic impacts experienced. Three supporting informants comprised two village officials, who provided contextual information on demographic conditions and village dynamics, and one representative of the Sulawesi III River Basin Organization, who provided the government and technical perspective on the acquisition process.

Primary data consisted of transcribed in-depth interview recordings and field notes from observation; secondary data included official project documents,

the village monograph, and relevant news articles and prior research reports. Data collection combined semi-structured in-depth interviews as the principal technique, non-participant observation of affected land and community economic activity, and documentation review used to verify facts reported by informants. Interviews were guided by five thematic indicators derived from the two research questions and the study's theoretical framework: process experience, loss of asset value, utilization of compensation funds, livelihood adaptation, and the meaning of economic wellbeing.

Data were analyzed using the six-phase thematic analysis procedure developed by Braun & Clarke (2006): familiarization with the data, initial coding, searching for themes, reviewing themes, defining and naming themes, and producing the final analytic narrative. Validity was addressed through source triangulation cross-checking accounts from key informants against those of supporting informants and official documents and member checking, in which preliminary findings were shared with key informants to confirm that the researcher's interpretation matched their intended meaning (Lincoln & Guba, 1985).

RESULTS

Overview of the Research Setting

Pakuli Village lies in Gumbasa District, Sigi Regency, in a fertile lowland area bordering the Palu River, historically one of the district's principal centers for rice and maize cultivation. Most residents depend economically on agriculture, whether as landowners or as tenant farmers, with rice, maize, coconut, and cacao as the dominant commodities. The village was also significantly affected by the 28 September 2018 earthquake and liquefaction disaster, which damaged irrigation infrastructure and disrupted agricultural production alongside the destruction of housing. At the time the PASIGALA land acquisition process began, much of the community was still in the midst of physical and economic recovery, a condition that forms an essential backdrop for understanding how residents subsequently experienced and interpreted the acquisition process.

The PASIGALA Regional Raw Water Supply System, managed by the Sulawesi III River Basin Organization under the Ministry of PUPR, aims to secure clean water access for disaster-affected communities across Palu, Sigi, and Donggala. Its distribution pipeline crosses a number of agricultural plots in Pakuli, requiring land acquisition under Law No. 2 of 2012, including stages of socialization, land inventory and identification, appraisal by an independent valuer, deliberation over compensation, and disbursement of payment.

Table 1. Profile of Key Informants

Code	Role	Main Occupation	Land Type	Compensation Form
INF-01	Support	River Basin Organization repr.	—	—

Code	Role	Main Occupation	Land Type	Compensation Form
INF-02	Key	Rice farmer	Irrigated rice field	Cash
INF-03	Key	Trader / entrepreneur	Roadside land	Cash
INF-04	Key	Homemaker / food vendor	Agricultural (rice)	Cash
INF-05	Key	Workshop & transport entrepreneur	Agricultural	Cash
INF-06	Key	Affected resident	Agricultural	Cash
INF-07	Key	Maize farmer	Agricultural	Cash
INF-08	Key	Rice farmer	Irrigated rice field	Cash
INF-09	Key	Affected resident	Agricultural	Cash
INF-10	Support	Village official	Pakuli Village	—
INF-11	Support	Village official	Pakuli Village	—
INF-12	Key	Maize farmer	Agricultural	Cash
INF-13	Key	Maize farmer	Agricultural	Cash
INF-14	Key	Maize farmer	Agricultural	Consignment
INF-15	Key	Coconut & cacao farmer	Agricultural	Cash

Source: Primary research data, processed 2026.

Table 1 summarizes the fifteen informants involved in the study. Twelve were affected landowners who directly experienced the acquisition process and received compensation; two were village officials who facilitated socialization and coordination; and one was a representative of the Sulawesi III River Basin Organization involved in project implementation. Key informants ranged in age from 38 to 67 years, were predominantly male, and worked mainly as farmers, with affected land ranging from irrigated rice fields and maize gardens to coconut and cacao plantations and roadside land with commercial value. Eleven of the twelve key informants received compensation in cash; one, whose valuation dispute was unresolved, underwent consignment through the court.

Community Experience of the Land Acquisition Process

Most informants first learned of the project through a village-office summons to attend a socialization meeting, where representatives of the ministry, district government, and village explained the planned pipeline route and compensation mechanism. While residents generally understood the project's broader purpose supplying clean water to disaster-affected areas this understanding did not always translate into genuine acceptance of the personal consequences they were asked to bear. One informant whose entire plot was affected recalled the weight of the news: his rice field was his only means of livelihood, and its loss left him uncertain how he would provide for his family. Another informant, himself a liquefaction survivor, described the acquisition as compounding a loss that had barely begun to heal, since the land had become his last remaining source of hope after his house was destroyed in the disaster.

Although opportunities to ask questions were provided during socialization, most informants acknowledged that this space did little to influence the technical decisions that had already been set. One informant

recounted asking how his crops would be affected once the pipeline was laid, only to be told that the route had already been determined as the most technically appropriate. A more assertive informant the only one who ultimately proceeded to consignment described voicing strong objections over the fact that prices had not been genuinely negotiated with farmers, leaving him with the impression that community voices carried little weight. From the institutional side, the river-basin representative maintained that all stages of socialization had followed the procedure required under Law No. 2/2012; yet village officials observed that residents' questions during these sessions concentrated overwhelmingly on price and post-acquisition land status rather than on the project's purpose, suggesting that while socialization was procedurally complete, residents' understanding of its long-term implications for ownership remained incomplete.

Regarding the compensation valuation, most informants learned the amount only when summoned to the village office to receive a sealed envelope containing the appraiser's figure. Reactions ranged from resignation to shock to open rejection; only one informant, who had already prepared a concrete business plan before the funds were disbursed, described the valuation as genuinely fair. For the majority, the compensation was perceived as failing to reflect the land's true worth, particularly when weighed against the rapid rise in local land prices that followed the project itself. One informant whose family had inherited a coconut grove observed that land prices near the project had climbed sharply once the project began, making the compensation insufficient to purchase an equivalent replacement plot. An informant whose land fronted the main road expressed sharper disappointment, noting that the valuation sat only slightly above the government's tax assessment value yet far below what the land would fetch on the open market. The informant who pursued consignment voiced the strongest objection, questioning why land of markedly different productivity had been assigned nearly identical values. This contrast between the majority's dissatisfaction and the single informant who viewed the valuation as fair suggests that perceived justice was shaped less by the nominal amount received than by each household's capacity to plan and execute a productive use of the funds.

In terms of the response chosen, all key informants ultimately accepted payment, though the reasoning behind their decisions varied considerably. Eleven accepted cash compensation, while one proceeded through consignment after declining to sign the proposed valuation. Acceptance of cash was rarely a fully voluntary choice; rather, it was heavily shaped by pressing economic need and by apprehension about the length and difficulty of the consignment route. Several informants described a sense of informal social pressure not overt coercion, but a reluctance to be the lone objector once neighbors had already agreed, reinforced by fear that resistance would simply delay and complicate their own payment. The informant who chose consignment maintained his objection despite the process proving exhausting and administratively costly, framing his persistence as a form of protest against a valuation he felt failed to respect his rights, even though the process ultimately produced no meaningful change in the compensation amount.

Beyond the procedural and financial dimensions, the acquisition touched something considerably deeper for Pakuli's residents: the existential meaning of land as a foundation of identity, dignity, and family continuity. For farmers who had cultivated the same plot for decades, the transfer of formal ownership represented not merely the loss of an economic asset but the loss of social standing and a sense of security long anchored in landownership. One informant described the land as inseparable from his dignity as a farmer and provider; another, reflecting on his inherited coconut grove, described the land as an inheritance meant for his children and grandchildren that had now been converted into money that would eventually be spent. Others described a persistent unease when entering their former land, now feeling like temporary occupants rather than owners, and a weakened sense of standing in their own community. As one informant summarized starkly, the deepest impact of the process was "the death of our hope as sovereign landowners."

Taken together, these narratives suggest that the PASIGALA land acquisition in Pakuli unfolded within a wide gap between the formal-procedural framework administered by project institutions and the agrarian lifeworld inhabited by residents. Compliance with the stages required under Law No. 2/2012 did not translate into an experience of substantive fairness; rather, residents largely accepted the process not because they perceived it as just, but because they saw no realistic alternative given their economic and social circumstances at the time.

Economic Impacts after Land Acquisition

The economic consequences experienced by Pakuli's residents following land acquisition were neither uniform nor singular; they varied according to the type and extent of land affected, pre-acquisition economic conditions, how compensation funds were used, and each household's capacity for livelihood adaptation. Even so, four recurring and mutually reinforcing patterns emerged across the data: loss of asset value, the utilization of compensation funds, adaptation of livelihood strategies, and the meaning residents attached to their post-acquisition economic wellbeing.

Loss of asset value was among the most immediate and widely shared impacts. Before acquisition, residents' land functioned not only as a medium of agricultural production but also as a long-term store of value that could be sold, inherited, or used as loan collateral. Following acquisition, all of these functions disappeared simultaneously once formal title transferred to the state. Several informants described the loss of collateral function as especially disruptive, having previously relied on their land certificates to secure farming capital from banks; without that collateral, they were forced to rely on informal lenders charging considerably higher interest. For the informant whose land fronted the main road, the loss extended further, encompassing the commercial potential the plot had once represented for a future business. Across almost all key informants, total household wealth was perceived to have declined after acquisition, since the liquid compensation received was spent relatively quickly while the fixed asset it replaced could not be recovered at comparable value.

The utilization of compensation funds closely mirrored the pressing needs each household faced at the time of disbursement. Most informants allocated their funds primarily to urgent, consumption-oriented needs: settling accumulated debt, home renovation, children's education expenses, and daily household needs. This pattern was strikingly consistent and recurred across nearly every informant's account. Many informants also expressed regret at not having set aside a portion of the funds to purchase replacement land, while acknowledging that pressing needs at the time left little room for such a choice. The informant who underwent consignment faced a still more constrained situation, since a substantial share of his funds had already been depleted by debts and administrative costs accumulated during the lengthy waiting period. The clear exception to this pattern was the informant who had prepared a business plan in advance, using the compensation to purchase workshop equipment, a transport vehicle, and working capital an allocation that, unlike the majority pattern, converted the funds into a productive, income-generating asset.

Adaptation of livelihood strategies after acquisition also varied considerably. Most key informants remained in agriculture, but under new constraints they had not previously faced: land crossed by the underground pipeline became harder and uneven after excavation, irrigation systems were disrupted, and only certain types of crops were permitted above the pipeline route. Informants who had relied on tree crops such as coconut and cacao were particularly affected, since these were removed during construction and could not be replanted, leaving them dependent on lower-value seasonal crops instead. For the informant who lost his entire rice field, no realistic alternative remained within farming, and he transitioned instead to informal construction labor. A small number of informants attempted modest supplementary income activities selling snacks or produce reflecting a degree of resilience but also underscoring how limited their options were in the absence of any structured livelihood-support program from the project. Only one informant achieved a substantial transformation, using the compensation as start-up capital to build a workshop and transport business that now provides more stable income than seasonal harvests once did; his success reflected not simply a larger compensation amount but a combination of prior planning, existing technical skill, and access to a functioning market network that most other informants lacked.

Finally, when asked to compare their economic wellbeing before and after the acquisition, nearly all key informants described their present circumstances as more difficult. This perceived decline extended beyond income alone to encompass economic security, the presence of a dependable asset base, and confidence about the family's future. Several informants linked this decline explicitly to a diminished sense of ownership and a corresponding rise in day-to-day anxiety; others expressed particular concern about their children's future access to assets that could support higher education or serve as loan collateral. The sole exception, again, was the informant who had transformed his livelihood into a workshop and transport business, who reported improved financial security precisely because his income no longer depended on rainfall or harvest cycles.

Table 1. Summary of Response Patterns and Economic Impact by Theme		
Theme	Majority Pattern	Notable Exception
Response to acquisition	Pragmatic / resigned acceptance of cash	One informant pursued consignment
Perceived fairness of value	Regarded as inadequate relative to market value	One informant regarded valuation as fair
Use of compensation funds	Debt repayment, renovation, education, daily needs	One informant invested in workshop/transport business
Livelihood adaptation	Continued farming under new constraints; limited diversification	One informant transformed to a stable non-farm enterprise
Post-acquisition wellbeing	Perceived decline in economic security	One informant reported improved security

Source: Primary research data, processed 2026.

Overall, the pattern of economic impact documented in this study appears asymmetric and unevenly distributed. Most residents experienced a decline in wellbeing driven by three interlocking mechanisms: the loss of a fixed asset that had functioned as a long-term economic reserve; the rapid absorption of compensation funds into urgent consumptive needs without producing an equivalent replacement asset; and constrained livelihood adaptation resulting from the absence of any systematic economic assistance program from the project's implementers. These three mechanisms operated concurrently and reinforced one another, producing a state of economic vulnerability that was not easily reversed in the short term.

DISCUSSION

Loss of Asset Value and Collateral Function

The most fundamental finding to emerge from this study is the near-universal, permanent loss of asset value experienced by affected residents.

Although land could physically still be cultivated, the transfer of formal title to the state stripped away every strategic economic function the land had previously served. Land that could previously be sold for substantial sums, or used to secure agricultural credit, lost these functions the moment ownership shifted, a change that village officials confirmed was a widely shared source of difficulty in accessing capital across the community.

This finding closely mirrors what Cernea (2000) identifies within the IRR Model as the risk of landlessness a risk that does not depend solely on the loss of physical access to land, but more fundamentally on the loss of secure tenure as a foundation for long-term economic security. Read through the Sustainable Livelihoods Framework developed by Chambers and Conway (1992) and Scoones (1998), this outcome illustrates how the erosion of natural capital directly weakens financial capital through the loss of credit access, demonstrating the cascading effect that the loss of one form of capital can have across a household's broader livelihood portfolio.

This pattern resonates with Silvia et al., (2021) findings on the Jakarta-Bandung high-speed rail project, where weaknesses in the formal acquisition process directly produced economic and psychological harm for affected residents. In Pakuli, the limited negotiating space residents experienced during deliberation several informants described simply being informed of, rather than consulted on, the government's terms appear to have similarly constrained the extent to which compensation could adequately offset the loss of asset value.

Absorption of Compensation Funds into Consumptive Needs

The pattern of fund utilization documented in this study reveals an almost uniform tendency among informants: compensation funds were consumed by urgent, consumptive needs home renovation, debt repayment, children's education, and daily expenses – leaving little available for replacement land, especially as local land prices climbed sharply once the project itself entered the area.

It is important to recognize that this consumptive pattern does not simply reflect poor financial management; rather, it constitutes a highly rational response given the compounded vulnerability facing Pakuli's residents. At the time compensation was disbursed, much of the community was still recovering from housing and infrastructure damage sustained in the 2018 earthquake, meaning that a substantial backlog of unmet needs already existed before the funds arrived, generating strong pressure to spend quickly once cash became available.

This finding is reinforced by Tuan (2021) study of shrinking agricultural land in Hanoi, which found that compensation money was typically directed toward non-productive purposes such as home repair, particularly among households already under prior economic strain. Aboda et al., (2022), studying resettlement for an oil refinery project in Uganda, reached an even sharper conclusion: households compensated in cash proved the least economically adaptive group compared with those who received replacement land. This finding speaks directly to the situation observed in Pakuli, where nearly every informant who received cash compensation now reports economic hardship, while the household that pursued land replacement occupies a comparatively more stable position. Rachmah &

Sudiro (2024) describe this layered condition as a compounded shock, in which vulnerability rooted in natural disaster is intensified by the pressures accompanying development; within such circumstances, prioritizing short-term needs represents the most locally rational choice available, even though it may worsen a household's longer-term economic position in aggregate.

Constrained Space for Livelihood Adaptation

Following land acquisition, every informant faced the challenge of sustaining or rebuilding a livelihood, yet the study's findings suggest that the available space for adaptation was narrow. For informants whose land had previously supported tree crops such as coconut and cacao, restrictions on planting above the pipeline route effectively eliminated their most stable long-term income source.

This constraint can be explained through the SLF concept of human capital. The skills, knowledge, and working capacity of most informants were deeply embedded in the farming system they had practiced for decades; once that production base narrowed, informants lacked a sufficient reserve of human capital to readily open alternative livelihood pathways. To-The et al., (2024), in their Vietnamese study, found that household head education and the proportion of land lost were the two most significant predictors of a farming household's ability to transition into non-farm work farmers with lower education and greater proportional land loss tended to remain locked into the same survival strategy of cultivating a shrinking, less productive remainder, a pattern that closely mirrors the narratives collected in Pakuli.

Cernea (2000) terms this conditions the risk of joblessness not the complete absence of work, but the loss of work matched to one's existing capability. For agrarian households whose human capital is concentrated in a single production system, any disruption to that system constitutes joblessness in its most fundamental sense. Halidy (2023) study of the Randugunting Dam in Blora offers an important point of contrast: the positive impacts he documented, including new tourism and fishery enterprises, emerged specifically because the dam itself created new infrastructure potential that communities could exploit. The PASIGALA project, consisting of an underground pipeline network, offers no comparable opportunity for local residents, which helps explain why economic adaptation in Pakuli proved considerably more difficult.

Weakened Economic Security and Its Meaning for Residents

Beneath the measurable material changes lies a dimension that informants described as most deeply felt yet hardest to quantify: a broadly weakened sense of economic security. Several informants captured this shift by contrasting a former sense of ownership with a present sense of merely being permitted to remain, while others expressed persistent unease about having nothing left to pass on to their children.

Read through Alfred Schutz's (1967) social phenomenology, these accounts depict the rupture of a lifeworld that had long been taken for granted. Schutz argued that the stability of everyday life rests on accumulated "stocks of knowledge" the reservoir of experience and certainty built up over a lifetime. For Pakuli's agrarian residents, land had long anchored this entire system of certainty:

as long as the certificate remained in their name, the future felt predictable, with land available to inherit, to pledge, or to sell in an emergency. Once these possibilities disappeared, the lifeworld built over decades was correspondingly destabilized.

Creswell and Poth (2018) argue that lived experience constitutes the most authentic form of primary data in phenomenological research precisely because it captures dimensions of a phenomenon that numbers alone cannot register. A compensation figure that appears administratively adequate on paper looks markedly different once read alongside residents' accounts of feeling as though they had lost their roots and their future as landowners in their own village – revealing a considerable distance between formal compensation and the fuller scope of loss residents actually experienced. (Otsuyama et al., 2024), in their comparative study of post-disaster land acquisition across Italy, the United States, and Japan, caution that land acquisition pursued purely on technical grounds, without an accompanying social vision for the affected community, tends to generate new and enduring forms of vulnerability a warning this study's empirical findings substantiate.

Diverse Responses as a Reflection of Uneven Vulnerability

The diversity of community responses documented in this study ranging from pragmatic acceptance, to negotiation for replacement land, to outright refusal culminating in consignment should be understood as a reflection of unevenly distributed vulnerability and bargaining capacity among affected households, rather than as simple differences in preference. Households under the greatest economic strain, typically those still carrying the heaviest burden of unresolved needs from the 2018 disaster, tended to accept cash quickly with comparatively little scrutiny of the valuation offered, while households in relatively more stable positions had greater latitude to negotiate or decline. This pattern aligns closely with what Cernea (2000) identifies as the risk of marginalization, whereby the most vulnerable groups are paradoxically the ones most likely to emerge from a formally equitable process with the least favorable outcome.

Between Public Interest and Substantive Justice

Taken together, the findings of this study point to a persistent tension between procedural compliance and substantive justice. The PASIGALA project is, without question, an infrastructure investment of genuine public value, and no informant in this study disputed its underlying necessity. Yet this understanding did not eliminate the very real personal burden residents were asked to bear illustrating the classic tension inherent in large-scale development, whereby benefits accrue collectively and broadly while costs concentrate narrowly on those whose land is directly affected.

Harvey's (2004) concept of accumulation by dispossession is instructive here: even when asset transfer proceeds through legally sanctioned channels, it can still constitute a substantive form of dispossession for those who lose control of the asset. In Pakuli, the acquisition process followed the corridor set out in Law No. 2 of 2012, yet the fact that nearly every informant reported feeling more

economically vulnerable afterward than before suggests that procedural compliance alone was not sufficient to guarantee substantive fairness, echoing Soemardjono (2008) argument that “proper and just” compensation must ensure affected households' living conditions are no worse than before acquisition – a standard this study's findings suggest was not fully met.

A closely related gap identified in this study is the absence of any structured livelihood-restoration program following disbursement of compensation. Village officials confirmed that their role was limited to informal encouragement toward prudent fund use, without any structured program to support that goal. Aboda et al. (2022) argue that cash compensation without accompanying assistance is among the riskiest combinations for the sustainability of affected households' livelihoods, while Prabandari et al., (2021) similarly emphasize that the central challenge facing compensation recipients is less about the amount received than about financial literacy and the capacity to manage large, one-off financial decisions. Halidy's (2023) Blora case again offers a useful contrast: the positive outcomes he observed depended on active follow-up support from local government to help residents capitalize on new infrastructure – support that appears largely absent in Pakuli's case.

Finally, the vulnerability documented in this study remains open-ended rather than resolved. The cultivation rights residents currently retain are informal and unprotected by any binding legal document guaranteeing their continuation. Wicaksono et al. (2024) note that uncertainty over post-acquisition cultivation status is among the most corrosive sources of long-term economic stress in agrarian communities, since it undermines households' ability to plan any investment from crop choice to equipment purchase on land whose future access cannot be guaranteed. Read through the SLF, this leaves Pakuli's residents within a vulnerability context that remains persistently open rather than progressively resolved, a condition Scoones (1998) argues is incompatible with genuine livelihood sustainability.

CONCLUSIONS AND RECOMMENDATIONS

This study set out to describe how residents of Pakuli Village responded to the land acquisition process for the PASIGALA Raw Water System and to analyze the economic impacts experienced afterward. Two principal conclusions emerge from in-depth interviews with fifteen informants, analyzed through a phenomenological approach. First, community responses to the acquisition process were diverse, reflecting differences in economic circumstance, bargaining capacity, and understanding among residents. Three distinct response patterns emerged acceptance of cash compensation, requests for replacement land, and refusal culminating in consignment with most residents accepting cash not because they regarded the compensation as fair, but because of mounting economic pressure since the 2018 disaster and limited genuine negotiating space within the deliberation process, which most residents experienced more as notification than as equal dialogue.

Second, the economic impacts experienced following acquisition were predominantly negative and layered. The loss of formal land ownership

simultaneously eliminated the land's resale function, its collateral function, and its role as an intergenerational inheritance functions that had long underpinned household economic resilience. Compensation funds were largely absorbed by accumulated consumptive needs rather than converted into productive assets, in the absence of any assistance program from either the project implementer or local government. Livelihood adaptation remained constrained because residents' human capital was concentrated in an agricultural system disrupted by planting restrictions along the pipeline corridor. At a deeper level, residents lost not only material assets but also their sense of security, their identity as landowners, and their capacity to plan their families' futures independently.

Overall, this study concludes that the PASIGALA land acquisition process in Pakuli Village was carried out in accordance with the procedures required under national law, yet it fell short of the standard of substantive justice that requires the living conditions of affected communities to be no worse than before the acquisition took place.

Based on these conclusions, several recommendations are proposed. For the Ministry of PUPR through the Sulawesi III River Basin Organization, the cultivation rights currently held informally by residents along the pipeline route should be formalized through binding legal documentation that residents can rely upon. For future land acquisition projects, particularly in communities still recovering from disaster, government agencies should design a structured financial-management assistance program that engages residents before compensation funds are disbursed rather than only afterward, equipping households to make sound decisions when facing unusually large financial choices. The mechanism for determining compensation should also account more dynamically for local context, including the tendency for land prices to rise specifically because of the project itself; valuing compensation against pre-project prices while requiring residents to purchase replacement land at markedly higher post-project prices constitutes a structural inequity that revised appraisal mechanisms should address.

For the Pakuli Village government, a more active bridging role is recommended between affected residents and higher levels of government, particularly in advocating for clarity over cultivation rights and for concrete livelihood-restoration programs, alongside facilitating the formation of farmer groups or community-based savings and credit cooperatives as an alternative source of capital access now that the collateral function of certified land has been lost.

FURTHER STUDY

As with any single-site qualitative study, this research is subject to several limitations that point toward productive directions for future inquiry. Because the study focused on the subjective experience of residents in one village, future research would benefit from a comparative design encompassing several affected villages simultaneously. A quantitative approach with a larger sample would also be valuable for measuring, in statistical terms, the extent of the economic welfare decline documented qualitatively here, allowing the present findings to

be corroborated with more generalizable numerical evidence. Finally, a longitudinal study spanning five to ten years is strongly recommended, given that several of the impacts identified in this research particularly those related to the uncertain status of cultivation rights remain open-ended and had not yet reached resolution at the time this study was conducted.

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