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Localizing the Sustainable Development Goals in Rural Indonesia Using Evidence from North Sumatra

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Abstract

Integrating the Sustainable Development Goals (SDGs) into village development is an important strategy for addressing persistent poverty, inequality, and environmental challenges in rural Indonesia. This study examines how SDGs are understood, interpreted, and implemented in village development planning in two North Sumatran villages, namely Melati II in Serdang Bedagai Regency and Air Hitam in Batu Bara Regency. A qualitative multiple-case approach employing semi-structured interviews, focus group discussions, participant observation, and document analysis was used to explore governance practices and implementation challenges. The findings of this study are structured as follows: (1) SDG alignment in village development exists but is largely incidental rather than the result of systematic or intentional planning processes; (2) there is limited awareness and understanding of the SDGs among local stakeholders, accompanied by insufficient administrative and technical capacity to integrate SDG frameworks effectively into village planning; (3) the integration of sociocultural values into SDG-related initiatives remains weak, reducing contextual relevance and sustainability; (4) strong social capital, reflected in trust, active community participation, and strong local networks, significantly enhances the effectiveness of village development implementation; and (5) multi-stakeholder collaboration through a penta-helix model involving government, community, academia, private sector, and media plays a crucial role in strengthening sustainable village development outcomes. In conclusion, although SDG principles are partially reflected in local practices, implementation remains unstructured. Bridging the gap between global agendas and grassroots reality requires strengthening local awareness, building institutional capacity, and fostering collaborative governance to ensure that sustainable development becomes a culturally grounded and community-driven process.

1. Introduction

Village development represents a strategic approach aimed at enhancing the socioeconomic conditions of rural populations, thereby improving overall quality of life [1]. Law Number 6 of 2014, enacted by the Indonesian government (Articles 78–86), frames village development as a collective effort to reduce poverty, fulfill basic needs, and advance infrastructure [2]. The policy emphasizes fostering a robust rural economy, promoting sustainable resource management, and improving access to education, healthcare, and housing, alongside social values such as togetherness, kinship, and cooperation.

Indonesia's village development strategy was established against a backdrop of increasing rural disparities, poverty, and uneven access to public services [3, 4]. The strategy aims to strengthen local governance, empower communities, and create inclusive development pathways that incorporate local knowledge and cultural practices [5]. Within this context, aligning village development with global sustainability objectives becomes essential. The United Nations' Sustainable Development Goals (SDGs), established in 2015, offer a comprehensive framework to address poverty, inequality, climate change, and environmental degradation [6]. The Indonesian government has incorporated these goals into national and local planning through Presidential Regulation No. 59 of 2017 and the Ministry of

Village Development Regulation No. 7 of 2021, which emphasize SDG-oriented initiatives within Village Fund allocations [7, 8].

Despite national-level alignment, the localization of Sustainable Development Goals (SDGs) at the village level remains limited and underexplored in many rural contexts (9). Recent studies have highlighted that SDG localization is a complex governance process shaped by institutional capacity, participatory planning, accountability mechanisms, and cross-sector collaboration [10, 12]. A study published in *Sustainability* demonstrates that effective SDG implementation at the local level depends on the strength of governance structures and the ability of local institutions to translate global goals into context-specific actions [11]. However, persistent challenges continue to hinder this process, including limited administrative resources, uneven policy interpretation, weak monitoring and evaluation systems, and insufficient integration of local sociocultural contexts into development planning [14]. Consequently, the success of SDG implementation depends not only on formal national mandates but also on the quality of local governance, institutional readiness, and the depth of community engagement in decision-making processes.

The SDG Village (*SDGs Desa*) framework attempts to translate global objectives into village-specific realities by strengthening local institutions, promoting inclusive economic growth, and preserving adaptive cultural practices [6]. Importantly, it explicitly recognizes local knowledge as a driver of sustainable development and long-term village resilience [7]. However, existing research has largely focused on macro-level policy analysis or descriptive program reporting, leaving a significant gap regarding how SDG principles are substantively embedded in village planning, interpreted by local actors, and mediated by social capital and collaborative governance [15, 16].

This study addresses this gap by investigating SDG integration in two North Sumatran villages Melati II in Serdang Bedagai and Air Hitam in Batu Bara. Specifically, it examines the extent and intentionality of SDG incorporation into village planning, explores how village officials and community members perceive and interpret SDG-oriented initiatives, identifies institutional, administrative, and sociocultural barriers to implementation, and analyzes how social capital factors, including trust, participation, and community networks, alongside collaborative governance models such as the penta-helix, facilitate or constrain SDG localization.

The contribution of this study is threefold. First, it provides empirical, village-level evidence on SDG localization in Indonesia, addressing a critical gap in sustainability governance research. Second, it bridges the gap between normative regulatory frameworks and local implementation practices. Third, it highlights the mediating role of social capital and multi-stakeholder collaboration in enabling transformative, community-driven development. By focusing on grassroots processes, this research advances understanding of how global sustainability commitments can be institutionalized at the local level, moving villages beyond symbolic compliance toward meaningful and inclusive sustainable development.

2. Literature Review

Village development in Indonesia has undergone a significant structural transformation following the enactment of Law No. 6/2014, which granted villages greater autonomy in managing governance, finance, and development planning [2]. This decentralization reform positions villages as central actors in national development agendas, including the Sustainable Development Goals (SDGs). However, scholarly debates indicate that institutional empowerment alone does not guarantee effective implementation [17]. Although village governments now control substantial fiscal transfers, disparities in administrative capacity, human resources, leadership quality, and accountability mechanisms continue to shape uneven development outcomes [14]. Consequently, research must move beyond regulatory analysis to examine how local sociopolitical conditions influence actual SDG performance.

The SDGs, established by the United Nations in 2015, offer an integrated framework addressing poverty, inequality, environmental degradation, and institutional sustainability [13]. Indonesia operationalizes this agenda through the SDGs Desa initiative, which adapts the 17 global goals into 18 village-specific targets tailored to rural realities [12]. This process exemplifies glocalization, whereby global norms are interpreted and modified in ways meaningful to local contexts. Comparative evidence from Southeast Asia including the Philippines and Vietnam demonstrates that while decentralization enhances local participation in principle, practical challenges such as fragmented intergovernmental coordination, weak data management, and limited technical capacity persist [18]. Similar patterns emerge in North Sumatra, where resource limitations and uneven institutional collaboration hinder systematic SDG implementation. Although national-level assessments indicate that SDG Villages contribute approximately 74% to Indonesia's broader SDG progress, aggregate figures risk masking localized inequalities: some villages demonstrate rapid institutional adaptation, while others remain constrained by limited technical expertise and weak participatory structures [19].

A critical limitation of existing scholarship is its tendency to treat villages as uniform administrative units. Little attention is given to how socioeconomic stratification, informal leadership dynamics, political patronage, and cultural norms influence SDG-oriented programs [20]. Furthermore, longitudinal studies examining whether *SDG Desa* initiatives generate sustained poverty reduction and structural transformation are scarce. Without such analysis, it is difficult to determine whether SDG integration represents substantive transformation or mere administrative relabeling [21].

To address these gaps, this study adopts a multidimensional theoretical framework combining social development theory, social capital theory, sustainability theory, and glocalization theory. Each framework is linked directly to empirical dimensions of SDG implementation, allowing for a critical analysis of how institutional capacity, social relations, and local adaptation shape village development outcomes.

Social development theory emphasizes empowerment, inclusion, and institutional capacity as foundations for sustainable progress [22, 23, 24]. Drawing on Sen's capabilities approach, development is conceptualized not simply as economic growth but as the expansion of individual freedoms and agency [23]. In the context of SDG Desa, this perspective focuses on villagers' participation in decision-

making forums, equitable allocation of village funds, access to essential services, and community control over development priorities.

Social capital theory highlights trust, networks, norms, and cooperation as key factors facilitating collective action [25, 26, 27]. In village-level SDG implementation, social capital affects the ability of communities to collaborate with local governments, monitor programs, and mobilize resources. Villages with strong bonding and bridging social capital are better equipped to overcome administrative and financial constraints, demonstrating greater resilience in achieving SDG objectives [28].

Sustainability theory situates village development as a multidimensional process encompassing economic, social, and environmental dimensions [29, 30, 6]. Economic sustainability emphasizes livelihoods and responsible resource management; social sustainability addresses justice, inclusiveness, and inequality reduction; environmental sustainability prioritizes conservation and ecological balance. While SDGs aim to integrate these dimensions, empirical observations suggest village programs often prioritize infrastructure and income-generation initiatives over environmental objectives, highlighting the need to examine governance negotiation of competing priorities.

Glocalization theory provides a lens for understanding how global agendas are interpreted and adapted in local contexts C. Rather than assuming uniform diffusion, this framework emphasizes negotiation, reinterpretation, and selective adaptation. Village officials may prioritize certain SDG indicators based on political feasibility, cultural relevance, or available resources, explaining variations in implementation across villages under the same national framework [31, 32].

By integrating these perspectives, this study moves beyond descriptive policy analysis to critically examine the interactions between institutional capacity, social relations, and contextual adaptation in shaping SDG implementation. The theoretical claims are linked to empirical dimensions such as participatory governance practices, institutional coordination, social trust networks, resource allocation, and sustainability outcomes. To enhance clarity, the study could include a table connecting each theoretical framework to *SDG Desa* implementation dimensions:

Table 1
Conceptual Mapping of Theoretical Frameworks and Empirical Dimensions of *SDG Desa* Implementation

Theory	**Key Concepts**	**Empirical Application in SDG Desa**
Social Development	Empowerment, inclusion, agency	Participation in decision-making, fund allocation, access to services
Social Capital	Trust, networks, norms, cooperation	Community collaboration, program monitoring, resource mobilization
Sustainability	Economic, social, environmental dimensions	Livelihood development, social equity, environmental conservation
Glocalization	Local adaptation, negotiation, selective prioritization	Interpretation of SDG targets, culturally relevant initiatives, resource-based prioritization

Overall, while the SDGs provide a promising framework for inclusive and sustainable rural transformation, significant challenges remain. Addressing context-specific institutional weaknesses, strengthening participatory governance, enhancing social capital, and ensuring balanced sustainability outcomes are essential for translating global development commitments into meaningful local change. This study thus bridges global development theory and village-level realities by critically analyzing the sociological and institutional dynamics shaping *SDG Desa* implementation in North Sumatra.

3. Research Design and Methodology

3.1 Research Approach and Design

A multiple case study strategy was employed to compare two villages, namely Melati II Village in Serdang Bedagai Regency and Air Hitam Village in Batu Bara Regency. The selection of these cases followed a purposive and comparative case selection strategy informed by several interconnected considerations: (i) preliminary field observations conducted during exploratory visits, (ii) consultations with village facilitators, local stakeholders, and community representatives, and (iii) review of available village development planning documents, annual reports, and references to SDG Desa-related activities within local governance practices.

The selection process was not based on a formal provincial database or quantitative ranking system because, at the time of fieldwork, no comprehensive registry of villages in North Sumatra containing measurable indicators of SDG integration performance was publicly available. In addition, there was no standardized provincial classification system categorising villages according to the effectiveness of SDG localisation, participatory governance quality, institutional capacity, or sustainability performance. Consequently, the study relied on exploratory qualitative assessment rather than statistical sampling procedures. This approach is consistent with qualitative multiple-case research traditions, where cases are selected for their analytical relevance, contextual diversity, and contrasting governance characteristics rather than for statistical representativeness or population-level generalisation.

The initial exploratory phase involved informal observations and consultations conducted with local development facilitators, village officials, and community actors in several rural areas within North Sumatra. Through these exploratory engagements, the researchers identified differences in how villages interpreted, communicated, and operationalised SDG Desa initiatives within local development planning processes. Particular attention was given to governance practices, administrative organisation, participatory mechanisms, visibility of SDG-related activities, and perceived implementation challenges. This preliminary assessment served as the foundation for identifying villages that could provide meaningful analytical contrasts regarding SDG localization processes.

Melati II Village was identified as relatively more “proactive” based on several observed characteristics during preliminary assessment. First, village planning documents, including development planning reports and village meeting records, contained more explicit references to SDG Desa terminology and

sustainability-oriented development objectives. Second, development programmes in Melati II demonstrated visible alignment with SDG themes such as poverty reduction, healthcare improvement, economic empowerment, and community participation. Third, village governance practices appeared relatively more coordinated administratively, particularly in relation to programme implementation, reporting practices, and community mobilisation. Fourth, community participation in village development activities appeared more visible and structured, with local actors demonstrating relatively stronger engagement in development meetings, cooperative activities, and local economic initiatives. These observations suggested that Melati II exhibited relatively stronger institutional adaptability and governance responsiveness in relation to SDG-oriented village development.

In contrast, Air Hitam Village was identified as relatively more “constrained” based on several interrelated observations and stakeholder reports. Village planning documents contained fewer explicit references to SDG frameworks and sustainability terminology, suggesting weaker institutional integration of SDG concepts into formal planning processes. Preliminary consultations with facilitators and local stakeholders also highlighted administrative limitations, including shortages of technical personnel, limited programme continuity, weaker coordination mechanisms, and difficulties related to monitoring and reporting systems. Furthermore, observations indicated that community participation was present but appeared less structured and more procedural in nature. Respondents frequently described challenges associated with limited technical expertise, restricted access to external support networks, infrastructural constraints, and inconsistent implementation capacity. These conditions suggested that Air Hitam faced more substantial institutional and administrative barriers in localising SDG frameworks effectively.

The contrasting nature of the two villages was therefore derived from triangulated qualitative evidence gathered through exploratory visits, stakeholder consultations, participant observations, and document analysis rather than through standardised quantitative indicators. The researchers intentionally selected cases that appeared to demonstrate variation in governance effectiveness, participatory practices, and institutional capacity while remaining situated within the same broader provincial and national policy environment. This comparative design allowed the study to explore how villages operating under similar macro-level governance frameworks could nevertheless experience different patterns of SDG interpretation, implementation, and community engagement.

Basic contextual information was also considered during case selection. Both villages are located within North Sumatra Province and operate under the same Indonesian village governance framework, including Village Fund policies, SDG Desa regulations, and decentralised rural development structures. This shared institutional context was important because it allowed broader policy conditions to remain relatively constant, thereby enabling the study to focus more specifically on differences in local governance practices, institutional capacity, social capital dynamics, and participatory implementation processes.

At the same time, both villages display several contextual differences relevant to the study objectives. Both villages are predominantly rural and agriculture-dependent, but local economic activities differ according to resource availability, leadership capacity, community organisation, and access to development support systems. Melati II demonstrated relatively stronger organisational coordination and more visible institutional engagement with development initiatives, whereas Air Hitam displayed more pronounced limitations related to administrative capacity, infrastructural support, and technical governance processes. These differences provided important analytical value for examining how local institutional conditions shape SDG localization outcomes within comparable rural governance settings.

The study further acknowledges that additional quantitative indicators such as population size, village land area, poverty rates, household income levels, economic diversification patterns, infrastructure indicators, and Village-Owned Enterprise (*BUMDes*) performance were not systematically employed as formal case selection criteria. This limitation was primarily due to uneven data availability at the village level, inconsistencies in local administrative reporting systems, and the qualitative orientation of the research design. In many rural Indonesian contexts, village-level socioeconomic data remain fragmented, inconsistently updated, or administratively inaccessible, making systematic comparative statistical selection difficult.

Moreover, the purpose of this study was not to produce statistically representative findings regarding all villages in North Sumatra or Indonesia more broadly. Instead, the study aimed to generate in-depth, contextually grounded understanding of how SDG localization processes are interpreted, negotiated, and operationalised within specific rural governance contexts. The contrasting case design was therefore intended to provide analytical depth and comparative insight rather than quantitative representativeness.

Nevertheless, the researchers recognise that reliance on exploratory qualitative assessment introduces interpretive limitations. The categorisation of Melati II as relatively “proactive” and Air Hitam as relatively “constrained” is based on triangulated field-based evidence and stakeholder perceptions rather than empirically validated statistical indices. As a result, the strength of contrast between the two villages cannot be measured objectively using standardised performance indicators. The comparative design should therefore be interpreted as analytically illustrative rather than statistically definitive.

Despite these limitations, the selected cases remain valuable for understanding how institutional capacity, participatory governance, social capital, and contextual adaptation influence SDG localization at the village level. The use of contrasting qualitative cases enables deeper exploration of governance processes, community perceptions, and implementation dynamics that are often overlooked in broader macro-level policy studies. In this sense, the study contributes not by claiming universal representativeness but by providing nuanced empirical insight into the complexities of translating global sustainability agendas into locally embedded rural development practices within the Indonesian context.

3.2 Study Area

The study was conducted in North Sumatra, one of Indonesia's major provinces located on the island of Sumatra. The province plays an important role in Indonesia's agricultural production and rural economy, particularly through oil palm plantations, rice cultivation, fisheries, rubber production, and small-scale farming activities. North Sumatra consists of diverse geographical settings, including coastal zones, plantation belts, agricultural lowlands, and highland regions, resulting in uneven patterns of rural development and infrastructure accessibility. Administratively, the province is divided into regencies (*kabupaten*) and municipalities (*kota*), with villages functioning as the primary local governance unit responsible for implementing rural development policies and Sustainable Development Goals (SDGs) localization initiatives.

From a sustainable development perspective, North Sumatra presents a complex development landscape characterised by both progress and persistent structural inequalities. Several socio-economic indicators reveal important disparities between urban and rural areas. Rural communities continue to experience relatively higher poverty rates, lower household incomes, limited healthcare accessibility, uneven educational quality, and infrastructural deficiencies compared to urban centres such as Medan. Many villages remain dependent on agriculture-based livelihoods, making them vulnerable to commodity price fluctuations, environmental degradation, climate-related risks, and limitations in market accessibility.

The urban–rural development gap in North Sumatra reflects broader national inequalities that remain significant despite decentralisation and SDG-oriented rural development policies. Urban centres generally demonstrate better access to healthcare services, higher educational attainment, improved transportation infrastructure, stronger internet connectivity, and more diversified employment opportunities compared to rural villages. In contrast, rural communities remain highly dependent on agriculture and informal economic activities, with more limited access to public services and technological infrastructure. These disparities are also reflected in Indonesia's macroeconomic inequality indicators, including the Gini ratio, which continues to demonstrate uneven income distribution between urban and rural populations. Although rural development programmes and Village Fund policies have contributed to gradual improvements in infrastructure, education, and poverty reduction, substantial structural inequalities persist between urban and rural regions.

Within the framework of the Sustainable Development Goals (SDGs), the distinction between urban and rural areas is not only economic but also infrastructural, demographic, and environmental. Rural areas possess lower population density and stronger dependence on natural resources and agricultural production, while urban areas experience greater industrialisation, infrastructure concentration, and environmental pressures associated with urban expansion. Although completely eliminating urban–rural disparities may be unrealistic, current development trajectories indicate potential for narrowing gaps in access to renewable energy, digital infrastructure, education, healthcare, and information technology. In particular, village-level development initiatives increasingly emphasise sustainable agriculture, nature-based economic activities, and environmentally adaptive rural innovation as alternatives to purely industrial development models.

In terms of SDG-related indicators, several critical development issues remain highly relevant within rural North Sumatra:

Table 2
Key SDG-Related Challenges and Rural Development Conditions in North Sumatra

SDG Dimension	Key Regional Challenges	Existing Conditions in Rural Areas
SDG 1: No Poverty	Rural poverty and income inequality	Dependence on unstable agricultural income and informal employment
SDG 2: Zero Hunger	Food security and agricultural resilience	Limited diversification of rural agricultural production
SDG 3: Good Health and Well-Being	Unequal healthcare access and stunting	Limited rural health facilities and healthcare personnel
SDG 4: Quality Education	Educational inequality	Lower educational attainment and digital access gaps
SDG 6: Clean Water and Sanitation	Basic infrastructure limitations	Uneven access to sanitation and clean water systems
SDG 8: Decent Work and Economic Growth	Limited rural employment diversification	Heavy reliance on plantations and agriculture
SDG 10: Reduced Inequalities	Regional and social disparities	Uneven development allocation across districts
SDG 11: Sustainable Communities	Weak village infrastructure planning	Limited transportation and digital infrastructure
SDG 13: Climate Action	Environmental degradation and land conversion	Expansion of plantations and ecological pressures

Indonesia's national SDG-oriented development policies also include specific targets related to improving rural access to education, healthcare, energy, digital connectivity, and income generation. Through the SDGs Desa framework and Village Fund allocation system, village governments are encouraged to improve educational participation rates, strengthen maternal and child healthcare services, reduce poverty levels, increase access to clean water and sanitation, and expand renewable energy accessibility. National development strategies additionally prioritise reducing rural inequality, strengthening local economic resilience, and improving digital and transportation infrastructure connectivity between rural and urban regions. Although implementation outcomes vary substantially across villages, these policies reflect broader national efforts to reduce structural disparities and improve rural quality of life.

Several forms of small-scale sustainable technology have also begun to emerge within rural Indonesian development programmes, including in parts of North Sumatra. Examples include the use of small-scale solar panel systems for community electricity support, village-level waste management initiatives, organic composting systems, and simple bioreactor technologies used in agricultural waste processing.

In some plantation and farming communities, organic fertiliser production and environmentally adaptive agricultural techniques have been promoted to reduce dependency on chemical inputs and strengthen local environmental sustainability. While these technologies remain unevenly distributed and are not yet systematically institutionalised across all villages, they represent early forms of sustainable rural innovation that align with SDG objectives related to clean energy, responsible consumption, and environmental sustainability.

In addition, biodiversity conservation, ecosystem services, and carbon sequestration are increasingly recognised as important dimensions of sustainable rural development in Indonesia. Rural areas in North Sumatra possess significant ecological value through forests, agricultural landscapes, river systems, and biodiversity-rich environments that contribute to ecosystem stability, water management, and carbon absorption. However, environmental pressures associated with plantation expansion, land conversion, and resource exploitation continue to threaten ecological sustainability. As a result, sustainable development discussions in Indonesia increasingly emphasise balancing economic growth with biodiversity protection, ecological conservation, and climate adaptation strategies. These environmental indicators are becoming progressively important in evaluating the long-term sustainability performance of rural territories within the SDG framework.

To further clarify the contrasting characteristics of the two study villages and strengthen the comparative case design, Table 3 provides a comparative overview of key governance, institutional, participatory, and development dimensions observed during the preliminary assessment and fieldwork process.

Table 3
Comparative Overview of the Two Study Villages

Dimension	Melati II Village	Air Hitam Village
Governance Capacity	Relatively stronger administrative coordination	More limited institutional coordination
SDG Awareness	More explicit SDG references in planning documents	Limited explicit SDG integration
Community Participation	More active participation in village programmes	Participation more procedural
Institutional Capacity	Relatively stronger planning and reporting practices	Technical and staffing limitations
Main Economic Activities	Agriculture, small-scale entrepreneurship, BUMDes	Agriculture and informal economic activities
External Collaboration	Some engagement with facilitators and external actors	Limited external partnerships
Main Development Challenges	Sustainability and empowerment issues	Administrative and infrastructural constraints
Social Capital	Strong community cohesion and trust	Moderate cohesion but weaker networking
Development Orientation	More adaptive and proactive	More constrained and reactive

Within this provincial setting, the study focuses on two villages: Melati II Village in Serdang Bedagai Regency and Air Hitam Village in Batu Bara Regency. Both villages operate within the same national and provincial governance framework but display differing levels of institutional effectiveness, social participation, and development adaptability. Melati II demonstrates relatively stronger village governance capacity, community participation, and administrative coordination in implementing development programmes, while Air Hitam reflects more substantial structural constraints such as limited institutional resources, weaker participation mechanisms, and infrastructural limitations.

3.3 Data Collection Methods

Data collection was exclusively qualitative, aiming to produce rich, contextually grounded insights into SDG Desa implementation. To strengthen the credibility, dependability, and confirmability of the findings, methodological triangulation was applied through the use of multiple data sources, namely in-depth semi-structured interviews, focus group discussions (FGDs), participant observation, and document analysis.

In-depth semi-structured interviews were conducted with village officials and relevant stakeholders to explore their understanding, interpretation, and implementation practices related to SDG Desa. The

interview guide included open-ended questions focusing on planning processes, governance practices, resource allocation, and perceived challenges in SDG integration.

Focus group discussions (FGDs) were used to capture collective perspectives from community members, allowing interaction among participants to generate shared meanings, identify consensus, and highlight divergent views regarding village development priorities and SDG-related initiatives. FGDs were facilitated using a guiding framework while still allowing flexibility for emergent themes.

Participant observation was carried out during selected village activities, meetings, and development-related programs to directly observe governance processes, community participation, and decision-making dynamics in practice. Field notes were systematically recorded to document behaviours, interactions, and contextual factors that could not be fully captured through interviews alone.

Document analysis involved reviewing relevant village planning documents, development reports, and policy materials related to SDG Desa implementation. These documents were used to cross-check and complement interview and observational data, ensuring consistency between reported practices and formal planning records.

Together, these four methods enabled data triangulation, enhancing the robustness and reproducibility of the study by providing multiple perspectives on SDG implementation at the village level.

3.3.1 Semi-Structured Interviews

Semi-structured in-depth interviews formed the primary data source. The interview protocol was designed based on the study's theoretical framework (social development theory, social capital theory, sustainability theory, and glocalization theory) and *SDG Desa* targets. The protocol was pilot-tested in a neighboring village to ensure clarity, relevance, and cultural appropriateness.

A total of 28 interviews were conducted across both villages, including participants from diverse stakeholder groups: village heads, secretaries, development planning officers, local council members, women's group representatives, youth leaders, and ordinary community members. Participants were selected through purposive and snowball sampling to ensure representation of governance actors and grassroots stakeholders. Interview questions explored knowledge and understanding of SDGs, participation in village development processes, perceptions of governance transparency and accountability, and experiences with participatory decision-making.

3.3.2 Focus Group Discussions (FGDs)

Four FGDs were conducted two per village with 6–8 participants per session, including diverse demographic and socioeconomic backgrounds. FGDs explored collective perspectives, community norms, and social dynamics related to SDG implementation. These discussions highlighted patterns of collaboration, negotiation, and power relations among villagers, as well as perceptions of leadership and institutional responsiveness.

3.3.3 Participant Observation

Participant observation was conducted during village development planning meetings (*Musrenbang Desa*), SDG-related discussions, and community activities. Observations focused on governance processes, participation patterns, interactions between officials and citizens, and enactment of SDG-related initiatives. These observations provided contextual validation of data obtained through interviews and FGDs and captured real-time social and institutional dynamics.

3.3.4 Document Analysis

Official documents, including village development plans, annual reports, and budgetary records, were analyzed to contextualize primary data. This analysis enabled identification of explicit SDG-aligned objectives, evaluation of alignment between official plans and observed practices, and triangulation of findings from interviews and FGDs. Document analysis was critical to understanding the formal strategies used by villages and the gaps between policy intentions and practical implementation.

3.4 Data Analysis

Data were transcribed verbatim and managed using NVivo 14. A hybrid coding approach was employed to balance theory-driven analysis with emergent themes:

1. Deductive coding: Applied based on theoretical constructs (social development, social capital, sustainability, glocalization) to examine how institutional capacity, trust networks, and adaptive processes influence SDG implementation.
2. Inductive coding: Allowed new themes to emerge from participants' narratives, capturing unique experiences, challenges, and locally relevant strategies.

Thematic analysis followed three stages:

1. Open coding: identifying recurring patterns, concepts, and practices.
2. Axial coding: establishing relationships between categories, e.g., participation patterns, trust networks, and institutional effectiveness.
3. Selective coding: refining core themes and linking them to the research objectives, including SDG interpretation, governance capacity, social capital, and sustainability outcomes.

Analytical rigor was ensured through intercoder reliability checks, reflexive memos, and member validation, confirming that interpretations reflected participants' perspectives and reducing researcher bias. Triangulation across interviews, FGDs, observations, and document analysis strengthened credibility and validity.

3.5 Ethical Considerations

The study received ethical approval from the Ethics Committee for Social and Humanities Research at Universitas Sumatera Utara (Ethical Clearance Number 04/11/EC/2024). Informed consent was obtained

verbally from all participants, who were assured of anonymity, confidentiality, and the right to withdraw at any time. Pseudonyms were used in transcripts and reports to protect identities, and sensitive materials were securely stored.

3.6 Methodological Strengths and Limitations

The qualitative case study design provides deep, contextually grounded insights into SDG integration, capturing nuanced interactions between governance structures, social networks, and local adaptation strategies. The use of multiple qualitative data sources enhances triangulation and strengthens the trustworthiness of the findings. The methodological limitations of this study are acknowledged as follows:

1. The findings are context-specific and are not intended to be statistically generalisable beyond the two selected villages, although they may offer analytical insights applicable to similar rural contexts.
2. The qualitative nature of the data involves interpretive analysis, which may introduce researcher subjectivity; however, this was mitigated through reflexivity, triangulation across data sources, and member checking to enhance credibility.
3. The cross-sectional research design limits the ability to capture long-term changes in SDG implementation and outcomes, suggesting that future longitudinal studies would be valuable for examining sustainability and developmental transformation over time.

While these limitations are presented to ensure methodological transparency, the detailed interpretation of their implications for SDG *Desa* implementation, including their relevance to governance processes, social capital, and contextual adaptation, is more appropriately addressed in the discussion section.

4. Results

4.1 Extent and Intentionality of SDG Integration in Village Development

The study reveals that SDGs are formally incorporated into both villages' development plans, yet the depth, intentionality, and transformative nature of this integration differ. In Melati II Village, SDG priorities particularly poverty reduction, health improvement, and economic growth are explicitly referenced in the village work plan (*Rencana Kerja Pemerintah Desa*) and reflected in budget allocations. This demonstrates administrative alignment with national and global sustainability goals, indicating that officials are aware of SDG objectives and are attempting to integrate them into local strategies.

A community leader in Melati II commented:

The village has programs to support families who struggle with food and basic needs. We make sure assistance reaches those who need it most, but sometimes people only wait for help instead of finding ways to improve themselves.

This quote highlights the tension between provision and empowerment. While the village actively addresses basic needs, the initiatives do not fully foster independent capacity or sustainable agency among beneficiaries. According to Social Development Theory, true development expands individual freedoms and capabilities. Here, the village programs reflect administrative compliance with SDG 1 (No Poverty) but fall short of transformative development, revealing a gap between intentional policy adoption and community empowerment.

Regarding economic growth (SDG 8), a Melati II resident remarked:

The Village-Owned Enterprise (VOE) is meant to help local businesses, but the pandemic slowed everything. We hope it can create more jobs soon.

In Air Hitam Village, a VOE manager explained:

We run tent rentals and small savings programs, but it is hard to meet everyone's expectations because we lack staff and technical support.

These narratives indicate that while Village-Owned Enterprises (VOEs), locally known as Badan Usaha Milik Desa (BUMDes), exist as institutional mechanisms to promote local economic development, operational constraints and external shocks hinder their effectiveness. This demonstrates that formal SDG integration at the village level does not automatically produce tangible outcomes, underscoring the need for deliberate capacity-building, institutional strengthening, and strategic planning to enhance the effectiveness of rural economic development initiatives.

4.2 Community Perceptions and Interpretations of SDG Initiatives

Community awareness and understanding of the Sustainable Development Goals (SDGs) remain limited in both study villages. Although villagers generally recognise development programmes related to health, education, infrastructure improvement, and economic assistance, most respondents do not explicitly associate these initiatives with the broader SDG framework or global sustainability agenda. For many villagers, development programmes are perceived simply as routine government assistance or village administrative activities rather than as part of a long-term and integrated sustainable development strategy. This finding indicates that SDG localization at the village level remains largely administrative and institutional rather than socially embedded within local community consciousness, participation, and ownership.

A youth participant from Air Hitam Village explained:

I know the village has programs for health and education, but I don't know what SDGs are. We just follow the village meetings.

This statement reflects a predominantly top-down governance approach in which development initiatives are viewed as externally directed programmes rather than collectively developed community agendas. Although villagers attend meetings and participate in village activities, their involvement is often limited to passive attendance and procedural participation rather than meaningful engagement in planning, implementation, and evaluation processes. In this context, village meetings function more as mechanisms for disseminating information and instructions from village authorities rather than platforms for participatory deliberation and collaborative decision-making.

The findings suggest that many villagers continue to perceive development programmes as obligations or instructions from village officials rather than as participatory and co-created sustainability initiatives designed to improve collective well-being. Consequently, the transformative potential of SDG localization becomes constrained because community members possess limited understanding of the strategic objectives, interconnected sustainability dimensions, and long-term developmental implications underlying these programmes. Additional interview excerpts, coding themes, and supporting qualitative evidence related to community perceptions and participation are provided in the Supplementary Materials.

Furthermore, limited awareness of SDGs also reflects broader structural challenges related to communication, education, and governance capacity at the village level. Village governments tend to focus primarily on administrative compliance and programme implementation rather than community education and sustainability awareness-building. As a result, SDGs remain largely conceptual and bureaucratic terms understood mainly by village elites, facilitators, and government officials, while ordinary villagers continue to engage with development initiatives without understanding their broader sustainability objectives. This creates a disconnect between policy discourse and grassroots realities, where SDG terminology is institutionalised within official documents but insufficiently internalised within everyday community practices.

The findings further indicate that social capital exists primarily in the form of trust toward village leadership, communal solidarity, and mutual cooperation among villagers. Community members generally demonstrate respect toward village authorities and are willing to participate in collective activities organised by the village administration. However, participatory engagement and collaborative co-creation remain underutilised. Community participation tends to occur mainly during programme implementation stages rather than during agenda-setting, planning, or policy formulation processes. This condition limits the effectiveness of SDG implementation because genuine community ownership and local empowerment remain insufficiently developed.

Similar patterns have been observed in previous rural governance studies in Indonesia and Southeast Asia, where villagers frequently participate symbolically in public meetings without possessing substantial influence over policy direction, resource allocation, or development priorities. Participation therefore becomes procedural rather than transformative. Such conditions risk producing “pseudo-participation,” where communities are physically present in governance processes but lack meaningful

authority to shape development outcomes. In the long term, this weakens local commitment, reduces accountability, and limits the sustainability of development interventions because programmes are not fully grounded in community aspirations and local socio-cultural realities.

Similarly, a mother from Melati II Village stated:

The village talks about improving health and the economy, but we are not really involved in planning. They tell us what will happen, and we attend meetings, but decisions come from above.

This statement highlights a significant participation gap within village development governance. While villagers are formally included in consultations and public discussions, their influence over decision-making processes remains highly limited. Development priorities continue to be shaped primarily by village elites, administrative requirements, and external policy frameworks rather than through genuinely inclusive grassroots deliberation. This hierarchical governance structure reinforces dependency relationships in which villagers become recipients of development programmes instead of empowered actors capable of shaping their own development trajectories.

The findings also suggest that limited community participation may reduce the contextual relevance of SDG-related initiatives. Without substantial involvement from villagers, development programmes risk failing to reflect local needs, cultural values, livelihood realities, and environmental priorities. This is particularly important in rural communities where social relationships, local traditions, and informal institutions play a central role in shaping development behaviour and collective action. Programmes implemented without strong community ownership are more likely to encounter implementation difficulties, weak sustainability, and reduced long-term effectiveness.

In addition, generational differences in perceptions of development were also observed during fieldwork. Younger participants generally demonstrated greater openness toward development innovation, digital technology, and educational advancement, while older participants tended to prioritise immediate economic stability, agricultural livelihoods, and social harmony. However, despite these differences, both groups shared limited familiarity with SDG terminology and sustainability frameworks. This indicates that SDG concepts remain insufficiently translated into locally meaningful language and practical community understanding.

The study therefore suggests that although SDG-related programmes are visible and partially implemented at the village level, genuine community ownership remains weak. The localization of global sustainability agendas continues to operate within a predominantly administrative and top-down governance framework, limiting opportunities for participatory empowerment and grassroots innovation. This lack of meaningful participation may reduce long-term sustainability, weaken local commitment, and limit the adaptability of development programmes to changing socio-economic and environmental conditions.

Strengthening SDG localization therefore requires more than policy alignment and programme implementation alone. Village governments must also prioritise community education, participatory governance mechanisms, and inclusive decision-making processes that enable villagers to understand, interpret, and actively shape sustainability initiatives according to local needs and cultural realities. Expanding participatory forums, improving public communication regarding SDG objectives, and strengthening collaborative planning processes are essential to ensure that sustainable development evolves beyond administrative compliance toward a more inclusive, community-driven, and socially embedded process of rural transformation.

4.3 Institutional, Administrative, and Sociocultural Barriers

Implementation of SDG programs faces multiple structural and sociocultural constraints. Technical and administrative barriers are significant. A facilitator from Air Hitam Village noted:

Sometimes the system doesn't work, and we cannot input the SDG data. It delays our reports to the district office.

This highlights digital infrastructure dependency. Even when local officials are capable and motivated, technical failures impede monitoring, accountability, and timely reporting, weakening the effectiveness of SDG programs.

Human resource limitations also hinder implementation. Facilitators and officials often lack adequate training in SDG concepts, participatory planning, and program monitoring. Sociocultural factors further influence implementation; informal leadership networks sometimes dictate resource distribution, which can introduce biases or unequal access. External collaboration is minimal, limiting exposure to new ideas, training, and technical assistance. An Air Hitam resident observed:

We want to improve the VOE, but we need guidance and training from outsiders. Without support, it is hard to grow the business.

This illustrates that while social capital exists, it cannot fully compensate for capacity gaps or lack of multi-stakeholder engagement. From a Glocalization Theory perspective, global SDG goals have been adopted rhetorically, but their institutional embedding at the village level remains incomplete, constrained by technical, administrative, and social factors.

4.4 Role of Social Capital and Collaborative Governance

Social capital including trust, networks, and community cohesion provides a supportive environment for SDG implementation. A resident in Melati II Village stated:

Even though the VOE is not perfect, we hope it will help everyone. People trust that the village will manage it fairly.

This reflects trust in local institutions, an essential component of social capital that can foster community engagement and support for development initiatives. Such trust represents potential for mobilizing collective action to strengthen SDG outcomes.

However, social capital alone is insufficient. In Air Hitam Village, a community member emphasized:

We need training and advice from outside to improve the VOE. Without guidance, it is hard to make it successful.

This highlights the need for collaborative governance, involving partnerships with NGOs, universities, private sector actors, and media (aligned with the penta-helix model). Social capital can facilitate engagement, but external collaboration is essential for capacity building, technical support, and sustainable implementation.

4.5 Comparative Synthesis Across Villages

Three cross-cutting patterns emerge:

1. Poverty and social assistance programs are widely supported, yet sustainability requires capacity building and empowerment strategies to reduce dependency.
2. Health initiatives demonstrate strong institutional commitment, but access remains uneven, particularly for universal coverage.
3. Economic initiatives, including VOEs, are socially trusted, yet operational constraints and limited managerial capacity restrict their effectiveness.

The most significant insight is the gap between administrative SDG adoption and community-level awareness and participation. Melati II Village exhibits stronger formal alignment and institutional capacity, whereas Air Hitam Village faces technical, infrastructural, and capacity challenges. In both villages, social capital exists but is not fully leveraged without multi-stakeholder collaboration.

Dialogues demonstrate that villagers are aware of programs and trust their leaders, yet they lack co-creation opportunities, empowerment, and external technical support. The findings underscore that SDG integration must move beyond administrative compliance toward participatory, community-driven, and sustainable implementation

5. Discussion

This study demonstrates that the localization of the Sustainable Development Goals (SDGs) at the village level in Melati II and Air Hitam is fundamentally shaped by governance quality, institutional capacity, and sociocultural dynamics rather than by the mere existence of policy frameworks. Although SDG principles have formally entered village development planning, the findings reveal a substantial gap between bureaucratic compliance and substantive community participation. This condition supports Social Development Theory, which argues that sustainable development can only be achieved when local

communities possess agency, participatory power, and institutional inclusion in decision-making processes [22, 23, 24]. The limited understanding of SDGs among villagers illustrates that implementation remains predominantly top-down, where communities function primarily as passive recipients of programmes instead of active actors shaping development priorities.

Critically, the findings of this study are not isolated but reflect broader structural patterns observed across rural governance systems in many developing countries. Comparative studies in Central Java and West Nusa Tenggara found that village governments frequently treat SDG localization as an administrative extension of decentralisation policies rather than as a transformative governance agenda [16, 33]. Similar tendencies have been documented in rural Thailand, the Philippines, and Cambodia, where local governments focus heavily on fulfilling procedural indicators and reporting requirements imposed by central authorities while neglecting participatory deliberation and grassroots empowerment [34, 35, 36]. These comparisons suggest that decentralisation alone does not automatically democratise development governance. Instead, decentralisation may reproduce bureaucratic centralism at the local level when institutional culture continues to prioritise compliance over participation. In this context, the villages examined in North Sumatra reflect a wider regional phenomenon in which SDGs are translated into technical planning exercises rather than socially embedded sustainability processes.

The comparative analysis further reveals that institutional weakness remains one of the most persistent barriers to SDG localization globally. In Melati II and Air Hitam, village administrations face serious limitations in technical expertise, digital governance systems, planning capabilities, and data management processes. Similar institutional constraints have been identified in rural governance studies conducted in Kenya, Ghana, Tanzania, and Uganda, where weak bureaucratic infrastructure and insufficient administrative capacity significantly undermine SDG implementation effectiveness [37, 38, 39, 40]. In many African and South Asian rural contexts, local governments formally adopt SDG frameworks but lack the financial, technological, and human resources necessary for adaptive governance and evidence-based planning [41]. This indicates that the challenge is not merely the absence of policy commitment but rather the structural mismatch between ambitious global sustainability agendas and weak local governance capacity. Therefore, the findings of this study reinforce international arguments that SDG localization requires deep institutional transformation rather than superficial policy integration alone.

The role of social capital identified in this study also provides important comparative insights. In Melati II, relatively strong bonding social capital contributes positively to programme coordination, collective trust, and community mobilization [42, 43]. However, both villages demonstrate weak bridging social capital due to limited engagement with universities, NGOs, private sector organisations, and external development actors. This pattern mirrors findings from rural Java, Eastern Indonesia, and Nepal, where strong internal cohesion often supports social stability but simultaneously limits innovation and external resource access when inter-organisational networks remain weak [44, 45]. Comparative studies in India and Bangladesh similarly demonstrate that villages with stronger external partnerships generally experience more successful development outcomes because bridging social capital facilitates access to

technical expertise, financial support, and institutional learning [46]. The critical implication here is that bonding social capital alone may produce social cohesion but not necessarily sustainable transformation. Without bridging mechanisms linking villages to broader development ecosystems, rural communities risk becoming socially cohesive yet economically and institutionally stagnant.

From a Sustainability Theory perspective, the findings reveal significant tensions between economic survival, social development, and environmental sustainability [47]. Village-Owned Enterprises (VOE/*BUMDes*) in both villages possess the potential to stimulate local economic development but remain constrained by weak management systems, limited entrepreneurial capacity, and dependency on external government support. Similar conditions have been documented in rural Sumatra, Kalimantan, Vietnam, and Laos, where community-based enterprises struggle to evolve beyond small-scale subsistence operations into sustainable rural economic institutions [48, 49, 50, 51]. Critically, these comparisons reveal that many rural economic initiatives across developing regions remain trapped within "survivalist development models" that prioritise short-term income generation over long-term structural transformation. Furthermore, poverty alleviation programmes in both villages risk reinforcing dependency when assistance-based approaches are not accompanied by empowerment-oriented strategies, entrepreneurship training, and institutional strengthening. Comparable findings in Sub-Saharan Africa and Latin America demonstrate that welfare-driven rural development often produces temporary socio-economic relief without significantly enhancing local autonomy or resilience [52, 53].

Environmental sustainability emerged as the weakest dimension of SDG implementation in both study villages. Immediate livelihood pressures frequently override environmental conservation priorities, especially in agriculture-dependent communities. This trend strongly parallels findings from plantation regions in Indonesia, mining communities in the Philippines, and agricultural zones in Brazil and parts of Africa, where economic insecurity encourages environmentally unsustainable practices such as land conversion, overexploitation of natural resources, and ecological degradation [54, 55, 56, 57, 58]. Comparative analysis therefore suggests that environmental sustainability cannot be effectively pursued in isolation from rural economic security. Communities facing persistent poverty and economic vulnerability are more likely to prioritise immediate survival needs over long-term ecological sustainability. This reinforces critiques within Sustainability Theory that environmental agendas often fail when detached from socio-economic realities at the grassroots level [47].

The findings can also be critically interpreted through Glocalization Theory, which explains how global policy frameworks are selectively reshaped according to local institutional realities, political priorities, and cultural contexts [59]. In Melati II, SDGs related to economic growth and healthcare receive greater administrative attention because they are more politically visible and easier to operationalise within existing governance structures. In contrast, more complex goals related to environmental governance, institutional reform, and participatory empowerment remain weakly implemented. Air Hitam demonstrates even stronger structural constraints due to infrastructural limitations and weaker governance capacity. Similar selective adaptation patterns have been observed across Southeast Asia, Latin America, and Africa, where local governments often reinterpret SDGs according to immediate

political interests, available resources, and institutional feasibility rather than adopting the holistic sustainability framework envisioned by the United Nations [18, 53]. This comparative evidence highlights that SDG localization is inherently political and negotiated rather than purely technical or universally standardised.

Another critical issue emerging from both the present study and comparative international research concerns monitoring and evaluation (M&E) systems. In Melati II and Air Hitam, weak digital infrastructure, inconsistent data collection systems, and limited analytical capacity reduce the effectiveness of monitoring development progress. Similar problems are widely reported in rural India, Sub-Saharan Africa, and Southeast Asia, where M&E systems function primarily as bureaucratic reporting tools rather than adaptive learning mechanisms capable of supporting evidence-based governance [60, 61]. This reveals a deeper structural issue within SDG governance: many local governments are pressured to produce indicators and reports despite lacking the institutional ecosystems required for meaningful policy evaluation and iterative learning. Consequently, SDG localization risks becoming performative rather than transformative, where compliance with reporting standards substitutes for substantive developmental change.

Overall, the intensified comparative analysis demonstrates that the challenges experienced in Melati II and Air Hitam are deeply connected to broader structural patterns affecting SDG localization across developing regions globally. The findings collectively indicate that successful localization of global sustainability agendas requires more than policy adoption or decentralised administrative structures. Sustainable village development depends fundamentally on institutional transformation, participatory governance, strong social capital networks, contextual cultural integration, adaptive governance systems, and long-term investments in local capacity-building. Without these structural changes, SDG implementation risks remaining symbolic, fragmented, and administratively driven rather than genuinely transformative and community-centred.

6. Conclusion

This study demonstrates that the Sustainable Development Goals (SDGs) have important potential for supporting rural development in the two studied villages, namely Melati II Village in Serdang Bedagai Regency and Air Hitam Village in Batu Bara Regency, by integrating social, economic, and environmental considerations into local governance practices. However, the findings suggest that the effectiveness of SDG localization within these specific village contexts is shaped by several interconnected institutional, sociocultural, administrative, and participatory factors rather than by policy adoption alone.

In both villages, limited community awareness and participation appear to constrain the depth and effectiveness of SDG implementation. Although villagers generally recognise development programmes related to health, education, infrastructure, and economic assistance, many participants do not explicitly associate these activities with broader SDG frameworks or sustainability objectives. In addition, insufficient institutional and technical capacities, particularly in areas such as data management,

monitoring systems, administrative coordination, and digital infrastructure, continue to pose significant challenges to effective localization processes. These limitations affect the ability of village administrations to implement systematic, evidence-based, and participatory development planning.

At the same time, the findings indicate that social cohesion, trust, and local social capital function as important enabling conditions within the studied villages. Strong local networks, mutual cooperation, and trust toward village leadership contribute positively to programme coordination and collective participation in development activities. However, the study also suggests that social cohesion alone is insufficient to ensure sustainable transformation without broader institutional support, technical capacity, and collaboration with external stakeholders such as universities, NGOs, private sector actors, and development agencies. Environmental sustainability considerations are present within village development initiatives but are frequently constrained by immediate livelihood priorities and economic pressures associated with agriculture-dependent rural communities.

Importantly, the findings of this study should be interpreted cautiously because they are derived from a qualitative multiple-case design involving only two villages within North Sumatra Province. The study does not claim that all Indonesian villages experience identical governance dynamics, institutional capacities, sociocultural conditions, or SDG implementation patterns. Rather, the findings provide context-specific insights into how SDG localization may operate within particular rural governance settings characterised by agricultural dependence, uneven institutional capacity, and evolving participatory structures. Consequently, the conclusions should not be interpreted as universally representative of all Indonesian rural contexts but rather as analytically grounded observations derived from the specific cases examined in this study.

From a practical perspective within these two village contexts, the findings highlight the importance of strengthening support for village administrations through targeted capacity-building initiatives, improved infrastructure, and technical training related to SDG planning, implementation, monitoring, and evaluation. Expanding participatory governance mechanisms and strengthening multi-stakeholder collaboration also appear important for improving transparency, trust, and community engagement in local development processes. In the studied villages, greater involvement of facilitators, local leaders, civil society organisations, and external support networks may help improve alignment between development initiatives and community priorities.

For future research within similar rural contexts, it would be valuable to examine more systematically how participatory governance mechanisms influence community engagement with SDGs, how social capital shapes implementation outcomes across different village settings, and how digital governance systems can strengthen monitoring and adaptive capacity in decentralised development processes. Longitudinal and comparative studies involving a larger number of villages may also provide deeper understanding regarding variations in institutional adaptation and sustainability outcomes across rural Indonesia.

In summary, within the limitations of this qualitative two-case study, the findings suggest that the realisation of SDG-oriented village development depends on the interaction between institutional capacity, participatory governance, technical infrastructure, social capital, and locally embedded sociocultural realities. Although these findings should not be generalised to all Indonesian villages, they may offer useful analytical insights into the opportunities and challenges associated with translating global sustainability agendas into locally grounded rural development practices within comparable governance settings.

Abbreviations

The following abbreviations are used in this manuscript:

SDGs	Sustainable Development Goals
CEDV	Community Empowerment and Village Development
VOE/BUMDes	Village-Owned Enterprises
NGO	Non-Governmental Organization
COVID	Coronavirus Disease
MoVDDRT RI	Ministry of Village, Development of Disadvantaged Regions, and Transmigration of the Republic of Indonesia
M&E	Monitoring and Evaluation
FGD	Focus Group Discussions

Declarations

Supplementary Materials: Not applicable.

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Ethical Approval and Accordance: The research protocol was reviewed and approved by the Research Ethics Committee of the Faculty of Social and Political Sciences, Universitas Sumatera Utara (Approval No. 04/11/EC/2024) prior to the commencement of data collection. The study was conducted in accordance with the ethical principles and research guidelines established by the Research Ethics Committee of the Faculty of Social and Political Sciences, Universitas Sumatera Utara, and in compliance with the applicable institutional regulations governing research involving human participants.

Consent to Participate: Verbal informed consent to participate in this study was obtained from all participants prior to data collection. The use of verbal informed consent was approved by the Research Ethics Committee because the study involved minimal risk and employed qualitative methods, including semi-structured interviews, focus group discussions, participant observation, and document analysis. Before participation, all participants were informed about the purpose of the study, the voluntary nature of their participation, their right to withdraw at any time without consequence, and the measures taken to ensure confidentiality and anonymity.

Consent to Publish: Not applicable

Data Availability: The data supporting the findings of this study are not publicly available due to ethical considerations and the need to protect the confidentiality and anonymity of participants involved in interviews, focus group discussions, and participant observations. Given the qualitative nature of the study and the small number of villages involved, releasing raw transcripts or detailed field data could potentially compromise participant privacy and village-level identifiability.

However, anonymised excerpts of interview data and selected supporting materials are included within the article to substantiate the findings. Additional aggregated or de-identified data may be made available from the corresponding author upon reasonable request, subject to ethical approval and adherence to participant consent agreements.

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