

Lifelong Learning as a Pathway: Strengthening Rural Communities for the SDGs

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Abstract

Background - The acceleration of globalization and the development of information and communication technology (ICT) have brought the world into an era of planetary urbanization, fraught with challenges such as climate change, financial crises, ecological degradation, and pandemics. In response, the United Nations (UN) formulated the 2030 Agenda for Sustainable Development Goals (SDGs). In Indonesia, the SDGs are integrated into village development through the Village Fund policy, as mandated by Law Number 6 of 2014.

Research Urgency - Although Village Funds have been proven to promote sustainable development, the implementation of the Village SDGs still faces various challenges, including low community participation, imbalances between physical development and human empowerment, and weak external stakeholder support. Previous studies have focused primarily on the use of Village Funds for infrastructure development, while their relationship to achieving Village SDG indicators has rarely been comprehensively examined.

Research Objectives - This research aims to analyze the extent to which Village SDGs can be achieved through the utilization of Village Funds and to examine how a people-centered development approach through lifelong learning is a key strategy in realizing sustainable village development in Yogyakarta..

Research Method - This study employed a qualitative approach with exploratory methods. Data were obtained through in-depth interviews with village officials and field observations in 5 villages in the Special Region of Yogyakarta Province, selected using purposive sampling based on geographic location and potential. Data analysis was conducted through data reduction, narrative presentation, and conclusion drawing, with validation through source and method triangulation.

Research Findings - Research results indicate that lifelong learning plays a strategic role in strengthening the social, economic, and environmental capacity of village communities. Findings in Bangunharjo, Margoluwih, Bosot, Wedomartani, and Sidoluhur demonstrate that community-based skills training, environmental education, and health programs can foster critical awareness, economic independence, and women's involvement. Furthermore, partnerships between actors (village government, PKK, youth organizations, farmer groups, and external stakeholders) create social capital that accelerates SDG implementation. However, obstacles remain, including budget constraints, low community participation, technical constraints, and the misalignment of external programs with village priorities.

Research Conclusion - : The study concludes that lifelong learning is not only an educational strategy but also a framework for socio-economic transformation that strengthens human capital, expands capabilities, fosters critical awareness, and strengthens village social capital.

Research Novelty - The novelty of this research lies in the empirical analysis linking the use of Village Funds to the achievement of Village SDGs indicators through the perspective of lifelong learning and people-centered development, a previously unstudied approach in the Indonesian context.

Keywords: strengthen;sustainable development goals; rural communities; empowerment; lifelong learning

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INTRODUCTION

Humanity has entered an era of planetary urbanization due to rapid globalization and the development of Information and Communication Technology (ICT), making mobility and instability increasingly apparent (Ye & Liu, 2020). The risks of climate change, financial crises, ecological degradation, and epidemics are further exacerbated by the massive movement of people, goods, and capital across continents, countries, and regions (Naidoo & Fisher, 2020). In response, the United Nations established the 2030 Agenda for Sustainable Development (SDGs), which drives global transformation through joint action by governments, civil society, and the private sector (Liu et al., 2021). There are 169 globally agreed targets to measure the achievement of the SDGs by 2030 (Benedek et al., 2021). The SDGs themselves are oriented towards economic prosperity, social sustainability, environmental sustainability, and justice and good governance to ensure a quality of life across generations (Bappenas, 2017). The five main principles underlying the SDGs are people, planet, prosperity, peace, and partnership (Tuti Rumiati et al., 2022).

In the Indonesian context, the Village SDGs serve as a benchmark for village development integrated with the global SDGs Agenda. Villages play a strategic role as the smallest governmental units with direct contact with the community. Through Law Number 6 of 2014 concerning Villages, the government grants villages the authority to manage their households, improve community welfare, develop facilities and infrastructure, and strengthen the local economy. One supporting policy instrument is the Village Fund (Village Fund Allocation/ADD), which aims to accelerate village development, both physical and non-physical, to improve the quality of life for the community (Boekoesoe & Maksum, 2022). In practice, the Village Fund has been proven to encourage sustainable development, including infrastructure, women's empowerment, children's and youth education, and strengthening social services (Marianti et al., 2023).

In addition to that, the integration of Village SDGs into local development planning encourages villages to align their programs with the principles of sustainability—covering social, economic, environmental, and institutional aspects. This alignment ensures that village development is not only focused on physical infrastructure but also on strengthening human capital, environmental resilience, and inclusive participation of marginalized groups. Moreover, the Village SDGs provide measurable indicators that help monitor and evaluate the progress of village development in achieving national and global targets (Lestari et al., 2023).

Furthermore, the success of implementing Village SDGs largely depends on the capacity of village governments, community participation, and transparency in the management of the Village Fund. Empowering village apparatus and increasing digital literacy in financial and development management are crucial to ensure accountability and sustainability. Collaboration among local governments, private sectors, and academic institutions can further enhance innovation in achieving Village SDGs, ensuring that every village becomes a self-reliant and sustainable community unit contributing to Indonesia's overall development goals (Kurniawati, 2024).

However, various challenges persist in achieving the Village SDGs. For example, data from Yogyakarta Special Region (DIY) shows that *Umbulharjo* Village's: Village SDG score remains below 50, *Bangunharjo* Village faces recurring flooding, and *Margoluwih* Village remains plagued by poverty. Furthermore, the use of Village Funds is predominantly directed toward infrastructure development rather than community empowerment and education, creating an imbalance in achieving the village SDGs (Bontempi et al., 2021). The SDGs, however, emphasize people-centered development, where improving the quality of human resources, critical awareness, and community independence are the foundations for sustainable village development.

To address these issues, it is crucial to reorient village development strategies toward inclusive and participatory approaches. Strengthening human resource capacity, enhancing data-based planning, and promoting collaboration between government, academia, and local communities are essential steps in realizing the Village SDGs. Moreover, the integration of digital technologies can support transparency and effectiveness in Village Fund management, ensuring that development is not only physical but also socially and economically empowering. By prioritizing education, innovation, and community participation, villages can become the driving force of sustainable transformation aligned with both national and global SDG agendas (Prihatiningtyas et al., 2023).

Based on these conditions, there is a research gap regarding the level of achievement of Village SDGs after the implementation of the Village Fund policy, particularly in Yogyakarta, which is still rarely studied comprehensively. Most previous studies have focused more on the use of Village Funds for physical development, but few have examined its direct relationship to the achievement of village SDG indicators.

Therefore, this study is novel in presenting an empirical analysis of the extent to which Village SDGs can be achieved using Village Funds, as well as how people-centered development can be a key strategy in realizing sustainable villages in Indonesia.

METHODS

Research Design

This research uses a qualitative approach with exploratory methods. This approach was chosen because it can uncover relatively new and complex phenomena related to the implementation of SDGs at the village level, particularly in relation to the role of lifelong learning. Through exploratory methods, this research seeks to discover previously unrevealed patterns, meanings, and social dynamics, thereby providing a broader and deeper understanding of village development practices. Data was obtained through observation, in-depth interviews, and document reviews to capture social realities holistically. The research results are presented in the form of descriptive narratives that emphasize the interpretation of the meaning behind the experiences and actions of village communities. Thus, this exploratory qualitative research is expected to enrich insights into the strategies and challenges in achieving village SDGs through a lifelong learning perspective.

Research Participants

The research was conducted in several villages in both urban and rural areas across the Special Region of Yogyakarta Province. Locations were selected using purposive sampling (Nyimbili & Nyimbili, 2024), considering several criteria: (1) villages or sub-districts located in the city/district center, (2) villages in outlying areas, and (3) villages with superior resources in both tourism and production. The research subjects were village/sub-district officials, particularly village heads or heads of development affairs, who were selected based on their understanding of development implementation in their respective villages.

Data Collection Techniques

Data collection was conducted through in-depth interviews with village officials and field observations to verify informants' responses. Interviews used an interview guide developed by the researchers and their team, while observations were conducted using an observation guide to gather more detailed information regarding program implementation in the village. The data collected consisted of narratives, descriptions, and direct observations of social dynamics and village development practices (Mertens, 2018).

Data Analysis Techniques

Data analysis was conducted qualitatively through three stages (Dierckx de Casterlé et al., 2012): (1) data reduction, which involves selecting, focusing, simplifying, and organizing relevant data; (2) presenting data in narrative form to facilitate understanding of the phenomena being studied; and (3) drawing conclusions to discover meaning and patterns from the collected data. To ensure data validity, this study employed source and method triangulation techniques to ensure scientifically sound results.

RESULTS AND DISCUSSION

Lifelong Learning and Sustainable Development in Rural Contexts

The concept of lifelong learning is a crucial approach to sustainable development because it bridges formal, non-formal, and informal education. With the principle of lifelong learning, rural communities not only acquire basic knowledge but also develop new skills relevant to development needs. This approach enables communities to continuously learn, adapt, and strengthen their environmental, economic, and social capacities, thus better prepared to face the various challenges of village development (Karani & Preece, 2020; Mardiyah et al., 2025).

The implementation of lifelong learning in rural areas can be realized through various concrete programs, such as job skills training, community-based environmental education, and health education that emphasize prevention and hygienic living behaviors (Zahid Nazir Khan et al., 2023; Leal Filho, 2021). These programs not only improve the quality of village human resources but also directly contribute to the achievement of the Sustainable Development Goals (SDGs). For example, skills training can support poverty alleviation goals, environmental education can strengthen ecosystem sustainability goals, while health education helps reduce stunting rates and improve community well-being.

International studies also provide important lessons regarding the integration of SDGs into local development. Research by Guarini in Italy shows that the integration of SDGs into local government strategic management is still in its early stages, necessitating a review of management systems, including ongoing evaluation mechanisms (Guarini et al., 2022). These findings are relevant to the village context in Indonesia, where a lifelong learning approach can be used as a strategic instrument to ensure the SDGs are truly integrated into long-term development planning and implementation. The novelty of this research lies in its emphasis on lifelong learning not only as a means of enhancing individual capacity but also as a collective village strategy for building participatory governance, strengthening partnerships, and ensuring the sustainability of SDG-based village development.

Village Priorities and SDGs Implementation

Environmental Awareness and Disaster Prevention

Environmental awareness is a key factor in disaster prevention, particularly in rural areas vulnerable to ecosystem damage. The *Bangunharjo* case demonstrates that low public awareness of environmental preservation contributes to flooding caused by river overflows. This situation indicates that disaster issues are not solely related to natural factors but also closely related to people's social behavior in managing their environment. This aligns with the ecological modernization theory perspective, which emphasizes that sustainable development cannot be achieved solely through technical interventions but requires social transformation that involves changing people's behavior toward the environment (Ewing, 2017; Bush & Spaargaren, 2024; Provensi et al., 2024).

In response to these conditions, village development priorities are directed toward fostering a more environmentally conscious community. Programs include education on nature conservation, environmental hygiene management, and community-based disaster prevention. These efforts align with the theory of community-based disaster risk reduction (CBDRR), which emphasizes the importance of community participation in identifying risks, designing mitigation strategies, and building local capacity to address disaster threats. Thus, environmental awareness is not merely a matter of knowledge but also a foundation for collective behavior that can strengthen village resilience to disasters (Tan & Lin, 2025; Bubeck et al., 2024; Lansakara et al., 2024).

Furthermore, *Bangunharjo's* environmental education approach can be understood through a lifelong learning framework, where the learning process extends beyond formal education to encompass non-formal and informal learning spaces within the community (Thwe & Kálmán, 2024; Van den Broeck et al., 2024). Through activities such as training, outreach, and community service practices, the community is encouraged to continuously learn and internalize sustainable values in their daily lives. Integrating this theory, it's clear that environmentally conscious development not only addresses the immediate problem of flooding but also fosters a culture of sustainable learning that can strengthen village resilience in the long term.

Poverty Alleviation and Youth Empowerment

The poverty problem in *Margoluwih* is closely linked to the high dropout rate and unemployment among youth. This situation demonstrates a disconnect between the formal education system and the real economic needs of rural communities. This aligns with the concept of human capital theory, which explains that education and skills are essential investments for increasing individual and community productivity (Leoni, 2025; Griffen, 2024; Edeji, 2024). Without access to relevant education, rural youth struggle to escape the cycle of poverty because they lack the competencies to meet the demands of the workforce and entrepreneurial opportunities.

As a strategy, skills training programs such as cooking, sewing, and entrepreneurship are aimed at empowering youth through a lifelong learning approach. This concept emphasizes that learning is lifelong and can be achieved through both formal and non-formal channels, not just formal education. By participating in training, youth not only acquire technical skills but also build self-confidence and motivation for economic independence. This aligns with empowerment theory, which emphasizes the process of strengthening individual capacity so they can control their own lives and actively participate in the socio-economic development of their communities (Gupta et al., 2024; Chidiogo Uzoamaka Akpuokwe et al., 2024; Swaiss, 2024).

The program's tangible impact is evident when training participants begin opening independent businesses, such as food stalls, after participating in cooking training. This phenomenon can be understood through the perspective of the sustainable livelihood approach (SLA), which emphasizes the importance of

leveraging human, social, and economic assets to create sustainable livelihood strategies (Diartho et al., 2025; Siloko, 2024; Chen & Cai, 2025). By facilitating youth skills development and access to economic opportunities, villages can gradually reduce unemployment and poverty. Furthermore, youth economic independence is a crucial foundation for achieving the SDGs, particularly the goal of eradicating poverty (SDG 1) and decent work and economic growth (SDG 8).

Health, Infrastructure, and COVID-19 Response

In *Bosot*, village development priorities for the 2020–2021 period focused on addressing COVID-19. The pandemic presents significant challenges to public health, the availability of basic services, and social protection for vulnerable groups. This situation can be understood through the framework of human security theory, which emphasizes that human security is not only about physical defense but also encompasses health, the economy, and the environment (Abdul-Razak et al., 2025; Stottlemire, 2024; Jamiu et al., 2024). *Bosot*'s efforts to prioritize the COVID-19 response align with the SDGs (specifically SDG 3: good health and well-being), as villages play a crucial role as the frontline in providing preventive health services and community-based education.

Entering 2022, *Bosot* and other villages like *Wedomartani* shifted their development focus to infrastructure and public facilities such as roads, pedestrian paths, and irrigation. This move can be analyzed through modernization theory, which views infrastructure development as the basis for increasing economic productivity, social mobility, and the community's quality of life (Huan & Huan, 2024; Xia et al., 2024; Warf, 2025). This physical development is also a key pillar in realizing sustainable development, as good infrastructure can facilitate the distribution of goods and services, improve public access to education and health services, and reduce disparities between regions.

Meanwhile, in *Sidoluhur*, village development priorities are focused on the five main SDGs: poverty alleviation, hunger eradication, health, quality education, and the active involvement of women. This focus is closely related to gender and development theory (GAD), which emphasizes the importance of women's integration in development to create sustainable social transformation (Tadros & Shutt, 2024; Christner & Bosacki, 2025; Warnecke, 2025). By empowering women and increasing their active participation, *Sidoluhur* not only targets gender equality (SDG 5) but also strengthens the social dimension of people-centered development. This demonstrates that SDG-oriented village development emphasizes not only the physical aspects but also the social and inclusive dimensions.

Partnerships and Stakeholder Engagement

The achievement of the SDGs in villages is greatly influenced by the success of multi-stakeholder collaboration, including village governments, youth organizations, the Family Welfare Movement (PKK), farmer groups, integrated health posts (*posyandu*), training institutions, and external stakeholders such as trade offices, cooperatives, and social institutions. This collaboration can be analyzed through the theory of collaborative governance, which emphasizes that successful development governance requires constructive interactions between actors with shared goals (Dai & Azhar, 2024; McNaught, 2024; Zhou et al., 2025). In the village context, the government cannot work alone; it needs to establish communication and build mutual trust with various community elements for effective implementation of the SDGs program.

The forms of partnerships emerging at the village level vary, from government–business partnerships, government–government collaboration, to community-based partnerships. The triple helix theory is relevant to understanding this pattern, where synergy between government, the private sector, and civil society is key to creating social and economic innovation (Espuny et al., 2025; Zadegan et al., 2025; Armas et al., 2024). For example, support from training institutions and cooperatives not only strengthens social capital but also opens new economic opportunities for village communities. Thus, these partnerships expand village access to resources, knowledge, and networks that were previously difficult to access.

The benefits of this multi-stakeholder partnership are evident in increased community access to training programs, additional development funds, women's empowerment, and local innovations tailored to village needs. This aligns with the asset-based community development (ABCD) perspective, which emphasizes the importance of leveraging local assets and potential for sustainable development (Qiaoyu et al., 2024; South et al., 2024; Barid Nizarudin Wajdi, 2024). With support from various stakeholders, villagers can develop more adaptive and contextualized community-based solutions. This means that partnerships are not simply a means of increasing resources but also a mechanism for strengthening village independence in achieving the SDGs.

Furthermore, the successful implementation of the SDGs in villages is also supported by social capital built through cross-actor partnerships, including between the village government and the Family Welfare Movement (PKK), youth organizations, and external stakeholders. Social capital, in the form of networks, trust, and collaborative norms, is a crucial factor in facilitating community access to resources, expanding opportunities, and finding local solutions tailored to their needs. Therefore, lifelong learning can be understood not only as an educational strategy but also as a framework for socio-economic transformation linked to strengthening human capital, expanding capabilities, changing awareness, and strengthening social capital. With this perspective, the SDGs in villages can be achieved in a more inclusive, sustainable manner, and based on the real needs of the community.

Challenges in Achieving Village SDGs

The first challenge in achieving the SDGs in villages lies in low community participation, for example, residents are reluctant to participate in environmental conservation programs or reject the use of their land for public facilities. This condition can be explained through the theory of planned behavior, which emphasizes that community participation is strongly influenced by attitudes, subjective norms, and perceptions of behavioral control (Maleknia & Cham Cham, 2024; Zulkepli et al., 2024; Wang et al., 2024). If communities perceive that a program does not provide direct benefits or conflicts with their personal interests, their tendency to participate is low. This indicates the need for a more intensive community engagement-based approach to build awareness, ownership, and trust in village programs.

Furthermore, there are technical obstacles such as frequent errors on the SDGs website or application, the lack of an integrated database, and limited human resources skilled in information technology. These obstacles can be analyzed through the perspective of the Technology Acceptance Model (TAM), which emphasizes that public acceptance of technology is strongly influenced by perceptions of usefulness and ease of use (Al-Momani & Ramayah, 2025; Parmaxi et al., 2024). If digital tools for the SDGs are perceived as complex or unreliable, their use will be low, hampering monitoring and evaluation of village development. Therefore, increasing digital capacity and developing information technology infrastructure are essential prerequisites for supporting the success of the SDGs.

Another challenge relates to funding and partnerships. Budget constraints often create a mismatch between proposed programs and actual funding, while external stakeholder support is suboptimal due to differing priorities from those of village programs. This situation can be explained using resource dependence theory, which states that organizations or communities are highly dependent on external resources and must negotiate their interests with other parties (Gao et al., 2024; Balcioglu, 2024). If partnerships are unbalanced, achieving shared goals is difficult. Therefore, village development strategies need to be directed at increasing multi-stakeholder collaboration and diversifying funding sources to be more adaptive to constraints.

The Role of Lifelong Learning in Overcoming Challenges

Lifelong learning is a crucial tool for building environmental awareness and disaster prevention at the village level. The *Bangunharjo* case demonstrates that low awareness of environmental conservation contributes to flooding caused by river overflows, making environmental education programs a priority. This aligns with the concept of ecological literacy, which emphasizes the need for communities to possess ecological knowledge, skills, and attitudes to maintain environmental sustainability (Kusumawardani et al., 2023; Pouresmaeli et al., 2024). With ongoing environmental education, village communities are not only better prepared to face disaster risks but also actively participate in ecosystem maintenance as part of sustainable development.

In the area of economic and social empowerment, lifelong learning is provided through skills training aimed at youth and women, as in *Margoluwih*. Training programs in sewing, cooking, and entrepreneurship provide opportunities for communities to increase economic independence. This aligns with human capital theory, which states that investing in individual skills and knowledge will increase productivity and economic well-being (Griffen, 2024). Concrete evidence can be seen in communities that have established independent businesses after participating in training, demonstrating that skills-based non-formal education can expand access to employment while reducing rural poverty.

Furthermore, community-based health education programs such as Family Planning Villages (KB Villages), integrated health posts (*Posyandu*), and child-friendly villages serve to strengthen awareness of healthy living within the community. This initiative aligns with the social learning theory approach, which explains that behavioral change can occur through social learning processes within the community (Okorley et al., 2024; Rumjaun & Narod, 2025). Through group interactions, communities not only acquire health

knowledge but also emulate healthy living practices from others. Examples of success can be seen in *Sidoluhur* with a women's economic program that strengthens women's roles in development, and in *Margoluwih* with entrepreneurship training that increases family income. Thus, lifelong learning is not merely an educational strategy, but also a foundation for accelerating the achievement of more inclusive and sustainable village SDGs.

CONCLUSION

This research confirms that lifelong learning is a crucial foundation for accelerating the achievement of the SDGs at the village level. Through the integration of formal, non-formal, and informal education, village communities can strengthen their environmental, economic, and social capacities, making them more adaptive to development challenges. Findings in *Bangunharjo*, *Margoluwih*, *Bosot*, *Wedomartani*, and *Sidoluhur* indicate that various programs, ranging from environmental education and economic skills training to women's empowerment and community health, serve as long-term investments in improving human resource quality, expanding capabilities, and fostering critical awareness among communities, enabling them to become agents of change. However, achieving the SDGs in villages still faces several obstacles, such as low community participation, technical constraints, budget constraints, and misalignment between village priorities and external programs. In this context, lifelong learning has proven to be not only an educational strategy but also a framework for socio-economic transformation that strengthens human capital, social capital, and collaboration between actors. Therefore, a lifelong education approach can be key to achieving the SDGs in villages in a more inclusive, sustainable manner, and in line with the real needs of the community.

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