Volume 4 Number 1 (2026)
January – June 2026
Pages: 33-44

International Assulta of Research and Engagement
(IARE)
https://edujavare.com/index.php/IARE/

Social Innovation of the Climate Village Program (Proklim) as a Community-Based Waste Management Effort to Improve Welfare in Pesanggrahan, Madiun City

Sukmayadevi[1], Lintang Akbar[2], Diaz Kurnia Pentasandi[3], Shinta Tris Irawati[4*]

[1,2,3] PT. Pertamina Patra Niaga Fuel Terminal Madiun, Indonesia
[4] University of Indonesia, Indonesia
* Correspondence e-mail; shinta.tris@ui.ac.id

Article history Submitted: 2026/03/22; Revised: 2026/04/15; Accepted: 2026/05/25

Abstract

The Climate Village Program (Proklim) is a concrete form of climate change mitigation efforts in the form of active actions to prevent or slow down the occurrence of climate change packaged in a community empowerment program. The purpose of the Pesanggrahan Proklim community service activity is to empower the community carried out by a group of people in the RW XI Pesanggrahan area, Taman Village. This community service method uses the Participatory Action Research (PAR) approach. The field findings show that Pesanggrahan Proklim is a social innovation carried out through the following schemes: 1) Waste management as the main point through sorting waste according to each category. 2) Conversion of organic waste into agricultural inputs in the form of compost. 3) Establishment of yard farming for food security. 4) Biofloc fish farming as a source of protein. 5) Economic and sustainable integration through waste banks. Another social innovation is seen in the management of the waste bank cycle through the digitalization of "SOKROSOK". Pesanggrahan Proklim has succeeded in creating various income streams for the group by converting waste into economic assets. Proklim social innovation has a social impact in improving the economy and environment, thereby encouraging sustainable development.

Keywords Climate Village Program (Proklim), Community-Based Waste Management, Community Welfare, Social Innovation.

INTRODUCTION

The waste problem is a global issue, Statista Research Department (2025) states that more than two billion metric tons of municipal solid waste are produced worldwide each year, so that this figure is expected to continue to increase to almost four billion tons by 2050. Waste generation causes several problems such as ecological damage, the emergence of public health problems, flooding, affecting the aesthetics of an area and the issue of the impact of increasing the risk of social conflict (Maharani, 2025).

The issue of the increasing volume of waste requires a more holistic waste management policy. In line with this, the Ministry of Environment/Environmental Control Agency (KLH/BPLH) stated that Indonesia has a target of National Determined Contribution The Nationally Determined Contribution (NDC) is a climate change mitigation and adaptation plan aimed at reducing greenhouse gas (GHG) emissions by 29% to 41%. Through this target, one of the key sectors in the GHG reduction effort is the waste sector, with a reduction target of 0.38%.

Madiun City, as a major city, is a destination for immigrants from other regions (Madiun City Communication and Informatics Office, 2025). The large population, especially immigrants, leads to a large amount of waste production. Waste generated in Madiun City comes from household waste and waste generated by immigrants, resulting in an accumulation of waste that has not been optimally managed. This is evidenced by data from the Madiun City Medium-Term Development Plan (RPJMD), which states that the Winongo Final Disposal Site in Madiun City will experience overload by 2026.

Based on data from the Sistem Informasi Pengelolaan Sampah Nasional (2026), waste generation in Madiun City reached 45,287.39 tons/year. Based on this data, waste generation in Madiun City ranks first with a percentage of 74.99% as waste that fills landfills. Based on this data, the waste problem in Madiun City has not been able to be properly intervened, so it has become a concern for the community and the local government to take strategic steps to reduce the negative impact on the environment (Lubis & Putro, 2025).

The unaddressed waste problem in Madiun City has become a concern for a group of residents in the RW XI area of Pesanggrahan Street, Taman Village. The community in this area participated in addressing the waste problem independently with support from PT Pertamina Patra Niaga Fuel Terminal Madiun. The collaboration between the community in Taman Village and PT Pertamina Patra Niaga Fuel Terminal Madiun was realized through the Climate Village Program (Proklim). Proklim is a concrete action in climate change mitigation efforts to prevent and slow down the occurrence of climate change or global warming and reduce the impact of climate change by stabilizing the concentration of Greenhouse Gas volume (Lestari et al., 2024).

Pesanggrahan's Proklim program is implemented through community waste management, which is then elaborated to develop independent yard farming to improve community food security. Climate change mitigation actions have been implemented in RW XI Pesanggrahan, Taman Village, Madiun City, by managing waste at the household level. Based on field data, 73% of the local community has composted independently and collectively in a master composter.

The implementation of the Climate Village Program (Proklim) in Pesanggrahan is a social innovation aimed at providing benefits specifically for vulnerable groups and the wider community. According to Firdaus (2024), social innovation is a way to seek societal change with the goal of meeting people's needs more efficiently, effectively, and sustainably.

The Pesanggrahan Climate Village Program (Proklim) is implemented in urban areas with a focus on improving environmental quality through organic and inorganic waste management integrated with efforts to increase community food security through yard farming and fish farming using the biofloc method. Waste management in the Pesanggrahan Proklim is carried out through the Pesanggrahan Waste Bank. The implementation of the Pesanggrahan Waste Bank still encounters several obstacles such as difficulties in distributing waste that has been sorted at home to be taken to the waste bank. This condition often occurs because it requires a weighing process, manual recording in the waste bank book, storage of waste in a warehouse that has passed the sorting process, a re-weighing process when collectors arrive, manual recording again in the waste bank book, until the money is received by customers through a long process. With this long and quite complicated process, the implementation of the Pesanggrahan Waste Bank has experienced quite a few obstacles. The Climate Village Program (Proklim) has been widely implemented in Indonesia, but based on the implementation of the Pesanggrahan Climate Village Program (Proklim), it is one of the programs that has succeeded in creating social innovation through digitalization (SOKROSOK). Not only through digital innovation, but also as a Proklim best practice that serves as a learning resource for other regions, as well as government and private institutions.

Based on the background explanation, this community service activity aims to address and prevent the climate change crisis in urban areas with a focus on improving environmental quality. It is hoped that through this article, Proklim social innovation will have a social impact in improving the economy and environment, thereby encouraging sustainable development.

METHODS

This community service method uses the Participatory Action Research (PAR) approach. Community service efforts are implemented through a participatory action research approach. According to Neuman (2014), participatory action research makes researchers agents of rapid change and partners in community learning. This method is used to further research existing issues and encourage measurable improvements in the social conditions of the surrounding community. This method was applied because it considers the community of RW XI Pesanggrahan, Taman Village, as active subjects. The research approach used in this activity is a qualitative approach. The qualitative approach was chosen with the aim of finding deeper meaning from the facts on the ground (Rubin & Babbie, 2011). The data collection process was carried out using interview techniques and field observations with the surrounding community, especially members of the Pesanggrahan Proklim movement.

FINDINGS AND DISCUSSION

The Pesanggrahan Climate Village Program (Proklim) is a form of empowerment carried out by a group of residents of Taman Jalan Pesanggrahan Village. Proklim represents a successful community-based initiative in the field of climate change adaptation and mitigation. The Climate Village Program aligns with SDGs target 13, namely climate change

mitigation and the global community's commitment to climate control. Meanwhile, the Indonesian government is driving climate change adaptation and mitigation activities through the national development plan (Suratman et al., 2023).

The implementation of the Pesanggrahan Climate Village Program (Proklim) is targeted to improve the quality of life of beneficiaries and the surrounding environment. This context is relevant to what Faedlulloh et al. (2019) stated, where Proklim is considered a strategy for achieving sustainable local development goals. In practice, community intervention through Proklim activities has led to the development program's success and community independence.

Proklim Pesanggrahan is a manifestation of Corporate Social Responsibility PT Pertamina Patra Niaga Fuel Terminal Madiun's (CSR) program aims to create a series of activities to revitalize the urban environment. The Pesanggrahan Climate Village Program (Proklim) is a social innovation implemented through the following scheme:

1. Waste management as the starting point. This scheme involves sorting household waste into categories. Waste is categorized into organic waste, typically food scraps and leaves, and inorganic waste, consisting of plastic, paper, and cardboard. Each type of waste has its own value chain.
2. Converting organic waste into agricultural inputs (Closing the Loop). This scheme converts organic waste into high-quality compost. The organic waste conversion process is carried out through a composting facility. The resulting compost is directly used as a growing medium for yard farming activities. Thus, organic waste serves as a key link between environmental management and food security.

Figure 1. Compost House

3. Yard farming for food security (food production*).* This scheme utilizes unproductive yard land to grow various types of vegetables, fruits, and medicinal plants. Utilizing

productive land also contributes to increasing urban vegetation cover, which can help mitigate climate change.

Figure 2. Farming in the Yard

4. Biofloc fish farming for protein source (protein source). This scheme is implemented through fish farming training with the aim of increasing the capacity of Proklim members, especially those in vulnerable groups such as the elderly, the poor, housewives, and informal workers. The output of this scheme is to increase income through fish farming.

Figure 3. Fish Cultivation Using the Biofloc Method

5. Economic integration and sustainability (economic engine). This scheme utilizes inorganic waste that has economic value by collecting it and selling it to collectors through a waste bank.

Figure 4. Pesanggrahan Waste Bank

Based on field findings, the waste bank established at the Pesanggrahan Proklim program currently has 162 members, managed by eight administrators, including senior citizens. The inclusion of senior citizens as administrators aims to ensure the elderly population is more productive in their later years. Based on the Minister of Environment and Forestry (LHK) Regulation Number 14 of 2021 concerning Waste Management in Waste Banks, data shows that waste bank innovation plays a significant role in reducing household waste.

The proceeds from the waste bank sales not only become the bank customers' personal income but also contribute to a joint cash fund. This represents one of the social innovation programs implemented within the waste bank. This social innovation program is considered capable of creating a self-sustaining funding mechanism, which has implications for the program's economic sustainability. This is relevant to the theory of Sheik et al. (2023) that social innovation can play a role in building an inclusive and sustainable economy.

Social innovation in waste management is realized through the concept of a digital waste bank. Through digitalization, the Pesanggrahan Waste Bank is expected to streamline the process and facilitate managers, customers, and collectors through proactive outreach. Through this initiative, PT Pertamina Patra Niaga Fuel Terminal Madiun is developing a

digital waste bank. The digitalization innovation is titled "SOKROSOK," and can be accessed via mobile phone.

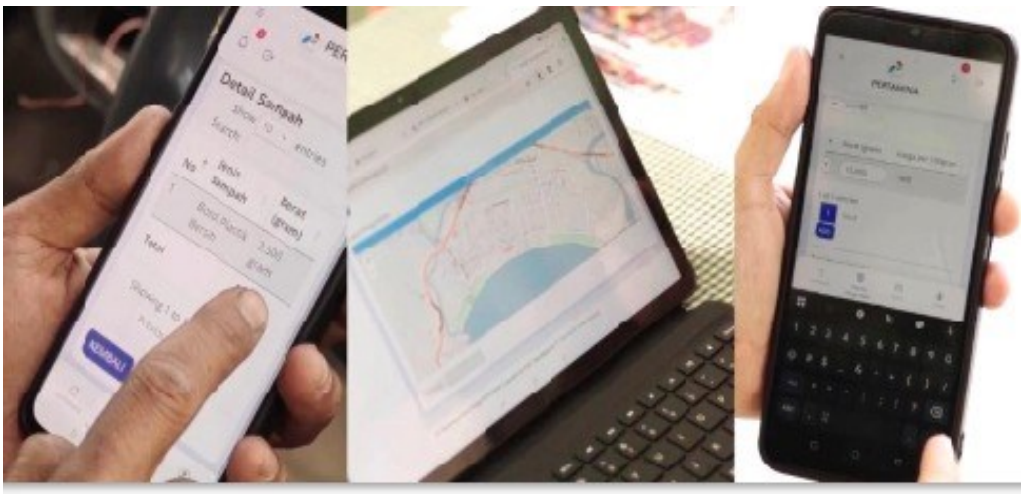

Figure 5. Overview of the SOKROSOK Application

Social innovation through digitalization "SOKROSOK" emerged as a result of knowledge developed to solve existing problems. According to Souza et al. (2019), social innovation emerges as a result of the accumulation of knowledge applied to social life, both through participation and collaboration between actors, social change mechanisms, and fostering mechanisms to address various types of problems. The concept of social innovation developed by Proklim Pesanggrahan is also in line with that conveyed by Firdaus (2024) that the purpose of social innovation is to solve problems faced by society so as to achieve a much better societal condition. The social innovation owned by Proklim Pesanggrahan is carried out based on elements of novelty, excellence, impact, and core competency. against the company PT Pertamina Patra Niaga Fuel Terminal Madiun.

Proklim has successfully created multiple streams of income for the group by transforming waste into economic assets. Meanwhile, the Proklim program has increased the group's capabilities and capacity. The Proklim group is no longer viewed as a beneficiary, but rather as an agent of change and a resource for other regions implementing similar programs and various agencies. This recognition strengthens the legitimacy of the Proklim group's expertise and affirms its position as a center of excellence in the field of environment-based community empowerment.

The roadmap for the Pesanggrahan Proklim social innovation program is carried out through several stages. Planning activities carried out through Focus Group Discussions (FGDs) with various stakeholders resulted in the Proklim roadmap. In 2025, Proklim focuses on optimizing organic to inorganic waste management and improving the digitalization of waste banks. Meanwhile, based on the Social Innovation Document from PT Pertamina Patra Niaga Fuel Terminal Madiun (2025), it is stated that the Pesanggrahan Proklim activities this year include: 1) Procurement of inorganic waste shredding machines; 2) Preparation of 3R workshop locations; 3) Upgrading the digital waste bank application; 4) Socialization and

training of the digital waste bank application.

The Pesanggrahan Climate Village Program (Proklim) is planned to implement an exit strategy using a phasing down and phasing over approach. This is relevant to the theory in the book What We Know About Exit Strategies: Practical Guidance for Developing Exit Strategies in the Field by Gardner et al. (2005) work explains that phasing down is an effort to gradually reduce program activities, utilizing local organizations as a strategy to maintain program benefits. Meanwhile, phasing over is an effort to transfer program activities to local institutions or communities.

The Climate Village Program (Proklim) innovation has benefited the community, particularly vulnerable groups in Taman Village. Based on field data, the program has been able to alleviate poverty by increasing daily income and involving elderly people in their empowerment through the provision of biofloc ponds for fish farming.

Social innovation in Proklim specifically lies in the integration of systems that are able to create community independence that is able to change the following paradigms:

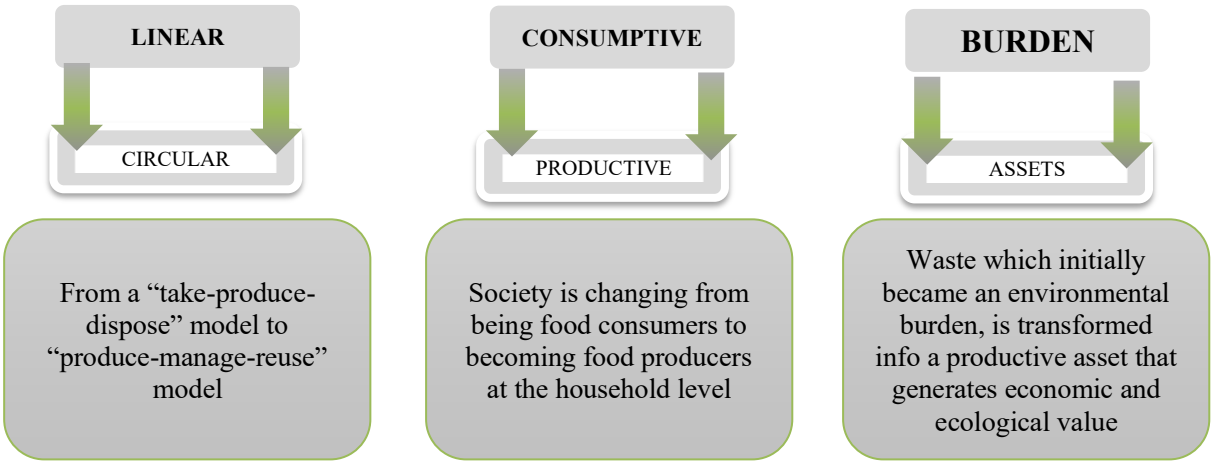

Figure 6. Paradigm Change of the Proklim Social Innovation Program

Another novel element in the social innovation of community empowerment practices, the Pesanggrahan Climate Village Program (Proklim), is that it has never been implemented before. This makes Proklim Pesanggrahan a reference for other regions interested in and concerned with similar issues. Consequently, the implementation of Proklim Pesanggrahan has become a resource center.

The significant value of this program lies not only in its internal achievements, but also in its capacity to broaden its impact by expanding the scope of benefits to the community. These phenomena demonstrate the existence of a mechanism for social transformation that transcends boundaries. Because a program implemented by a community group at the village level has been able to develop into a reference location for other areas, this is what makes Proklim Pesanggrahan a best practice.

PT Pertamina Patra Niaga Fuel Terminal Madiun's contribution has been able to produce local heroes. Through the social innovation of Proklim, it has been able to produce local heroes

who act as captains to direct and bring the program to success and run in accordance with the goals and vision and mission of the group. This is evidenced by the presence of program drivers who have various experiences in environmental management activities and are active in various organizations in the community.

The implementation of the Pesanggrahan Climate Program (Proklim) was able to provide enthusiasm for group members and was able to bring commitment within the local social environment to realize common goals. This condition is relevant to the theory of Carron et al. (2002) that the development of an empowerment program requires social cohesion among members, this is interpreted as a dynamic process influenced by the tendency of group attachment and unity to stay together and united in achieving goals or satisfying the needs of members.

The findings of this community service demonstrate that the Pesanggrahan Climate Village Program (Proklim) has successfully transformed community-based waste management into a multidimensional social innovation capable of improving environmental quality, strengthening food security, and increasing community welfare simultaneously. This success occurred because the program did not merely focus on technical waste handling, but also integrated social participation, economic empowerment, and digital innovation into a sustainable community ecosystem. The participatory action research (PAR) approach encouraged the community to act not only as beneficiaries but also as active agents of change, thereby creating a strong sense of ownership and collective responsibility toward environmental management. These findings are consistent with previous studies conducted by Faedlulloh et al. (2019), which emphasized that Proklim contributes significantly to strengthening community empowerment and local resilience against climate change. However, the Pesanggrahan Proklim shows a distinctive advancement through the integration of circular economy practices and digital waste bank management ("SOKROSOK"), which was not extensively discussed in earlier Proklim studies. This indicates that social innovation in environmental governance becomes more effective when supported by technological adaptation and collaborative governance involving corporations, communities, and local institutions. Theoretically, these findings reinforce the concept proposed by Souza et al. (2019), who argued that social innovation emerges through collective knowledge creation and participatory collaboration to solve social problems sustainably.

Another important finding is that the waste management system implemented in Pesanggrahan has succeeded in generating new economic opportunities through compost production, biofloc fish farming, yard farming, and waste bank activities. This result occurred because waste was no longer perceived as a social burden but was reconstructed into an economic asset capable of generating multiple income streams for vulnerable groups, including elderly residents and low-income households. In contrast to previous community service programs that generally focused only on environmental cleanliness or waste reduction campaigns, the Pesanggrahan Proklim developed a more integrated empowerment model that combined ecological sustainability with livelihood improvement. Similar findings were also

reported by Sheik et al. (2023), who explained that social innovation can foster inclusive economies by involving marginalized groups in productive economic activities. Nevertheless, the Pesanggrahan case contributes a new scientific implication by showing that climate change mitigation programs can simultaneously function as poverty alleviation strategies when supported by community-based economic mechanisms. From a theoretical perspective, this condition reflects the sustainable development paradigm, where environmental, social, and economic dimensions are interconnected and mutually reinforcing. The emergence of local heroes and strong social cohesion among group members also explains why the program was able to sustain collective participation over time. This finding aligns with the group cohesion theory proposed by Albert Carron et al. (2002), which emphasizes that solidarity and shared commitment within a community significantly influence the success of collective action programs.

Furthermore, the digitalization of the waste bank through the "SOKROSOK" application represents a critical innovation that differentiates Pesanggrahan Proklim from many previous waste management initiatives in Indonesia. The digital system simplified waste collection, recording, and financial transactions, thereby reducing administrative inefficiencies that previously discouraged community participation. This result occurred because technological innovation enhanced transparency, accessibility, and operational efficiency within the waste management cycle. Previous studies on waste banks generally identified administrative complexity and low public participation as major barriers to sustainability, yet the Pesanggrahan model demonstrates that digital transformation can effectively overcome these limitations. Scientifically, this finding broadens the discourse of social innovation by emphasizing the strategic role of digitalization in strengthening community empowerment and environmental governance. The implementation of the "SOKROSOK" application also supports the argument of Firdaus (2024), who stated that social innovation must contain elements of novelty, effectiveness, and long-term societal impact. In addition, the existence of a clear exit strategy through phasing down and phasing over approaches indicates that the program has moved beyond short-term corporate social responsibility activities toward sustainable community independence. Consequently, the Pesanggrahan Proklim not only serves as a local environmental initiative but also functions as a replicable best-practice model for community-based climate governance and sustainable urban development in Indonesia.

CONCLUSION

The implementation of the Pesanggrahan Climate Village Program (Proklim) is an implementation of the Corporate Social Responsibility (CSR) of PT Pertamina Patra Niaga Fuel Terminal Madiun. Proklim is a concrete manifestation of climate change mitigation efforts implemented through a series of preventive and proactive actions aimed at reducing the intensity and slowing the rate of climate change. These interventions are carried out through comprehensive waste management activities, waste sorting and management of organic and inorganic waste to reduce greenhouse gas emissions from final generation, and create circular

economic value. The implementation of the CSR program carried out through Proklim Pesanggrahan has shown significant results and multidimensional impacts on environmental, economic, societal and wellbeing aspects.

REFERENCES

Behavioral Economics The effects of monetary incentives and environmental information nudges on household waste sorting behavior: Experimental evidence from community-based waste banks in Indonesia. (2026). *Resources, Conservation and Recycling, 232*, 108991. https://doi.org/10.1016/j.resconrec.2026.108991

Carron, A., Bray, S. R., & Eys, M. (2002). Team cohesion and team succes in sport. *Journal of Sports Sciences*, *20*(1), 119–126. https://doi.org/10.1080/0264041023 17200828

Circular Economy Gibovic, D., & Bikfalvi, A. (2025). Informing scalability for social innovation: Evidence from a recycling initiative. *Waste Management & Research*. https://doi.org/10.1177/0734242X251345349

Circular Economy Kędzia, G., Ocicka, B., Pluta-Zaremba, A., Raźniewska, M., Turek, J., & Wieteska-Rosiak, B. (2022). Social innovations for improving compostable packaging waste management in CE: A multi-solution perspective. *Energies, 15*(23). https://doi.org/10.3390/en15239119

Climate Adaptation Rusanda, N., Indriana, H., & Falatehan, S. F. (2025). Partisipasi masyarakat dalam adaptasi terhadap perubahan iklim: Keberlanjutan Program Kampung Iklim (Proklim) di Desa Cibanteng. *Jurnal Sains Komunikasi dan Pengembangan Masyarakat, 9*(3). https://doi.org/10.29244/jskpm.v9i3.1505

Climate Change Mitigation Ismiartha, G. R., Santoso, R. S., & Hanani, R. (2021). Analisis stakeholders dalam kegiatan pengelolaan sampah Program Kampung Iklim (Proklim) sebagai upaya mitigasi perubahan iklim Dusun Soka, Desa Lerep, Kecamatan Ungaran Barat, Kabupaten Semarang. *Journal of Management and Public Policy, 10*(2), 86–103. https://doi.org/10.14710/jppmr.v10i2.30591

Collaborative Governance Pamungkas, W. A., & Yuwanto. (2025). Mapping collaborative governance in Indonesia Climate Village Program: A bibliometric analysis (2022–2025). *Journal of Law, Politic and Humanities, 6*(1). https://doi.org/10.38035/jlph.v6i1.2635

Community Empowerment Husna, K., & Yandra, A. (2023). *ProKlim:* Institutional data inventory assistance at site level. *Dinamisia: Jurnal Pengabdian Kepada Masyarakat, 7*(1), 278–286. https://doi.org/10.31849/dinamisia.v7i1.13371

Dinas Komunikasi dan Informatika Kota Madiun. (2025). *Analisis strategi smart city Kota Madiun 2019-2024*. Dinas Komunikasi dan Informatika Kota Madiun.

Environmental Policy Sumanti, E. S., Prasetya, D. D., & Patmanthara, S. (2025). Integration of social, organizational, and technological factors to improve the effectiveness of environmental policies in waste management in Bima City. *Emerging Information Science and Technology, 6*(2). https://doi.org/10.18196/eist.v6i2.29171

Faedlulloh, D., Prasetyanti, R., & Irawan, B. (2019). Kampung versus climate change: The dynamics of community empowerment through the climate village program (Proklim).

Journal of Physics: Conference Series. https://doi.org/10.1088/1742-6596/1424/1/012055

Firdaus, A. (2024). Inovasi sosial di hutan wakaf Bogor dalam mencapai pembangunan berkelanjutan. *Jurnal Ilmiah Ekonomi Islam*, *10*(1), 64–72. https://doi.org/https://doi.org/10.29040/jiei.v1i1.11918

Gardner, A., Greenblott, K., & Joubert, E. (2005). *What we know about exit strategies: Practical guidance for developing exit strategies in the field*. C-Safe Regional Learning Spaces Initiative.

Lestari, D. P., Falasifah, N., & Zakariya, A. F. (2024). Peran masyarakat dan pesantren dalam adaptasi dan mitigasi perubahan iklim di Desa Plumpang Kecamatan Plumpang Kabupaten Tuba. *Journal of Community Development and Disaster Management*, *6*(2), 103–116. https://doi.org/10.37680/jcd.v6i2.6148

Lubis, H. D., & Putro, R. K. H. (2025). Analisis dampak lingkungan kerja operasional TPA terhadap kesehatan masyatakat di Desa Kaliabu, Kecamatan Mejayan, Kabupaten Madiun. *Jurnal Teknik*, *5*(2), 1161–1177. https://doi.org/https://doi.org/10.51135/ryeev545

Maharani, H. S. (2025). *Dampak sosial timbunan sampah terhadap kehidupan masyarakat sekitar pasar Kotaagung*. Universitas Lampung.

Neuman, W. L. (2014). Social Research Methods: Qualitative and Quantitative Approaches. In *Teaching Sociology* (Vol. 30, Number 3). https://doi.org/10.2307/3211488

PT Pertamina Patra Niaga Fuel Terminal Madiun. (2025). *Dokumen Inovasi Sosial: Program Pemberdayaan Masyarakat Proklim Pesanggrahan*

Public Service Innovation Meričkova, B. M., Nemec, J., & Svidronova, M. (2015). Co-creation in local public services delivery innovation: Slovak experience. *Lex Localis, 13*(3), 521–535. https://doi.org/10.4335/13.3.521-535(2015)

Rubin, A., & Babbie, E. R. (2011). Research Methods for Social Workers. In *Research Methods for Social Workers* (Seventh Ed). Thomson Brooks/Cole. https://doi.org/10.1057/978-1-137-44283-3

Sheik, A., Van Rooyen, D., & Mazzei, M. (2023). Social innovation in South Africa: building inclusive economies? *Social Enterprise Journal*, *19*(1), 1–22. https://doi.org/10.1108/SEJ-07-2021-0060

Sistem Informasi Pengelolaan Sampah Nasional. (2026). *Statistik Pengelolaan Sampah*. https://sipsn.menlhk.go.id/sipsn/

Social Enterprise Lombardi, M., & Costantino, M. (2020). *A social innovation model for reducing food waste: The case study of an Italian non-profit organization*. *Administrative Sciences, 10*(3). https://doi.org/10.3390/admsci10030045

Social Innovation Barsei, A. N., Giyatno, Wahyuni, N., & Atmoko, A. W. (2023). Social innovation in community-based household waste management in Ciamis Regency, West Java Province. *Journal of Local Government Issues, 6*(2), 133–151. https://doi.org/10.22219/logos.v6i2.26479

Souza, A. C. A. A., de Lessa, B., & Lázaro da Silva Filho, J. C. (2019). Social innovation and the promotion of local economic development. *Innovation and Management Review*, *16*(1), 55–71. https://doi.org/10.1108/INMR-10-2018-0074

Suratman, Yuwono, A., Priyambada, I., Kusumandari, A., Santosa, D. H., Sudaryatno, Marwasta, D., Nurjani, E., Sekaranom, A. B., Hasanati, S., & Suarma, U. (2023). *Gerakan aksi Proklim Indonesia 2020-2030*. Gajah Mada University Press.