

Community-Based Waste Management through the Keping Emas Programme in Siwarak Village: Community Empowerment, Institutional Strengthening, and Circular Economy Practices

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ABSTRACT

This study examines community-based waste management through the Keping Emas Program (Kelola Potensi Keuntungan Desa Mandiri Sampah) in Siwarak Village, Karangreja Subdistrict, Purbalingga Regency. The research focuses on analyzing program implementation, changes in community perceptions and behaviors toward waste, strengthening local institutions, and developing circular economy practices at the village level. A qualitative approach with a case study design was employed to understand the social and institutional dynamics of the program through in-depth interviews, observation of household waste sorting and processing activities, and analysis of village documents and waste bank administration.

The findings show that the Keping Emas Program encourages a shift in community paradigms from viewing waste as worthless garbage to understanding it as an economic and ecological resource. This change is reflected in the growth of household-level waste sorting, composting, and recycling practices. The program also contributes to community empowerment through increased knowledge and skills, additional income from the sale of compost and recyclable waste, and stronger social capital through collective work in the waste bank. However, the program still faces institutional challenges, particularly dependence on key individuals, weak administrative systems, and the potential for internal conflicts over benefit-sharing. Thus, Keping Emas has strong potential to become a replicable village-based waste management model, provided that institutional strengthening and participatory governance mechanisms are improved to ensure long-term socio-ecological sustainability.

Keywords: community-based waste management, Keping Emas, community empowerment, waste bank, circular economy, Siwarak Village

ABSTRAK

Penelitian ini mengkaji pengelolaan sampah berbasis komunitas melalui Program Keping Emas (Kelola Potensi Keuntungan Desa Mandiri Sampah) di Desa Siwarak, Kecamatan Karangreja, Kabupaten Purbalingga. Fokus penelitian diarahkan pada analisis implementasi program, perubahan perspektif dan perilaku masyarakat terhadap sampah, penguatan kelembagaan lokal, serta pengembangan praktik ekonomi sirkular di tingkat desa. Pendekatan kualitatif dengan desain studi kasus digunakan untuk memahami dinamika sosial dan kelembagaan program melalui wawancara mendalam, observasi aktivitas pemilahan dan pengolahan sampah, serta analisis dokumen desa dan administrasi bank sampah.

Hasil penelitian menunjukkan bahwa Program Keping Emas mendorong perubahan paradigma masyarakat dari memandang sampah sebagai limbah tak bernilai menjadi sumber daya ekonomi dan ekologis. Perubahan tersebut tercermin dari tumbuhnya budaya pemilahan, pembuatan kompos, dan aktivitas daur ulang di tingkat rumah tangga. Program ini juga berkontribusi pada pemberdayaan masyarakat melalui peningkatan pengetahuan dan keterampilan, tambahan pendapatan dari penjualan kompos dan sampah anorganik, serta penguatan modal sosial melalui kerja kolektif dalam bank sampah. Namun demikian, program masih menghadapi tantangan kelembagaan, terutama ketergantungan pada individu penggerak, lemahnya sistem administrasi, dan potensi konflik dalam pembagian manfaat. Dengan demikian, Keping Emas berpotensi menjadi model pengelolaan sampah berbasis desa yang replikatif, dengan catatan diperlukan penguatan kelembagaan dan mekanisme partisipasi agar keberlanjutan sosial-ekologis dapat terjaga.

Kata kunci: pengelolaan sampah berbasis komunitas, Keping Emas, pemberdayaan masyarakat, bank sampah, ekonomi sirkular, Desa Siwarak

Introduction

Waste has become an increasingly urgent environmental and social issue in both urban and rural areas. The World Bank's *What a Waste 2.0* report demonstrates that the waste problem concerns not only the continuously rising volume of waste, but also institutional capacity, financing, behavioural change, and the sustainability of management systems. Meanwhile, UNEP, through the *Global Waste Management Outlook 2024*, underscores that the transition towards waste reduction, sustainable management, and a circular economy has become imperative, as the conventional "take-use-dispose" model is no longer adequate in the face of intensifying environmental and social pressures (Kaza et al., 2018; UNEP, 2024).

In the Indonesian context, waste management already rests upon a relatively clear legal framework through Undang-Undang Nomor 18 Tahun 2008 tentang Pengelolaan Sampah, which emphasises that waste must be managed in a systematic, comprehensive, and sustainable manner. This provision is further reinforced by PP Nomor 81 Tahun 2012 tentang Pengelolaan Sampah Rumah Tangga dan Sampah Sejenis Sampah Rumah Tangga, as well as Permen LH Nomor 13 Tahun 2012, which specifically encourages the implementation of *reduce*, *reuse*, and *recycle* activities through waste banks. At the level of producer policy, Permen LHK Nomor 75 Tahun 2019 also stresses the importance of a producer waste reduction roadmap. Taken together, these regulations indicate that waste management in Indonesia is no longer understood merely as an issue of final disposal, but is increasingly directed towards source reduction, reuse, and material circulation (Pemerintah Republik Indonesia, 2008; Pemerintah Republik Indonesia, 2012; Kementerian Lingkungan Hidup, 2012; KLHK, 2019).

Even so, the implementation of waste management policy continues to face major

challenges, particularly at the regency and village levels. The review by Budiarto, Clarke, and Ross shows that regencies across Indonesia still face infrastructural and institutional constraints in waste management, with waste banks emerging as an important community-based solution, although their effectiveness depends heavily on local support, managerial capacity, and compatibility with regional characteristics. At the community level, Rachman et al. likewise demonstrate that citizen participation constitutes a decisive factor in the success of waste banks as instruments of waste management and local value creation (Budiarto, Clarke, & Ross, 2024; Rachman et al., 2021).

This condition is highly relevant to the situation in Purbalingga Regency. The Government of Purbalingga Regency officially launched the Keping Emas Programme on 22 April 2025 as a strategy for independent, innovative, and collaborative waste management at the village level. During the launch, the Regent of Purbalingga stated that the Kalipancur landfill accommodates only around 16–22 per cent of the total waste generated in Purbalingga, meaning that the vast majority of waste must be handled through more effective means. In the same forum, Siwarak Village was identified as the embryo and success model of waste management deemed worthy of replication in other villages in Purbalingga (Setda Kabupaten Purbalingga, 2025).

Within this context, Siwarak Village offers a particularly compelling case for study because waste management there has been developed not merely as a technical system for reducing waste, but also as a medium for community empowerment and the strengthening of the local economy. The Keping Emas Programme extends beyond the household-level sorting of waste to encompass the establishment of a waste bank, the processing of organic waste into compost, and the utilisation of inorganic waste as material with economic value. In this way, waste is no

longer positioned merely as refuse, but as a resource that can be processed, recirculated, and transformed into social and economic benefits for the village community.

Against this background, this study aims to examine in depth the implementation of the Keping Emas Programme in Siwarak Village and to analyse its impact on the local community. More specifically, the study addresses three issues. First, shifts in community perspectives and behaviour towards waste. Second, the strengthening of local institutions, especially the waste bank and the role of village government. Third, the development of circular economy practices at the village level through the productive and sustainable reuse of waste materials.

Theoretical Framework

Community-Based Waste Management

The concept of community-based waste management (CBWM) emphasises that waste management cannot be carried out adequately through top-down technical and administrative instruments alone, but must instead be grounded in the active participation of the community as the principal actor. Within this approach, residents are not merely objects of policy, but subjects who possess local knowledge, collective capacity, and a direct interest in the quality of their environment. Studies on waste banks in Indonesia show that the success of community-based waste management is strongly shaped by the degree of citizen participation, the strength of local organisations, and the ability to generate social and economic incentives at the household level (Rachman et al., 2021; Budiyarto et al., 2024).

Waste Banks as Instruments of Citizen-Based Environmental Governance

Normatively, waste banks have been recognised in Permen LH Nomor 13 Tahun 2012 as instruments for implementing the 3R principles

(*reduce, reuse, recycle*). In practice, however, waste banks are more than merely mechanisms for collecting sorted waste; they also function as instruments of environmental education, economic savings, and the cultivation of collective discipline. Wijayanti and Suryani show that waste banks in Surabaya function as a form of community-based environmental governance, namely environmental management grounded in community initiative, local leadership, and simple yet effective economic incentives (Wijayanti & Suryani, 2015).

Community Empowerment and the Strengthening of Local Institutions

From the perspective of local development, community empowerment does not simply mean increasing income, but also enhancing citizens' capacity to make decisions, manage resources, and build institutions capable of sustaining programmes over time. Accordingly, the success of community-based waste management cannot be measured solely by the quantity of waste collected or sold, but also by the extent to which the programme strengthens local organisations, broadens citizens' knowledge, and fosters a sense of ownership over the system being built. A governance study from Makassar shows that community-based waste reduction programmes are strongly influenced by whether the institutional context supports or instead hinders local participation and collaboration (Latanna et al., 2023).

Circular Economy

The circular economy provides a highly relevant framework for interpreting village-based waste management programmes. The Ellen MacArthur Foundation defines the circular economy as a system designed so that materials do not become waste, but remain in circulation through reuse, repair, recycling, and composting. Its three core principles are eliminating waste and pollution, circulating products and materials at their highest value, and regenerating nature. From

this perspective, waste management in Siwarak Village can be understood as an effort to transition from the linear “take-use-dispose” model towards a circular model that yields both ecological and economic benefits (Ellen MacArthur Foundation, 2024).

Based on this framework, the present study positions the Keping Emas Programme as a community-based waste management practice operating simultaneously across three layers: behavioural change, the strengthening of local institutions, and the formation of circular economy practices at the village level.

Research Method

This study employed a qualitative approach with a case study design. This approach was selected because the objective of the research was to gain an in-depth understanding of the social, institutional, and economic dynamics of the implementation of the Keping Emas Programme in Siwarak Village. A case study design makes it possible to capture relationships among actors, community experiences, and processes of social change that cannot be adequately explained through a quantitative approach.

The research subjects included village officials, waste bank managers or waste management groups, environmental cadres, and local residents actively involved in household waste sorting and waste utilisation activities. Informants were selected purposively on the basis of their degree of involvement in and knowledge of programme implementation.

Data were collected through three principal techniques. First, in-depth interviews were conducted with village officials, programme facilitators, and residents. Second, direct observation was carried out of waste-sorting processes, collection at deposit points, weighing, waste bank administrative recording, and the processing of both organic and inorganic waste. Third, documentary study was undertaken on village archives, programme documents, waste

bank administration records, and other relevant institutional documents.

The data were analysed using an interactive model involving data reduction, data display, and conclusion drawing. The field data were then interpreted with reference to the concepts of community-based waste management, community empowerment, and circular economy.

Findings and Discussion

The Implementation of the Keping Emas Programme in Siwarak Village

The findings show that the implementation of the Keping Emas Programme in Siwarak Village has proceeded gradually and has not relied exclusively on top-down administrative instruction. Although the programme is formally an initiative of the Government of Purbalingga Regency, its implementation at the village level has been strongly shaped by local dynamics, especially the presence of key actors with strong concern for environmental issues. Thus, programme implementation has developed through the intersection of formal policy and community initiative.

At the initial stage, the primary focus of the programme was to build awareness that waste must be sorted at the source. Residents were introduced to the distinction between organic and inorganic waste, as well as the importance of sorting waste at the household level. This process did not occur through a single formal outreach session, but rather through repeated practice, direct observation, and social learning within the community. Such a pattern suggests that behavioural change in waste management is more effectively built through collective habit formation than through normative appeals alone.

Institutionally, the waste bank has become the main node of the programme. The waste bank performs not only the technical functions of collection and record-keeping, but also serves as

an arena for social interaction, coordination, and shared learning. Yet, as is commonly the case in many community-based waste management practices in Indonesia, the effectiveness of this institution remains highly dependent on the quality of local leadership and the stability of managerial commitment (Budiyarto et al., 2024).

Changes in Community Perspectives and Behaviour Towards Waste

One of the most important achievements of the Keping Emas Programme is the transformation in how the community perceives waste. Prior to the programme, waste was generally understood as valueless refuse that deserved to be burned, buried, or simply discarded. Since the programme's implementation, however, a gradual shift has emerged in which waste is seen as something that can be sorted, processed, and reused.

This change in perspective is visible in the growing practice of household-level waste sorting, the processing of organic waste into compost, and the utilisation of inorganic waste with resale value. From the standpoint of CBWM theory, this is significant because the success of waste management lies not primarily in technology, but in the willingness of people to change their basic habits. These findings are consistent with the study by Rachman et al., which stresses that community acceptance and participation are the principal conditions for waste banks to function as sustainable waste management instruments (Rachman et al., 2021).

The change in community behaviour also shows that the programme operates at an educational level. Residents are encouraged not merely to dispose of waste properly, but also to understand the relationship between waste, environmental health, and economic opportunity. In this sense, the Keping Emas Programme functions as a medium of social learning that gradually fosters a new culture of waste management.

Social Impact and Community Empowerment

From the perspective of empowerment, the Keping Emas Programme produces dual effects. First, residents acquire new knowledge and skills, such as techniques of waste sorting, compost production, and the management of recyclable inorganic waste. Second, opportunities for supplementary income emerge, whether through the sale of compost or through the sale of sorted inorganic waste.

Although these economic impacts are not always large or evenly distributed, they are important in generating incentives for participation. This is consistent with recent literature showing that waste banks can create local economic opportunities, increase income for both customers and managers, and add value to waste management systems when supported by sufficiently strong institutions (Budiyarto et al., 2024).

Beyond the economic dimension, the programme also strengthens social capital. The activities of sorting, collecting, weighing, and processing waste are carried out through collective work that fosters a sense of togetherness. Residents who previously regarded waste as a private household matter begin to see it as a shared concern requiring collective responsibility. At this point, community-based waste management proves capable not only of generating environmental benefits, but also of strengthening social cohesion at the village level.

Strengthening Local Institutions and Challenges of Sustainability

Although the programme's socio-ecological achievements are quite visible, this study also finds that the institutional dimension remains its weakest point. The continuity of the programme depends heavily on a small number of key initiators. When these individuals experience declining commitment or personal burdens, waste management activities also tend to

diminish. This condition indicates that the programme has not yet been fully institutionalised within a stable village system.

In addition, the potential for conflict over the distribution of benefits constitutes another important challenge. As waste begins to generate economic value, the need arises for clearer rules concerning financial management, incentive-sharing, and work responsibilities. If such mechanisms are not developed transparently, the programme risks internal friction that may erode community trust. This finding is consistent with governance studies of community-based programmes, which emphasise that long-term success depends heavily on organisational capacity, regulatory clarity, and sustained institutional support (Latanna et al., 2023).

In other words, the principal challenge facing the Keping Emas Programme lies not merely in waste management techniques, but in the process of institutional consolidation. If institutions remain fragile, the programme's initial success will remain sporadic and dependent on personal commitment rather than on an established system.

The Keping Emas Programme and Circular Economy Practices at the Village Level

The Keping Emas Programme may be interpreted as an early form of circular economy practice at the village level. Organic waste is no longer treated as final refuse, but is processed into compost that can be reused in agriculture. Inorganic waste is sorted and then sold or processed into other products with economic value. This pattern demonstrates an effort to keep materials in circulation, in line with the core principles of the circular economy (Ellen MacArthur Foundation, 2024).

At the same time, the study shows that the circular economy in Siwarak Village remains at an early stage. Existing activities are still concentrated on sorting, composting, and the collection of saleable waste, while more

advanced product innovation, market diversification, and value chain strengthening have not yet developed optimally. This means that the potential for a circular economy has already emerged, but still requires technical support, marketing networks, and business mentoring if it is to become a stronger foundation for the local economy.

The Relevance of Keping Emas as a Replicable Model

More broadly, Siwarak Village demonstrates that village-based waste management can evolve into a replicable model when supported by three principal conditions: behavioural change among residents, relatively strong local institutions, and tangible economic benefits. This aligns with the policy direction of the Government of Purbalingga Regency, which from the outset positioned Siwarak as the embryo of the Keping Emas Programme for replication in other villages. Even so, replication cannot be achieved simply by copying the programme's name or institutional form. Each village has its own social, economic, and geographical characteristics, and therefore any model intended for replication must be adaptive rather than uniform.

Within this framework, Keping Emas is not merely a waste management programme, but an experiment in environmentally grounded village development. Its success lies in the extent to which it is able to connect ecological awareness, citizen participation, local institutions, and economic benefit into a mutually reinforcing system.

Conclusion

This study concludes that the Keping Emas Programme in Siwarak Village contributes positively to environmental management, community empowerment, and the strengthening of local institutions. Environmentally, it has shifted residents' views of waste from valueless refuse to a resource that

can be sorted, processed, and reused. Socially, it reinforces collective learning, mutual cooperation, and social capital. Economically, it creates opportunities for supplementary income through compost production and the sale of inorganic waste. However, these gains remain fragile because of institutional weaknesses, particularly dependence on key actors, weak administration, and potential conflict over benefit-sharing. The programme's sustainability therefore depends on the village's ability to develop governance that is stronger, more transparent, and more participatory. Based on these findings, the study recommends prioritising institutional capacity-building for waste banks and management groups, expanding government technical support and marketing networks, advancing circular economy innovation beyond simple sorting and sales, and adapting any replication of the model to each village's social, economic, and geographical conditions. Overall, Keping Emas represents a promising example of community-based waste management, but its long-term success as a waste-self-reliant village model requires stronger institutional consolidation and participatory governance.

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