

# Decentralization of Local Government Authority to Village Governments in Domestic Waste Management: A Case Study of Temanggung Regency

Aria Wirawan<sup>1,2</sup>, Maryono Maryono<sup>2,3\*</sup>, and Kismartini<sup>4</sup>

<sup>1</sup>Magister Environmental Science, School of Postgraduate Studies, Diponegoro University, Indonesia

<sup>2</sup>Cluster Research for Green Infrastructure Resilience Development, Diponegoro University, Indonesia

<sup>3</sup>Department Urban and Regional Planning, Faculty Engineering, Diponegoro University, Indonesia; e-mail: [maryono@pwk.undip.ac.id](mailto:maryono@pwk.undip.ac.id)

<sup>4</sup>Department of Public Administration, Faculty of Social and Political Sciences, Diponegoro University, Indonesia

## ABSTRACT

Waste management is a major environmental challenge in Indonesia. With the increasing volume of waste due to urbanization and population growth, waste management capacity is limited. This research explores the Temanggung district government's efforts to implement a decentralized waste management policy involving village governments and communities. Through the policy that started in 2019, waste management coverage increased significantly from 30.7% in 2018 to 70.9% in 2023, with villages playing an active role in waste reduction. This research uses in-depth interviews, observation, and document review methods to understand the decentralization policy's implementation process and the challenges faced in its implementation. The results show that decentralization contributes to improving the effectiveness of waste management in Temanggung and can be an alternative solution to be implemented in other regions in Indonesia.

**Keywords:** Waste Management, Decentralization, Local Village Government

## ABSTRAK

Pengelolaan Sampah merupakan salah satu issue krusial dalam pengelolaan lingkungan di Indonesia. Timbulan sampah yang terus meningkat karena urbanisasi dan pertumbuhan penduduk menjadi salah satu faktor dalam keterbatasan kapasitas pengelolaan sampah. Penelitian ini mengkaji upaya Pemerintah Kabupaten Temanggung dalam mengembangkan kebijakan desentralisasi pengelolaan sampah pada lingkup wilayah Pemerintahan Desa. Sejak diluncurkan kebijakan ini pada tahun 2019, pengelolaan sampah di Wilayah Kabupaten Temanggung meningkat pesat, pada tahun 2018 tingkat layanan 30.7% naik signifikan menjadi 70.9% pada tahun 2023. Pada prinsipnya kebijakan yang dikembangkan adalah mendorong pemerintah di tingkat Desa untuk mengambil peran aktif dalam pengurangan sampah. Penelitian ini menggunakan pendekatan *in-depth-interview*, observasi dan review dokumen, untuk menganalisis proses implementasi kebijakan, tantangan pada proses implementasi kebijakan. Hasil penelitian menunjukkan bahwa kebijakan desentralisasi pengelolaan sampah memberikan kontribusi yang efektif. Pola ini dapat menjadi alternatif untuk di implementasikan pada wilayah lain di Indonesia.

**Kata kunci:** Pengelolaan Sampah, Desentralisasi, Pemerintahan Desa.

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## 1. INTRODUCTION

One of the main environmental problems is the lack of access to waste management, which can be linked to the responsibility for consumption and production of the 17 goals in the Sustainable Development Goals, known as SDGs (Rodić & Wilson, 2017). Meanwhile, the increase in solid waste volumes due to population growth and urbanization often exceeds management capacity and leads to

heavy reliance on landfills (Hoornweg, 2012). Several issues in waste management, such as the low sorting and recycling rates, the high use of single-use plastics, the lack of management efforts (Nemat et al., 2022), the inconsistent of law enforcement and regulations related to waste management, and inequality of access and services (Gollakota et al., 2020), becoming complex since combining the Economic issues, such as the cost of waste management and lack of recycling

incentives, as well as the impacts of climate change and natural disasters (Jiang et al., 2024; Pitakaso et al., 2024).

The seriousness of Indonesia's Government is shown by the target of 100% Waste Management by 2025 (Pemerintah Indonesia, 2017). However, the realization of this policy in 2021 is still far below the target. Statistic data show that the average coverage of Waste Management services in Indonesia is still at 27.15%, and only 5% of rural areas in Indonesia currently have access to waste management (Badan Statistik Indonesia, 2021).

One of the hypotheses of this achievement is the limitations of centralized systems in collection and processing systems. This research explores the changes in the system, from centralization to decentralization. This research analyzed the possibility of a decentralization process in waste management in the community. Decentralization can be defined as a network or independent process in an environment or community where the management of waste that should be handled at the central level is transferred (Pai et al., 2019). In this system, the local community plays a role in waste management, and its participation becomes very important. Decentralization is also seen as a way to overcome the challenges of a centralized system.

Like other cities in Indonesia, Temanggung has limitations in Waste Management coverage, and the main cause is that its area is dominated by rural areas spread out across areas that are difficult to reach. Based on local government projections (2023), Temanggung Regency in 2022 has a population of 807,440 people, and because of that, Temanggung Regency produces more than 400 tons of waste per day. Until 2018, the coverage of waste management services stagnated at 30.7% or a total of 89 villages/sub-districts. 69.3% of Temanggung Regency has not been served by a waste management system, and this has the potential to cause pollution if not immediately addressed.

Addressing the waste problem requires an integrated and sustainable approach involving collaboration between the government, private sector, communities, and non-governmental organizations to improve infrastructure, education, and law enforcement, as well as innovation in waste management practices (Kozová et al., 2018). Starting in 2019, the Temanggung government applied a decentralization policy of waste management that pushed the involvement of village government and community to manage their solid waste, and at the end of 2023, the scope of waste management has increased to 205 villages/sub-districts or 70.9% of its total area of Temanggung Regency. In addition to increasing the quantity, this policy also tends to improve the quality of waste management continuously. Thus, waste reduction can be optimized. Ultimately, this can minimize the volume of residual waste that will be processed in the landfill. This result indicates that the policy was considered successful in

overthrowing the waste management problems in Temanggung Regency.

This research was conducted to define the decentralization policy of Waste Management and the transformation of the institutional framework of the Waste Management system in Temanggung Regency. It also addressed the challenges that must be faced so that the policy can be implemented optimally. As a broader goal, this research can be a reference as an alternative solution to waste management problems in other cities in Indonesia.

### **1.1. Decentralization and Waste Management**

The main objective of decentralization is to give more power to local entities so that they can be more responsive to their needs and aspirations (Okot-Okumu & Nyenje, 2011). Meanwhile, the purpose of waste management is to reduce negative impacts on the environment and public health (Alsabt et al., 2024). The decentralization approach can be implemented as an integrated concept to overcome the challenges of the complexity of waste management problems (Menon & Palackal, 2022).

Decentralization can improve the local responsiveness to participate in waste management more over the preferences and concerns of its citizens are critical (Yuan & Shen, 2024). Participation of the local communities also helps the local government to determine the adaptive policies and services based on the local potential to overthrow the waste management problems (Wang et al., 2024).

The decentralization concept consists of administrative decentralization (distribution of administrative and operational tasks to local institutions), fiscal decentralization (distribution of resources and budget management to local governments), and political decentralization (transfer of political decision-making authority to local governments) (Dick-Sagoe, 2020). In Indonesia, village governments have the authority that has been established by the national constitution through the Village Law, which includes village governance, village funds, and so on (Pemerintah Indonesia, 2014) so that the concept of decentralization can be applied by village governments to address their own problems, including the waste management problems.

However, decentralization also requires good coordination between the central and the local government to ensure that waste management standards and policies remain consistent and integrated throughout the area (Cumming et al., 2025). In addition, support in terms of training, resources, and monitoring is crucial for successful waste management at the local level (Serrona et al., 2014; Zurbrügg et al., 2014).

### **1.2. Waste Management Decentralization Policy**

The problem of coordination between the higher level and lower government can be solved by being facilitated through policy (Benz, n.d.; Vince et al., 2024). The decentralization policy of waste

management in Indonesia has also been stated in Law of The Republic of Indonesia Number 18 of 2008 Concerning Waste Management, which includes the division of authority and responsibility between the central government and local governments to address waste issues effectively. This policy includes planning, managing, and implementing waste management programs that suit local needs and conditions, such as organizing a sustainable waste management system from upstream to downstream. It is also clarified that local governments have the authority to regulate and manage waste management in their area (Pemerintah Indonesia, 2014) and regulate the standards of household and similar waste management, including waste segregation, collection, and treatment (Pemerintah Indonesia, 2012). In the absence of conflict in regulations, the village government can be involved by the local government to participate actively in waste management to tackle the waste issues in their administrative area.

### **1.3. The Challenges of Waste Management Decentralization Policy**

The challenges of decentralization cannot be separated from the capabilities of local governments, which have limited technical, financial, cultural, political, and managerial capacity to handle waste management effectively (Pietzsch et al., 2017). Development gaps in infrastructure and capabilities in waste management between urban and rural areas can be problematic if there is no coordination and integration between the central government, local governments, and communities to avoid imbalances in facilities and infrastructure, as well as overlapping policies and other issues (Cumming et al., 2025).

Besides that, raising public awareness about the importance of good waste management and active participation in recycling programs faces several issues, such as a lack of understanding and education, cultural and behavioral barriers, inadequate infrastructure, economic factors, and inconsistent policies (Etim, 2024). Therefore, the successful implementation of this policy relies heavily on coordination between different levels of government and active community participation.

## **2. METHODS**

This research uses some methods that involve interviews, observations, and document reviews to obtain qualitative and quantitative data that enable the exploration of the phenomenon of decentralization of waste management policy implementation in the specific context of Temanggung Regency (Creswell, 2019; Lexy, 2018).

In this study, in-depth interviews were applied to gain insight into the decentralization policy and the authority that was distributed, the implementation

process, and the challenges faced by each level of decentralization actors. The strategy used in this sampling selection for in-depth interviews was non-probability purposive sampling, where subjects were selected based on their role and relevance in the context of the research and asked for recommendations from the initial subjects to identify other relevant subjects with important information (Vehovar et al., 2016). The observation was carried out at village waste management facilities, waste transport system, and central landfill at the city level to determine the waste management authority distribution at each decentralization level (Heigham & Croker, 2009). Besides that, document reviews are carried out to analyze government policies related to waste management, reports on waste management activities, and other relevant documents.

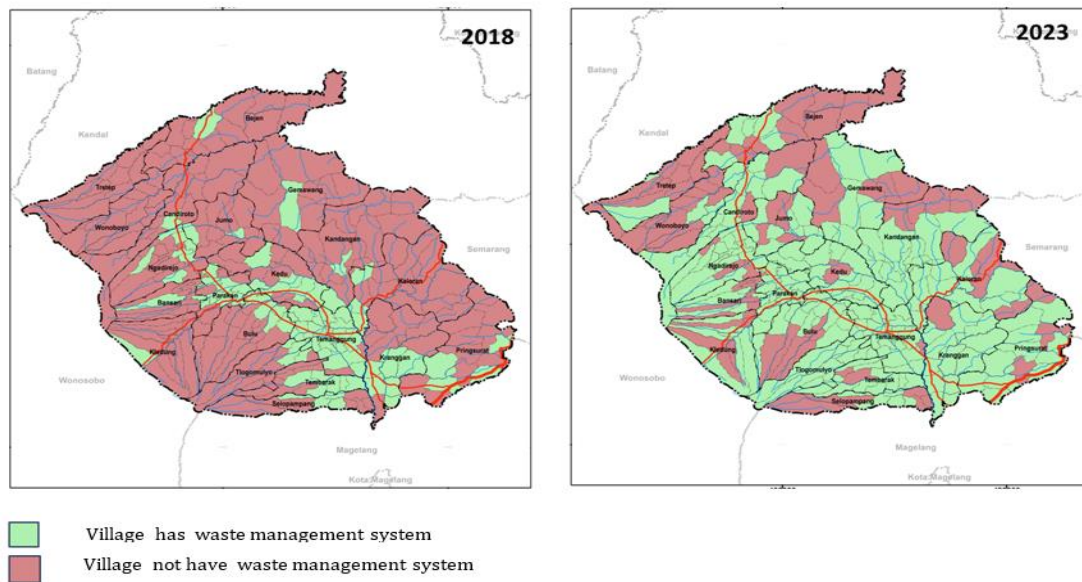
To achieve this goal, qualitative research is needed, where each actor involved in the collaboration is mapped and then grouped according to the role and stakeholder group based on the pentahelix framework. Then, analyze and comprehensively describe the phenomena that occurred, after collecting valid data through existing research methods.

In Creswell, 2019 reveals that case studies are part of a strategy that can be used in exploring and developing an in-depth analysis of phenomena sharply. This research uses a case study approach because the analysis and presentation are based on field studies, either in the form of programs, events, or activities in Temanggung Regency. In this case study approach, the researcher thoroughly examines the entire process of collaboration between stakeholders, from source to landfill.

## **3. RESULTS AND DISCUSSION**

### **3.1. Temanggung Waste Management Condition, 2018-2023**

Based on data from the Temanggung government, the Temanggung Regency, with a population of 807.440, produces 403,72 tons of waste every day, which is scattered throughout the region. Temanggung Regency has an area of 87.065 Ha, which is divided into 289 areas at the village level as the smallest unit of government. In 2018, service coverage in Temanggung Regency only covered 30,44% of its total area or only 89 villages. Meanwhile, the amount of waste managed was only 30,52% or 123,2 tons per day, which is landfilled in Sanggrahan Landfill as the only landfill in Temanggung Regency, without other preliminary treatment to reduce the amount of the waste. This condition has tended to stagnate since the early 2000s. If this continues and there is no solution, the capacity of the landfill run out, and it will become a greater problem for the Temanggung Regency.



**Figure 1.** GIS Map for Comparison of Waste Management System Policy in Temanggung Regency Village during 2018-2023

Therefore, Temanggung Regency implemented a decentralization policy on waste management starting at the end of 2019, which was initiated by the stipulation of the Regent's Circular Letter Number P/541/520/22/X/2019 that stated waste management and zero waste village program and strengthened through Temanggung Regent Regulation Number 43 of 2023 about Implementation of Village Waste Management. This has led to a significant increase in waste management performance, with a change from initially only 88 villages with waste management increasing to 205 villages by the end of 2023. By 2023, the coverage area of waste management in Temanggung Regency reach 70,1%, of course, with the pre-treatment in each village through the village waste management facilities that contributed to waste reduction.

The legal framework for WM issues in Indonesia has been regulated through legislation, both in the form of a Law, namely the Law on Waste Management Num 18 of 2008, and also regulations from related Ministries. The derivatives of these regulations have also been translated through regional regulations on waste management in each region, which are also done by Temanggung Regency, one of the administrative regions in Indonesia.

However, in the case of Temanggung District, the local government technically established technical regulations signed by the Regent at that time, namely Regent Regulation Number 43 of 2023, about the Implementation of Village Waste Management on Technical Guidelines for Waste Management at the Village Level and the Regent Regulation Number 42 of 2023 on Community Participation in Waste Management. Both regulations aim to encourage the involvement and authorize village governments to carry out WM responsibilities in their areas and activate community participation.

The policy has also been implemented to answer the challenges of WM in Temanggung Regency, which has stagnated due to financial, technical, and human resource limitations. In addition, the policies implemented have technical objectives to accelerate the development of WM facilities and activities at the village level that have not received WM services from the local government. The policy set by the Temanggung Regency Government in the WM for 2018-2023, especially related to the implementation of the decentralization concept in Temanggung Regency in waste management, is as follows: Regent's Circular Letter Number P/541/520/22/X/2019 concerning Waste Free Village Program; Regional Regulation Number 10 of 2020 concerning Amendments to Regional Regulation Number 29 of 2011 concerning Waste Management, which is the basic reference for waste management in Temanggung Regency; Regent Regulation Number 42 of 2023 concerning Community Participation in Waste Management; Regent Regulation Number 43 of 2023 concerning Implementation of Village Waste Management; and Regent Regulation on Guidelines for the Management of Village Funds, Village Fund Allocation, Tax Revenue Sharing, and Retribution Revenue Sharing of Temanggung Regency from 2020-2023 are concerning in usage of Village Funds in the context of financing waste management in the village.

From these policies, the Temanggung District Government authorizes each village government to manage waste in their respective areas. The authority is in the form of technical, financial, institutional, and regulatory authority within the local scope of the village and community involvement. The technical authority given encourages the decentralization of the WM system as well as its sub-systems (source of waste management sub-systems), where the sub-systems of containerization, collection, and processing of organic and inorganic waste become the authority of the

village. Meanwhile, the sub-systems of residue transportation, residue processing, and final processing at the landfill are under the authority of the local government. In the implementation process, this decentralization policy is applied in stages, taking into account the understanding and readiness of the village government and the community.

This decentralization policy at the local level gives authority to the village government to carry out WM independently in its area, with the final output target being only residual waste that will be handled by the local government. Technically, the village government has the task of starting with community development, collecting waste from households to village-level Waste Management Sites, and processing waste that can be utilized. Furthermore, residual waste that cannot be utilized is transported and processed at the Final Processing Site, both of which are the responsibility of the local government.

To be able to support the technical role of the village government to be able to carry out WM optimally, the village government has the authority to use village funds for the purposes of infrastructure development and socialization, financial management for operations, making local village regulations to regulate WM procedures in the village area, forming village business entities/community institutions as technical operators of WM. In addition, the village government also forms volunteers as a mouthpiece

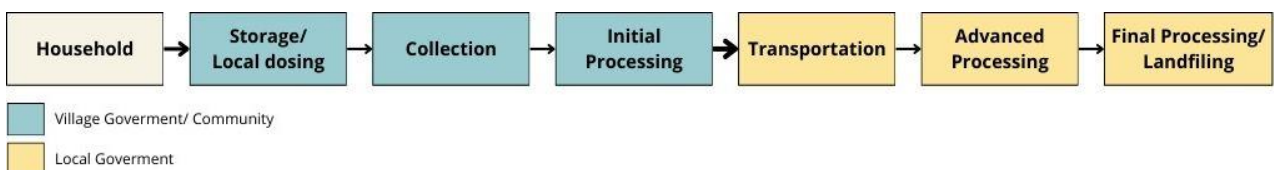
for socialization and education about WM for the village community. This educational activity is important so that it can increase understanding and also a wise culture of the community in managing waste (Zurbrügg et al., 2014).

Meanwhile, the local government has functions other than the technical function of transporting and processing residual waste in landfills, namely supervising WM activities in villages and regions, making policies to respond to field constraints so that WM can run efficiently and effectively, upgrading technology in the context of final processing, and collaborating with the private sector and government agencies above in order to optimize existing. The details are shown in Table 1 about the Division of Authority in Waste Management in Temanggung Regency.

With this division of authority, it is hoped that WM at the village level can also reduce waste with a target of 75% through the 3R approach. Meanwhile, the residual waste as the remnant of the process in the village will only be 25%. This requires strong commitment and leadership by the village head, supported by professional village-level operator institutions and the community. In addition, the local government needs to assist and support continuously so that the pattern built through this decentralization approach can run sustainably.

**Table 1.** The Division of Authority in Waste Management in Temanggung Regency

Management Level	Local Government	Village Government
Institution	Temanggung Regency Government (Office of Public Housing, Settlement Areas, and Environment)	- Village Government - Community and/or BUMDes (Village-Owned Enterprises)
Authority and Responsibility	- Regency-level planning - Regency-level regulation making - Construction of waste management facilities at the regional level - Technical implementation of waste management (regency-level)) Monitoring and evaluation	- Village-level planning - Village-level regulation making - Construction of waste management facilities at the village level - Technical implementation of waste management (village-level) Monitoring and evaluation
Technical Waste Management	- Transportation - Advanced Processing - Final Processing (landfilling)	- Dumping - Collection - Initial Processing
Legal Basis	- Law of The Republic of Indonesia Number 18 of 2018 on Waste Management - Temanggung Regency Regulation No. 10 of 2020 on Waste Management	- Temanggung Regent Regulation No. 43 of 2023 on the Implementation of Village Waste Management - Temanggung Regent Regulation No. 42 of 2023 on Community Participation in Waste Management - Temanggung Regent Regulation on Guidelines for the Management of Village Funds, Village Fund Allocation, Tax Revenue Sharing, and Retribution Revenue Sharing of Temanggung Regency - Village Regulation on Waste Management (in each village)



**Figure 2.** Institutional Framework Model of Waste Management in Temanggung Regency

### 3.2. Challenge Decentralization

Although changes have been seen and the impact felt by the community has received a positive response, in its implementation, this decentralization policy still has many challenges that need to be mitigated and also resolved in a multi-stakeholder manner. The following are the challenges that exist in the implementation process of the decentralization policy in Temanggung District.

#### a. Limited Village Financing

There is still limited financing for the development of WM facilities by the village government. This is because each village has different development priorities. Therefore, the development of WM facilities in practice is carried out in stages.

#### b. Community Readiness

Although community education is ongoing, problems that arise in the community still occur. In general, the problems that arise are the low level of community order in paying the WM retribution. In addition, the ability and willingness to pay vary among the villagers. Meanwhile, this retribution is used to ensure the operation of WM at the village level.

#### c. Diversity of local village problems

The different physical and non-physical conditions of each village mean that each village has its own problems and challenges. One of the most common is the unavailability of land that can be built as a WM facility in the village. This also makes the approach taken to create a WM system in each village cannot be uniform.

#### d. Lack of supervision and mentoring

In addition, to ensure the implementation of this decentralization policy, it requires strong supervision and coordination from the local government. However, the condition of the supervision and evaluation carried out is still not optimal. These villages also still need intense mentoring to be able to implement WM properly. This assistance is especially important for villages that do not yet have WM.

### 4. CONCLUSION AND RECOMMENDATION

The decentralization policy carried out in Temanggung Regency is an alternative solution that uses a regulatory and institutional approach to handling waste problems. Where from this policy, decentralization of WM authority has been carried out to village governments with regional and technical scope limits, both administratively, fiscally, and politically. This decentralization policy has produced positive results. This positive impact is not only a significant increase in WM performance in Temanggung Regency but also for the people who have felt the impact of solving the waste problem in their respective villages. However, from these positive results, of course, there are still several problems that need to be resolved so that this policy can run sustainably.

Several steps need to be taken so that this policy can be implemented optimally. The effort is to strengthen the planning of each village so that the use of village funds can be effective and efficient, and even if the development financing is carried out in stages, it can get the expected results. Strengthening community participation in WM also needs to be encouraged, especially regarding the commitment to contribute to operational costs. In addition, it is necessary to strengthen assistance and evaluation from the local government to the village government. With this, the regional government can be present to provide solutions to the diversity of problems that exist through its authority, as well as provide assistance starting from planning, development, and implementation of WM so that the system formed in villages can be in accordance with the expectations and objectives of this policy, namely accelerating the resolution of waste problems in Temanggung Regency.

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