CHAPTER I

INTRODUCTION

1.1 Research Background

Waste management issues have evolved into a multidimensional crisis that demands serious global attention. The latest report published by the United Nations Environment Programme (UNEP) in "*Global Waste Management Outlook 2024: Beyond an age of waste – Turning rubbish into a resource*" warns that, without drastic intervention, global waste generation is projected to increase significantly, thereby exacerbating greenhouse gas emissions and environmental pollution. The linear economic paradigm, in which resources are extracted, consumed, and discarded, is no longer considered relevant in addressing the limitations of the Earth's carrying capacity. Therefore, the transition toward a circular economy is no longer merely an option, but an urgent necessity for every country to prevent permanent ecological degradation and ensure resource sustainability for future generations (UNEP, 2024).

Indonesia faces substantial challenges in translating global sustainability commitments into concrete actions at the local level. According to "*Environmental Statistics of Indonesia 2024* (*Statistik Lingkungan Hidup Indonesia 2024*)" published by Statistics Indonesia / BPS RI (2024), the percentage of nationally managed waste reached only approximately 64.28% in 2023. Furthermore, based on data from the National Waste Management Information System (*Sistem Informasi Pengelolaan Sampah Nasional / SIPSN*) released by the Ministry of Environment / Environmental Control Agency (2025) in *Waste Management*

Statistics, waste generation in Indonesia reached 23,071,954.84 tons per year, with 56% remaining unintegrated across 227 regencies/cities and 65% unmanaged in 2025. These figures indicate that more than one-third of waste in Indonesia remains unmanaged, ultimately ending up in illegal dumping sites, polluting rivers, or being openly burned. Dependence on Final Waste Processing Sites (TPA) utilizing the open dumping system remains highly dominant, despite the method posing significant risks to public health and long-term environmental stability (Silalahi & Nafi'ah, 2025). The national waste crisis is distributed unevenly across various regions in Indonesia. Visualization data comparing the volume of waste generation among provinces in 2025 can be seen in the figure below.

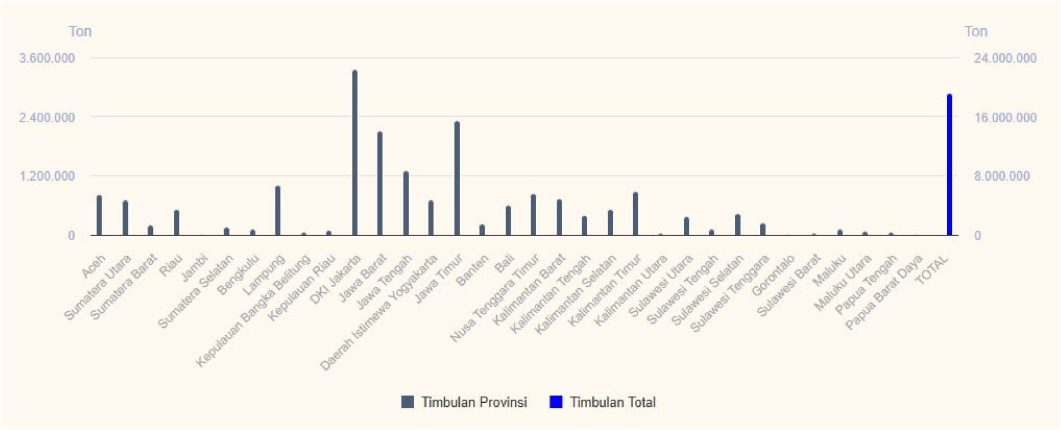

Figure 1.1 Graph of Provincial Waste Generation in Indonesia, 2025
Source: National Waste Management Information System (SIPSN), 2025

According to data published by Statistics Indonesia / BPS RI (2025) in *Population by Province in Indonesia, 2025*, East Java ranks as the second most populous province in Indonesia, with a population of approximately 42,089.3 thousand inhabitants. In addition, East Java also ranked second as the province with the highest waste generation in Indonesia in 2025, producing 2,319,424.18 tons of

waste annually according to the National Waste Management Information System (2025). This condition has become a major concern for the government, as factors such as population growth, urbanization, and industrial development contribute significantly to the increasing volume of annual waste generation.

The complexity of waste-related problems in Indonesia lies not only in the inadequacy of physical infrastructure, but also in the weaknesses of governance systems that tend to be rigid and bureaucratic (Hakim, 2025). Waste management policies are often reactive and heavily dependent on procedural routines, failing to anticipate the exponential growth of waste volume alongside urbanization (Maesarini, 2023; Salsabila et al., 2024). This phenomenon indicates the existence of a gap between policies formulated at the central government level and their implementation at the regional level. Local governments frequently struggle to respond to the changing dynamics of increasingly resource-intensive consumption patterns within society. As a result, waste reduction programs such as Reduce, Reuse, and Recycle (3R) often remain merely rhetorical concepts without measurable and systemic implementation.

The Government of Indonesia has established regulations concerning waste management through Law Number 18 of 2008 concerning Waste Management. In Article 4, the law explicitly emphasizes that the objectives of waste management are to improve public health, enhance environmental quality, and transform waste into useful resources. Nevertheless, its implementation in practice still requires substantial evaluation, particularly regarding infrastructure, intersectoral coordination, and public awareness (Silalahi & Nafi'ah, 2025). These three

elements play a crucial role in determining the effectiveness of waste management systems. Collaboration among various stakeholders, including the government sector, private sector, and civil society, is therefore necessary to achieve effective and sustainable waste management.

Within the context of bureaucratic reform in Indonesia, Zein (2023), in the book "*Transformasi Birokrasi pada Abad 4.0*", explains that bureaucratic reform has progressed gradually through several phases. The first phase, which took place from 2004 to 2009, focused on institutional reform aimed at achieving effective governance. This was followed by the second phase between 2010 and 2014, which sought to establish clean governance free from practices of corruption, collusion, and nepotism (*Korupsi, Kolusi, dan Nepotisme / KKN*) through the concept of Old Public Administration, namely rule-based bureaucracy. In addition, this phase also aimed to improve the quality and capacity of public services as well as governmental performance accountability. Based on the Grand Design of Bureaucratic Reform 2010–2025 contained in the Appendix to Presidential Regulation of the Republic of Indonesia Number 81 of 2010, it can be understood that the pace of bureaucratic reform during the first phase was slower compared to reforms in the economic, political, and legal sectors. This policy framework emphasized the development of state apparatuses aimed at enhancing professionalism and realizing effective governance (Zein, 2023). During the 2015–2019 period, the government adopted the concept of New Public Management, characterized by performance-based bureaucracy. Subsequently, the government established the Bureaucratic Reform Road Map 2020–2024 through Regulation of

the Minister of Administrative and Bureaucratic Reform Number 25 of 2020 concerning the Bureaucratic Reform Road Map 2020–2024, which prioritized addressing the root causes of governance problems through the governance approach known as Dynamic Governance.

The concept of Dynamic Governance introduced by Neo & Chen (2007) emphasizes the importance of the government's ability to adapt policies to rapid and uncertain external environmental changes. Within this framework, governments are not only required to operate efficiently, but also to possess adaptive capabilities through the processes of thinking ahead, thinking again, and thinking across. The implementation of this concept is particularly crucial in the waste management sector, where purely technical solutions will not be effective without an agile organizational culture that is responsive to local challenges.

The need for such dynamic governance becomes increasingly relevant in relation to the targets of the United Nations Sustainable Development Goals (SDGs), particularly Goal 11 concerning Sustainable Cities and Communities and Goal 12 concerning Responsible Consumption and Production. Tabibi (2024), in "*Waste Management in the Context of the United Nations Sustainable Development Goals*", emphasizes that poor waste management constitutes a major obstacle to sustainable development. Therefore, local governments in Indonesia need to develop institutional innovations capable of integrating public participation, appropriate technology, and flexible policy approaches. Without a fundamental transformation in governance systems, the national targets of achieving a 30% reduction in waste and 70% waste handling by 2025 will be difficult to attain. To

provide an empirical overview of the scale of waste management burdens faced by local governments in supporting the sustainability agenda, data on the accumulation of waste generation across regencies in East Java in 2024 are presented below.

Table 1.1 Waste Generation Data in East Java Province by Regency, 2024

Year	Province	Regency	Daily Waste Generation (tons)	Annual Waste Generation (tons)
2024	East Java	Bangkalan	417,67	152.450,43
2024	East Java	Blitar	417	152.206,64
2024	East Java	Ngawi	370,68	135.297,67
2024	East Java	Sumenep	364,55	133.059,91
2024	East Java	Bondowoso	315,2	115.049,02
2024	East Java	Trenggalek	302,44	110.391,91
2024	East Java	Madiun	295,69	107.927,58
2024	East Java	Pacitan	289,57	105.691,5
2024	East Java	Pamekasan	280,74	102.470,1
2024	East Java	Magetan	276,65	100.976,23

Source: National Waste Management Information System (SIPSN), 2024

Bangkalan Regency on Madura Island reflects the serious waste management problems faced by Indonesia at the national level. As a region undergoing rapid urbanization, Bangkalan has experienced a significant increase in waste volume. Based on data from the National Waste Management Information System (2024), in *Waste Generation Data of East Java Province*, the total waste generation in Bangkalan Regency reached 417.67 tons per day. However, the capacity of the existing waste processing infrastructure remains highly disproportionate to the scale of the burden (Hidayatullah, 2025). This substantial gap between the volume of waste generated and the region's capacity to manage it

has created a serious threat in the form of illegal waste accumulation and environmental degradation, which has become a growing concern among local residents.

Figure 1.2 Scattered Waste Along the Roadsides in Bangkalan Regency
Source: Astuti & Rastika (2025), in surabaya.kompas.com

The primary issue in Bangkalan Regency centers on the limited capacity of existing waste processing facilities. The Recycling House (*Rumah Daur Ulang / RDU*), established in 2022 and located in Pangeranan Subdistrict, was developed as an innovation to address local waste-related problems. However, despite receiving the East Java Provincial Regional Innovation and Technology Innovation Award (*Inotek Award*) in 2022, the Recycling House is only capable of processing approximately 10 to 15 tons of waste per day. Meanwhile, the Integrated Waste Processing Facility (*Tempat Pengolahan Sampah Terpadu / TPST*), which serves as the primary waste management facility, has a storage capacity of only around 50 to 60 tons per day (Wahyudi, 2025). This means that a substantial volume of daily waste residue remains unmanaged by formal facilities, forcing already overloaded

Final Waste Processing Sites (*Tempat Pemrosesan Akhir / TPA*) to bear excessive waste burdens, a situation that is technically and ecologically unsustainable in the long term.

Based on the results of a preliminary interview conducted with the Head of the Waste, Hazardous Waste, and Toxic Materials Management Division of the Environmental Agency of Bangkalan Regency on December 23, 2025:

> "In practice, we conducted what may be referred to as a benchmarking study. Coincidentally, the nearest example was in Surabaya, so we adopted and adapted the model from there. The recycling program itself was also promoted by the Ministry of Environment, which encouraged us to directly implement it here... Regarding waste management regulations, we refer to Regional Regulation of Bangkalan Regency Number 3 of 2024 concerning Waste Management." (Source: Preliminary interview conducted by the Author with Kuspriyanto, S.E., M.M., Head of the Waste, Hazardous Waste, and Toxic Materials Management Division of the Environmental Agency of Bangkalan Regency on December 23, 2025).

The Government of Bangkalan Regency, through its Environmental Agency, has attempted to introduce breakthroughs through the establishment of the Recycling House (*Rumah Daur Ulang / RDU*) based on a zero-waste concept. The facility utilizes a former slaughterhouse building and converts waste into economically valuable charcoal briquettes (Setiawan, 2023), with its legal foundation based on *Regional Regulation of Bangkalan Regency Number 3 of 2024 concerning Amendments to Regional Regulation of Bangkalan Regency Number 5 of 2012 concerning Waste Management*. This initiative reflects an effort of thinking across through the adoption of appropriate technology. However, the reality in practice demonstrates that this innovation has not yet been supported by agile processes in managerial and operational aspects. Astuti & Rastika (2025), in surabaya.kompas.com, reported that waste accumulation had occurred around the

RDU due to limited processing capacity, indicating that the existing management system was not yet fully prepared to respond to dynamic fluctuations in waste volume.

Figure 1.3 The Recycling House (RDU) of Bangkalan Regency
Source: Personal Documentation (2025)

Governance challenges have become increasingly complicated and complex due to cultural factors and human resource capabilities. From the perspective of Dynamic Governance, policy success is highly dependent on able people, namely competent individuals who operate the system with integrity and vision (Neo & Chen, 2007). In Bangkalan Regency, challenges related to intersectoral coordination and limited operational budgets frequently hinder the expansion of innovative programs such as the Recycling House (*Rumah Daur Ulang / RDU*). Without adaptive governance interventions, the RDU risks becoming merely a static pilot project rather than evolving into a systemic solution that can be

replicated across all districts to comprehensively address waste management problems in Bangkalan Regency.

The following is a statement from a preliminary interview conducted by the Researcher with the Manager of the Recycling House (*Rumah Daur Ulang / RDU*) of Bangkalan Regency on December 24, 2025:

> "From my observation of foreign countries, waste management there is much easier because public habits have already changed, and the government is also firm in enforcing regulations. For example, if Monday is designated for disposing of paper waste, people are not allowed to dispose of plastic waste. As a result, the processing system becomes more organized and efficient. In fact, if waste sorting could already be implemented properly, the work process would become much easier and the government would not face complicated management issues... Meanwhile, here, in my opinion, there is still a habit of disposing of waste carelessly along the roadside instead of in designated places. I often get into arguments because when waste piles up in front of the RDU to the point of blocking the road, I am the one blamed for it. I always say that Indonesia could truly become like Europe if we started changing from now on, but perhaps it would take another 25 years before we could experience such conditions. Why? Because the most difficult aspect is changing people's habits; technology itself is easy. However, changing behavior is difficult unless there are clear reward and punishment mechanisms. Even though the Regency Government has attempted to provide support, without support from the community elements, it will never work... The problems here are: first, waste sorting is not practiced by the community; second, there is still a habit of disposing of waste improperly; and another issue is that the budget allocated here is only 0.028% of the Regional Revenue and Expenditure Budget (APBD)." (Source: Preliminary interview conducted by the Author with Abdul Kadir as the Manager of the Recycling House of Bangkalan Regency on December 24, 2025).

Based on the preliminary findings above, the problems faced by Bangkalan Regency are not merely technical issues related to inadequate equipment, but rather governance-related issues concerning the government's response to the crisis. The fundamental question is how the Government of Bangkalan Regency can implement the principles of dynamic capabilities within Dynamic Governance to

optimize the performance of the Recycling House (*Rumah Daur Ulang / RDU*) despite limited resources. The absence of a dynamic governance strategy raises concerns that investments in RDU infrastructure may become ineffective and fail to meet public demands for a clean and healthy environment.

Wandira, Susanti, and Hans (2024), in their study published in *PAMARENDA: Public Administration and Government Journal*, highlighted the role of organizational culture and dynamic capabilities in Waste Bank programs. Their findings revealed that dynamic governance was capable of promoting program sustainability through multisectoral collaboration. However, their study primarily focused on the aspect of community participation within socially and communally oriented Waste Bank schemes, and did not extensively address the management of semi-industrial technical units such as the Recycling House, which possesses operational and managerial complexities distinct from those of conventional Waste Banks.

Furthermore, the study conducted by Salsabila, Ariany, and Koeswara (2024) in *Jurnal Bina Praja: Journal of Home Affairs Governance* examined the implementation of Dynamic Governance in promoting community-based waste management in Batam. The study successfully identified that the thinking ahead element plays a crucial role in metropolitan city planning. Nevertheless, the context of the study was an advanced industrial city with demographic and infrastructural characteristics that differ significantly from those of Bangkalan Regency, which represents a rural–urban transitional area on Madura Island. Consequently, the

findings from Batam may not be fully applicable without contextual adjustments to the unique socio-cultural challenges of the Madurese community.

On the other hand, a more specific study regarding waste management policy in Bangkalan Regency was conducted by Solihah & Rohman (2024), published in *Jurnal Media Akademik*. They analyzed the implementation of waste management policies through the Waste Bank program at the Environmental Agency of Bangkalan Regency. Their findings indicated that although the aspect of responsibility had been implemented adequately, significant constraints remained in terms of human resources and supervision. This study is highly relevant as an empirical foundation; however, its approach still relied on the classical public policy implementation perspective, namely the Van Meter and Van Horn model, and therefore did not explore the aspects of dynamic capabilities and bureaucratic adaptability in responding to rapid changes.

Another study conducted by Maesarini (2023) in the proceedings of the *IAPA Conference* discussed the dynamics of local government policies in waste management in Indonesia from a broader perspective. The study provided a macro-level overview of the need for local governments to be innovative and flexible in addressing waste-related issues. However, the study remained general in nature and did not specifically examine technical implementation units such as the Recycling House (*Rumah Daur Ulang / RDU*). Most existing literature tends to focus either on policy at the macro level or on participation at the micro level (households), leaving a research gap in governance analysis at the meso level, particularly regarding intermediary waste processing facilities such as the RDU, which play a

crucial role in reducing the burden on Final Waste Processing Sites (*Tempat Pemrosesan Akhir / TPA*).

Furthermore, Kamil, Roziqin, and Rahmawati (2023), in *Jurnal Studi Pemerintahan*, offered a more technical perspective through their study on the Dynamic Governance model in integrated waste management in Malang. Entitled "*Dynamic Governance Model Within Integrated Waste Management in Malang City: Agile People and Process in Action*", the research explored the dimensions of agile people and agile processes in practical implementation, including the development of sanitary landfill methods and international partnerships. Although the study provided in-depth insights into bureaucratic agility in a large urban context, its scope was broader, encompassing the city-wide integrated waste management system as a whole. This differs from the urgency of the present study in Bangkalan Regency, which specifically focuses on optimizing the Recycling House (*RDU*) as an intermediary facility with distinct technical challenges compared to landfill systems or urban waste management systems in general.

Based on the literature review above, a significant theoretical gap can be identified. The majority of studies on Dynamic Governance in Indonesia, such as those conducted by Wandira et al. (2024), Salsabila et al. (2024), and Kamil et al. (2023), tend to focus on community-based Waste Banks, metropolitan city policies (Smart City or integrated systems), or Final Waste Processing Sites (TPA). There remains limited research specifically applying the Dynamic Governance lens (thinking ahead, thinking again, and thinking across) to examine the governance of operational technical units within developing regions, such as the Recycling House

(Rumah Daur Ulang / RDU). The RDU possesses unique characteristics because it combines public service functions with technical production processes, such as charcoal briquette manufacturing, thereby requiring a more specific governance analysis compared to conventional Waste Banks or urban waste management systems in general.

Empirically, studies concerning waste management in Bangkalan Regency, such as the work of Solihah and Rohman (2024), are still dominated by linear and static policy evaluation approaches that primarily examine the conformity between regulations and implementation. There has been no in-depth study exploring how the dynamic capabilities of government apparatuses in Bangkalan interact in managing RDU innovation. In fact, the socio-cultural context of Madura and the specific geographical challenges of Bangkalan require distinct adaptive strategies. This gap demonstrates the need for research that not only describes *what* occurs, but also explains *why* and *how* governance dynamics evolve in responding to capacity-related constraints.

This study seeks to address the limitations within the existing literature by examining how the thinking across element, namely learning from external innovations, was adopted in the establishment of the Recycling House (*Rumah Daur Ulang / RDU*), and why the thinking again element, particularly performance reflection and evaluation, is often constrained, thereby contributing to overload problems. Accordingly, this study is expected to provide a new perspective on how waste processing technology should be managed through agile bureaucracy in order to function effectively.

The urgency of this study is grounded in the waste emergency conditions faced by Bangkalan Regency, which require governance solutions that go beyond conventional approaches. Without this study, understanding of the non-technical obstacles in optimizing the RDU will remain limited, and the potential failure of RDU innovation due to rigid governance systems will become increasingly significant. This condition may further exacerbate the environmental crisis in Bangkalan, intensify social conflicts caused by pollution, and hinder the achievement of regional waste reduction targets. By focusing on Bangkalan Regency, this study is expected to offer a distinct perspective on how a developing region with limited financial resources yet high waste burdens attempts to manage waste independently, effectively, and sustainably. Referring to the background of the problems described above, these conditions form the basis for the Author to conduct a study entitled **"Dynamic Capabilities in Waste Management: A Study of the Bangkalan Regency Recycling House."**

1.2 Research Question

Based on the issues outlined above, the research question of this study is formulated as follows: "How are dynamic capabilities implemented in waste management in Bangkalan Regency?"

1.3 Research Objectives

Based on the research question described above, this study focuses on and is limited to describing dynamic capabilities in waste management in Bangkalan Regency, particularly at the Recycling House (*Rumah Daur Ulang / RDU*) of Bangkalan Regency.

1.4 Significance of the Study

The findings of this study are expected to provide benefits to various parties involved, particularly students, academics, and the public who require information and knowledge regarding dynamic capabilities in waste management in Bangkalan Regency, especially in relation to the Recycling House (*Rumah Daur Ulang / RDU*) of Bangkalan Regency.

1.4.1 Theoretical Significance

This study is expected to contribute ideas and knowledge related to dynamic capabilities in waste management in Bangkalan Regency, particularly regarding the Recycling House (*Rumah Daur Ulang / RDU*) of Bangkalan Regency. In addition, this study is also expected to provide a deeper understanding of the relationship between the theoretical framework employed and its practical implementation. Furthermore, this study is expected to serve as a reference and supporting literature for future research.

1.4.2 Practical Significance

1. For the Author

   This study serves as a medium for self-development, the application of theoretical knowledge into practical contexts, and as one of the requirements for obtaining a bachelor's degree in Public Administration at the Faculty of Social, Cultural, and Political Sciences, University of Pembangunan Nasional "Veteran" Jawa Timur.

2. For the University of Pembangunan Nasional “Veteran” Jawa Timur

   This study is expected to serve as library material and a reference source for future studies and similar research conducted by students within the academic environment of the University of Pembangunan Nasional “Veteran” Jawa Timur.

3. For the Environmental Agency of Bangkalan Regency (DLH)

   This study is expected to provide constructive input and serve as evaluative material for identifying existing governance constraints, thereby enabling the local government to formulate strategies that are more adaptive and responsive to the dynamics of waste generation. Furthermore, this study is also expected to provide insights into the importance of continuous learning processes and policy reflection in addressing capacity limitations and fluctuations in waste volume.