

MASTER THESIS

The Evaluation of Community-Based Solid Waste Management (Waste Bank) Program in Makassar, South Sulawesi, Indonesia

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LIST OF ABBREVIATIONS

BSP	:	Central Waste Bank (<i>Bank Sampah Pusat</i>)
BPS	:	Indonesian Central Statistics Agency (<i>Badan Pusat Statistik Indonesia</i>)
CBSWM	:	Community-based solid waste management
CIT	:	Contextual Interaction Theory
DPLH	:	Environmental Management Agency of South Sulawesi Province (<i>Dinas Pengelolaan Lingkungan Hidup</i>)
DLH	:	Makassar Environment Agency (<i>Dinas Lingkungan Hidup</i>)
GAT	:	Governance Assessment Tool
ISWM	:	Integrated Sustainable Waste Management
KLHK	:	Ministry of Environment and Forestry (<i>Kementerian Lingkungan Hidup dan Kehutanan</i>)
MSW	:	Municipal Solid Waste
NGO	:	Non-Governmental Organization
YPN	:	Peduli Negeri Foundation (<i>Yayasan Peduli Negeri</i>)
WB	:	Waste Bank

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ABSTRACT

Waste bank program is acknowledged as one of initiatives conducted by Indonesia's government to anticipate waste problems. Makassar, particularly, is a compelling city that applies for this program, actively engaging its local government to craft a community-based solid waste management (CBSWM) through waste banks as a main program to tackle the waste problems in this city. However, the challenge in implementing this program lies in the fact that there is no guarantee for its effects assessed under sustainability criteria. Therefore, this study aims to navigate the impact of community-based management implementation through waste bank program in Makassar, South Sulawesi, Indonesia. This research specifically utilizes Governance Assessment Tool, Stakeholder Identification and Salience, and Community-Based Solid Waste Management (CBSWM) implementation evaluation for more comprehensive assessment results. In addition, this study implements a mixed research method with accentuation on quantitative analysis. Therefore, the data of this study included primary data conducted through surveys and in-depth semi-structured interviews conducted with waste bank administrators, motivators, federal, provincial, and local governments, academics, and non-government organizations. In addition, the researcher conducted field visits to study the practice of waste banks in Makassar to navigate the updated condition of the CBSWM implementation. Further, the secondary data were obtained from a literature review regarding CBSWM through waste banks, performance reports from local government, and central waste bank reports. The result of this study depicts that the salience stakeholder for CBSWM in Makassar is the local government. Importantly, other stakeholders added that the involved residents or community in waste bank could play an important role in succeeding this program. However, the government has not yet cooperated with recycling companies to facilitate the flow of materials. Other result indicates that the contextual governance assessment results are predominantly restrictive, and the effectiveness of policy implementation in Makassar through the waste bank depicts an average effective result despite the declining achievement of the waste reduction target annually. This study further propose several recommendations to improve CBSWM in Indonesia in order to support and collaborate with governance from every level of government including the implementation of law enforcement as well as prominent and fair strategy, and the continuation of this study for further research in terms of policy and waste management areas.

Keywords: Community-Based Solid Waste Management, Governance Assessment Tools, Waste Banks, Stakeholder Identification and Salience.

ACKNOWLEDGEMENTS

“Waste isn’t waste until we waste it.” — Will. I. Am

This expression is very suitable to describe the message conveyed through this thesis. This thesis is a sharing achievement that I would not have been able to do without the support of the best people. I give thanks to the Almighty God, Jesus Christ. Special acknowledgement to my parents, supervisors, co-supervisors, external supervisors, friends, MEEM-2021 classmates, university staff, reviewers, interviewees, policy experts, the person I always remember and cheer me up, and the house landlord I live within Leeuwarden.

My gratitude also goes to the Indonesian Ministry of National Development Planning or the Indonesian National Development Planning Agency (Bappenas) for financial support for this Master’s degree program.

Michael Denny Latanna

The Netherlands, August 19th

CHAPTER 1 INTRODUCTION

1.1 Background

Damanhuri & Padmi (2019) pointed out that the majority of the local governments in Indonesia manage the municipal waste by disposing it in landfills leading to a future disaster once applied in similar way. The amount of waste produced by Indonesian on a daily basis was reported to accumulate approximately 0.68 kg, or around 65.2 million tons annually (Kaza et al., 2018). Indonesian households generate approximately 50-60% (wet-weight) of total Municipal Solid Waste (MSW) per day (Damanhuri et al., 2014). The representations of Indonesia's waste management problems are due to lack of community involvement in policy-making, ability inadequacy for waste management, limited strategies, unsustainability of long-term waste management strategies, and weak coordination and cooperation between the government and the community (Kubota et al., 2020).

Indonesian national government particularly has stipulated a Waste Management Law (*UU 18/2008*, and Environmental Minister Regulation 14/2021) to overcome waste problems in Indonesia, enacting the comprehensive integration of waste management within a circular economy approach. As such, Makassar's municipality applies a community-based recycling concept (waste bank) by engaging households as a means to promote circular economy practices by collecting plastics, cardboards, glasses, irons or metals and selling them to recycling companies. The members, in return, will get revenues (Fatmawati et al., 2019) from selling those materials. This program was initiated in 2015 as one of the elected major's programs (Kubota et al., 2020). Despite numerous changes in leadership, this program has currently remained active in operation. However, different preferences of political parties altered people's desire to join this program (Kubota et al., 2020).

Apart from political rhetoric and contestation, the impression of community-based recycling has been appealing in Makassar, as it allows the residents to receive money. In 2018, waste bank in Makassar was capable of generating revenue of around €130,000 (Kubota et al., 2020). In addition, this program serves as an example of government intervention in municipal waste segregation schemes (Kubota et al., 2020).

Former researchers have explained how the community expects the active involvement of government in community-based waste management programs (Wulandari et al., 2017). Further, the community demands the government intervention in community-based waste management (Kubota et al., 2020). Similarly, prior studies have reported both achievements and obstacles by providing an overview regarding the involvement importance

of stakeholders, especially the government in improving community-based solid waste management (Raharjo et al., 2017), community participation, and public engagement (Wijayanti & Suryani, 2015). However, the study concerning relationship between good governance in community-based solid waste management (CBSWM¹) and achievement in managing waste was limited, thereby requiring further research.

In general, this research applies the three steps to evaluate the implementation of community-based solid waste management (CBSWM) which include:

1. Identification of the stakeholders, by defining their important role in CBSWM approach. This determination was initiated based on the theory proposed by Mitchel (1997). In brief, this theory is employed to identify significant stakeholders and the extent of their roles in implementing CBSWM, especially in Waste Bank in Makassar.
2. Assessment of the governance in society by using the Governance Assessment Tool (GAT to assess whether the dimensions of governance could support or constrain the program of waste bank management. The selection of GAT instrument is in accordance with Bressers (2016) presented in Chapter 2 of this thesis.
3. Assessment of the implementation result of CBSWM by employing an evaluation instrument adapted from Ministry of Public Works and Public Housing (2017).

1.2 Problem Statement

The current challenge for CBSWM program lies in the fact that there has been no guarantee for its effects assessed under sustainability criteria. In addition, CBSWM is required to consider non-technical aspects including socio-cultural, economic, policy, and institutional issues which affect its management (Damanhuri & Padmi, 2019). Furthermore, attempts are deemed pivotal to improve CBSWM management, such as: government support in circular activities, assessment for the effectiveness of policy implementation as well as evaluation of this program.

Previous studies, however, do not provide an overview regarding the influence of CBSWM program management initiated by the local government concerning the effectiveness of waste management in Makassar (Kubota et al., 2020). Furthermore, Makassar is selected as one of the compelling examples exhibiting the recycling innovation as the government and community program. Thus, research is required to assess the mechanism of government, waste bank communities, non-government organizations, non-formal

¹ Community Based Solid Waste Management (CBWSM) are activities carried out by members of communities to clean up their neighborhoods and/or to earn an income from solid waste (Anschutz, 1996)

communities, and recycling companies' relationships in building more effective and sustainable forms of waste management (Kubota et al., 2020).

Besides, political and system changes have been inevitable since the initiation of such program. Therefore, through this research, the author aims to navigate the contribution of this program in dealing with urban waste related problems in Makassar (Kubota et al., 2020).

1.3 Research Objective

In particular, this study aims to analyze the implementation effect of community-based management through waste bank program in Makassar. In addition, this study aims to identify the key stakeholders and the governance conditions towards this program to ensure its future sustainability. Furthermore, this study aims to provide a reference for policymakers in formulating a standard procedure for CBSWM implementation in Makassar. Therefore, the potential benefits to all stakeholders involved in waste management become the integral part of the design criteria. Furthermore, this research is expected to contribute to environmental management literacy applying community-based concepts.

1.4 Research Questions

The main research question of this study, in accordance with the background, problem statement, and study objective, is *“To what extent does the implementation of community-based waste management (waste bank) promotes the success of waste reduction in Makassar, and what factors explain this degree of success?”*

Sub research questions:

- a. What are the key stakeholders' roles during the implementation of community-based solid waste management in order to reduce waste in Makassar?
- b. What are the factors that support or restrict stakeholder participation in community-based solid waste management aimed at waste reduction?
- c. What is the governance contextual condition that support or hinder the successful implementation of community-based waste management in relation to waste reduction in Makassar?
- d. How effective is the implementation of community-based solid waste management to reduce waste in Makassar?

1.5 Organization of the Research

This thesis consists of six chapters, comprising: 1. Introduction; 2. Literature Review; 3. Material and Methodology; 4. Findings; 5. Discussion; 6. Conclusions and

Recommendations. Chapters 1, 2, and 3 provide the essential information to introduce this study. As an introduction, Chapter 1 explains the rationale for this thesis and general information regarding this research. Chapter 2 describes theoretical framework employed in this thesis and other details regarding the scope of the research. Chapter 3 presents research methods, research design, and research framework. Subsequently, Chapter 4 presents research result; meanwhile Chapter 5 elaborates the answers of each sub-question. Lastly, Chapter 6 provides conclusion and recommendations.

CHAPTER 2 LITERATURE REVIEW

Chapter 2 elaborates the applied theoretical framework in this study. Furthermore, this chapter will introduce Integrated Sustainable Waste Management (ISWM) Framework based on Governance Assessment Tools (GAT) that will be applied as framework to assess the governance context in implementing CBSWM.

This study combines the two main frameworks to analyze the application of Community-Based Solid Waste Management (CBSWM) in Makassar. Firstly, this study applies Integrated Sustainable Waste Management (ISWM), including six main aspects to support ISWM, which are: technical, environmental, financial, social, institutional, and policy aspects. Chiefly, ISWM emphasizes the most important discourse in waste management problem including a change in behavior and attitude (Van de Klundert & Anschutz, 2001). In addition, solutions to reduce waste are required through social, institutional, legal and political conditions. For this reason, tools are provided to assess the extent of the interaction context among stakeholders, be it policy makers or target groups.

Secondly, this study applies Governance Assessment Tools (GAT) to assess the interaction among the concerned actors derived from Contextual Interaction Theory (CIT). The premise of CIT includes the process of making and implementing policies determined by the motivation, information, and power possessed by each actor involved. CIT refers to a theory that bridge the top down and bottom up in the interaction process among the actors (Owens & Bressers, 2013)

GAT embedded in CIT theory is applied to assess the governance context for the implementation of CBSWM in Makassar and to navigate the supportive context in implementing this policy (H. Bressers & Bressers, 2016). This study further elaborates GAT to observe whether government could support or restrict in institutional aspects and policy implementation. Furthermore, this chapter provides more details regarding the integration of the framework.

2.1. Integrated Sustainable Waste Management

According to previous study (Van de Klundert & Anschutz, 2001), Integrated Solid Waste Management (ISWM) was potential in addressing problems related to waste in Global South Countries, such as in Indonesia. ISWM consists of three main dimensions, including: (1) stakeholders, (2) sustainability aspects, and (3) waste system elements, depicted as follows.

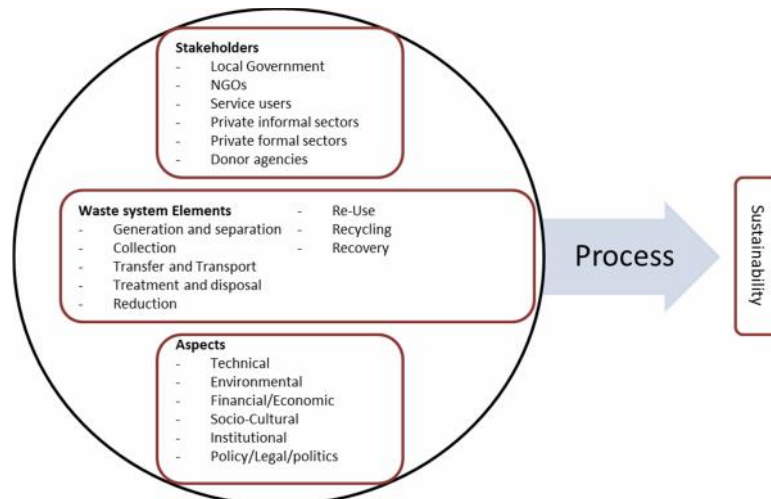


Figure 1 Integrated Solid Waste Management Framework (Van de Klundert & Anschutz, 2001)

a. First Dimension: Stakeholder

This dimension includes people or entity related to waste management. The definition of stakeholders could be differ depending on the involved countries and their responsibilities. As an example in Indonesia, this dimension has the lowest hierarchy of community organizational system which is not common in other countries (Towoloe et al., 2016). There are small governments in Indonesian, consisting of sub-districts (*kecamatan*), urban villages (*kelurahan*), neighborhood associations or similar to hamlet (*Rukun Warga/RW*), and neighborhood units (*Rukun Tetangga/RT*) (Pasang et al., 2007). This study employs Mitchell's framework to determine the degree of stakeholders' importance in CBSWM.

b. Second Dimension: Aspects

The six main aspects of the ISWM are explained as follows:

- 1.) The environmental aspect refers to the influence of waste management site, such as in water/ocean or in the land.
- 2.) Technical and performance aspects refer to the management and maintenance of, such as the use of equipment and the clean level of the city when applying waste management.
- 3.) Financial and economic aspects refer to the budget and costs to manage waste on a local, regional, and national level. The discussed issues cover: the cost recovery, the generated income, the impact of the services on economic activity, and the relationships with waste infrastructure.

- 4.) Socio-cultural aspects refer to culture affecting to the produced amount of waste, and the relationship between each group (who sorts out waste and does not), also including other determinants such as age, gender, ethnicity, and social conditions of the communities.
- 5.) The institutional aspect refers to the emerging political and social framework as a result of adopting waste management, as well as the organizational structure, procedures, methods used, and the concerned actors, either from commercial sector or other parties.
- 6.) The political/legal aspect focuses on the waste management standards that must be fulfilled, including: goals, priorities, roles, and decisions for each resident.

c. Waste system elements

For the maximum result, this system should be integrated from raw materials of a product until it becomes waste. ISWM comprises several integrated systems as illustrated in **Fig.1**. However, this thesis focuses on Reduce, Reuse and Recycle (3R) through Community Based Solid Waste Management (CBSWM), by prioritizing aspects from ISWM as dimension for further evaluation.

2.2. Community-Based Solid Waste Management (CBSWM)

Waste management serves as one of the strategies to protect the environment, selected according to the conditions of a company or a country. However prior to the implementation, several things are required to be considered, including: cost or amount of money, providing an alternative of waste management as a form of waste management. According to Cheremisinoff (2003) a hierarchy of waste management strategies consists of:

1. Prevention, referring to the strategy in preventing waste generation;
2. Recycling/Resource Recovery/Waste-to-Energy (R3WE), indicating the conversion of certain type from waste into energy by employing specific technologies;
3. Treatment, referring to the strategy in reducing waste volume and toxicity caused by waste before it goes to disposal.
4. Disposal, referring to the least favorable alternative to choose, in which the government practically sends the waste to a landfill.

Similar strategies to cope with waste generation are represented in **Fig. 1**, which illustrates the hierarchy of strategies while comparing their risks and costs among them.

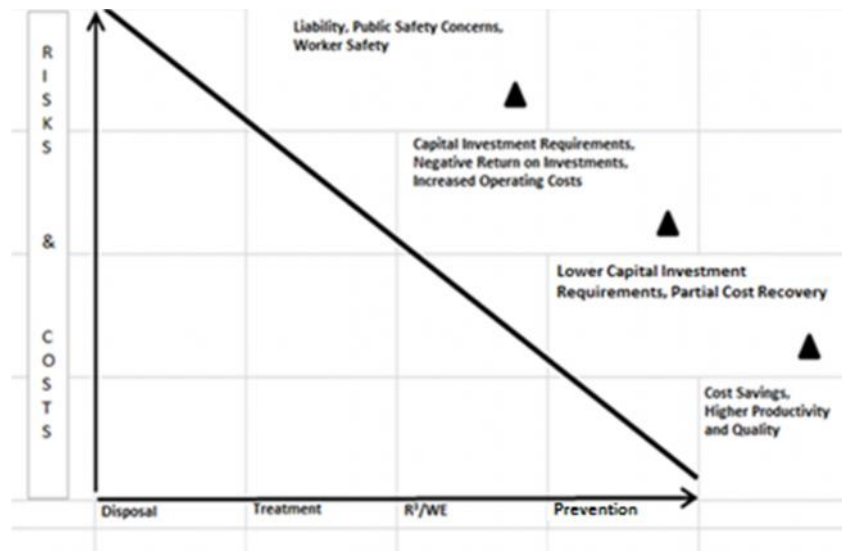


Figure 2 Hierarchy of Waste Management Strategy (Cheremisinoff, 2003)

Fig. 2 presents the preferred strategy which emphasizes the prevention since it can decrease waste, reduce ongoing costs, and lower the environment's risk (Cheremisinoff, 2003). Further, behavior change from residents is deemed necessary to implement the prevention in cities. Therefore, community-based solid waste management (CBSWM) plays an important role in managing solid waste in households, leading to change behavior of people (Wulandari et al., 2017).

In accordance with Tanaka (2014, p. 3), creating a sustainable society can save resources and protect the environment. Furthermore, he added the three crucial future societies to create a sustainable society, including: a low-carbon society, a society in harmony with nature, and a 3R society. Lastly, society refers to a form of community which will be discussed further in this study, essential to manage waste and reduce its environmental impact substantially. Thus far, such society in Makassar is recognized as waste bank.

2.3. Waste bank: an Overview

A recycle-based society, such as a waste bank community, serves as an informal institution initiated by residents transforming waste into cash (Wulandari et al., 2017). Such community is formed to raise the awareness of society for applying the 3Rs concept. The waste bank system is considerably similar to a financial bank. Instead of saving money, the customers of waste bank deposit their recyclable waste and gain financial benefits from this activity (Raharjo et al., 2017).

According to Wijayanti & Suryani (2015), waste bank is categorized as a form of household waste management, as stated in Government Regulation Number *PP 81/2012*, also acknowledged as a form of waste management innovation in urban areas. Consequently,

waste bank becomes one of the mainstay programs in municipality waste management. The success indicators of waste bank as part of waste management include:

- a. The decreasing amount of waste and
- b. The increasing number of settlements implementing the concept of waste bank.

Furthermore, according to Ostrom (1990), community initiatives or self-regulating entity, such as waste bank, become an alternative approach to govern the common-pool resources (CPR). In addition, if waste bank is linked to Ostrom's framework of Social-Ecological System (SES) (Ostrom, 2007), the condition can be described as follows.

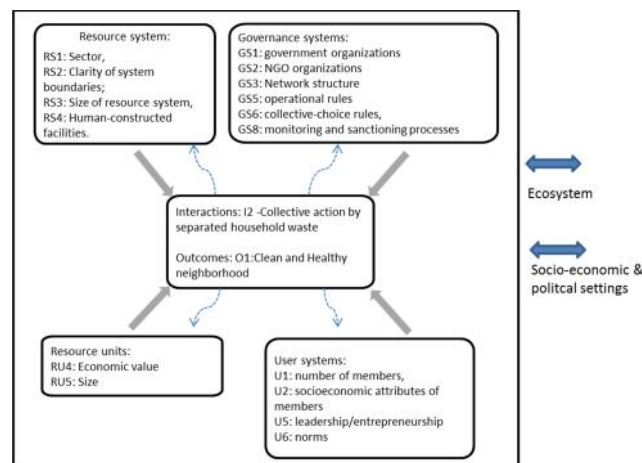


Figure 3 Waste Bank Framework Based on SES (Nugraheni et al., 2013)

This framework is beneficial in assessing the collective action applied in waste bank program. Originally, waste sorting was an activity initiated by individuals, and later became a collective action in several regions in Indonesia. Several factors encourage individuals to participate the collective action, including: age, occupation, participation in social activities, knowledge of sustainable development, distance, and 3R dissemination program (Meidiana et al., 2021). To integrate waste management and the community, it is necessary to focus on people willing to carry out these activities, their current waste management, its frequency, and their behavior and attitude, especially in sorting waste (Van de Klundert & Anschutz, 2001). Furthermore, there are five influential aspects determining the sustainability of this program, including: legal aspects, institutional, technological, financial, and community participation (Van de Klundert & Anschutz, 2001; Wardhana et al., 2021).

To assist the implementation and development of waste banks in Indonesia, the government regulates 3R activities and waste bank program (Wijayanti & Suryani, 2015). This regulation supports the involvement of stakeholder in waste reduction through community-based activities. However, the weakness of this regulation lies in the fact that

there are no guidelines for communities. In addition, the regulation has not explained the information regarding the possibility to obtain profits through existing mechanisms (Kubota et al., 2020).

Furthermore, according to Kubota et al. (2020), this condition becomes one of the drivers for forming a waste bank on the local government's initiative in Makassar City. In 2015, the new regional heads enacted local regulations supporting community-based solid waste management activities. The impact of this local government intervention is the increasing number of waste banks in Makassar. Therefore, waste bank in Makassar becomes one of the compelling concepts to introduce circular economy application in Indonesia.

2.4. Indonesia Government's Way to Apply Circular Economy

To further understand the circular economy concept in Makassar, it is deemed important to identify the difference between linear system and circular concept. The conventional concept of an economic system is a linear system, described as follows:

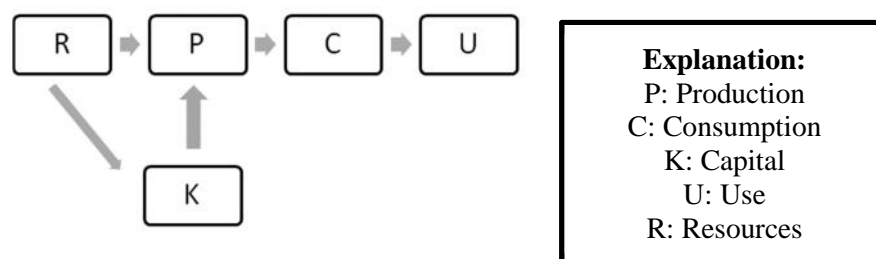


Figure 4 Concept of linear economy (Andersen, 2006)

Fig.4 depicts natural resources (R), and Capital (K) as the inputs to produce goods. Furthermore, after production (P), the produced goods can be consumed (C), later needed for use (U). This system becomes circular when the relationship between resource use and waste is considered. According to Andersen (2006), this circularity is closely related to the first law of thermodynamics, stating that “the total energy and matter in a closed universe is always constant”. As a result, the produced waste must be equal to the number of resources used in one period (Andersen, 2006).

On the other hand, the circular economy is associated to the second law of thermodynamics, stating that “If matter and energy are organized, the entropy will be lower” (Andersen, 2006). This condition emerges if there is recycling process, hence some waste can be converted back to resources, as depicted in **Fig.5**



The circular economy integration in waste management emphasizes the use of materials and the preservation of the materials' value. In a circular economy system, the presence of resource use, waste, emissions, or wasted energy is minimal. Hence, it requires the alternatives to extend service life, innovate designs, improve maintenance, reuse, remanufacture, recycle, and even increase waste into products with different use values (upcycling) (Shrestha, 2018). The conceptual scheme presented by Ellen MacArthur Foundation is as follows



Fig.6 illustrates the circulation technology of nutrient-based products and ingredients in accordance with the characteristics of each material. In principle, the presence of waste must be designed following the logic of the economic system, thereby causing each waste product to be classified as biodegradable or non-biodegradable. Waste that has biological properties (biodegradable) is considerably safe to be returned to the biosphere, while non-biodegradable wastes such as metal, plastic, or glass require further process (The Ellen MacArthur Foundation, 2013).

The implementation of a circular economy in Indonesia is performed by changing the paradigm from the “end of pipe” solution to “circular economy” approaches, stipulated under the Law Number 18 of 2008, Legislation Number 81 of 2012, and Presidential Regulation Number 97 of 2017, regulating several steps of changes as illustrated in the following figure.

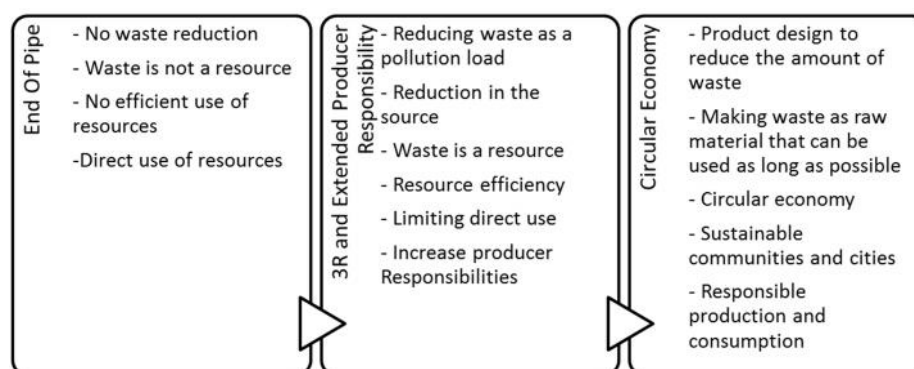


Figure 7 Transformation of the Waste Management Paradigm in Indonesia

However, participation from the stakeholders in the aforementioned figure becomes the missing link in creating good waste management in community-based solid waste management. Hence, this thesis aims to provide more explanation regarding stakeholders' involvement and their engagement through CBSWM in Makassar in order to understand more about stakeholder contribution

2.5. Stakeholders in CBSWM

Waste management is not only the responsibility of local governments and the communities, but also the private sector, NGOs, and even academic circle, playing role in waste management (Chen, 2018). Thus, the significantly required participation is the willingness of the community to sort and minimize their waste production. Without community participation, all planned waste management activities will be pointless (Damanhuri & Padmi, 2019).

2.5.1. Community

The main problem in community empowerment lies in the mechanism to combine democratic decision-making practices with effective and efficient solutions to overcome waste management problems (Coenen et al., 1998). Along with the government, each individual involvement is critical in decisions making regarding consumption and waste management, as stipulated in the mandate of the Government Regulation (*PP 81/2012*), asserting that communities running the CBSWM serves as the most important stakeholder (Damanhuri & Padmi, 2019).

The distribution of resources, people gathering and wider waste management are better conducted by involving communities from different sectors such as non-governmental organizations, private companies, community-based organizations, informal sectors, and local governments (Kalra, 2019). In CBSWM concepts, most of the communities are from residents. However, CBSWM concept can be distinct in different countries (Kalra, 2019). Indonesia, in particular, practices more levels under the municipality, including: kecamatan (sub-district/council), kelurahan (urban village), rukun warga (RW), and rukun tetangga (RT). RW and RT which are managed by the community representative on a voluntary basis (Pasang et al., 2007). This lowest hierarchy community system can help to implement solid waste arrangements in their communities (Towoloe et al., 2016).

However, it is not only lowest community who should take the responsibilities, but also all stakeholders in different levels. Furthermore, effort is needed to identify the key stakeholders and their involvement affecting CBSWM. Hence, another theory regarding stakeholders is required to clarify such notion..

2.5.2. Typology of Stakeholders

This study intends to identify stakeholders in CBSWM, by further analyzing the interaction between each actor through GAT; however, this study refers to prior study (Mitchell et al., 1997) to navigate the concerned actors' role. This classification is compulsory to describe the relationship between actors who play a salience role and those who have low contributions in CBSWM (Suherman et al., 2019).

According Mitchell et al., (1997), stakeholders are defined based on three aspects (power, legitimacy and urgency). Further, this perspective is essential to determine which groups need more attention in managing the implementation of regulations related to waste bank. Firstly, power in the context of sociological matters is more challenging to understand. According to Etzioni (1964) in (Mitchell et al., 1997), power can be divided into three

classifications of coercive, utilitarian, and social-normative. "Coercion" refers to the exercise of control by exerting pressure. At the same time, the use of material-based rewards can be categorized as "utilitarian," while power as a symbol can be categorized as "social-normative".

Secondly, legitimacy can be categorized into individuals, organizations, and society (Mitchell et al., 1997)., defining legitimacy as the shared matter among parties, built socially, according to norms and beliefs from social conditions (Mitchell et al., 1997). Thirdly, urgency refers to the required level of attention in the relationship among stakeholders. Further, urgency is divided into "time sensitivity" and "critical". "Time sensitivity" indicates the possibility of delays in the handling of a program and "critical importance" indicates the importance of the relationship among stakeholders. In contrast, salience refers to a condition placing the stakeholders at the forefront with all the attributes. Based on these criteria, stakeholder typology is described as follows.

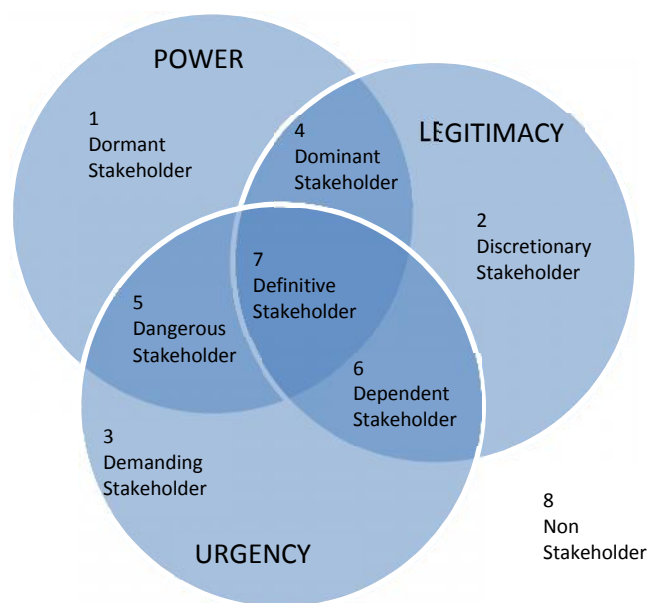


Figure 8. Stakeholder Typology (Mitchell et al., 1997).

From the picture above, it can be explained that there are seven types of stakeholders, including those who have one attribute (dormant, discretionary, demanding), two attributes (dominant, dangerous, dependent), and three attributes (definitive stakeholders). In addition, if a stakeholder does not own the three attributes, then it is labelled as a non-stakeholder. Meanwhile, stakeholders (actors) play an important aspect in the implementation setting, covering more aspects in the next theory.

2.6 Governance Assessment Tool

The strategy for reducing household waste in Indonesia as stated in the National Policy and Strategy was initiated from the preparation of norms, standards, and policies; strengthening of coordination, commitment, between institutions; to strengthening community involvement (Government of Indonesia, 2017). The strategy for CBSWM implementation in Indonesia is conducted through waste bank program, despite not an easy practice. Numerous assumptions have emerged from various actors in defining community-based waste management, thereby requiring an integrated focus from upstream to downstream in addressing this diversity.

The governance context model influences aspects such as motivation, cognition, and resources of the stakeholders involved in CBSWM implementation program. The characteristics of the involved actors are influenced by previous conditions of other certain cases as illustrated in the following figure.

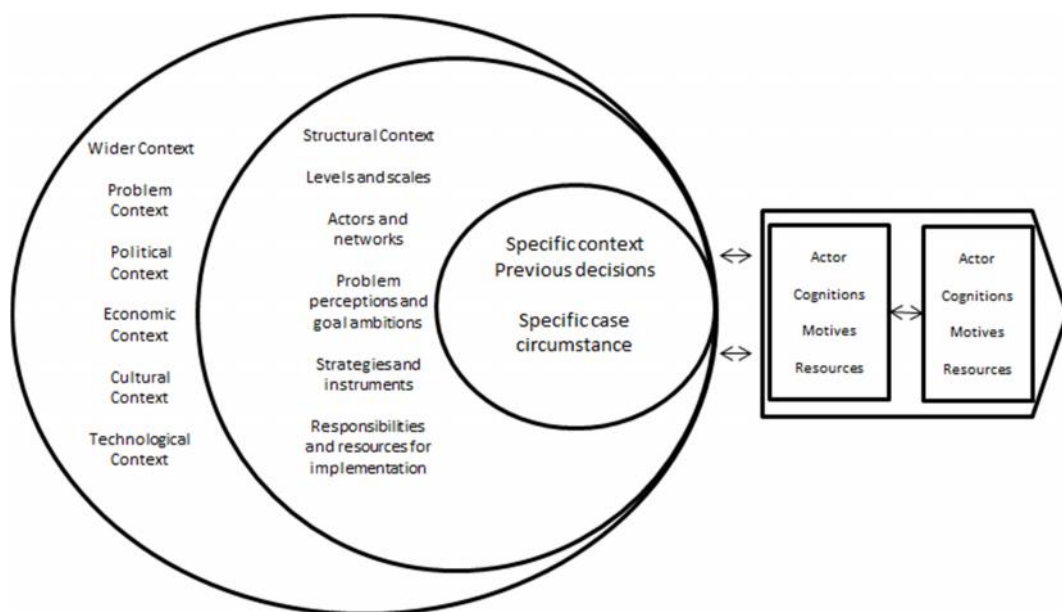


Figure 9. Layer of contextual factors for actor characteristics (H. Bressers, 2009)

Assessment instrument such as Governance Assessment Tool (GAT) is defined as a theory rooted in Contextual Interaction Theory (CIT), established on the characteristics involving relationship among actors (J. T. A. Bressers et al., 2016). In order to clarify the dimensions of governance as depicted in **Fig.9**, descriptive questions are required to analyze various documents and to form a basis for interviews with the key stakeholders (J. T. A. Bressers et al., 2016). Further, the formulated questions serve as a guide to interview the key stakeholders, presented in **Table 1**.

Table 1 Descriptive Question Based on Five Governance Dimension
(H. Bressers et al., 2013)

Governance Dimension	Main descriptive questions
Levels and scales	“Which levels of administration are involved, and how are they involved? Which scales are taken into account, and how? To what extent do they rely on one another or are they capable of acting productively? Is there much that has changed over time, or do they appear to be changing over the next few years?”
Actors and networks	“Who are the involved actors in the process? To what extent do they have network relationship also outside the case under study? What are they responsibilities? Which actors are involved as affected by beneficiaries of the measures taken? What are the conflicts among them? How they communicate? Are there any actors who become mediator? Is there much that has changed over time, or do they appear to be changing over the next few years?”
Problem perspectives and goal ambitions	“Which point of view that is debated by the public and stakeholders? What are the current policies designed to address in terms of potential disruption? What levels of interruption to regular resource usage are sufficient for various stakeholders? What are the goals which are outlined in policy articles and policy declaration? Is there much that has changed over time, or do they appear to be changing over the next few years?”
Strategies and instruments	“Which policies and measurements are being implemented to address the issue? How do they represent a specific impact approach (regulatory, incentive, demonstrative, vocational, etc.)? Is there much that has changed over time, or do they appear to be changing in the upcoming time?”
Responsibilities and resources	“Which organizations are responsible for the duties according to the policies? What legal authorities and other resources are given to them, or do they already have for this purpose? What levels of transparency are expected and monitored in applying their responsibility? Is sufficient information available regarding the resource system? Is there much that has changed over time, or do they appear to be changing in the upcoming time?”

GAT presents both descriptive and four semi-normative qualities (extent, coherence, flexibility, and intensity) (J. T. A. Bressers et al., 2016). to identify whether those five elements will become stimulation or restriction (support or strain) for the implementation of community-based solid waste management. The extent indicates the complete nature of regime under the criterion regarding all relevant aspects (J. T. A. Bressers et al., 2016). Coherence describes various elements in the regime leading to mutual reinforcement rather than contradiction (J. T. A. Bressers et al., 2016). Flexibility concentrates on whether the multiple roads achieving the goals are present, depending on opportunities and threats. Flexibility indicates the degree of adaptability to several regimes and capability of facilitating the actors for more optimal work (J. T. A. Bressers et al., 2016). Furthermore, intensity means to which degree does the governance regime encourages changes in the status quo or in current developments in shifting conservative motivations towards better adaptive conditions (J. T. A. Bressers et al., 2016). The matrix of these five dimensions and four qualities is presented in **Table 2**.

Table 2 Governance Dimension and Governance Quality Matrix

Governance dimension	Quality of the governance system			
	Extent	Coherence	Flexibility	Intensity
Levels and scales	“Are all levels of government involved and dealing with the issue? Are there any important gaps or missing level?”	“Does every level work together and trust each other? In what level, interdependence is acknowledged?”	“Given the issues at stake, Is it possible to upscaling or downscaling”	“Is there a strong effect on behavioral improvement or management reform at a certain level?”
Actors and networks	“Are all relevant stakeholders involved? Who are excluded?”	“What are the strengths of stakeholder interactions? What are the mechanisms of these stakeholders in stable structure? Do the stakeholders have experience to work cooperatively? Do they have mutual faith and dignity each other?”	“Is it possible that a new actor is included or leads when there are pragmatic reasons for this? Do the actors share in “social capital” allowing them to support each other’s tasks?”	“Is there a strong impact from an actor or actor coalition towards behavioral change or management reform?”
Problem perspectives and goal ambitions	“To what extent different points of view is considered as an issue?”	“To what extent do the various goals support each other? Are there any competition or conflict?”	“Are there any opportunities to re-assess the goals?”	“What is the status quo or Business, and how is it different between goal and ambitions?”
Strategies and instruments	“Are there any instruments implemented in policy strategy?”	“How much the incentive scheme is built on synergy? Are there any emerging overlaps or conflicts?”	“Are there any possibilities for combining or using various kinds of instruments? Is there an option?”	“What are the implicit behavior deviations from the present implementation, and how strict are the instruments on requiring and enforcing it “
Responsibilities and resources	“Are all roles and obligations clearly defined and supported by resources?”	“To what extent do the assigned responsibilities create competence struggles or cooperation within or across institution? Do the key stakeholders regard them as legitimate?”	“To what extent it is possible to pool the assigned responsibilities and resources as long as accountability are not compromised?”	“Is the amount of allocated resources sufficient to implement the required measure for intended change?”

From the aforementioned presentation, it is concluded that GAT applies the four main criteria to evaluate and describe regime conditions whether it supports or limits CBSWM implementation. In addition, **Fig.9** depicts the existence of overlapping pattern between GAT and ISWM. However, GAT provides a more in-depth context regarding the relationship between actors involved institutionally and politically, due to its four criteria of semi-normative qualities (extent, coherence, flexibility, and intensity) explaining the dimensions of governance. The implementation of GAT and ISWM in this study will be explained further in the next chapter.

CHAPTER 3 RESEARCH DESIGN

3.1 Research Framework

This study adopted the sequential stages of writing by Verschuren & Doorewaard (2010) comprising the following seven stages of:

Step 1: Formulating the research objective

This study aims to measure the impact of community-based waste management in Makassar, conducted on the implementation mechanism of waste bank, especially at the municipal level, and traced further to a smaller organization (waste bank). Currently, there are almost 200 waste banks scattered throughout Makassar. This research identifies the involved actors, their management performance, and the successful factors actively running waste banks. The results of this study are expected to provide an input for long-term plans in Makassar City and to become a pilot project for other cities in managing their waste with a community-based approach. In addition, this study provides additional input in terms of literature on waste management with a community-based approach, emphasizing the governance context.

Step 2: Determining the research object

This research aims to assess the effect of implementing community-based solid waste management through identifying its stakeholders and assessing the governance situations

Step 3: Establishing the research nature

This study assesses if the studied community-based waste management works as expected and influences the implementation of waste sorting in Makassar. Upon completing the assessment for the effectiveness of governance and obtaining the results, the next step is progressed by formulating recommendations for a more sustainable means of management.

Step 4: Determining the sources of the research perspective

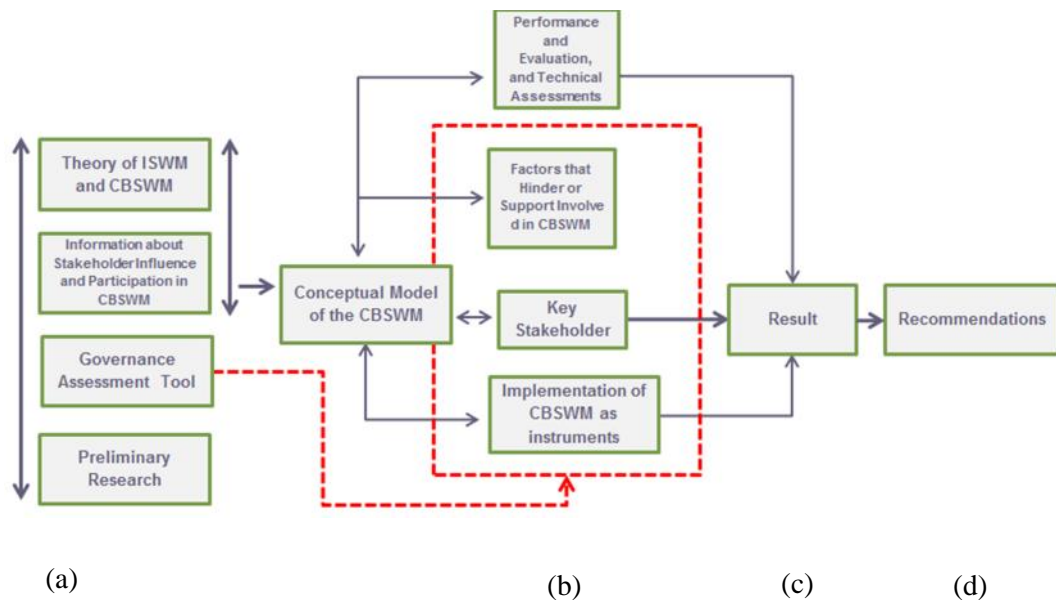
Based on the literature review, it is necessary to obtain results that are in accordance with the purpose of this examination

Table 3 Key Concepts, Theories and Documentation

Key concepts			Theories and Documentation
Community-Based Management	Solid Waste		Theory of Community-Based Solid Waste Management and Circular Economy Framework
Governance Assessment Tool			Contextual Interaction Theory
Stakeholder in CBSWM			Stakeholders Theory

Step 5: Formulating a schematic presentation of the research framework

The schematic presentation of research framework is illustrated as follows:

**Figure 10** Research Framework**Step 6: Formulating the research framework**

- (a) Literature review and Preliminary study related to CBSWM by analyzing the theory employed in this study, including: theory of ISWM, information regarding public influence and participation, and Governance Assessment Tool.
- (b) Qualitative assessment of the degree of supportiveness of the governance, by applying Governance Assessment Tool, and Quantitative assessment to evaluate the waste bank performance in Makassar
- (c) Analysis results.
- (d) Recommendations to address the navigated issues.

Step 7: Examining whether the proposed model requires changes

There is no indication that any change is required.

3.2 Research Strategy

The strategy of this study is to observe the executed activities or regarded as a practice-oriented research project. This study is designed to comprehend the successful implementation of Makassar municipality program in sorting out waste through waste bank activities by conducting surveys, interviews, and observing the implementation of these activities.

3.2.1 Research Unit

The unit of this study is the management of CBSWM, especially the waste bank in Makassar. National data reported that there are 118 active waste banks managed by local government (Ministry of Environment and Forestry, 2020). This study applies Slovin formula to determine the sample size:

$$n = N / (1 + (N \times e^2)).$$

Where:

n = number of samples; N = total population; and e = error margin / margin of error

The number of samples obtained with a margin of error of 15% is 32 waste banks.

3.2.2 Research Boundaries

This study focuses on waste bank implementation as a program in handling household waste in accordance with local government's policies. This study, particularly, focuses on the stakeholders involved in the management of waste banks in Makassar. Geographically, the location of the research is presented by **Fig. 11**.

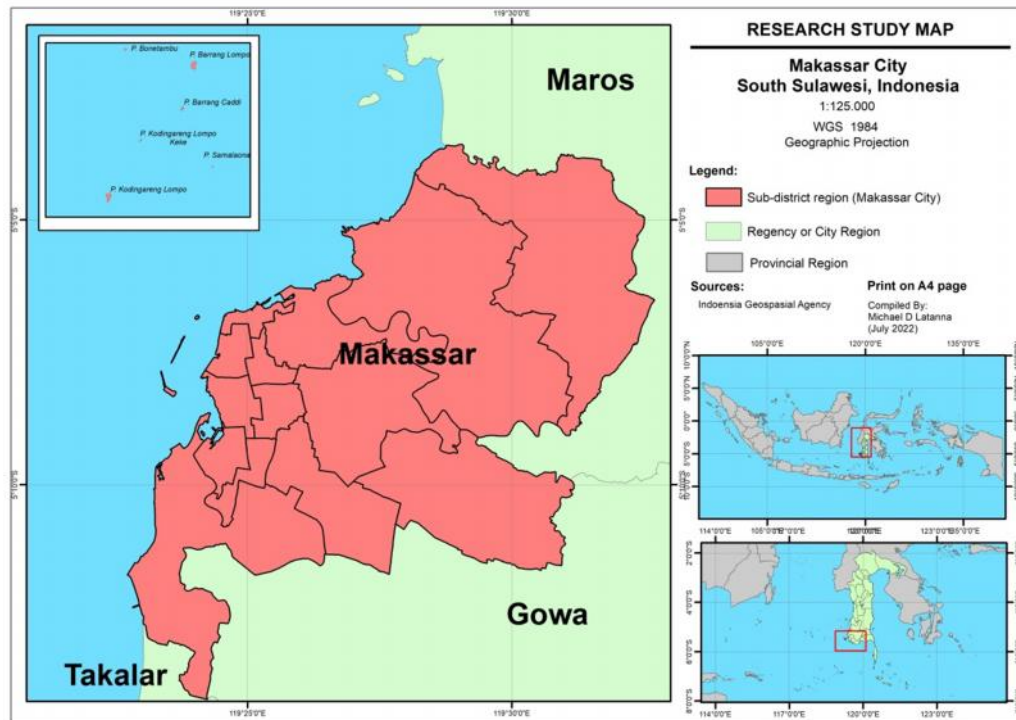


Figure 11. Research Study Location

3.2.3 Research Limitation

Due to strict COVID-19 regulations in Indonesia, the interviews were conducted with a small group of informant who were able to meet in a location. Thus, interviews were not conducted with more than two people at that time, thereby requiring continuous monitoring until the latest regulations are issued. In addition, the time frame for this master thesis limits the number of interviews.

3.3 Research Material

Research material of this study is adjusted to the research objectives and research questions (Verschuren & Doorewaard, 2010). This study collects data through literature study, surveys, and interviews with the stakeholders. In-depth interviews were conducted to obtain answers to sub-questions related to the participation and forms of cooperation carried out by the stakeholders and actors involved, including the factors that influence their involvement. Questionnaires were distributed to evaluate the implementation of management performed since the establishment of the waste bank. Furthermore, this research assesses the management of waste bank to answer the effectiveness of waste bank. The research materials and access methods (research question) are explained as follows.

3.3.1 Data and Information

The data and information were obtained from primary data and secondary data.

a. Primary Data

As the data obtained directly in this study, the primary data were collected from the result of interviews with each stakeholder. In particular, primary data of this study were obtained from semi-structured in-depth interviews, according to the interview procedures and questions that have been prepared.

b. Secondary Data

Secondary data were obtained from data previously presented by other parties, such as in reports and policies of agencies which are relevant for this research.

3.3.2 Data collection

In determining the sample to be interviewed, this study applied a purposive sampling approach, by selecting the key stakeholders deliberately with the following predetermined criteria.

Table 4 Key Informants and Criteria

No.	Key Informants	Criteria
1	Representative of Community-Based waste management	Individuals who actively participate in the waste bank program
2	Representative of Government in national level, federal level, province level, and municipality level.	Government employee in charge of this program
3	Academic experts	Academic experts who concentrate his/her research on community-based waste management
4	Representative of NGO	Representative of NGO with interest in waste reduction in Makassar

3.3.3 Source of Data and Accessing Method

In order to obtain the desired data, with the author of this study applied the following methods:

Table 5 Data Information, Source, and Accessing Method

Research Question	Data/Information	Source of Data	Accessing Method
Q1: What are the key stakeholders' roles during the implementation of community-based solid waste management in Makassar?	The roles of key stakeholders and actors	Secondary Data	Literature Review

Research Question	Data/Information	Source of Data	Accessing Method
Q2: What are the factors that support or restrict stakeholder participation in community-based solid waste management?	The perceived factors and difficulties which influence stakeholders to participate in this program	Primary Data	Interview
		Secondary Data	Literature Review
Q3: What is the governance contextual that support or hinder the successful implementation of community-based waste management in Makassar?	Governance Assessment Tool (Bressers et al., 2013): Levels and scales	Primary Data	Interview
		Secondary Data	Literature Review
	Actors and networks	Primary Data	Interview
		Secondary Data	Literature Review
	Problem perspectives and goal ambitions	Primary Data	Interview
		Secondary Data	Literature Review
	Strategies and instruments	Primary Data	Interview
		Secondary Data	Literature Review w
	Responsibilities and resources	Primary Data	Interview
		Secondary Data	Literature Review
Q4: How effective is the implementation of community-based solid waste management in Makassar?	Policy and Regulations	Primary Data	Survey and Interview
		Secondary Data	Desk Research
	Technical Assessment: including the waste volume.	Secondary Data	Desk Research
	Institutional	Primary Data	Survey and Interview
		Secondary Data	Desk Research
	Financial	Secondary Data	Desk Research
	Participation	Primary Data	Survey and Interview
		Secondary Data	Desk Research

3.3.4 Ethic Statement

This research was strictly conducted under the ethical principles regulated by the University of Twente. Therefore, a consent form from the interviewee was required indicating a willingness or unwillingness to conduct an interview. Each interviewee had the right to interrupt the interview conducted at any time. This agreement aimed to respect privacy of

each interviewee during the interview. The data submitted was confidential and stored in a laptop with password and would not be disseminated. The data that had been submitted would not be exchanged and dismissed when no longer needed.

3.5 Data Analysis

The steps of data analysis in this study are explained as follows

3.5.1 Data Analysis Method

Data was analyzed through qualitative and quantitative methods by in-depth semi-structured interviews with key informants, survey, and a literature review.

1. Qualitative analysis

In this analysis, the data was compiled, analyzed, and evaluated in a certain way to answer the formulated research. Interviews and direct visits were conducted to understand the implementation of CBSWM program. Specifically, data was collected by combining questions related to waste management from policy making to implementation. The compiled data was further evaluated based on GAT Assessment Matrix as seen in Appendix I.

2. Quantitative analysis

Quantitative analysis was employed to measure the effectiveness of waste bank in Makassar. An ordinal measurement was employed to assess effectiveness of waste bank, scored based on their performance for each indicator. The lowest performance was 1, middle score was 3, and the highest score was 5. Data was collected through survey in waste banks. The obtained scores were then summed up, and the proportion of each aspect's score was calculated by using the following formula:

$$\% \text{ aspect's score} = \text{total score} / \text{maximum score} \times 100\%$$

The weight of each aspect was assessed as adopted from an assessment of active community-based waste management (Direktorat Jenderal Cipta Karya, 2017). The assessment categories are as follows.

Table 6 Score and Criteria

Score	Criteria
N 18.2	Very Good
13.65 < N < 18.2	Average
9.1 < N < 13.65	Less Effective
N 9.1	Bad

Meanwhile, the method of data analysis is presented in the following table.

Table 7 Method of Data Analysis

Research Question	Data/Information	Method of Analysis
What are the key stakeholders' roles during the implementation of community-based waste management in the city of Makassar?	The key stakeholders and actors roles	Qualitative: identify and analyze their roles
What are the factors that encourage or hinder stakeholder participation in community-based waste management?	The perceived factors and difficulties influence stakeholders to participate in this program	Qualitative: identify and analyze the challenges and influence to participate or not participate
What are the governance conditions that support and hinder the successful implementation of waste segregation in Makassar	Governance Assessment Tool (Bressers et al., 2013): Levels and scales	Qualitative: assessing the level and scale
	Actors and networks	Qualitative: assessing the level of involvement
	Problem perspectives and goal ambitions	Qualitative: assessing the quality of actor's perspective
	Strategies and instruments	Qualitative: assessing the quality strategies
	Responsibilities and resources	Qualitative: assessing the actors' responsibilities
How effective is the implementation of community-based waste management in Makassar	Legal aspects	Quantitative: Assessing regulations regard waste bank Qualitative: Assessing whether the regulation has run well
	Technical	Quantitative: Assessing technical factors, such as the percentage number of sorting
	Institutional	Quantitative: Assessing institutional factors Qualitative: Assessing how well has the institution been built
	Financial	Quantitative: Assessing financial and accountability factors
	Participation	Quantitative: Assessing the number whether it rise or decline Qualitative: Assessing Participation from the residents

3.5.2 Data Validation

Various results were then validated by comparing the results with the reviewed documents. The validity of the data was adjusted by comparing the conditions found empirically with document searches. At the qualitative stage, the triangulation process was performed to compare the collected data and information. In addition, cross-checks were conducted on each stakeholder through interviews.

CHAPTER 4 FINDINGS

This chapter presents research's results, consisting of four sections. The first section of this chapter explains the importance of actors; the second section presents the supporting and constraining factors influencing the stakeholder's willingness in participating waste bank program; the third section presents the government context of waste management through the implementation of waste bank (WB) for society in Makassar, and the last section of this chapter explains the implementation effectiveness of waste bank program.

4.1 Key Stakeholders

Waste management laws have regulated the roles and responsibilities of each stakeholder involved in community-based solid waste management (CBSWM) such as in waste bank program. In its implementation, CBSWM serves as a form of collaboration among the government, private sector, and NGOs. The demand levels include national level, provincial level, and city level. As for the non-government level, the intense cooperation is determined by the local government.

Appendix III illustrates the identification and salience of the key stakeholders involving in waste reduction, particularly through community-based waste management activities in Makassar. At the national level, the two ministries play important role, including the Ministry of Environment and Forestry (KLHK) and the Ministry of Public Works and Spatial Planning (PUPR). KLHK is the dominant actor holding the responsibility for CBSWM implementation. Commonly, government at the national level has been the dominant actor in Indonesia due to the bureaucratic hierarchy in Indonesia. KLHK customarily plays a role in strategic conditions, such as formulating a waste reduction roadmap until 2025 (Mohamad Satori, from Bandung Islamic University, offline interview, June 06, 2022). Additionally, PUPR plays a dominant role, similar to KLHK, except that PUPR focuses on providing facilities such as buildings and equipment.

At the provincial level, waste management intersects with the flow of materials and governance between cities. Recycled materials are not patterned only at the city level, but can be managed in cross-municipal and even cross-provincial level. Therefore, the provincial and central level play an important role in distributing materials to help industries process raw materials from the sorted waste (Mohamad Satori, from Bandung Islamic University, offline interview, June 06, 2022). At the provincial level, responsibility for waste management is entrusted to the Environmental Management Agency of South Sulawesi Province (DPLH). In

accordance with the mandate of the regulations, DPLH should act as the dominant stakeholder, despite insignificant role in practice (Fitriana Nur, DLH, online interview, June 07, 2022), thereby assuming that DPLH is a merely social normative stakeholder due to holding the power as a symbol (Mitchell et al., 1997).

At the city level, the role of waste management involves numerous actors, by which Makassar Environment Agency (DLH) serves as the dominant stakeholder, in charge of implementing waste management at the city level. In addition to DLH, it is Central Waste Bank (BSP) whose role is to sell waste to vendors and to collect waste from Waste Banks (WB). BSP is considered as a utilitarian since connecting WB with vendors by selling the recycled materials having an economic impact on WB. Another concerned actor also includes Department of Cooperatives Micro, Small, and Medium Enterprises (Dinkop UMKM), providing training for waste bank members to turn waste into useful materials with commercial value (upcycling) as illustrated in **Fig.12**.

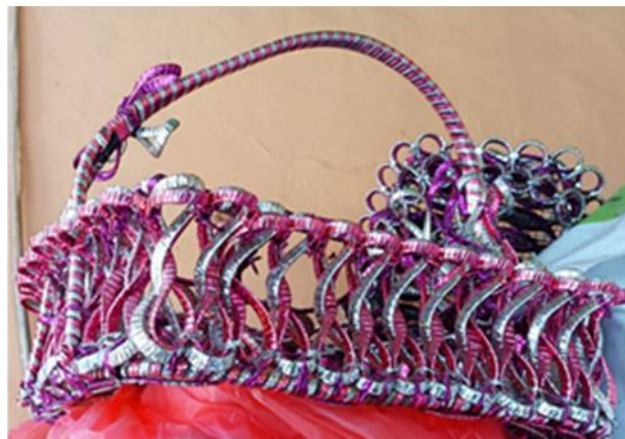


Figure 12.Upcycling Result

Meanwhile, “motivators” include the community representatives who work for local government, capable of providing motivation and training for the community to recycle waste, reduce waste, and sort out waste. Furthermore, the role of the sub-district (*kecamatan*) is to provide initial guidance before the formation of a waste bank. The urban village (*kelurahan*) has the obligation to provide a legal form for waste bank in Makassar (Veronica, BSP, offline interview, June 13, 2022).

The results of interviews with representatives at every level of government signified that residents played as the most important party in CBSWM based on a perception of the article in regulation *UU 18/2008* regulation *UU 18/2008* stating that every waste must be separated from its source. Thus, residents (community) are dominant because they produce the largest amount of waste having a responsibility to sort out the waste. However, not all

residents want to sort out their waste, under the belief that the waste problem must be solved by the government because they have already paid the service.

In the development of CBSWM in Makassar, NGOs provide education to the public, particularly represented by *Peduli Negeri Foundation* (YPN), which was also entrusted to develop a system for processing organic waste by utilizing Black Soldier Fly (BSF). This role strengthens the utilitarian role of NGO role as a stakeholder.

Private sector actors who involved in CBSWM include vendors who buy recycle materials from waste banks and distribute them to recycling companies. According to BSP, they made an attempt to contact the company outside the city, but the recycling company requested BSP to contact the vendor or their representative in Makassar. Therefore, all waste that has been properly sorted is usually delivered to the vendor (Veronica, BSP, offline interview, June 13, 2022). In addition, the scavengers for domestic waste are rare as they may prefer to scavenge in landfill areas (reported by several parties). The results of this analysis are concluded in **Table 8**, and the details are enclosed in Appendix III.

Table 8 Key Actors in CBSWM in Makassar

Number	Institutions	Abbreviations	Scale	Stakeholder Categories
1.	Ministry of Environmental and Forestry	KLHK	National	Dominant
2.	Ministry of Public Work	PUPR	National	Dominant
3.	Environmental Management Agency of South Sulawesi Province	DPLH	Provincial	Dominant
4.	Makassar Environment Agency	DLH	Municipal	Definitive
5.	Central Waste Bank	BSP	Municipal	Dominant
6.	Cooperatives and Micro, Small and Medium Enterprises Agency	Dinkop UMKM	Municipal	Dominant
7.	Sub-District (<i>Kecamatan</i>)	Sub-district	Municipal	Dominant
8.	Urban village (<i>Kelurahan</i>)	Urban village	Municipal	Dominant
9.	Motivators	Motivators	Municipal	Discretionary
10.	Non-Governmental Organizations	NGO	Municipal	Dominant
11.	Communities	Communities	Municipal	Dependent
12.	Vendors	Vendors	Municipal	Demanding
13.	Scavengers	Scavengers	Municipal	Demanding
14.	Recycle companies	Recycle industries	National	Dangerous

Identification of the factors that support and hinder this cooperation in Makassar was conducted to observe the scope of the roles of these parties and how each party cooperates. Thus, interviews were conducted with representatives from each level with further explanation of the interview results presented in section 4.2.

4.2 Supportive and Restrictive Factors Applying CBSWM

Waste management in household is deemed pivotal, as waste is an entity that is visible to the public. If accumulated in immense number, it could be a sole indication of the government's negligence in managing its territory (Van de Klundert & Anschutz, 2001). The new paradigm gives an overview that waste is a free resource which can provide benefits to society. This vision was captured by the Indonesia government, thus making it as a national policy in Indonesia (Wistinoviani, KLHK, offline interview, May 27, 2022).

As the executor of regulations ruled by the national government, the city government is tasked with exercising these functions in its territory. Therefore, since 2008, *Peduli Negeri* Foundation (YPN) as an NGO in Makassar has intensively provided education to the public regarding waste banks, followed by a government program since 2015 acknowledging CBSWM with waste bank program (Kubota et al., 2020). However, this achievement leaves a drawback on the reasons of why this activity has not been massive. The reasons for the increase and decrease of CBSWM activities in Makasar are described as follows.

4.2.1 Supportive Factors

a. Technical performance

The performance of the Central Waste Bank (BSP) and waste bank (WB) community in sorting out waste was consistently conducted from 2016 to 2021 as presented in **Fig.13**. Although they do not use sophisticated technology (**Fig.14**), WB and BSP were capable of performing exceptionally. Based on the results of interviews with NGO representatives, it was stated that the type of society in Makassar including its human resources were not as advanced as in Java, in which is the most important support was through educating people with the simplest possible technology (Ancha, YPN, offline interview, June 18, 2022). This advancement motivates the community participation in waste management as the technology is inexpensive and affordable.

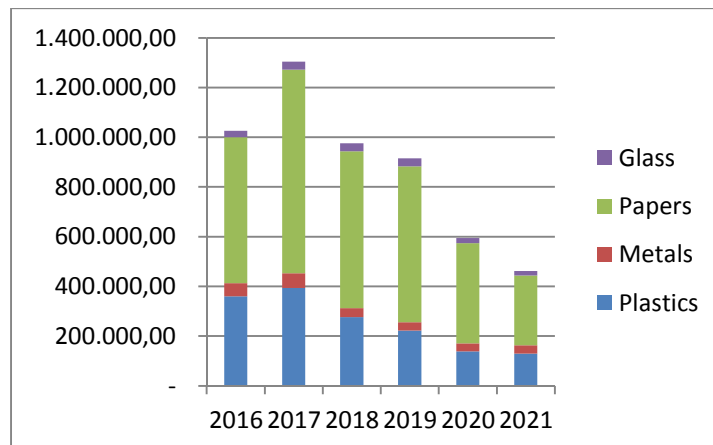


Figure 13. Sorting out waste performance in 2016-2021 (Source: BSP)



Figure 14 Transportation to Collect Recycled Materials in Makassar

b. Environmental Factors

The purpose of waste bank implementation is to have a clean environment, especially in remote areas. Based on direct observations, most of the locations that have implemented waste banks already have a better level of cleanliness, compared to areas that do not practice it. In addition, the city government also claims to have succeeded in handling the waste problem in Makassar, supported by the amount of handled waste by 75% (Makassar City Environment Agency, 2021).

c. Financial-economic performance

From a financial perspective, DLH was granted a budget for waste management, including for waste bank activities, assisting the implementation of waste management program in Makassar. Other needs include infrastructure, human resources, and waste collection from residents (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022). In addition, every community is freed from levies or mandatory fees, and they can receive all the proceeds from the sale. In practice, waste bank also has a

savings book and financial statements as controllers for selling recycled materials to other parties.

d. Social and cultural

In implementing CBSWM program, the government does not only mandate for the tangible results of the implementation, but also educates the communities. According to representatives of NGO, the main instrument that is important in waste management through waste banks is the successful education, placing aside the economic changes. However, there are other factors that can benefit the community by generating additional income from selling waste to the third parties (Ancha, YPN, offline interview, June 18, 2022). Based on the results of the conducted survey, it is also observed that changes in political conditions had insignificant impact in Makassar. The benefit of sorting waste becomes a strong factor to encourage the concerned parties to participate in waste bank program.

e. Institutional and organisational

Nationally, the role of each stakeholder at each level has been regulated under the law; thus it is mandatory for each level to participate both as policy makers and as a target group. Locally, each formed WB shares equal rights and obligations in waste management. Under the law, each WB has a legal document to conduct these activities. In addition, they can sell the recycled material to other parties besides central waste bank (BSP) as long as the price offered by the other party is more profitable (Veronica, BSP, offline interview, June 13, 2022). Furthermore, BSP cooperates with five vendors to facilitate the waste bank on selling their materials.

f. policy and legal

Regulations related to waste have been stipulated from the national to the local government level. The latest regulation, Ministerial Regulation 14/2021, has stipulated the partnerships between waste banks and other parties. In terms of waste management regulations, sanctions have also been regulated as stated in law number 18/2008, in the form of administrative sanctions upon breaking the applicable regulations (Wistinoviani, KLHK, offline interview, May 27, 2022). The law additionally regulates the role of each party from the national government, provincial level, and city level

4.2.2 Restrictive Factors

a. Technical performance

Complaints from waste bank customers relate mostly to the often late collection of waste due to less optimal source. Even though the collection mechanism is easy by texting BSP, but the service has not been supported by a timely collection. In addition, from the totally listed 600 waste banks, only 118 were considered as active waste banks (Makassar City Environment Agency, 2021).

b. Environmental factors

Currently there is no appropriate evaluation related to improving public health. Thus, the relationship between the number of waste banks in Makassar, environmental hygiene, and health improvement has been unascertained. In addition, Makassar remains practicing a dumping landfill technology with a total waste handled of 279,955.867 tons in 2021. The estimated amount of waste in 2021 was 373,653.931 tons, representing 75% (Makassar City Environment Agency, 2021). This can reduce the public's intention and spirit to sort waste, because in the end the waste that they have sorted is disposed of in landfills.

c. Financial-economic performance

Problems related to the need for funds have been inevitable. Currently, the Ministry of Finance in Indonesia has been incapable of providing a special portion for waste management as it has not become a national priority, since the current national priorities include health and education (Tyas, KLHK, offline interview, May 27, 2022). Meanwhile, the problem at the city level is the disbursement of funds, which in some cases is not in accordance with the expectation of waste bank community. The community expects the instant disbursement at the same time they sell the waste, but this cannot be fulfilled by local government, due to the government regulations (Veronica, BSP, offline interview, June 13, 2022).

d. Institutional and organisational

Currently, BSP does not have a cooperative relationship with the recycling company, hindering the material cycle from the waste bank until it returns to the community (Veronica, BSP, offline interview, June 13, 2022).

e. Social and cultural

Based on the results of interviews, it is navigated that at the initiation of this program, every government employee is obliged to become a customer (Veronica, BSP, offline interview, June 13, 2022). However, at this time, this program has been less optimal.

Furthermore, waste bank program is voluntary in nature, thereby discouraging people to get involved and sort out the waste. Currently, waste bank program and waste sorting

activities are disintegrated. Communities who have not been involved are introduced through dissemination by DLH to be involved in waste bank program (**Fig.15**).



Figure 15 Dissemination and Evaluation Process In Makassar

f. policy and legal

The application of the law should be enforced, such as when people do not sort the waste, administrative penalties are applied. However, this practice has not been enforced. According to a representative from the Ministry of Environment and Forestry (KLHK), enforcing the law is relatively difficult in Indonesia with the constant defense from the community excusing the economic condition; thus a reward approach is believed to be more workable than a punishment one (Tyas, KLHK, offline interview, May 27, 2022).

In addition to determine the factors that support and hinder the application of this policy, it is necessary to distinguish the extent of the actor roles and how collaboration is performed in each level. The governance context is conducted by applying Governance Assessment Tools (GAT) derived from the Contextual Interaction Theory (CIT) framework. The purpose of this section is to describe the context of the regime that occurs in CBSWM implementation through waste bank in Makassar.

4.3 Governance Context

This study utilizes Governance Assessment Tools (GAT) to assess governance context in the implementation of CBSWM in Makassar and to observe how it supports or restricts governance roles (H. Bressers & Bressers, 2016). GAT assesses the governance context more on the institutional aspects and policy implementation.

The scopes of governance comprise social, organizational, political, juridical dimensions, and role of each stakeholder by ensuring that all these dimensions work on an

issue. In addition, governance dimension is broader than just actors at the government level, including other elements such as technology and innovation to reduce waste accumulation (H. Bressers & Bressers, 2016).

The form of Indonesian governance context in the implementation of CBSWM program can be defined in this study by utilizing Governance Assessment Tools (GAT). Further, GAT will help assess the extent to which the context of governance is conducted by various actors as well as the supports and hurdles in terms of policies and programs (J. T. A. Bressers et al., 2016).

To obtain comprehensive answers regarding waste management through waste banks in Makassar, each respondent was interviewed based on the questions as attached in Appendix II. Interviews were conducted with six key informants from various levels who are responsible for waste management through waste bank in Indonesia and Makassar. The level of participation in this interview is presented in **Table 9**.

Table 9. Level of participation interviewee

Federal Level	Provincial Level	Municipal Level	External Level
Directorate of Waste Reduction, Ministry of Environment and Forestry	Hazardous and Toxic Waste and Waste Management Sector, Waste Management Section	Makassar Environmental Capacity Building Section, Makassar Environmental Agency	<i>Peduli Negeri</i> Foundation (YPN) as a representative Non-Governmental Organizations
		Central Waste Bank	Expert representative in the field of community-based waste management

In this study, an assessment of five dimensions was performed to assess the governance context in the implementation of waste management through waste banks in Makassar. The explanation for the assessment is described as follows.

4.3.1. Levels and Scales

Regarding the extent and flexibility, this dimension is considerably moderate. Meanwhile, coherence and intensity are considered low thus restrictive. The explanation of the findings in each criterion is as follows.

Extent can be assessed as a moderate, thus supportive, since each level understands that they have their respective roles in this policy implementation while provincial level does

not participate well. In addition, partnerships with other parties such as recycling companies or NGOs are allowed in accordance with the applicable regulations.

From the national level, representatives of federal level stated that the Ministry of Environment and Forestry (KLHK) crafted the waste bank program as a national program and socialized it through ministerial regulation 14/2021 (Wistinoviani, KLHK, offline interview, May 27, 2022). However, KLHK only provides guidelines without facilitating and funding assistance. Meanwhile, provincial level is expected to provide guidance followed by implementation at the city level. Moreover, city government can cooperate with several trained facilitators from the community or NGOs.

Thus, provincial level holds an important position despite not playing a good role, thereby requiring an external evaluation from a higher level (Fitriana Nur, DLH, online interview, June 07, 2022). In addition, Ministry Regulations 14/2021 does not evidently state the role of provincial level in waste management through waste banks, indicating the decreasing extent of the condition in the level and scale dimensions.

Coherence is assessed as restrictive, as it is difficult for city level to engage at higher levels such as in provincial or national level since the bureaucratic system in Indonesia demands the implementation of policies which must satisfy the hierarchy. Furthermore, there are inconsistencies in the implementation of policies in each region, leading to diverse actions and achievements of each province (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022).

The decrease in coherence is due to the entire implementation of CBSWM in the hand of the local government. On the other hand, federal level is tasked with crafting this program as a national program, while provincial level is expected to provide guidance and evaluation of activities. Provincial representatives have also acknowledged that provincial level have not been optimally involved in CBSWM (Sumarni, DPLH, offline interview, June 17, 2022). This situation would be different if every level of government synergizes and cooperates in managing waste and in meeting national targets. However, this synergy has not yet occurred, thereby reducing the coherence of the level and scale dimensions.

Flexibility is considerably moderate, thus supportive, because there is an opportunity that all parties could participate either directly or indirectly in CBSWM as long as it follows the regulations. The involvement of every layer must embrace the value of WB, encouraging the implementation of a circular economy at the community level. Thus, it can produce a clean environment and economic benefits.

However, the planning and implementation of CBSWM must follow the bureaucratic process in Indonesia as this situation creates inflexibility between regions. For example, the Local Government in Makassar cannot cooperate with other regencies to receive materials because of the regulations.

Intensity is low, thus restrictive because only the city level works for behavior change. The local government collaborate with community members are involved in planning and implementation. The involvement of the community in planning includes proposing waste banks providing financial benefits and social impacts. In addition, the government involves community and NGOs as extensions in providing education to communities (Ancha, YPN, offline interview, June 18, 2022). In addition, programs related to CBSWM implemented by the city government are able to force government employees to participate in waste management (Veronica, BSP, offline interview, June 13, 2022). Currently, the biggest responsibility lies in city level, which actively educates community to sort out waste. In addition, federal level has not consistently implemented and disseminated this policy to all regions (M. Satori, from Bandung Islamic University, offline interview, June 17, 2022).

Besides, the main priorities of the Indonesia government are currently limited to food security, health, and education. Funding for waste management does not have a large portion to manage waste since it is not a national priority (Tyas, KLHK, offline interview, May 27, 2022). For example, the budget for waste management operations at Makassar Environment Agency is only 1.83% of the total operational budget for 2021 in Makassar.

Conditions at levels and scales are indirectly related to the actors and networks involved in CBSWM program. The analysis of actor and networks in Indonesia and Makassar is enclosed in section 4.3.2.

4.3.2 Actors and Networks

The actor and network dimensions indicate that there are various multi-actor characters working in CBSWM network (J. T. A. Bressers et al., 2016). Thus, not only do the actors involve the government sector, but also outside the government. In this dimension, the extent and coherence criteria are considered moderate, thus supportive, while flexibility and intensity are considered low, thus restrictive. A brief explanation of these findings is as follows.

Extent is considered moderate, thus supportive, because most of the actors acknowledge that basically these actors exist, and most of them have their own responsibilities. The problem lies in the less-maximized role of each actor. For example, the

role of provincial level is still lacking in guidance, with no collaboration with the recycling companies. To address this gap DLH, as the main actor in city level, could collaborate with motivators and NGOs to help disseminate and educate the 3R program of “Reduce, Reuse, and Recycle” in Makassar.

In addition, currently around 22% of the Makassar City area has been successfully served, with 13% active from a total of 885 hamlets (*Rukun Warga/RW*) in Makassar. The number of services increases along with good cooperation between government, waste-producing communities, and producers such as factories that have plastic or glass bottle packaging.

To encourage the improvement of CBSWM implementation in the community, the city government could collaborate between agencies, such as DLH collaborates with Makassar Public Works Agencies (DPU) in making a competition. One of the assessments criteria is to have a waste bank in the neighborhood.

However, there are several inescapable situations that decrease the extent, in which waste management cannot be assessed independently since no one has been appointed as an external assessor. In addition, the absence of a recycling company in Makassar hinders the flow of the recycled materials (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022). The waste that has been sorted out by communities, only reaches the vendors, thereby requiring further process to a recycling company outside Makassar (Veronica, BSP, offline interview, June 13, 2022).

Coherence shows moderate conditions, thus supportive, because interactions of DLH with WBs and NGOs are institutionalized, particularly, in providing education. In addition, in one of the tourism activities, DLH engages with several new actors to promote waste bank (Ancha, YPN, offline interview, June 18, 2022). Furthermore, the mayor as a political actor could play a role in the implementation of CBSWM program in Makassar by accommodating it as the main program, surviving until recently despite a decline due to the pandemic and a leadership change.

However, not all actors were involved, for example actors from the livestock agency who could utilize compost from organic waste, and lack of involvement of actors from provincial level (Veronica, BSP, offline interview, June 13, 2022). Furthermore, mostly interactions among actors are institutionalised, thereby threatening the stability of an actor when a change in political conditions emerges reducing coherence (Ancha, YPN, offline interview, June 18, 2022).

Flexibility of this dimension indicates restrictive due to difficult nature of involvement and cooperation with new actors. A new actor means a new budget, while proposing a waste management budget is not a priority and difficult task. In addition, the absence of uniformity in the application of regulations indicates that the government remains hesitant in determining the actors who are part of the management (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022). However, each actor agrees that new additions of actors are tolerable as long as they did not compromise CBSWM process and were complied with the regulations (Tyas, KLHK, offline interview, May 27, 2022).

In addition, bureaucratic conditions provide hurdles to involve new actors, requiring discussion with various parties. The decision to add new actors is usually left to the leader or top level (Sumarni, DPLH, online interview, June 17, 2022; Fitriana Nur, DLH, online interview, June 07, 2022).

Intensity is considered restrictive, because currently there are no actors who have a role to ensure the law enforcement on waste management. Representatives of actors from federal level explained that the community will use the economic conditions as a reason for not managing waste (Wistinoviani, KLHK, offline interview, May 27, 2022). On the other hand, according to representatives from NGOs, waste management is not always a matter of rich or poor, but about behavior. Behavior is changeable by socializing regulations, providing education, and assisting people who want to be involved (Ancha, YPN, offline interview, June 18, 2022).

Furthermore, it is deemed necessary to assess the perspective of the problem and the ambition of the goal, to better see the perspective of the problems in CBSWM whether it is ambitious or relevant to achieve these goals. Assessment of problems and objectives is presented in section 4.3.3.

4.3.3 Problem Perspectives and Goal Ambitions

Each actor in CBSWM is potential to have a different perspective on a problem. An assessment of the perspective for the problem and goal ambitions indicates the obtained results despite differences in perspective and goals ambitions. In this case, coherence is considered as highly supportive and intensity is considered moderate. Meanwhile, both extent and flexibility are considered low, thus restrictive, described as follows.

Extent on this dimension is considered restrictive, because the rapid changes in political conditions affect the goals to be achieved (Fitriana Nur, DLH, online interview, June

07, 2022). This condition however does not affect the motivation of the people who have already benefited from waste bank activities, but it affects the implementation and changes in the program targets as well as the budget to support this program.

The main priorities in CBSWM include: supporting funding, providing facilities and infrastructure, and delivering information (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022). The dissemination regarding 3R to the community has been less than expected that makes it restrictive. Hence, people are disorganized about the applicable rules perceiving different perspective in managing waste (Ancha, YPN, offline interview, June 18, 2022). Moreover, the communication to the government at lower levels is often miscommunicated, causing misunderstandings in the policies presented by the government (Ancha, YPN, offline interview, June 18, 2022).

Coherence is considered high, thus supportive. Since the different goals are not seen as separate things rather than a series of parallels for better waste management even though the government has different roles at each level. For example, federal level prepares some programs as alternative menu to implement, encouraging local governments to apply a combination of programs that have been prepared in each region based on the community characteristics (Tyas, KLHK, offline interview, May 27, 2022).

In addition, there are differences in perspective, people terms of gaining benefits by cashing in on waste through the 3R method, while some people only sort waste at home. However, this is in line with the main goals of not piling up waste, having a clean environment, and changing paradigms (Ancha, YPN, offline interview, June 18, 2022). All actors at all levels agreed that the main goal of CBSWM includes cleanliness and shifting paradigm, while the economic goal is a bonus. However, this economic goal could increase the motivation of the community to be involved in waste management, which resulted in a new goal of obtaining high prices from the sale of recycled materials.

However, there are some activities that reduce coherence, such as no collaboration between Makassar government and the recycled industry. This condition makes the unit price difficult to maintain at a high level, because sales are made to collectors (vendors), then they resell the materials to recycled industries in other islands (Veronica, BSP, offline interview, June 13, 2022). If the flow of this material is shortened, it will help the distribution of recycled materials. Furthermore it is possible that prices can be competitive and increase people's motivation.

Flexibility in this dimension is considered restrictive as this program should be conformed to the local government mechanism for re-evaluating objectives, such as when

considering the waste-selling payment process. The waste-selling payment could not be obtained within similar day, requiring one month of finalization due to local government regulations (Fitriana Nur, DLH, online interview, June 07, 2022).

To change the goal, thus it is necessary to wait until implementation ends or elections occur, because changes in political conditions have an indirect impact. Any leadership change causes slow innovation, further affecting the presence of WB in Makassar, since they were formed based on the mayor's regulation (Ancha, YPN, offline interview, June 18, 2022). With the change of mayor, waste management policy through waste bank is threatened to change or to even be discontinued, at least after five years.

Intensity in this dimension is considered moderate thus supportive, because currently there are not many waste management programs. Therefore, waste reduction programs through waste banks can be conducted intensely (Fitriana Nur, DLH, online interview, June 07, 2022). Other goals, such as reducing raw materials due to production restrictions from the government were unfortunately unable to reduce the intensity of CBSWM implementation because the production of plastics are higher than the recycling activities (Tyas, KLHK, offline interview, May 27, 2022).

Changes that are important are to increase the intensity by creating a special formula to measure the performance of waste management or CBSWM in the city. In addition, shifting people's behavior through education and assistance requires longer time, thereby qualified resources are essential to accelerate this effort. To assess the strategies in changing behavior or achieving other goals in CBSWM, an assessment of strategies and instruments is conducted in section 4.3.4.

4.3.4 Strategies dan Instruments

Extent is considerably high, and flexibility in this dimension is classified as moderate thus supportive. Meanwhile, coherence and intensity are classified as low thus restrictive. A brief explanation of the findings is described as follows.

Extent is considerably high, thus supportive, because every important instrument is almost used, which include regulations, norms, policies/laws, programs, and projects that have been made. For example, the making of regulations is mostly completed at federal level, while the making of programs and projects is completed at urban level. At federal level, there is ADIPURA program intended to appreciate local governments who successfully implemented waste management. As for producers, appreciation is conducted with

recognition from the Minister of Environment and Forestry (Tyas, KLHK, offline interview, May 27, 2022).

Another instrument includes the provision of education and information regarding waste management. Education is provided by facilitators (motivators) and NGOs in collaboration with the city government. The provided educational material includes the mechanism to turn waste into useful items (Ancha, YPN, offline interview, June 18, 2022). Over time, economic instruments were employed to involve the community and to achieve the goal of a cleaner environment.

The aforementioned strategies and instruments are prepared by different levels, and most of these instruments or strategies are assigned to actors at the city level. For example, BSP focuses on economic instruments, while NGOs and motivators in Makassar focus on providing education. However, the strategies and instruments were only written in regulations; meanwhile in practice, this regulation and instruments are less optimised.

Coherence is considered as restrictive, because law enforcement is inapplicable optimally, even though the national law 18/2008 has stipulated the administrative sanctions against parties who do not comply with the rules (Tyas, KLHK, offline interview, May 27, 2022). This enactment has an impact on the difficulty of implementing other instruments that are incentive and disincentive.

The provision of punishment is less preferred by local governments. Furthermore, the disincentive policy according to Law 18/2008 cannot be implemented due to the lack of facilities. Disincentive can be applied if the resources and facilities have been fulfilled. Otherwise, this policy will not be effective (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022).

Since Ministry of Environment and Forestry has utilized information system technology, called SISPN, it is capable of improving the coherence of this dimension. This improvement could inform and supervise waste management activities throughout Indonesia. Through this open website, everyone can access activities in every area in Indonesia.

Flexibility is moderate, thus supportive, because combining several instruments are feasible as long as it is clearly regulated. For example, reforestation in alleys is integrated with the procurement of a waste bank. Each district or sub-district is required to have a waste bank as a requirement of the competition held by the Makassar government. In addition, according to representatives of the central government, the management assessment conducted by the government in Indonesia (called PROPER) is expected to include elements

of waste management indicators for each company, despite not implemented (Tyas, KLHK, offline interview, May 27, 2022).

Inflexibility occurs due to unclear incentives for each region or community that has successfully implemented good environmental management in its area. One interviewee mentioned that there are incentives when successful in managing their waste, while others argued that there are no incentives and the incentives were only limited to non-money forms (Ancha, YPN, offline interview, June 18, 2022). Additionally, new instruments will increase budgets, and additional budgets are processed through a bureaucracy that is not easy becoming the inflexibility in implementing waste management strategies.

Intensity is considered restrictive, because many people reject to sort out or bring out their waste to WB. One of the reasons for the refusal is due to the fact that the community has already paid a levy to the government, thus it is the government's obligation to sort out the waste. Additionally, there is an assumption that sorting out waste is the scavenger's duty (Veronica, BSP, offline interview, June 13, 2022), marking that the government has been incapable of enforcing the community to change the mindset and behavior of managing waste. In addition, the government has been incapable of ensuring the flow of material from the sorted waste to companies or industries that can accommodate it (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022). Currently, the flow of materials in Makassar city only reaches the collectors (vendors) and has not been able to reach the recycling company.

Adequate resources are required to actualize the planned strategies including how the relevant parties utilize these resources with their responsibilities, as explained in section 4.3.5

4.3.5 Responsibilities and Resources

Extent, coherence, and intensity on this dimension are considered low, thus restrictive. Meanwhile, flexibility is considerably moderate, thus supportive. Further explanation regarding the assessment is as follows.

The assessment of **extent** is restrictive because the number of resources owned has been incapable of conducting all the responsibilities of each actor. The main problems in sequential waste management in Indonesia include facilities, funding, human resources, and segregation of waste from home (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022). Further, these four things become the main problems in waste management through waste banks. Effort in providing education for residents is also uneasy

task. Currently, the number of human resources is relatively small, but the provision of education and assistance is capable of changing the paradigm of society (Ancha, YPN, offline interview, June 18, 2022).

In addition, current funding comes mostly from the city government budget with no financial assistance from other level and actors, such as the company through CSR. Meanwhile, for national level, budgeting for waste management remains difficult with people rely on the government to sort out the waste they produce. Likewise, minimal facilities such as segregated trash bins are not owned by every community. The provision of facilities has not become a priority for some people, because people are pessimistic that the waste they dispose of will be recombined, thus pointless (Veronica, BSP, offline interview, June 13, 2022).

Coherence is restricted due to lack of support from both national and provincial governments. Segmented activities shaped all waste management programs to be centered on local governments. Hence, local governments are expected to find their own way and discover the appropriate mechanism to support CBSWM (Tyas, KLHK, offline interview, May 27, 2022). In addition, there are relevant technical activities potentially performed by experienced human resources, but have not been yet involved (Ancha, YPN, offline interview, June 18, 2022). Furthermore, human resources involvement in a government program must go through government procedures with at least one year planning in advance, in accordance with the local government budget planning by considering the available budget.

Flexibility is considered supportive because responsibilities of each actor do not overlap. The possibility of merging the cooperation of several actors with different levels is potential to be performed such as by conducting a joint evaluation between the city and provincial levels despite not implemented, since there are no human resources from provincial level that focus on the evaluation. On the other hand, combining responsibilities at the same level has been performed by providing education and guidance related to waste management in schools among WB, school, and DLH.

In addition, WBs are given the freedom to choose a place to sell their waste. Sales can be made directly to vendors (*pelapak*), or through BSP. People are free to sell to vendors if they feel to be more profitable (Veronica, BSP, offline interview, June 13, 2022).

Intensity is assessed as restrictive, due to lack of human resources and budget. Since DLH is not only responsible for CBSWM, but also other programs. Furthermore, it becomes restrictive because this program is segmented, thus only the parties involved in this program could sort out the waste. Meanwhile, the handling of waste has been more practiced from

house to house creating conflict, resulting in some people being reluctant to sort out their waste. In fact, one of the most influential factors in CBSWM lies in people willingness to sort and save their waste in a waste bank (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022). Hence, it is concluded that the results of the assessment of the extent, the coherence, the flexibility, and the intensity in the CBSWM are as follows.

Table 10 Assessment Result

		Criteria			
		Extent	Coherence	Flexibility	Intensity
Dimension	Levels and Scale	Moderate	Low	Moderate	Low
	Actors and Networks	Moderate	Moderate	Low	Low
	Problem Perspectives and Goal Ambitions	Low	High	Low	Moderate
	Strategies and Instruments	High	Low	Moderate	Low
	Responsibilities and Resources	Low	Low	Moderate	Low
	Assessed as	Moderate (Supportive)	Low (Restrictive)	Moderate (Supportive)	Low (Restrictive)

Referring to the presentation in **Table 10**, the governance conditions for the implementation of the CBSWM policy appear to be restrictive because support is obtained at urban level, where at that level the cooperation between each stakeholder and efforts to implement CBSWM in urban areas is reasonably good. Mostly restrictive occurs at the provincial level which does not sufficiently understand the needs of the city in applying this policy. In addition, the bureaucracy discourages the city to convey their needs to other level (national and provincial level), only causing the city level to struggle on its own waste management implementation through WB. Therefore, it is concluded that the overall governance of CBSWM remains **restrictive**.

To improve the governance of the implementation of this policy, it only requires good cooperation between levels. For this reason, an evaluation of the implementation of waste management through waste bank in Makassar City was also performed in order to assess the success of the implementation for this program in Makassar.

4.4 CBSWM Effectiveness in Makassar

This section describes the implementation of CBSWM policy from the main actor's point of view which is the community, and how governance is implemented in Makassar. The management of CBSWM is led by Makassar City Environmental Agency (DLH)

implemented by the Waste, Hazardous Waste and Capacity Building Division, in charge of compiling, implementing, and coordinating waste management policies.

Currently, DLH leads to a paradigm shift by viewing the environment as an entity that is not only a victim of the impact of the development that occurs (Makassar City Environment Agency, 2021). This paradigm has an impact on DLH activities in the future more directed towards sustainable development. Solid waste in urban areas presents a major problem in Makassar City. Therefore, DLH makes one of these aspects as a priority that needs to be addressed such as by developing a waste bank in Makassar.

The approach through the waste bank is considered as a community-based approach. Through the waste bank, good cooperation is demonstrated by starting from the smallest scale of governance in the community, known as the neighbourhood (*Rukun Tetangga/RT*) and the hamlet (*Rukun Warga/RW*). RT and RW are considered as the most micro scale in managing waste through the waste bank (WB) (Kubota et al., 2020). For the highest level which is KLHK, the approach is conducted by stipulating WB arrangements through regulation number 14/2021.

To find out how successful is the implementation of waste management policies and programs through WB in Makassar, an evaluation of the performance was also conveyed. The indicators were adopted from government regulations, and Integrated Solid Waste Management (ISWM) (Van de Klundert & Anschutz, 2001). This evaluation assesses five main aspects, including: policy and legal aspects, technical aspects, institutional aspects, financial aspects, and participation, presented as follows.

4.4.1. Policy/legal aspects

In the legal and policy aspects, the evaluated elements include local regulations, development plans, legality of institutions, and standard procedures. Based on the results of the evaluation, this aspect is considered **good** depicted **Table 11**.

Table 11. Assessment criteria of policy and legal aspects

Criteria	Indicator	Parameter	Score	Average Score
Politic/legal/policy aspects (5%)	Regulations	The regulations legalizes waste management, and contains detailed 3R implementation arrangements	5	4.94
		The regulations have not set the implementation of 3R	3	
		No regulations	1	
	Development Plan	Have a planning document	5	4.94

Criteria	Indicator	Parameter	Score	Average Score
		Have a planning document, but it is not well documented	3	
		Do not have planning document	1	
	Legality of Institution	has an official permit and is registered	5	4.94
		On process official permit	3	
		No official permit	1	
	Standard procedure	Understanding and applying standard procedures on waste sorting.	5	4.82
		Developing standard procedures	3	
		Not understanding and not applying standard procedures on waste sorting.	1	
		Total		19.65
Maximum = 1	Minimum = 0,2	Score x weight 5%		0.98
		Assessed as		Good

The results on the policy aspect indicate that the public are considerate about the regulations and policies that apply in Indonesia, especially in Makassar, also marking that dissemination and education regarding the regulation has been well applied by the actors participating in WB program.

4.4.2. Technical Aspects

In the technical aspect, the evaluated elements included the volume of waste managed, the condition of buildings and infrastructure, the type of management, the condition of the equipment, and the volume of residue transported to the TPA. Based on the evaluation results, this aspect is classified as **average** as illustrated in **Table 12**.

Table 12 Assessment criteria of technical aspects

Criteria	Indicator	Parameter	Score	Average Score
Technical - Technology (30%)	Waste volume managed	> 80%	5	3
		60%-80%	3	
		<60%	1	
	Condition of Buildings and Infrastructure	100% the condition of the building and infrastructure is functioning well	5	3.1
		some infrastructure is functioning well	3	

Criteria	Indicator	Parameter	Score	Average Score
	Management Type	The condition of buildings and infrastructure is not functioning	1	1
		sorting, processing organic and inorganic waste	5	
		Process of sorting and processing organic waste	3	
		Only sorting process	1	
	Equipment condition	Adequate equipment and good condition	5	3.4
		Sufficient equipment , but some do not function properly	3	
		Inadequate equipment, and does not work well	1	
	Residual Volume Transported to Landfill	<30% from total waste managed	5	5
		30%-40% from total waste managed	3	
		>40% from total waste managed	1	
		Total		15.4
Maximum = 7,5	Minimum = 1,5	Score x weight 30%		4.6
		Assessed as		Average

These results indicate that DLH demonstrates a good performance in waste management. The managed volume and residual volume transported to landfill data are obtained from DLH performance report as illustrated in **Table 13**.

Table 13. Achievement of waste reduction

Number	Indicators	Year					
		2016	2017	2018	2019	2020	2021
(1) *source: PP 97/2017	National Waste Reduction Target	-	15%	18%	20%	22%	24%
(2) *Indonesian Central Statistics Agency (BPS)	Makassar Population	1,469,601.00	1,489,011.00	1,508,154.00	1,526,677.00	1,423,877.00	1,427,619.00
(3) = $\frac{(2) \times 0.7 \times 3}{1}$	Estimated Amount of Waste in Makassar (Ton/Year)	375,483.06	380,442.31	385,333.35	390,065.97	363,800.57	364,756.65
(4) *source: Perwali 36/2018	Makassar Waste Reduction Target (Ton/Year)	-	-	69,593.00	78,872.00	88,494.00	98,470.00
(5) *source: BSP Makassar	Makassar Waste Reduction by Waste Bank (Ton/Year)	1,000.67	1,271.90	943.60	883.36	573.59	443.63

Number	Indicators	Year					
		2016	2017	2018	2019	2020	2021
(6) = ((5)/(4) x 100%)	% Contribution of Waste Bank	-	-	1.36%	1.12%	0.65%	0.45%
(7) = ((5)/(3) x 100%)	% Reduction	0.27%	0.33%	0.24%	0.23%	0.16%	0.12%

Table 13 presents that waste banks' contribution to reduce waste in 2016-2021 indicated unfavorable results. In 2016, the amount of waste that was successfully collected every year reached 1000 tons and could increase in the following year, further slowly decreasing until it did not reach half (444 ton/year).

4.4.3. Institutional Aspects

In the institutional aspect, the evaluated elements include management agency, partnership with Recycling Company, organizational structure, human resource, administration, and monitoring & evaluation. Based on the evaluation results, this aspect is considered **good** as depicted in **Table 14**.

Table 14. Assessment criteria of institutional aspects

Criteria	Indicator	Parameter	Score	Average Score
Institutional (30%)	Management Agency	Society	5	4.88
		Government	3	
		Individual	1	
	Partnership	There is an MOU, and the cooperation is going well	5	1
		There is an MOU, but the cooperation is not going well	3	
		No Partnership	1	
	Organizational structure	Complete structure and active manager	5	4.6
		Complete structure but less active manager	3	
		There is a structure but the organization doesn't work	1	
	Human resource	enough manpower	5	4.3
		less manpower	3	
		no manpower	1	
	Management Administration	Accountability recorded and reported	5	3.7
		Improperly recorded and reported	3	
		not recorded and reported	1	
	Monitoring and	1 time per month	5	4.6

Criteria	Indicator	Parameter	Score	Average Score
	Evaluation	1 time in 3-6 months	3	
		no monitoring and evaluation	1	
		Total		23.2
Maximum = 9	Minimum = 1.8	Score x weight 30%		7.0
		Assessed as		Good

The only thing lacking in this aspect is cooperation with recycling companies. With this collaboration, the flow of materials is expected to be properly maintained and to employ a better circular economy through a waste bank implementation.

4.4.4. Financial Aspects

In the institutional aspect, the evaluated elements include financial condition, assistance from the government, and financial management. Based on the evaluation results, this aspect is considered **average** as depicted in **Table 15**.

Table 15 Assessment criteria of financial aspects

Criteria	Indicator	Parameter	Score	Average Score
Financial Aspects (15%)	Financial condition	surplus	5	4.5
		balance	3	
		deficit (minus)	1	
	Financial Management	well recorded, and well accounted	5	3.6
		recorded but not accounted to members	3	
		not recorded and reported	1	
	Government grants	adequate financial assistance	5	3
		inadequate financial assistance	3	
		no financial assistance	1	
		Total		11.2
Maximum = 2.25	Minimum = 0.45	Score x weight 15%		1.68
		Assessed as		Average

Due to the bond between the community and the government through WB, the government provides funds to the WB. This guarantees WB in carrying out their activities. However, with the growing number of waste banks, it is estimated that the required funds will increase.

4.4.5. Participation Aspects

In this last aspect, the elements that are evaluated are the participation of the community such as activities in sorting waste, the economic impact received, and the addition of community members involved. Based on the evaluation results, this aspect is considered **average** as demonstrated in **Table 16**.

Table 16 Assessment criteria of participation aspects

Criteria	Indicator	Parameter	Score	Average Score
Participation (20%)	Garbage sorting by the community	All members are contributing on sorting the garbage	5	4.1
		Some members	3	
		No one	1	
	Economic impact	There is an Addition of Economic Value for all members an society	5	5.0
		There is an Addition of Economic Value in management	3	
		There is no Addition of Economic Value	1	
	Customer addition	customer addition is greater than 100%	5	1.4
		customer addition is 50%-99%	3	
		customer addition is < 50%	1	
		Total		10.5
Maximum = 3	Minimum = 0.6	Score x weight 20%		2.09
		Assessed as		Average

The problem of participation has arisen over the last 3 years, because the waste bank has decreased in the number of customers. However, after the pandemic ended the number of active customers increased again. It is however inconclusive whether there is a correlation between the pandemic and waste bank activities, but the impact felt by the community is less activity in several communities in Makassar.

Based on this explanation, it is concluded that the waste management through waste banks in Makassar can be categorized as Average as described in the **Table 17**..

Table 17 Assessment of Waste Bank in Makassar

Aspects	Score	Assessment rate
Policy/legal	0.98	Good
Technical	4.6	Average
Institutional	7.0	Good
Financial	1.68	Average
Participation	2.09	Average
Conclusion	16.33	Average

Although the conditions for CBSWM implementation indicate good results, the governance conditions lead to restrictions. In addition, with many actors involved at urban level, it is necessary to discuss how the local government in Makassar could better apply CBSWM program. Further discussion is provided in Chapter 5.

CHAPTER 5 DISCUSSION

This chapter discusses the success of implementing CBSWM in urban areas, including the effect of CBSWM implementation on waste management targets and conditions whether it was successful or less successful. Based on the results of the research, it is suggested that further elaboration is encouraged on the success of Makassar in implementing CBSWM through waste bank program. The current discussion was mainly oriented to the results of evaluation of the key stakeholders, the governance of the waste bank program, as well as the evaluation results of waste bank implementation in Makassar. In addition, this chapter has a reflection section to understand the obstacles in the implementation of the research.

5.1. Reflection

This research lasted for approximately three months. In its implementation, it encountered several acquaintances. The first interesting thing is the need to visit the research site directly during the pandemic. It is because most waste banks are scattered and need coordination to reach their locations.

In addition, in applying GAT in this study, accuracy is needed in analyzing the results of interviews. The advantage of using GAT is that this tool already gives a matrix. However, reading the interview results two or three times is necessary to understand. Sometimes errors in assessing the interview results can occur if the researchers do not understand the context of the interviewee's answer. Therefore, after conducting the interview, a researcher should distribute it directly into the GAT matrix.

5.2. The Role of Government and Society in Reducing Waste in Makassar

To maximize the role of the community, Makassar City Environment Service (DLH) continues to encourage community involvement as the dominant actor who plays the most significant role in implementing CBSWM program in Makassar. DLH is the definitive actor who has the ability to encourage paradigm change and the implementation of community-based waste management, as well as having a higher level of urgency. In other words, DLH serves as the main actor in the implementation of waste bank program, which is in line with the stipulated regulation mandating that DLH has the authority to craft regulations, organize waste management in its area, provide guidance, determine locations, and perform monitoring or evaluation.

Meanwhile, based on the results of interviews with each level of stakeholders, it is apparent that the community serves as the party appointed by each level as the most important

actor in CBSWM. Although stakeholder analysis theory points out that they do not have sufficient power, their existence is inseparable in this activity.

In implementing the waste bank in Makassar, actors who are involved in the implementation of this activity are required to understand the applicable regulations, the sorting process, and to have willingness in participating. Thus, both education and dissemination related to waste management through waste bank activities are encouraged to be continuously delivered.

The government's effort to disseminate this program is performed by contracting motivators from the community and the experienced NGOs. Motivators refer to agents from the central government to educate people not yet actively involved in waste management activities. It is common that the educated people would also dispose the waste without prior sorting. It has recently been found out that there are more than 600 waste banks registered in Makassar, but only around 118 are regarded as active waste banks (Makassar City Environment Agency, 2021). In addition, DLH also collaborates with other sectors particularly Government bodies to support this program.

5.3. Most Supportive and Restrictive Factors on CBSWM Implementation in Makassar

Based on the research results, it can be summarized that the conditions that support and reduce the motivation of each stakeholder to get involved are depicted as follows:

Table 18 Most a Supportive and Restrictive Factors

Aspects	Most Supprtive Factors	Most Restrictive Factors
Technical	Easy and cheap technology	Poor services
Environmental	The spirit of having a clean environment	There are no adequate environmental and health evaluation results
Financial	1. Financial support from local government 2. Financial Benefit From Selling waste	There is no proportional budget to solve the problem of waste management.
Social and Cultural	Paradigm change through education	1. Implementation is voluntary 2. There is no proper scheme yet
Institutional	Local Government Intervention and support	Support from the government at other levels has not been maximized
Policy and Legal	Reward due to applying program to reduce waste	Reluctant to apply law enforcement against law violations

Based on the research results, interviews and surveys have been conducted to determine the factors affecting the involvement of each level of society. Based on the results of the interview, it is revealed that the institutional conditions of waste bank in Makassar are considerably good, indicated by the existence of a clear structure in each waste bank, as well as the fulfillment of waste bank resource. Every waste bank in Makassar must be registered with the local government and thus they can be controlled or evaluated annually.

However, the weakness of this dependence on the Government is the obligation to follow the rules of the game from the government. Hence, every activity related to reducing waste bank must be in accordance with the Government's rules. This obligation also includes the payment from the selling of waste. On the other hand, waste banks have the flexibility to sell their waste to vendors, giving more instant payment than leaving it to the government. However, this freedom lead to uncontrollable waste data with the exception that each waste bank reports the amount of waste sold to the local government.

In addition, there are less-maximized conditions in the application of 3R and circular economy in Makassar through the implementation of waste banks. Instances include the fact that 600 waste banks with inactive status that encourage the government to prepare more human resources to re-active them. If the government does not immediately reactivate it, then in the future the waste reduction target will continue to decline, along with the increasing level of waste, while awareness and those who are active in carrying out 3R is in contrast nature. In addition, Makassar government has not collaborated with recycling companies to return recycled materials into reusable goods.

Nationally, the support and limit conditions to the waste management program are evident from financial, institutional, and policy aspects. Currently, there is no special budget from the national government to reduce waste. In addition, the implementation of policies which are not conducted by the government has liberated people to do things outside the regulations. Reducing waste by burning waste at home is common and combining organic and inorganic waste is also not prohibited.

Basically, CBSWM program serves as an education for people who do not understand simple practices to reduce waste as a forum for socialization. However, further steps are required to integrate other waste management programs.

5.4. Successful Rate of Waste Bank Program to Reduce Waste and Apply Circular Economy in Makassar

According to Indonesian policies, household waste management activities are expected to reduce waste by 30% in 2025. This target is further expected to be gradually achieved from 2018 to 2025. This study evaluates the waste bank program as an activity of waste reduction from 2016 to 2021. However, Makassar waste reduction target in Major Regulations number 36/2018 was started in 2018 (18%). Therefore, contribution of waste bank on reducing waste was capable of assessment from 2018.

Overall, the waste bank program was able to reduce the amount of waste from 2016 to 2021 by 3,755,122 kg of inorganic waste and 159.026 pcs of glass, with the details in Appendix IV. However, this number has not been able to achieve the national target in accordance with the national policies and strategies set by the President of Indonesia. The successful achievement of waste reduction through waste bank activities is depicted in **Table 12**.

Table 12 presents that the amount of waste is reduced through the waste bank program which is far from the expected target. This finding further shows that waste bank program in Makassar is less valid to be used as the sole foundation for waste reduction in Makassar. In contrast, waste bank as a program involving the community serves as a trigger for the implementation of independent waste management by the community together in urban areas (Meidiana et al., 2021). By consistently socializing and continuing to implement this activity, other communities can be motivated for similar activity.

Apart from these targets, the existence of this program is able to stimulate waste management initiated by the community. Moreover, Makassar government has succeeded in changing the paradigm of some people and encouraging the implementation of management in accordance with applicable regulations.

In addition, waste bank program has had an economic impact on the people involving in waste management in Makassar. From Appendix IV, it is apparent that of the selling of waste since 2016 amounted to 700,398 euros. Based on the results of a conducted survey, this provides additional income for people who are customers and are committed to collecting waste in the waste bank. This condition should be an additional motivation to obtain a clean environment.

However, there are not many additional customers based on the survey of the parties in waste bank indicating that the number of customers has moved steadily since its inception.

The condition is even worse marking more people to not participate since 2020 because of the pandemic.

Alleging the pandemic solely is useless, despite labeled as a force major, an anomaly condition that causes a decrease in human productivity. Even from the aforementioned table, it is apparent that the population from 2019 to 2020 has decreased with further improvement in 2021. From that table, it is obvious that the decline in productivity has started since 2019 to 2020, in which Makassar did not have a mayor. This absence of mayor can be a barrier to participation, where a leader can motivate the community to carry out community activities with government intervention.

In terms of community service, community feels that they have not received support from Makassar Government in providing responsive services regarding an on time schedule and payment, discouraging public confidence towards the credibility of government services.

Another hindering condition makes it difficult to motivate people, in which government must always invite and persuade people to apply 3R in their environment. The government's firmness in enforcing the law is thus required for better 3R implementation, but the government is reluctant to do so. Based on the on-field observations, the practice applied in Makassar is conducted by contracting motivators to invite RT/RW who are not yet active in this activity. Approaches are usually made to leaders or elders in the area. Then the motivator will educate the public by delivering 3R program and waste bank program. The community is still free to choose whether to implement this program.

The 3R principle plays an important element in the circular economy. Thus, one of the objectives of implementing CBSWM program is to promote the principle of a circular economy as mandated by Indonesia government regulations. It is estimated that the Indonesian government will experience difficulty to switch to a circular economy because of the nature of program which is voluntary.

The principle of circular economy and CBSWM can support each other. However, new technological resources are required for this. In addition, proper schemes need to be made assisting each city to independently manage its waste with this principle. The paradigm shift to a circular economy has been conducted with education. Therefore, it is the time for the government to plan the technology to have a circular city.

In addition, according to the community, political conditions do not influence the community to carry out these activities related to a certain leader who does not change one's motivation to be involved in community-based waste management. Changes in leadership will thus affect political and institutional conditions, as discussed in section 5.4. It is assumed that

cognitive factors and additional income play a more important role in encouraging the community to be involved in waste bank program. The desire to have a clean environment and beneficial values from financial is evident to encourage the community involvement voluntarily in community-based waste management.

5.5. Governance Context that Support or Restrict Waste Reduction in Makassar

The results of this study indicated that the context of governance in Makassar tends to be restrictive because the involvement of each level has not been maximized. Levels and stakeholders in the provincial levels are in the spotlight because there has been no effect felt by stakeholders at other levels. Cooperation between cities and regencies has not become a priority in dealing with waste management, especially in the flow of materials from one city to another. In addition, vertical cooperation from the highest level as a policy maker to the target group has not been maximized, because the main burden of this activity seems to be on the community as the target group facilitated by the city level government through waste bank program. The national level has not been able to contribute more in supporting this program. On the other hand, the flexibility to express public opinion as the party implementing this activity has not been facilitated at the national level. Despite the fact that community contributions are facilitated at the urban level, the limited resources of the urban side hinder the running of this program.

On the other hand, actors are free to actively participate in this program, as long as it does not take the essence of this activity as a community-based activity. On an urban scale alone, there are about 14 actors involved, making it difficult for the government to regulate cooperation with each party. In addition, the Government must be ready to deal with various interests and different perceptions.

Currently, the Government already has a future target to reduce waste gradually towards 30% until 2025. However, this target seems normative because it has not been supported by applicable approaches by the community. Currently, the existing policies contain policy formulation, standards, and strengthening coordination.

However, integration between each program is deemed necessary to reduce waste in urban areas, not only relying on one program (Van de Klundert & Anschutz, 2001). As depicted in **Table 12**, the amount of reduced waste decreases over time. Therefore another strategy is required to increase the level of waste reduction in Makassar in particular and in Indonesia in general, further discussed in Chapter 6.

CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS

This section provides answers to sub-research questions by describing the completed activities to improve CBSWM program in Makassar. Conclusions and suggestions from this research are explained as follows.

6.1 Conclusions

This study evaluates the implementation of waste management policies through WB program in Makassar, South Sulawesi, Indonesia. The expected result by employing this policy lies in a paradigm shift and a behavioral change of the community.

To evaluate CBSWM program implementation, identification was conducted to observe the key stakeholders playing a role in this activity and to navigate the most important actor using the theory developed by Mitchel (1997). Further assessment of governance was additionally completed through Governance Assessment Tools (GAT) developed by Bressers et al., (2016) to assess whether there were supports or hurdles in implementing the policy. Meanwhile, in the final stage, an assessment of the effectiveness of CBSWM implementation in Makassar was conducted by adapting the assessment of the theory developed by Integrated Solid Waste Management (ISWM) and Ministry of Public Works and Public Housing (2017). The data and information were obtained through in-depth semi-structured interviews, surveys, and desk research.

The first sub-question of this research is the role played by each stakeholder in the implementation of community-based solid waste management in Makassar. Based on the results of the research conducted, it is evident that Makassar Provincial Environmental Management Agency (DLH) has the most significant role in executing the implementation of this policy. In addition, it is inevitable that the community managing waste bank holds the most needed place to collect the processed waste. Apart from these two actors, the implementation of this activity is actualized as a result of the cooperation from all stakeholders. However, the disadvantage of this activity lies in the fact that there is no collaboration with the recycling company ensuring that the recycled materials that have been collected will be reused.

The second sub-question is formulated to explain the factors that can support or hinder each stakeholder from being involved in the implementation of this policy. Based on the results of the conducted analysis, it is obvious that there are various encouraging conditions for the involvement of stakeholders in waste bank management policies. In general, the

involvement of parties is driven by cooperation in meeting the main needs to drive this activity, including facilities, funds, human resources, and segregation of waste from the source (Mohamad Satori, from Bandung Islamic University, offline interview, June 17, 2022).

The third sub-question comprises the governance context. Based on the results of the assessment, a balanced result was obtained between supportive and restrictive. However, policy implementation was restrictive due to insufficient support from policy makers such as national and provincial parties. Hence, from a governance perspective, it is labeled as restrictive. The results of this assessment indicate that both extent and flexibility are supportive, while coherence and intensity are restrictive. This finding emerges because there were only few parties at the city level which are y serious in carrying out this activity, while policy makers at higher levels did not exhibit more meaningful support and tended to be inconsistent for implementing policy concerning CBSWM.

The fourth sub-question relates to the effectiveness of the implementation of this activity. Based on the results of the evaluation, it is obvious that this implementation is considerably average-effective. Several points are noted in the implementation including a cooperation agreement with the company to ensure the flow of materials and to promote more for costumer addition and a waste management system both for inorganic waste and organic waste.

6.2 Recommendations

Recommendations that can be given in the CBSWM in Makassar are for better implementation and for the future research.

6.2.1 Recommendation for Policy Implementation.

Firstly, it is evident that the implementation of waste management is an activity from upstream to downstream, requiring the cooperation of numerous parties and the integration among regulation and other programs. Hence, it takes the seriousness and activity of each party to cooperate. Therefore, support from each party is required to not only provide targets, but also to provide socialization and education to the community in conducting waste management, according to their respective portions, further supported by sufficient resources.

The second recommendation notes that the regulations are important to implement and law enforcement is required to change people's behavior, becoming the directive to plan for the closure of the final waste processing site using an open disposal system in no later than 1 (one) year from the enactment of Law number 18 of 2008.

The third recommendation states the need for ministries and provinces to provide adequate resources for implementing parties. Despite the sufficiently supporting current regulations, their implementation must be more enforced. Funds are the biggest homework to tackle the waste problem in Indonesia with the absence of priority funding sources for waste management hindering program implementation at the city level.

The fourth recommendation is to increase effectiveness, necessary to ensure the material flow in developing the circular economy. In addition, fair retribution should be implemented. For example, for those who have managed their waste and have been actively involved in the waste bank, they can get incentives to reduce retribution payments. While, those who do not want to sort their waste must pay a higher retribution. Furthermore, it is hoped that the local government will reach out to areas that have not been socialized to increase the total coverage of CBSWM program.

6.2.2 Recommendation for Future Research

This study has contributed to the use of Governance Assessment Tool. In a previous study, the GAT is used to assess the contextual governance condition of water governance (H. Bressers et al., 2016; Flores, 2017). However, this study challenges GAT to adapt to other environmental governance problems namely waste management. This study also featured the GAT combined with other frameworks, yielding the compelling results outlined in this thesis. It shows that using the GAT matrix help to dig deeper into a waste management problem.

Subsequent research is encouraged to develop this study by comparing several areas that have been accomplished in community based waste management particularly by focusing on the national level. However, the challenges would be greater, requiring a joint research mechanism by examining waste management governance. In addition, another research theme on the possibility of implementing a fair retribution policy for the community is feasibly important in advocating fair incentives for those who actively sort waste.

Furthermore, research on circular cities is encouraged by applying a combination of waste banks and other waste management programs. This combination would further indicate how the circular city program will work and describe the government's future plans to actualize Makassar (or other cities) as a circular city. Future research on circular scheme is feasible by using a circular economy framework.

REFERENCES

- Andersen, M. S. (2007). An introductory note on the environmental economics of the circular economy. *Sustainability Science*, 2(1), 133–140. <https://doi.org/10.1007/s11625-006-0013-6>
- Bressers, H. (2009). *From Public Administration to Policy Networks: Contextual Interaction Analysis*. In: Stéphane Nahrath and Frédéric Varone (Eds.), 2009, *Rediscovering Public Law and Public Administration in Comparative Policy Analysis: Tribute to Peter Knoepfel Chapter*. 123–142.
- Bressers, H., Boer, C. De, Lordkipanidze, M., Ozerol, G., Vinke-De Kruijf, J., F, Furusho, C., Lajeunesse, I., Larrue, C., Ramos, M.-H., G, Kampa, E., Stein, U., Troltzsch, J., UK, & Browne, A. (2013). *Water governance assessment tool: with an elaboration for Drought Resilience*. June, 1–42.
- Bressers, H., & Bressers, N. (2016). Governance for Drought Resilience. In *Governance for Drought Resilience*. <https://doi.org/10.1007/978-3-319-29671-5>
- Bressers, H., Bressers, N., Kuks, S., & Larrue, C. (2016). *The Governance Assessment Tool and Its Use*. <https://doi.org/10.1007/978-3-319-29671-5>
- Bressers, J. T. A., Bressers, N., Kuks, S. M. M., & Larrue, C. (2016). The Governance Assessment Tool and Its Use. *Governance for Drought Resilience: Land and Water Drought Management in Europe*, 45–65. <https://doi.org/10.1007/978-3-319-29671-5>
- Chen, Y. (2018). *Household Participation In Solid Waste Management Towards Circular Economy : A Case Study Of Haidian District , Beijing , China*.
- Cheremisinoff, N. P. (2003). *Handbook of Solid Waste Management and Waste Minimization Technologies*. Elsevier Science (USA).
- Coenen, F. H. J. M., Huitema, D., & Jr, L. J. O. (1998). *Participation and The Quality of Environmental Decision Making*. Kluwer Academic Publishers.
- Damanhuri, E., Handoko, W., & Padmi, T. (2014). Municipal Solid Waste Management in Indonesia. In *Environmental Science and Engineering (Subseries: Environmental Science)* (pp. 139–155). https://doi.org/10.1007/978-981-4451-73-4_8
- Damanhuri, E., & Padmi, T. (2019). *Integrated Waste Management* (2nd ed.). ITB Press.
- Direktorat Jenderal Cipta Karya. (2017). Technical Instructions for 3R Waste Processing

- Sites. In *Research and Development Agency - Center for Settlement Research and Development*.
- Fatmawati, A., Muhsin, M. A., & Taufik, A. (2019). Makassar Waste Bank Service Performance. *Makassar Journal of Innovation and Public Service*, 1(18), 1–15.
- Flores, C. C. (2017). *Context Matters: Water Governance Assessment of The Wastewater Treatment Plant Policy in Central Mexico* (Issue March).
- Government of Indonesia. (2017). *National Policies and Strategies for the Management of Household Waste and Types of Household Waste*.
- Kalra, N. (2019). Community Participation and Waste Management (Sustainable Waste Management: Policies and Case Studies Vol:1, Springer). *Sustainable Waste Management: Policies and Case Studies*, January. <https://doi.org/10.1007/978-981-13-7071-7>
- Kaza, S., Yao, L., Bhada-Tata, P., & Van Woerden, F. (2018). *What A Waste 2.0*. World Bank Grup. <https://doi.org/10.1596/978-1-4648-1329-0>
- Kubota, R., Horita, M., & Tasaki, T. (2020). Integration of community-based waste bank programs with the municipal solid-waste-management policy in Makassar, Indonesia. *Journal of Material Cycles and Waste Management*, 22(3), 928–937. <https://doi.org/10.1007/s10163-020-00969-9>
- Makassar City Environment Agency. (2021). *Government Agency Performance Report 2021*.
- Meidiana, C., Sekito, T., & Sasongko, W. (2021). Determining Factors of Community Participation in Waste Bank. *IOP Conference Series: Earth and Environmental Science*, 940(1). <https://doi.org/10.1088/1755-1315/940/1/012085>
- Ministry of Environment and Forestry. (2020). *SIPSN*. <http://sipsn.menlhk.go.id/sipsn/#>
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853–886. <https://doi.org/10.5465/AMR.1997.9711022105>
- Nugraheni, S., Poerbonegoro, A. F., & Mokoginta, I. S. (2013). *Community-Based Solid Waste: The Case of Bank Sampah*. July 2013, 0–9.
- Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective*

- Action. In *Political Economy of Institutions and Decisions*. Cambridge University Press.
<https://doi.org/DOI: 10.1017/CBO9780511807763>
- Ostrom, E. (2007). A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences of the United States of America*, 104(39), 15181–15187.
<https://doi.org/10.1073/pnas.0702288104>
- Owens, K. A., & Bressers, H. (2013). A Comparative Analysis of How Actors Implement: Testing the Contextual Interaction Theory in 48 Cases of Wetland Restoration. *Journal of Comparative Policy Analysis: Research and Practice*, 15(3), 203–219.
<https://doi.org/10.1080/13876988.2013.785668>
- Pasang, H., Moore, G. A., & Sitorus, G. (2007). Neighbourhood-based waste management: A solution for solid waste problems in Jakarta, Indonesia. *Waste Management*, 27(12), 1924–1938. <https://doi.org/10.1016/j.wasman.2006.09.010>
- Raharjo, S., Matsumoto, T., Ihsan, T., Rachman, I., & Gustin, L. (2017). Community-based solid waste bank program for municipal solid waste management improvement in Indonesia: a case study of Padang city. *Journal of Material Cycles and Waste Management*, 19(1), 201–212. <https://doi.org/10.1007/s10163-015-0401-z>
- Shrestha, Z. (2018). *The Integration of Circular Economy into the Municipal Solid Waste Management of Kathmandu Metropolitan City in Nepal*. <https://essay.utwente.nl/77393/>
- Suherman, V., Franco-Garcia, L., Abdoellah, O., Kurniadie, D., & Hidayati, Y. (2019). *Circularity of Wastes: Stakeholders Identity and Salience for Household Solid Waste Management in Cimahi City, West Java Province, Indonesia: Texts and Studies in the History of Philosophy* (pp. 81–104). https://doi.org/10.1007/978-3-319-92931-6_5
- Tanaka, M. (2014). *Sustainable Society and Municipal Solid Waste Management BT - Municipal Solid Waste Management in Asia and the Pacific Islands: Challenges and Strategic Solutions* (A. Pariatamby & M. Tanaka (eds.); pp. 1–14). Springer Singapore.
https://doi.org/10.1007/978-981-4451-73-4_1
- The Ellen MacArthur Foundation. (2013). *Towards The Circular Economy*.
- Towolioe, S., Permana, A., Aziz, N., Ho, C., & Pampanga, D. (2016). The Rukun Warga-based 3Rs and waste bank as sustainable solid waste management strategy. *Planning Malaysia, Iv*, 31–44.
- Van de Klundert, A., & Anschutz, J. (2001). Integrated sustainable waste management - the

concept: Tools for decision-makers: Experiences from the Urban Waste Expertise Program. In *Waste*. <http://www.bvsde.paho.org/bvsacd/cd48/concepts.pdf>

Verschuren, P., & Doorewaard, H. (2010). *Designing a Research Project* (M. J. Mellion ed.) (Second). Eleven International Publishing.

Wardhana, I. W., Budihardjo, M. A., Istirokhatun, T., Ikhlas, N., & Fadhilah, I. (2021). An overview of the waste management system in Tembalang District, Semarang City. *IOP Conference Series: Earth and Environmental Science*, 894(1). <https://doi.org/10.1088/1755-1315/894/1/012044>

Wijayanti, D. R., & Suryani, S. (2015). Waste Bank as Community-based Environmental Governance: A Lesson Learned from Surabaya. *Procedia - Social and Behavioral Sciences*, 184(August 2014), 171–179. <https://doi.org/10.1016/j.sbspro.2015.05.077>

Wulandari, D., Utomo, S. H., & Narmaditya, B. S. (2017). Waste bank: Waste management model in improving local economy. *International Journal of Energy Economics and Policy*, 7(3), 36–41.

Appendix I: GAT Assessment Matrix
(H. Bressers et al., 2013; Flores, 2017, p. 56 - 58)

Governance dimension	Quality of the governance system			
	Extent	Coherence	Flexibility	Intensity
Levels and scales	<p>High: All level feels engaged</p> <p>Moderate: Most of the levels engaged</p> <p>Low: The minority levels feel engaged</p>	<p>High: All levels are work together</p> <p>Moderate: Most level are cooperating, report some trust issues</p> <p>Low: Most levels are missing or not work together, The levels report some trust issues</p>	<p>High: There is a chance to move up and down levels, depending on the issue</p> <p>Moderate: There is a chance to move in different level by create agreements among the levels depending on the issue</p> <p>Low: There is no chance to move up and down between the levels</p>	<p>High: All levels are working together to effect behavioural change or management improvement</p> <p>Moderate: Most levels are working to lead behavioural change or management improvement</p> <p>Low: The minority levels are working to lead behavioural change or management improvement</p>
Actors and networks	<p>High: All stakeholders are engaged</p> <p>Moderate: Most of stakeholders feel engaged</p> <p>Low: The minority of stakeholders feel engaged</p>	<p>High: There is mutual trust in all interactions that are institutionalized and stable</p> <p>Moderate: The majority or interactions are institutionalized and stable, and there are mutual trust issues</p> <p>Low: Some interactions have been institutionalized and stable and there are mutual trust issues.</p>	<p>High: There are opportunities to include new actors, change leadership, and share social capital</p> <p>Moderate: Actor network facilitates the following: new actor engagement, and/or leadership change, and/or social capital sharing</p> <p>Low: Actor network limits the involvement of new actors, changes in leadership, or sharing of social capital</p>	<p>High: There is a collision between various actors that can have a significant impact on behavioural transformation or management reform</p> <p>Moderate: The intensity has been fragmented. A few actors are attempting to have a significant impact on behavioural change or management reform</p> <p>Low: No actor has a significant effect on behavioural change or management reform</p>
Problem perspectives and goal ambitions	<p>High: The actors contemplate that all perspectives are included</p> <p>Moderate: Some actors consider that the most of perspectives are included</p> <p>Low: Some actors consider that minority of the perspectives are included</p>	<p>High: All the different goals support each other.</p> <p>Moderate: Most goals support each other</p> <p>Low: Competition among goals</p>	<p>High: There is a chance to re-evaluate goals</p> <p>Moderate: Goals can be re-evaluated partly</p> <p>Low: There is no chance to re-evaluate goals</p>	<p>High: The perspective are generally in agreement on how to accomplish the objective and step away from status quo</p> <p>Moderate: The majority of the actors agree on their perspectives on how to accomplish the objective and step away from the status quo</p> <p>Low: No strong agreement among the actor's perspective.</p>

Governance dimension	Quality of the governance system			
	Extent	Coherence	Flexibility	Intensity
Strategies and instruments	<p>High: No instruments or strategies are absent</p> <p>Moderate: Some instruments or strategies are absent</p> <p>Low: An important number of instruments or strategies are absent</p>	<p>High: The system enables policy instruments to work together and create teamwork. There are no conflicts among instruments</p> <p>Moderate: The system allows for the development of teamwork among instruments, but it suffers from some incoherence</p> <p>Low: The system does not allow the teamwork happen and there are conflicts among the instruments' implementation</p>	<p>High: Different instruments may be combined or used</p> <p>Moderate: Instruments are able to combined as long as it stated in agreement or law</p> <p>Low: There is no chance to combine or use different instruments.</p>	<p>High: For strongly enforced instruments. There is a low requirement for behavioural deviation from current practice</p> <p>Moderate: Requirement for behavioural deviation in certain activities, as well as compliance issues in particular areas</p> <p>Low: High demand for behavioural deviation in practices, as well as compliance issues</p>
Responsibilities and resources	<p>High: All responsibilities are clearly assigned, and adequate resources are provided</p> <p>Moderate: The majority of responsibilities are clearly assigned but some have resources</p> <p>Low: There are clearly assigned responsibilities with inadequate resources</p>	<p>High: Responsibilities foster cooperation among organisations and resources are used consistently</p> <p>Moderate: Some of responsibilities foster collaboration among organizations, and only a small portion of resources are used consistently</p> <p>Low: Create competence and conflict among organizations and resources are not used consistently</p>	<p>High: The delegated tasks can be pooled with appropriate accountability mechanisms</p> <p>Moderate: While it is possible to pool assigned roles, there are no effective accountability structure in place</p> <p>Low: There is no chance to combine the responsibilities that have been assigned</p>	<p>High: There are enough resources needed to make the desired changes</p> <p>Moderate: Some resources are needed to obtain the desired changes</p> <p>Low: The resources required to affect the desired improvements are in high demand</p>

Appendix II: List of Interview Questions for GAT

Level and Scale

1. How many levels are involved in dealing with community-based solid waste management (waste bank) in Indonesia or Makassar (Depend on level the interviewee)? Are there any external parties (outside the government) involved? Are there any important level skipped?
2. What is the form of cooperation between levels? Have all the parties felt involved? At what stage does interdependence usually arise? To what degree usually interdependence among level is recognized regarding CBSWM implementation?
3. Is there a possibility of collaborating with other parts that are appropriate in this activity, if this activity is expanded? How it would look like?
4. Which level has the impact towards behavioral change or reform management (for example in segregating waste, or join the CBSWM)? How do your levels of governance influence the behavior change?

Actors and Network

5. Are there any stakeholders who should be involved, but have not been involved yet? Why they are uninvolved or excluded?
6. Has each actor ever worked together? Are there any outputs or outcomes from their collaboration which can be used to support this activity? How they manage to work together? Do each actor trust and respect each other?
7. Is there possibility to add new actors who have not been involved in this activity, change leadership, and share social capital? How this new actor will join this activity?
8. Is there a very influential actor in this activity? Does it mean if this actor does not exist, this activity will not run? How strong is the pressure from an actor to change people behavior or management reform?

Problem perspectives and goal ambitions

9. Are there any issues that have not been addressed or that could interfere the CBSWM performance? How this issue is supporting or hindering CBSWM?
10. Are the objectives in carrying out this activity mutually supportive? Are there overlapping goals? Is there competition or conflict in carrying out their respective goals?
11. In your opinion, has the policy in the implementation of CBSWM been appropriate? Do you think it is strict enough or not? If the goal is not right, is there a possibility to improve the goal in the future? How to reach multiple targets in CBSWM
12. What is the current state of achieving this goal? What are the reasons to not be able to reach the intended goal? Do you think this goal is very difficult to achieve, and what should be done to change it?

Strategies and instruments

13. What instruments are used in the policy strategy? Are there any other instruments that can be applied to optimize the policy? How to optimize the instruments?

14. To what extent the incentive system is implemented? Can these instruments be used at the same time? Will there be no overlap or conflict of interest if the instrument is implemented?
15. Is it possible to combine different instruments? How will it be combined?
16. What is the most important instrument? Are there any problems in implementing the instruments? Are there any rejections from implementing the instruments? How the instruments change the behavior or management reform?

Responsibilities and resources

17. Who has the most important role in this activity? Does each actor have a clear role? How each stakeholder carries out its responsibilities
18. How the actor uses resources to achieve goals? Do the responsibilities assigned to each actor support this activity? Are there any conflicts that arise in carrying out their responsibilities?
19. Can the responsibilities of each actor be combined? To what extent is it possible to pool assigned responsibilities and resources as long as accountability and transparency are not compromised?
20. Are the funds, human resources, and other resources can support CBSWM program? Are there any other resources that can support this activity? How will the resources help to implement the measures needed for the intended change?

Appendix III: Stakeholders Identity and Salience for Reducing Waste in CBSWM in Makassar

No	Stakeholders	Roles Practically	Power (Dormant)			Legitimacy (Discretionary)			Urgency (Demanding)		Power+Legitimacy (Dominant)	Power+Urgency (Dangerous)	Legitimacy+Urgency (Dependent)	Power+Legitimacy+Urgency (Definitive)
			C	U	N	I	Or	S	TS	Cr				
	A. Formal Sectors													
1.	Government													
1.1	National Government Authority Based on Law Number 18/2008													
	a. Establish national policies and strategies													
	b. Establish norms, standards, procedures, and criteria for waste management													
	c. Develop cooperation among regionals, partnerships, and networks in waste management													
	d. Coordinating, making guidance, and supervising local government performance in waste management													
	e. Establish policies for resolving disputes in waste management between regionals													
1.1.1	Ministry of Environmental and Forestry	a,b,c,d,and e			√		√				√			
1.1.2	Ministry of Public Work	b and d			√		√				√			
1.2	Provincial Government Authority Based on UU 18/2018 and Regulation Number 14/2021													
	f. Coordinate, guide, and perform an evaluation of Waste Management by Waste Banks													
	g. Facilitate collaboration with other parties													
	h. Establish policies and strategies in waste management													
	i. Facilitate the resolution of waste management disputes													
	1.2.1	Makassar Provincial Environmental Management Agency	f,h, and i			√		√				√		
1.3	Local Government Authority Based on UU 18/2018 and Regulation Number 14/2021													
	j. Establishing policies and strategies for waste management													
	k. Managing city scale waste													
	l. Fostering and supervising the performance of waste management carried out by other parties													
	m. Conducting monitoring and evaluation													
	1.3.1	Makassar Environment Agency	j,k,l, and m			√		√			√			

No	Stakeholders	Roles Practically	Power (Dormant)			Legitimacy (Discretionary)			Urgency (Demanding)		Power+Legitimacy (Dominant)	Power+Urgency (Dangerous)	Legitimacy+Urgency (Dependent)	Power+Legitimacy+Urgency (Definitive)
			C	U	N	I	Or	S	TS	Cr				
1.3.2	Central Waste Bank	k		√			√				√			
1.3.3	Cooperatives and Micro, Small and Medium Enterprises Agency	k and l		√			√				√			
1.3.4	Sub district	k		√			√				√			
1.3.5	Urban village	Practically: Establishing a waste bank decree		√			√				√			
1.3.6	Motivators	Practically : conduct guidance and supervision of waste management performance carried out by communities				√								
2.	Non-Governmental Organizations (NGOs)-Local Level													
	a. Any person in household solid waste management shall reduce and handle waste in environmentally friendly manner (Law No. 18/2008)													
	b. Practically: conduct guidance and supervision of waste management performance carried out by other parties													
2.1	NGO-Represent by YPN	a and b		√			√				√			
3. Communities														
3.1	Waste Bank	Reducing and handling waste in environmentally friendly manner				√			√				√	
B. Informal Sectors														
4. Informal Waste Collectors														
4.1	Vendor (Pengepul)	Practically: Buying Waste recyclable							√					
4.2	Scavengers	Collecting goods								√				

No	Stakeholders	Roles Practically	Power (Dormant)			Legitimacy (Discretionary)			Urgency (Demanding)		Power+Legitimacy (Dominant)	Power+Urgency (Dangerous)	Legitimacy+Urgency (Dependent)	Power+Legitimacy+Urgency (Definitive)
			C	U	N	I	Or	S	TS	Cr				
4.3	Recycle industries	Processing waste and reused as a new product		√						√		√		

Appendix IV: The Amount of Waste Reduced in 2016-2021

Year	Product Categories								Amount			
	Plastics		Metals		Paper		Glass					
	Kg	Euro	Kg	Euro	Kg	Euro	Pcs	Euro	Pcs	Kg	Euro	IDR
2016	360,340.00	67,874.71	51,917.00	5,409.00	588,410.00	53,496.44	25,035.00	994.11	25,035.00	1,000,667.00	127,774.27	1,993,278,570.00
2017	393,888.95	93,239.54	59,104.05	8,346.53	818,907.48	88,954.75	31,750.40	1,494.17	31,750.40	1,271,900.48	192,034.98	2,995,745,710.00
2018	276,544.50	66,603.65	36,137.70	5,959.25	630,917.50	56,804.80	31,816.00	1,444.04	31,816.00	943,599.70	130,811.74	2,040,663,120.00
2019	222,304.90	53,469.92	33,820.20	4,809.94	627,238.10	48,625.73	32,362.00	1,431.75	32,362.00	883,363.20	108,337.34	1,690,062,500.00
2020	138,261.00	25,858.59	31,979.50	3,915.28	403,348.50	34,054.93	20,415.00	818.45	20,415.00	573,589.00	64,647.25	1,008,497,050.00
2021	129,310.90	29,430.44	34,087.50	5,734.70	280,228.50	40,885.53	17,648.00	741.44	17,648.00	443,626.90	76,792.11	1,197,956,910.00
Total	1,520,650.25	336,476.85	247,045.95	34,174.70	3,349,050.08	322,822.18	159,026.40	6,923.96	159,026.40	5,116,746.28	700,397.68	10,926,203,860.00

*) 1 euro = IDR15,600.00

Appendix V: List of Survey Questions for Waste Bank

Questions Regarding Politics/Legal/Policy Aspect

1. Have you ever read/Do you know the regulations in Indonesia about waste management and sort out waste?
 - a. Yes
 - b. No
 - c. Don't know
2. Have you ever read/Do you know the regulations in Makassar about waste management and sort out waste?
 - a. Yes
 - b. No
 - c. Don't know
3. Did you know that the waste bank program in Makassar is related to the waste management development program?
 - a. Yes
 - b. No
 - c. Don't know
4. Is your waste bank registered in the government and has an official license to operate?
 - a. Yes
 - b. No
 - c. The license is in process
5. Has the waste bank in your area implemented standard waste sorting operations?
 - a. Yes
 - b. No
 - c. The standard is in process
6. Does a leadership change (such as a change in government officials) affect the sustainability of waste management through the waste bank in your place?
 - a. Yes
 - b. No
 - c. Don't know

Questions Regarding Technical Aspect

7. How much (approximately) waste is collected and how much waste is sorted each day (you can answer it by fill in the table below)?

Collected (kg/day)	Sorted (kg/day)				
	Plastic	Paper	Metal	Glass	Others

8. What is the current condition of your Waste Bank Infrastructure and Building?
 - a. Very good
 - b. Well
 - c. Bad (No Infrastructures)
9. What is the current ownership status of your Waste Bank Infrastructure and Building?
 - a. Own it
 - b. Contract/Lease
 - c. Owned by Government
10. What is the condition of the equipment you currently have?
 - a. Very good
 - b. Well
 - c. Bad (No Equipments)
11. How much waste is disposed of to the landfill which is not sold successfully?
(You can answer it by fill in the table below)

Collected (kg/day)	Disposed of to the landfill (kg/day)				
	Plastic	Paper	Metal	Glass	Others

Questions Regard Institutional Aspect

12. Who regularly manages the waste bank?
 - a. The Government
 - b. Individual (Private *) please specify _____
 - c. Community *) please specify _____
13. What is the organizational structure in the Waste Bank?
 - a. Complete organizational structure (eg there is a chairman, secretary, treasurer, or other management), and all management works actively.
 - b. Complete organizational structure (eg there is a chairman, secretary, treasurer, or other management), and not all management works actively.
 - c. There are man powers, but it is not yet organized.
14. Do you have a sufficient number of workers in the Waste Bank
 - a. Enough
 - b. Not enough
 - c. No workers
15. Are there reports that are submitted either to the Regional Government, or to members of the waste bank?
 - a. Available and reported every 6 months
 - b. Yes, but not reported
 - c. No report
16. Is there monitoring and evaluation from the local government or from other parties?
 - a. Yes, evaluated every month

- b. Yes, evaluated every 3-6 months
- c. No monitoring and evaluation

Questions Regarding Financial Management Aspect

17. How have members responded regarding the financial management of waste banks so far?
 - a. All members are satisfied (no complaints)
 - b. Some members are satisfied, some are not
 - c. Not satisfied
18. How is the condition of the financial statements?
 - a. There are financial statements which are reported to each member and local government
 - b. There are financial statements which are not reported to other parties
 - c. No reports

Questions Regarding Engagement/Participation

19. Is the waste bank still active/inactive?
 - a. active
 - b. inactive
20. Are all residents around become a member of the waste bank?
 - a. Yes
 - b. No

Why people interests become a member or not a member of waste bank?
21. Do all members of the Waste Bank actively contribute to sorting out the waste?
 - a. 100% sorting out the waste before taking to the Waste Bank
 - b. 50% sorting out the waste before taking to the Waste Bank
 - c. Inactive, the one who sorts out the waste is the employee
22. Is there a membership fees, and does each member pay for it?
 - a. Yes and 100% members pay the fee
 - b. Yes and 50-90% members pay the fee
 - c. No Payment to be a member of the waste bank
23. What are the economic impacts of waste bank programs in your place?
 - a. Increase the income of each costummers, and help create cleanliness in the surrounding environment
 - b. Does not increase income, but is able to help in neighbourhood projects (eg building trails, or cleaning rivers)
 - c. No economy impact
24. Has the number of customers in your waste bank increased since it started?
 - a. Significantly improved since the start of implementation
 - b. Slightly increased
 - c. No improvement at all

Appendix VI: Consent Form

CONSENT TO TAKE PART IN INTERVIEW

“The Evaluation of the Community-Based Solid Waste Management (Waste Bank) Program in Makassar, South Sulawesi, Indonesia”

- | | Yes | No |
|---|--------------------------|--------------------------|
| • I, _____, voluntary agree to participate in this research study interview. | <input type="checkbox"/> | <input type="checkbox"/> |
| • I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind. | <input type="checkbox"/> | <input type="checkbox"/> |
| • I understand that I can withdraw permission to use data from my interview after it, in which case material will be deleted. | <input type="checkbox"/> | <input type="checkbox"/> |
| • I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study. | <input type="checkbox"/> | <input type="checkbox"/> |
| • I agree to my interview being audio-video-recorded. | | |
| • I understand that all information I provide for this study will be treated confidentially. | <input type="checkbox"/> | <input type="checkbox"/> |
| • I understand that in any report on the result of this research my identity will remain anonymous if preferred to be so. This will be done by not explicitly mentioning my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about. | <input type="checkbox"/> | <input type="checkbox"/> |
| • I understand that I am entitled to access the information I have provided after the interview. | <input type="checkbox"/> | <input type="checkbox"/> |
| • I understand that I am free to contact any of the people involved in the research to seek further clarification and information. | <input type="checkbox"/> | <input type="checkbox"/> |

Here as follow the names of the people involved in this research who guarantee the agreed use of this consent and the answer provided during the interview.

Researcher:

Project Supervisor:

Participant

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Michael Denny Latanna

Signature of Participant

Date: 2022

Location:

Persetujuan Untuk Mengambil Bagian Dalam Wawancara
Consent To Take Part In Interview

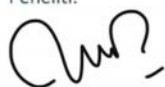
"Evaluasi Program Pengelolaan Sampah Berbasis Masyarakat di Makassar, Sulawesi Selatan,
Indonesia"

Ya Tidak

- Saya, Wistnovian, secara sukarela setuju untuk berpartisipasi dalam wawancara penelitian ini. ☒ ☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat mengundurkan diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun. ☒ ☐
- Saya mengerti bahwa saya dapat menarik izin untuk menggunakan data dari wawancara saya setelah itu, dalam hal ini materi akan dihapus. ☒ ☐
- Saya memahami tujuan dan sifat penelitian yang dijelaskan kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang penelitian ini. ☒ ☐
- Saya setuju wawancara saya direkam dengan audio-video. ☒ ☐
- Saya mengerti bahwa semua informasi yang saya berikan untuk penelitian ini akan dijaga kerahasiaannya. ☒ ☐
- Saya mengerti bahwa dalam setiap laporan hasil penelitian ini identitas saya akan tetap anonim jika diinginkan. Ini akan dilakukan dengan tidak secara eksplisit menyebutkan nama saya dan menyamarkan rincian wawancara saya yang dapat mengungkapkan identitas saya atau identitas orang yang saya bicarakan. ☒ ☐
- Saya mengerti bahwa saya berhak untuk mengakses informasi yang saya berikan setelah wawancara. ☒ ☐
- Saya mengerti bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk meminta klarifikasi dan informasi lebih lanjut. ☒ ☐

Berikut adalah nama-nama orang yang terlibat dalam penelitian ini yang menjamin persetujuan penggunaan persetujuan ini dan jawaban yang diberikan selama wawancara.

Peneliti:



Michael Denny Latanna

Pembimbing:

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Peserta Wawancara



Wistnovian

Tanggal: 29-5 2022

Lokasi: Jakarta

PERSETUJUAN UNTUK MENGAMBIL BAGIAN DALAM WAWANCARA
Consent To Take Part In Interview

“Evaluasi Program Pengelolaan Sampah Berbasis Masyarakat di Makassar, Sulawesi Selatan,
Indonesia”

- | | Ya | Tidak |
|---|----|--------------------------|
| • Saya, Tyasning Permanasari, S.Hut., M.Si, secara sukarela setuju untuk berpartisipasi dalam wawancara penelitian ini. | v | <input type="checkbox"/> |
| • Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat mengundurkan diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun | v | <input type="checkbox"/> |
| • Saya mengerti bahwa saya dapat menarik izin untuk menggunakan data dari wawancara saya setelah itu, dalam hal ini materi akan dihapus. | v | <input type="checkbox"/> |
| • Saya memahami tujuan dan sifat penelitian yang dijelaskan kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang penelitian ini. | v | <input type="checkbox"/> |
| • Saya setuju wawancara saya direkam dengan audio-video. | | |
| • Saya mengerti bahwa semua informasi yang saya berikan untuk penelitian ini akan dijaga kerahasiaannya. | v | <input type="checkbox"/> |
| • Saya mengerti bahwa dalam setiap laporan hasil penelitian ini identitas saya akan tetap anonim jika diinginkan. Ini akan dilakukan dengan tidak secara eksplisit menyebutkan nama saya dan menyamarkan rincian wawancara saya yang dapat mengungkapkan identitas saya atau identitas orang yang saya bicarakan. | v | <input type="checkbox"/> |
| • Saya mengerti bahwa saya berhak untuk mengakses informasi yang saya berikan setelah wawancara. | v | <input type="checkbox"/> |
| • Saya mengerti bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk meminta klarifikasi dan informasi lebih lanjut. | v | <input type="checkbox"/> |

Berikut adalah nama-nama orang yang terlibat dalam penelitian ini yang menjamin persetujuan penggunaan persetujuan ini dan jawaban yang diberikan selama wawancara.

Peneliti:



Michael Denny Latanna

Pembimbing:

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Peserta Wawancara

1. Tyasning Permanasari



Tanggal: 27 Mei 2022
Lokasi: Jakarta

PERSETUJUAN UNTUK MENGAMBIL BAGIAN DALAM WAWANCARA
Consent To Take Part In Interview

"Evaluasi Program Pengelolaan Sampah Berbasis Masyarakat di Makassar, Sulawesi Selatan,
Indonesia"

- | | Ya | Tidak |
|---|-------------------------------------|-------------------------------------|
| • Saya, <u>Sumarni</u> , secara sukarela setuju untuk berpartisipasi dalam wawancara penelitian ini. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat mengundurkan diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Saya mengerti bahwa saya dapat menarik izin untuk menggunakan data dari wawancara saya setelah itu, dalam hal ini materi akan dihapus. | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| • Saya memahami tujuan dan sifat penelitian yang dijelaskan kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang penelitian ini. | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| • Saya setuju wawancara saya direkam dengan audio-video. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Saya mengerti bahwa semua informasi yang saya berikan untuk penelitian ini akan dijaga kerahasiaannya. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Saya mengerti bahwa dalam setiap laporan hasil penelitian ini identitas saya akan tetap anonim jika diinginkan. Ini akan dilakukan dengan tidak secara eksplisit menyebutkan nama saya dan menyamarkan rincian wawancara saya yang dapat mengungkapkan identitas saya atau identitas orang yang saya bicarakan. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Saya mengerti bahwa saya berhak untuk mengakses informasi yang saya berikan setelah wawancara. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Saya mengerti bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk meminta klarifikasi dan informasi lebih lanjut. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Berikut adalah nama-nama orang yang terlibat dalam penelitian ini yang menjamin persetujuan penggunaan persetujuan ini dan jawaban yang diberikan selama wawancara.

Peneliti:



Michael Denny Latanna

Pembimbing:

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Peserta Wawancara


Sumarni

Tanggal: 16 - 06 - 2022

Lokasi: Makassar

PERSETUJUAN UNTUK MENGAMBIL BAGIAN DALAM WAWANCARA
Consent To Take Part In Interview

"Evaluasi Program Pengelolaan Sampah Berbasis Masyarakat di Makassar, Sulawesi Selatan, Indonesia"

Ya Tidak

- Saya, Fitriana Nur secara sukarela setuju untuk berpartisipasi dalam wawancara penelitian ini. ☒ ☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat mengundurkan diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun. ☒ ☐
- Saya mengerti bahwa saya dapat menarik izin untuk menggunakan data dari wawancara saya setelah itu, dalam hal ini materi akan dihapus. ☒ ☐
- Saya memahami tujuan dan sifat penelitian yang dijelaskan kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang penelitian ini. ☒ ☐
- Saya setuju wawancara saya direkam dengan audio-video. ☒ ☐
- Saya mengerti bahwa semua informasi yang saya berikan untuk penelitian ini akan dijaga kerahasiaannya. ☒ ☐
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- Saya mengerti bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk meminta klarifikasi dan informasi lebih lanjut. ☒ ☐

Berikut adalah nama-nama orang yang terlibat dalam penelitian ini yang menjamin persetujuan penggunaan persetujuan ini dan jawaban yang diberikan selama wawancara.

Peneliti:

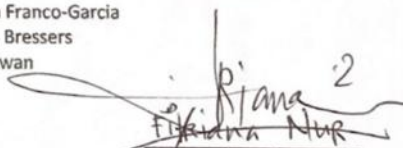


Michael Denny Latanna

Pembimbing:

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Peserta Wawancara



Tanggal: 02/06/2022
Lokasi: Makassar

PERSETUJUAN UNTUK MENGAMBIL BAGIAN DALAM WAWANCARA
Consent To Take Part In Interview

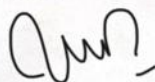
"Evaluasi Program Pengelolaan Sampah Berbasis Masyarakat di Makassar, Sulawesi Selatan, Indonesia"

Ya Tidak

- Saya, Wahyudi, secara sukarela setuju untuk berpartisipasi dalam wawancara penelitian ini. ☒ ☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat mengundurkan diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun. ☒ ☐
- Saya mengerti bahwa saya dapat menarik izin untuk menggunakan data dari wawancara saya setelah itu, dalam hal ini materi akan dihapus. ☒ ☐
- Saya memahami tujuan dan sifat penelitian yang dijelaskan kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang penelitian ini. ☒ ☐
- Saya setuju wawancara saya direkam dengan audio-video. ☒ ☐
- Saya mengerti bahwa semua informasi yang saya berikan untuk penelitian ini akan dijaga kerahasiaannya. ☒ ☐
- Saya mengerti bahwa dalam setiap laporan hasil penelitian ini identitas saya akan tetap anonim jika diinginkan. Ini akan dilakukan dengan tidak secara eksplisit menyebutkan nama saya dan menyamarkan rincian wawancara saya yang dapat mengungkapkan identitas saya atau identitas orang yang saya bicarakan. ☒ ☐
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- Saya mengerti bahwa saya bebas untuk menghubungi siapa pun yang terlibat dalam penelitian untuk meminta klarifikasi dan informasi lebih lanjut. ☒ ☐

Berikut adalah nama-nama orang yang terlibat dalam penelitian ini yang menjamin persetujuan penggunaan persetujuan ini dan jawaban yang diberikan selama wawancara.

Peneliti:



Michael Denny Latanna

Pembimbing:

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Peserta Wawancara



Tanggal: 02.06.2022

Lokasi: Makassar

PERSETUJUAN UNTUK MENGAMBIL BAGIAN DALAM WAWANCARA
Consent To Take Part In Interview

"Evaluasi Program Pengelolaan Sampah Berbasis Masyarakat di Makassar, Sulawesi Selatan, Indonesia"

- | | Ya | Tidak |
|---|-------------------------------------|--------------------------|
| • Saya, <u>Purnamasari Sihotang</u> secara sukarela setuju untuk berpartisipasi dalam wawancara penelitian ini. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat mengundurkan diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Saya mengerti bahwa saya dapat menarik izin untuk menggunakan data dari wawancara saya setelah itu, dalam hal ini materi akan dihapus. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • Saya memahami tujuan dan sifat penelitian yang dijelaskan kepada saya dan saya memiliki kesempatan untuk mengajukan pertanyaan tentang penelitian ini. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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Peneliti:



Michael Denny Latanna

Pembimbing:

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Peserta Wawancara



Purnamasari Sihotang

Tanggal: 2 Juni 2022

Lokasi: Dinas lingkungan hidup Makassar

PERSETUJUAN UNTUK MENGAMBIL BAGIAN DALAM WAWANCARA

Consent To Take Part In Interview

"Evaluasi Program Pengelolaan Sampah Berbasis Masyarakat di Makassar, Sulawesi Selatan, Indonesia"

Ya Tidak

- Saya, Veronica secara sukarela setuju untuk berpartisipasi dalam wawancara penelitian ini. ☒ ☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat mengundurkan diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun ☒ ☐
- Saya mengerti bahwa saya dapat menarik izin untuk menggunakan data dari wawancara saya setelah itu, dalam hal ini materi akan dihapus. ☒ ☐
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Berikut adalah nama-nama orang yang terlibat dalam penelitian ini yang menjamin persetujuan penggunaan persetujuan ini dan jawaban yang diberikan selama wawancara.

Peneliti:



Michael Denny Latanna

Pembimbing:

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Peserta Wawancara



Tanggal: 13-06-2022

Lokasi: Makassar

PERSETUJUAN UNTUK MENGAMBIL BAGIAN DALAM WAWANCARA
Consent To Take Part In Interview

“Evaluasi Program Pengelolaan Sampah Berbasis Masyarakat di Makassar, Sulawesi Selatan,
Indonesia”

Ya Tidak

- Saya, M. Satori, secara sukarela setuju untuk berpartisipasi dalam wawancara penelitian ini. ☒ ☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat mengundurkan diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun. ☒ ☐
- Saya mengerti bahwa saya dapat menarik izin untuk menggunakan data dari wawancara saya setelah itu, dalam hal ini materi akan dihapus. ☒ ☐
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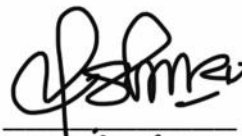


Michael Denny Latanna

Pembimbing:

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Peserta Wawancara



Tanggal: 6 - 6 - 2022

Lokasi: Bandung

PERSETUJUAN UNTUK MENGAMBIL BAGIAN DALAM WAWANCARA

Consent To Take Part In Interview

"Evaluasi Program Pengelolaan Sampah Berbasis Masyarakat di Makassar, Sulawesi Selatan, Indonesia"

Ya Tidak

- Saya, Ayca, secara sukarela setuju untuk berpartisipasi dalam wawancara penelitian ini. ☒ ☐
- Saya memahami bahwa meskipun saya setuju untuk berpartisipasi sekarang, saya dapat mengundurkan diri kapan saja atau menolak menjawab pertanyaan apa pun tanpa konsekuensi apa pun. ☒ ☐
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Peneliti:

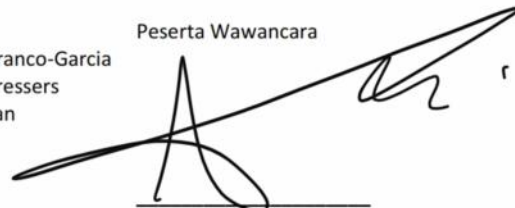


Michael Denny Latanna

Pembimbing:

1. Dr. Maria Laura Franco-Garcia
2. Prof. Dr. J. T. A. Bressers
3. Dr. Budhi Gunawan

Peserta Wawancara



Tanggal: 18-06-2022
Lokasi: Makassar

Appendix VII: Summary of Interview's Transcript

1. **Name of Interviewee** : Wistinoviani and Tyasning Permanasari
Institution : Ministry of Environmental and Forestry
Date of Interview : May, 27th 2022

A. Levels and Scales

The implementation of the waste bank is a community initiative. Meanwhile, the local government provides education, socialization, coaching, and supports this program. The form and type of waste bank vary, depending on local government policies. In Makassar, it forms a Central Waste Bank, which helps the waste bank community because the local government provides the funds for its implementation. The federal-level disseminated the concept of a waste bank but could not provide facilities or funding assistance.

All levels can be involved as long as they do not take program experts and do not violate the rules. Currently, every level is involved. It's just that the portion is not maximized. In waste management through waste banks, waste management is left to local governments. The task of the central level is to make policies and regulations, to facilitate. In addition, support and cooperation can come from the assistance of companies in Indonesia.

Higher levels, such as international, can indirectly support the waste bank program through assistance delivered to the main level. The central government will decide which cities or districts will need the assistance.

B. Actors and Networks

The actors involved have not carried out their functions optimally. The involvement of the younger generation will help optimize waste management. The central government hopes that the waste bank management will not only be initiated by the community. Local governments and the private sector are expected to participate in community-based waste management. Currently, the ministry or institution has initiated waste management activities.

C. Problem perspectives and goal ambitions

The goal of the program is a clean environment. Every purpose is not isolated but runs as a series. For example, most waste banks collect waste to be used as raw material for recycling. Then there is a new policy limiting single-use plastics that can reduce the use of these raw materials. The two things do not overlap but have the same goal: better environmental quality.

The National Government has prepared programs as an alternative menu to use. Local governments can apply alternative combinations of programs organized in each region based on their characteristics. In addition, people's behavior needs to be improved. Each waste management goal does not conflict but instead supports each other. The national governments are still relying on the road map and targeting a 30% reduction in waste. However, the implementation is not optimal.

Currently, the power of recycling is not yet comparable to the power of producing. So, no matter how much the material is recycled, if it has not been resolved at the upstream (community) level, it still cannot solve the waste problem. So it is necessary to integrate waste management. There are three main approaches to waste management: circular economy, technology, and behavior change. This approach applies to 270 million people with various backgrounds and understandings. When people are at the level of a society that has not been educated and produces waste continuously, it is hoped that people will be able to apply waste recycling.

D. Strategies and instruments

Currently, the strategies and instruments being implemented include cooperation with several companies (vendors) willing to receive recycled materials collected by the waste bank. Local governments can do further cooperation with companies or parties that accommodate. In addition, a funding subsidy mechanism is needed in the form of "Regional Incentives" as a new mechanism in the special budgeting of the national government because there is no particular budget for waste management.

Another instrument that is applied is: giving rewards to cities with a better level of cleanliness than other regions. However, in waste management in Indonesia, there is a weakness, namely the lack of law enforcement. In the regulations, the government has also arranged partnerships with certain parties. When national government conveyed law enforcement matters related to waste management to the community, they revealed the weak side of their economic condition. So the government does not dare to apply punishment.

In some activities, such as the assessment of management in companies in Indonesia (PROPER), the government hopes to include waste management indicators for each company. Besides that, the local government has an "ADIPURA" program. One of the focuses is waste management as an appreciation to the local government. Meanwhile, for producers in the business world, there is an appreciation for giving recognition from the government.

E. Responsibilities and resources

At the federal level, the parties involved focus on responsibilities in providing information, policies, education, promotion, and directing funding assistance (Financial Resources), and Human Resources. Waste banks, which are mostly located in cities and regencies, are required to be independent. They grow on their own, making the waste bank more militant and enduring. But if you have to compete with other programs, the waste bank will lose. If it is returned to waste management, the principal needs are facilities and human resources militant in waste management through waste banks.

Through the latest regulations, local governments are charged with the responsibility to be able to reduce waste. One of them is by managing it through a waste bank. The rules for waste management through waste banks in Indonesia were too rigid, making collaboration with other parties difficult. However, with the latest regulations, it is hoped that waste

banks will be able to obtain more funds. However, this is only limited to funding. Meanwhile, achieving other goals with other resources may not be flexible because it has not been regulated.

- 2. Name of Interviewee : Sumarni**
Institution : Makassar Provincial Environmental Management Agency
Date of Interview : June, 16th 2022

A. Levels and Scales

The involvement of the provincial parties is not optimal, and cooperation with other levels is only limited to coaching and coordination. The South Sulawesi Provincial Government guides waste management related to the handling and reduction of waste to lower levels. The form of cooperation at this level is only in collaboration with the Garbage Mall. As for the partnership with the Makassar city government, it focuses on coaching. Guidance to cities and regencies, education, socialization, and technical guidance carried out by the province will affect people's mindsets and behavior in managing waste starting from the source.

The primary responsibility of the Provincial Government is to make regulations related to waste management. Meanwhile, the involvement of the Province at the national level is to participate in the activities carried out by the waste management carried out by the party.

Community-based waste management will be better if the provincial government and other levels synergize in managing waste. In addition, the achievement of targets for handling and reducing waste at the district, city, local and national levels as stipulated in national and regional regulations is given special attention.

B. Actors and Networks

This program may involve all stakeholders, and no one is excluded as long as it is practical. The participation of actors at the provincial level produces output in the form of a reduced volume of waste disposed of in landfills. It can extend the landfill's life and reduce pollution and environmental damage. While the outputs of this program are finance, collaboration with other levels, coaches, and education.

The province does not have the authority to add and remove new actors. However, we are ready to cooperate in coaching and educating new actors by conveying matters related to waste management in the province of South Sulawesi. There are no influential actors because all parties carry out their roles based on the authority regulated by applicable laws

C. Problem Perspectives and Goal Ambitions

So far, no one has interfered with implementing community-based waste management. The implementation of this program is still based on the applicable rules and authorities. All levels can implement this program well if the provincial, district, and city governments continue to work together to manage waste. In addition, cooperation at every level is needed to achieve the target handling and waste reduction in Indonesia following the national target.

D. Strategies and Instruments

Currently, there are no specific instruments to improve the implementation of this policy. However, to optimize existing approaches, the province remains consistent in providing guidance, education, socialization, and technical guidance to the government and the community so that the implementation of existing waste management can run sustainably. However, to achieve this, no incentives or disincentives have been provided. In addition, to combine several instruments must follow the rules and situations that occurred at that time.

E. Responsibilities and Resources

For the government, there are clear duties and responsibilities for waste management. Meanwhile, the waste management actors in the waste bank also have clear responsibilities and functions based on the decree and applicable regulations. In this program's implementation, no conflicts occur because the tasks and roles are straightforward. May make changes or mergers of responsibilities depending on the mutual agreement of each stakeholder, and no party is harmed.

In the development of waste bank activities, human resources and the active involvement of the community in saving their waste in the waste bank are the most important resources to support its implementation.

- 3. Name of Interviewee : Fitriana Nur, Wahyudi, and Purnamasari Sihotang**
Institution : Makassar Environment Agency
Date of Interview : June, 2nd 2022

A. Levels and Scales

Several levels are directly involved in implementing waste management through waste banks in Makassar. Management at the unit waste bank is at the community level. After that, it is at the city level. At the city level, a central waste bank picks up waste. There is not much cooperation with waste banks at the provincial level. In contrast, the role of the ministry is to foster and socialize. However, there is no technical support for the waste bank yet.

So far, the role of the province is still considered small. The provincial level should be able to supervise cities and districts in handling waste through waste banks. In addition, the existing waste banks are evaluated to determine why they are still active and inactive. Provinces can also provide rewards or assistance to the community.

The waste bank in Makassar is based on the Neighbourhood (*RT*) and Hamlet (*RW*). The existence of a waste bank in Makassar City began with the mayor's program as one of the performance assessments of *RT* and *RW*. Every *RT* and *RW* must have a waste bank in the mayoral program. The formation of a waste bank starts from the sub-district by providing education. Then the village made a decree related to forming a waste bank.

At the city level, the government helps the waste bank by providing a passbook as a form of appreciation for the implementation of the waste bank. Most of the implementation of waste management through waste banks is carried out by the Central Waste Bank (*UPTD-BSP*). In addition, the waste bank has a facilitator in each sub-district who fosters inactive waste banks and provides monitoring and evaluation. In its development, around 200 waste banks are active from a potential of 1000 waste bank units.

Meanwhile, the ministry evaluates by holding waste bank competitions throughout Indonesia. Winners will get rewards. While at the city level, they evaluate through direct observation. For evaluation, other parties, such as facilitators at the urban level, assist in the implementation, especially in terms of coaching. However, the City Government felt that it was not optimal and needed assistance from other parties in carrying out this evaluation.

Currently, of all the activities that have been carried out, they have not been able to change the community's behavior into a society of sorting waste due to the lack of human resources, and the performance of each level has not been maximized. The community's demotivation arises because of the change in the director of the waste bank (Chairman), who is an encouraging figure in this activity. In addition, the change

of the head of the RT or RW, the director of the Waste Bank, and the Village Party, who rarely monitors waste, affects customer motivation. So the understanding of having a clean environment is decreasing.

B. Actors and Networks

The scope of involvement of each at the lowest level is the head of the *RT/RW*, Sub-district (*Kecamatan*), and Urban Village (*Kelurahan*). The city level is represented by the central waste bank, the Makassar Sanitation Service, and facilitators whose human resources are partly from NGOs. Meanwhile, the national government is represented by the Ministry of Environment and Forestry. The actors who have been less involved so far are the Provincial Parties. Meanwhile, the actors who have not been involved so far are academics and technology. Furthermore, the most important actor at this time is the spearhead of this activity, namely the Waste Bank or the community in the RT or RW in each Waste Bank.

Currently, the involvement of the regional government and city governments is not running solid. Because the regional government (neighborhood/RT, hamlet/RW, district/kecamatan, and urban village/kelurahan) consider this a government program, there is a tendency that they do not want to be involved much, and there is less awareness of common interests.

Currently, government actors have played their respective roles. For example, the Central Government (Ministry) evaluates by giving rewards. Then the City Party must make rules, facilities, budgets, and waste management assistance because this is a program from the mayor. Meanwhile, the central waste bank plays a role in implementing waste management through the waste bank. Then some facilitators come from a combination of NGOs and the community providing education to the waste bank. However, we do not know the role of the Provincial Government.

All parties can be involved. However, it is better to cooperate with the Central Waste Bank (BSP) to get involved. BSP can provide a list of things that can be done by parties who want to be involved in waste management activities through waste banks.

C. Problem Perspectives and Goal Ambitions

The goal to be achieved is a clean environment. Meanwhile, the targets set for waste management are comprehensive. The weakness of community-based activities is usually a lot of influence on political conditions. Because these changes easily provoke people.

So far, the purpose of the waste bank is profitable. Still, if goals are not in favor of the community, it usually makes them not wholeheartedly carry out these activities. Meanwhile, the Makassar City Government currently does not have many waste management programs. For example, single-use plastic has not yet started and what is already running is a waste reduction program through waste banks. Although there are

differences in objectives, the power of taking has not been proportional to the power of producing. So that no matter how much material is collected, if the company still produces plastic, then recycled materials are still available.

The weakness of the waste bank policy that relies on the local government is that each implementation mechanism must follow the mechanism of the local government. For example, BSP cannot cash out sales proceeds earned that day. Waste banks have to wait one month after trash is sold.

Another weakness is that currently, there is no formula to measure performance in waste management, especially for those who run waste banks. The government carried out the policy of measuring the performance of the regions in the previous period. Although the policy is from the mayor, all parties have not fulfilled it. Currently, many waste banks are vacuumed. So that, an incentive is applied for region that implements the waste bank policy properly.

D. Strategies and Instruments

The strategy and instrument used in this dive is socialization to the community annually through the solid waste sector. In addition, the evaluation is carried out through capacity building and field visits. Another strategy is implementing a waste bank to generate income for the community. The people of Makassar will be more interested if profitable economic instruments support it. An example of an economic instrument used is the provision of an incentive of 1 million per region that has a waste bank.

The strategy of providing punishment or law enforcement has not been carried out due to the regional regulations' weakness. This regulation does not write down the consequences of not managing waste. The local government will not dare to act if there are no regulations. Implementing strategy and using instruments in enforcing regulations and achieving goals is not much done. This is because local governments do not want to put additional burdens on the community to achieve performance targets. So the instrument considered the most effective is the provision of rewards. Giving punishment scares the public, so enforcing the law by giving punishment for those who violate it will be difficult to do.

E. Responsibilities and Resources

The duties and functions of local governments have been divided according to their fields. The Environment Agency should monitor and evaluate waste banks in Makassar. This is stated in the regulations governing evaluation and monitoring. The facilitator is obliged to provide information and guidance in the sub-district environment. Meanwhile, the waste bank must have management, such as the director of the waste bank. The waste bank and the central waste bank (BSP) must work together.

The responsibilities of the Makassar Environmental Agency (DLH) and other parties do not overlap. The mayor may combine DLH responsibilities. For example, actors at the city and provincial levels conduct joint evaluations, although this has not yet been implemented. Apart from that, DLH is also responsible for providing education and guidance on waste management in schools. This responsibility is shared between the waste bank and DLH.

However, the initiative of several waste banks is still lacking. For example, to sell the waste to the central waste bank. Yet it is very easy to do. Each waste bank can sell its waste by calling or sending a message via cellphone. BSP also does pick-up without the need to spend more money.

Currently, waste banks and municipal governments have fewer human resources. The reason is that there are many different responsibilities outside waste management through the waste bank program. Currently, DLH is assisted by the presence of a facilitator who can become an extension of the hand in developing the community.

4. Name of Interviewee : Veronica
Institution : Central Waste Bank
Date of Interview : June 13th, 2022

A. Levels and Scales

Neighborhood and hamlet is the lowest scale at the Government level. The Waste Bank in Makassar was formed at this level. Then the Kelurahan issues a decree and proceeds to the sectoral waste bank as a janitor in the sub-district. After that, at the city level, there is waste management by the Environment Agency and the Central Waste Bank. Currently, the provincial level has not been directly involved.

Regarding cooperation, the province can act as an extension of the central government. The Central Government also provides socialization related to government regulations. In addition, there is also financial assistance and facilities from foreign parties, such as Japan and Korea. The province once held an innovation competition related to waste management and gave rewards. However, directly engaging in waste management at the provincial level has no role.

Cooperation with the province has not yet been carried out. Such as organizing inter-city and district activities such as provincial-scale meetings. In contrast, an internal level evaluation has been carried out. Apart from the government, BSP also cooperates with NGOs. This foundation helps waste banks in Makassar.

The government must also cooperate in the planning and implementation aspects of activities. However, the bureaucracy prevented Makassar from cooperating with parties outside the city of Makassar. However, this cooperation can do this as long as there are clear rules. Based on the applicable policy, the waste bank can accommodate certain programs. For example, to get incentives, people must make a waste bank. In addition, each employee is also required to become a customer of the waste bank and deposit 2.5 kg of waste.

Currently, the most important level is the community. People can sort waste. If you only rely on the government's rules, the garbage sorting by the waste bank in the community will not be able to run optimally. Because the government only works as a supervisor. Currently, there is no other method besides the waste bank to make people sort their waste from the source.

However, the regulations from the government do not make the implementation good. The weakness of policy in Indonesia is that regulations can be interpreted differently by local governments as long as there is no supervision. Because in its implementation, there are other interests besides environmental cleanliness

B. Actors and Networks

Most of the actors involved are still from the government. This is because socialization is still lacking. In addition, the government is limited by regulations, so the actors involved also need to be regulated first. In local governments, cross-departmental coordination and involvement have not run optimally. In addition, government involvement is very important. If the government plays an active role, all waste sales activities can be channeled through the central waste bank and the waste bank does not lack funds for activities. In addition, socialization is needed from the bottom to the top. In addition, each layer needs to carry out its respective duties.

To include new actors requires a new budget, thus making this difficult to do. In addition, the bureaucracy is quite difficult, making it difficult to add new actors. But involving many parties can be done, such as involving the Department of Agriculture for compost made by the waste bank.

New actors can be accepted, as long as they comply with the rules and have a positive impact. The actors that are expected to be involved include government parties from different agencies, as well as from companies. As an alternative, combining the two functions is workable.

According to the Central Waste Bank, the community and policymakers are the most important actors. For example, one district wants to have a concept like a waste bank like Makassar, but it is difficult to implement because there is no approval from the regent.

C. Problem Perspectives and Goal Ambitions

The central waste bank hopes that cooperation with all parties can change behavior. The output of community behavior is expected to no longer see waste as useless. Then people change their mindset. Because if the community already has a view that garbage can provide benefits, then the community will sort out waste and not litter.

However, in carrying out cooperation to achieve these goals, the problem lies in the leadership policy. If the leadership from top to bottom is teamwork, it will speed up implementation. For several years, the obstacle faced was a pandemic. Although the existence of the waste bank is still running, since the incident, it has not been able to meet the given target.

Currently, waste bank cooperation has not been carried out with the industry. So far, BSP has cooperated with waste collectors. However, High-level prices are difficult to obtain because BSP must go through waste collectors to sell the recycled materials. Meanwhile, the waste collectors have to resell to industries in other cities. Every time BSP tries to contact the industry, this industry always says to contact their agent in Makassar.

If there were other programs besides the waste bank with the same goal (i.e., a clean environment), it would help achieve the main goal because the waste bank has no economic purpose. But so that the environment becomes clean and the community has a different paradigm. However, changing the goals will be difficult because of the limited rules.

Initially, the waste bank aimed to minimize the operational costs of waste vehicles by sorting, reducing maintenance costs, having a clean environment, improving public health quality, and having the environment's aesthetics. No less important is behavior change. However, to change behavior requires an example and cannot change quickly. So several waste banks work with schools to provide education from an early age.

Furthermore, there needs to be a regional pilot that can be used as a role model in implementing this activity. This pilot project may change people's behavior in the future. In addition, all agencies can cooperate by utilizing waste. For example, by making use of the Black Soldier Fly

D. Strategies and Instruments

Currently, economic instruments have been carried out, such as selling materials and providing incentives from the government of 1 million per RT or RW with good performance. In addition, innovation competitions are also conducted by the provincial government. The competition will generate recognition and present awards. In addition, sorting out the waste is necessary to increase the selling price because clean raw materials have a higher price.

In addition, to be more effective, BSP requires developing and utilizing technology. Currently, BSP still uses simple technology and performs manual input. The mayor's dream in a waste bank is to have a scale that can read in real-time. Although there are not many instruments in Makassar, it is possible to combine them later, as long as there are clear rules. So inter-departmental coordination is needed to make the rules for implementing the use of the instrument run properly.

The most helpful strategy for implementing this program is competitive pricing. Direct cooperation with factories will help boost the community's economy because of better prices.

However, the obstacle to implementing this program is the community's many rejections. They are not aware that sorting is a waste management solution. There are still people who are ignorant and negative. In addition, there is a paradigm that states that sorting waste at the Waste Bank means being a scavenger (low income and dirty).

E. Responsibilities and Resources

BSP's responsibility is to buy waste from waste banks, help sell, sort waste according to its classification, and disburse funds. With this responsibility, human resources are

currently considered sufficient. On the other hand, facilities are not a major obstacle although they need attention but are not a top priority. Because without facilities, as long as the waste management scheme is improved, waste management will continue to run well, even though it is not optimal.

Another obstacle is the disbursement of payments. Because the weakness of joining a government institution has to follow government rules, the BSP cannot immediately give the funds collected from the sale. Still, they must wait for the process by the finance department in Makassar.

5. Name of Interviewee : Anca
Institution : Non-Governmental Organization (Yayasan Peduli Negeri/YPN)
Date of Interview : June 18th, 2022

A. Levels and Scales

At the level, involvement from the national and community levels should carry out waste management because this is already stated in the law. It should not only be at the district level responsible for managing waste but also at the national and city levels. For example, it was providing education and assistance to the community. So there needs to be a great collaboration between the national program and the ministries, provinces, cities, and districts as technical implementers where the province is also expected to assist. However, there are currently missing functions at the provincial level.

Meanwhile, the most important level of government is at the city and district level because the Ministry or Provincial level has the function of education, monitoring, and evaluation. At the same time, the implementers in the field are districts and cities. However, it is not only the Department of the Environment that is obliged to think about waste management. However, cooperation with other agencies, including the community or institutions outside the government, is also necessary.

Currently, the provincial level plays an indirect role as an extension of the center because the province oversees the districts and cities. Provinces should provide assistance, monitoring, and evaluation to districts and cities. So the function of the province is to provide education, assistance, evaluation, and monitoring. This program should be carried out in a relay starting from the provincial district level to the center and not crossing from the city level directly to the center.

Each party needs to cooperate in monitoring the implementation of the waste bank. Collaboration between central, provincial, and district or city parties needs to be implemented. Apart from that, the district and city parties can talk to the sub-district, sub-district, and the community. In practice, NGOs are involved in community empowerment and providing education. NGOs Invite the community to be involved in waste management activities.

Meanwhile, in planning, NGOs are involved in formulating technical-based activities. Since 2008, NGOs have invited the community to be directly involved and are always invited to be involved in formulating strategic programs related to waste management in Makassar. NGOs also link the government with the community. Meanwhile, there is no administrative cooperation with the government.

The weakness of this program is that law enforcement related to waste management problems by city districts is still not good. The government demands to manage waste,

but the handling is still very minimal, so sometimes private parties are more effective in helping waste management.

B. Actors and Networks

So far, all the actors have been there. However, each actor has not effectively carried out his role, whether government or non-government such as the private sector. In addition, cooperation between the government and the private sector in the community has not been massive. One of the obstacles is the location and very wide scope. The government needs to measure things that can be implemented immediately and which can be done in the future.

In the implementation of the waste bank, the possibility of the entry of new actors can occur, and if there is a change, the NGO can accept it. In addition, the community needs to improve community-based waste management because the government can not implement policies without them. So far, most of the sources of waste come from households in the community. Thus, early education is also important, and massive law enforcement is needed.

C. Problem Perspectives and Goal Ambitions

So far, government communication with the community often does not go well, so people are confused about the rules in waste management. Such as regulations in picking up garbage that is often late or schedule changes. In addition, miscommunication occurs in communication with regional governments such as RT and RW when implementing policies from the Government. Not to mention that the application of new technology for waste management sometimes cannot be balanced with the condition of adequate human resources. Then people are still difficult to change their behavior due to a lack of socialization and education. However, some things support, such as regulations from the Government, as well as support from non-government parties.

The main objective of this program is a clean environment and a paradigm shift in the community's mindset regarding environmental issues. So there needs to be cooperation to achieve this goal. Each party has the same goals: no garbage accumulation in the future, a cleaner environment, and a paradigm shift regarding waste.

Although cooperation has been carried out, the application often does not meet expectations. The application of technology cannot run well because of the lack of human resources. In addition, we encountered other problems in the not-yet massive socialization, so not all people understood the recommended waste management application.

Furthermore, political changes have an indirect impact because leadership changes can change certain policies, such as applying innovations. The basis for the existence of a waste bank in Makassar is the mayor's regulation. With the major change, waste

management through waste banks can change (at least every five years) depending on the leader. In addition, activity planning may change because it depends on the budget. Changes in the budget will result in changes in activities.

Suppose there are other goals or new goals. Such as the 30% waste reduction target, which is the central government's target. It does not change the implementation of activities in continuously educating the public. However, the weakness with high flexibility is that the intensity of the implementation of the waste bank is threatened with weakness because the conditions are very flexible.

D. Strategies and Instruments

The main instrument in the waste bank is to use the waste bank media as education in changing the paradigm of society. Economic instruments are ruled out, but along the way, there are economic instruments that help waste management in the form of additional income from the sale of waste.

In addition, collaboration with other waste management activities. Not only cleanliness but greening is a concept being built at this time. Instruments such as incentives in the form of money do not exist. There are incentives in the form of services and assistance. Meanwhile, disincentives as a form of law enforcement did not work well.

The waste bank adopts the concept of a circular economy, from sorting in the household to the vendor. In this case, the government's role in implementing regulations is quite important so that the circular economy concept in the waste bank runs from the community to the government level.

But the government's strategy to involve the community through education is paramount. Through education, the government can change people's mindsets about waste. Education takes a process, so it takes a long time for the community to carry out the sorting.

E. Responsibilities and Resources

With the responsibility as a companion, currently, the number of human resources owned is very small. Furthermore, changing the paradigm or views of the community regarding waste management is not an easy job, so sufficient human resources are needed. An effective approach is carried out through community leaders.

Some technical activities are quite relevant to the tasks of other parties, but some parties still need other people, due to a lack of power, for example, at the government level. So it takes cooperation to build this system. Collaboration is key as long as the goals of each party are the same. Sharing responsibilities and increasing human resources can be done with a focus on providing education to the community.

6. Name of Interviewee : Dr. Ir. Mohamad Satori, MT
Institution : Bandung Islamic University
Date of Interview : June 17th, 2022),

A. Levels and Scales

Operationally, the waste bank collects certain types of waste that have economic value and are tiered starting from the *RT* or *RW* level, called the unit waste bank, then to the City or Regency as the main waste bank. From this main waste bank, it enters the business system. The business system starts from the factory city to the industry. At the level of collecting waste upstream, it coincides with the waste management system in the Regency city so that the waste bank can be equated with a community-based waste management system.

In the same area, there may also be a collection system carried out by regional officials, depending on the policy in the Regency city, so at this level at collecting level, it will coincide with the local governance system. At the same time, the province overlaps in other respects, such as trade administration. Because recycled materials are not patterned only at the City or Regency level but can be cross-City and District, it can even be cross-provincial. From the provincial level to the center, it plays an important role, so all parties must be involved.

In the ministry, strategic matters play a role in the context of strategic matters ranging from making a roadmap for waste reduction to circular economy policies. In the future, international involvement in export is also possible.

From an operational perspective, such as a waste bank institution, it can become a conflict if there are no clear rules. So, regulations and guidance are needed at the city, district, and provincial levels. In addition, the waste bank can also form a forum like the one in West Java. There is the West Java waste bank forum. These institutions or these containers are expected to be a bridge between the government and waste bank actors, so this collaboration is important so that the form of cooperation can be in the form of coaching and facilitation, including facilities.

The greatest power is still in the community because the waste bank was born from the community. Districts and cities have not been uniform in waste management through waste banks.

B. Actors and Networks

Actors should be able to provide supporting funding, incentives and facilities, and infrastructure. The involvement of the parties should be more in the provision of facilities. As a waste bank, the main actors today are the waste bank and the community.

C. Problem Perspectives and Goal Ambitions

The new policy that seeks profit does not affect the implementation of the waste bank because the waste bank is not looking for profit, but people can separate any recycled materials at their home.

The current government policies are comprehensive but not consistent in their implementation. For example, one of the regulatory clauses states that the community has the right to get incentives to sort waste, but so far, this has not been received. The weakness of the policy implemented by the waste bank, which is tied to the local government, is that each implementation mechanism must follow the existing mechanism in the local government.

D. Strategies and Instruments

The application of economic instruments in triggering participation has not been effective due to the lack of public awareness and infrastructure. The disincentive policy has not been implemented due to the lack of facilities (facilities and infrastructure). The government can implement a disincentive policy if many things are met. If the government is not ready, this policy will not be effective.

The law is not in line with the government. So it seems that the government is still half-hearted, especially if it is considered part of the management. Because there are consequences in this case, for example, if the government decides to make the party or actor a part of management, there are budgeting consequences. In addition, currently, what has not been done is to determine how the waste bank material flows.

E. Responsibilities and Resources

The main problem with waste banks is the availability of infrastructure, finance, human resources, and segregation of waste from home. If the waste is more segregated, the more it will help the government and the waste bank.