Achieving Zero-Waste Households in an Urban Area: A Case Study of Kampung Darling, Indonesia

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ABSTRACT

In recent years, the drive toward a sustainable future has gained traction, not the least in urban areas of developing countries. Substantial environmental degradation stemming from insufficient waste management has triggered numerous environmental movements. The residents of Kampung Darling, Indonesia, for instance, have initiated a local movement to tackle waste problems. Fuelled by a shared vision of a sustainable future, their journey is filled with inspiring stories of community-led initiatives in transforming their urban area into a zero-waste environment. This case study utilizes mixed methods approach, including semi-structured interviews and observation to examine the key factors contributing to the development of domestic waste management practices in Kampung Darling. In identifying these key factors, social practice theory is employed to uncover the key practices of Kampung Darling's domestic waste management. Through zooming in and zooming out lenses, this study finds three interconnected key practices: waste bank practice, SOD practice, and eco-enzyme upcycling practice. These findings are then enriched with insights from the social learning framework, which shows that the development of domestic waste management practices is highly influenced by social learning processes through the dimensions of action, communication, negotiation, and reflection. By combining these findings, this study reveals five key factors enabling the improvement of domestic waste management practices in Kampung Darling, which are interconnected practices, convenience, additional bonuses, local leadership, and family-like social bonds. The interconnected practices demonstrate that domestic waste management practices are built upon shared meanings, skills, materials, and mutual relations with broader household activities. Convenience refers to the ease of accessing and implementing these practices, as well as support from external actors. The additional bonuses demonstrate socio-economic empowerment among the local community through circular economy principles in waste management. The local leadership illustrates the contribution of an influential actor in fostering collaborations and social learning. Family-like social bonds illustrate the strong influence of cultural background in fostering mutual cooperation to create synergistic and cost-effective waste management practices. These key factors offer valuable insights that other urban areas can adopt to address waste problems, particularly those inhabited by underprivileged communities. Based on these findings, recommendations for domestic waste management practices in Kampung Darling and future research are proposed.

Keywords:
Domestic waste management, community-led initiative, social practice, social learning.

CHAPTER 1 INTRODUCTION

1.1 WASTE PROBLEMS IN KAMPUNG-KOTA

In Indonesian, the term “kampung” refers to a residential settlement or urban area that is typically built informally (KBBI, 2024). Kampung can also be understood as an area inhabited by low-to lower-middle-income communities (Handayani, 2009; KBBI, 2024). In large cities in Indonesia, the kampung developed within urban areas is specifically referred to as kampung-kota (Devas, 1980, as cited in Widjaja, 2013; Nursyahbani & Pigawati, 2015). Kampung-kota is not necessarily built informally; rather, it is a low-middle-income residential area that develops organically and unplanned (Setiawan, 2010). Unlike the individualistic lifestyle found in cities, kampung-kota still holds tightly to traditional values and maintains strong familial bonds among residents (Herlianto, 1986, as cited in Widjaja, 2013). With a relatively high population density, residential environments in kampung-kota generally have inadequate physical infrastructures and service facilities (Sujaarto, 1980; Concarplan, 1983, as cited in Widjaja, 2013; Nursyahbani & Pigawati, 2015). As a result, environmental problems such as poor waste management often arise in these residential areas (Handayani, 2009; Widjaja, 2013).

Figure 1. 1 Domestic waste in residential area in Indonesia (source: antarafoto.com, 2021).

In her research, Handayani (2009) noted that environmental problems in kampung-kota occur due to the growth of buildings that disregard land use regulations. New buildings in kampung-kota often do not meet standards, and similarly, domestic waste disposal systems are frequently neglected (Budiharjo, 1997; Handayani, 2009). Due to limited land, waste problems in kampung-kota areas become more complex. Domestic waste is generally not processed and is merely piled up in temporary disposal sites, leading to high waste transportation costs (Nudin, 2013; Paramita et al., 2018; Atmanti, 2023).

According to the National Waste Management Information System, Indonesia produced 69.9 million tons of waste in 2023 (SIPSN, 2023). This waste was primarily composed of food waste (41.60%) and plastic waste (18.71%), with the household sector accounting for 44.37% as the primary source. With the ongoing trend of population growth (BPS, 2024), the amount of waste is expected to increase. This situation has the potential to further exacerbate the environmental crisis, such as water pollution and disease outbreaks (Hasibuan, 2016; Utari et al., 2022), which lowers the quality of life for the surrounding community.

1.2 COMMUNITY ACTION TO ADDRESS WASTE PROBLEMS

An effective approach to resolving domestic waste issues is to tackle waste at its source and actively involve all components of the local community (KLHK, 2018). As noted in social demographic research by the Indonesian Research Agency BRIN (2022), waste management practices in major Indonesian cities are heavily influenced by local community initiatives. Several scholarly articles (Sabardi, 2014; Nilan & Wibawanto, 2015; Pambudi, 2018) also highlight the significant role of local communities as drivers of pro-environmental activities through various concrete efforts, both individual and collective, often organized within environmental organizations. In certain circumstances, community members even act as "experts" in pro-environmental activities, drawing from their experiences or knowledge from their daily routines (Sabardi, 2014). The vital role of local communities in environmental management is particularly relevant in domestic waste management practices, as seen in Kampung Darling, Tangerang City, Indonesia.

Kampung Darling is one of the successful examples of grassroots movements that significantly improved their domestic waste management practices (Pemerintah Kota Tangerang, 2024). For five consecutive years, Kampung Darling has won various awards from both local and national governments. Their journey to increase community awareness towards domestic waste management was challenging. The long process of changing the public's practices of waste management took years to sustain. Through continuous improvement, Kampung Darling has emerged as a pioneering model for other kampungs who are eager to learn how to manage their waste collectively. Despite having limited space and resources, Kampung Darling has independently managed to transform its environment into a zero-waste neighborhood by implementing more sustainable waste management practices.

1.3 KAMPUNG DARLING'S ZERO-WASTE HOUSEHOLD PRACTICES

Kampung Darling is located in the RT 4/RW 11, Sudimara Jaya District, Tangerang City, Indonesia. This area represents a neighborhood association consisting of 115 families, with the majority of its residents coming from lower-middle-income backgrounds (Interview P-12, 2024).

The term Kampung Darling is an abbreviation of "*Kampung Sadar Lingkungan*," an Indonesian language that can be translated as environmentally aware village. Kampung Darling was one of the winners of the Thematic Village Program initiated by the Tangerang City Government. This program was part of a Tangerang City governmental agenda called *"Tangerang Bebenah"; one* of its objectives is to transform slum areas into liveable settlements by highlighting their local potential (PPID Kota Tangerang, 2024). Participation in this program was voluntary and relied heavily on active public participation. As a result, the local community was encouraged to be independent and creative in developing their potential.

After deciding to participate in a thematic village program, the residents of RT 4/RW 11 chose domestic waste management as the theme for their kampung. This decision was driven by their concerns towards limited access to proper waste disposal. Then, in July 2019, the residents of RT 4/RW 11 officially declared their participation in the thematic village under the name of Kampung Darling. Their journey starts with an initiative to establish "*Rumahku Merdeka Sampah*" also known as the zero-waste household program, where all waste from household activities is managed through new sustainable practices.

"The definition of a thematic village is a habitable settlement, which has one or more main potentials, supported by other potentials for the welfare of its people. Well, because we were forming a thematic village, it means that we must have main potentials that can be sustainable. The community had never stopped producing waste, and it often became a problem. Finally, the desire arose to create a zero-waste household program."
(Interview P-1, 2024)

Prior to the zero-waste household program, residents of Kampung Darling implemented a mixed waste disposal management practice (Interview P-4, 2024). In this practice, all domestic waste was disposed of without being sorted. Both organic and inorganic waste were combined into the same bin and subsequently collected by trash collectors hired by the government. To access this service, the residents were required to pay 25,000 to 30,000 rupiah per month. The waste collection took place in the morning before being transported to the landfill or final disposal site.

The zero-waste household program began by organizing community work to clean the kampung's slum area and establish *Bank Sampah Darling* (Darling Waste Bank) as their first waste management facility (Interview P-1, 2024). As the waste bank system started working, the residents gradually improved their waste management practice. By putting aside the practice of mixed waste disposal, their new waste management namely zero-waste household practices, are progressively developed and have been sustained to this day.

Unlike the mixed waste disposal that was carried out individually, the zero-waste household practices have been implemented as a collective action and become a routine for most residents

(Interview P-1, 2024). The knowledge and skills that are shared among residents create a conducive environment for maintaining these new practices. As the practices are continuously carried out, they persist like a tradition. It is not surprising that, within five years, Kampung Darling's zero-waste household practices became widely adopted and contributed to the sustainability of their zero-waste household program, passing it on to the next generation.

1.4 RESEARCH AIMS AND SIGNIFICANCE OF THE STUDY

The societal relevance of studying the Kampung Darling case is significant. Research has indicated that community-led initiatives do not always run as idealized (Mulugetta et al., 2010; Walker 2011). It often struggles to sustain participation like many other volunteer movements due to limited resources and power (Seyfang & Smith, 2007; Middlemiss & Parrish, 2010; Wells, 2011). Unlike similar grassroots activism that is seasonal and short-lived, Kampung Darling has become a pioneer in consistently maintaining sustainable domestic waste management practices. Their approach holds the potential to inspire other urban areas that grapple with similar problems. Despite facing various challenges, both limited space and lack of financial resources, Kampung Darling's resilience in maintaining sustainable practices has indicated its effective approach to shift their social practices. The strategy employed by Kampung Darling can provide valuable input to underprivileged communities in Indonesia's urban areas that face domestic waste problems.

Domestic waste management is far more than a technical aspect or individual choice, as it is shaped by intricate social structures (Bissmont, 2020; Nguyen et al., 2023). Hence, to understand the domestic waste management strategy of Kampung Darling, it is crucial to know the complex dynamic within their practices. While the research on domestic waste management practice is widely available and studied in different contexts, most of the existing literature focuses on the attitude and behavior toward waste (Tucker & Speirs, 2003; Bernardo, 2008; Licy et al., 2013; Yoada et al., 2014; Babaei et al., 2015; Chikowore, 2021; Sultana et al., 2021; Fadhullah et al., 2022). Additionally, in the context of Indonesia, research on social practice is often viewed in broad strokes and lacks detailed examination. For instance, studies of kampung-kota's green transition conducted by Yuanjaya (2015), Akbar (2018), Sihotang and Nugroho (2021) primarily focus on analyzing the roles of agencies and structures as two separate dimensions. It can be said that research exploring domestic waste management practices as an interlinkage concept between agencies and structures is hardly available, particularly in kampung-kota environments.

In response to this debate, social practice theory is utilized to uncover the complexity of practice. The lenses of social practice theory can help conceptualize the shifting of practices that undergo novel knowledge acquisition, routine modifications, and social norms reconfiguration (Kennedy, 2015). Viewing domestic waste management practices as social practices can be an option to reveal the dynamics of collective actions within the Kampung Darling community. This dynamic can be seen through three elements of practice that interact with each other, namely materials, meanings,

and competences (Shove, 2003). Changes in domestic waste management practices are also accompanied by interactions between the elements of practice. For example, changes in technology can be attributed to the shift in meaning or skills and the other way around. This can be observed through a detailed explanation from the lens of social practice theory, which provides a nuanced understanding of how practices emerge, form, renew, or break; and also explains the connection between practices (Shove et al., 2012). For this reason, it is useful to see how the Kampung Darling waste management practices developed as a whole set of elements (practice) rather than a singular.

The learning process is inseparable from the development of Kampung Darling's domestic waste management practices. As a collective action, social practice emerges through interaction and shared experiences (Nguyen, 2023). During this interaction, there is knowledge transfer and even social influence to encourage the community to adopt new practices. Some specific skills and knowledge are often required to conduct particular practices, which can only be obtained through social interaction. In line with this, the complementary framework of social learning is employed to explain how the process of social learning supports the development of social practice. This framework offers a perspective on learning experiences and how they can influence shifts in the elements of social practices.

Against this background, this study seeks to investigate how the social practices in domestic waste management occur in Kampung Darling. By employing social practice theory as the main framework and social learning theory as the complementary framework, this study provides insight into the key factors that contribute to the success of sustainable waste management in an urban area. Ultimately, this insight will be valuable for improving the implementation of more effective green practices and essential for supporting the development of green transition policies. The findings of this research can also inspire other communities to replicate the strategies used by Kampung Darling to improve their domestic waste management.

The main research question of this thesis is: **“What are the key factors enabling the improvement of domestic waste management practices in Kampung Darling, Indonesia?”**
From the main research questions above, the specific research questions are derived as follows:

1. What are the key social practices of domestic waste management in Kampung Darling, and how have they developed over time?
2. How do processes of social learning contribute to the development of domestic waste management practices?

1.5 RESEARCH SCOPE AND LIMITATIONS

This study is designed to investigate and analyze the implementation of domestic waste management practices in Kampung Darling households. The scope includes all the social practices of domestic waste management under the zero-waste household program during the year 2024. The previous domestic waste management practice that was implemented before the zero-waste household is included as a complementary finding to understand the development of the practices and the occurrence of social learning. Due to time and budget constraints, this study limits its data collection to the span of three months, from October to December 2024. In choosing the interviewee, this study focused on voluntary participation recruitment. The stakeholders involved are limited to zero-waste household practitioners and a non-practitioner, local government, NGO, and local organizations. Due to undisclosed reasons, the stakeholders from the private sector (recycling industry) were unable to participate. Therefore, this study limits its additional insight from available recruited interviewees.

1.6 OUTLINE OF THE THESIS

This thesis consists of six chapters. Chapter 1 introduces the background of the waste management problem in the *kampung-kota* setting and explains how community-led initiatives address this issue. In addition to the background, the research aims, significance of the study, research questions, and research scope are introduced to provide an overview of the thesis's directions. In Chapter 2, the conceptual framework is presented, explaining the theory of social practice and social learning and how this theory is utilized. Chapter 3 explains the research methodology, providing insight into data collection, analysis, data management, and ethical considerations. The research findings are elaborated on in Chapter 4. This chapter presents crucial findings of social practice, utilizing zooming in and zooming out lenses (Nicolini, 2012), and also explains the social learning perspectives. Chapter 4 is then finalized by elaborating on the key factors contributing to the success of social practices. Next, Chapter 5 serves as a discussion section, providing the methodological strengths and weaknesses, remarkable findings, and reflection on the theory. Finally, Chapter 6 summarizes the overall contributions of this thesis through a conclusion and recommendations for Kampung Darling and future research.

CHAPTER 2 CONCEPTUAL FRAMEWORK

This chapter describes the conceptual perspective on social practice and social learning theory and demonstrates their application to analyze the dynamics of Kampung Darling's zero-waste household practices. First, it highlights the roots of social practice theory and how different scholars have interpreted it. Then, it describes the social practice elements outlined by Shove et al. (2012) and explains the methods of zooming in and zooming out of practice (Nicolini, 2009). The next part elaborates on social learning theory as the complementary framework used in this study. It begins with an overview of the principles of social learning in addressing social problems and specifies how Wildemeersch's (2007) social learning perspective is operationalized in this study. The last part of this chapter then illustrates how the integration of social practice and social learning theory scrutinizes Kampung Darling's zero-waste household practices.

2.1 SOCIAL PRACTICE THEORY

In everyday life, the routine of social practice illustrates how individual behavior is not only determined by personal motivation but is also influenced by the interactions and social structures within them (Van Koppen & Spaargaren, 2023). In the context of micro-level research, the social practice approach is beneficial for providing a holistic explanation of how practices are shaped in social settings (Van Koppen & Spaargaren, 2023). Rather than focusing on individuals or institutions, social practice theory offers fundamental perspectives that are widely used in environmental research, such as those of Hargreaves (2011) and Hampton (2018), in evaluating pro-environmental behavior practices.

Social practice theory brings together different elements of practice by understanding how they are routinized in social settings (Spaargaren, 2003; Shove et al., 2012). The inherently social characteristics of social practice (Schatzki, 2009; Van Koppen & Spaargaren, 2023) explain that social practice cannot be carried out by individuals in isolation. It requires the involvement of interactions with others and continues to evolve through social relationships. Likewise, this study views social practice as routinized behavior that is widely performed in social settings. It does not stand alone but is interconnected with other daily routines. In the field of domestic waste management, the shifting practices of daily routines into more sustainable ones have been deeply connected with other household practices. These practices can continue to be created and co-shaped within the social sphere where people interact and collaborate, as they are shaped in accordance with the cultural setting in which they live (Van Koppen & Spaargaren, 2023).

The theory of social practice has its roots in the debates on the relation between structure and agency, especially in a theory developed by sociologist Anthony Giddens (1984). While structure refers to the broad social-political-economic systems, agency, on the other hand, emphasizes the individual's role to act independently and make his or her own choices (Giddens, 1984; Tan, 2011).

The debates on structure vs. agency underscore the differences in perspectives on how society and individuals interact with each other. Structural theories believe that society shapes individual behavior, while agency theories explain that individuals shape society through their interactions (Tan, 2011). In his theory, Giddens constructs social practices as a framework that can capture both structures and agency. Also known as the "duality of structure" theory, Giddens interpreted structure and agency in social life as an iterative process in which both co-shape each other (Giddens, 1984).

According to Andreas Reckwitz (2002), social practice can be understood as routinized behavior that combines the elements of physical actions, activities, tools, knowledge, and motivations, which are interconnected. This theory particularly depicts how individuals' activity within society shapes the world, and vice versa. The term "practice" in this sense refers to the routinized behaviors that are an important part of society, for example, doing laundry, commuting, and shopping (Reckwitz, 2002). Several scholars, such as Reckwitz (2002), Spaargaren (2003), Nicolini (2009), and Shove et al. (2012), have also contributed to the development of social practice theory. In his theory, Reckwitz (2002) defines the main characteristic of practice theory as a conceptual alternative to social and cultural theory. Meanwhile, Spaargaren (2003) offers a thorough explanation of how the social practice theory can be utilized to scrutinize environmentally (un)friendly behavior, which used to rely on limited socio-psychological models. In relevance to these scholars, Nicolini (2009) developed a strategy to analyze social practice through zooming in and zooming out approach. In addition, Shove et al. (2012) show the dynamism of social practice. Rather than staying static, social practices are constantly changing due to ongoing transformations (Shove et al., 2012). The elaboration of social practice theory by Shove et al. (2012) gained significant recognition, particularly because of the idea to simplify the elements of practices into three core elements, namely materials, competences, and meanings, which corelate with each other. By breaking down these three core elements, Shove et al. (2012) were able to show a nuanced understanding of how social practices emerge, are formed, renewed, or broken.

2.2 SOCIAL PRACTICE ELEMENTS

Shove et al. (2012) build on social practice theory with two ideas. The first idea simplifies the practice elements into three core interrelated elements: materials, competences, and meanings. Meanwhile, the second idea argues the dynamic nature of social practice, which emphasizes that practice is constantly evolving as the relationship between the elements changes. This implies that when the links between elements are strengthened, the practice is likely to persist, and if the link is broken, the practice may disappear or transform into another version. This perspective helps to understand the dynamic of social practice by examining the elements that constitute and are connected.

By focusing on the element's trajectories, Shove et al. (2012) suggest a framework to describe and analyze the change and stability of social practice without relying too heavily on either agency or structures. This framework implies that the shift from mixed-waste disposal practice to zero-waste household practices in Kampung Darling happened not because of individual decisions or regulations alone but because of the interactions or evolving natures of material, competences, and meanings of the practices.

Materials encompass physical objects, infrastructures, technologies, and tangible things that are needed to perform practice. Competences include skills or techniques to be able to perform the practice. Meanings include emotions and motivational knowledge that embrace the purpose or motivation behind performing the practice. Shove et al. (2012) also highlighted that these core elements were not isolated but linked together to make practice. They argue that practice can evolve through reconfigurations of these three elements. In other words, social practice may change whether new materials are introduced, people start to acquire new competences, or there is a shifting meaning as the environmental awareness grows. This framework emphasized that practice elements are not static, as they continuously interact and change. When materials, competences, and meanings shift, the practice also evolves or undergoes a novel transition. This explains how certain practices, such as zero-waste household practices, can become widespread and make the previous practice disappear.

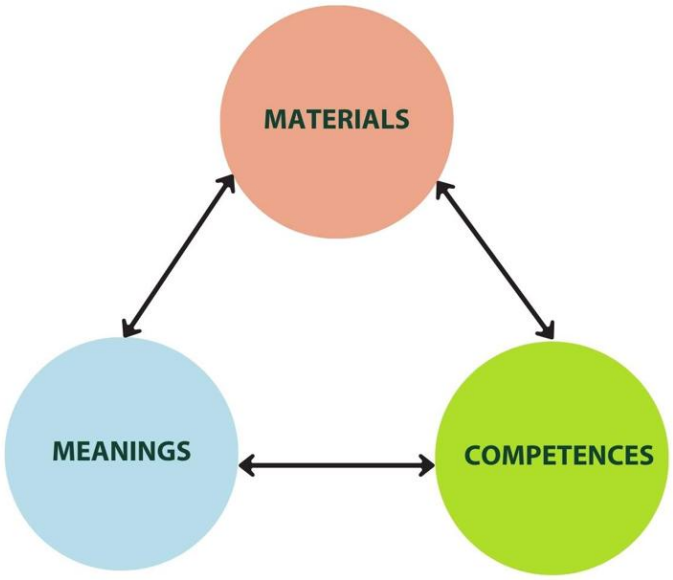

Figure 2. 1 Social practice elements (Shove et al., 2012),

2.3 SOCIAL PRACTICE THEORY AS A FRAMEWORK

To understand the key factors that enable the improvement of domestic waste management practices in Kampung Darling, it is necessary to identify the key social practices implemented by the residents of Kampung Darling. To answer this question, this study employed a zooming in and zooming out approach (Nicolini, 2009). Since the zero-waste household practices in Kampung Darling consist of more than one practice, a clear delineation of the types of practices is needed. This section aims to illustrate how zooming in and zooming out is utilized in the study.

2.3.1 ZOOMING IN

Zooming in is conducted by defining the small unit of social practice and taking a closer look at social practice elements. Through this perspective, zooming in offers a comprehensive view of how practice elements are interlinked, co-shaped, and influenced by each other. Through observations and interviews, the elements that contribute to the occurrence of the practice are analyzed. By understanding the required materials, competences, and meanings behind the practice, a clearer picture of social practices continues to emerge. The purpose behind zooming in is to analyze practice elements and explain how social practice develops. It helps to distinguish the characteristics of social practices, identify what makes certain practices unique, and describe the relations among practice elements. Zooming in also goes beyond simply describing each of the zero-waste household practices. Instead, this approach will help illustrate how the practice is maintained and experienced by Kampung Darling residents. It provides a deeper understanding of the practical concerns that motivate the implementation while offering a richer explanation of community dynamics. Rather than solely focusing on how the residents adopt new routines, it helps shed light on how social practices in Kampung Darling are collectively upheld and reproduced.

In the context of zero-waste household practices in Kampung Darling, the most visible social practice is the waste bank practice, while other social practices are less apparent. Given this situation, zooming in was carried out by identifying the practice elements of the waste bank as a starting point. Materials are the first element identified, as they are more tangible than other elements. Subsequently, the elements of competences and meanings are analyzed. This step was conducted iteratively to analyze other key social practices, such as eco-enzyme upcycling practice and SOD practice.

2.3.2 ZOOMING OUT

To capture a broader perspective on zero-waste household practices, zooming out was utilized to examine how a certain practice is connected to other practices. Zooming out is a crucial step in understanding how a certain practice is connected to other practices. It helps to situate Kampung

Darling's zero-waste household practices as a part of interconnected practices rather than treating them as a standalone practice. Zooming out helps magnify other linked practices that might not be visible from a distance. By implementing zooming out, other practices linked to or included in the zero-waste household practices will become more visible. Since the practices cannot stand alone, zooming out provides a broader perspective of the bundle of practices.

This study posits that the important element in sustaining zero-waste household practices is the mutual reinforcement of interconnected practices. To test this hypothesis, two of Nicolini's zooming out approaches were adopted. The first approach is "following the connection between practices" and the second approach is "following intermediaries within practices". Once the key social practices were identified and zooming in was conducted, the two approaches of zooming out took place.

The first approach, following connections between practices, helps analyze how practice elements interact. This step is crucial in uncovering the relationships and interactions between practices. By looking at the practice relationships, we can see how different practices interact and influence each other. By comparing practices, identifying the patterns of practice elements, and analyzing their interdependencies, this approach aims to uncover how multiple practices share the same meanings, skills, or materials. The second approach, following intermediaries within practices, focused on tracking the material or object movements to see the interconnected practices in a bigger picture. By mapping out these practices, the connections between zero-waste household practices and other household practices become clearer. This, in turn, helps in understanding how these practices are sustained.

2.4 LEARNING IN PRACTICE

Some of the long-established social practices are difficult to change (Nicolini, 2012). Therefore, external factors are considered necessary to support the successful transition to new practices, one of which is through the process of learning. Before settling into the new practices, the improvement of Kampung Darling's domestic waste management practices involved a long process of learning. Although the concept of social practice has provided a holistic approach to understanding the dynamics of practices, the social learning theory is utilized as a complementary framework to provide a more thorough explanation of how the learning process changes or enhances each elements of practices.

Keen et al. (2005) define social learning as "*a collective action and reflection of different individuals and groups that are working to improve the management of human and environmental interrelations*". One of the aims of the development of social learning theory is to understand the nature of the learning process, which takes place in groups, communities, and networks that are trying to address social problems (Wildemeersch, 2007; Van Koppen, 2007); seeking the middle

ground of conflict of interest by empowering collaborations and consensus (Van Koppen, 2007). This theory helps to understand the transformation processes, such as sustainability issues, through collective actions. It is often linked with the constructivist approach, which focuses on interest and views pluralism to achieve mutual understanding (Van Koppen, 2007).

As quoted by Van Koppen (2007), *"Education is important in maintaining the public sphere by regulating and structuring practices"*. While this statement focuses on consumerism, applying social learning to other sustainability agendas, such as domestic waste management is relevant. First, the success of learning - determined as people can adapt to the new practices - is crucial in achieving sustainable practices. The upgrade of competences is greatly influenced by the success or failure of learning processes within social settings. This concept can explain the role of a local leader who has a significant influence in educating the residents of Kampung Darling. Second, learning processes also influence personal identity formations (Van Koppen, 2007). When individuals become involved or connected to particular practices, it is not only their competence that evolves. Along with this shift, the emotional purposes behind the practices also change, referred to as the teleoaffective structure of a practice (Schatzki, 2005). This means that when people learn and become proficient in certain practices, the meaning that is attached to the practices also transforms, contributing to the reshaping of their personal identity.

The importance of social learning in supporting social engagement, where people are brought together to stimulate collective learning processes, is also captured through the social learning theory developed by Wildemeersch (2007). In his research, Wildemeersch (2007) conceptualized social learning as four different activities of collective problem-solving processes. These elements are action, reflection, communication, and negotiation. The action dimension explains that social learning links to social actions. It refers to a tangible activity, such as group discussion or multi-party negotiations, that is triggered by specific motivations and competences acquired from the learning processes. The reflection dimension highlights that social learning contributed to triggering the process of internal and external reflection. It argues that the process of social learning is meant to seek the balance between rational and emotional aspects. This process involves critical thinking by questioning norms or relating to personal values, which might lead to shifting perspectives. In communication dimensions, social learning is tied to the communication processes that occur either inside or outside the social system. The communication process puts an emphasis on how dominant or different voices can control the process of learning. It explains how communication can support or hinder social learning. Negotiation, on the other hand, makes sense in terms of how the different interests in learning processes might involve negotiation. This dimension refers to the way people manage their goals or priorities and find a balance between consensus and dissent.

2.5 SOCIAL LEARNING THEORY AS A FRAMEWORK

Kampung Darling serves as a suitable case for capturing the significance of voluntary environmental action in changing established practices through social learning. In this study, social learning is defined as the learning processes that take place in formal and informal settings. By including both, this study aims to capture the holistic insight of social learning, whether in structured meetings or unstructured social interactions. For this purpose, four analytical tools by Wildemeersch (2007) are adopted to explain the phenomenon of social learning in Kampung Darling.

The Wildemeersch (2007) analytical tool or social learning dimension is used to build a guiding question that explains the phenomenon of social learning in Kampung Darling. It provides a structured approach to understanding how individuals and communities acquire, share, and apply knowledge. The main questions derived from the social learning dimensions present as follows: (1) what kind of actions trigger the shifting motivations and competences (2) how does the learning process find balance between rational and emotional aspects within the social system (3) how communication processes within the social systems inspired by dominant voice (local leader) or different voices and, (4) how the different interests are represented within the social system and achieve consensus among all the members of Kampung Darling.

The aim of the first question is to explore the action dimension of social learning in Kampung Darling. This question guided the exploration to find what kind of activities trigger shifts in practice elements that support the development of zero-waste household practices. The second question aimed to understand how reflection processes take place and find a balance between rational and emotional aspects. This domain is relevant to uncovering the real reason that justifies why Kampung Darling's residents sustain the practice of voluntary participation in zero-waste household practices. This step helps make sense of the external and internal factors that contribute to residents engagement in zero-waste household practices. The third question amplifies the key actors who support the development of these practices. This question seeks to determine whether specific voices contribute to fostering social practices. The fourth question is about negotiation. This question explores the tensions that arise within the practices. These four social learning questions aim to provide holistic illustrations to capture how social learning supports the practices.

The integration of social practices and social learning is a strategy to see how the learning process can specifically shift the elements of practices. This study argues that social learning is crucial to support the implementation of Kampung Darling's zero-waste household practices. Through social learning, Kampung Darling residents acquire new knowledge and skills that directly support the development of social practices toward new practices. This process illustrates the key factors that support the development of practices from the perspective of learning in social settings. In the context of social practices, social learning is often associated with skill improvement and shifts in

motivation. Meanwhile, its role in enhancing materials is not highlighted as much. Therefore, this study aims to understand how social learning processes contribute to the shift or enhancement of the three practice elements. It explains how the presence of learning processes in social settings contributes to the overall development of social practices.

CHAPTER 3 RESEARCH METHODOLOGY

This chapter aims to explain the methodology employed in the study. It begins with Section 3.1, which describes the data collection methods, including literature review, semi-structured interviews, and observations. Section 3.2 outlines the data analysis process, including a description of how the coding was conducted. This chapter then ends by providing explanations on data management and ethical considerations in Section 3.3.

3.1 DATA COLLECTION

This case study was conducted in a qualitative manner by employing exploratory methods. Focusing on kampung-kota's urban setting, this research aims to gain a deep understanding of specific features of the unique domestic waste management practices embedded in Kampung Darling, Tangerang, Indonesia. The qualitative exploratory method was chosen because it offers an adaptive approach (Stebbins, 2001). An adaptive approach can bring many advantages, such as flexibility in revealing unexpected insight, in-depth analysis, and capturing diverse perspectives. The data collection methods include literature review, semi-structured interviews, and observations.

3.1.1 LITERATURE REVIEW

A scientific literature review was used to help operationalize the concept of social practice and social learning in Kampung Darling. This step is also crucial to gaining a deep understanding of the selected case study by giving more descriptions of Kampung Darling or similar initiatives while also establishing the theoretical relevance of the research. This process includes reviewing scientific literature, reports, official websites, and other sources that provide a relevant description of social practices, social learnings, and community-led initiatives.

3.1.2 SEMI-STRUCTURED INTERVIEWS

The semi-structured interview captures practitioners' experiences with zero-waste household practices. It works by combining structured and predetermined open-ended questions (Weller et al., 2018). This approach allows flexibility to explore unexpected insights, as well as gain an in-depth understanding of varied practices and experiences of Kampung Darling's residents without being overly time-consuming. The semi-structured nature of this method also provides standardization and comparability between the interview findings. In addition, the questions constructed for semi-structured interviews allow the utilization of existing theory. Formulating the questions based on the theory ensures the alignment of the interview responses with the existing scientific framework (Knott et al., 2022).

The interview's guiding questions were derived from the theoretical framework to reveal broader perceptions of zero-waste household practices. It aims to uncover the implementation of the practices, the meanings behind the practices, and aspects that support and hinder the social practices. Additionally, it examines skills development and learning processes that enable the adaptation to current social practices.

Before delving into the main interviews, a pilot interview was conducted to test the interview guide questions and timing to assess the effectiveness of the design. The insights obtained from the pilot interview were used to refine the guiding questions into a better version. The interviews were conducted on-site in Kampung Darling's urban areas in Indonesia, with each session lasting between 40 to 60 minutes per participant. The interviews with Kampung Darling residents and local organizations were held in their homes and at the Waste Bank's collection point. Meanwhile, interviews with the government officials were conducted in their office. The interview with the NGO was challenging since their office is located far from Tangerang City; the interview was then conducted online through a virtual meeting.

The interviews were conducted one-on-one. Before the interviews began, participants were informed about the consent form, including the use of interview data and anonymity. All interviews were recorded on a phone, with additional notes taken. The recorded conversations were transcribed verbatim, then classified, coded, and analyzed.

3.1.3 INTERVIEW PARTICIPANTS

To collect broader perspectives of zero-waste household practices, this study focuses on the stakeholders that are directly and indirectly involved to the practices. This step was conducted by identifying the key actors. The chosen actors include zero-waste household practitioners and non-practitioner, local organizations, local government, and NGO. The participants in these interviews were then categorized into five groups, as illustrates in Table 3.1.

Table 3. 1 Interview Participants

Group	Category	Actor	Number of Interviewees
1	Practitioner	Kampung Darling Resident	14
2	Non practitioner	Kampung Darling Resident	1
3	Local organizations	Darling Women Farmer Group (KWT)	1
		Darling Waste Bank Organization (WBO)	1
4	NGO	Glintung Go Green	1
5	Local Government	Environmental Agency of Tangerang City Government (DLH)	2

Zero-waste household practitioners and non-practitioner

The majority of Kampung Darling's residents engage in zero-waste household practices (Interview P-1, 2024). However, there is still a small number of residents who choose not to engage with the practices, referred to as non-practitioner. As practitioners, they implement all the practices of a zero-waste household into their routines. The chosen practitioners came from lower-middle income classes with diverse sociocultural backgrounds. Each of the practitioners represents their household unit. This study, in fact, was able to capture 13% representations of the Kampung Darling households.

Darling Waste Bank Organization (WBO)

"Bank Sampah Darling", or Darling Waste Bank Organization, is an informal local organization that works on a voluntary basis to initiate and manage the operational aspects of the waste bank. Their member, who is referred to as a waste bank organizer, is responsible for facilitating and organizing inorganic waste bank activities, also known as Waste Bank Day. They arrange the planning, preparation, administration, and technical aspects such as accommodating, weighing, sorting, registering, and selling waste to waste collectors (*pengepul sampah*). Additionally, the waste bank organizer is responsible for managing the financial transactions of the waste bank. Their responsibilities go beyond the waste bank practice. They also coordinate all of the zero-waste household practices and promote sustainable waste management education. Additionally, WBO act as intermediaries. They inform waste price rates, negotiate with waste collectors, and oversee waste-related activities in Kampung Darling. One representative of the waste bank organizer was chosen to provide an extensive description of the social practices from the perspective of material flow while also giving the dynamic of the social learning within the Kampung Darling social setting.

Darling Women Farmer Group (KWT)

"*Kelompok Wanita Tani*", or the Women Farmer Group (KWT), is an informal local organization consisting of ten housewives from Kampung Darling who work on a voluntary basis. Despite its name, this group is not necessarily involved in farming activities, in fact, they focus on household-scale gardening activities. In relation to zero-waste household practices, KWT supports organic waste management by providing education and facilitating the practices. Its contribution includes promoting green initiatives by teaching the Kampung Darling community to upcycle organic waste into fertilizers or cleaning solutions. Even though KWT works on a voluntary basis, they play a crucial role in maintaining the circular economy of the community, as they help to sell waste management products. The selected representative from KWT contributes to the holistic understanding of organic waste management under zero-waste household practices and highlights the importance of acquiring competences to shift social practices.

Tangerang City Environmental Agency (DLH)
The Environmental Agency of Tangerang City Government (DLH) plays an active role in supporting zero-waste household practices in Kampung Darling. Their relevance includes providing education, materials, and financial support for waste management initiatives. Additionally, DLH provides waste supply chain information and regulates waste pricing to ensure fair market rates. DLH was chosen to inform how the external factors outside the Kampung Darling community influence the development of practice and the process of learning.

Non-Governmental Organization - Glintung Go Green
The development of Kampung Darling has been significantly influenced by the support of the NGO. Glintung Go Green is a pioneering, successful community-led initiative, focusing on water conservation in Malang, Indonesia. This NGO was appointed by the Tangerang City Environmental Agency to guide the Kampung Darling community in developing a thematic village. The selection of an NGO as an interviewee aims to showcase the role of external stakeholders in facilitating the shifting practices and fostering social learning.

3.1.4 OBSERVATIONS

In qualitative research, observation is one of the fundamental methods for data collection (Hasanah, 2017; Adler & Adler, 1987), as well as in social practice research (Reiss, 1971). This step allows for capturing specific details that cannot be obtained through interviews. It is conducted factually and empirically based on field realities involving observation, perception, and memory (Hadi, 1986, as cited in Hasanah, 2017). Observations also serve as an alternative to collecting direct data from the research subjects (Denzin & Lincoln, 2009). The carried out observations provide a real picture of how zero-waste household practices were implemented. They reflect on the situation during the practice, which aids in understanding the dynamics of social practice along with its complexities.

Observations were conducted simultaneously with semi-structured interviews to gather authentic evidence on how zero-waste household practices occur in Kampung Darling. In this study, the observation process includes selection and recording. First, social practices were selected according to the research needs. This research limits the observation to three key social practices in Kampung Darling, namely waste bank practice, SOD practice, and eco-enzyme upcycling practice. Second, the observation occurred by following the practitioners as they performed these practices while also clarifying any unclear information. These activities were recorded through note-taking and preserved using a digital camera.

The observations of zero-waste household practices were divided into two categories: 1) observation of key practices that were performed individually on daily routines, and 2) observation of practices that were performed collectively. The first category took 14 sessions of observations,

with one practitioner per session. Each session took approximately 1 hour of direct observations in each of the practitioner's houses. The second category included seven sessions, with 5 to 6 hours per session. The second observation category involved observing Waste Bank Day, community gathering, training, and eco-enzyme upcycling day.

3.2 DATA ANALYSIS

The data collected from the interviews were analyzed employing thematic analysis. In qualitative research, thematic analysis allows the researcher to explore the deeper underlying meaning of the data (Braun & Clarke, 2006). It focuses on identifying and analyzing a pattern within the interview responses. By highlighting the complexity of responses, this step helps to reveal the recurring themes of zero-waste household practices, bringing deeper comprehension on how the practitioners perceive and interact with their routinized practice.

Thematic analysis involves the process of identifying, creating, and grouping the codes according to the patterns found in the interview results. In qualitative data analysis, codes provide a system that can classify concepts, topics, categories, attitudes, or beliefs that are reflected in human thought and activity (Forman & Damschroder, 2007). In this research, the codes were assigned into data segments to capture their summative and essence. The coding process, or the process of assigning the codes to the interview transcript, helps to find the commonalities and different perspectives among participants, making the results more readable.

This research utilized a combination of deductive and inductive coding approaches. In deductive coding, the established theoretical framework of social practice and social learning, which structured the data analysis, becomes the starting point. For instance, in the social practices part, the practice elements (materials, meanings, and competences) become the main codes. Meanwhile, social learning uses social learning dimensions (action, reflection, communication, and negotiation). In addition, the inductive coding was combined with the analysis to add more flexibility in interpreting the data, especially when discovering unexpected patterns. The idea is to balance the structured analysis while still leaving room for exploratory insight. In inductive coding, the codes are derived once the data is collected. It started with breaking down complex data into smaller units before being categorized and thoroughly analyzed. The important fragments were further labeled based on the emerging insight. In this case, inductive coding was conducted after deductive coding. Once the data was analyzed and categorized, the smaller fragments were labeled into the subcodes.

In doing the coding, an Excel dashboard was created to maintain the organization of the coding. The dashboard was meant to help differentiate the fragments based on the key practices. Once the fragments were separated, they were classified based on the central point of the arguments. For instance, under the waste bank practice, each fragment that contains a different theme, whether it

reflects one of the practice elements or a combination of more than one element, was coded under the fitted theme and underwent an inductive coding phase. The result is shown in the diagram, summing up the frequency of the appearance of all the responses.

3.3 DATA MANAGEMENT AND ETHICAL CONSIDERATIONS

This research adheres to strict ethical guidelines to ensure integrity and validity by addressing the confidentiality and anonymity of the interview participant, data handling and storage, non-maleficence, and transparency and honesty. Prior to the interviews, the guidelines and detailed consent statements were explained to all the interviewees to ensure the clarity of the interview process. This includes information regarding the rights of the participant, how the data will be used, and the confidentiality of the data obtained. Participation is fully voluntary, which means that the participant has the full right to withdraw the participation and respond at any time. Their consent was recorded for documentation purposes.

Aligned with the standard of General Data Protection and Regulations (Finck & Pallas, 2020), the interviewer committed to keeping the anonymity of the Kampung Darling residents and making sure that no individual can be identified from the published final reports. However, full anonymity for participants who hold specific positions might not be feasible. In such cases, the researcher has given their consent to mention their positions in this report.

Furthermore, the digital data, which includes transcripts and interview recordings, were stored and handled securely with limited access. Seven years after the completion of this research, all the digital recordings will be destroyed. The interviews prioritized the safety of the research participants, which means that all the interview questions were designed to be respectful and in adherence to the ethical norms of Kampung Darling. The questions avoided sensitive issues, and the participants had the right to skip the questions if they wished. Upon its completion, participants were given a poster depicting the summaries of research results in their local languages. This poster will be available in the waste bank collection point where all the participants can read and see the file.

CHAPTER 4 FINDINGS

This chapter outlines the research findings in six sections. Section 4.1 elaborates on the key practices of zero-waste household implemented in Kampung Darling. Section 4.2 serves as a detailed analysis of key social practices from the lens of zooming in, where each of the key practice elements was broken down into materials, competences, and meanings. Simultaneously, section 4.3 unfolds the practice of interconnectedness from the lens of zooming out. Furthermore, section 4.4 explains the social learning dimensions found in Kampung Darling's zero-waste household practices, while section 4.5 synthesizes how social learning contributes to the practices. Finally, section 4.6 summarized the findings by highlighting relevant key factors in the success of Kampung Darling's zero-waste household practices.

4.1 ZOOMING IN ON KEY PRACTICES OF KAMPUNG DARLING'S DOMESTIC WASTE MANAGEMENT

The establishment of Kampung Darling with its zero-waste household program became a turning point for significant changes in domestic waste management practice for the RT 4/RW 11 community. After years of implementation, the residents slowly adapted to sustainable ways to dispose of and manage waste. Their previous practice, mixed-waste disposal, has been abandoned since the zero-waste household (*Rumahku Merdeka Sampah*) program was introduced.

Kampung Darling took its first step by setting up the Darling Waste Bank and implementing waste bank practice; they even provided the required materials independently. With the guidance of Glintung Go Green-NGO, Kampung Darling set up a master plan to develop its first waste management system (Interview P-1, P-5, P-6, 2024). On its journey, the waste bank practice was gradually developed as the positive response did not instantly take place. At first, there were less than 50 residents who participated. There was also a moment when this practice stopped its activity because of unconducive management and the COVID-19 outbreak. However, after undergoing an organization replacement, Darling Waste Bank started to reoperate and gained higher participation. This practice led to the establishment of two other domestic waste management practices, namely SOD practice and eco-enzyme upcycling practice, where each created a new social practice. In collaboration with local government, local organizations, and NGO; the SOD practice and the eco-enzyme upcycling practice started to take place as part of the zero-waste household key practices. In the following section, the key practices of the zero-waste household are explained further.

4.1.1 WASTE BANK PRACTICE

Waste Bank is a waste management facility or system that implements the 3R (reduce, reuse, and recycle) principle that is established and managed by the government, community, or businesses (Regulation of the Minister of Environment and Forestry Number 14 of 2021). While it promotes

waste management education and behavioral changes, waste bank also aims for a cleaner and healthier environment by implementing a circular economy (Ministry of Environment, 2022).

The reduce principle in Darling Waste Bank is implemented by educating the residents to minimize the use of plastics. Meanwhile, the reuse principle is applied by repurposing plastic waste as a flowerpot, chairs, and other useful tools. Furthermore, the recycle principle, as the main attraction of a waste bank, is implemented differently. In this principle, people can deposit their waste into their waste bank savings and receive money in return. The deposited waste will be sold by the waste bank organizer to the recycling industry through waste traders.

In the context of zero-waste household practices, waste bank practice refers to the action of practicing the "recycle" principle. In this practice, the recyclable waste, such as plastic, iron, and cardboard, that still have economic value, will be collected, sorted, cleaned, transported, and deposited at the waste bank collection point every Sunday. The amount of waste collected will be counted according to its recent price; the balance will then be noted on the waste bank savings book and can be cashed.

From 14 interviews with zero-waste household practitioners, various elements of practice were revealed. Through the zooming in method, the elements of the waste bank practice were analyzed into materials, competences, and meanings as explained below.

4.1.1.1 MATERIALS

In contrast to previous practice (mixed waste disposal), which only relied on the waste bin, waste bank practice needs more equipment and facilities. To conduct the waste bank practice, practitioners need scissors and a cutter to separate waste according to the category. As each component of the inorganic waste has different prices, sorting waste becomes important. For instance, the cutter is used to separate the plastic bottle into its cap, label, and main body. Waste that appears dirty needs to be cleaned with water. The cleaner the waste, the higher its price. After the cleaning processes, the waste was then collected using unused plastic sacks or boxes as shown in Figure 4.1.

Figure 4. 1 Plastic waste collected in an unused plastic sack (left) and cardboard boxes (right).

Furthermore, the waste is transported to the waste bank collection point by utilizing a waste bank cart or motorcycle, as illustrated in Figure 4.2. The waste bank cart is provided by the government (DLH) and is managed by waste bank organizers. It can be used free of charge and shared on a rotational basis. Meanwhile, the motorcycle is personally owned by the practitioner.

Figure 4. 2 Waste bank practitioners transport waste using a cart (left) and a motorcycle (right).

A waste bank collection point is a required facility for conducting waste bank practice. This facility is used to accommodate practitioners who want to deposit their waste. It also served as a place for waste sales transactions between the waste bank organizer and waste traders (*pengepul sampah*).

In Kampung Darling, the waste bank collection point is accessible as it is strategically located in the middle of a residential area. However, this area is considered insufficient and too small by the interviewees, as the amount of waste being deposited on Waste Bank Day is often overflowing (Interview P-1, P-5, P-6, P-11, P-14, 2024).

Figure 4. 3 Waste bank collection point (right) and weighing scale (right).

Upon arrival at the waste bank collection point, the waste will be weighed using a large weighing scale. It is then calculated according to market price by the waste bank organizer using a digital calculator. Aside from the use of the large weighing scale and digital calculator, the waste bank organizers utilize notebooks, stationery, and a computer unit to record deposited waste for their own data. Meanwhile, waste bank practitioners use their personal waste bank savings book to keep tracking their balances, just like in a conventional bank.

Figure 4. 4 Waste bank savings book (left) and waste bank organizer noting waste deposit (right).

4.1.1.2 COMPETENCES

Several skills are needed in doing waste bank practice, including the skill to sort the waste based on its classification. Before depositing into the Darling Waste Bank, practitioners are required to clean and sort the recyclable waste according to its classification. These processes were carried out to obtain an optimal waste selling price. In the sorting process, for example, a plastic bottle must be separated between its cap, label, and main body, as these parts have different selling values. The sorting skills must be accompanied by the skill to identify the waste types. Plastic bottles are made of three different components: PET (polyethylene terephthalate), HDPE (high-density polyethylene), and PVC shrink (Selintung et al., 2021). To understand the differences, practitioners refer to the information on waste classifications available in the waste bank savings book. In this context, practitioners require basic literacy skills. Next is the cleaning skill. The cleaning process is relatively simple yet essential. Practitioners must rinse the waste with running water to ensure no residue remains.

"Because I go to the waste bank every two weeks, I rinse the plastic waste first, then I deposit it in the waste bank. If the waste is clean and has been sorted, the price is also higher. Clean bottles are priced higher, but if they are still dirty, they are usually categorized as scrap, so the price is lower."
(Interview P-13, 2024)

The sorted and cleaned waste is then transported to the Darling Waste Bank by carts. In doing this, practitioners do not require specific skills. However, when a cart is not available, practitioners often use their private vehicles, such as motorcycles, to transport large amounts of waste. To perform this action, practitioners need the skill to ride a motorcycle to the waste bank collection point.

After the waste arrives at the collection point, waste bank organizers will weigh, record, and calculate the value of the waste. To conduct these steps, they need to be able to read the weighing scale and calculate the prices using a calculator. The amount of deposited waste is then written manually in a waste bank savings book, which requires basic literacy skills of writing, reading, and numeracy. In addition, to protect data from the risk of a savings book being lost or damaged, the data can also be recorded digitally on the waste bank's computer, which requires digital literacy skills.

4.1.1.3 MEANINGS

During the interviews, selected practitioners linked the waste bank practice with various meanings, as presented in Figure 4.5. These meanings include six aspects: environmental responsibility, well-being, religious commitment and altruism, financial incentives, non-financial incentives, and waste optimization.

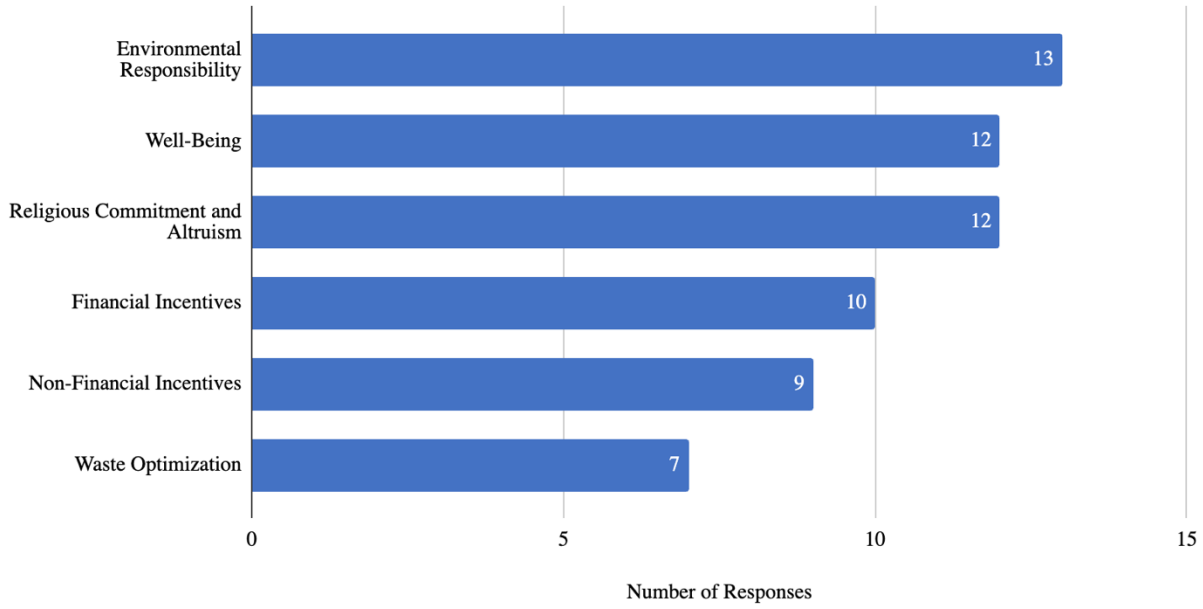

Figure 4. 5 The meanings of the waste bank practice.

Environmental Responsibility

The majority of interviewees mentioned environmental responsibility as the meaning behind the waste bank practice. This aspect refers to personal responsibility to protect the environment and spread awareness to others. They realize that the negative impacts caused by unmanaged domestic waste are increasingly alarming, as the long process of waste degradation of inorganic materials has become a burden for most landfills in Indonesia. By doing the waste bank practice, interviewees believe that their positive impact will contribute to preserving the environment.

"When I saw the waste dump shelters, oh my gosh, the garbage is quite piled up. It seems like waste processing also becomes a burden as it takes quite a long time to decompose. But when I deposited my waste in the waste bank, they already knew how to process it sustainably. So, our waste will also be much reduced and cleaner."
(Interview P-10, 2024)

"I am sure that all products in this world are definitely sourced from natural resources, whether plastic, paper, metal, oil, all come from natural resources. Well, if we recycle the product, it can be used for new products again; this will save natural resources, and maybe our environment can be sustainable."
(Interview P-1, 2024)

Some interviewees also revealed that conducting the waste bank practice has triggered them to educate their kids, families, and surroundings. These interviewees expressed that by gaining waste

management knowledge from the waste bank, they can become good role models for their children. By giving direct examples, they aim to instill environmental responsibility in their families.

"I saw other children pulling the carts and depositing waste into the waste bank. I wanted my children to be like them. I wanted my children not to be ashamed to manage waste, to be aware of waste and have positive activities. That's why I supported my children to actively participate in the waste bank."
(Interview P-14, 2024)

Well-being

Well-being emerged as the second most frequently mentioned meaning by interviewees. This aspect highlights the idea of environmental and emotional well-being. In terms of environmental well-being, commitment to practicing waste banks is driven by the strong meaning of cleanliness. Interviewees expressed that after the implementation of the waste bank practice, their homes and the surrounding environment became significantly cleaner, healthier, and more organized.

"In fact, now I am actively managing the waste. I just like it, when cleaning the house, sometimes I find unused items. So I know which items can still be used or not, the house is not stuffy because I can declutter things."
(Interview P-14, 2024)

"After the waste bank program, I am very happy as the environment is becoming cleaner and healthier."
(Interview P-2, 2024)

The second aspect is emotional well-being. Some of the interviewees express that the waste bank practice is a moment of quality time with family and friends. This idea was captured from the interviewee who was excitedly telling their family moment when conducting the waste bank practice. At first, they see the waste bank practice as an option for managing waste, however, along the way, they started to feel it as an enjoyable activity to do together with their close ones.

"So, at that time, my child saw my friend's children get vouchers from the waste bank. It turned out the activity is so much fun. Now, every week, my children, husband, and I deposit together at the waste bank. My children are the ones who usually help carry the waste cart."
(Interview P-14, 2024)

Religious Commitment and Altruism

In many religious countries like Indonesia, the spiritual values were broadly emphasized in the social settings. One of which is enforcing human responsibility to safeguard the environment. For this reason, interviewees feel that their proactive role in the waste bank practice, is part of their devotion to their religion. This statement is reflected in the below quote:

"The God has created everything so beautifully and perfectly, and has placed everything according to its place and given it all to humans. How uncivilized we are as humans who have occupied this world and do not want to maintain and care for it and are very uncivilized if we throw garbage carelessly and let the environment become dirty. I have to live this life trying my best to carry out the job description as a human being from my creator."
(Interview P-1, 2024)

Another meaning that appeared during the interviews is altruism, where individuals willingly engage in the waste bank practice for the community without expecting anything in return. By doing so, they do not wish to generate any incentives; instead, they gain personal fulfillment from empowering the community while taking care of the environment. This motivation is driven by shared responsibility among residents to benefit others and future generations.

"I'm happy to help this waste bank because only a few people are willing to do it. So we have to be willing and responsible to contribute to society. Indeed, religion teaches us that cleanliness is part of faith, so we have to clean this waste, that's just one factor. We have to be sincere in doing it for the future, and hopefully, there will be results for society and our children and grandchildren because we have to really work hard to get the best results."
(Interview P-6, 2024)

In addition, some interviewees were driven by empathy and a moral obligation to reduce the burden on waste officers. They viewed sorting waste and depositing it at the waste bank as an act of charity that can help other people.

"And it's also nice (to do the waste bank practice) so we do not throw away too much rubbish, which makes it easier for the rubbish collectors too."
(Interview P-9, 2024)

Financial Incentives

The circular economy concept adopted by Darling Waste Bank means that all the benefits from the waste bank practice will return to their local economy (Interview P-1, 2024). In line with this statement, an important meaning arising from the interview was financial incentives. The majority of interviewees mentioned that the incentives obtained from the waste bank motivated them to

continue preserving the practice. There are two different incentives generated from the waste bank practice: financial incentives and non-financial incentives.

Financial incentive refers to the profit generated from the waste bank practice; this can be sourced from the waste selling to the recycling industry or a donation from a sponsor. The profit from the waste bank practice can be cashed out by the practitioners, or in certain events, it can be exchanged with shopping vouchers. The shopping voucher is an additional bonus that employs a physical paper (voucher) with a certain amount of money. This voucher can be used to buy daily necessities, such as vegetables, cooking oil, and rice at the Kampung Darling resident's local stores.

"Usually, there is a program where residents can earn coupons. We can exchange 10 kilograms of waste for a coupon worth 10,000 rupiahs, we used it to shop at local stores. Within a month, we can collect several coupons to buy vegetables, phone credit at local convenience stores, and other local businesses that collaborate with the Darling Waste Bank."
(Interview P-12, 2024)

The benefits are not only in the form of incentives like cash or vouchers but also the facilities obtained from waste bank profit. The waste bank administrator explained that 70% of the profits are for the waste bank practitioners; this is the amount that can be cashed out in Indonesian rupiah. The remaining profit, which is 30%, is used to fund the waste bank operation, community activities, and Kampung Darling facilities.

"Actually, 70-30 is just a term. In principle, more is returned to the needs of the community, for the benefit of the wider community. Whether it is returned to customers through bonuses and social innovations that we do."
(Interview P-1, 2024)

"I am very happy, as the money can be used for the community. Like installing CCTV and street lighting, all of that. We also still get bonuses from the Waste Bank sponsor. Sometimes, I save it to pay monthly expenses like trash collection, neighborhood funds, or graveyard maintenance. It's more flexible because we pay with waste instead of cash."
(Interview P-4, 2024)

In addition, the profits from the Darling Waste Bank are also allocated as a compensation fund or social security for Kampung Darling residents from vulnerable groups.

"During the month of Ramadhan, there are also donations of basic necessities. People become happier when they have already received money and are still getting bonuses. There are also donations for orphans and things like that. From worthless trash, it helps a lot of people."
(Interview P-4, 2024)

Non-financial Incentives

The next meaning that is often mentioned by interviewees is non-financial incentives. Non-financial incentives are intangible; they include social acceptance, networking, and social recognition**.**

As a winner of the thematic village, Kampung Darling has gained nationwide recognition and received several awards. Darling Waste Bank eventually stands out and has made the existence of the waste bank practice the main attraction in the kampung. This status has also influenced more residents to engage in the practice to enhance their social acceptance in society, expand their network, and gain social recognition.

"I am very happy to be invited to an activity like this. I think waste bank is cool. This is the moment I can socialize with other residents. I am a rather quiet person and have difficulty socializing, but this activity enables me to interact with other residents. I used to be a bit shy and afraid to interact with neighbors, but now, thank God, I have become brave enough to talk to people, so I learned how to socialize."

(Interview P-14, 2024)

Furthermore, interviewees revealed that the waste bank practice had served as networking opportunities. These opportunities allow them to expand their social presence and increase their knowledge of waste management by interacting with other communities that share a similar mission toward achieving more sustainable domestic waste management.

"We often gather to discuss waste, and sometimes, our local leader invites us to join the seminars. It was fun because I could go anywhere and get to know people from the other villages."

(Interview P-4, 2024)

The social recognition is also earned while doing the waste bank practice. In the following quotes, one of the interviewees mentioned that the popularity of Darling Waste Bank has made them feel honored to become part of the Kampung Darling community. This meaning captures how the impact of social recognition is able to maintain the engagement in the waste bank practice.

"Everyone can easily search the information of Kampung Darling from Youtube, Instagram, this makes me really proud. A lot of my friends from other community already know the Kampung Darling waste bank. They keep asking me about it."

(Interview P-11, 2024)

Waste Optimization

Waste optimization also stimulated the interviewee to do the waste bank practice. This meaning refers to the mindset of maximizing the full potential of objects that are considered to still have value before being disposed of. Since the waste bank was established and people began to understand its value, the perceptions towards waste were reshaped. Waste that used to be seen as worthless is now viewed as a potential resource. As recognition of the waste value increased, they were more cautious to discard items that still had benefits. This explains why interviewees become more mindful of the potential value of waste. Hence, they tend to hesitate to discard their waste, and some of them also start to declutter things more often.

"When I clean the house, sometimes I find unused items, so I know which items can still be used and which ones can't. Some of it I sell to the waste bank."
(Interview KDR-I4, 2024)

"When I see unused plastic bottles scattered around, it feels like such a waste to just throw them away, rather than throwing them away, it is better for us to utilize them."
(Interview P-13, 2024)

4.1.1.4 WASTE BANK PRACTICE AS A SOCIAL PRACTICE

By breaking down the waste bank practice into its elements, this study has come to a conclusion, which sees that this practice is not just an activity of sorting, cleaning, transporting, and selling inorganic wastes to generate revenue. This practice has go beyond profit based activities, instead, it represents a broader concept of becoming a part of the Kampung Darling community that shares the same goals to achieve better quality of life. This argument is stemming from the fact that the waste bank practice is able to transform the living situation of the community. After the waste bank practice was implemented by the majority of residents, they have been living in a better environment that is healthier, cleaner, well-equipped with better facilities, and more socially safe. In essence, this practice is a path for Kampung Darling residents to achieve their vision of better quality of life, something that previously they lacked as a kampung-kota community.

4.1.2 SOD PRACTICE

SOD is an abbreviation of the Indonesian word for "*sampah organik dapur*", which means organic kitchen waste or food waste. This term is used to describe the food waste management practice utilizing SOD bins. SOD practice is the second established zero-waste household practice. In this practice, practitioners have to collect food waste and dispose of it in SOD bins, which are available in every corner of the Kampung Darling. Each practitioner usually carries out the SOD practice differently. Some people collect their food waste first and then dispose of it in the SOD bin, but some immediately discard their leftover food after eating. Through the SOD practice, food waste

is then processed to cultivate maggots (black soldier fly larvae) that can be used as an animal feed. However, practitioners do not carry out this cultivation process; instead, it is the role of the government (DLH). Aside from the practitioners, the waste bank organizers are also involved in this practice. Waste bank organizers help to distribute SOD bins from the government to Kampung Darling residents. The following section will explain the SOD practice according to its practice elements.

4.1.2.1 MATERIALS

SOD waste includes all of the organic waste produced during cooking and dining activities. Items of food waste, such as vegetable scraps, leftover meat, fish bones, and moldy bread, can all be categorized as SOD waste. To conduct the SOD practice, an SOD bin is needed. A SOD bin is a large plastic barrel to collect organic waste from the Kampung Darling residential area. This bin is made from high-density polyethylene (HDPE) plastic, capable of holding over 60 liters of organic waste. It comes with a dark plastic lid to prevent flies and unpleasant odors from escaping. Additionally, the SOD bin is equipped with colorful labels to make the bins easily recognizable.

To accommodate large amounts of organic waste, Kampung Darling uses multiple SOD bins and places them on the street corner. In each neighborhood alley, at least one SOD bin is provided. These bins are supplied by DLH specifically to support the zero-waste household initiatives. Every two days, the bins are picked up by the DLH cleaning officers and are processed into maggots (black soldier fly larvae) and casgots (maggot residues) in a separate location. Later, these products can be used as animal feed and plant fertilizer.

Figure 4. 6 A practitioner disposing of food waste into an SOD bin (left); maggots (black soldier fly larvae) cultivated through the SOD practice (right).

Figure 4. 7 A SOD practitioner feeding maggots to their pet bird (left) and pet fish (right).

4.1.2.2 COMPETENCES

The SOD practice might seem simple, as it only includes disposing of food waste in the SOD bin. However, some practitioners still do not dispose of their waste properly. As observed, unsuitable materials such as chopsticks and branches were found in the bin. While the SOD bin is meant to collect organic waste, specifically food waste, some people may think that anything organic can be disposed of in it. Organic waste with strong structures, such as branches or wooden sticks, cannot go into the SOD bin because they will interfere with the decomposition process (Interview P-4, 2024). Therefore, in order to conduct the SOD practice, practitioners are required to develop waste sorting skills and understand the characteristics of organic waste.

At the level of practitioners, the SOD practice stops at the sorting and disposal stage. Further processing to produce maggots and casgots is carried out by the DLH. Therefore, practitioners do not need to obtain a skill to manage their SOD waste into maggots or casgots; they just simply walk outside their homes to find the nearest SOD bin and dispose of their waste every day.

4.1.2.3 MEANINGS

The meanings behind the SOD practice can be categorized into three main points: waste optimization, cleanliness, and product usefulness and practical benefit. Figure 4.8 shows the meanings that are mentioned during the interviews. The following paragraph elaborates on these findings:

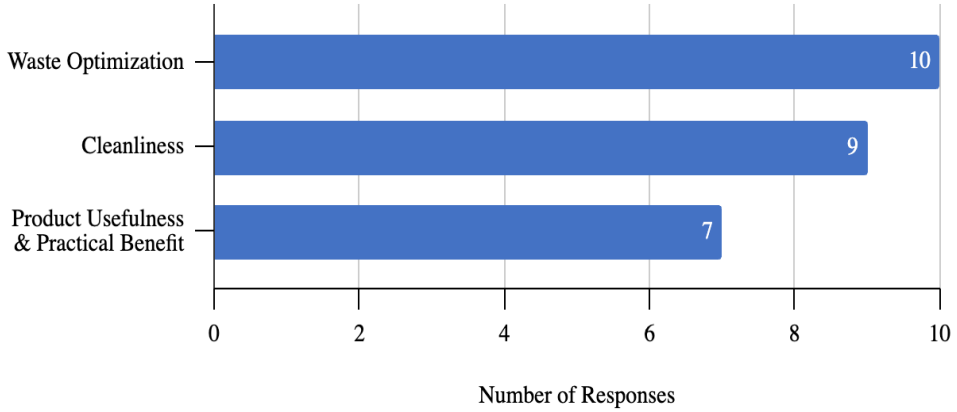

Figure 4. 8 The meanings of the SOD practice.

Waste Optimization

Waste optimization has become the most mentioned meaning behind the SOD practice. Interviewees mentioned that, as they received waste management education from their local leader, they now perceive food waste as a resource that can be optimized (Interview P-2, P-9, P-10, P-13, 2024). By practicing this, they feel satisfied because they can maximize the full potential of their waste. This sense of satisfaction stems from their gratitude for food as a blessing from God. Given the challenges of earning a living for food in a lower-middle-income community, the practitioners highly valued the food; they felt that food should not be wasted or "*mubadzir*". *Mubadzir* is an Arabic term that Indonesians commonly use to express wastefulness when using resources. It carries religious values, which discourage wasteful action. Building on this background, practitioners strive to maximize food resources and motivate them to optimize food waste. As expressed in the following quotes:

"I still routinely throw organic waste into the SOD bin because it's a shame to waste food- cari nasi kan susah (implies to the difficulties to earn a living)"
(Interview P-13, 2024)

Cleanliness

Living in a densely populated area such as kampung-kota makes a clean environment feel like a luxury. The vision towards a clean environment has brought the practitioners to engage with the SOD practice. Interviewees reveal that cleanliness is a driver that motivates them to sustain the SOD practice. Cleanliness also reflects their spiritual values. This meaning was observed during the SOD practice when practitioners explained how their religion encourages them to maintain cleanliness as part of their responsibility. By conducting the SOD practice, the environment has become cleaner, healthier, and more organized. The issue that is caused by decaying organic matter from food waste has been effectively addressed.

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"There was a moment after the Eid celebration because the trash collectors were on holiday, and they were late picking up the trash for a week. Imagine that rubbish has been piling up for a week, and larvae and flies are everywhere because people are still throwing their rubbish carelessly. Now, there is an SOD bin to dispose of the wet waste; it is much cleaner."
(Interview P-4, 2024)

Product Usefulness and Practical Benefit

Product usefulness and practical benefit is the least mentioned meaning in the SOD practice. This, in fact, reflects that the benefits of the product cannot be directly used by the practitioners. After the SOD waste was collected and picked up by the DLH cleaning officers, the waste management process took weeks to cultivate the maggots. Hence, it is a relatively long wait for practitioners to benefit from waste management products. They also need to ask the local leader to request it from the DLH so that the DLH can deliver the maggots for practitioners. Once available, maggots can be utilized to feed fish, chickens, and birds. On the other hand, casgots, the by-product of maggot production, can be used as fertilizer or growing media.

"SOD will later be collected by the DLH and processed into maggots and casgots. We can request and use them for gardening, you know, as a planting medium to enhance soil fertility."
(Interview P-7, 2024)

4.1.2.4 SOD PRACTICE AS A SOCIAL PRACTICE

Compared to other zero-waste household practices, SOD practice is the simplest domestic waste management practice, which requires a single material and competence. By emphasizing a dominant concept of waste sorting, the SOD practice is able to increase awareness towards food waste that was previously neglected. While showing gratitude for food waste by maximizing its benefits, it also served as a proactive effort to improve the quality of life with a cleaner and healthier living environment. Additionally, this practice reflects the practitioners' trust in the waste management system managed by the government. The SOD practice is not merely about disposing of domestic waste but also reflects the importance of social collaboration to maintain more sustainable waste management.

4.1.3 ECO-ENZYME UPCYCLING PRACTICE

The eco-enzyme upcycling practice is the last established key practice under Kampung Darling's zero-waste household program. This practice focuses on the management of organic waste. Before this practice was introduced, Kampung Darling residents were not processing their organic waste, as they relied on mixed waste disposal, where all the organic and inorganic waste was combined in the same bin. The eco-enzyme upcycling practice is implemented by utilizing simple

fermentation methods to convert fruit waste into enzyme liquid that can be used as a household cleaner, fertilizer, or even as a natural pesticide. By doing this practice, practitioners help to reduce greenhouse gases while producing multipurpose products from their organic waste. This practice is conducted by mixing all the ingredients into a big plastic container before being stored in shades and fermented. After reaching the perfect stage of fermentation, the mixture is transformed into a liquid that contains amylase, protease, and lipase enzymes. From this step, KWT members take over the process, collecting fermented liquid from practitioners and continuing with further processes that are filtrating and packing the final product. In the following part, the eco-enzyme upcycling practice is explained according to its elements:

4.1.3.1 MATERIALS

Each household has its materials to produce eco-enzyme; this includes plastic containers (plastic gallons), sugar, water, and fruit waste. All of the materials, excluding the fruit waste, were provided by the Darling Waste Bank. These materials include reused plastic gallons and sugar, which were funded through waste bank profits. Once the equipment is distributed by the KWT, households begin making eco-enzyme as taught by the KWT and waste bank organizers. To make eco-enzyme, the practitioner collected the fruit waste and placed it into the container, then added sugar and water simultaneously. The composition needs to follow the ratio of 1 kg of sugar, 1 kg of fruit waste, and 10 liters of water (Interview P-13, 2024). The ingredients are then mixed, sealed, and stored in the shade to allow fermentation to take place. After fermenting for at least three months, eco-enzyme is ready for collection.

Figure 4. 9 Adding fruit waste to an eco-enzyme mixture (left); storing eco-enzyme in the shade (right).

When the fermentation process was complete, the KWT informed practitioners about the pickup schedule and collected the gallons from house to house using a cart provided by the waste bank. At the same time, they distributed new materials for the next batch of eco-enzyme production.

Figure 4. 10 KWT members pick up fermented eco-enzyme (left); new materials are being distributed to the practitioners houses (right).

The collected eco-enzyme is transported to the waste bank collection point, where they were filtered, repackaged, and labeled into ready-to-use products. In doing this process, KWT required a big bucket to collect liquid, cloth filters to separate the solution and residue, hand gloves to protect from acid splash, and labeled packaging to store the final product. The final product is then distributed to practitioners, while the residue is repurposed as compost for the Kampung Darling Community Garden.

Figure 4. 11 Eco-enzyme filtration process (left); eco-enzyme product packed in plastic bottles (right).

Figure 4. 12 Eco-enzymes are used as a cleaning solution (left) and as a fertilizer (right).

4.1.3.2 COMPETENCES

The central competences for conducting eco-enzyme upcycling practice include the ability to understand ingredient composition and quality, the skill to monitor the fermentation processes, and the skill to do filtration with a strong focus on hygiene and safety compliance. Practitioners need to understand the characteristics of the ingredients used. To make a good quality eco-enzyme, practitioners should avoid fruit waste that is hard textured and contaminated with oil. Otherwise, it would disrupt the fermentation process. They have to understand that different fruits result in different qualities of enzymes. Fruit with high sugar, such as pineapple and orange, likely produce a good quality eco-enzyme (Interview KWT, 2024). Therefore, acquiring basic knowledge of the ingredients is crucial. In this regard, the KWT plays a significant role in assisting practitioners with the necessary skills.

The next crucial skill in doing this practice is fermentation monitoring. Eco-enzyme containers need to be securely sealed and placed in a dark area to ensure the fermentation is maintained at optimal conditions. To avoid the gas outburst, practitioners need to release the trapped gases, by regularly opening and closing the caps. In this case, monitoring skills help to navigate the optimum and safe fermentation processes.

After the fermentation reaches its final stage, filtration begins. In doing this step, basic safety skills need to be acquired. Practitioners need to understand the risks of working with high-acidity liquids so they can prepare sufficient tools and methods. The filtration process was conducted by the KWT. The KWT are also the practitioners of the eco-enzyme upcycling practice. They volunteered

to provide convenience for other practitioners who are unable to finalize the upcycling process to foster the sustainability of this practice. To conduct the filtration, KWT members need basic safety skills and must provide suitable materials. They use a low chair and large storage containers to avoid splashing, and wear long-sleeved shirts to protect themselves from the risk of irritation.

4.1.3.3 MEANINGS

Meanings behind the eco-enzyme upcycling practice can be categorized into: product usefulness and practical benefit, waste optimization, financial incentives, and community empowerment. Figure 4.13 shows the meanings that are mentioned during the interviews. The following paragraph elaborates on these findings:

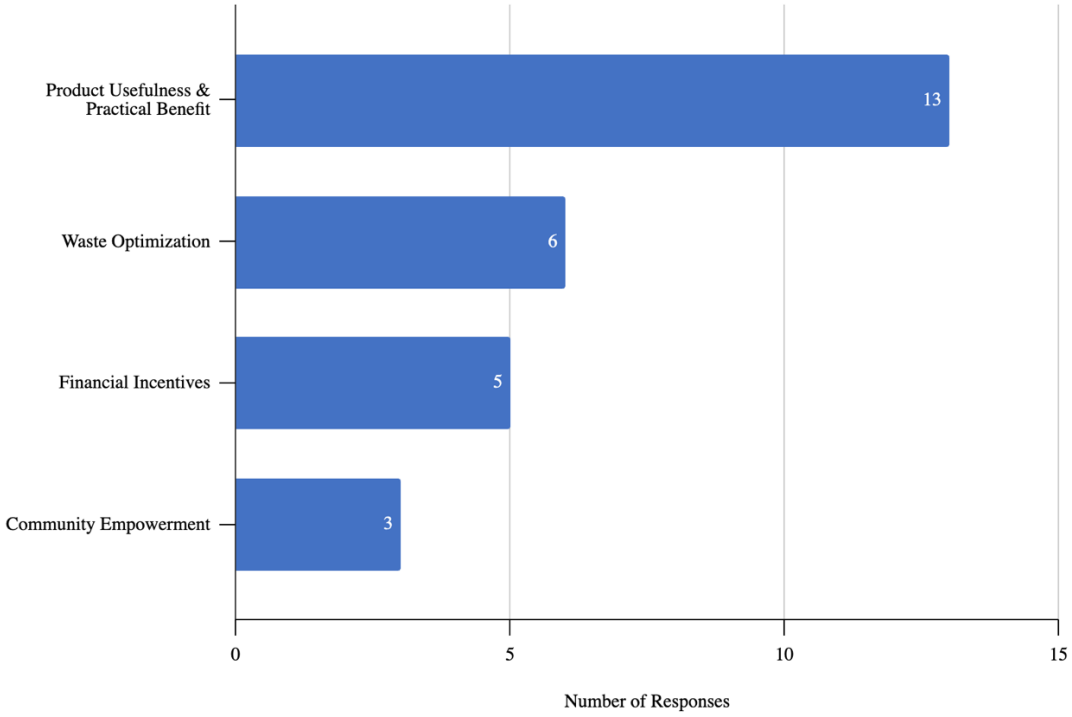

Figure 4. 13 The meanings of the eco-enzyme upcycling practice.

Product usefulness and practical benefit

Eco-enzyme's usefulness and practical benefit appear to be the most frequent meanings mentioned during interviews. The practitioners reveal that the product generated from eco-enzyme upcycling practice is practical for supporting household tasks. It can be used as a cleaning solution for washing dishes or mopping floors and as fertilizer for their garden. The usefulness and practicality of eco-enzyme, which have been integrated with various household practices, have contributed to sustaining this practice. This motivation is enforcing the practitioners to routinize eco-enzyme upcycling practice, as they are experiencing its benefits firsthand.

"It can be used to wash dishes and mop floors, and I also use it for plant nutrition at home (as fertilizer); it does have benefits, it is good, and it is also fragrant when used for mopping."
(Interview P-7, 2024)

Waste Optimization

Fruit is neither cheap nor expensive for Kampung Darling residents; still, it is categorized as a precious resource (Interview KWT, 2024). The eco-enzyme upcycling practice serves as a promising social practice that can maximize the full potential of fruits to optimize fruit waste. When Kampung Darling residents start to experience the benefits of the eco-enzyme product, their motivation to optimize the fruit waste starts to grow. The meaning of waste optimization has also contributed to stimulating another resident of Kampung Darling to engage with eco-enzyme upcycling practices. In one of the personal observations, there was a resident who, at that time, was not able to make an eco-enzyme. They went to the eco-enzyme practitioner's home to put their fruit waste into their neighbor's fermentation container. Later, they explained that rather than throwing it away as waste, it is better to optimize the benefits. This explains how the practice of eco-enzyme has contributed to the shifting meaning of organic waste from being worthless to valuable.

"It would be a waste to throw away the peels since they also have benefits, but with eco-enzyme, the fruit skins are not wasted and become trash, and it is for our benefit too. I used the eco-enzyme to wash dishes, and as fertilizer."
(Interview P-5, 2024)

Financial Incentives

The financial incentives as a meaning of the practice were the least mentioned motivation during the interviews. Most of the time, eco-enzyme is used only by the residents of Kampung Darling. As in one batch of production, this practice produces a decent amount for the community's daily needs. However, when eco-enzyme production exceeds the demand, some products are sold online or during special occasions. For instance, KWT will sell it during Independence Day or Kampung Darling exhibitions. The profit from the eco-enzyme sales is therefore redistributed to the Kampung Darling. This profit can support the waste bank activities, upgrade Kampung's facility, or fund other public goods. Although it is not as significant as other meanings, financial incentives have contributed to fostering the development of the eco-enzyme upcycling practice, sustaining the practice to the present day.

"Eco-enzyme is a diversification of products; we display all of them with the hope that if waste is managed, there is also a circular economy, and it also increases the welfare of the community."
(Interview P-1, 2024)

Community Empowerment

The eco-enzyme upcycling practice also highlights the meanings of community empowerment. By proactively doing this social practice, practitioners aim to encourage the development of the Kampung. This motivation is closely linked to financial incentives and a sense of responsibility to help other residents. The interviewees expressed that the profit from the eco-enzyme practice is ultimately used for the Kampung Darling development. It reflects the eagerness of practitioners to improve their social welfare independently. By doing this practice, they believe that this effort will foster a circular economy and support the development of the Kampung without relying on government aid.

Additionally, eco-enzyme practice is a crucial opportunity for the community to acquire new knowledge. This practice has taught Kampung Darling's residents to be open to new knowledge. This positive trait became a crucial factor leading to the success of the Kampung and triggered other green initiatives.

> *"Then, eco-enzyme the hope that if waste is managed, in addition to making the environment cleaner and healthier, it increases community welfare, and it is proven in the development of the kampung; we do not depend on the government and can be independent."*
> *(Interview P-1, 2024)*

4.1.3.4 ECO-ENZYME UPCYCLING PRACTICE AS A SOCIAL PRACTICE

The analysis of eco-enzyme upcycling practice into its elements has undermined a central idea of self-sufficiency to empower the community. When practitioners explain how they made and used eco-enzyme, they seem excited and proud. Their statements represent how eco-enzyme upcycling practice has become a sort of achievement, especially for housewives, as they have successfully created a multifunctional product that is useful for daily activities. This sense of achievement is understandable because, throughout the process, this practice emphasizes resource independence by using available materials that are commonly discarded. The simple fermentation process of eco-enzyme is conducted at a low cost, yet the product holds significant practical and economic value. Moreover, since the eco-enzyme practice occurs in each household, it contributes to higher self-satisfaction. As each practitioner was directly responsible and had full control over the product they made, the sense of accomplishment would be more apparent. By doing this practice, practitioners not only contribute to the environment but also reduce reliance on commercial cleaning products, resulting in financial savings and community empowerment.

4.2 ZOOMING OUT ON KAMPUNG DARLING'S ZERO-WASTE HOUSEHOLD PRACTICES

In this study, the method of zooming out introduced by Nicolini (2012) was used to operationalize the zero-waste household practices in Kampung Darling. Through this perspective, zooming out offers a comprehensive view of how practices elements are interlinked, co-shaped, and influenced by each other. Rather than treating it as a standalone practice, zooming out helps to situate Kampung Darling's zero-waste household practices as a part of interconnected practices.

Zooming out was conducted using two approaches. First, the connection between zero-waste household practices in Kampung Darling was followed to uncover how multiple practices shared the same materials, competences, and meanings. Second, the material flow within practices was followed to see the connection between zero-waste household practices and other household practices. As explained in Chapter 4, Kampung Darling's zero-waste household practices comprise three different key practices: waste bank practice, SOD practice, and eco-enzyme upcycling practice. This bundle of zero-waste household practices is interconnected with other household practices, where Kampung Darling's local leader set up a circular system to promote a sustainable lifestyle. From the chosen approach, there are two main takeaways that are valuable for understanding how zero-waste household practices remain sustained.

First, the zero-waste household practices in Kampung Darling were shaped by shared meanings and skills. During zooming out, the same meanings of waste optimization were found in all three different waste management practices. The shared meaning of waste optimization implies that practitioners have a similar perception of waste. They share a mutual understanding that organic and inorganic household waste holds an economic and practical value that can still be utilized and directly benefited from. This perception helps shape awareness of the importance of adopting zero-waste household practices, which have been introduced to generate benefits rather than solely being discarded. Next, these social practices share the same skill that needs to be acquired, which is the ability to sort waste. As practitioners improve their waste sorting skills through the waste bank practice, the distinction between organic and inorganic waste becomes clearer. The new habit of separating organic and inorganic waste gradually raises practitioners' awareness of the waste in their surroundings. This new habit increases their consciousness of the amount of waste they produce, encouraging them to optimize waste through the SOD practice and the eco-enzyme upcycling practice. Additionally, zooming out also reveals shared materials between practices. However, this is only relevant to the eco-enzyme practice and the waste bank practice that uses weighing scales and carts. Meanwhile, the SOD practice does not share this characteristic. Nevertheless, these shared materials help to explain how shared resources between practices can facilitate and reinforce the sustainability of other social practices by providing conveniences in conducting them.

Second, zero-waste household practices are connected with other everyday practices, such as gardening, cooking, cleaning, and other leisure activities. These practices co-exist and interact through shared materials. This relation begins at the household level when all of the domestic waste is managed through the zero-waste household practices. Through the waste bank practice, practitioners can optimize the inorganic waste from household activity to generate profit that can be cashed out into money or vouchers, which can be used to fund household practices such as cooking, cleaning, and gardening. Moreover, organic waste generated from cooking, such as fruit waste, can be upcycled through the eco-enzyme practice, producing fertilizer that can be used for gardening. Later, fruits and vegetables grown from this gardening process can then be cooked and consumed by the practitioners. Further, the organic waste coming from cooking activity can be processed utilizing the SOD practice to produce maggots and casgots. These SOD products can then support gardening and other leisure activities such as aviculture and aquaculture. The connection between practices is illustrated in Figure 4.14

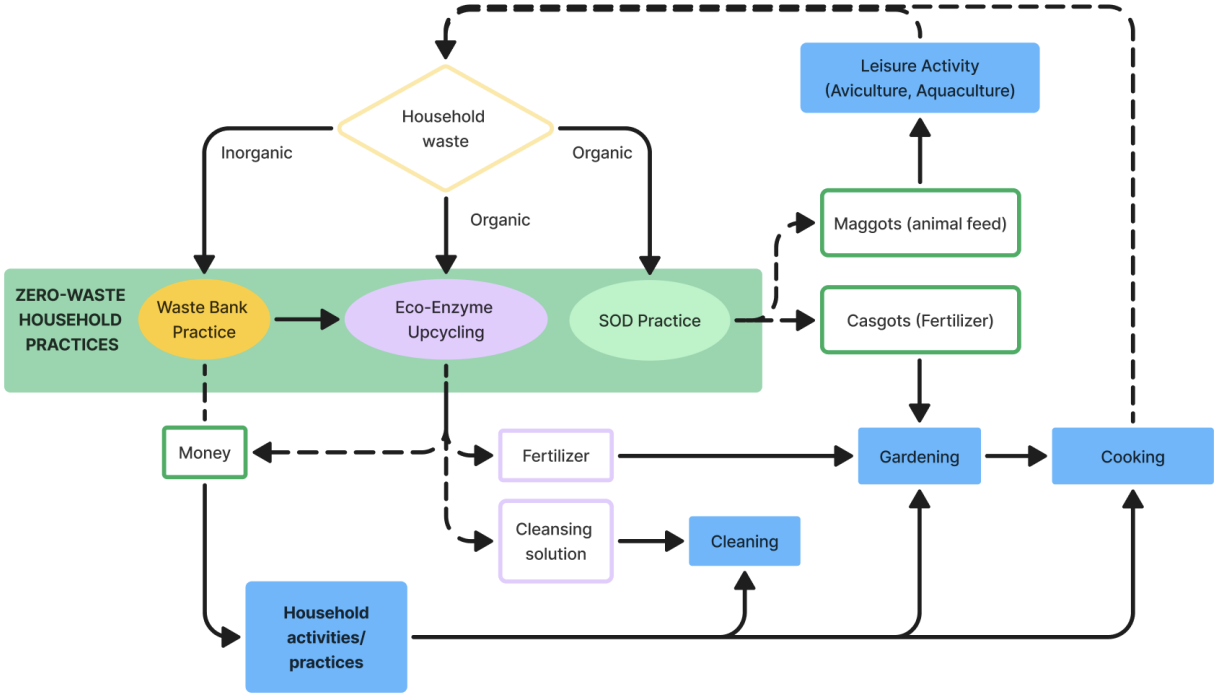

Figure 4. 14 Material flows in zero-waste household practices and household activities.

4.3 SOCIAL LEARNING IN KAMPUNG DARLING

The development of zero-waste household practices cannot be separated from the role of social learning that occurs in the daily life of the Kampung Darling. This argument can be proven by the discovery of social learning dimensions that occur in their daily practices. By adopting the social learning concept (Wildemeersch, 2007), the process of learning can be found in the dimension of action, communication, negotiation, and reflection as explained below.

4.3.1 ACTION

To understand the action dimension, the exploration began by finding out the activities that trigger shifts in practice elements that support the development of zero-waste household practices. The exploration then continued, revealing the dynamics within the action dimension.

The learning process in Kampung Darling occurs in community interaction, both in a formal and informal setting. In this interaction, an information exchange simultaneously improves zero-waste household practices. As mentioned by the interviewees, the learning process occurs during formal interactions through community activities such as workshops, Waste Bank Days, and *Rapat RT* community gatherings (Interview P-1, P-2, P-4, P-10, P-12, 2024). Meanwhile, informal learning occurs through social media interactions (Interview P-4, P-6, P-7, P-10, P-14, 2024).

In formal settings, Kampung Darling residents participate in workshops to develop new skills and enhance knowledge through practical demonstration and dialogue. This event is typically organized by the Waste Bank Organization, the KWT, or the local government. Aside from the workshops, the learning process occurred throughout the Waste Bank Day. On this day, the practitioners will interact with each other and share their experiences on waste management. Waste Bank Day is particularly important for skills improvement by facilitating active engagement with practitioners across ages, as the practitioners can learn directly from the waste bank organizers. In addition, the *Rapat RT* community gathering serves as an opportunity to engage in the decision-making processes of the zero-waste household program.

Moreover, in informal settings, social learning occurs through social media interactions. As an integral part of daily life for the residents of Kampung Darling, social media has increasingly shaped their community dynamics. Real-time information exchange about the community flows rapidly through the residents' social media groups. Using the WhatsApp platform, each family representative can join, interact, and have open discussions (Interview P-3, P-5, P-7, 2024). Their social media group continuously updates information about waste management activities. These social media platforms allow residents to exchange information about waste collection schedules, the latest waste prices, and upcoming waste management programs (Interview P-4, P-6, P-14,

2024). As part of the group, they freely convey criticism or suggestions regarding waste management in Kampung Darling.

Action dimensions explain how social learning, triggered by specific motivations or competences, leads to social actions. In Kampung Darling's case, the process of social learning occurs both inside and outside the practice. The first finding shows that social learning is evident in the practice of eco-enzyme upcycling. During personal observations, social learning appeared to be successful as the practitioners were able to link their concerns about the insufficient filter with the need for a better filtering fabric. They argued that the filters were too small and overly dense, which made the filtration process ineffective and time-consuming. This opinion was then acknowledged by other practitioners who shared similar concerns. This dynamic has sparked a discussion within the group and simultaneously created a space for idea exchange among the practitioners. Some suggested utilizing available fabric as a filter, while others proposed purchasing a new one. The discussion ended as they collectively agreed to purchase a new filter using the waste bank's profits. This discussion illustrates that social learning can have a concrete impact on enhancing material.

The second finding explains that social learning also occurs outside zero-waste household practices. Kampung Darling's residents actively contribute to the planning process of the zero-waste household programs. This statement was captured when the interviewees expressed their willingness to participate in regular community discussions and meetings (Interview P-1, P-4, P-5, 2024). The embedded tradition of *"musyawarah"* or community discussion, where ideas related to the kampung community must be discussed openly during the Rapat RT, has led to this action. *Rapat RT* is a cultural tradition routinely held once a month by the residents of Kampung Darling. In this event, residents of Kampung Darling gathered at one resident's house to discuss matters related to their interests and exchange factual information about the kampung. The decision-making process also occurred on this occasion. The local leader typically leads the gathering, discussing environmental and social issues relevant to the residents. This event provides an opportunity to discuss and learn the skill of waste management, thus promoting zero-waste household practices. Other information, such as upcoming cleanliness activities or updates on waste bank revenue, is also shared during *Rapat RT*.

Figure 4. 15 Rapat RT community gathering in Kampung Darling.

4.3.2 COMMUNICATION

The communication dimension explains that the dynamic social learning process is influenced by the voices of influential people or differing voices. This process is not just about exchanging information but also recognizing who is speaking and who is being heard. The success of social learning then can be indicated by the balance of unilateral and multilateral communications (Wildemeersch, 2007). This study revealed that the development of the zero-waste household practices is influenced by both unilateral and multilateral communications.

Unilateral communication was found during the interviews when practitioners extensively mentioned the role of their local leader in influencing them to engage with zero-waste household practices. In this context, unilateral communication was perceived as a one-way communication where information was transferred from one party to another without expecting feedback. In Kampung Darling, unilateral communication is dominantly led by the local leader to the community. This indicates that the voice of the local leader, both in formal and informal situations, has been influential and dominant. This situation contributes to sustaining zero-waste household practices from time to time. The local leader's efforts to invite all of the Kampung Darling residents to engage in zero-waste household practices have been continuing for years, even before the practice was carried out by the majority of the residents (Interview P-1, P-5, P-6, 2024). Local leader roles in influencing the decision-making processes were legitimate in a public forum like the one in the *Rapat RT* community gathering.

The leader of Kampung Darling dominantly contributed to the establishment of zero-waste household practices (Interview P-2, P-3, P-6, P-7, P-8, P-11, P-12, 2024). The additional bonuses and other creative programs related to zero-waste household practices were mostly initiated by the local leader (Interview P-1, P-6, 2024). The majority of interviewees admitted that they were impressed by the local leader's figure and always complied with the local leader's decisions regarding zero-waste household practices. The social proximity of the local leader with the residents also becomes a factor that smooths the improvement of zero-waste household practices (Interview P-9, 2024). Interviewees mentioned that the practices they follow were, in part, a form of respect for the local leader's efforts to build a more environmentally conscious community (Interview P-9, P-7, P-11, 2024). Seeing their local leader's persistence, the residents who were initially reluctant to adopt the practices slowly became interested (Interview P-9, 2024). The figure of the local leader not only captured its influential leadership but also its commitment to instilling a sense of environmental responsibility among Kampung Darling residents. Besides the local leader; local organizations, local government, and NGO also act as dominant voices advocating for zero-waste practices in Kampung Darling.

Darling Waste Bank Organization's contribution expands beyond the waste bank practice, as they also maintain and foster all of the zero-waste household practices and cultivate collaboration with external organizations (Interview WBO, 2024). While doing their job on Waste Bank Day, waste

bank organizers actively engage with practitioners to provide knowledge related to waste management (Interview P-2, P-3, P-6, P-10, P-12, P-13, P-14, 2024). They teach how to conduct proper waste sorting, fermentation of eco-enzyme, and even the utilization of SOD maggots. All of the interviewees from the practitioner group mentioned that the role of the waste bank organizers is significant in raising awareness towards zero-waste household practices. Next is KWT, or the Women Farmer Group. While KWT's role is not as dominant as that of the local leader, they still play a significant part in facilitating social learning. KWT is credited with successfully influencing the housewives of Kampung Darling to continue conducting zero-waste household practices (Interview KWT, P-9, P-10, P-14, 2024). Expanding on these efforts, the local government, or DLH, further reinforces social learning through workshops and socialization to enhance residents' competence in sustainable waste management (Interview DLH-1, P-5, P-13, 2024). Complementing these actions, NGO also contribute to the development of the Kampung. The role of the NGO was evident in the beginning of the establishment of zero-waste household practices. By providing waste management training for the entire Kampung Darling element, NGO plays a substantial role in motivating the residents to leverage their potential (Interview NGO, P-1, P-5, P-6, 2024).

Furthermore, Kampung Darling's social learning was also supported by multilateral communications, which involved interactive information exchange from multiple parties. This case was revealed during the interview, specifically when the practitioners mentioned that they were always given room to voice their ideas during the *Rapat RT* community gathering (Interview P-1, P-5, 2024). They are willing to share complaints about zero-waste household practices during interactive discussions. For instance, when the SOD bin is lacking, they start to discuss rearranging the distributions of the facilities in the forum (Interview P-11, 2024). However, interviewees reveal that, even if the opportunity to voice their thoughts was always given, they rarely used it because everything related to the zero-waste household practices was already ideal for them (Interview P-10, P-11, 2024).

In addition, the observations show that Kampung Darling residents tended to be more open when they were discussed with the same gender group. For instance, during eco-enzyme upcycling practice, women tend to be more proactive in sharing their thoughts when in an all-female group compared to the discussion in a mixed-gender group. By looking at this example, it can be said that in single-gender groups, especially among women, there was a strong sense of comfort and mutual understanding. This has led to the creation of a safe place that reduces hesitations and increases willingness to be more open. In contrast, during a mixed-gender discussion, people were more cautious in expressing their ideas, as there might be pressure stemming from social hierarchy and cultural norms that limit their expression. However, this pattern needs to be further studied, as the analysis was only limited to two observations.

Additional finding on communications:
By looking at the predetermined interview data, communication is not effective in all situations. This is because, at the end of the research, a resident of Kampung Darling was identified who does not engage in the practices and is referred to as a non-practitioner. A non-practitioner revealed that even if zero-waste household practices create benefits, there are still weaknesses that make them refuse to engage (Interview NP, 2024). Among these is the perception that waste bank practice has lowered the income of informal waste pickers. The non-practitioner then shared that their reluctance to engage in the SOD practice and the eco-enzyme upcycling practice stems from personal motivation to handle organic waste individually. Furthermore, the non-practitioner explained that the collected waste can still be used to make compost and feed their pets at home, so practicing these practices does not seem relevant to them at this moment. These findings offer a different perspective on the communication dimension, which has not fully progressed as intended. This insight illustrates that social learning is a vulnerable process and closely related to the mindset that individuals bring with them.

4.3.3 NEGOTIATION

Kampung Darling is known for its migrant groups from rural areas who relocate to the city, seeking better job opportunities. Its residents, who come from different regions in Indonesia, contributed to a diverse ethnic spectrum with distinct characteristics of socioeconomic status, political views, and communication style. This socio-cultural background difference is also found in the Kampung Darling case study. The conflicting perspectives often appear in their decision-making processes. As a result, constant negotiations are closely tied with Kampung Darling residents.

During the interviews, the practitioners revealed that negotiation has become an essential part of zero-waste household practices in resolving conflicting interests. Although the conflict has been rare in recent years, the negotiation process was an integral part of the initial implementation of the practices. The interviewee stated that the conflict is likely to happen at the beginning of SOD practice implementations (Interview P-11, 2024). The conflict between a limited number of SOD bins as well as the placement was noticeable. In the first conflict, practitioners demand an increase in the quantity of SOD, which can be more accessible for the practitioners (Interview P-11, 2024). The second conflict happened when a non-practitioner demanded an adjustment on the placement of SOD to be far from their home, as it attracted flies and caused discomfort (Interview P-13, 2024). In addressing these conflicts, the local leader acts as a mediator and intermediary, bringing the issues into community discussions to find a win-win solution for both supporters and opponents of the SOD practice (Interview P-11, P-13, 2024). Interviewees mentioned that the negotiation processes eventually proceeded smoothly, and the issues were resolved successfully (Interview P-11, P-13, 2024). This is because the local leader was able to accommodate both interests by increasing the number of SOD bins needed and adjusting the SOD bin placement into more suitable locations (Interview P-11, P-13, 2024).

Additionally, the negotiation was evident in addressing other concerns related to zero-waste household practices during the *Rapat RT* community gathering. Conflicts are usually resolved through consensus-driven resolutions. The process starts by identifying the issue and interest involved. Each household's representatives were given the opportunity to share their perspectives, while the local leader facilitated the discussion and negotiation to reach common ground. This opportunity was not limited to the *Rapat RT* community gathering, as the residents could also convey their concerns privately to the leader. In other cases, Kampung Darling's local leader usually attempts to make a personal compromise before bringing an issue to the forum. If the resolution is not reached, further negotiations will be held in public forums such as the *Rapat RT* community gathering. Once the agreement was made, the residents collectively monitored and ensured that the agreed-upon solution was properly implemented.

4.3.4 REFLECTION

The reflection dimension in Kampung Darling is mainly associated with the shifting meaning of the practices. It took place when the practitioners started to realize the impacts of adopting zero-waste household practices. At the beginning of the implementations, practitioners who were driven by a sense of compliance merely saw the practices as a "must-do responsibility" as a part of the Kampung Darling community (Interview P-5, P-9, 2024). Along the way, they begin to realize that their participation actually contributed to a significant change for the kampung. They not only fulfill their responsibilities but also benefit from a cleaner and healthier environment. Gradually, their perspectives on waste shifted. The initial perceptions of waste as valueless are no longer relevant, as they realize waste has potential if they can manage it sustainably.

"At first, I was lazy too. I used to think it was such a hassle, like, after eating fruit, I had to separate the peels to make eco-enzyme. But once I saw how it was packaged and how I could earn money from it, I didn't feel like I was wasting my effort anymore. I can even buy more fruit and sugar from this profit. Its residue also can be used as fertilizer. So when I go somewhere and see leftover fruit, I automatically think, 'If this were in my place, it would have been used."
(Interview P-5, 2024)

During the social interactions at Waste Bank Day, the interviewees realized that managing waste would also provide an opportunity to create better living conditions for the community (Interview P-10, P-13, 2024). This reflection process does not happen instantly, as the practitioners require time to realize its significant impact.

"It actually has a big impact. I can imagine that if people did not litter, especially plastic waste which takes a hundred years to decompose, the environment would feel much better."
(Interview P-10, 2024)

The growing social recognition of Kampung Darling also reinforces the reflection processes. On multiple occasions, Kampung Darling has won awards from governments and external organizations as one of the best community-led initiatives (Interview P-1, P-6, 2024). Kampung Darling is often selected as a learning center for external communities to study sustainable waste management (Interview P-6, P-11, 2024). Many journalists also came to broadcast and publish the zero-waste household practices on television and online media. This social recognition indirectly facilitated a process of reflection, where the practitioners began to see themselves from the external perspective. The act of stepping back to see themselves as part of the Kampung Darling community aligns with the concept of distance introduced in the reflection dimension of social learning. External recognition not only enhances Kampung Darling's reputation but also fosters a sense of pride among practitioners. Additionally, this dynamic is important in identity formation as it helps cultivate a sense of belonging to the community.

4.3.5 CONCLUSION ON SOCIAL LEARNING

Based on the findings on social learning, it can be concluded that social learning has occurred in the Kampung Darling both inside and outside the zero-waste household practices. The learning process is evidenced through the dimensions of action, communication, negotiation, and reflection. The action dimension shows that social learning has taken place both in formal and informal settings, and people have succeeded in connecting their motivations and competence with social actions. Additionally, the communication dimension describes the existing unilateral and multilateral communication that has fostered social learning and decision-making processes. Moreover, the negotiation plays an integral part in obtaining consensus among different interests. Finally, the reflection dimension is able to shift meaning and shape self-identity as a community. Although the balanced proportion of the learning dimension has been identified in the action, reflection, negotiation, and communication, the generalizations that social learning happens in ideal situations in Kampung Darling cannot be drawn as there have been found non-practitioners reluctant to engage with the social practice. However, in general, the integration of these four dimensions of social learning ultimately contributes to the improvement of Kampung Darling's zero-waste household practices.

4.3.6 KEY DYNAMICS IN SOCIAL LEARNING

In this section, the findings on social learning are integrated with social practice. This aims to explain how learning improves the zero-waste household practices in Kampung Darling. It begins by describing the initial condition of domestic waste management in Kampung Darling before the implementation of zero-waste household practices. It then continues to explain how the shifting practice elements were enforced by the process of social learning, contributing to the recent zero-waste household practices.

The previous domestic waste management practice of Kampung Darling was fundamentally different from its recent practice under the zero-waste household program. Previously, waste management practice consisted solely of mixed waste disposal. In this practice, waste management followed an old paradigm of Indonesian society, "*kumpul-angkut-buang*", where domestic waste is typically discarded without any separation. Consequently, the mixed waste could not be processed sustainably, resulting in poor environmental conditions. As illustrated in Figure 4.16, domestic waste from household activities, both organic and inorganic, was directly discarded into waste bins before being sent to a landfill or final disposal site.

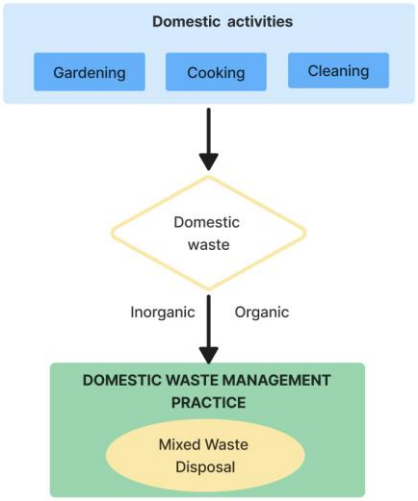

Figure 4. 16 Mixed waste disposal practice.

This situation changed after Kampung Darling initiated zero-waste household practices. The old practice of mixed-waste disposal has shifted into three distinct practices, as shown in Figure 4.17, where continuous social learning has contributed to maintaining the sustainability of zero-waste household practices.

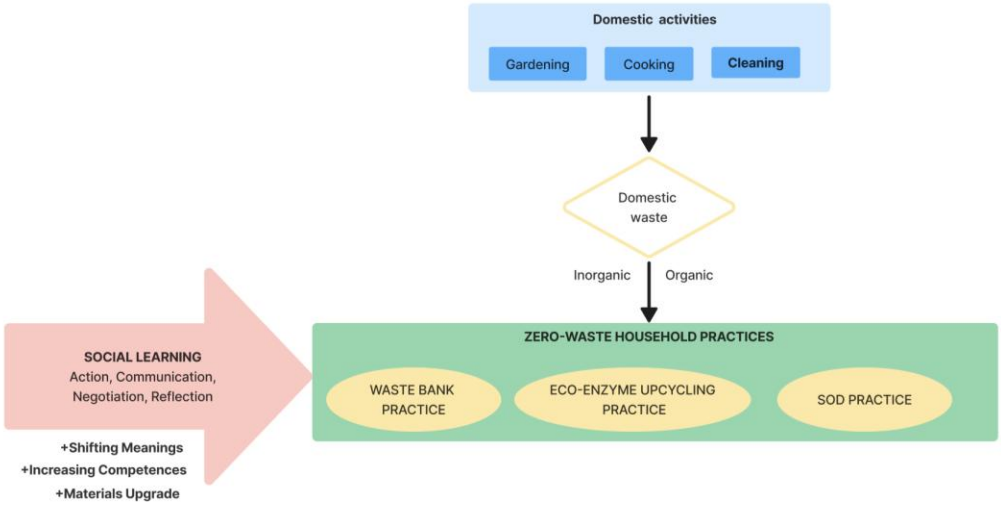

Figure 4. 17 Social learning supports the development of zero-waste household practices.

Social learning plays a central role in introducing new elements of practices. It influences practitioners to engage with zero-waste household practices by reframing the purpose or meanings of performing the practices. This newly introduced perspective has contributed significantly, as practitioners now perceive waste as valuable and manageable. For instance, during Waste Bank Day, practitioners would engage in social interactions with their local leader, waste bank organizer, and volunteers that are relatively more eco-conscious. These social interactions offer an opportunity to reframe waste management as a collective responsibility through action, communication, and reflection processes.

Social learning contributes to skill improvement. It is clear that knowledge acquisition can be obtained through action and communication dimensions such as local government workshops; however, social learning can contribute beyond the formal settings, even reaching a broader audience. The role of social learning in enhancing skills can be seen, for instance, during the eco-enzyme upcycling. Since zero-waste household materials are available in communal areas, waste management activities have become a common sight for the residents. The eco-enzyme upcycling filtration process, which takes place in the community garden, often sparks curiosity among nearby residents, making them eager to observe it closely and interact with the KWT members who are conducting the practice. The KWT members involved in the practice become good role models as they share their knowledge in a more interactive way. This exchange of knowledge contributes to the improvement of competence, as it inspires more individuals to conduct the practice.

Social learning has a significant role in the improvement of materials. In Kampung Darling's case, the dynamic of material improvement can be seen through the action and negotiation dimension. For instance, when practitioners propose material upgrades for eco-enzyme upcycling and SOD practice during the community gathering, which is later approved by the collective voice and their local leader. This example showcases that social learning will also result in upgraded materials in a collective discussion that allows people to share their concerns and knowledge. This would apply if the decision-making processes have reached a collective agreement or obtained leadership endorsement.

In essence, social learning has contributed to the improvement of Kampung Darling's zero-waste household practices. Through different dimensions, social learning foster shifting meanings, increases competences, and contributes to the upgrade of materials.

4.4 KEY FACTORS ON THE SUCCESS OF SOCIAL PRACTICES IN KAMPUNG DARLING

This section evaluates the overall findings of the study to inform the key factors enabling the success of domestic waste management practices in Kampung Darling. One of the aims of this study is to know the strategies of Kampung Darling that can be replicated and adapted to other

communities that face waste challenges. Therefore, it is necessary to pinpoint a specific reason that contributes the most to the success of Kampung Darling to understand how they maintain their consistent implementation. Identifying key factors will also serve as a model that can be scaled up for future needs. It also provides data-driven insight that can be useful for authorities or policymakers trying to make similar interventions. These key factors can be seen below.

4.4.1 INTERCONNECTED PRACTICES

The zero-waste household practices are interconnected by shared meanings, skills, and materials. The shared meaning of waste optimization among practices has led to an increasing awareness of waste value. At the same time, the shared skills of waste sorting between practices make the implementation of optimizing waste values through zero-waste household practices more manageable. The shared materials also contributed to the sustainability of the practices, as they provided convenience for the practitioners in conducting multiple practices.

Additionally, the zero-waste household practices are also interconnected with domestic activities, such as cooking, cleaning, and gardening. This link explains a mutual relationship between them. While domestic activities produce waste, zero-waste household practices can be utilized to manage them. Products generated from the zero-waste household practices can be redistributed to support household activities. This connection is significant in enhancing community interest in adopting zero-waste household practices. The product derived from the practice of waste bank, SOD, and eco-enzyme upcycling can be used for residents daily needs, making household tasks much more manageable and cost-efficient. These tangible benefits from waste management products provide a direct and practical outcome. Whereas the waste bank practice provides additional income to support household expenses, the SOD practice produces animal feed and fertilizer for gardening. Meanwhile, eco-enzyme products help save money on cleaning products while also improving soil quality. All of these benefits, which practitioners can directly experience, create a sense of attachment to zero-waste household practices and motivate practitioners to sustain them.

4.4.2 CONVENIENCE

The ease of implementing the zero-waste household practices has become a crucial factor in the success of Kampung Darling. As seen during Waste Bank Day, the practitioners are optimally supported by the local leader, local organizations, and local government, who provide the necessary tools, manpower, and accessible facilities that can be used for free. In the context of eco-enzyme practice, the process is even more accessible since all necessary materials (except fruit waste) are provided by the waste bank and KWT, which are delivered door-to-door. Similarly, all of the materials required for SOD practice as well as the manpower were provided by the local government. These conveniences encourage the residents to engage with the practices, preserve them, and pass them down to future generations.

4.4.3 ADDITIONAL BONUSES

It is undeniable that one of the key factors in improving domestic waste management practices in Kampung Darling is additional bonuses. In each zero-waste household practice, Kampung Darling's local leader has attached a unique value to attract more participation through additional bonuses. It can include essential goods, vouchers, and other creative products. Through this approach, the practitioners are free to choose which bonuses suit them well. For instance, in waste bank practice, the waste-saving balance can also be converted into vouchers that can be used to purchase household necessities such as vegetables, rice, and cooking oil from local small businesses owned by Kampung Darling residents. This voucher is a bonus when the practitioners reach a certain amount of waste-saving balance. Additional bonuses benefit not only waste bank practitioners but also local business actors as it supports the local economy. Moreover, on certain commemorative days, there was also a bonus of oil exchange for the waste bank practitioners. In this innovation, practitioners can exchange 3 kg of used cooking oil for 1 liter of brand-new cooking oil, while Darling Waste Bank will manage the used cooking oil through the recycling industry. This bonus aims to raise awareness about the importance of proper oil waste disposal, as residents usually dispose of it directly into drains without knowing the negative impact it has on the environment. This integration between additional bonuses and waste management has successfully enhanced the attractiveness of the social practice, particularly among housewives and lower-middle-income communities. They feel that these additional bonuses are highly advantageous because their efforts to protect the environment also have a broader social impact that supports the local economy and creates job opportunities (Interview P-1, P-6, P-10 2024).

4.4.4 LOCAL LEADERSHIP

In Kampung Darling's case, the success of their environmental initiatives heavily depends on how the local leader navigates community engagement. In this sense, the political will of the local leader highly contributes to shaping the local regulations that affect the community's well-being. The tangible improvement of Kampung Darling was significantly achieved during the thematic village programs, where the local leader acted as a catalyst to determine the program's feasibility based on community needs and available resources. Beyond that, the role of local leader was evident in creating cost-effective waste management practices.

The local leader is the key person who proactively collaborates with other stakeholders and even takes the first step in most of the waste practices implementations (Interview P-5, P-6, P-7, P-9, 2024). The local leader's creativity in utilizing social media platforms, such as YouTube, Instagram, and Facebook, to promote Kampung Darling's program has been instrumental in increasing the kampung's popularity, resulting in frequent collaborations with industries and other stakeholders. Hence, stakeholder collaboration is highly dependent on the local leader.

In sustaining the zero waste household practices, Kampung Darling's local leader also fosters knowledge transfer through intergenerational communications (Interview P-9, 2024). This effort is carried out by involving people of various age groups, where all of the community components are encouraged to participate in zero-waste household activities. By demonstrating openness and flexibility, the local leader has successfully created broader opportunities for interaction and knowledge transfer. This is a significant movement, as in Indonesian culture, there are norms and hierarchies in intergenerational communication. Older individuals are placed in a more respected position, while younger generations are expected to prioritize the opinions of their seniors as a form of respect. As a result, many young generations tend to avoid interacting with their elders. In contrast, Kampung Darling has a different dynamic from this tradition. Zero-waste household practices are open to all age groups, actively involving the elderly, adults, teenagers, and children from the community. Parents are even encouraged to bring their children to the Waste Bank Day. The local leader, who also serves as the head of the waste bank helps facilitate the learning process during these interactions, introducing them to sustainable waste management practices. By fostering intergenerational communications, Kampung Darling's local leader builds an emotional attachment to the residents, which contributes to higher compliance.

4.4.5 FAMILY-LIKE SOCIAL BONDS

The cultural background of Kampung Darling residents plays a significant role in creating a strong sense of social awareness. In Kampung Darling's case, social awareness is often associated with a sense of "*kekeluargaan*" or family-like social bonds, which has been deeply rooted across generations (Interview P-1, P-12, 2024). This concept indicates an extended relationship beyond the nuclear family, as they feel collectively responsible for taking care of their surroundings. This explains why it is easy for the Kampung Darling residents to voluntarily participate in zero-waste household practices. This intergenerational tradition has instilled a strong sense of "*gotong royong*" or mutual cooperation among residents (Interview P-1, P-5, P-12, 2024) as a fundamental factor that has contributed significantly to the development of zero-waste household practices.

> *"This community was already extraordinary even before this thematic village existed. Our harmony, togetherness, and spirit of gotong royong (mutual cooperation) were already remarkable. This is not just an urban area where people typically live individually. This is an urban area, but it feels just like a village."*
> *(Interview P-1, 2024)*

Furthermore, the tradition of *gotong royong* (mutual cooperation) has also contributed to efficient stakeholder collaboration in mobilizing resources. Beyond that, the important position of mutual cooperation was evident in creating cost-effective waste management practices. While the local government supports the high prices of equipment, the local leader and local organizations play a role in complementing the facility with available resources. For instance, while the local

government provides *becak motor* (motorize becak) to carry inorganic waste to the waste bank, the Waste Bank Organizer and KWT help to create the lending system so the practitioner can use them for free, and simultaneously, the practitioners provide sacks and ropes by reusing the available material to complement the practice materials as part of shared responsibilities.

CHAPTER 5 DISCUSSION

This chapter reflects on the research findings by evaluating the methodological and theoretical implications. The section below elaborates on the strengths and weaknesses of the methodological approach, highlights the remarkable findings, and provides a reflection on the theory.

5.1 METHODOLOGICAL STRENGTHS AND WEAKNESSES

Conducting a case study in unfamiliar social and cultural settings is challenging. Kampung Darling, with its diverse community background, has made the social practice identification become more complex. The lack of prior experience with zero-waste household practices led to preconceived assumptions, exposing a risk that could hinder the researcher to understand the emerging findings. To minimize the risk, prolonged interaction with practitioners during observation was chosen to gain a deeper understanding beyond initial assumptions. However, the coding process of the interview results, which was done by one person, may reduce reliability due to the possibility of random error. To minimize this risk, the coding process was done iteratively. There was a crucial need to adjust the communication approach. Even if there is a similarity in the language used, it does not directly constitute an interactive communication and understanding. This can be seen in the semi-structured interviews, which reflect the unavoidable unclear interpretation of the research questions. Therefore, it is crucial to conduct the pilot interviews and tailor the interview questions based on interviewee backgrounds to be simpler and more understandable. During the interview, interviewees with a higher educational level are most likely to understand the questions and provide extensive answers, while those with lower educational levels underperform and tend to speak less even after being provided with probing questions. The representation of the interviewer as a master's student has led to high expectations of interviewees. This pitfall was manifest when the interviewees tried to impress by giving extensive answers and asking whether their answers were good. To avoid this pitfall, the interviewer emphasizes an honest answer over a correct one by clarifying that there are no right or wrong answers.

To increase internal validity, most of the interviews were conducted in the participant's house to allow direct observations of their routinized waste management practice. However, a small number of interviewees preferred to meet in public areas, limiting the observational data collection and increasing the reliance on the interview responses. To reduce sampling bias, interviewees were recruited from those who engage and do not engage with zero-waste household practices. In addition to reproducibility, this methodological approach holds the potential to be replicated to capture social practice dynamics in other communities with family-like bond characteristics. A familial community is typically more engaged in communal activities, which would help gain a rich understanding of the dynamics of social practice. For this reason, it is essential to understand the social and cultural structures of the research setting before the data collection is conducted.

5.2 REMARKABLE FINDINGS

The remarkable finding of this research is family-like social bonds (*rasa kekeluargaan*) among kampung darling residents, which play a role in supporting zero-waste household practices. There is no specific term to describe family-like social bonds. However, the closest concept that can represent family-like social bonds of Kampung Darling residents can be seen through the theory of primary group introduced by Charles H. Cooley and Ellsworth Farris (1920). This theory helps to illustrate how the relationships between Kampung Darling residents are formed due to close and intensive interactions in their daily lives. Intensive interaction with their neighbours has led to a deep emotional connection and mutual trust. In Kampung Darling, residents often interact day-to-day during community activities and religious events. This interaction has brought them into stronger social ties, which encourage mutual cooperation or *gotong royong*.

In Indonesian culture, mutual cooperation or *gotong royong* is usually carried out voluntarily to address collective problems and serve the common interest (Derung, 2019). It can arise from community members' initiatives (Sumarsono, 2010) or originate from the authorities (Puswanto, 2014, as cited in Derung, 2019). Through the years, *gotong royong* tradition has slowly declined and shifted into paid labor (Derung, 2019). However, this does not apply to Kampung Darling, as this tradition is still embedded within the community.

The family-like social bonds among Kampung Darling residents demonstrate how mutual cooperation or *gotong royong* is likely to thrive. As a primary group, they uphold collective social responsibility to maintain the development of their Kampung. Through *gotong royong*, the residents show their commitment to the community. *Gotong royong* does not only occur in zero-waste household initiatives. At other community events, Kampung Darling residents also conduct *gotong-royong* to help their neighbors. This dynamic has strengthened the idea of the non-individualistic nature of Kampung Darling community. Despite residing in a big city, their traditional values stay intact. It shows that modernity does not always eliminate traditional values. Instead, it can be adapted and sustained.

The shared responsibility stemming from family-like social bonds has also contributed to a strong foundation of mutual cooperation in zero-waste household practices. As observed during Waste Bank Day, there was a practitioner who willingly volunteered to help with the depositing process. Beyond that, family-like social bonds also encourage the residents to take responsibility for protecting their environment. This can be illustrated when the residents encourage and remind their neighbors to participate in waste bank practice, SOD practice, or eco-enzyme upcycling practice. By looking at this example, it can be said that family-like social bonds are significant in the sustainability of zero-waste household practices.

5.3 REFLECTIONS ON THEORIES

Shove's social practice theory offers comprehensive insights into how the Kampung Darling community developed and has sustained zero-waste household practices. First, this framework provides a reliable approach to illustrate the practice's characteristics by giving a detailed explanation of the three practice elements of zero-waste household practices. By employing zooming in approach, this framework helps to uncover hidden elements of practice that were once unnoticeable. As seen in this study, unexpected meanings and skills across different practices were successfully revealed. This analysis has contributed to a holistic understanding of practices while also being reliable in illustrating how the zero-waste household practices upheld and reproduced.

Second, social practice theory is a reliable framework for conceptualizing the interactions between elements of interconnected practices. By utilizing zooming out approach, the social practice framework has successfully examined the interconnectedness of zero-waste household practices. The influential relationships between practices can be observed by following how the bundle of zero-waste household practices shares the same meanings, competences, and materials. The concept of the shared practice element ultimately explains its role in the sustainability of zero-waste household practices. Zooming out, on the other hand, highlights the interconnectedness between zero-waste household practices and broader household practices.

By following intermediaries, such as material flow, zooming out approach effectively illustrates the interconnectedness of practices. This step is crucial for understanding how practices are linked and co-exist within a broader system. In relation to this study, zooming out delivered an important insight into the connection between household practices and the products generated from zero-waste household practices. This insight is crucial to understanding the key factors enabling the improvement of waste management in Kampung Darling. In this sense, social practice theory is considered a reliable framework to holistically capture the dynamics within zero-waste household practices.

Even though social practice theory provides an in-depth conceptualization of social practices, this framework limits the observation of practice elements and their interactions. It does not take into account other external factors that might contribute to shaping the practices. To address this limitation and grasp a detailed explanation of the external factors that contribute to the shifting practice elements, it is recommended to utilize a complementary framework.

This study intentionally chose the theory of social learning as the complementary framework. It was led by an assumption that social learning is an important process for enabling the shift in practices on community-led initiatives, more important than either policy or regulation. Combining social practice and social learning theory provides an opportunity to understand how external factors affect social practices within community-led initiatives. While social practice theory

focuses on analyzing the internal part of practices, social learning helps explain the external factors contributing to the development of practice. Reflecting on this study, the combination of social learning theory has successfully revealed the dynamics of external factors that shape zero-waste household practices as it provides a broader learning dimension beyond knowledge acquisition. The social learning framework is reliable in explaining the dynamics of the learning process by scrutinizing zero-waste household practices in several dimensions. The four social learning dimensions—action, communication, negotiation, and reflection (Wildemeersch, 2007)—were able to reveal the social learning contribution to the development of meanings, competences, and materials within the zero-waste household practices. It can be said that social learning theory can function as a complementary framework to thoroughly assess the external factors that influence social practices.

CHAPTER 6 CONCLUSION AND RECOMMENDATIONS

This chapter provides several central statements to conclude and answer the research questions. Moreover, a recommendation for future research has been provided in the following section.

6.1 CONCLUSION

This study aims to uncover the key factors enabling the improvement of domestic waste management practices in Kampung Darling. In finding the answer, there are two sub-questions employed to analyze the key social practice and explain the contribution of the social learning process in the development of zero-waste household practices.

Sub-question 1: What are the key social practices of domestic waste management in Kampung Darling, and how have they developed over time?

In managing its domestic waste, Kampung Darling has implemented zero-waste household practices. These practices comprise three different key practices, which include waste bank practice, SOD practice, and eco-enzyme upcycling practice. Waste bank practice is the first established zero-waste household practice, which implements the circular economy principle in managing inorganic waste. It reflects their commitment to safeguarding the environment by optimizing inorganic waste and generating financial and non-financial incentives. Moreover, SOD practice and eco-enzyme upcycling practice constitute an implementation of organic waste management. SOD practice offers the convenience of food waste disposal. By optimizing food waste, SOD practice can transform food waste into sustainable bioproducts. This practice illustrates a proactive contribution to creating a cleaner and healthier living environment through collaboration with the government sector. On the other hand, the eco-enzyme upcycling practice manages fruit waste by transforming it into multipurpose eco-enzymes that foster self-sufficiency for the practitioners.

Kampung Darling pioneered the zero-waste household practices gradually and simultaneously. In the initial stage, they develop waste bank practice by providing accessible facilities and feasible materials while slowly shifting the perception toward waste, transforming it from useless into valuable items. As the new materials and meanings were introduced, the residents established new skills in inorganic waste management. These upgrades are continuously reinforced through collective learning processes. Over time, a greater sense of environmental awareness and responsibility emerged, transforming this new practice into routinized behavior and replacing the existence of mixed-waste disposal. As the waste bank practice developed, the residents discovered comfort in managing waste, making it easier for other waste management practices, such as SOD and eco-enzyme upcycling practices, to emerge and gain social acceptance.

Sub-question 2: How do processes of social learning contribute to the development of domestic waste management practices?

Social learning has successfully contributed to the development of zero-waste household practices through four learning dimensions consisting of action, communication, negotiation, and reflection. These four dimensions effectively accommodate the shifting practice element in a dynamic and non-value-neutral way. First, the action dimension of social learning takes place both in formal and informal settings. In formal settings, social learning occurs during organized activities, meanwhile, in informal settings, the learning process occurs in social media interactions. The success of social learning in both settings was indicated by the practitioners' capability of initiating social action based on their motivations and skills. Second, the development of zero-waste household practices is influenced through a balanced form of unilateral and multilateral communication. This finding highlights the central role of the local leader, local organizations, local governments, and NGO in fostering community discussion and sustaining the practices. Third, the social learning that occurs during negotiations enables balancing different interests and reaching a consensus on the zero-waste household practices. Last, social learning which takes place in the reflection process has enabled the realisation of personal existence and fostered a sense of attachment to the Kampung Darling community. These four insights show that social learning simultaneously contributes positively to sustaining zero-waste household practices.

Building on previous statements, it addresses the main research question, which is: **What are the key factors enabling the improvement of domestic waste management practices in Kampung Darling, Indonesia?**

There are five central ideas to describe the key factors enabling the improvement of domestic waste management practices in Kampung Darling, which are interconnected practices, convenience, additional bonuses, local leadership, and family-like social bonds. Interconnected practices imply that zero-waste household practices are sustained because they connect with other household practices. This statement highlights the importance of shared practice elements between practices and the interconnectedness of zero-waste household practices and household activities to attract participation and continuous engagement. The second factor is convenience, which refers to the ease of accessing and implementing zero-waste household practices because of the support from local and external actors in providing accessible facilities. Next, the key factor of additional bonuses helps to sustain the zero-waste household practices by empowering socio-economic potential among local residents. It promotes the circular economy concept to solve systemic environmental issues by optimizing the waste management profit to be reinvested in Kampung Darling's local economy. The fourth key factor highlights the essential role of Kampung Darling local leadership in fostering the implementation of social practices. The local leader becomes essential in fostering learning, as their role is present in every aspect of social learning by acting as a good role model, promoting the practices, and initiating stakeholder collaboration. Lastly, the

sustainable zero-waste household practices are highly supported by family-like social bonds among its residents. It explains how family-like relationships contribute to fostering mutual cooperation in creating synergy and cost-effective zero-waste household practices.

6.2 RECOMMENDATIONS

6.2.1 RECOMMENDATIONS FOR KAMPUNG DARLING SOCIAL PRACTICES

Despite various limitations, Kampung Darling's efforts in waste management are already exemplary compared to many other community-led initiatives in Indonesia. Kampung Darling also inspires many people to be more responsible for the waste they produce. However, behind their hard work in managing zero-waste household practices, there remains a strong dependency on the local leader, who serves as both the head of the kampung and the waste bank. While local leader's efforts are commendable and highly appreciated, this dependency makes the initiatives vulnerable. The absence of an independent institution governing the zero-waste household practices poses a potential risk of future conflicts that could significantly impact zero-waste household practices. For instance, when the local leader is no longer present, the program would lose its direction because most of the initiatives rely on the local leader's efforts. The reliance on the local leader's ideas would also limit the residents in exploring their potential to initiate actions independently. Based on this study, it is recommended that Kampung Darling establish an independent organization separate from the kampung's management, that maintains its organizational regeneration. This idea is expected to ensure the long-term sustainability of zero-waste household practices, both in terms of operations and leadership succession. An independent organizational structure of zero-waste management can enhance the implementation of the regulations regarding the rights and responsibilities of waste management organization and practitioners, not only for the waste bank but also for SOD and eco-enzyme upcycling practices. Through strategic planning, it can oversee the potential for growth and innovation in zero-waste household practices. In addition, independent management could open broader collaboration opportunities with the government, private sector, and other communities. This independent organization also can enhance existing participation while also supporting social learning through more structured training programs. In other words, establishing an independent organization can directly reinforce social practices and social learning in zero-waste household practices.

6.2.2 RECOMMENDATIONS FOR FUTURE RESEARCH

External support is crucial in developing and sustaining community-led initiatives, particularly government support through policies and financial assistance. In the Kampung Darling case, the local government has stated that their primary focus is managing waste from midstream to downstream, while the upstream management, such as household waste production, is seen as a shared responsibility with the local community (Interview DLH-2, 2024). By prioritizing

midstream to downstream waste management, the local government aims to transform waste processing on a larger scale while also encouraging behavior change in upstream waste management through education and community initiatives such as a thematic village program (Interview DLH-1, 2024). As it relies on voluntary participation, not all thematic villages achieve long-term sustainability. Kampung Darling is an exception. As one of the successful thematic villages that can maintain its sustainability, Kampung Darling highly relies on the role of its local leader. This interesting fact raises the question of what would happen if Kampung Darling lacked a strong local leadership. Can the zero-waste household program still thrive in the absence of a local leader?

The study on the role of the local leader will explain how the local leadership impacts the sustainability of thematic villages. Through a comparative case study, a comparison between villages with strong local leaders and those without strong leadership offers valuable insight whether the community-led initiatives can survive without a strong leader figure, and through which mechanism they can strengthen their efforts.

REFERENCES

Adler, P. A., & Adler, P. (1987). Membership roles in field research (Vol. 6). Sage.

Akbar, T. (2018). Kampung tematik sebagai bentuk partisipasi masyarakat dalam permasalahan permukiman kumuh di Kota Malang. Wahana, 70(2), 37-48.

Atmanti, H. D. (2023). Kajian pengelolaan sampah di Indonesia. *Pembangunan Berkelanjutan di Indonesia dalam Mewujudkan Tujuan Ekonomi Inklusif*, 15-27.

Babaei, A. A., Alavi, N., Goudarzi, G., Teymouri, P., Ahmadi, K., & Rafiee, M. (2015). Household recycling knowledge, attitudes and practices towards solid waste management. *Resources, Conservation and Recycling*, *102*, 94-100.

Bernardo, E. C. (2008). Solid-waste management practices of households in Manila, Philippines. *Annals of the New York Academy of Sciences*, *1140*(1), 420-424.

Bissmont, M. (2020). The practice of household waste minimisation. *Environmental Sociology*, *6*(4), 355-363.

BPS. (2024). Jumlah Penduduk Pertengahan Tahun (Ribu Jiwa), 2022-2024. Jakarta : Badan Pusat Statistik

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101.

Budiharjo, E. (1997). Tata Ruang Perkotaan. Bandung: Penerbit Alumni.

Chikowore, N. (2021). Factors influencing household waste management practices in Zimbabwe. *Journal of Material Cycles and Waste Management*, *23*(1), 386-393.

Clow, F. R. (1920). Cooley's Doctrine of Primary Groups¹. The American Journal of Sociology, 1, 326.

Denzin, Norman K., & Lincoln, Yvonna S. (2009). Handbook of Qualitative Research, 2nd editions. New Delhi, Teller Road Thousand Oaks, California, USA: Sage Publication Inc.

Derung, T. N. (2019). Gotong royong dan Indonesia. *Sapa: Jurnal Kateketik dan Pastoral*, *4*(1), 5-13.

Fadhullah, W., Imran, N. I. N., Ismail, S. N. S., Jaafar, M. H., & Abdullah, H. (2022). Household solid waste management practices and perceptions among residents in the East Coast of Malaysia. *BMC public health*, *22*, 1-20.

Finck, M., & Pallas, F. (2020). They who must not be identified—distinguishing personal from non-personal data under the GDPR. International Data Privacy Law, 10(1), 11-36.

Forman, J., & Damschroder, L. (2007). Qualitative Content Analysis. Advances in Bioethics, 39–62. doi:10.1016/s1479-3709(07)11003-7

Giddens, A. (1984). The constitution of society Polity Press. Cambridge (oorspronkelijke uitgave 1984).

Hampton, S. (2018). Policy implementation as practice? Using social practice theory to examine multi-level governance efforts to decarbonize transport in the United Kingdom. Energy Research & Social Science, 38, 41-52.

Handayani, S. (2009). Penerapan metode penelitian participatory research apraisal dalam penelitian permukiman vernakular (Permukiman kampung kota). In Proceeding Seminar Nasional Penelitian Arsitektur–Metoda dan Penerapannya Seri (Vol. 2, p. 1).

Hargreaves, T. (2011). Practice-ing behavior change: Applying social practice theory to pro-environmental behavior change. Journal of consumer culture, 11(1), 79-99.

Hasanah, H. (2017). Teknik-teknik observasi (sebuah alternatif metode pengumpulan data kualitatif ilmu-ilmu sosial). At-Taqaddum, 8(1), 21-46.

Hasibuan, R. (2016). Analisis dampak limbah/sampah rumah tangga terhadap pencemaran lingkungan hidup. *Jurnal Ilmiah Advokasi*, *4*(1), 42-52.

KBBI. (2024). Kamus Besar Bahasa Indonesia. KBBI Daring. https://kbbi.kemdikbud.go.id/entri/kamus

Keen, M., Brown, V., & Dyball, R. (2005). Social learning in environmental management. London: Earthscan.

Kennedy, E. H., Cohen, M. J., & Krogman, N. T. (2015). Social practice theories and research on sustainable consumption. In Putting sustainability into practice (pp. 3-22). Edward Elgar Publishing.

Knott, E., Rao, A. H., Summers, K., & Teeger, C. (2022). Interviews in the social sciences. Nature Reviews Methods Primers, 2(1), 73

Licy, C. D., Vivek, R., Saritha, K., Anies, T. K., & Josphina, C. T. (2013). Awareness, attitude and practice of school students towards household waste management. *Journal of environment*, *2*(6), 147-150.

Middlemiss, L., & Parrish, B. D. (2010). Building capacity for low-carbon communities: The role of grassroots initiatives. *Energy policy*, *38*(12), 7559-7566.

Ministry of Environment and Forestry of the Republic of Indonesia. (2021). Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number 14 of 2021 on Waste Management at Waste Banks.

Ministry of Environment. (2018). KLHK Ajak Ibu Rumah Tangga Kelola Sampah dari Sumbernya. Jakarta: KLH. https://ppid.menlhk.go.id/siaran_pers/browse/1382

Ministry of Environment. (2022). Pemberdayaan Bank Sampah Dalam Mendukung Mitigasi Program Kampung Iklim (PROKLIM) - HPSN 2022. Jakarta:KLH https://simba.menlhk.go.id/portal/berita/detail/berita-6-v_berita

Mulugetta, Y., Jackson, T., & Van der Horst, D. (2010). Carbon reduction at community scale. *Energy Policy*, *38*(12), 7541-7545.

Mychelisda, Erla., Irawan, Heru., Adhi, Intan. (2022). Small Changes Matter: Praktik Ekonomi Hijau Dalam Pengurangan Sampah Perkotaan Di Provinsi Banten. BRIN Working Paper

Nguyen, A. T., Nguyen, N., Phung, P., & Yến-Khanh, N. (2023). Residents' waste management practices in a developing country: a social practice theory analysis. *Environmental Challenges*, *13*, 100770.

Nicolini, D. (2012). Practice theory, work, and organization: An introduction. OUP Oxford.

Nicolini, D. (2009). Zooming in and out: Studying practices by switching theoretical lenses and trailing connections. Organization studies, 30(12), 1391-1418.

Nilan, P., & Wibawanto, G. R. (2015). "Becoming" an environmentalist in Indonesia. Geoforum, 62, 61-69.

Nudin, I. (2013). Kebijakan pemerintah kabupaten Tangerang tentang pengelolaan sampah di TPA Jatiwaringin Tangerang.

Nursyahbani, R., & Pigawati, B. (2015). Kajian Karakteristik Kawasan Pemukiman Kumuh di Kampung Kota (Studi Kasus: Kampung Gandekan Semarang). *Teknik PWK (Perencanaan Wilayah Kota)*, *4*(2), 267-281.

Pambudy, A. R. (2018). Peran Komunitas Dalam Pengelolaan Sampah (Berbasis Masyarakat) Di Dusun Sukunan Desa Banyuraden Kecamatan Gamping Kabupaten Sleman Yogyakarta Diajukan Kepada Universitas Islam Indonesia Untuk Memenuhi Persyaratan Memperoleh Derajat Sarjana Strata Satu (S1) Teknik Lingkungan.

Paramita, D., Murtilaksono, K., & Manuwoto, M. (2018). Kajian pengelolaan sampah berdasarkan daya dukung dan kapasitas tampung prasarana persampahan Kota Depok. *Journal Of Regional And Rural Development Planning (Jurnal Perencanaan Pembangunan Wilayah Dan Perdesaan)*, *2*(2), 104-117.

Pemerintah Kota Tangerang. (2024). *Kampung Darling Kota Tangerang, kelola sampah hingga raih penghargaan ternama.* Retrieved from https://www.tangerangkota.go.id/berita/detail/43809/kampung-darling-kota-tangerang-kelola-sampah-hingga-raih-penghargaan-ternama

PPID Kota Tangerang. (2024). Melihat Kampung Darling Kota Tangerang yang Ikuti Bank Sampah Innovation and Competition Tingkat Nasional. Pemerintah Kota Tangerang: https://ppid.tangerangkota.go.id/artikel/detail/45413/melihat-kampung-darling-kota-tangerang-yang-ikuti-bank-sampah-innovation-and-competition-tingkat-nasional

Reckwitz, A. (2002). Toward a theory of social practices: A development in culturalist theorizing. European journal of social theory, 5(2), 243-263.

Reiss, A. J. (1971). Systematic observation of natural social phenomena. *Sociological methodology*, *3*, 3-33.

Sabardi, L. (2014). Peran serta masyarakat dalam pengelolaan lingkungan hidup menurut Undang-undang Nomor 32 Tahun 2009 tentang Perlindungan dan pengelolaan lingkungan hidup. Yustisia Jurnal Hukum, 3(1), 67-79.

Schatzki, T. R. (2005). Practice mind-ed orders. In *The practice turn in contemporary theory* (pp. 50-63). Routledge.

Selintung, M., Lando, A. T., Hustim, M., Sari, K., Zakaria, R., Mangarengi, N. A. N. P., & Arifin, A. N. (2021). Sosialisasi Pemanfaatan Limbah Botol PET menjadi Ecobrick di SD Inpres Kantisang-Tamalanrea. *JURNAL TEPAT: Teknologi Terapan Untuk Pengabdian Masyarakat*, *4*(1), 65-85.

Setiawan, B. (2010). Kampung kota dan kota kampung: Potret tujuh kampung di Kota Jogja. *Pusat Studi Lingkungan Hidup Universitas Gadjah Mada*.

Seyfang, G., & Smith, A. (2007). Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental politics*, *16*(4), 584-603.

Shove, E. (2003). Comfort, cleanliness & convenience: the social organization of normality. Berg Publishers

Shove, E., Pantzar, M., & Watson, M. (2012). The dynamics of social practice: Everyday life and how it changes. SAGE.

Sistem Informasi Pengelolaan Sampah Nasional SIPSN. (2023). Capaian Kinerja Pengelolaan Sampah. Kementerian Lingkungan Hidup Indonesia. https://sipsn.menlhk.go.id/sipsn/

Sihotang, D. R., & Nugroho, F. (2021). Peningkatan Pembangunan Sosial Melalui Optimalisasi Program Kampung Tematik Kampung Purun, Kalimantan Selatan. Jurnal Pembangunan Manusia, 2(1), 6.

Spaargaren, G. (2003). Sustainable consumption: A theoretical and environmental policy perspective. Society and Natural Resources, 16(8), 687–701.

Stebbins, R. A. (2001). What is exploration. Exploratory research in the social sciences, 48, 2-17.

Sultana, S., Islam, M. S., Jahan, F., & Khatun, F. (2021). Awareness and practice on household solid waste management among the community people. *Open Journal of Nursing*, *11*(5), 349-366.

Sumarsono, (2010). Sosiolonguistik. Yogyakarta: Sabda

Tan, S. (2011). Understanding the “structure” and the “agency” debate in the social sciences. Moderator’s Note, 37, 37-50.

Tucker, P., & Speirs, D. (2003). Attitudes and behavioral change in household waste management behaviors. *Journal of environmental planning and management*, *46*(2), 289-307.

Utari, E., Fatimatuzzahra, M., Pramaisyella, M., Jaedah, S., & Triana, T. (2022). Analisis Pengelolaan Sampah Akibat Pertumbuhan Penduduk dan Perkembangan Pembangunan di Kelurahan Cipare Kota Serang. *Bioscientist: Jurnal Ilmiah Biologi*, *10*(1), 556-562.

Van Koppen, C. S. A. (2007). Social learning for sustainability in consumerist society. In Wals, A. E. (Eds.), Social learning towards a sustainable world: Principles, perspectives, and praxis (pp 369-382). Wageningen Academic Publishers.

Van Koppen, C. S. A., & Spaargaren, G. (2023). Environment and society. Environmental Policy Group, Wageningen University

Walker, G. (2011). The role for 'community'in carbon governance. *Wiley interdisciplinary reviews: climate change*, *2*(5), 777-782.

Weller, S. C., Vickers, B., Bernard, H. R., Blackburn, A. M., Borgatti, S., Gravlee, C. C., & Johnson, J. C. (2018). Open-ended interview questions and saturation. PloS one, 13(6), e0198606.

Wells, P. (2011). The transition initiative as a grass-roots environmental movement: history, present realities and future predictions. *Interdisciplinary Environmental Review*, *12*(4), 372-386.

Widjaja, G. P. (2013). Kampung-Kota Bandung. Graha Ilmu.

Wildemeersch, D (2007). Social learning revisited lessons learned from North and South. In Wals, A. E. (Eds.), Social learning towards a sustainable world: Principles, perspectives, and praxis (pp 99-116). Wageningen Academic Publishers.

Yoada, R. M., Chirawurah, D., & Adongo, P. B. (2014). Domestic waste disposal practice and perceptions of private sector waste management in urban Accra. *BMC public health*, *14*, 1-10.

Yuanjaya, P. (2015). Modal Sosial Dalam Gerakan Lingkungan: Studi Kasus Di Kampung Gambiran Dan Gondolayu Lor, Kota Yogyakarta. Natapraja, 3(1).

APPENDIX

A. List of Interviews

No	Interviewee	Code	Role	Interview Date
1	Participant 1	P-1	Practitioner	November 16, 2024
2	Participant 2	P-2	Practitioner	November 1, 2024
3	Participant 3	P-3	Practitioner	October 31, 2024
4	Participant 4	P-4	Practitioner	October 27, 2024
5	Participant 5	P-5	Practitioner	October 31, 2024
6	Participant 6	P-6	Practitioner	October 30, 2024
7	Participant 7	P-7	Practitioner	November 5, 2024
8	Participant 8	P-8	Practitioner	December 10, 2024
9	Participant 9	P-9	Practitioner	December 10, 2024
10	Participant 10	P-10	Practitioner	November 23, 2024
11	Participant 11	P-11	Practitioner	November 24, 2024
12	Participant 12	P-12	Practitioner	October 31, 2024
13	Participant 13	P-13	Practitioner	November 1, 2024
14	Participant 14	P-14	Practitioner	November 1, 2024
15	Participant 15	NP	Non-Practitioner	November 23, 2024
16	Participant 16	DLH-1	Local Government	November 20, 2024
17	Participant 17	DLH-2	Local Government	November 20, 2024
18	Participant 18	WBO	WBO	October 27, 2024
19	Participant 19	NGO	NGO	October 31, 2024
20	Participant 20	KWT	KWT	October 31, 2024

B. Interview Guide Questions

Waste Bank Practice (WBP)

SOD Practice (SODP)

Eco-Enzyme Upcycling Practice (EUP)

1. **Category: Practitioner**

   1.1 Background Questions:

   - Can you explain how you usually manage your domestic waste? (*Aims: exploring activities included within the practice, such as waste collecting, sorting. Reveal what practices are connected to domestic waste management, such as cooking, gardening).*
   - What kind of domestic waste do you produce daily? *(plastic/paper/food waste/electronic waste)*
   - How long have you joined the WBP/SODP/EUP?
   - How do you experience the WBP/SODP/EUP?
     Aims: Exploring participant satisfaction or dissatisfaction with the program/involvement
   - How do you know the information regarding the WBP/SODP/EUP? (*Social Media/Community Group Activities/Announcement*)
   - How often do you have to conduct the WBP/SODP/EUP? *(Daily/Weekly/Monthly)*

   1.2 Social Practice - Materials:

   - How do you usually collect domestic waste? What tools are needed?
   - How do you sort domestic waste? What tools are needed?
   - Do you need to clean the waste first before conducting the WBP/SODP/EUP?
   - How far is the collection point of the WB/SOD/EU from your home?
   - Is it easy to go to the WB/SOD/EU collection point? Is there any transport needed?
   - How do you transfer domestic waste into the WB/SOD/EU collection point? What tools are needed?
   - How do you accommodate the availability of the required materials for WBP/SODP/EUP?

- How have the materials used changed before and after the WBP/SODP/EUP?
- Are there any obstacles encountered in using or providing materials *(in terms of price, feasibility, availability)?*

1.3 Social Practice - Competences:

- Are there any difficulties in conducting WBP/SODP/EUP?
- What kind of skills do you need to acquire to conduct WBP/SODP/EUP?
- How do you acquire the skill to conduct WBP/SODP/EUP? *(examples: learn by talking with others, learn from community WhatsApp broadcast)*
- What are important factors that have helped you acquire your skills? *(training/class.)*
- How do you know which trash *(plastic/food waste.)* can and cannot be processed in WBP/SODP/EUP?
- Can you explain how these skills develop over time? How do you reroutinize your new skill? *(For example, learn by talking with others, learning from the community's WhatsApp broadcast.)*

1.4 Social Practice - Meanings:

- What are your aims or goals in joining the WBP/SODP/EUP? (*Aim: exploring meanings for joining* the WBP/SODP/EUP*)*
- What makes you want to reroutinize the WBP/SODP/EUP? *(Aim: exploring motivation development)*
- How do you feel after conducting WBP/SODP/EUP?
- After years of implementation, can you share what is the WBP/SODP/EUP for you? How do you perceive it?

1.5 Social Learning:

- Is there any community activity for Kampung Darling's residents that is regularly held regarding the WBP/SODP/EUP? *(Examples: community gathering/campaign. Aims: exploring the action dimension to uncover the motivation and competence enhancement)*

- Is there a particular person or activity that plays a role in enhancing your competence in WBP/SODP/EUP? *(Aims: exploring communications and action dimension)*
- Is there any particular person or activity that drives motivation to conduct WBP/SODP/EUP? *(Aims: exploring communications and action dimension)*
- How is that particular person involved, and how does it play a role in motivating WBP/SODP/EUP? *(Aims: exploring communications, action, negotiation, reflection dimension)*
- Is there any conflict happening throughout your involvement? How does your community negotiate to achieve goals and reach a consensus? (*negotiations)*
- Are your goals/interests represented within the WBP/SODP/EUP? *(negotiations)*
- Have you ever found yourself reflecting on what it means to be part of Kampung Darling that made you realize your connection to the community? (*Aims: exploring the reflection dimension in finding balance between rational and emotional aspects)*
- What is the lesson learned from your involvement in the WBP/SODP/EUP? *(reflection)*

2. Categories: Local Organizations, Local Government, and NGO

- Can you explain the involvement of your institutions in WBP/SODP/EUP?
- What does WBP/SODP/EUP mean to your institutions?
- How do your institutions support WBP/SODP/EUP? *(Example: provide materials/tools, competences/money/infrastructures to support WBP/SODP/EUP)*
- How is Kampung Darling is important to your institutions?

C. POSTER


RUMAH BEBAS SAMPAH
KAMPUNG DARLING
Kata Warga Tentang Rumahku Merdeka Sampah
Kesadaran Lingkungan
Kebersihan, Kesehatan & Kebahagian
Tanggung Jawab Moral
Insentif Finansial
Penerimaan Sosial
Pengoptimalan Sampah
0 2 4 6 8 10 12 14
PRAKTIK BANK SAMPAH
Praktik ini mencerminkan semangat kebersamaan untuk mencapai kualitas hidup yang lebih baik. Bank sampah berhasil membawa perubahan signifikan bagi lingkungan dan kesejahteraan warga. Selain tempat tinggal menjadi lebih layak, sehat, dan bersih, lingkungan sosial juga menjadi lebih aman. Praktik ini menjadi jalan bagi warga Kampung Darling dalam mewujudkan visi menuju kehidupan yg lebih berkualitas
Pengoptimalan Sampah
Kebersihan
Kebermanfaatan Produk
0 2 4 6 8 10
PRAKTIK SOD
Selain sebagai bentuk pemanfaatan limbah pangan secara maksimal, SOD berkontribusi membuat lingkungan yang lebih bersih dan sehat. Praktik ini mencerminkan kepercayaan masyarakat terhadap sistem pengelolaan sampah yang dikelola pemerintah serta menegaskan pentingnya kolaborasi sosial dalam menciptakan sistem pengelolaan limbah yang lebih berkelanjutan.
Kebermanfaat Produk
Pengoptimalan Sampah
Insentif Finansial
Pemberdayaan Masyarakat
0 2 4 6 8 10 12 14
PRAKTIK EKOENZIM
Praktik ekoenzim bukan sekedar pengelolaan sampah, melainkan sebuah pencapaian besar bagi Kampung Darling, terutama para ibu-rumah tangga. Berbekal limbah buah yang tidak termanfaatkan, praktik ini menciptakan produk multifungsi yang berguna untuk sehari-hari. Selain bermanfaat untuk mejaga lingkungan, praktik ini mampu memperkuat kemandirian warga dengan mengurangi ketergantungan pada produk komersial.
Ekoenzim
Ekoenzim

RUMAH BEBAS SAMPAH

KAMPUNG DARLING

5 Kunci Utama Keberhasilan Rumahku Merdeka Sampah

- PRAKTIK2 PENGELOLAAN SAMPAH YANG SALING TERHUBUNG SATU SAMA LAIN & MANFAAT PRODUK OLAHAN SAMPAH
- KEMUDAHAN MENGAKSES FASILITAS & DUKUNGAN PIHAK INTERNAL - EKSTERNAL
- INOVASI SOSIAL YANG MENDUKUNG PEREKONOMIAN LOKAL
- KEPEMIMPINAN KETUA RT KAMPUNG DARLING YANG INKLUSIF DAN INOVATIF
- RASA KEKELUARGAAN DAN TENGGANG RASA ANTAR TETANGGA

AGAR LEBIH BERKELANJUTAN :

Disarankan untuk membentuk organisasi pengelolaan sampah yang independen dan terpisah dari kelembagaan RT untuk mendukung regenerasi kepengurusan dan kemandirian masyarakat. Dengan organisasi independen, operasional pengelolaan sampah dapat dilakukan dengan lebih profesional dan terarah.