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# **Practising sustainable waste management: a case study on a zero waste community in Bandung, Indonesia**

A thesis presented in partial fulfilment of the requirements for the Degree of  
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## **Abstract**

This study explores how men and women understand and practice a zero waste lifestyle at the household level in the Zero Waste Community YPBB Bandung City. In particular, this study examines the perception, attitude and behaviour, the progress, and the barriers men and women experience related to practicing their zero waste lifestyles within their daily life. In order to achieve the aim of this study and to gain a deeper understanding of the daily practice in their everyday lives, this study has adopted a qualitative research. Working along with the Zero Waste community Yayasan Pengembangan Biosains dan Bioteknologi (YPBB) Bandung or The Foundation of Development in Bioscience and Biotechnology as the case study had been conducted in Bandung city, Indonesia.

The findings reveal that YPBB zero waste lifestyle is perceived as a philosophy and visionary concept. Adopting a zero waste lifestyle concept into daily life may bring about difficulty for participants. The results showed that men and women participants had different ways of perceiving zero waste lifestyles practices, such as, composting, consumption patterns, and carrying a zero waste kit. Power structures in the household and gender stereotypes in society also play a role in households. These structures are affected by the patriarchal system embedded in Bandung City. This study builds on understanding of the participants realities as reflected through zero waste, and gender and development lenses. Acknowledging the roles of men and women within zero waste programmes will lead to a gender sensitive in sustainable waste management. To achieve zero waste goals, this study suggests the importance of education to broaden the mindset of society about the role of equality as it relates to men and women in the household.

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## Abbreviations and glossaries

<b>3 R</b>	Reduce, reuse, and recycle
<b>ADB</b>	Asian Development Bank
<b>ASEAN</b>	Association of South East Asia Nations
<b>BAPPENAS</b>	<i>Badan Perencanaan Pembangunan Nasional</i> (National Development Agency)
<b>BPS</b>	<i>Badan Pusat Statistik</i> (Statistics Indonesia)
<b>CCICED</b>	China Council for International Cooperation on Environment And Development
<b>GDI</b>	Gender Development Index
<b>GPS</b>	<i>Gerakan Pungut Sampah</i> (Waste pick movement)
<b>MAD</b>	Masculinities and Development
<b>NGO</b>	Non-Government Organisation
<b>PKK</b>	<i>Pemberdayaan Kesejahteraan Keluarga</i> (Empowerment Family Welfare)
<b>RPJMN</b>	<i>Rencana Pembangunan Jangka Menengah Nasional</i> (National Medium Term Development Plan)
<b>SDG</b>	Sustainable Development Goals
<b>THM</b>	Takakura home composter
<b>ToT</b>	Training of Trainers
<b>UN</b>	United Nations
<b>UNDP</b>	United Nations Development Programme
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>UNEP</b>	United Nations Environment Programme
<b>UN-HABITAT</b>	United Nations Human Settlements Programme
<b>WCED</b>	World Commission on Environment and Development
<b>WED</b>	Women, Environment, and Development
<b>WHO</b>	World Health Organization
<b>WSSD</b>	World Summit on Sustainable Development
<b>YPBB</b>	<i>Yayasan Pengembangan Biosains dan Bioteknologi</i> (Foundation of Development in Bioscience and Biotechnology)
<b>ZWI</b>	Zero Waste Indonesia

# CHAPTER ONE:

## Introduction

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### 1.1 Introduction

Waste is often looked at negatively and deemed as useless material. The result of this way of thinking is that many people are not likely to deal with it and waste is considered as “somebody else’s problem” (Lehmann & Crocker, 2012, p. 1). In recent years, waste has become an endless problem that is growing in many places around the world, particularly for developing countries that struggle with poor waste management systems and resources limitations (Tot et al., 2017). Waste problems faced by developing countries are complex and difficult to solve (Wilson, 2007). It is mostly through population growth that consumption patterns of society are affected (Davies et al., 2005). These consumption patterns encourage people, not only to meet their primary needs, but also to pursue both their “secondary” and “tertiary” needs. As a consequence, the type of waste is increasingly varied requiring more resources to manage it (Ngoc & Schnitzer, 2009). Unsustainable waste management has resulting negative impacts for the community and the environment. Other waste problems related to environmental degradation include pollution of the water, air and sea resulting in the decline of natural resources and, ultimately, health problems for communities (Ziraba et al. 2016). Therefore, a sustainable waste management is a key concept undertaken to handle waste from the source to landfill in a sustainable and holistic way.

To support sustainable waste management, the role of government through regulations, law enforcement, and adequate infrastructures are significant to support communities to carry out their obligations in handling waste (Hazra & Goel, 2009; Moghadam, 2009). A lack of community awareness of participation in waste programmes is one of greatest hindrances in waste management programmes in developing countries (Soares et al., 2011). Moreover, the roles of private and non-governmental organisations (NGO) are crucial (Sujauddin et al.,

2008). The technical and knowledge supports offered by such institutions contribute to a sustainable waste management system.

Against the backdrop of the problems faced by developing countries, governments and non-governmental institutions are looking for more innovative and sustainable ways of planning and organising urban life. One of the concepts that continues to attract attention is zero waste. A zero waste lifestyle aims to produce less, or even no household waste. Connett (2013) argues that zero waste is a visionary concept for confronting the waste problem in our society. Zero waste is an alternative lifestyle, which allows a paradigm shift from a 'take-make-dispose' to prevent waste at the early stages, and waste is seen as a valuable resource (Pietzsch et al., 2017). Conducting a zero waste lifestyle does not necessarily mean that there is no waste to generate at all, but it involves reducing and managing waste more wisely (ZWIA, 2009). However, to adapt a zero waste lifestyle is difficult to achieve on a daily basis since it requires a strong commitment and consistency to put into practice (Murray, 2002).

More than 50% of developing countries still rely on landfills and open dumping (Dhokhikah & Trihadiningrum, 2016, p. 331). These are unsustainable and cause environmental problems. Zero waste emerges as an alternative solution to handle the increasing waste problem. This solution addresses waste issues by highlighting the importance of waste recycling to be discharged back into the community or economy, thereby reducing the dredge on natural resources (Pietzsch et al., 2017). To date, most developing countries live in a linear economy where product design and manufacture waste is an end product (Ilic et al., 2016). Zaman (2015) points out the importance of product stewardship within zero waste discourse, which means that industries and producers have to redesign and be responsible to their products in reducing economy, social, and environmental impacts. In addition, the government also has a supportive role through regulatory framework and adequate waste infrastructures.

This thesis focuses on household waste that is central to the human lifestyle (Barr et al., 2001). Household waste solutions, however, have primarily focused on the technical issues, such as landfills and incinerators, rather than optimising

individual agency to manage and reduce household waste. It is well understood that individuals' behaviour at home, such as their attempts to "reduce waste, re-use items, improve recycling habits, and change waste-generating consumer choices has a massive impact on the environment locally and globally" (Lehmann & Crocker, 2012, p. 46). What is less understood is how zero waste practices are connected to gender relations.

The recognition of handling household waste and gender relations are inextricably linked. The difference between men and women must be considered as they each play an important part in the household with respect to waste management (Scheinberg et al., 1999). Different household tasks and the behaviour of men and women in daily life are increasingly seen as the essential starting point for change in household waste management practices. Men and women have different roles, needs and perceptions towards waste (Tiwari, 2001). Analysing and identifying gender roles, therefore, highlights the potential barriers and opportunities for zero waste practices in terms of household waste management.

The concept of zero waste has generated a wealth of research related to plans, policies, and strategies (see Zaman, 2015). Many of these studies have been conducted using quantitative methods. Owing to the focus on figures and general features of the findings of such research, there is still a lack of understanding about the complexities and the relationships between gender and zero waste. To fill the gap in this information, this study focuses on the human-related details about zero waste issues, by elaborating more on the personal perceptions, experiences, expectations and personal views and values about zero waste.

## **1.2 Research background**

Indonesia, as a developing country, is also experiencing the problem of increasing volumes of waste every year. For most people in Indonesia, waste is generally seen as an unimportant topic in their lives. Many irresponsible behaviors toward waste are still found in society. In many places, people still practise unsustainable habits such as throwing waste into the river, burning waste, or using an open-dump area in their neighbourhood (Aprillia et al. 2012). End-of-pipe solutions that rely on

landfills and open dumps are the primary waste management methods applied in many provinces in Indonesia (Machmud, 2017, p.188). These approaches result in an unsustainable society and environment (Ngoc & Schnitzer, 2009).

A turning point regarding waste issues in Indonesia was marked by a tragedy that occurred on September 21, 2005, when a landslide of waste from the Leuwigajah landfill in Bandung city killed hundreds of people. The tragedy also hampered the delivery of waste which consequently piled up in every corner of Bandung city (Lavigne et al., 2014, p. 11). Since then, the issue of waste has been drawing public and government attention to the importance of sustainable waste management. Waste has become a national problem that needs a comprehensive and integrated solution from household to the final landfill. Deemed as the fourth largest population with a total population of 261.1 million (World Bank, 2016), Indonesia's living standard has rapidly grown, also in line with the amount of waste generation of 64 million tonnes annually (Jong, 2015). Unfortunately, the increase of waste is not in line with a sound waste management system (Amheka et al., 2015, p. 89). As suggested by Aprillia et al. (2012), the enforcement of the Waste Management Law 18/2008 and the improvement of waste management infrastructures, are crucial. Sustainable waste management in Indonesia will benefit the state's economy, a healthy society, and environmental safety.

Similar to any major cities in Indonesia, Bandung city is experiencing rapid progress in the economy and infrastructures. Although this city is progressing economically, the behaviour of its people when they deal with waste and how they manage it, remains unfavourable to the environment. Waste became such a major problem in Bandung that it led to the worst situation that caused a landslide tragedy in Leuwigajah. After the tragedy, waste has become an important agenda in the city government programmes (Ramadhan et al., 2016). With increased population and limited land availability, the city government of Bandung is looking for solutions by issuing various policies and programmes of waste management. Despite the number of programmes provided by the government, these programmes have not met the expected government's targets (Ramadhan et al., 2016). One of the biggest hindrances as Tarigan (2016, p.105) argues that there are some communities in Bandung city who are well aware of waste management

practices, however, “their awareness did not reflect” the increase of waste in the landfill.

When it comes to gender, Indonesia has made significant progress ensuring equal access for men and women in different sectors (ADB, 2015). While some places in Indonesia are retaining their traditional gender practices, they are becoming affected by patriarchal cultures (Millie, 2011). This situation, therefore, impacts on gender relations in Indonesia since a man traditionally has a more dominant position than a woman in the household. Gender roles in Indonesia are shaped through various value systems, including customary, educational, religious, political, and economic values (Adamson, 2007, p. 26). This study focuses on investigating the gendered dimension of applying zero waste principles in the context of households. Gender, in this thesis, is limited to considering men and women only, for, especially in the context of Indonesia, women and men in the household are usually entwined in a marriage bond. Descriptions of the participants of this study are presented in Chapter 4.

### **1.3 Personal rationale**

The extent to which the zero waste programme can be applied at the household level was of interest to me. After a four-year involvement in a zero waste programme under a local NGO named Yayasan Pengembangan Biosains dan Bioteknologi<sup>1</sup> (YPBB) Bandung and in the training of zero waste and sustainable development in YPBB Bandung, I personally believe that zero waste is one of the solutions to address the waste problem in Indonesia. The YPBB grassroots movement changed my mindset into a visionary thinking towards waste. The work of YPBB Bandung is significant as this NGO is the pioneer of the zero waste programme and has been focusing on lobbying, advocating and raising awareness of zero waste since 2005.

However, the zero waste programme in YPBB Bandung has rarely discussed the issues around gender. My concern is how the zero waste lifestyle is carried out on

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<sup>1</sup>Yayasan Pengembangan Biosains dan Bioteknologi or Foundation of Development in Bioscience and Biotechnology.

the scale of a household. Therefore, the division of the roles of men and women should also be considered, as not all of the domestic works and zero waste lifestyle only relate to and is imposed on women. In my own personal life experience, my husband and I are trying to practise a zero waste lifestyle in our everyday lives. Several years of practising a zerowaste lifestyle has made me wonder about the role each of us play, and whether our roles are balanced without burdening either one of us. Understanding the respective roles of men and women perhaps can achieve zero waste goals and solve the problems of household waste.

#### **1.4 Research aim, question, and objectives**

The current study aims to explore how men and women understand and practise a zero waste lifestyle at the household level in the Zero Waste Community YPBB Bandung City. Employing this case study of men and women in the zero waste community in YPBB Bandung, I have had the opportunity to deeply explore the way in which men and women value and practise zero waste, and the daily challenges and opportunities presented. To achieve the research aim, the following sets out the research question that guided this study.

##### **Research question:**

What are men's and women's attitudes and behaviours regarding the practice of zero waste at home in the Zero Waste Community YPBB Bandung?

Four research objectives are applied to guide in answering the research question:

1.1: To explore men's and women's perceptions of a zero waste lifestyle.

1.2: To analyse the progress of the zero waste practices in the households of the Zero Waste community YPBB Bandung towards sustainable waste management.

1.3: To explore the roles of men and women in practising a zero waste lifestyle at the household level.

1.4: To identify the challenges for men and women who are practising a zero waste lifestyle in the household to achieve sustainable waste management.

To address research questions and research objectives, fieldwork in Bandung city was undertaken for six weeks and utilized a qualitative methodology. The zero waste community YPBB Bandung was employed for the case study as this community is known as the first community that has advocated zero waste in Indonesia. Data collection methods used to explore gender roles in practising zero waste included a focus group, 23 interviews, and seven household observations. The research participants were men and women from The Zero Waste Community of YPBB Bandung, and also some of their family members. In addition, YPBB staff persons, and an official staff person from the Sanitary Agency of Bandung city were interviewed to gain in-depth information and a general understanding of the current situation of zero waste in Bandung city.

### **1.5 Thesis outline**

This thesis comprises of seven chapters. Chapter 1 briefly introduces and provides the background for this study.

Chapter 2 addresses three concepts: the sustainable waste management concept, the concept of zero waste, and gender and development. The sustainable waste management section discusses the topic around the problems faced by developing countries, which is the value-action gap theory. The concept and development of zero waste is then described by contrasting developing and developed countries, and by focusing on how zero waste practices achieves a circular economy. Lastly, the concept of gender is discussed in context to waste management development.

Chapter 3 explains the general context of waste management and gender in Indonesia. The first section describes the general picture of the condition of waste in Indonesia, the plan to achieve Sustainable Development Goal (SDG), goal 12 that relates to waste management. Meanwhile, the next section, given the picture of gender structures in Indonesia, includes a discussion of the role of gender in Indonesia, and especially the traditional role of gender in the city of Bandung.

Chapter 4 presents the qualitative methodology and data collection methods employed in this study. It describes the fieldwork experiences and concludes by

summarising certain issues concerned with ethics and reflections from the fieldwork.

Chapter 5 focuses on the case study of this thesis, the Zero Waste Community of YPBB Bandung. A brief explanation is provided on the demographics of Bandung city and the current situation of waste management in Bandung city. The chapter discusses zero waste in Bandung and the progress to date. An introduction is presented on YPBB Bandung and their role as the first local NGO that has promoted zero waste in Bandung city.

Chapter 6 presents the findings from the fieldwork, which includes the two key related themes that have emerged from the data. This chapter shows the differences of men and women in valuing and practising a zero waste lifestyle, and also the perspective of family members is also presented.

Finally, Chapter 7 discusses the key findings and compares and contrasts findings with the overall literature review. Lastly, the concluding statement and policies are presented along with recommendations for future studies.

# CHAPTER TWO:

## The concept of sustainable waste management, zero waste, and gender in managing waste

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### 2.1 Introduction

Over the years, the issue of waste has been a prominent subject matter in a global context. Both developed and developing countries struggle to solve their waste problems driven by various factors such as, population growth, consumption patterns, industrial development as well as the increase of the production of disposable feedstock products. However, the major difference between developed and developing countries is that developing countries have relatively inadequate supporting legislation, financial and technical support, and that the impact of waste on public health is more prominent (Tot, et al., 2017; Ribic et al., 2017). Developing countries face major challenges since the problem around waste management not only affects the environment, but there are also other social impacts that cannot be ignored for example in household (Jayangsinghe et al., 2013). Drawing attention to the role of men and women is crucial as the starting point of household waste management. This chapter outlines a review of the literature concerning the debates surrounding the concept of zero waste and the role of gender in relation to practising zero waste at the household level in developing context.

This chapter attempts to outline some of the gaps in the literature by focusing on the gendered daily practices of zero waste within the context of gender roles. It commences by linking sustainable waste management and sustainable development. These concepts are followed by a review of the concept of sustainable waste management. The first part considers sustainable waste management as it relates to the problems developing countries have with respect to managing waste and household waste sustainably. The second part presents the concept of zero waste along with the idea of a circular economy. It also includes

case studies of zero waste best practices. The next section then explains the context of gender within the household waste management. The concept and definition of gender roles are explained as they relate to the household waste management, motives, drivers, and challenges in their daily activities performing a zero waste lifestyle. The last section explains the ecological citizenship theory that underpins the study is introduced.

## **2.2 The contribution of sustainable waste management to sustainable development**

In order to have a deeper understanding of this study, this thesis will be looking at the concept of sustainable development as an umbrella concept that encompasses sustainable waste management. The sustainable development concept intends “to seek equitable development between the current generation in the present and those in the future”, as defined in the Brundtland Report (WCED, 1987, p. 8). This definition includes three meanings: (1) to fulfill the present and future generations’ needs; (2) to protect environmental resources that contribute to economic well-being; (3) to be aware of the natural extraction impacts (Elliot, 2012; Sachs, 2015). The concept of sustainable development consists of three pillars of social, economic and environmental (WSSD, 2002, p. 1). According to Sachs (2015), these three pillars emphasize how to increase the needs of economic growth without sacrificing the environmental capability to support social development.

In the journey towards sustainable development, El-Haggar (2010) and Tudor et al. (2011) argue that waste must be managed in an effective, comprehensive and sustainable manner. Both authors also add that the purpose of waste management is to create a self-sufficient community on a sustainable basis. However, many of the developing countries still have inadequate waste management and are yet to reflect the principles of sustainability (see section 2.3.2). As Farrelly, Schneider and Stupples, (2016, p. 35) point out, “improving sustainable waste management practices to simultaneously improve livelihood opportunities, healthcare, education, and trade”. Waste management practices require “the effective integration of the three pillars of sustainable development to the decision-making

policy processes with the aim to improve the well-being and the benefit of current and future generations” (Gupta & Dangayach, 2015 p. 270).

The Sustainable Development Goals (SDGs) have set out some goals and targets that are related to waste. Now, virtually all SDGs are relevant to sound waste management. However, this thesis emphasizes the specific goal as follows: Goal 12 “Responsible consumption and production”, and target goal 12.5 “By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse” (UN, 2015, p. 22). This goal and target refers specifically to the waste hierarchy as described in the next section. This specific goal emphasizes that the sustainable management of waste can lead to responsible consumption so, ultimately, sustainable development can take place. The SDG goal may not be achieved if the waste problem cannot be solved. Rodic and Wilson (2017, p. 14) point out that waste management is an integral component to take actions that are necessary for achieving SDGs. To achieve waste-related goals are not easily attainable, especially for developing countries, as it will require a shift in thinking in society on how to manage waste and the consumption patterns wisely. In addition, industries are also urged to redesign products into more sustainable and reduce unsustainable impacts (Farrelly et al., 2016). Therefore, SDGs should be incorporated into national waste strategies. Importantly, the sustainable development concept ought to implement through robust policies and regulations. Responding to implement SDGs in policies supports for developing countries to move toward sustainable livelihoods (Sachs, 2015).

### **2.3 Sustainable waste management**

*“Until the environmental movement emerged in the 1960s, most waste was disposed of with little or no control: to land, as open burning; to air, by burning or evaporation of volatile compounds; or to water, by discharging solids and liquids to surface, groundwater or the ocean”. (UN-Habitat, 2010, p. xxi)*

As the above quote indicates, the sustainable management of waste is a growing environmental challenge throughout the world and solutions are sought towards the goal of achieving sustainability. Many developing countries are still focusing on

landfills, incineration, and open dumps (Ngoc & Schnitzer, 2009). Any failure to manage waste properly will result in certain risks to human health as well as to the degradation of the environment. Therefore, there is an urgent need for many developing countries to improve and shift toward sustainable waste management. This section explores the literature on the concept of sustainable waste management. The first part explains the concept of waste as it relates to sustainable waste management. The second chapter investigates the impact of waste on developing countries.

### **2.3.1 The concept of sustainable waste management**

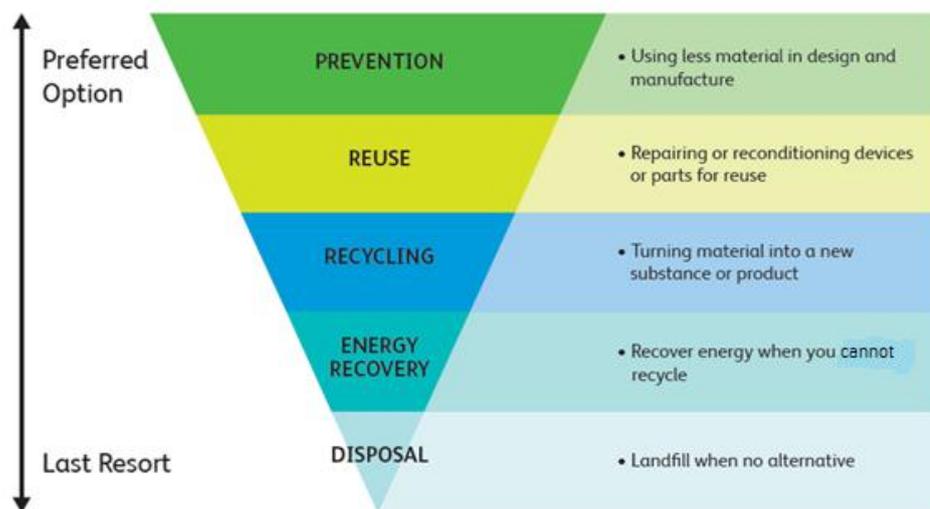
The definition of waste may vary in the literature depending on how people view the issue. The World Health Organization (1971 as cited in Roberts, 2010, p. 15) defined waste as “something, which the owner no longer wants at a given time and place and which has no current or perceived market value”. This definition views waste as material that does not have economic value. Palmer (2004, p. 88) defines waste as “any object whose owner does not wish to take responsibility for it.” According to the definition given by Palmer, waste depends on the relationship between an object, and a person who functions as the owner (2004). The United Nations refers to waste as “materials that are not prime products (i.e. products produced for the market) for which the generator has no further use for his own purpose of production, transformation or consumption, and which he discards, or intends or is required to discard” (UNSTAT, 1997, p. 76). These definitions define waste as material or source that does not have value either for an economic or social purpose. Drawing from these definitions, this thesis concludes that (1) waste is seen as material that can be converted into other material and has value for other purposes; (2) waste has a direct relationship to human activity; and (3) waste needs to be properly managed.

This research focuses on waste at the household level, as Young (1992, p. 136) defines a household as “a group of related individuals who share a home, share meals and who pool their resources for the benefit of the group”. Meanwhile, Waite (1995, p. 1) defines household waste as “those unwanted items that arise in a domestic dwelling: discarded products, such as, furniture, clothing or toys, used packaging, and food waste”. The amount and type of waste, depends on the

lifestyle and type of food consumed. Therefore, household waste management plays a crucial role in reducing household waste such as waste segregation. Ziraba et al. (2016, p.3) points out that the segregation of waste is crucial at the household level. For individuals, however, waste separation requires efforts to prepare, separate, store, and transport recyclables to the recycling center (Ramayah et al., 2012). However, Xu et al. (2017), argue that many waste separation programs in developing countries are unsuccessful due to a lack of community participation and a lack of awareness.

Sustainable waste management emphasizes the sustainability of the environment as well as the engagement of society that adheres to waste hierarchy. Waste hierarchy is a guideline for sustainable waste management and is essential to assess waste priority and ranked based on environmental impacts (Figure 2.1).

**Figure 2.1 Waste hierarchy**



(Source: UNEP, 2011)

As argued by Wilson (2007), “the waste hierarchy can also be seen as a ‘historical’ first step towards a current move away from the ‘end-of-pipe’ concept of ‘waste management,’ towards the more integrated concept of ‘resource management’” (p. 200). In Malaysia, under the Ministry of Housing and Local Government, the hierarchy of waste has been successfully used as a framework to establish an integrated, holistic and cost-effective waste management law through proper waste treatment (Manaf et al., 2009). Applying a hierarchy of waste concept, waste

is treated not as a homogenous material that merely ends up at final landfill, rather waste is managed with a comprehensive and integrated management system (Gertsakis & Lewis, 2003).

The principles of 'reduce, reuse, and recycle' (3Rs) have become a basic principle in sustainable waste management efforts for individuals to practise. The 3Rs placed in the second and third step of a waste hierarchy (Tudor et al., 2011). Reuse is an activity to reutilise material or product more than once or in a similar function. Gertsakis and Lewis (2003) point out that by reusing products the need to buy new products is diverted and creation of waste is avoided, whereas, Connett (2013) argues that the recycling method may add economic value if sold to the scavenger for the recycling purpose. However, Gertsakis and Lewis (2003) note that recycling requires energy to form waste into new products, thus it should be placed at the third stage of the waste hierarchy (see Figure 2.1).

To date, the 3Rs principle is outdated and has been extended to achieve sustainability. Prevention is listed at the top of the waste hierarchy as the main target and the preferred option in sustainable waste management practices (See Figure 2.1). Prevention is a radical effort which is primarily performed by reducing a culture of excessive consumerism and re-designing of products (Ferrara & Missios, 2012). To prevent waste in the first place, Davies et al. (2005, p.65) argue that the "prevention of waste involves a change in lifestyle; a choice that requires time and commitment". At this first stage, it requires individuals to economize any activity that may produce waste. In addition, it is essential that industrial production supports the redesign of packaging to create more durable and non-toxic products.

Composting is one of the techniques used to handle organic waste. In the waste hierarchy (Figure 2.1), composting can be included in the fourth step, which is waste recovery. There are many ways for individual to implement simple composting method in household, for example, the vermicompost method, takakura method, and so forth. In Surabaya, Indonesia, the takakura home method

(THM)<sup>2</sup> has been used as a successful method of home composting in many households. The work of householders have implemented the 3Rs and conducted takakura training for composting for the householders. The uses of takakura and community participation have proven successful in reducing organic waste sent to landfill by 30% (Kurniawan & de Oliviera, 2014). In addition, household organic waste can be composted and used as fertilizer, thus providing additional economic value for householders.

At the bottom of the waste hierarchy (see Figure 2.1) is landfill. Open dumping has negative impacts as Townsend et al. (2015) note, in terms of human health and environmental pollution including potential uncontrolled, leachate<sup>3</sup>, air and water pollution (Townsend et al., 2015). However, many developing countries still use open dumping as their final disposal method due to the lack of infrastructure, and human financial capital (Ngoc & Schnitzer, 2009). Therefore, there is urgency for many developing countries to transform open dumping practices into more sustainable and controlled landfill until a sustainable waste management is fully implemented.

After explaining the concept of sustainable waste management, the next section investigates the challenges of developing countries towards sustainable waste management.

### **2.3.2 Waste management challenges in developing countries**

Over the past twenty years, waste management systems in developing countries remain challenging and complicated (McAllister, 2015). Studies have shown that there are many problems affecting the success of waste management in developing nations. Raising individuals' awareness considers important factors in determining the success of waste management (Babaei et al., 2015). In East Timor, a study

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<sup>2</sup>Takakura Home Method is a composting method developed by Koji Takakura from Japan. THM is a design that is well ventilated to prevent insects entering and producing any bad odor, and hence can be placed inside the house.

<sup>3</sup>Leachate is "liquid that passes through a landfill and has extracted dissolved and suspended matter from it. Leachate results from precipitation entering the landfill from moisture that exists in the waste when it is composed" (Raghab et al, 2013, p.187).

found that individuals do not sort their waste. The difficulty for individuals in Dili, Timor Leste, to dispose of waste in the right place and maintain cleanliness is the result of a lack of education and awareness in terms of treating the waste properly (Soares et al., 2011).

Waste generation in urban cities is closely linked with the expansion of the urban population (Davies et al., 2005). With the growth of the population, the amount of waste generated is increased due to the level of daily consumption (Farrelly & Tucker, 2014), whereas landfill space is limited. A study by the Asian Institute of Technology conducted in Sri Lanka (2004, p. 93) confirmed that with the population increasing by 32.5% annually, the waste problem has emerged as a national issue due to improved living standards and unsustainable waste management system such as open dumping and burning waste (Bandara, 2008).

In Kenya, a study by Ziraba et al. (2016) showed that there is evidence of the linkage between poor waste management and adverse health outcomes. In terms of the outcome of unsorted waste and improperly treated hazardous waste, it has two effects on human health. The direct effect is caused by direct contact with the waste, such as, infections (e.g., bacterial, viral) and the indirect effect is emotional or psychological (e.g., related to strong smell, aesthetics). A research study by Al-Khatib et al. (2007) showed that open dumps was still utilized to dispose waste in seven Palestinian districts. As a result, leachate from open dumps may contaminate the groundwater: the primary drinking water source in most cities.

In recent years, many developing countries struggle with the amount of plastic waste (Shekdar, 2009). A recent report stated that China, Indonesia, the Philippines, Vietnam, and Thailand ranked 1 to 5 respectively in plastic waste generation into the oceans (Jambeck et al., 2015, p. 769). Around 40% of plastic waste originated from packaging products as a result of unsustainable consumption patterns (Comanita et al., 2016, p. 677). Plastic is a dangerous threat, since it does not biodegrade and decomposes into a more dangerous form. Additionally, it will produce toxins if burnt or, if in the ocean, it will be consumed by sea creatures. Hence, it pollutes the environment and ultimately endangers

human health. Currently, various countries are starting to ban and regulate single-use or disposable plastics. As suggested by Comanita et al. (2016), the role of the government is crucial in regulating the use of plastic such as implementing a fee on single-use plastic, and regulates plastic production from industries.

Scholars have acknowledged that waste collection and transport in developing countries often face many hindrances. Hazra and Goel (2009) report that due to insufficient infrastructure, poor roads and limited vehicles for waste collection have resulted in an improper waste collection system and unclear route planning and the miscommunication of waste schedules have an influence on the collection, transfer and transport that are involved with waste activities. (Henry et al., 2006; Moghadam et al., 2009). Alelui and Ferrao (2016) have also pointed out that the high cost of waste transfer and infrastructure, which includes vehicle operating costs, and the labor wages associated with transporting the waste, are deemed as factors that have an influence on the continuity of waste management.

NGOs and the private sector also play significant roles in waste management. For NGOs, Muller and Hoffman (2001) argue their roles include encourage effective service delivery to communities, including educational and motivational campaigns. NGOs mainly foster their programmes at the grassroots level. Private companies are also playing a significant role as operators in waste management (Davies et al., 2005). Private Service providers occur at different levels, mostly in relation to waste collection and waste transportation from household residents. Both NGOs and Private Service providers often act as a critical partner in filling in for supporting government role in waste management (Groves, 2008). This is since one of the problems in developing countries is the lack of human resources with technical expertise.

Above all waste challenges mentioned, waste management system is legally under the control of the government. However, Guerrero et al. (2013) noted governments tend to give least priority to waste, since they are more concerned with other priorities (i.e., education, politics, social development, health and so forth). As a consequence, unsustainable waste management systems, such as the lack of

monitoring and the evaluation of waste management, the low enforcement of regulations, and limited financial resources are major drawbacks for the government to support a sustainable waste management (Hazra & Goel, 2009; Moghadam, 2009). With these drawbacks, therefore, it makes difficult for individual to implement sound waste management.

Unsustainable production has contributed significantly to the destruction of the environment and natural resources. The fact shows the behavior of industry has been negligent in the handling the waste and producing waste as the end product (Ngoc & Schnitzer, 2009). Waste management should start from the point where the waste is produced. Industries are considering applying Extended Producer Responsibility (EPR). By EPR, industries oblige to sell products and use sustainable packaging to minimize waste (Zaman, 2015, p. 19). It is clear that commitment from all stakeholders, especially from the business world, is required to use energy efficiently. Once again, the role of government is significant through policy support and incentives and sanctions for waste management for the industry sector.

In this section, sustainable waste management in developing countries and the problems related to it have been discussed. Household waste management becomes complex because of many factors such as lack of financial support, weak law enforcement, and lack of awareness of the community. The next section discusses the concept of zero waste and its practices in developing countries, more deeply.

#### **2.4 Zero waste as the ideal concept in sustainable waste management**

A multidimensional waste problem faced by developing countries as explained in the previous section has resulted in increasing volumes of waste. The application of advanced technology does not guarantee waste reduction (Zaman, 2015). Against this backdrop, governments and non-governmental institutions are looking for more innovative and sustainable ways of planning and organising urban life. One of the concepts that continue to develop is zero waste. Zero waste is one of the alternatives in solving the problems of waste preventing waste generation in the first place. In this section, I explore the idea of zero waste as the

principal vision in contemporary waste management to achieve sustainability. I then continue to explain how the concept of zero waste is embedded in circular economy principles, and the last section shows how the concept of zero waste can be practised on a daily basis by people in their households.

#### **2.4.1 The concept of zero waste**

The concept of zero waste is considered the ideal waste management model. Palmer (2004) was the first to use the term 'zero waste' in 1973 as a term to recover resources from chemical waste. This principle guides individuals in changing their lifestyles to emulate sustainable natural cycles in which all discarded materials are designed to be a resource for others to use (ZWIA, 2009, as cited in Zaman, 2015, p. 13). Zero waste is seen as a holistic process and a solution for achieving a true sense of sustainable waste management systems (Zaman & Lehman, 2011). In its broadest sense, zero waste refers to a process of producing resources that do not produce residual waste materials (Palmer, 2004). If any material is left from a production process, it can be reused or reprocessed for another purpose. Moreover, Connett (2013) claims that zero waste is a visionary goal in the waste management system by reducing environmental impact.

Zero waste is seen as a cultural shift and a new way of thinking ensuring that materials are carefully taken into account to reduce the total amount of resources needed and to be used in the long term. Although it is seen as an ideal waste management system, practically attaining a state of zero waste is difficult to achieve (Murray, 2002) because, in general, most individual activities and industrial production will generate waste (Lehmann, 2011). The concept of zero waste continues to evolve, and continuous improvement, innovation and creativity is required to achieve zero waste. By changing attitudes and enhancing awareness of environmental degradation and resource scarcity, Lehmann (2011) argues that zero waste demands a radical change in the traditional way of thinking of waste as something to discard into a more responsible and sustainable way of thinking of waste as valuable resources to reuse or repurpose. Therefore, product stewardship and corporate responsibility are equally important as zero waste relies on the responsibility of industries to reduce the waste as the end product.

The concept of zero waste continues to evolve and it has been implemented in many countries. In recent years, a mushrooming of the zero waste movement has emerged. A review of the literature reveals that the determining factors of success of these movements include the integration of community participation, support by strong regulations, and a strategy based on the local context (Connett, 2013). The capital city of Ljubljana, Slovenia, became the first 'Zero Waste Capital' in Europe to implement various zero waste practices. The key successes are door-to-door separate collections, high composting and recycling rates (Ilic & Nikolic, 2016, p. 192). In addition, one town in Slovenia Vrhnika achieved the highest rate of recycling by 80 percent (Van Vliet, 2014, p. 2). Italy is also one of the countries committed to zero waste and this has been proven since 232 cities are working towards this goal. Capannori, an Italian city, has reached up to 40% of waste reduction and 82% of waste segregation (Van Vliet, 2014, p. 2). Capannori is one of the highest in Europe supported by good waste management policies and high public awareness (Vliet, 2014).

#### **2.4.2 Achieving zero waste through circular economy**

Many developing countries still adopt the linear economy system of waste (Sakai et al., 2011). The linear economy relies on extracting a massive natural amount of non-renewable resources and turns these resources into products that have temporary value and end up as waste. Scholars have acknowledged that the high cost of a linear economy does not address the underlying problems that are the result of a throw-away society, and lead to the destruction of the environment, economy and other social aspects (Ghiselline et al., 2015). To achieve a more sustainable waste management system, a shift to a circular economy is needed. A circular economy was a term firstly coined by David Pearce and R. Kerry Turner in the early 1990s (Andersen, 2007). The approach used in the circular economy is holistic and include multi-stakeholders. One of the central pillars of a circular economy is:

feeding materials back into the economy and avoiding waste being sent to landfill or incinerated, thereby capturing the value of the materials as far as possible and reducing losses (Ribic et al., 2016 p. 245).

Another definition offered by The Chinese Circular Economy Promotion Laws is “a circular economy is a generic term for the reducing, reusing, and recycling activities conducted in the process of production, circulation and consumption” (CCICED, 2008, p. 1.)

A circular economy is an opportunity for developing countries to improve their waste management systems. In many developing countries, the concept of circular economy is still in the early stages of implementation. Ilic and Nikolic (2016, p. 191) point out that various factors, such as a poor waste management system, low recycling rates, a weak waste management system, and unsustainable industrial production, represent challenges for developing countries to shift from a linear to a circular economy. Pietzsch et al. (2017, p. 325) suggest a collaborative effort, and involve the role and function of each stakeholder along the waste chain including government, the private sector and society in every cycle of waste management stages. Hence, a circular economy has potential to enable empowerment of community livelihoods and enhance wellbeing for individuals through employment and recycling opportunities.

#### **2.4.3 Zero waste practices in developing countries**

Zero waste has become an aspirational goal for developing countries to deal with their waste problems. To date, the literature has identified some successful zero waste practices in those countries (Tangri, 2012; Connett, 2013). Zero waste practices emphasize the part individuals and communities can take toward zero waste.

Every country has different problems and different means of handling waste. Therefore, understanding the local context is a priority area in achieving the strategies of zero waste. In Pune, India, waste pickers formed a union called ‘*KagadKachPatraKashtakari Panchayat*’ (Connett, 2013, p. 184). These waste pickers in Pune, India, show how communities have vital roles to reach zero waste that are driven by the motivation to live sustainably. A study by Tangri (2012, p. 4) shows that a door-to-door collection service operated by 2,000 wastepickers has been the primary waste management system in Pune, India. As a result,

greenhouse gas emissions annually are reduced and have an impact on the community so they can have better livelihoods and working conditions.

In partnership with an NGO, the Mother Earth Foundation, the local government of Puerto Princesa commenced a zero waste programme in the Philippines (Connett, 2013). The aim of the project was to make Puerto Princesa a sustainable city by establishing a material recovery facility in every village and a waste separation centre. The project was successful, since 90% of the residents did not mix waste and every village has at least one material recovery facility that the village owns and manages (Connett, 2013, p. 189). The income from the material recovery facility is then used for the community itself. This project shows how government leadership can support all stakeholders in handling waste responsibly to achieve a zero waste city.

Despite some positive efforts, much of the literature on zero waste does not discuss the everyday practices at the household level in developing countries. The next chapter explores literature's gender roles, therefore, can further lead towards a zero waste lifestyle.

## **2.5 The role of men and women in sustainable waste management**

The effectiveness of household waste management can be improved through understanding the role individuals have at home. Tiwari (2001) argues that waste generation and management in the household are influenced by gendered roles and gendered consumption patterns. A thorough understanding of gender is crucial in terms of household waste management and the contribution of men and women have to be taken into account in improving domestic waste management. In this section, I explore gender roles in managing household waste by focusing on men and women. Firstly, the concept of gender roles and the recognition of gender in discourses of sustainable development are explained. The second section explores the different perceptions of waste from a gender perspective. The third section is about division of labour in handling waste between men and women. The fourth section discusses whether men's and women's attitudes and behaviours

differ in the ways that they view zero waste. Lastly, in section five, the consumption patterns of men and women are discussed.

### **2.5.1 The concept of gender**

Gender refers to “the roles and responsibilities of men and women that are created in our families, our societies and our cultures” (UNESCO, 2003, p. 1). Ostergaard (1993) notes that gender is reinforced by social learning, laws, norms, customs, ideology systems, religion and the culture of the prevailing society. The role of gender may vary based upon roles given to, or undertaken by, men and women in a society. March et al., (1999) argue that the concept of gender is central because it shows how women’s or men’s roles are socially constructed. There are two prominent schools of thought that dominate development discourse: Women in Development (WID) and Gender and Development (GAD) (March et al, 1999). These two frameworks emphasize gender relations between men and women, and women’s empowerment which includes women as active agents of change in the development process (Wanner & Wandham, 2015).

However, these frameworks have gained a number of criticisms by WID and GAD proponents. Chant and Guntmann (2002) argue WID and GAD discourse neglects and overlooks the vital role of men either in theory and practice. Many development policy makers and practitioners highlight the importance of gender, but solely focus on women. Therefore, Masculinities and Development (MAD) emerged in the 1990s to recognize the roles of men in development discourse. According to Cornwall (2000), the presence of men in development discourse are important to give nuance in attitudes, roles, relationships and access to resources and decision-making for gender equality. Wanner and Wadham (2015, p. 8) argue that men often struggle with expected masculine behaviour and gender stereotypes because of the impact of lack of recognition of men and masculinity in GAD.

The concepts in gender, such as, masculinity and femininity, become one of the concepts that shape and guide human behavior. A man or a woman who behave in accordance with their stereotypes are often viewed more positively than those who challenge the expectations of gender stereotypes, hence resulting in limited

choices in their lives (Prentice & Carranza, 2002). Anselmi and Law define gender stereotypes as “overgeneralized beliefs about men and women based on their membership in one of many social categories” (1998, p. 195). Based on the study of Deaux and Lewis (1984, p. 992), they identified four gender stereotypes that consist of the dimensions that include role behaviours, traits, physical characteristics, and occupations. The concept of masculinity and femininity varies depending upon the social context, and is also culturally constructed (Ellemers, 2018, p. 278). In some cultures, not all women are identical to the stereotypical expectations of femininity, and the same goes with the men in terms of masculinity. According to Eagly and Kite (1987, p. 453), the difference between men and women raises social and cultural expectations and is deeply embedded in each gender, and sometimes their sex does not fit to this stereotype.

Gender roles are also affected by patriarchal systems, in which a man controls all family members, ownership of goods, sources of income, and acts as the key decision maker (Kandiyoti, 2005, p. 145). The marginalization of a woman in the patriarchal system is exacerbated by the assumption that everything a woman does in the domestic sphere is not something that needs to be respected and taken into account (Bierama, 2003, p. 3). Therefore, WAD emphasizes the power within women to act and behave for their roles (Kabeer, 1999). Meanwhile, under the GAD framework, Singh (2007, p. 102) argues that patriarchy is a product of “unequal social relations between men and women”. Many developing countries still adhere to the patriarchal system, particularly in Indonesia, which is explained further in Chapter 3.

### **2.5.2 Gender and sustainable development**

The Johannesburg Declaration on Sustainable Development in 2002 prominently mentions the needs and roles of women, stating “we are committed to ensuring that women’s empowerment, emancipation and gender equality are integrated in all the activities encompassed within Agenda 21, and the Millennium Development Goals” (UN, 2002, p. 1). This international recognition provides a way and means to endorse gender equality in development projects. This is due to the idea that women and men might have different roles and may be treated differently in

society. In a related manner, The Women, Environment, and Development (WED) discourse emerged as a hot debate in the 1970s in the agricultural sector as opposed to gender inequality since women in Rajasthan, India, extracted natural resources to meet the needs of the family's livelihood (Homberg, 1993). According to Schultz et al. (2001, p. 4):

The WED debate is anchored in a critical view of development policies where the link between modernization and technology on the one hand and environmental deterioration on the other is focused (p. 4).

To date, while WED is still an ongoing debate, it is more concerned with climate change and sustainable development than other environmental issues (Alston, 2014). Therefore, in line with the gender and environmental framework, the involvement of gender in waste management is pivotal, particularly at the micro level, namely households (Scheinberg et al., 1999). Their contribution at the household level, may balance the economic development, social progress and environmental protection at the macro level. In addition, men's and women's relationships need to be taken into account to fully participate in achieving sustainable development (Koehler, 2016, p. 57).

### **2.5.3 A gendered definition of waste**

Men's understanding about what qualifies as waste is distinct from women's understandings. For example, a woman may regard kitchen waste as a resource for composting and fertilising their plants, whereas a man may not see it as valuable. In contrast, while scrap metal or wood for a woman may be useless, conversely, for a man, these materials could be valuable for fixing something in the house or car (Tiwari, 2001). Studying the waste perception setting in Mexico, Buenrosto et al. (2014, p. 3001), assessed the gender perceptions of whether littering is a problem and why it occurred. Their study found out that 36% of men deemed waste as a problem because of the releasing of bad smells, while 38% of women feel disturbed by waste because of rodents and the negative image of waste (Buenrosto et al., 2014, p. 3001). Likewise, according to Scheinberg et al. (1999), waste differs in some societies and, in particular, within the same household, men and women have differing opinions and views of whether or not waste has value.

#### **2.5.4 Men and women's attitudes and behavior towards waste**

One of the vital factors to achieve zero waste at home is highly dependent on how individuals behave toward waste in daily life (Connett, 2013). In reality, gender has a significant role in the success of zero waste at the household level. Men and women may have different behaviors because of their preferences and backgrounds. Differences in preferences include how men and women manage waste and how they perceive waste. Research shows that men and women respond and act differently regarding waste (Babaei et al., 2015; Pakpour et al. 2014; Al-Khatib et al., 2009).

Babaei et al. (2015), in Iran, found in a gender comparative study that men found it easier to follow their own pro-environmental routines. This study showed that men are able to control stronger behavior in waste segregation compared to women. The data shows that the main reasons women do not want to participate include lack of time, fear of illness and dislike of waste handling (Pakpour et al., 2017). Based on the Al-Khatib et al. (2009) study in Palestina, he suggests that men be targeted in the waste programmes since they may be more effective than women. A study of household waste behaviour in Iran, demonstrated by Pakpour et al. (2014), found men have a tendency to recycle waste more than women because men have more access to education. According to Oztekin (2017), the attitudes and behavior of men in Turkey, in terms of managing waste, is something that is learned. This is because men's intentions to manage their waste are shaped by their past behavior and their conclusions are supported by a willingness to learn.

However, a study found that in Canada women were more able to demonstrate their commitment to the environment than their male counterparts, especially in activities dealing with private households due to greater environmental concerns. (Tindal et al., 2013, p. 926). In many cultures, a woman plays heavier domestic responsibilities, including handling waste. Meanwhile, men limit their roles in the household because, according to Gender and Water Alliance (2010, p. 120) such work of handling waste will influence their status as a man. Buckingham et al (2005, p. 288) points out that women have become disadvantaged in regard to waste management policies. For example, waste utilities and programmes are

mostly designed by men with other priorities and concerns. Men often misunderstand the perspective of handling waste from the point of view of women and according to their needs. Therefore, equal education for women and men is crucial to enhance their knowledge and awareness (Alston, 2014, p. 288).

### **2.5.5 Gender and consumption patterns**

The increase of the population is also accompanied by the need for the consumption of natural resources that eventually leads to an uncontrolled reduction of natural resources. As identified by Ngoc and Schnitzer (2009), one of the root causes of waste generation in ASEAN countries is the unsustainable patterns of consumption. Connett (2013) points out when people are tempted to buy unnecessary things, this is often triggered by advertising. If this behaviour remains irresponsible, it results in over-consumption and in the generation of enormous waste. One solution to managing waste is practising sustainable consumption, which is one of the prerequisites of zero waste Zaman (2015, p. 17).

Much research has found differences between women and men in their pro-environmental consumption behaviour. The analysis of data collected from 115 male and female in the United Emirates Arab (UAE) respondents showed significant differences in sustainable consumption behavior (Khan & Trivedi, 2015, p. 32). Khan and Trivedi suggest that the role of women needs to be supported in family and household decision-making as this is one way that sustainable consumption behavior can be realized. In a similar context, a research project in Egypt found that 88% of men were aware of environmentally sound behaviour towards green purchasing (Mostafa, 2007, p.225). However, a study by Brough et al., (2016, p. 579) in Seattle argues that men tend to avoid “green behavior” to preserve the image of their masculinity since choosing green products seems more feminine. This study provides evidence that the concept of “greenness” between masculinity and femininity are interconnected. Surprisingly, the findings of a study of two hundred university students in Malaysia showed that where sustainable consumption was concerned, there were no significant differences between men and women (Chen & Chai, 2010, p.33). Here, it can be seen that gender consumption patterns in developing countries are different.

### **2.5.6 Gender divisions of labour in handling waste**

A gendered division of labour is “the result of how each society divides work among men and among women according to what is considered suitable or appropriate to each gender” (UNESCO, 2003, p. 2). Ostergaard (1993) points out that a gendered division of labour varies from one society to another, and changes due to external conditions and time. With this division, the context of particular gender patterns questions "who works what" and "who decides what", and "how?" (March et al., 1999). The division of labour between men and women is played out in their roles at home. Scheinberg et al. (1999, p. 20), argue "there is a conflict of interest among men and women in power-sharing, family duties and decision-making affecting gender participation in waste management in the household." Therefore, an equal role and a clear division of labour between men and women involve their participation in handling household waste together (Buckingham et al., 2005). In a household, the decisions about waste have to do with what, how, and when to throw out are not entirely in the hands of a man or a woman. Family members at home also have a role and influence each other's power relations. Conflicts of interest may easily arise among family members (Organo et al., 2012, p. 571). Therefore, Organo et al., (2012) point out that it is necessary to recognize nuances to reduce conflict between the gender and this is an important step that may cause changes in the power dynamics between women and men.

Many studies have identified shared responsibilities performed by men and women in handling household waste. A study in New Zealand by Tiwari (2001) found women are mainly taking responsibility in regard to household waste segregation according to its categories, whereas men were responsible for removing rubbish from the kitchen to the kerbside collection (Wheeler & Glucksmann, 2016). Nevertheless, due to their triple roles that are embedded within them, some woman in such cultures often act as the first educators to teach their family to practise environmentally-friendly behaviours (Kusakabe & Veena, 2008). The findings from studies by other researchers show that men and women have different preferences in terms of how frequently waste is disposed of or how much time is spent disposing of waste (Tindall et al., 2013). These views are quite in contrast to a recent study set in Ghana which showed that men are likely to

support women in carrying out the household tasks (Kadfak, 2011). Further, Kadfak (2011) points out that men and women are becoming more aware and open to the idea of sharing responsibilities in performing household tasks. Wanner and Wadham (2015) suggest that to achieve gender equality within households, the inclusion of men in domestic chores are crucial, thus women are not overloaded by domestic chores.

## **2.6 Theoretical framework: ecological citizenship the basis theory of a sustainable society**

After the explanation of three concepts of sustainable waste management, zero waste, and gender, this thesis draws attention to the theory of ecological citizenship. Ecological citizenship was introduced by Andrew Dobson (2003) who argues that ecological citizenship focuses on the obligation of individuals to reduce their ecological footprints. Citizens are considered change agents to create and act sustainable lifestyles. In this thesis, these individual collective actions through zero waste lifestyles are expected in providing environmental justice and reducing environmental impacts beyond their private spheres (Jaggers & Matti, 2010). Several studies have been conducted in relation to waste and ecological citizenship. Sefyang (2005, p.304) conducted a study on sustainable consumption, and she argues that although people have reduced their ecological footprint by shopping wisely, they still could not achieve sustainability on a community level. The root of the problem was that the government does not support the community through policies to reduce the ecological footprint (Latta, 2007). As a consequence, this community effort was useless when facing those barriers as it does not bring change within them. According to Melo-Escrihuela (2008, p. 124) the theory not only focuses on individual action but also aims at how society can bring top-level change like government and industry. Kennedy (2011, p. 856) states “by focusing on a group of individuals within a neighborhood, the focus of ecological citizenship shifts to seeking to understand the potential for participation in social change rather than the potential to reduce individual environmental impact.”

Another study in Bangalore, India, shows how an ecological citizenship theory applied to examine home waste management within middle-class household. It was found by Anantharaman (2014, p. 182) that individuals from the middle class

were able to change personal behavior in recycling and composting, whereby they could simultaneously participate in collective action to change norms, institutions and policies to support sustainable waste management behavior.

Section 2.5 discusses that women are often overloaded with their triple roles. In ecological citizenship, women are encouraged to lead as a “positive political identity” beyond their household roles to reduce their ecological footprint (Mcgregor, 2010, p. 29). The burden of responsibility for environmental sustainability should not only be imposed on the individual, especially men or women. Instead, the responsibility of government, waste industry and producers must be acknowledged as strong components of sustainable waste management. With the acknowledgment of this top-of-pipe approach, this thesis focus on the bottom level (households and individuals) is crucial, since the citizen effort is important to achieve sustainability. This thesis draws on an ecological citizenship approach to illuminate the drivers and barriers confronted by men and women in living a zero waste lifestyle in developing countries.

## **2.7 Chapter summary**

This chapter discusses the literature review around sustainable waste management, zero waste, and gender roles. Waste is seen as materials that can be converted into other material and has value for other purposes. With the increased volume of global waste, the urgent requirement for a paradigm shift of waste as a product into waste as a resource is appropriate and necessary to manage since it represents the beginning phase of the extraction of natural resources until it reaches the landfill. As the umbrella concept of sustainable waste management, sustainable development thinking seeks to bridge the concern of many parties, due to the excessive exploitation of natural resources to meet the needs of people. Developing countries face various problems such as public health, environment protection, waste as a valued resource, institutional and responsibility issue, and raising public awareness. Apart from that, the expansion of the urban population, and the financial resources that lead to an improper waste collection system. In the context of sustainable waste management, zero waste is seen as a holistic process and a solution for achieving the true sense of sustainability. In line with the

concept of zero waste, a circular economy not only adds value to the environment, but the creation of new economic and social value, such as community empowerment. To date, many developing countries have started to implement the concept of zero waste as part of their national regulations.

In regard to gender, men and women may perceive and behave differently towards waste based on their preferences and background. In addition, gender roles are inevitably connected with gender stereotypes and patriarchy cultures that are culturally embedded within society in many developing countries. This thesis will address not only the tension of gender roles, especially within a patriarchal system. But also, looks at the tension between the role of individual men and women towards achieving sustainable waste management and a lack of structural support, which is often the case in developing countries.

After critically discussing the literature review, the following chapter gives a contextualization of sustainable waste management, zero waste, and gender in Indonesia.

# CHAPTER THREE:

## Context of sustainable waste management and gender roles in Indonesia

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### 3.1. Introduction

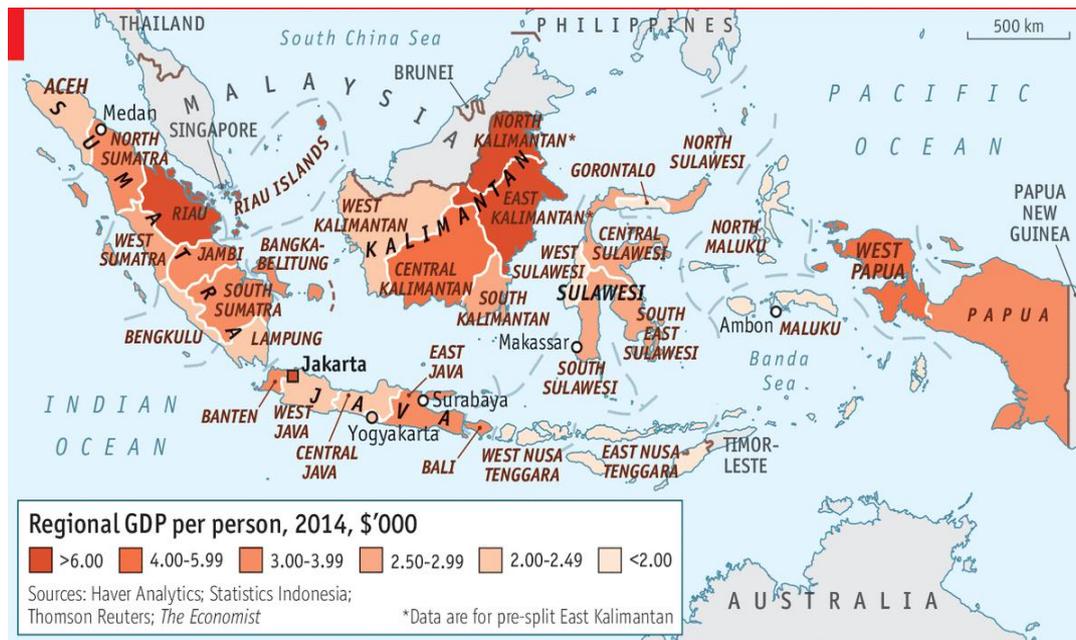
This chapter provides background information relating to the geographic and social context regarding zero waste and gender roles in Indonesia. It is important to understand the significance of urban waste and the socio-cultural aspects in Indonesia in order to contextualize zero waste practices and the different roles of men and women in Bandung city. The growth of urbanization to urban city has led to an increase of population and further waste generation. This chapter has four sections. The first section discusses the urban development in Indonesia, with a particular focus on the Bandung City waste management system. The second explores the zero waste movement in Indonesia. The third section considers the current SDGs in terms of zero waste in Indonesia as well as the legal framework of household waste management in Indonesia as guidance regarding waste management in Indonesia. The following section then explores gender roles in Indonesia and how their traditional roles relate to handling and managing household waste.

### 3.2. Urban development in Indonesia

Geographically, Indonesia is located in the ASEAN region lying between the Pacific Ocean and the Indian Ocean and shares borders with Malaysia, Singapore, Papua New Guinea, and East Timor. With a total population of 260 million people (UN, 2017) and inhabiting around 6000 islands of the 17,508 islands, Indonesia is the fourth most populous and the world's largest archipelago country in the world as shown in Figure 3.1 (World Bank, 2017). By adopting the national motto of 'Unity in Diversity', Indonesia reflects the multi-diversity of hundreds of ethnicities, culture and languages. Over half of the population of Indonesia is dominated by the two largest tribes: 41% represent the Javanese and 15% represent the Sundanese.

These tribes inhabit the most populous island in Indonesia, the Island of Java (Suryadi, 2016, p. 807). Furthermore, the most highly populated province is West Java (more than 43 million inhabitants), while the least populated is West Papua (with a population of around 761,000 inhabitants) (BPS Statistics Indonesia, 2015b).

**Figure 3.1 Map of Republic of Indonesia**



Economist.com

(Source: The Economist, 2016)

Indonesia is undergoing a process of rapid population; currently 118 million populations live in urban areas (World Bank, 2012 p. 81). According to World Bank projections, two-thirds of the population of Indonesia will live in urban areas by 2025 (2012, p. 81). Aside from the capital city of Jakarta, with more than 10 million inhabitants, other major cities in Indonesia, such as, Bandung, Surabaya, Semarang, and Medan are the most populated cities in Indonesia (see Table 3.1) (BPS Statistic Indonesia, 2014).

**Table 3.1 Largest urban population in Indonesia**

<b>Rank</b>	<b>City</b>	<b>City population</b>	<b>Provinces</b>
1	Jakarta	9,586,705	Jakarta
2	Surabaya	2,765,487	East Java
3	Bandung	2,481,469	West Java
4	Medan	2,097,610	North Sumatra
5	Semarang	1,520,481	Central Java

(Source: BPS Statistic Indonesia, 2014)

The rapidly urbanised population in Indonesia is the result of uncontrolled urbanisation due to the industrialisation and modernisation in the urban areas (Essex, 2016). On one hand, urbanisation provides a positive impact for the urban cities to grow the economy. On the other hand, Dhokhikah and Trihadiningrum (2016) argue that the urban development in Indonesia evokes serious environmental and social risks, particularly in terms of waste management which is the focus of this study, and is driven by uncontrolled consumption patterns, pollution, population density and lack of green spaces due to the massive infrastructure. This section explores waste management in general in Indonesia.

### **3.2.1 The current situation of waste management in Indonesia**

Rencana Pembangunan Jangka Menengah Nasional (RPJMN) or the National Medium Term Development Plan 2015 - 2019 targets almost 100% of waste in urban areas to be sustainably managed (BAPPENAS, 2014, p. 6). However, many studies have acknowledged that waste management remains a major challenge in Indonesia (Meidiana & Gamse, 2010; Aprilia et al, 2013; Amheka et al, 2015; Machmud, 2017). Based on data from the World Bank (2012, p. 81), on average, waste generation in Indonesia reaches 0.52 kg/ capita/ day and 61,644 tonnes/day, and this number continues to rise every year. The BPS Statistics Indonesia data states that until 2013, the waste that was managed and transported to the final landfill reached 24.9% (BPS Statistic Indonesia, 2017). In addition to the waste treatment, according to Meidiana and Gamse (2010, p. 202), 14% of the waste is burned and buried, and 2.9% of the waste is disposed into the river.

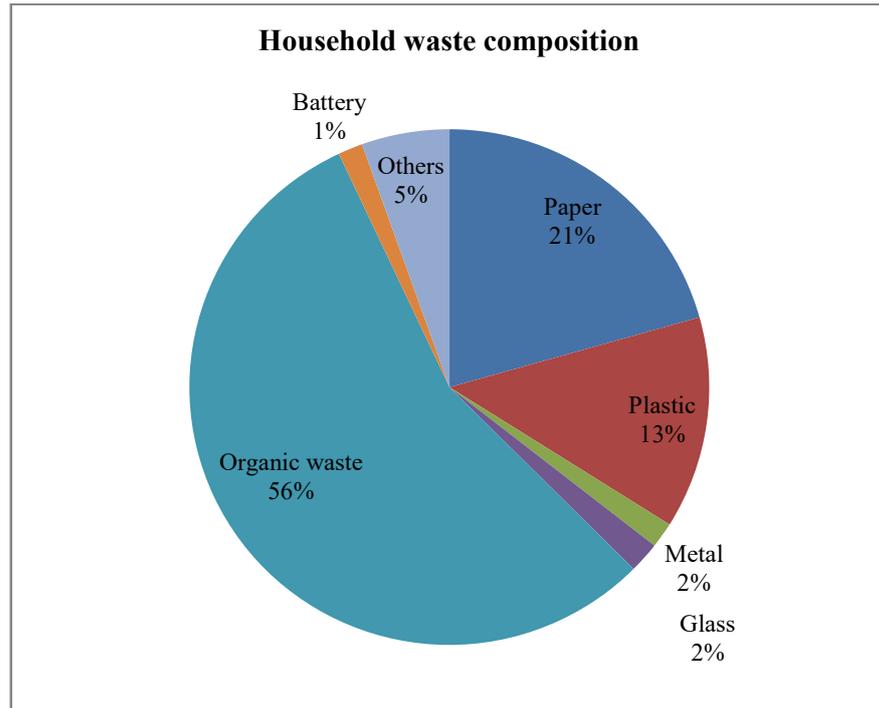
Waste management in Indonesia is complex and multi-dimensional because it involves various underlying factors (Dokhikah & Trihadingrum, 2016). To date, the paradigm of waste management relies on traditional methods, collect-transport-dispose, and 99% of the landfill in Indonesia are open dumps (Machmud, 2015, p. 188). Studies have identified that household waste is the major source of the waste problem in Indonesia since 43.4% of the waste is household waste (Meidiana et al 2010, p. 202; Safitri et al, 2014; Amir et al, 2015; Trihadiningrum et al, 2017). According to the data from BPS Statistics Indonesia (2017), 81% of the household waste is not segregated and, as a result, the waste is mixed and contains toxins, thus it is difficult to process for other purposes (see Table 3.2). Furthermore, 56% of the organic waste, as shown in Figure 3.2, is the most dominant part of the household waste in composition (BPS Statistic Bandung, 2014, p. 122). In fact, only 0.9% of organic waste is converted into compost, while around 10% of the inorganic waste is use for recycling purposes (BPS Statistic Bandung, 2014). These various indicators show that waste management in Indonesia is still far from the expected target of the RPJMN.

**Table 3.2 Percentage of household waste segregation**

Province	2014 (in percentage)	
	Sorted waste	Unsorted waste
<b>Indonesia</b>	<b>18.84</b>	<b>81.16</b>
Jakarta	11.34	88.65
North Sumatera	15.02	84.98
East Java	15.49	84.51
Central Java	22.04	77.96
West Java	22.64	77.36

(source: BPS Indonesia, 2017)

**Figure 3.2 Household composition in Indonesia**



(BPS Statistics Indonesia, 2017)

In general, waste management in Indonesia is handled by the Ministry of Environment and Forestry with support from the local state-owned enterprise named the Sanitation Agency (PD Kebersihan). The Sanitation Agency has roles as collectors, regulators, and supervisors of the waste management in each province. However, the services from The Sanitation Agency are not optimal due to the overlapping roles within the department itself (Amhemka et al., 2015).

### **3.2.2 The zero waste movement in Indonesia**

Over the last five years, many grassroots movements, such as, from individuals, households, and communities, have acted to overcome the waste problem in Indonesia. These grassroots movements are instrumental in spreading the vision of zero waste as well supporting the government in handling waste in Indonesia. The first organisation to advocate zero waste is YPBB Bandung, which is discussed in Chapter 5. Greeneration Foundation focuses on education and campaigns for environmentally friendly behavior through information technology and creative media. The foundation supports eco-friendly economic solutions by producing

foldable reusable bags, and providing waste consulting services for schools, companies and households (Greenaration, 2017). Zero Waste Indonesia (ZWI) is an environmental organization that is concerned about the waste problem in Depok city, West Java. ZWI invites the communities to participate in the waste bank owned by ZWI. The Waste Bank that owns ZWI can produce 200 kg of plastic per day with a turnover of Rp. 30 million per month or NZD \$3,227 (Mohammad, 2016). Other organizations that focus on reducing plastic bags as a means towards zero waste, include Indonesia Movement Plastic Bag Diet which is a national association and their mission is to encourage people to be wiser in the use of plastic bags. Diet means "Wisdom in the consumption" (Diet kantong plastic, 2015). The campaign aims to reduce the excessive use of plastic bags. Similar to the Indonesia Movement Plastic Bag Diet, Bye Bye Plastic Bags is a social movement initiated by teenage sisters in Bali. The organization campaigns to ban plastic bags in Bali by promoting their activism in schools (Bye Bye Plastic Bags, 2017). Their activism has gained so much success that the province of Bali is committed planning to be plastic-bag free by 2018. To date, many environmental movements emerged across Indonesia to spread the zero waste messages.

### **3.2.3 The waste management and the SDGs in Indonesia**

Indonesia is signatory to the declaration of the Sustainable Development Goals (SDGs). Therefore, it has an obligation to implement programmes to achieve the SDGs' targets and monitor progress. Indonesia has committed to achieve the SDGs as a development priority, in accordance with the Nawacita<sup>4</sup> and Rencana Pembangunan Jangka Menengah Nasional<sup>5</sup> (RPJMN) or Medium Term Development Plan 2015 – 2019. In particular, it relates to the objectives of environmental sustainability. However, the implementation of SDGs in Indonesia will face many challenges and refers to the experience of 15 years of the MDGs. Khairanisa (2016) points out that the regional autonomy and decentralization in Indonesia is potentially constraining local governments in terms of achieving the goals and targets of the SDGs. Therefore, in her analysis, Khairanisa (2016)

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<sup>4</sup>*Nawacita* is a program under President Joko Widodo that consists of a nine priority development agenda. This program was initiated to show the priority towards Indonesia's political sovereignty, and independent economy.

<sup>5</sup>*RPJMN* is a development planning document in the long term and medium term in a 5 year period conducted by all elements at the National and regional levels

suggests that local government must oversee the goals and targets of the SDGs by involving a multi-stakeholder partnership, including community engagement and the private sector.

#### **3.2.4 Legal framework of household waste management in Indonesia**

Indonesia sees the importance of the waste management laws of waste problems. In his seminal article, Dyayadi (2008, p. 213) identifies two important aspects of the waste management laws. In terms of the aspect of management, the Waste Management Law is general and universally applied to society, government and the private sector. In terms of the technical aspect, it is related to the provisions of technology, funding, and setting administrative rules, regulations and sanctions (Dyayadi, 2008, p. 213).

The enactment of the Waste Management Law No. 18/2008 highlights shifting from the traditional pattern of waste management from collect-transport-disposal to sort-process-reuse-dispose. This paradigm shift is practically underway in some metropolitan cities, such as, Surabaya and Jakarta, under their Sanitation Departments, which have received support from various NGOs as well as from the private sector (Meidiana & Gamse, 2010). In addition, the law also underscores that the 3Rs method is still applicable in waste management in Indonesia. Thereby, by reducing at the source and at recycling resources through the application of the 3Rs, the people throughout the whole of society are expected to change their practices and treat waste as a resource that is possible to be recovered. Nevertheless, the report of the Indonesia Infrastructure Initiative (2011, p. 5) argues that the “law is considered weak in terms of accommodating regional waste regulations, and promoting Sustainable Waste Management principles.”

The Indonesian Government issued a Government Regulation No. 81/2012. This includes the implementation of regulations for The Waste Management Law No. 18/2008, as well as to serve to strengthen the legal basis for dealing with household waste management in Indonesia. The Government Regulation No. 81/2012, plays an important role in order to protect public health and environmental quality, prevent any accidents and disasters associated with

household waste, as well as to support economical waste activities at the household level. However, in a study by Mulyanto (2013), waste management in Indonesia has not been able to run well because it identifies that there was a gap between the law and the actual plan. Further, Mulyanto (2013) argues that there was no review and public consultation during the establishment of the Government Regulation No. 81/2012 on the household waste management. Thus, the existing policies are not fully integrated and do not fully address current waste challenges.

This section briefly explains the current situation of waste management in Indonesia. The next section discusses the context of gender in Indonesia. This is important to see the background of gender in general and how their role in handling waste in Indonesia.

### **3.3. Gender roles in Indonesia**

The World Development Report in Gender Equality and Development (World Bank, 2012) has revealed that Indonesia has made significant progress in improving gender issues, such as, in the promotion, protection and fulfillment of men's and women's rights in the areas of health, education, employment and well-being through a variety of programmes and development schemes. However, according to a recent report released by the United Nations Development Program in 2016 (UNDP, 2016), Indonesia ranks 113<sup>th</sup> out of 188 in the Gender Development Index (GDI). This recent data shows that the ranking of Indonesia has dropped from the 110<sup>th</sup> in 2014 and is still behind other ASEAN countries. It has been reported that people lack adequate information and understanding of gender rights and gender issues (Robinson & Bessell, 2002). As a result, gender equality has not been achieved, and many programmes have not been able to reach their target (ADB, 2015). In this section, I explore gender roles in Indonesia. Firstly, the evolution of the role of men and women in Indonesia is explained. The second section investigates how men and women in Indonesia handle and manage household waste. The last section relates to traditional gender roles specific to Bandung city.

### 3.3.1 The evolution of men's and women's roles in Indonesia society

Gender in Indonesia is influenced by many factors, including politics, religion and culture (Robinson, 2008; Brenner, 2011; Widayani and Hartati, 2015). In regard to the political factor, gender roles have been influenced by the legacy of Dutch colonisation for more than 350 years. Martyn (2005) notes that during colonisation, women in Indonesia experienced oppression because of their skin color, poor status, and the power the colonists had over them. Furthermore, the colonists considered Indonesian women as a second class. Over a period of time, this ideology still occurred until the New Order regime under the dictatorship of former President Suharto during 1965-1998. The New Order regime constructed gender based on the ideology of *ibuisme* (motherism) and women's *kodrat* (biologically ordained role). It means an understanding which 'promoted a normative vision of women's primary role as wife and mother' and the depolitisation of women's participation in politics (Robinson, 2008, p.5). The New Order had a powerful influence in terms of gender in Indonesia and manifested in state documents, such as, *Garis Besar Haluan Negara*<sup>6</sup>(Indonesian: Broad Guidelines of State Policy) and *Undang-undang Dasar Republik Indonesia 1945*<sup>7</sup> (The 1945 Constitution of the Republic of Indonesia). During the 32 years of the New Order government, women had limited movement and their role was constrained to the private sphere, namely the household (Robinson, 2008).

Shortly after the fall of the New Order regime in 1998, the Reform Era has been regarded as the milestone in redefining gender roles in Indonesia. It is characterized by the increasing number of organizations that are part of the non-governmental women's movement who stand up and attempt to conduct public advocacy programs, and conducting education on the importance of participation for women in any of the sectors throughout society (Robinson, 2008). Then, in 2001, President Megawati became the first female President of Indonesia. Since that time the role of women has increasingly been taken into account in strategic positions, as shown in the cabinet and parliament. In addition, Indonesia's

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<sup>6</sup>*Garis Besar Haluan Negara* is a state guideline of the state administration which is designed by the Indonesian Parliament for a 5 year period.

<sup>7</sup>*Undang-undang Dasar Republik Indonesia 1945* is the constitution of the state government of the Republic of Indonesia that is authorized by the Indonesian Parliament.

constitution and various national laws and regulations have endorsed the significance of protecting the rights, freedom and welfare of men and women. Under The State Ministry of Women's Empowerment and Child Protection, Indonesia continues to move forward towards gender equality in line with The Presidential Instruction No.9/2000<sup>8</sup> (ADB, 2015).

Religion has also become one of the factors that have an influence on gender in Indonesia. As the largest Muslim population in the world, Islam has a significant role in the construction of gender within society (Robinson, 2008). From the Islam perspective, men and women are seen as equals under God. On a practical level, Islam has given detailed guidance concerning the roles of men and women as stated in the Qur'an verse 34 of Surah An-Nisa. The Qur'an recommends that men are the guardians of women, and thus responsible for earning the livelihood for the family and the man is also considered as the head of the family. Women, meanwhile, are responsible for housekeeping, childcare, and are to be obedient and protect their honor and integrity to their husband (Adamson, 2007). However, at the same time, women are given a degree of autonomy to provide their own income, but this autonomy is exercised only under the permission of the husband in order not to violate Islamic principles (Hashim, 1999). According to Hashim (1999), such division is merely considered as equally important in the efforts to bring about the justice of men and women in society. As the findings by Millie (2011, p. 165) show in a study regarding preaching in Bandung city, in West Java, men are mostly responsible to the managerial aspect of the Mosque. In contrast, women, have no role in the managerial level and are treated as 'knowledge-seekers and pleasure-takers' who are responsible for spreading the Islamic knowledge to the family. Further, in West Java "some of Islamic society supports an ideological framework that appears to cast women as secondary servants of Allah" (Millie, 2011, p. 162). However, Adamson (2007) suggests that men and women have different knowledge and interpretation in viewing gender from the perspective of Islam.

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<sup>8</sup>The Presidential Instruction No.9/2000 in National Development enacts promotes gender equality within the family, society and nation.

Another factor is the cultural system that is deemed as the main factor that influences the gender system in Indonesia (Puspitawati, 2012). With the diverse culture that exists in Indonesia, there are differences in the gender roles in each ethnic group. The cultural system that dominates in Indonesia is a patrilineal system that traces a person's descent through the father or the male line, and while a matrilineal system also exists within Indonesian society, it serves as a minority. In a study setting in Bali, Indonesia, the uniqueness and distinctiveness of Balinese culture cannot be separated from a patriarchal culture that comes from the patrilineal system embraced by the Balinese people (Widayani & Hartati, 2015). Nevertheless, in this modern era, the Balinese people are capable of embracing the changing paradigms. Even so, this kinship system is certainly very contradictory to the view of Hinduism as a religion which is the predominant faith of the Balinese people which glorifies women, and even considers women as strength for men (Gelgel & Ras, 2016).

Similarly, in the Javanese culture women are considered as “konco winking” or friend in the back, which implies a “woman's role is to sit behind her husband (both a literal and figurative custom) and support him as he needed” (Adamson, 2007, p. 19). This can be seen in the position of men and women in marriage, inheritance and its role in the social life in the community. While women today have gained better education, rights and knowledge, the patriarchal system in Indonesia is difficult to overcome, since it has been ingrained for so long within the family and the national level, thus, having a direct impact on the roles of men and women.

### **3.3.2 Gendered household roles in Bandung city**

The major tribe in West Java is Sundanese, including in Bandung City, which is the second-largest ethnic group in Indonesia (Suryadi, 2016, p. 807). The Sundanese culture views gender similarly to the majority of the ethnic groups in Indonesia. In a study conducted on the gender socio-cultural construction, Puspawati (2012) explains that Sundanese culture plays a major factor in determining such roles of women and men in families and communities and that it is driven by a patriarchal system. In the Sundanese culture, a man is not allowed to perform any activities

related to domestic chores, such as cooking, sweeping and cleaning. For men these activities are considered taboo. Since childhood, Sundanese women have been trained to carry out domestic chores, such as cooking, washing clothes, and girls are educated to be good wives. This culture reflects that a good wife should allow her husband to decide family matters. These aspects are reflected in two popular proverbs which emphasize the lack of initiative and bargaining power of Sundanese women “istri mah dulang tinanden” (women are like an empty rice platter waiting for the man to fill it) and “najan dibawa ka liang cocopet, oge daek” (women are only the followers of their husbands, either in a sad or a happy situation) (Puspitawati, 2007). A wife who works outside the house often still retains the primary responsibility of childcare and housekeeping equal to the wives who do not work, meaning excessive and burdensome workloads for women to men. Therefore, power-sharing between women and men, and education is identified as a crucial means to achieve equal roles of gender in Bandung city (Turgarini, 2012).

### **3.3.3 The roles of men and women in handling household waste in Indonesia**

About 70% of the waste in Indonesia originates from residential areas (Amir et al, 2016, p. 62). This fact indicates that waste reduction requires greater participation on the part of householders. Therefore, the role of men and women is important to manage household waste (Abadi, 2013). Studies have been conducted for the purpose of exploring the role of men and women in managing waste in Indonesia (Abadi, 2013; Susilowati, 2014; Dhokhikah & Trihadiningrum, 2016; Amheka et al., 2015).

According to the study by Abadi (2013), in Semarang city, Indonesia, the participation of women in domestic waste activities is significant because handling waste management is one of the regular household chores handled by women. Further, Abadi’s study showed that women are mainly involved with waste-sorting activities and composting. In relation to the patriarchal system, a study by Sari (2012) showed that women in Probolinggo city attempt to address environmental issues. Within the patriarchal frame, women take up more responsibility in terms of handling waste thus enabling them to gain equal access, participation, control,

and benefit in waste management activities. Study findings by Utami et al. (2008) have revealed that education is crucial as a means to improving the waste management at the household level.

With their nurturing and caring instinct, women in Jakarta act as the key agents and the educators to teach their family how to separate waste into different categories (Utami et al., 2008). Meanwhile, research by Susilowati (2014) in Lombok city found that males have less involvement in waste management because they are not familiar with the process and have limited time to manage the household waste due to their work outside the home. This finding is also confirmed by Abadi, in that men are more concerned or familiar with the work relating to the infrastructure of their neighborhood rather than handling household waste in their home (Abadi, 2013, p. 91).

As such, community organizations at the household level in Indonesia have a major role in terms of empowering women or mothers to fully engage in waste management. Amheka et al. (2015) pointed out that an organisation, namely, Pembinaan Kesejahteraan Keluarga, (PKK) or Family Welfare Organisation, in Surabaya, has encouraged women's participation in household organic waste composting at the community level. Similar to Amheka et al. (2015), in a study conducted in Bali, a group of women *arisan*<sup>9</sup> initiated waste management activities in the Village of Sanur Kaje due to the increasing population and waste generation in their village (Wardi, 2011, p. 171). These communities positioned a woman to become an active cadre of the households, as well as an agent of change within their neighborhood to live in a clean and healthy environment. Therefore, from these various studies, it can be seen that the majority role of handling waste in Indonesia remains the responsibility of women that is embedded within their traditional gender roles.

### **3.4 Chapter summary**

This chapter explores the Indonesian context regarding waste management, zero waste, and gender roles in Indonesia. While waste management in Indonesia is still

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<sup>9</sup>*Arisan* is a regular social gathering where a kind of lottery is conducted and members take turns to win an amount of money previously deposited by all members

far from the goal of a sustainable waste management system of 100% waste free by 2020, many attempts have been made by government, society, NGOs and those in the private sector to manage and reduce waste. Indonesia must consider strong partnerships with various local governments, the private sector and communities to achieve SDG's. The legal framework as the basis of waste management in Indonesia is considered weak in managing waste properly. Meanwhile, the patriarchal system is dominating the gender roles in Indonesia and is driven by many elements, such as, religious, political, and cultural and it has been embedded over many years. Therefore, most of the women in Indonesia hold the primary responsibility of household chores and handling waste.

After explaining the literature review and the contexts in Indonesia, the next chapter presents the methodology and data methods used to conduct this research.

# CHAPTER FOUR:

## Methodology

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### **4.1 Introduction**

This chapter discusses the approach and methods employed in this study. The first section includes a discussion of the qualitative research methodology. The second section explains a description of the fieldwork experiences. The third section explains the methods used for data collection. Subsequently, the fourth section explains the procedure and the technique for the data analysis. The chapter concludes by summarizing issues concerned with ethics and includes some reflections on the fieldwork.

### **4.2 Research methodology**

Considering the methodology is crucial for conducting research, Hussey and Hussey (1997, p. 54) points out that methodology is “the overall approach to the research process, from the theoretical underpinnings to the collection and analysis of the data”. This study attempts to gain a deeper understanding of gender roles in valuing and practising a zero waste lifestyle in daily life. Therefore, the most appropriate methodology to explore the experiences of men and women practising zero waste is the qualitative approach. According to Creswell (2007, p. 39) qualitative research is employed for the purpose of exploring a problem or an issue. In order to gain a detailed understanding of a complex issue, a researcher wants to understand the context or settings in which participants in a study live. Most importantly, a researcher wants to empower individuals to share their stories as they relate to an issue. Qualitative researchers believe that truth is dynamic and can only be found through the study of people through their interactions with their social situation (Mayoux, 2006). Snape and Spencer (2003 p. 7) assert that qualitative research examines participants' perspectives with strategies that are flexible, and aimed at understanding social phenomena from the point of view of the participants.

There are three reasons that motivated my selection of qualitative methodology:

- Firstly, the use of qualitative research was informed by my wish to comprehend and interpret social phenomena in a naturalistic setting (Stewart-Withers, Banks, McGregor, & Meo-Sewabu, 2014, p. 59).
- Secondly, in order to understand such social phenomena, the qualitative methodological approach uses multiple sources of data (e.g interview, observation, and a focus group) that allow for the exploration of experiences from the participants (Creswell, 2009, p. 175).
- Thirdly, the importance of the participants' meaning in regard to the issue of waste and what participants' interpretation brings to the study rather than focusing on the meaning of myself as the researcher (Creswell, 2009, p. 175).

Therefore, using a qualitative research approach gives me the opportunity to explore rich, robust and in-depth information from the perspective of the participants as it relates to this research. Denzin and Lincoln (2011, p. 3) noted the strength of qualitative research as “a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible”.

The use of a case study approach is considered an appropriate research strategy in this study. A case study is “strongly associated” with qualitative research in many ways (Lewis, 2003, p. 51). As described by O’Leary (2014), a case study is:

a method of studying elements of our social fabric through a comprehensive description and analysis of a single situation or case, e.g., a detailed study of an individual, setting group, episode, or event (p. 194).

According to Yin (2014), a case study is appropriate to answer a “how” and “why” research question. A case study approach is an effective way to comprehend the concrete and practical aspects of a phenomenon or community. The Zero Waste community was employed for the case study because this community is known as the first community that advocates zero waste in Bandung, and Indonesia more broadly. This study employs a single case study which focuses on individuals, specifically men and women, in the zero waste community, who share similar

experiences from the YPBB Bandung zero waste lifestyles training. According to Baxter (2010, p. 95), case studies may be used to understand and solve practical problems relating to the case alone, and they may be used to test, expand, or generate explanatory theoretical concepts. Yin (2014) identifies case studies to understand phenomena within a particular context by using multiple methods of data collection. A case study approach can provide rich, insightful descriptions of lived realities because it can include different types of data to describe, analyze and evaluate interactions within a particular context. The complexity and uniqueness of a Zero Waste community in exploring the zero waste lifestyle practices, requires an in-depth investigation in order to understand the relationship and its effect on gender roles at the household.

However, applying a case study also has limitations. Hussey and Hussey (1997, p. 67) noted that the research process can be very time-consuming because it involves various data collection methods. Another weakness of a case study, as identified by Baxter (2010), is generalisation. Generalisation in social research concerns “the potential for drawing inferences from a single study to the wider population” (Lewis & Ritchie, 2003, p. 285). Since a case study approach is an in-depth study, the study is therefore less extensive. The findings of the case study are also difficult to generalise under such circumstances, since the results of the finding are valid only in one particular situation. In my case, the result of my study of how men and women perceive and behave towards zero waste may be applied in some places with similar Indonesia contexts and characteristics, but not to all countries.

#### **4.3 Planning for fieldwork**

This section focuses on explaining the fieldwork, which was conducted in Bandung city from 18 June - 4 August 2017. This section discusses the selection of the participants and the criteria in selecting the participants. Meanwhile, Chapter 5 provides a detailed description of the research location of Bandung city.

### **4.3.1 Gaining access to the Participants**

Working with participants in qualitative research is crucial to gain in-depth and rich information (Creswell, 2009). In this study, the participants were selected by using a purposive sampling method. A purposive sampling method was used to make sure that “certain types of individuals or persons displaying certain attributes are included in the study” (Berg, 2007, p.44). In qualitative research, the number of participants may change depending on the circumstances. As O’Leary (2014) pointed out, the number of participants will always change and the final number of research participants depends on the situation in the field and to what extent data saturation is achieved. Before my fieldwork started, I contacted YPBB Bandung by email to inform my intention to conduct research in Bandung city, and asked for a list of people from the community that I could follow up. The process of recruiting the participants was smooth. I contacted 14 people through text and introduced myself as a Masters’ student. 13 people agreed to participate in the research and one person declined due to lack of available time. Meanwhile, in contacting the family members, I asked the permission from members of the zero waste community to interview their family. Only four people of family members agreed to be interviewed alongside their relatives.

The householder members of the Zero Waste Community were the main participants of this research (see Table 4.1). Participants were selected based on gender, training received from YPBB Bandung, based on the fact that they actively practise a zero waste lifestyle in their daily life, and the length of time that they had been involved in the community. These participants “relate to specific experiences, behavior, and roles” (Ritchie et al., 2003, p. 78). They participated in the zero waste training and joined the Zero Waste Community because of their concern about waste in Bandung.

**Table 4.1 List of householder participants of Zero Waste Community**

<b>List of participants</b>				
<b>Pseudonyms</b>	<b>Gender</b>	<b>Data collection methods</b>		
		<b>Focus group</b>	<b>Semi-structured interview</b>	<b>Observation</b>
Faisal	Male		✓	✓
Indra	Male		✓	
Hilman	Male		✓	✓
Adit	Male	✓	✓	
Arif	Male	✓	✓	✓
Arya	Male		✓	
Ahmad	Male		✓	✓
Rizki	Male	✓	✓	
Rara	Female		✓	✓
Siti	Female	✓	✓	
Neni	Female	✓	✓	✓
Wulan	Female	✓	✓	
Neneng	Female	✓	✓	✓

This research involved key informants with specific expertise of waste in Bandung city. A key informant has a thorough knowledge and a special understanding of the subject we are investigating. With their presence, insight can be given into the nature of the problem and recommendations for solutions can be made (Davidson & Tolich, 1999, p. 229). This research has involved staff from YPBB Bandung as the umbrella organization of the Zero Waste programme as key informants. This included the Director of YPBB Bandung, the programme coordinator of the zero waste programme, and staff members (see Table 4.2). As key informants, they were interviewed to provide insight about the current waste management situation in Bandung city, to explore the Zero Waste programme in Bandung and to clarify the data collected from the participants. Another key informant was from the Sanitary Agency of Bandung city. The purpose of his interview was to gain information about the situation of waste management in Bandung city and the city government programme to solve waste.

**Table 4.2 List of key informants**

<b>List of key informants</b>			
<b>Key informant</b>	<b>Organisation</b>	<b>Gender</b>	<b>Date of interview</b>
NGO Worker 1	YPBB Bandung	Male	July 4
NGO Worker 2	YPBB Bandung	Female	July 13
NGO Worker 3	YPBB Bandung	Female	July 17
NGO Worker 4	YPBB Bandung	Male	August 1
NGO Worker 5	YPBB Bandung	Male	July 5
Sanitary officer 1	Sanitation Agency of Bandung city	Male	July 17

In addition, to ensure rich and robust information, the family members of the zero waste community were also asked to participate in the research (See Table 4.3). The family members were selected because it was important to explore their views regarding their relatives' practice of a zero waste lifestyle, as well as the coping strategies of the family members in adjusting to a zero waste lifestyle. However, not all family members participated in the YPBB Bandung zero waste training. Rian, the husband of Wulan, was the only family member who participated.

**Table 4.3 Participating family member**

<b>List of family member</b>				
<b>Pseudonyms</b>	<b>Gender</b>	<b>Family member of</b>	<b>Type of relationship</b>	<b>Zero waste training</b>
Dian	Female	Arif	Wife	
Gama	Male	Siti	Husband	
Rian	Male	Wulan	Husband	✓
Tuti	Female	Ahmad	Mother	

#### **4.4 Data Collection**

Qualitative research is used for this research because it can give a deep understanding of “a complex picture of the issue” by applying multiple forms of data from different sources (Creswell, 2009, p. 17). This research employed various methods including a focus group discussion, observations, and semi-

structured interviews, all of which are discussed in this section. The entire group of participants requested to start the data collection phase after the Eid al-Fitr celebration, which was during the third week of the fieldwork.

#### **4.4.1 Focus group discussion**

A focus group discussion was employed in this study as an opportunity for participants to discuss a topic. The focus is upon the interaction within the group and the joint construction of meaning (Punch, 2016). A focus group allows researchers and informants to discuss intensively and in a non-rigid manner in terms of discussing a specific issue (Davidson & Tolich, 1999). Moreover, researchers can gather information quickly and constructively from participants who have different backgrounds. In addition, the group dynamics that occur during the focus group often provide important, interesting and, sometimes, even unexpected information and also inhibiting features (Creswell, 2009).

Only six householders joined the focus group. The other six were unable to attend because of time unavailability (for the list, see Table 4.1). These participants consist of three males and three females. The role of facilitator is crucial in conducting a focus group. If a facilitator does not have facilitation skills, it would be difficult to conduct the discussion in a focus group (Stewart-Withers et.al, 2014). My research assistant was the facilitator for the focus group, and I was the co-facilitator which made it possible to also observe the focus group and to take notes. At the beginning of the focus group, he explained the rules of the focus group and encouraged everyone to be able to speak freely in each other's presence in terms of considering others and being respectful in regard to good manners.

I used several focus group activities or activity-oriented questions during the focus group (see Appendix 2). This is important because it makes focus groups more enjoyable for the participants rather than simply a question and answer format. At the same time, according to Colucci (2007, p. 1422) "these activities can help focus the group's attention on the core study topic and also make a subsequent comparative analysis more straightforward". Therefore, I chose free listing, pile sorting, and pairwise ranking for the focus group activities. First, participants were asked to list zero waste activities in their daily life. After they wrote the answers,

they discussed the answers as a whole group. The reason I chose the free listing activity is because it is a simple and an effective activity to stimulate further discussion (Bernard, 1995). Indeed, the discussion was lively because as they shared their activities, they inspired the others to do the same.

The second activity was pile sorting. Pile sorting is an activity in which participants sort pictures or cards and group them based on similarity. In my case, the facilitator showed the symbols of women and men. Then the facilitator, asked the participants to sort their list of answers based on the gender activities they are doing at home. According to Colucci (2007), this technique is beneficial to explore individual understanding. From this activity, I wanted to see the big picture of whether a man or a woman has a greater role in practising zero waste, and also what activities were practised by each.

The last activity is pairwise ranking. Pairwise ranking is a ranking list that helps to decide the important issues. There were two questions that I asked: “What are the most important activities in zero waste lifestyles?” and “what are the most challenging issues in practising a zero waste lifestyle”. Then, all participants made list of the answers and ranked based on the priority (see Figure 4.1). During the pairwise ranking activity, I changed my role to become the facilitator because I had a greater comprehension of the tool than my research assistant. After I explained the pairwise ranking and how to conduct it, the participants were divided based on gender (see Figure 4.2). My research assistant and I accompanied the participants to facilitate the process. I accompanied the female group while my research assistant sat with the male group participants. The reason I divided the group based on gender was because I wanted to see the difference in preferences between men and women in practising zero waste. The results from this activity helped me to determine the issues that required further exploration in the interviews. The data gathered from the focus group was important to be triangulated with the findings from the interviews and the observations.



Figure 4.1 The list of answers for pairwise ranking (source: Author)



Figure 4.2 Focus group with the participants in pairwise ranking session (source: Author)

#### 4.4.2 Observations

This research used observations that, according to Stewart-Withers et al. (2014, p. 64) “requires the researchers to immerse themselves in the place or society they are studying”. The advantage of observation was to investigate the daily life of the

participants in a natural setting (Davidson & Tolich, 1999). The use of observation is to collect targeted information in terms of understanding the reality of zero waste practices at the household level in the context of gender roles. Prior to observations, I asked each of the participants for their permission with respect to whether I could come to their house or follow their activities for a couple of hours. Only seven of the 13 participants allowed me to come to their house and observe the zero waste activities that they carried out at home. The rest declined my request for various reasons, such as, they would possibly be embarrassed if I came to their house because they were not practising 100% zero waste or for some other reason because of limited time availability.

This method was important for me to deepen my understanding of the attitudes and behaviours of the men and women as they practised zero waste in their everyday life. While observing my participants carrying out zero waste activities, I conducted active interviews. I asked questions, such as, 'What motivates you to carry out such an activity?' or 'Who is mostly preparing the waste separation bins?'. These questions were derived from my interview guidelines. By asking these questions, I was able to make greater sense of these activities.

Although the process of observation is powerful, it can also be challenging. I was aware that during the observation process, the participants might not always act the same as when they were not being observed, and there was the possibility of bias or misinterpretation of activities that I observed (O'Leary, 2014). Thus, to mitigate bias, I used two recording methods. Firstly, I wrote fieldwork notes right away to identify the important behaviours that occurred during the observation. Secondly, with their permission, I used photographs to capture activities about participants' daily life habits, such as, cooking, shopping, disposing of the waste and composting. It was important for my understanding to capture men's and women's household zero waste practices (Davidson & Tolich, 1999).

#### **4.4.3 Semi-structured interviews**

I also used semi-structured interviews. These interviews allow for a flexible structure and work in a natural flow while still following the interview guideline (O'Leary, 2014, p. 218). This flexibility is significant because it allows some space

for the researcher to face a possible unexpected issue that may emerge during the interview process (Mason, 2002). I conducted the interviews between the third and sixth week of the fieldwork. Most of the interviews were held for about 45 minutes to one hour. The interviews were the crucial stage in my fieldwork and they were conducted following other methods, such as, observations and focus group. The purpose of this method was to gain in-depth information on how participants practised their zero waste lifestyles, and I focused on the gender role played by the participants at the household. According to Davidson and Tolich (1999), a semi-structured interview provides a powerful insight into people's opinions, beliefs and values in regard to a particular issue. Aside from using an interview template (see Appendix 1) as my guide, I used the findings from the focus group and observations to obtain more detailed, specific and unpredictable information from the participants. These methods were pivotal to triangulate and validate my data to ensure that my understanding and interpretation were correct.

The interviews were conducted in a comfortable and relaxing atmosphere for the participants. The participants had to choose the time and location that was suitable for them. Before the interview began, I explained the process and the theme of the interview, including the use of the voice recorder and their rights to decline to answer any question. All of the conversations were conducted in Bahasa Indonesia, although some of the participants occasionally used the Sundanese language. In this case, if I did not understand, I asked them to translate it in Bahasa Indonesia, or my research assistant translated for me.

#### **4.5 Data analysis**

Qualitative researchers are required to be able to produce raw data, such as, voice-recordings from interviews and the focus group, photographs, and fieldwork notes into the form of descriptions, narratives, stories, written and unwritten documents (e.g. photos), as well as other non-numerical forms (Richards, 2014). Analysis is an important part of the research. It is a big challenge for researchers to be able to analyze and interpret such data into what is meaningful research (Spencer et al., 2003). However, before I started analyzing, I transcribed the voice-recorded data to ensure it was accessible to analyze. I transcribed the entire voice recordings into

Word documents while I was in the field so that I could check information straight away and clarify any details if necessary. The transcriptions were originally in Bahasa Indonesia, and then translated into English.

Thematic analysis was chosen as the method for data analysis. According to Braun and Clarke (2012, p.58), “thematic analysis is a method for systematically identifying, organizing, and offering insight into patterns of meaning (themes) across a data set”. In the thematic analysis stage, there are several steps that need to be taken. After I familiarized myself with my data including the transcriptions, photos and fieldwork notes, in order to grasp the big picture, I manually coded every paragraph in the transcription. All of the codes were then moved to an Excel document. Then, each code was compared and categorized based on similarity or patterns. At this stage, I removed any information irrelevant to the research question and objectives. From the similarities, I then found the themes from the codes that had been categorized. During this stage, I continuously re-read the transcripts because the data analysis is a cyclical process. Stewart-Withers et al. (2014, p. 75) point out that data analysis is challenging because the researcher must re-examine the data and determine whether it makes sense or not and, importantly, ascertain if it achieves the research aim and answers the research questions.

#### **4.6 Ethics**

Conducting ethically sound research is imperative in the context of human participants. Prior to my fieldwork, I carefully discussed the ethical concerns with my supervisors. As a Development Studies Masters Student, I had to obtain two ethics approval: the in-house ethics of Institute of Development Studies and Massey University Human Ethics Committee (MUHEC). This research was considered low risk research by MUHEC.

The information sheet and consent forms were very important as part of research (Banks & Scheyvens, 2014). I provided a written information sheet and consent form in full detail and included all the relevant information about the participants, including what participation would be involved in this research (see Appendices 4

and 5). I translated the information sheet into two languages; English was used for the ethics process requirement and Bahasa Indonesia was used to meet the language preferences of the research participants (Massey University, 2015).

Generating the data for this research could potentially result in a 'conflict of interest' between the participants and me because I had worked previously for YPBB Bandung from 2011-2014, and I was involved in their zero waste campaign programme (Banks & Scheyvens, 2014, p.171). Most of the participants were already aware of my position as a former zero waste campaign staff member. These prior relationships potentially made the process of collecting the data smoother. However, this situation could make a participant feel compelled to answer some of the questions from a positive perspective and say that they practise zero waste properly. As Wolf (1996) suggests, a researcher should be fully aware of their position might affect the research process. Hence, I clearly explained about the purpose, my role, and how they were selected to be invited in my research at the time I approached them. This was important to clear any potential conflict of interest and reduce any discomfort or hesitation on the part of the participants.

Gender-related research requires sensitivity on the part of the researcher to meet the ethical issues during the data collection. I was aware that my position as a female researcher could be a barrier while interviewing male participants. Hence, having a male research assistant helped me when encountering gender issues during data collection. My research assistant accompanied me during the interviews with the male participants or the couples. He also accompanied me when I interviewed a husband and wife. Considering that the research is exploring gender roles at the household, some of the interview questions specifically asked about their personal habits. The research assistant helped me to ask personal questions of the male participants so that they could express their opinions freely. This was intended to ease any possible uncomfortable situation between the male participants and myself (McLennan et al, 2014, p. 153).

Reciprocity is one of my ethical concerns in this research. Before I returned to New Zealand, I invited my participants to have a meeting to share my fieldwork process. This is to show them that they are the important part of my research (Banks & Scheyvens, 2014). However, the meeting was cancelled due to the limited time of the participants. Instead, I sent emails to them expressing my gratitude for their participation in my research, saying farewell and, importantly, sending the summary of my fieldwork. In addition, I visited the YPBB Bandung to thank them for their support for my research and to “signal an official end to fieldwork” (Kindon & Cupples, 2014, p. 229). Providing gifts is considered ethical, which is, according to Banks & Scheyvens (2014, p. 176) “showing appreciation to those who have assisted you and given up their time to help the research.” I gave the participants souvenirs based on zero waste principles, a canvas tote bag and organic chocolate to support and motivate their zero waste lifestyle.

#### **4.7 Validity and reliability**

In this study, by using a variety of data collection methods, I was able to control and also acknowledge my biases and generate credible data from different perspectives through triangulation (O’Leary, 2014). The triangulation of the data enabled me to check the data from one source and compare it with the other sources. For this reason, the information gathered from the different actors will be able to be verified by the other participants, and consequently will ensure the validity of the findings of the research (Hussey & Hussey, 1997, p. 74). The fieldwork notes are pivotal in recording the day-to-day experiences involved with conducting the research that supported my findings during the writing of the analysis of the research. I used my notes to reflect on findings from the interviews, the observations and the focus group. Reflection was an important process during my research. During my fieldwork, I continuously wrote a reflection at the end of the day. I recalled the data collection process on that day and wrote anything I thought of as well to reflect on the methods used. This process was significant to ensure that I could maximize my data and improve on the methods used.

By the end of my fieldwork, I sent a summary of the fieldwork to the participants. By sending the summary, they could revise or correct their statements or my

misunderstanding and misinterpretation of their statements. Hence, I could maximize the validity of this research. The role of the key informants and the family members was also crucial to crosscheck the statements of the zero waste members or 'respondent validation' (Merriam, 2009, p. 217). These methods were pivotal to triangulate and validate my data to ensure that my understanding and interpretation was correct.

#### **4.8 Lessons learned from the fieldwork**

The research was a "mind-blowing" experience for me. Firstly, it was a great opportunity to do research in my home country, Indonesia, and at the same time to conduct research about zero waste in Indonesia since I am really interested in this. Secondly, I gained experience to apply various methods of data collection for my research. My skill as a researcher was tested as, while in the field, I learned how to use these methods to generate high-quality data, because different methods have their own uniqueness and characteristics. Thirdly, in terms of personal experiences, I met the participants and they shared their inspiring stories with me about how they were devoting their lives towards a better future. This research has redefined my life goal as a person who is really passionate about and concerned with zero waste principles in Indonesia, in particular, even more so after I interviewed my participants. Last of all, I was able to maintain my close relationship with YPBB Bandung and this gave an advantage in supporting my fieldwork. YPBB Bandung contributed to my knowledge on zero waste and waste management in Indonesia and this has been extremely valuable for my research. At the same time, connecting zero waste with gender had not ever been taken into consideration by YPBB, thus this is my contribution to the shared knowledge.

#### **4.9 Research Limitations**

Many unexpected occurrences emerged while conducting this research. Thus, flexibility is an important component while conducting qualitative research. I was able to identify the limitations of this research as part of my "reflexivity" (Cupples & Kindon, 2014, p. 244). In my fieldwork plan I intended to conduct a gender analysis, thus I prepared a form that related to a gender activity profile. I handed out the form during the focus group and interviews, and the form could be

returned before I left to return to New Zealand. However, from 13 forms, only four were returned by the participants since they were busy people. I kept reminding the participants after I had arrived in New Zealand, still no-one sent in their form. Therefore, I dropped the activity profile out of my data collection because the four activity profiles from three women and one man were not adequate to represent the gender analysis.

#### **4.10 Chapter summary**

In this chapter, I have discussed the methodology used for my fieldwork. The purpose of qualitative research is to gain a deeper understanding of why and how men and women practice a zero waste lifestyle in their everyday lives. The Zero Waste community was employed for the case study because this community is known as the first community to advocate zero waste in Indonesia. A range of data collection methods were used to explore gender roles in practising zero waste. With 23 interviews, a focus group and seven observations, I was able to generate very useful data. The use of different methods was pivotal to triangulate and validate my data to ensure that my understanding and interpretation was correct. Using thematic analysis, I read thoroughly all the interview transcriptions and manually coded every paragraph in the transcription. The ethics approval from MUHEC was crucial to conduct research that incorporates with ethical acknowledgements such as the information sheet, conflict of interest, gender issue, a research assistant and reciprocity. This chapter concludes with reflections from the fieldwork based on the positive experiences and limitations that I encountered during the fieldwork. The next chapter explains the case study of this research.

# CHAPTER FIVE:

## The case study of zero waste in Bandung city and Yayasan Pengembangan Biosains dan Bioteknologi (YPBB) Bandung

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### 5.1 Introduction

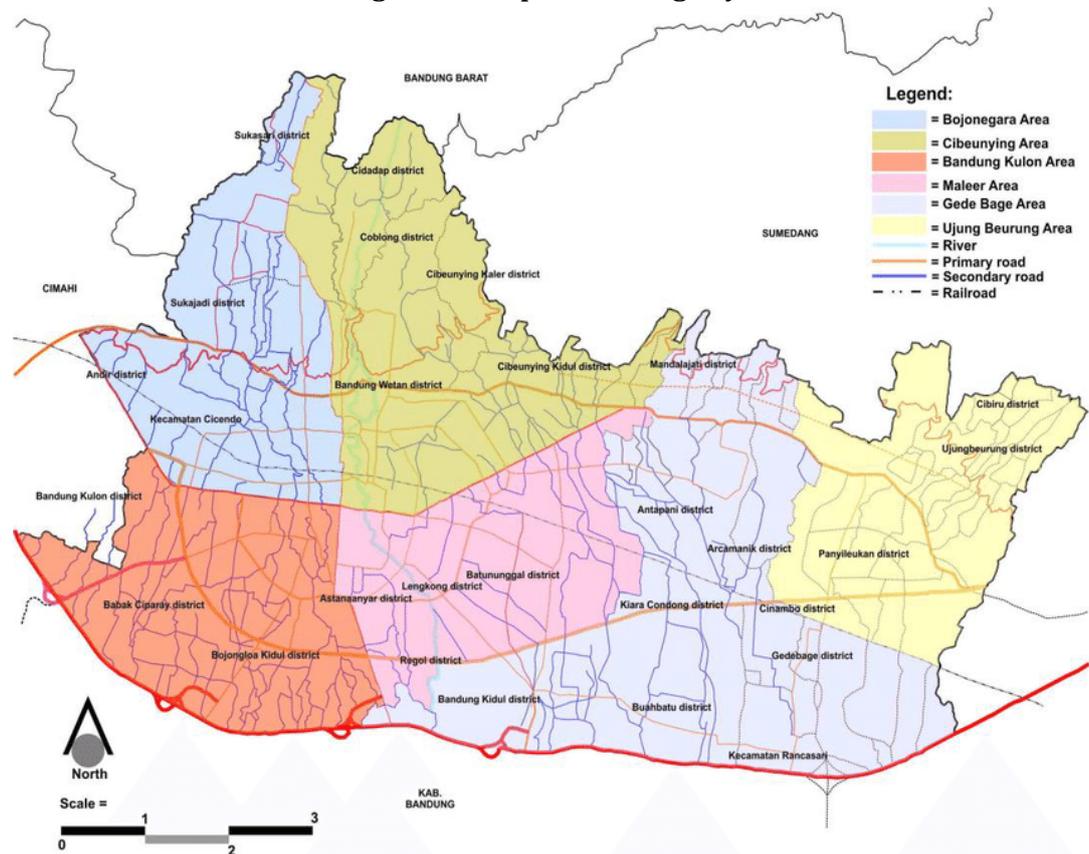
This chapter is devoted to introducing the case study of zero waste in Bandung city and the Zero Waste Community of YPBB Bandung. This chapter gives a brief explanation about the demographics of Bandung city and the current situation of waste management in Bandung city. This includes the programme from Bandung City Council implemented to solving waste problems since Bandung once was known as “Bandung City of Waste”. In this chapter, I also provide interview information from the NGO staff of YPBB Bandung and an official from Sanitation Agency about the progress of waste management in Bandung city. The chapter then discusses zero waste in Bandung and how the progress is to date. This section incorporates an introduction about YPBB Bandung and their role to promote and advocate zero waste in Bandung city. The perspectives of the householder participants after they had received zero waste training from YPBB Bandung are given.

### 5.2 Bandung: the green urban city

Bandung city is the third most populous city in Indonesia with a total population of 2.4 million inhabitants (BPS Statistics Bandung, 2016). Known as the City of Flowers, Bandung is the capital of the West Java province and is also known as the Paris Van Java of Indonesia. The name was given by Dutch colonists at the time because the atmosphere resembles Paris with the art deco architecture. Bandung is surrounded by two active volcanoes. This setting causes Bandung to have a slightly different climate compared to other cities in Indonesia. Therefore, due to the cooler, pleasant climate, Bandung enjoys a reputation as one of the local and

international tourism destinations in Indonesia. Just two-hours away from Jakarta, Bandung city (see Figure 5.1) is an emerging city and the potential of the area is driven by a massive growth of infrastructure.

**Figure 5.1 Map of Bandung city**



(Source: Permana & Wijaya, 2017, p. 3)

### 5.2.1 Waste management progress in Bandung city

A devastating tragedy that happened in 2005 turned Bandung city into the “Bandung city, sea of waste” (Ramadhan et al, 2016, p. 32). Recorded as the second worst landfill landslide in the world, the Leuwigajah landfill landslide killed 156 people and buried 71 houses (Lavigne et al., 2014, p. 11). Heavy rainfall for three days in a row caused 2.7 million cubic meters of waste landslide and covered the area of three settlements. After the catastrophic incident, the waste in Bandung city could not be transported to the final landfill because Leuwigajah was the one and only final dumpsite in Bandung city. As a result, the waste piled up in lanes and on the roadside and it became a temporary dumpsite for months. Since then,

the waste has been a serious problem in Bandung city and sustainable solutions are under investigation.

West Java Province is the largest province in terms of producing waste in Indonesia. The same problems also occurred in Bandung city that generates 1.12 kg of waste / person per day (Amir et al, 2015, P. 62). To date, the Sarimukti landfill is the only final landfill in Bandung area that covers three regions that include Bandung, Bandung Barat and Cimahi and accommodates 1200 tonnes/waste per day. While Bandung city alone transports 1100 tonnes of waste per day (Sanitation Agency, 2017), the rest of the waste is transported from Cimahi city and from the Bandung Barat district. According to Ramadan et al. (2016), the Sarimukti landfill is almost at maximum capacity and will be closed in the next four years. According to Sanitary Officer 1, in one of the temporary landfills in Bandung city, there is an increase in the volume of waste that is normally transported from once a week to twice a day. Meanwhile, there are around 160 temporary landfills in Bandung city based on data from the Sanitation Agency in Bandung (2017). Therefore, a proper sustainable waste management system is urgently needed to replace the current landfill.

Considering that many constraints may hinder a sustainable waste management, the local government under Mayor Ridwan Kamil initiated various programmes to manage the waste in Bandung city. Since 2012, Bandung city is the first city in Indonesia to enact a local regulation no. 17/2012 on the reduction of the use of plastic bags (Octaviani et al., 2017). As a result, in 2015, the law inspired the Minister of Environment to issue a Free Plastic Bags policy and Bandung was appointed the pilot project of the Free Plastic Bags policy (Octaviani et al., 2017). However, the plastic bag ban programme in Bandung ceased at the end of year of 2016, and NGO Worker 5 explained why the programme was unsuccessful.

*Last year, the government did a trial to ban using plastic bags or paying for plastic. However, the outcome was not significant because people kept buying the plastic bags since they were cheap. (NGO Worker 5, interview)*

The Bandung city government also banned the use of polystyrene since 1 November 2016. However, there is no clarity on the sanctions that will be given if violated (BBC, 2016).

In an effort to increase the public awareness of Bandung society, Ridwan Kamil introduced a programme named *Gerakan Pungut Sampah* (GPS) or the Waste Pick Movement Program. Through this programme, the public has an important role as they are the main actors in this movement. This movement is applied three days a week on Monday, Wednesday, and Friday whereby the public is expected to take 10 to 30 minutes to collect the waste within 100 to 300 meters near where they are standing. However, NGO Worker 5 argued that the outcome of the GPS programme was insignificant to reduce the waste in the street. Moreover, in order to adhere to the Bandung City Act 9/2011 of Household Waste Management, Ridwan Kamil urges householders to sort and reduce the amount of generated household waste. However, the adoption of this law did not work properly according to NGO Worker 4:

*The waste management law is like a common regulation but then we do not know how to navigate it. Furthermore, indeed the bureaucracy process is a long process and it is complicated until the government can produce sustainable systems. Therefore, many people have felt pessimistic about it.* (NGO Worker 4, interview)

NGO Worker 1 also added about the situation of waste management in Bandung city:

*Well, waste management in Bandung city is in chaos. However, solving it is complicated because they do not know how to start it and which is the first thing to do to solve it.* (NGO Worker 1, interview)

The Bandung city government instituted another ambitious programme by gradually installing one thousand biodigesters<sup>10</sup> throughout the city. The biodigesters are expected to reduce the waste upstream as well as to produce gas that can be used as fuel for cooking. However, these programmes may not be

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<sup>10</sup>Biodigester is a tool of anaerobic digester

successful without active participation from the community as well as consistent law enforcement (Tarigan et al, 2015). A crucial factor to achieve in developing a successful waste management program for Bandung city will involve education. As the public take more active roles, a successful waste management program will be able to be put in place (Ramadan et al., 2016).

### **5.2.2 Household waste problems in Bandung city**

Chapter 2 has discussed many issues of waste in developing countries. This section specifically discusses the waste problems faced in Bandung city. Numerous scholars have identified constraints to sound waste management in Bandung (e.g. Damanhuri et al, 2009; Chaerul et al., 2014; Tarigan et al, 2015; Amir et al, 2016; Ramadan et al, 2016). Household waste is a significant problem in Bandung city which is, in part, because there is limited waste separation at the household level (Saja, 2015). Most people in Bandung city are not used to separating their household waste. Waste separation is one of the most crucial steps in solving the waste problems in Bandung city because the largest household waste component is from organic waste of 67% (Safitri et al., 2014, p. 579). One of the worker recalls:

*Actually, if waste is separated, it will simplify the process and can solve almost 70% of the problem. Since almost 70% of household waste composition is come from organic waste. (NGO Worker 2, interview)*

Damanhuri et al. (2009) and Ramadan et al. (2016) found that the level of waste awareness of the Bandung society is low. Many of the Bandung people are still littering on the road and rivers even though the government has provided waste bins. However, the government and NGOs have implemented various programmes related to waste management and public awareness. However, NGO staff 1 justified that the waste problem is beyond a lack of awareness.

*...because we do not have a proper waste management system then how can we expect our citizens would do it. (NGO Worker 1, interview)*

Based on the study of Siyaranamual (2013), Bandung residents are aware of the importance and benefits of separating organic and non-organic waste, but their knowledge is not implemented properly. The rate of people that implement

sustainable waste management is stagnant. Damanhuri et al. (2009) found many people who segregate and recycle their waste are based upon a motive that has to do with economic resources instead of environmental awareness.

Similarly, a study by Chaerul et al, (2014, p. 510) lists three reasons why waste management in Bandung is unsuccessful. The reasons include undefined long term planning, a lack of monitoring and evaluation, and limited public participation in waste management planning to supporting efforts at individual and household level. NGO worker 2 states:

*They like to blame each other. When I went to the ground to meet the citizens they say it is because the government did not provide a good waste management system. And this goes for the government too. They will say that it is because of the attitudes and lack awareness of the citizens. (NGO Worker 2, interview)*

Miscommunication between stakeholders and limited coordination between the local government and its citizens often occurred regarding the waste management programme in Bandung city. This miscommunication of weak broader structural support has meant that resulting individual efforts are not sustainable.

In the context of waste management facilities and infrastructure, Amir et al. (2016) argues that it is not feasible to operate many waste collection trucks due to the old conditions and, furthermore, many waste treatment waste facilities are not equipped with a proper leachate treatment system. NGO worker 5 argued:

*The infrastructure is an important indicator of the waste problem. We wanted to separate the rubbish, but later it would be mixed by the waste pickers because there were no waste separation facilities in the temporary landfill. (NGO worker 5, interview)*

NGO Worker 5 said, ideally, waste must be managed starting from the household to ensure it reaches the final landfill properly through adequate waste management infrastructures.

Therefore, the role of organizations and communities is crucial to support society to achieve sustainable waste management. The next section discusses zero waste

progress in Bandung City, and the role of YPBB to promote and advocate zero waste among its citizens.

### **5.3 Zero waste in Bandung city**

After the tragedy at the Leuwigajah landfill landslide, the Government of Indonesia declared that the 21<sup>st</sup> February is commemorated as *Hari Nasional Peduli Sampah* (Care of Waste National Day). In line with that, this action is one of the means by the Indonesian government to achieve zero waste goals by 2020. In this section, I discuss the Zero Waste community YPBB Bandung as the case study and YPBB's role in the society.

#### **5.3.1 The Zero Waste Community programme YPBB Bandung**

*Yayasan Pengembangan Biosains dan Bioteknologi* (YPBB) is a local non-profit and non-governmental organisation located in Bandung City which was established in 1993. In the span of three years from 1995 to 1998, YPBB designed an office with a concept of 'Small Office Home Office' that aims to reduce carbon emissions and unnecessary costs. In 1998, YPBB began to determine the identity of the organization by creating a clear vision and mission. The vision of YPBB is to create quality of life through a natural and harmonious lifestyle. Meanwhile, the mission of YPBB is to assist and support the community in understanding and applying the sustainable lifestyle to achieve a high quality of life (YPBB, 2013). YPBB promotes sustainable lifestyle innovation and helps people adopt these lifestyles effectively through education, support groups, capacity building, as well as technology and infrastructure support. The work of YPBB has expanded beyond the individual/household level with commercial, industrial, other NGOs, local and national government to help inform policy and legislation.

Currently, YPBB has been known for its leadership in environmental issues, and especially zero waste which has been their main campaign since 2005 (YPBB, 2013). This is not only related to the Leuwigajah landfill landslide. The issue of waste is considered strategic to encourage society in Bandung city to be more environmentally sensitive in a broader sense. According to Komari et al. (2017), the Zero Waste Lifestyle Program is the actualization of a non-formal education

learning process where this activity is focused on raising awareness and developing community knowledge through environmental empowerment to behave wisely and independently in managing waste. There are three main activities under the Zero Waste Programme (YPBB, 2013), including Zero Waste Campaign lifestyle training. In this training, participants learn how to solve waste problems without causing greater environmental problems in the future. Through this training, participants begin to understand how to resolve almost 70% (Safitri et al., 2014, p. 579) of the household waste problems by a few simple steps. YPBB also recruits volunteers and give training. This approach serves as a solution to the lack of human resources at YPBB Bandung. Volunteers have significantly contributed to most of the YPBB programmes. YPBB has changed volunteers' mindsets in their attitudes and behaviour towards the environment (Nomura & Hendarti, 2005). In 2011, YPBB runs training for trainer (ToT) programme named Zero Waste Campaign Team to produce local agents of change to spread zero waste programmes in Bandung city for community and government.

The Zero Waste Community is the case study for this thesis. The Zero Waste Community Zero Waste is a programme under the Zero Waste Campaign programme of YPBB Bandung. This is a group effort that ranges from individuals, households, to offices, schools and villages, which aims to bring about change in the environment towards zero waste. To support the Zero Waste Community, YPBB hold a monthly meeting to share experiences and suggestions related to zero waste efforts. Thus, the Zero Waste Community members are expected to increasingly commit in their efforts to spread the zero waste vision. In general, the Zero Waste Communities underscore that members are to learn about environmental issues to support the efforts of a zero waste lifestyle, motivate each individual in regard to their efforts to achieve zero waste, and members undertake collective action towards zero waste. YPBB has proved that a local NGO can contribute to preserve the environment through education for people in Bandung city. This is done by continuously improving the programmes and maintaining a close relationship with other stakeholders (Nomura & Hendarti, 2005).

### 5.3.2 The role of YPBB Bandung

YPBB has focused on the issue of zero waste as their main campaign since 2005. YPBB Bandung has adopted zero waste as their campaign as a result of the Leuwigajah tragedy. The influence of a zero waste programme in Bandung city is widespread and the demands for training have been high. For the last ten years, the issue of zero waste has been recognized. This is because of the mushrooming of organisations or communities that use zero waste as its campaign. NGO Worker 2 stated:

*We have many environmental movements; however, the number is not comparable with the amount of increasing waste. Does it mean that we are less hard work or is it because the programme is not correct, or the environment players are still lacking. Or it could be all. (NGO Worker 2, interview)*

NGO Worker 3 has another perspective:

*We feel 10 years does not feel significant because the change is infeasible... I still feel zero waste has not grown rapidly. And 10 years is too long compared to the natural damage that occurred and waste keeps increasing. (NGO Worker 3, interview)*

Furthermore, due to the lack of human resources and the budget to support the programme, YPBB could not reach out to all society throughout Bandung city. NGO Worker 1 explained:

*...because zero waste is against capitalism. So, mainstream funding is impossible to get, even from the government too. Most funding that we received for this program came from a family foundation or training fees. (NGO Worker 1, interview)*

There is no mainstreaming of gender-specific issues in the YPBB Bandung program. This is because staff members rarely discuss gender and, furthermore, the output of applying gender mainstreaming was unclear.

*From various training and research, we saw that the women were burdened with the household workload, and taking care of her husband and children. Therefore, YPBB must support these women to survive and keep the spirit alive. (NGO Worker 1, interview)*

NGO Worker 1 explained that once YPBB used gender analysis for a biogas programme, however, the gender analysis stopped because the process was costly and time consuming. The zero waste programme YPBB Bandung may need to reconsider as a raising community awareness that have little sustainable effect. The crucial idea is to build social awareness about the problem to gain support to change government and industry policy.

Meanwhile, the household participants acknowledge that there was a paradigm shift after they participated in the zero waste training and after they became involved in the zero waste community:

*From the first training, I felt enlightened and I did not hesitate with the training. I remembered during training, I did not question it at all. Why? The training itself was a justification for me about what I had learned before. (Faisal, interview)*

*The difference between the Environmental Agency of Bandung city and YPBB is clearly the opposite. It is because the Environmental Agency has its own interest and agenda. (Rian, interview)*

According to Rian, YPBB Bandung is an idealistic and a visionary organisation. YPBB's vision and mission is clear for humanity and the environment. Rian and Wulan are a married couple. They found their involvement in the Zero Waste Community was beneficial to their married life. Wulan explained that her husband, Rian, became interested in zero waste after he was invited to join the Zero Waste Community YPBB Bandung. Rian added that at the time he joined the Zero Waste Community, his understanding of waste was significantly changed. Wulan and Rian easily incorporated the practice of a zero waste lifestyle into their married life as they came to share the associated values:

*So before our marriage, we already had the same mindset toward a zero waste lifestyle. We learned the impact of waste in our life. Therefore, we always think carefully about the decisions we make. And now we are thinking along the same lines, it is easier to compromise each other on decisions.*  
(Wulan, interview)

Another householder participant also revealed the benefits gained from joining the Zero Waste Community. Ahmad recounted that he finally understood how much waste was generated in Bandung city through the Zero Waste Community, especially the effect of waste for people. He realises the importance of a zero waste lifestyle to reducing the waste problem. The training materials provided by YPBB are different from other places. NGO Worker 2 explained that YPBB's training offer a paradigm shift and also practical suggestions to reduce waste at home, whereas other organisations are only more practical or technical solutions. NGO Worker 3 added, participants must have commitment to practise a zero waste lifestyle after the training:

*Actually, being a zero waste role model is more powerful than the training itself. It is because people can see our consistency and commitment toward zero waste. Training was just like changing our frame of knowledge.* (NGO Worker 3, interview)

YPBB gained a positive perception towards their persistence as a local NGO in promoting and advocating zero waste lifestyles in Bandung city.

#### **5.4 Chapter summary**

This chapter has discussed the case study of this research. After the tragedy of Leuwigajah's landfill landslide in 2005, Bandung city government and NGOs developed many programs to solve the waste problems. However, the situation has not progressed over the years and the volume of waste keeps increasing. Poor waste management systems are also one of the major problems since the lack of support and infrastructures remain unresolved. On top of that, no waste separation at household and municipal level continues to constrain sustainable waste management in Bandung city.

The rationale for choosing YPBB Bandung as the research setting was explained; YPBB Bandung is the pioneer of the zero waste movement in Indonesia. The zero waste lifestyle training has been inspired in changing participants' attitudes, values, and perceptions toward waste. In addition, the issue of zero waste has been publicised through the increasing number of organizations that use zero waste as their campaign as discussed in Chapter 3. Householder participants acknowledged that they had experienced a shift in thinking after they participated in the zero waste training and after they became involved in the Zero Waste Community. The zero waste lifestyle has helped participants to behave wisely in regard to managing their waste. In addition, YPBB has not implemented gender mainstreaming because of limited staff resources, time and budget. The next chapter focuses on presenting the findings on the importance and the constraints of men and women practising a zero waste lifestyle.

# CHAPTER SIX:

## Gender differences in practising a zero waste lifestyle at household level in Bandung city

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### **6.1 Introduction**

This chapter presents the findings from the fieldwork as they relate to gender in practising a zero waste lifestyle in households in Bandung city. The chapter responds to research objectives. The findings were built upon the results of a focus group, interviews and observations. There are three sections in this chapter on gender. The first section presents the result of pairwise ranking from the focus discussion group. The second section explains the comparison of men and women in handling a zero waste lifestyle, and the third section explains the barriers faced by men and women in practising zero waste at home.

### **6.2 The results of pairwise ranking**

In this chapter, I present the results of pairwise ranking. The pairwise ranking was one of the methods in the focus group that was used to explore how men and women handled waste. The results of the pairwise ranking were subsequently used for the in-depth exploration of the men and women, with respect to adopting a zero waste lifestyle through the interviews and observations. There are two questions I asked the participants during the pairwise ranking activity. A separate group based on gender of men and women were given the opportunity to answer based on group agreement to each question asked. To explore the activity with the highest priority, the question asked was: “what are the important zero waste activities?” The results of the pairwise ranking are presented in Table 6.1.

**Table 6.1 The pairwise ranking result**

Ranking	The most important zero waste practices		The most difficult zero waste practices	
	Men	Women	Men	Women
1	Reducing consumption practices	Carry a zero waste kit	Different levels of zero waste knowledge within the family	Reducing packaging products
2	Carry a zero waste kit	Reducing consumption	Zero waste is difficult to put into practice	Household chores are only imposed on women
3	Composting	Preparing zero waste kit for the family	Consistency	Impulsive buying
4	Waste separation	composting	Inadequate waste infrastructure	Ignorance
5	Zero waste education	Re-use	Ignorance	Zero waste difficult to put into practice

Table 6.1 shows that there was a similar preference when comparing the male group with the female group. The pairwise ranking results indicate that men and women considered that reducing waste and carrying a zero waste kit was among the most important zero waste activities. However, when comparing the two groups, the first and the second ranks were reversed. While the men ranked reducing consumption first, the women ranked carrying a zero waste kit first.

To explore the barriers to practising zero waste, one question that was posed in the pairwise ranking session is as follows: “What are the most challenging activities in practicing a zero waste lifestyle?” Table 6.1 presents the results for barrier to practising a zero waste lifestyle. As Table 6.1 shows, men and women have different challenges and struggles in terms of practising a zero waste lifestyle. This challenge related question showed variations between men’s and women’s responses. Exploring the issues that constrain participants in practising zero waste is central. The participants could not deny that practising a zero waste lifestyle was more difficult than in theory. For participants, a real shift from a mainstream lifestyle into a zero waste lifestyle was never easy.

In real life, there were many factors that contributed to the difficulty in the daily practice of zero waste that may create a burden for them. Firstly, because of the activities and, secondly, because of the gender reality they faced. Male participants have different concerns in handling zero waste compared with the women. From the interviews with the men, in which they were asked about what zero waste is for them, most of the male participants explicitly expressed that it was difficult to put it into practice. However, from the point of view of the female participants, they assumed that it should not be difficult for men to put a zero waste lifestyle into practice, because men and women have different needs.

By acknowledging men's and women's challenges related to a zero waste lifestyle, solutions for these problems can be determined. An in-depth explanation of the results of pairwise is presented in the following sections.

### **6.3 The comparison of men and women handling a zero waste lifestyle**

During the fieldwork, I found that male participants considered it important to implement zero waste in their daily lives. Exploring how men value and implement zero waste in their daily life is important because men also have other roles within their domestic space. The male participants considered that some of the zero waste activities were important because they represented their identity as a male and as the head of the family. However, from my observations, it was not easy for men to apply zero waste activities in their daily lives. During the in-depth interviews, the male participants shared a number of barriers related to the practice of zero waste.

On the other hand, zero waste within the women's space is different from the male participants. This was evident from the results in the pairwise ranking. The answers from the female participants differed from those of the men, in particular, with respect to questions I asked about the challenges for the female participants in terms of performing a zero waste lifestyle. The female participants answered, that from their perspective, the issue of gender was important, and it emerged as one of the constraints. In other words, they mentioned the idea that household

chores are only for women. I used the results of the pairwise ranking as the baseline information for the interviews and observations.

### **6.3.1 Men and women perceived a zero waste lifestyle**

The results of the interviews with the participants show that men have voiced the same value in terms of their perceptions toward zero waste. The concept of zero waste is perceived as a life value and a vision to achieve sustainability in their lives. Hilman, a single-male, hinted that because the concept of zero waste is embedded within his subconscious, zero waste is not a burden for him. Similar to Hilman, Adit shared his thoughts about zero waste.

*Zero waste is a simple and wise lifestyle. Life is actually simple. Lifestyle is the one which is complicated. (Adit, interview)*

Another perspective from the male participants is they argued that the idea of zero waste was an idealistic concept. As an idealistic concept, a zero waste lifestyle attempts to change a mainstream lifestyle. Rian expressed his view on this:

*Zero waste is actually a very essential lifestyle that is different from the popular lifestyle out there. (Rian, interview)*

As the above comments illustrate, the male participants agreed that the concept of zero waste is a valuable concept. However, they also found practising zero waste was challenging. Hilman admitted that the process of changing one's habits to a zero waste lifestyle requires time and consistency.

*Yes, it is as if zero waste is impossible, but by doing simple things we can achieve a zero waste lifestyle. What I can do then, I will do it first. It is not easy to change habits in an instant. (Hilman, interview)*

Meanwhile for women, zero waste had the same value as the men had. While each of the female participants had a different perspective in terms of defining the concept of zero waste, they all had the same consensus that zero waste was significant as a part of their daily lives. Moreover, they expressed the idea that zero waste should be a basic principle of life. In the interview with Neni, she mentioned the concept that zero waste is closely related to the concept of sustainable

development. Neni suggested that it is better to understand the concept of sustainable development first, and then it would be easier to understand the concept of zero waste. In other words, it is crucial to comprehend sustainable development. Rara also emphasized that sustainable development is the umbrella concept of sustainable waste management to comprehend the concept of zero waste.

*I learned about sustainable development when I was in college. From sustainable development, then I learned about a sustainable lifestyle. So, zero waste is one of the principles to support a sustainable lifestyle. (Rara, interview)*

Rara added the interconnectedness of the concept of zero waste and a circular economy. According to Rara, zero waste is one of the pre-conditions to achieve a circular economy. Waste is seen as a valuable resource that can be utilized through various methods, such as, composting or 3R principles (reduce, re-use and recycle). For Neni, zero waste was the concept that was applicable for her.

*Maybe I enjoyed it because there is a sense of responsibility and it fits with my passion, thus I am addicted to a zero waste lifestyle. I just let it flow and I do not feel burdened by doing it. (Neni, interview)*

It is important to note, their perception towards zero waste changed after received training from the YPBB Bandung. This result has showed how YPBB has significant roles in changing their mindset to live sustainably. For these men and women, zero waste is seen as important to put into practice.

### **6.3.2 Reducing consumption**

According to the pairwise ranking results, reducing consumption was one of the top priorities in terms of practising a zero waste lifestyle for the men. The participants were well aware of the significance of reducing consumption because reducing consumption allowed them to reduce the waste they generated. Arif recalls:

*If you want to practise a zero waste lifestyle, the first thing you should do is start reducing your consumption. (Arif, interview)*

Arif emphasized that reducing consumption was the first action to take towards practising a zero waste lifestyle as in the waste hierarchy. He argued that, at the reduction level, there was less waste generated. It would be different at the re-use or recycle level, because at that level, the waste was already generated and it required more resources to be extracted.

From my observation, reducing consumption was the easiest zero waste activity for men. Their daily basic needs were less compared with the women. Faisal was able to reduce his consumption by refusing to use any mainstream products. He used homemade or organic products instead:

*I am more careful in the selection of products and I am not a consumptive person. From 2014, I do not use Unilever products anymore for my basic needs because those brands produce waste. (Faisal, interview)*

However, I noticed that reducing sachet coffee was difficult for men. Male participants often mentioned drinking coffee in the morning was part of their routine. There was one particular reason which, according to Ahmad, was because the taste of the instant coffee was much better than real coffee and it was less expensive (see Figure 6.1).



**Figure 6.1 Packaging product**

*Sachet coffee as an exemplar of a packaging product. Aside from the inexpensive price, sachet coffees are practical and had a different taste compared with original coffee.*

Source: Ahmad

Andy shared his approaches to reducing consumption. Apart from reducing consumption, at the same time Andy also shared the re-use value to his family.

*We try not to buy too many new clothes. We re-use clothes from our family and relatives. I like to ask my relatives if they have any used clothes. Usually, at Ramadan it is time to discard clothes or receive clothes. I buy new clothes every two years. If we buy clothes, then we have to take one or two clothes out of our dresser. (Andy, interview)*

It emerged that reducing consumption ranked second in the pairwise ranking in terms of the priority activity for the female participants. The female participants argued that as housewives and as decision-makers for their family and household, they often did the grocery shopping for their household needs. The female participants mentioned that in terms of grocery shopping, their husbands let them make the decisions. For Siti, nowadays, reducing consumption, such as packaged products, was nearly impossible while shopping in the supermarket, or even in the traditional market.

*Reducing packaging products is difficult, because everything is packed with plastic. Nowadays, people only want something handy and easy. (Siti, interview)*

Another female participant, Wulan expressed that she did not have a choice because she is using certain products or goods that could not be replaced. Neneng also had the same experience. Neneng had to remind herself not to buy products with lots of packaging. However, she did not have a choice because the eco-friendly products were often more expensive. They had to buy durable or bulky products in order to support a zero waste lifestyle. In addition, participants had to spend more money to buy better quality products, however, they explained in doing so, they could save more money in the long run. For a housewife and a mother, a zero waste lifestyle is beneficial in terms of the daily household expenses.

*In fact, I think zero waste is cheaper even though at first we had to pay more and it was expensive. I buy the large size package because for my household expenditures; it is much cheaper. (Wulan, interview)*

With regard to consumption, the participants agreed that some of the obstacles to applying the zero waste lifestyle at home have to do with being married and having children. From my own personal observation at Rara's house, the difficulty they had in applying a zerowaste lifestyle in their daily lives, was due to family reasons, and it was very visible. This was true, in particular, for those participants who already had children, since they admitted that they were still using disposable diapers for example. Even Rara had reusable diapers, however since she was taking care of everything by herself, she preferred disposable diapers (see Figure 6.2a and 6.2b). Although she felt guilty about using disposable diapers, she had no option. The reason for this was because disposable diapers could ease her daily activities and the economical factor was also the deciding factor. Meanwhile, even though cloth diapers are environmentally friendly, because they are reusable, the initial investment is costly.

*...since marriage, it has been a bit difficult to practise a zero waste lifestyle. In particular, since I have a baby, I am taking care of her and the household by myself. The disposal diaper helps my role as a housewife. (Wulan, interview)*



**figure 6.2a Disposable diaper (picture-in the left)**

**Figure 6.2b Cloth diaper (picture-in the right)**

The use of disposable diapers is deemed a constraint to a zero waste lifestyle.

(Source: Rara)

For Wati, her approaches to reduce consumption included investing in reusable sanitary pads, although this was expensive in the beginning. Another aspect of reducing consumption in terms of buying packaged products is the effect it has on one's health. Rara, still buys packaged products, even though she was aware that buying packaged products is not consistent with zero waste principles. More importantly, she was aware that the packaged products are unhealthy and contain preservatives and this is even more of a concern to her since she has a toddler. However, she argued that she had no options since she had limited time to do everything by herself.

### **6.3.3 Magic pouch bag: the zero waste kit**

Based on the pairwise ranking, carrying a zero waste kit was the second most important factor for male participants. I explored this during the interviews and observations. All of the male participants were committed in terms of carrying a zero waste kit all the time. During the interviews, these male participants proudly showed me their kit. At a minimum, their kit consisted of a water bottle, a set of cutlery, and a food container. The reason for this was, as Hilman explained, waste was easily generated and it was associated with food and dining activities. Many unexpected situations could arise, for example, if they had to dine out, or if someone offered them some food. In the interview, Faisal briefly shared his strategy for this kind of situation:

*When I do not cook at home and have to buy food out or if my friend asks me out, I never choose takeaway food. I always try to eat in the restaurant. I choose a restaurant that does not use plastic plates and preferably I choose a porcelain plate. (Faisal, interview)*

Men specifically emphasized that all of the kits should be made from stainless steel rather than from plastic (see Figure 6.3). The purpose of the stainless steel is that the kit is durable for long term use.

*I refuse to use plastic straws if I buy a drink from a coffee shop. However, sometimes the waiter forgets my request and instead puts the plastic straw in my drink. If this situation happens, then I do not have any other choice. Next time I will make sure the waiter receives my message. (Faisal, interview)*

**Figure. 6.3 Zero waste kit from stainless steel**



(Source: Faisal)

Surprisingly, during the interviews with the male participants, I found some interesting topics in regard to gender and carrying a zero waste kit. There is a stereotype amongst men that if a man brings a zero waste kit to a public space, then the man would be regarded as womanly or childish.

*If I bring food containers, my friends will laugh at me. If I bring a water bottle and a lunchbox or carry a tote bag, I receive a feminine impression from other people. (Adit, interview)*

*I was underestimated by other people for bringing a water bottle and a lunchbox. They said I looked like a kindergarten kid. (Arif, interview)*

I figured that for men who are seen as masculine figures, this impression has an effect on them. Adit mentioned that there was a certain fear by carrying a zero waste kit would make him look different from his family or friends. Adit further explained that if he carried a zero waste kit, his friends often asked why, and so he thought it might detract from his masculinity.

In relation to gender identity in terms of carrying a zero waste kit, for example, the male participants often felt it was not masculine, so I asked the female participants about this.

*Nowadays, the view of men bringing a water bottle is still commonplace. However, if a man brings a lunchbox, sometimes he still receives a feminine impression. Often, a man is ashamed to bring a lunchbox from home. (Wati, interview)*

In terms of the pairwise ranking results, as they relate to the zero waste activities, the top priority for females is consistently carrying a zero waste kit. This also applied to the male participants, since the zero waste kit that is often the so-called magic pouch by the female participants, is beneficial to reducing the use of plastic packaging. The kit is placed inside a small pouch bag or wrap and consists of a reusable straw, a set of cutlery, a water bottle, a cloth napkin and a lunchbox.

*I always prepare a reusable bag to make sure there are no plastic bags. When buying food, I always bring containers according to the amount of food. (Siti, focus group).*

*Bringing a stainless-steel straw is a must-have item in my zero waste kit. I am consistent with using a stainless-steel straw. (Wati, focus group).*

Many people viewed the idea of carrying a zero waste kit is impractical. It is because carrying a zero waste kit seemed heavy and troublesome. However, Neni disapproved of the reactions of certain people.

*I always carry my zero waste kit anytime and anywhere I go. Maybe people see it as a burden, but it is my problem, so why people bother with it, I don't know. (Neni, interview)*

Regardless of the view of other people, the result reflects that carrying a zero waste kit is essential. The participants emphasized that these small behavior changes, for example, bringing a zero waste kit could save money over time and, most importantly, could contribute to the waste reduction in the Bandung city environment.

### 6.3.4 Composting organic waste

Another important activity for is composting. The male participants acknowledged that composting was essential in reducing organic waste. Although they rarely spent time cooking in the kitchen, they would spare some time for composting. Indra was aware of the benefits of composting, therefore he made sure that composting was an obligation and all of his family members were forbidden from taking any organic waste to the kerbside. Indra has the power to apply such rules because he wanted zero waste to succeed in his household. This was the same for Arif. For him, composting was an obligation. In addition, he explained that composting could be done anywhere in the house.

*There are many varieties of home composters. For example, a takakura composter can be placed in the kitchen so there is no excuse for space limitations. With the home composter, people can compost at any time inside or outside the house. (Arif, interview).*

During the interviews and focus group, the male participants shared their preference for composting. There were various methods of home composting applied. However, most of them argued that the takakura home composter was difficult to utilize. Indra, and Arif shared their story respectively.

*The takakura home composter was very sensitive and in terms of trouble shooting, it must be handled correctly because sometimes if I did not manage it properly then it could produce a bad odor. Then, I chose another home composter, Black Fly Soldier Larvae (BFS)<sup>11</sup> for almost 3 years (Indra, interview)*

*Vermicompost is more interesting than the takakura home composter. In my opinion, vermicompost is far more effective and easy to use than takakura. I just need to put the kitchen waste into the vermicompost bin then the earthworms will eat it. So, I do not have to dig. (Arif, focus group)*

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<sup>11</sup> BFS is The Black Soldier fly larva that eats most of organic waste. After several weeks of decomposing organic waste, shortly they will start to crawl out from the pipe into some soil and transform into "Pupa". In the last phase, these pupa turn out to be adult flies. These flies continues the life cycle by lays the egg in the pipe.

In my observation at Arif's house, Arif used his backyard garden as his medium for composting because of its effectiveness. According to Arif, his wife's role was only to dispose of the organic waste in the backyard and later Arif would clean it. He added that his wife was afraid of rats, therefore he was taking care of the backyard garden.

The interviews and observations suggest that composting is also one of the important parts of the female participants' activities. As it is mostly the female participants who spend time cooking in the kitchen, they must handle the kitchen waste. Organic waste such as the waste from the kitchen is mainly the biggest source for composting. There are many options for home composting, and each option has advantages and disadvantages. For female participants, most of them described that the takakura home composter was the one that works for them and it can support their zerowaste lifestyle. Siti, Wulan, Neni, and Wati mentioned that they use the takakura home composter because it is handy to use since they just need to throw organic waste into the bin and stir it (see Figure 6.4) compared with other home composters, such as, the vermicompost. This result was different from the male participants and they argued that the takakura home composter was difficult to utilize since it requires more troubleshooting. Some female participants revealed that because they are the ones in charge of the household, most of them look after the composting at home. Neni recalls:

*I have three different home composters. All composting activities are done by me. Because my husband and my children are busy and they did not see the importance of composting. Their role is limited to waste segregation only.*  
(Neni, interview)

This was because her husband is away from home. Regardless of the limited role of the family, the female participants admitted that composting was crucial. It is because whether they garden or not, composting can eliminate kitchen waste, save resources, fertilize the soil and save money.



**Figure. 6.4 Takakura home compost**

Takakura can be placed in an open space, such as, a yard or terrace of the house. The decomposing process will last for approximately three days until it becomes compost.

(source: Siti)

### 6.3.5 Preparing zero waste kit for the family members

Preparing zero waste equipment for the family in the house is one activity that emerges from the conversations with the female participants. To start a zero waste lifestyle, the women admitted that many preparations were required. Again, in their role as housewife and household managers, they were aware that since they had the knowledge of zero waste, they had to put more effort into supporting their family members, in this case, preparing the zero waste equipment. Neni shared about her house situation:

*As long as the waste separation bin is prepared, my husband and children will also separate waste. (Neni, interview)*

Neni expressed that even though they were busy with work or other household chores, they could always spare some time to prepare the zero waste equipment for the family. Neni clearly expressed her thoughts:

*My husband likes to buy breakfast every morning at a chicken congee food stall. Therefore, every night I always prepare food containers on the table. So, when he wants to go, the food containers are ready for him to take with him. (Neni, interview)*

My observations at Rara's house provided me with a sense of how they practised a zero waste lifestyle in terms of preparing the zero waste equipment at home.

*Most of the time, Rara is the one preparing the equipment, for example, the waste segregation bin. Meanwhile, her family member did not take any initiative. (Author, field notes)*

For Rara, preparing the zero waste equipment has been part of her daily activity. Rara holds the primary role in preparing the equipment for the family and, even though it was extra work for her, she was willing to prepare the zero waste equipment for family members.

*I prepared the waste separation bin. I said that the dry waste is disposed of here, and the kitchen waste is disposed of in another bin. And later I will dispose of it on the front yard. I am doing all of this while at the same time, I have to look after my baby. So, it is a little bit hectic for me. (Rara, interview)*

Preparing zero waste equipment could help their family members become more familiar with the activities. The achievement of zero waste goals at home is not an easy transition for anyone who is accustomed to living a life in the mainstream. Female participants admitted that patience and consistent reminders are crucial to encouraging their family members.

#### **6.4 Men and women experiences of zero waste with the family members in the household**

This section explores the experiences related to the family members of the male and female participants. This section explores how the family members of participants embraced the zero waste lifestyle within their everyday lives. It is important to note that not all of the family members received zero waste training from YPBB Bandung (see Chapter 4 for the list). There are two sections, one which includes men and the family members, and the other which includes women and the family members.

#### **6.4.1 Men and the family members' roles at home**

To collect the information from the family members, I was only able to manage two interviews, one with Ahmad's mother, Tuti, and the other one with Arif's wife, Dian. Meanwhile, the rest of the information related to family members was received from the testimonies from the male participants. The result from the male group in terms of the pairwise ranking indicated that the issue they faced the most was the different levels of zero waste knowledge amongst their family members. According to them, the different levels of knowledge about zero waste among their family members may be a constraint to the practice of a proper zero waste lifestyle in the household. The reason for this is because their family members did not receive zero waste training from YPBB Bandung. Therefore, these male participants were the ones who were educated and consequently offered support to their family members. This issue was explored further during the interviews and most of the male participants expressed their unrest. Faisal clearly illustrated his thoughts on this.

*Actually, for me the zero waste activities are not hard. However, the most difficult part is to influence my family and friends to do the same as I do.*  
(Faisal, interview)

The male participants explained that the task of educating their family members was challenging as the head of the family, (Indra, Hilman, Arif, Arya, Ahmad, and Rizki), and the first and the only son in the family (Faisal and Adit). There are many factors that hindered a zero waste lifestyle in their household. Because he has been trained in zero waste he has an obligation to educate his family. Dian, his wife, explained that her perspective on zero waste was positive, although, at some point she felt that some of the activities were not easy to put into practice. For example, Dian admitted that although Arif reminded her to separate the waste or reduce the plastic packaging, she often forgot to put it into practice.

From my observations in Arif's house, I saw that Arif's family lives with their extended family: his brother's family. Hence, there were two households within one house. Arif explained during the focus group discussion, that his extended family could not keep an open mind to zero waste and they often acted defensively

if Arif shared information about the zero waste principles. Arif argued that they did not seem to have the willingness and intention to put the principles into practice. As head of the family, Arif concluded that this was because he had failed to teach his family the zero waste principles well. This was because he traveled long distances to work and was rarely home.

Arif shared information regarding how to introduce the zero waste principles, for example, reducing family consumption, in a simple way. Since Dian enjoyed cooking, Arif asked her to create homemade products. Arif used this strategy so that the family had a chance to experience and to understand the zero waste lifestyle.

*We make all kinds of candy, noodles, cakes and others with safe ingredients at home. The good thing about reducing consumption is we seldom buy junk food. Therefore, my kids are rarely asking to buy snacks. Economically, it is not cheaper, but there are zero waste values that I want to share with my family and that is the most important thing. (Ben, interview).*

In contrast to Arif, Ahmad as the oldest son in the family and the head of his little family, he was really committed to zero waste. From my observations, I noticed that Ahmad is the first son within the family. He set the zero waste rules at home, such as, waste segregation and reducing the use of plastic bags. Ahmad applied a different strategy to influence his household decision maker.

*I explained the zero waste lifestyle principles to my mother. It was because my mother is the superior at home. Well, luckily my mother supported the idea of zero waste and now she is very committed to zero waste. (Ahmad, interview)*

He feels strongly that as the person in charge holds the power, they must be influenced to ensure the zero waste lifestyle in the household succeeds. Thus, that person could easily influence other family members and adopt the application of a zero waste lifestyle in the household. Since Ahmad was rarely at home, he said his mother was the right person to implement the zero waste ideas into practice since she spent most of her time at home. During my interview with Tuti, Ahmad's mother, she admitted that it took five years for Ahmad to encourage her to adopt

the idea. It was a difficult concept in the beginning. However, as time passed by, she adopted the new lifestyle. My field notes reflected this shift:

*Tuti was strongly committed to zero waste principles and became a role model in the family. (Author, personal journal)*

She set the zero waste rules and gave orders to the family members to follow it. Because of her serious commitment, she became a role model to all the neighbors, and many national television and media networks covered her zero waste lifestyle activities.

In contrast to Ahmad, Adit personally struggled at home to influence his parents. He added that his parents did not comprehend the principle of zero waste even though he had explained it many times. Since his mother was busy with her own activities, she did not have much time to spend carrying out a zero waste lifestyle. In addition, Adit explained that his father did not care about practising a zero waste lifestyle at home. His father did not consider zero waste principles part of a waste management solution at home.

*Actually, a zero waste lifestyle is more complicated. Sometimes people ask why we should practise it, for example, separating rubbish, since if in the end the waste is mixed again. So, it makes sense and explains why Father thinks it is difficult and whether it is worthwhile. (Adit, interview)*

Adit argued that his parents felt that the lifestyle was insignificant in terms of the changes it brought to the environment. Meanwhile, Faisal emphasized that it is very important to educate family members about the tools to support a zero waste lifestyle, for example, the use of a home composter.

*I bought a takakura composter but it only lasted for a year. I did not have time to look after the takakura. Moreover, I did not have the time to educate the people in the house. This was my fault because I bought a tool but did not properly tell my family members about how to compost. So, my mom discarded the takakura. (Faisal, interview)*

During the interviews, the male participants explained that they were being thoughtful to influence their family. Indra shared his story about influencing his

wife. He understood that his wife would find it difficult to comprehend practising the composting method and to put the zero waste principles into practice in their daily life. Therefore, one of his strategies was to choose activities that were easy to use so that his wife would adopt the zero waste habits. He explained that a typical person, such as his wife who did not receive zero waste training, while faced with the difficulties involved in managing a zero waste lifestyle, would tend not to follow through with the principles. Adit also added that it could seem somewhat of a burden for the person, if that person did not want to practise a zero waste lifestyle. Some male participants shared that although they kept reminding their family members to consistently adopt the lifestyle, the family members often forgot and did not take the initiative to put the principles into practice. This included Arya and Indra, because even though they had provided waste separation bins, often their wives mixed the waste up again because they forgot to separate it. Moreover, they were careful to mention that they did not want to be aggressive while educating their family members.

*I do not force my wife to understand the zero waste principles because I am concerned and prefer to avoid conflicts. If I forced her to practise zero waste, later we would be fighting and in the end, she would not want to practise a zero waste lifestyle. (Arya, interview)*

From the statements of the male participants, it indicated how they faced a struggle in practising zero waste at home. Many contributing factors, such as that some of these male participants were not the decision makers and they were not always around since they had to work away from home. However, these men agreed that patience and tolerance were required to achieve a zero waste lifestyle at their households. The next section presents the results from the female participants in terms of their valuing and practising zero waste.

### **6.3.2 Women and the family members' roles at home**

To gather information regarding family members, I was only able to manage two interviews with Siti's husband, Gama, and Wulan's husband, Rian. The female participants also argued that for men and women within the same household who do not have the same vision of zero waste, it would be difficult to influence the

other family members to do the same as they do. Wulan said if it is difficult to influence the family members, it might be because zero waste might not be one of their priorities. Thus, there are different ways to influence people. Rara added perhaps it actually depended on how smart these participants were in terms of influencing their family members, so while they asked their family members to practise zero waste, they tried to make sure their family members did not dislike the activities.

The female participants noticed their position as women and housewives, and how the structural position of men and women in the household differed. According to Siti, due to the presence of the patriarchy culture, she is required to do the household chores including managing and handling the zero waste lifestyle at home while, at the same time, she works full-time.

*From the very beginning of our relationship, I knew that we had a very different culture. Although I wanted to have gender equality, it seems impossible because the patriarchal system is dominant. My husband is accustomed to being served even in his big family. Men are not allowed to do household chores. (Siti, interview)*

Apart from being culturally related, Wati links the role of men and women to religion, especially from the Islam perspective.

*For those who have a strong religion, they may argue that the household chores are for women and the men are the breadwinners. (Wati, interview)*

Exploring this situation further, many female participants revealed the challenges and obstacles of looking after a zero waste lifestyle in their household; there are many household duties imposed on them, and they often need to act as the decision makers.

Interestingly, Rara had a different perspective on this. She argued that it makes sense if women were more dominant because men are already burdened with their work outside the home to support the family.

*Not all of the men like household chores. There is a notion that 'Men do not do chores'. Sometimes, men are burdened with their work. While for women, even*

*though they have been assisted by men in doing household chores, they always feel it is not enough. (Rara, interview)*

Gama, Siti's husband had an opinion about the household chores:

*...because my work started from 4am until 7pm, and even more than that. So, when I arrived home, I am already exhausted to do household chores. (Rian, interview)*

Gama encountered that he was rarely at home because of his work demands and because men have to earn more income. Therefore, he barely helps Siti at home. Another factor that contributed to the notion that it is difficult to practise zero waste is the idea that there is less willingness to practice this lifestyle. According to Neneng, she said her husband did not want to practise it because he thought zero waste was much too troublesome and basically he was too lazy to do it. Rara recounted that apart from laziness, her husband was not an open-minded person, and her husband was even skeptical about the future of zero waste in Bandung city.

*Once, my husband told me what is the point of separating waste? He said that if we separate waste we will be doing the job of the waste pickers. (Rara, interview)*

As mentioned in the previous section the aspect that if men carry a zero waste kit, it is not masculine and the female participants also mentioned this. They shared that often their husbands felt embarrassed to carry a zero waste kit. Siti shared her experience about her husband.

*I always insisted to bring food containers if we wanted to buy food. But, when I am going with my husband, Gama, he must be ashamed of carrying food containers. (Siti, interview)*

When I interviewed her husband, Gama, he admitted to Siti's comment.

*In fact, after marriage I often debate with my wife. I said to Siti, if we go to a shop together, please do not bring food containers because the staff might wonder why I carry food containers. (Gama, interview)*

Gama's response was similar to the above section that link how carrying zero waste may be a threat to masculinity. While the interview was taking place with both of them, I also observed them. It was very clear to me that there was a gap within their relationship. Gama looked more powerful and represented the typical conservative man.

*Every time Siti asked him to carry a zero waste kit or food containers, Gama fiercely refused to do it. This pride of a man that Gama held is related to not do such womanly things. Therefore, for Siti, there was no choice except to follow it. (Author, personal journal)*

Therefore, this has also affected the household consumption in Siti's and Gama's household. Siti shared that as a consequence, her husband still could not reduce his consumption, and she was the one who had a greater role in reducing consumption at home.

*...but since marriage it is difficult for me to reduce packaged products. There is a big difference between the waste generated when I lived alone and after I got married. So now I am very familiar with waste products and I have to buy for my husband, for example, instant coffee. (Siti, focus group)*

In relation to consumption, the female participants expressed their concern, particularly when they were married and had children. This is because their spouse or children were not completely aware of, and did not understand the importance of, waste reduction.

## **6.5 Chapter summary**

This chapter presents the findings from the fieldwork as they relate to research objectives. The findings in regard to men and women in valuing and practising a zero waste lifestyle are based on the results from the focus group, interviews, and observations. The first finding related to zero waste within the men's space shows that the male participants perceived the concept of zero waste as a life value and not a burden or an add-work. In regard to consumption practices, reducing consumption was the easiest zero waste activity for men since they have less consumption than women. Carrying a zero waste kit was the second important

priority for the male participants. However, some male participants argued there was a stereotype that if a man brings a zero waste kit to a public space; he would be regarded as womanly or childish. With respect to composting, the male participants had different preferences and opinions from women. Most of the men argued that the takakura home composter was difficult to utilize, therefore, they chose the BFG or the vermicompost since there was less troubleshooting involved. In relation to their family members, the men indicated the issue they faced the most was the different level of zero waste knowledge amongst their family members. The male participants explained that they tried to be considerate when influencing and educating their family; they wanted to minimize conflicts and did not want to be aggressive.

The second set of findings relating to zero waste were within the women's space. They had the same consensus as men that zero waste was significant as a part of daily life. Women also found that zero waste is closely related to the concept of sustainable development and a circular economy. The top priority for zero waste activities for females was consistently carrying the zero waste kit. The participants emphasized the idea that small behavior changes, for example, bringing the zero waste kit, could save their expenses over time and, most importantly, could contribute to waste reduction. Nevertheless, in terms of reducing consumption, such as, efforts to reduce purchasing packaged products, it was almost impossible to avoid while shopping. Women found that, even though they brought food containers, more often everything already was packed in plastic. Women had the responsibility to do the grocery shopping for the household and for the family needs. Again, since women felt this was their role, and that they have to put more effort in supporting the family members, for example, preparing the zero waste equipment. In terms of composting, most of the women described that the Takakura home composter was working for them since it was handy and practical to use. In relation to their family members, women agreed that the cultural views of the patriarchal system are still embedded and clearly visible in their daily life. This is related to the division of roles in the household that are dominated by women. These female participants argued that most of them are responsible to manage the zero waste lifestyle because it is related to the household chores.

The final chapter critically discusses how the findings from the fieldwork compare and contrast with the literature review and context chapter.

# CHAPTER SEVEN:

## Discussion and conclusion

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### **7.1 Introduction**

The final chapter critically discusses the findings of the study in response to the research objectives. The first section of the chapter provides an overview of the key findings, while the second section discusses the aims to address the first research question. The last two sections present the concluding statement of this thesis.

The issue of sustainability is a key issue in development studies. By looking at sustainable waste management using the ecological citizenship in the context of Indonesia, this study seeks to explore a solution, namely a zero waste lifestyle, to tackle waste problems at the household level which contribute to community and nation-wide waste strategies. It is important to look at the role of men and women at the household level as the starting point in tackling the household waste challenges. An analysis of the complexities of men's and women's roles in practising a zero waste lifestyles will contribute valuably to sustainable waste management efforts to future generations.

### **7.2 Overview of the key findings**

There are several key findings from the fieldwork. The first findings are related to some of the progress and the problems related to zero waste in Bandung city. Over the years, the number of households that implement sustainable waste management has remained stagnant. While the Indonesian Government and NGOs have provided various programmes to increase public awareness, the volume of household waste in Bandung city has continuously increased. In relation to the current situation of waste management in Bandung city, poor waste management and lack of law enforcement are hindering sound waste management in Bandung city. Thus, this systematic problem has resulted in the waste problem becoming very complex and it is not easy to find a solution. Since these problems are interrelated, it is not easy to determine which problems to resolve first.

Furthermore, from the interviews with key informants and field observations, it was found that the main problem of unsustainable household waste management in Bandung is the lack of waste segregation at the household level. The majority of household waste comes from organic waste, in particular, kitchen waste. If kitchen waste is separated, according to the categories of organic and inorganic, then the organic waste can be composted while the inorganic waste can be reused or recycled. If the waste was separated at the household level, it could then reduce some of the waste problem in Bandung city.

The second finding is related to the role of YPBB Bandung. The role of YPBB Bandung, as one of the local NGOs in the city of Bandung is crucial in providing education, advocacy, and promoting the development of zero waste in Bandung city. According to the participants, the zero waste lifestyle training by YPBB has been successful in changing the participants' paradigm on waste. The zero waste lifestyle has helped participants to act and behave wisely in terms of the waste they generate. However, YPBB Bandung has not implemented gender mainstreaming in its programme. Interviews with YPBB Bandung staff people revealed that the reason behind the lack of gender mainstreaming is due to limited staff resources, time and financial budget.

The third finding is related to the experiences of men and women in terms of their commitment to a zero waste lifestyle within their daily lives. Zero waste is seen as a principal value by participants and should be applied in everyday life. However, the results showed that zero waste may be a burden for men and women in different ways. Influencing others, such as, family or friends, is found to be the most challenging for men and women in practising zero waste. Not all family members participated in the training of YPBB Bandung. Therefore, there are differences in perceptions, values and understanding of waste between the different family members. As a consequence, implementing a zero waste lifestyle may not be fully successful when only carried out by some individuals and not by everyone in the family.

Based on the data analysis as it relates to gender roles in practising zero waste, there are two gender-related findings. Firstly, the patriarchal system is dominant

in Bandung and is reflected in the everyday lives of the participants. Most of the men are the family decision-makers and the breadwinners. Hence, if a man has knowledge of zero waste, then his role as the head of the family is to encourage and educate his family about the zero waste principles. However, the problem emerges if the husband does not have time to supervise the zero waste activities at home, which leads to most of the wives forgetting and not taking the initiative to practise zero waste. On the other hand, women are the ones in charge of the household. If a wife has the knowledge about waste management, the zero waste activities are not a problem and the zero waste activities are continuously run under the supervision of the wife. A housewife or a working woman can handle the zero waste even though the family members might forget to apply the zero waste principles. However, not all husbands easily comply with some aspects related to zero waste.

Secondly, the results show that there is still a presumption; if a man brings lunch or a drink bottle into a public space, they are considered womanly. With this kind of gender stereotype, some of the male participants do not like to be regarded as such and are discouraged to fully commit to a zero waste lifestyle.

The next section attempts to bring the results from Chapters 5 and 6 into the literature review in order to answer the research question and research objectives.

### **7.3 Response to research question: What are men's and women's attitudes and behaviours regarding the practice of zero waste at the household level in the Zero Waste Community YPBB Bandung?**

This study found that the attitudes and behaviors of men and women in managing waste are different. They have their own way of facing challenges and living a zero waste lifestyle. Therefore, the results were not consistent with the literature. Previous studies by Pakpour et al., (2014) and Al-Khatib et al., (2009) found that men are more entrusted in handling waste and therefore they are more likely to succeed if they have participated in training, compared with women. However, these previous studies are not necessarily applicable in terms of the results of this study. In fact, men found it difficult to practise zero waste, while the female participants, who were said from the study to be incapable, proved to be more

successful in terms of putting a zero waste lifestyle into practice. This result is also in contrast to the opinion of Pakpour et al. (2017) who suggests that women do not like to take care of waste. For these women, taking care of waste is a chore that is also included within the household chores. This section discusses the research question about men's and women's attitude and behaviour towards zero waste. There are four objectives provided to answer the research question.

### **7.3.1 Perception to a zero waste lifestyle**

Men's and women's perceptions of their zero waste lifestyle experiences are varied. The training on zero waste by YPBB Bandung played an important role in changing the mindset of participants in valuing and interpreting waste. They have seen YPBB's Bandung role in encouraging and supporting the participants in implementing zero waste as discussed in Chapter 5. All of the participants acknowledged that the YPBB training was crucial and has helped them keep the spirit to run zero waste. These results are consistent with those of other studies suggesting that NGOs have a supporting role for communities by educating people, and promoting campaigns to create awareness (Muller & Hoffman, 2001).

All those men and women that participated in the zero waste training YPBB Bandung had the same perception of waste. Waste is seen as material that is useful for other purposes through variation techniques, such as, 3Rs (reduce, reuse, and recycle), or composting. This finding is opposed to the definition by UNSTAT (1997) which argues that waste has no value for other purposes. If waste is undervalued, the problem of waste is not likely to be solved. In addition their perception may result in an increase in the volume of waste and, as such, lead to an unsustainable environment for societies. Supposedly, waste is not creating problems if waste is managed properly as suggested by the zero waste community members by implementing the 3Rs principles or zero waste lifestyle.

This finding is also in contrast to a study conducted by Buerosto et al. (2014, p 3001) who argue that waste is identified as a problem because it causes odors and attracts rodents. According to the study by Buerosto's et al., (2014) men and women did not want to handle waste because it was perceived as gross. However, these perceptions were not found in this study, since the participants had no

problem in handling the waste, including sorting the organic and inorganic waste, and composting wherein one has to deal with the soil or organic waste. Another study by Scheinberg et al. (1999) also argued that men and women have dissimilar perspectives on what is considered as waste. For example, men may consider kitchen waste as waste that is not valued, whereas women may consider kitchen waste useful for composting (Tiwari, 2001). These arguments from the literature were not confirmed by the perception of participants. The participants agreed that waste material has value for other purposes. For example, the results showed that both genders perceived kitchen waste as valuable, not only for composting, but also for handling organic waste.

According to the literature, the concept of zero waste is philosophical and can be seen as an ideal waste management (Zaman & Lehman, 2011). As a visionary goal, the aim of zero waste is to prevent it in the first place and to minimize the impact of the waste to the environment and for society (Connett, 2013). In the definition of ZWIA (2009), there are two key points related to zero waste, firstly, zero waste holds a vision for people to achieve sustainability and secondly, zero waste is a process to redesign material, therefore, it can be reused or recycled. With the background of zero waste training received from YPBB Bandung, both men and women have the same perspective and agreement towards zero waste as a goal to value sustainability. According to both men and women, zero waste is significantly important in their life and to put it into practice is crucial. In addition, zero waste is perceived by participants as a radical effort to achieve sustainability.

Understanding the concept of sustainable development is seen as the starting point of a zero waste lifestyle. Some of the participants had received training from YPBB Bandung about sustainable development and found that the concept is an important stepping point to understand and practise zero waste. To really have a thorough understanding of zero waste, it is necessary to learn and comprehend the concept of sustainable development as argued by Farrelly et al. (2016). Understanding the concept of sustainable development enabled participants to apply zero waste in their daily lives. The findings of the current study are consistent with El-Haggar (2010) and Tudor et al. (2011) who argue that waste is an integral part of the sustainable development discourse and, therefore, waste

must be managed properly to achieve sustainability. It means that sustainable development emphasized in the capacity of natural resources to support the life of humans. Zero waste is closely related to sustainable development since the principal of zero waste is to return waste into the economy system, or what is known as circular economy. Therefore, limited, or no material ends up as waste (Ribic et al., 2016).

Overall, the perceptions of men and women towards zero waste were positive. The zero waste training played a major contribution to their knowledge. Waste is seen as a valuable resource and zero waste is seen as one of the solutions to waste problems and to achieve sustainability. The next section discusses the progress zero waste to achieve sustainable waste management.

### **7.3.2 Practising a zero waste lifestyle**

The practice of zero waste lifestyles by men and women may affect sustainable waste management. Even though their actions may be considered small contributions, at least their effort is helping to make a difference to the environment. Connett (2013) has argued that the daily behaviour of men and women in the household is a decisive factor of the success towards zero waste. Using the sustainable development framework of the three sustainability pillars of economic, social, and environmental aspects (WSSD, 2002, p. 1), the zero waste lifestyle practices by participants gave a depiction of how these three pillars are interrelated and connected. In terms of the economic aspect, for example, participants must invest to buy quality goods that can be used over a long period of time (e.g. water bottles, sanitary pads). In the beginning, these products would be more expensive; however, maybe these will be more economical at the end. By having durable products, the destructive impact on the environment is reduced since less waste is generated to buy disposable bottles. Practising zero waste lifestyles gave participants the values of satisfaction and confidence and, therefore, they felt that they could spread these positive and sustainable values to others.

The results suggest that there are three activities that were deemed as the top priority for men and women in practising zero waste lifestyles. Firstly, men and women have different attitudes and behaviors towards consumption practices.

There was a tendency that women preferred organic or green products. My study confirms the results of previous studies by Schultz et al. (2003) and Khan and Trivedi (2015) that women are more concerned with environmental and health factors while shopping. The findings suggest that these choices were made because women wanted to ensure their consumption was safe for the family and to meet the needs of their families. Male participants had a tendency to shop less because they had fewer needs and also because shopping duties were mostly done by women. However, both genders agreed that consumption should be efficient and overconsumption should not be practised as suggested by Zaman (2015).

Secondly, aside from their consumption practices, men and women both saw composting as one of the top priorities towards sustainable waste management. The literature found that composting is very important and useful for utilizing organic waste and managing organic waste (Kurniawan & de Oliveira, 2014). My participants had the same argument that composting brings about value of processing and reducing organic waste. As described in Chapter 6, the preference in composting is different between the genders. Male participants did not mind dealing with animals and prefer to use vermicompost and BFS, such as, worms or maggots. This type of composting requires persistence in its technical maintenance. Women, however, preferred takakura style composting which they thought was handy to use and fewer rodents appeared. From this study, it can be concluded that results are in line with the study by Pakpour et al. (2017), which argues women do not like handling waste since it is gross due to rodents.

Thirdly, this finding is related to the experience of participants in reducing waste by carrying a zero waste kit. The zero waste kit becomes crucial since carrying it is useful to prevent waste generation and excessive consumption (Ferrara & Missios, 2102). In terms of the waste hierarchy by UNEP (2011) (see Chapter 2), prevention is the effort that is placed at the top. At the beginning, all participants admitted that bringing a zero waste kit was not easy because they often forgot to take it. This was similar to the findings from the study by Davies et al.(2005) in which they argue prevention requires a change of habit. As explained in Chapter 6, a zero waste kit usually consists of a water bottle, a set of cutlery, and a food container, and made from material such as plastic, wood, or stainless steel. Some

participants emphasized that material made for the zero waste kit was important because it will determine the durability of the kit. This study found that the zero waste kit which was made from stainless steel was preferable because of its durability, and it was safe for long-term use. Apart from its durability, the use of stainless steel can prevent the use of plastic. Participants argued that plastic was not safe for human and environment, and this result confirming the study as suggested by Comanita et al. (2016)

Overall, the individual zero waste lifestyles practices by participants had led towards more sustainable waste management on household level. Both men and women were aware that their small actions, such as practising sustainable consumption, composting, and carrying a zero waste kit were may become an inspiration for other people to follow their journey. The next section discusses men's and women's roles within the household in the context of zero waste practices.

### **7.3.3 The roles in the household**

The result from this study suggests that men and women have different roles in the way they practise a zero waste lifestyles in their daily lives. In Chapter 3, Indonesia was identified as a patriarchal society. Result showed that this patriarchal culture is deeply embedded within the participants' households. In the majority of families, men are the head of the household and control the family finances, while women are responsible for most, if not all of the household chores and consumption, and some of them are also working full-time. Women remain responsible for the zero waste activities amidst their busy lives. Their zero waste lifestyle has become an inseparable part of their household chores. There are similarities between the attitudes expressed by female participants in this study and those described by Abadi (2013) and Utami et al. (2008) in Chapter 3. Authors argued that in most parts of Indonesia, handling domestic waste is considered as a part of the regular household chores which are mainly the responsibility of the women in the households. This argument can be agreed within light of the result of my study.

However, female participants admitted that the transition to a zero waste lifestyle was difficult. Although their partners supported the idea of a zero waste lifestyle, they showed limited efforts in helping their female partners to jointly practise the zero waste lifestyle. In households where a wife had participated in the YPBB training, but not the husband, there was an imbalanced power structure and often women did not have a bargaining position. The female participants' husbands left the household responsibilities to the female participants. Thus, these female participants had no choice focusing on the 'obligations' as housewives and practising their zero waste lifestyle as much as possible, even though they received a limited contribution from their partners. As they had a commitment to zero waste, women participants therefore tried to accept that situation and keep to their commitment. For instance, Neni explained that every night she had to prepare a zero waste kit for her husband. Neni's behaviour indicated devotion as a wife to serve her husband and these results confirm the practice of patriarchy on a household level.

As discussed in Chapter 2, Singh (2007) argues that women are often disadvantaged in the household because the chores are mostly done by women and are categorized as jobs that do not provide added value. Therefore, Singh (2007) asserts that household chores were often underestimated by husbands or other family members and the burdens of these chores relied on women only. The results in my study also may be explained by the fact that a patriarchal culture in the context of Indonesia influences gender behaviour on a household level still exists as discussed in Chapter 3, and is still strong and powerful. Most cultures in Indonesia adhere to patriarchal systems that are influenced by cultural and religious factors (Robinson, 2008; Adamson, 2007), and this study has shown some effects of these structures on household levels.

In particular, patriarchy is associated with the Sundanese culture, which is the origin of the participants' tribe. Based on the Sundanese culture, it was seen as a commonplace phenomenon for female participants to do all household chores, including applying zero waste in daily life at home. These results match those observed in the study from Puspawati (2012). She observed that men play a minimal role in household activities, and may not be allowed to take part in

household activities, which in turn may have an impact on the division of labor and the roles in the household (see Chapter 3).

My study also found that religion is influential in the patriarchal system in Indonesia. Islam, as the most popular religion in Bandung, plays an important role within domestic life. As detailed in the Qur'an verse 34 of Surah An-Nisa, it is explained that men play a role in earning a living while women are responsible for the housework, taking care of the children, and serving their husbands. The findings from the study by Millie (2011) and Adamson (2007) conducted in Indonesia, showed that men are more dominant than women, and men are acknowledged as husbands and heads of families who must be respected. The results of my study showed that female participants hold respect for their husbands and for the integrity of their husbands. If their husbands do not want to practise zero waste, the female participants themselves would take this task on and were committed to zero waste. However, the female participants expect that the role of men in the household is very important to achieve gender equality, which is suggested by Wanner and Wandham (2015).

This section has explained that the division of labour of men and women in the household was imbalanced. The power structure of households in Indonesia still sees a man as a figure to be respected and served. As a consequence, the patriarchal system that is embedded in the family, may hinder the practice of zero waste by imposing the chores on a woman. Even though women were busy with their household chores, they manage to spend all their time on looking after the zero waste. This section may help us to understand how the roles of women and men operate, as it relates to a zero waste lifestyle in households and how they are limited, in the context of Indonesia. The next section is focused on the barriers faced by men and women towards sustainability.

#### **7.3.4 Barriers to a zero waste lifestyle**

Chapter 6 has described the challenges in practising a zero waste lifestyle. There were several challenges faced by men and women potentially preventing the implementation of zero waste towards sustainable waste management. Zero waste is conceptualised as a process to change one's mindset and habits into sustainable

ways, and it is impossible to change a habit in an instant (Zaman, 2015). The findings of my study indicate that zero waste is perceived as difficult to put into practice in daily life. Participants admitted that at some point zero waste was a concept that was easy to understand. However, the reality was that zero waste is difficult to be put into practice. Taking the simplest example of separating waste into different categories, all participants felt that even though waste bins were provided at home, they often forgot to separate waste. There is a similarity between the attitudes expressed by participants and those described by Murray (2002) and Lehman (2011). The authors considered that zero waste is not easy to achieve and therefore requires a radical change from a mainstream lifestyle into a more responsible and sustainable way of thinking about waste. This was confirmed by the participants in my study.

One of the interesting findings was that some men argued that if they carried a zero waste kit, they would receive a feminine impression from their surroundings, which made them feel de-masculinized. For example, Adit felt uncomfortable because his friends questioned why he carried a zero waste kit and that this made him look feminine. However, men that had received the training from YPBB persisted despite this discomfort since a zero waste kit is important to reduce waste generation while eating or drinking. In contrast, men married to women who participated in the zero waste training chose to give up carrying a zero waste kit since they felt embarrassed. This shows the importance of participating in the zero waste training to broaden their perspectives on zero waste lifestyle.

This result confirms the studies by Anselmi and Law (1998) and Deaux and Lewis (1984). These authors claimed that in some societies the stereotypes of how a man and a woman were portrayed had been firmly entrenched in society. A woman is portrayed as a loving and gentle figure, while a man is displayed as a figure of masculinity. Men and women may receive some negative views from their society if they behave differently from the expected stereotype as stated by Brines (1994). Brough et al., 2016 also argues that a man tends to avoid green behavior to keep his masculine image, which is in line with Gama who refused to carry any food containers while eating in a restaurant or having a take-away. Again, as it was mentioned in the previous section Bandung's society is affected by the existence of

the patriarchal culture, which shows that the man is powerful (Puspawati, 2007). Given this stereotype in society would likely prevent men from carrying a zero waste kit (Prentice & Carranza, 2002).

According to the results, women felt that household duties were mostly imposed on them. In line with the patriarchal structure of Bandung communities as discussed in the previous section, most men worked full-time which caused time limitations to help their wives. As a consequence, zero waste in the households may not work consistently. In addition, due to time constraints, male participants found it was difficult to influence their wives, mothers, or families. However, despite men's limited time at home, the results noted that male participants did not want to force their wives or family members to apply zero waste. The reason was male participants want to minimize the conflicts that may emerge and ultimately may hinder the application of zero waste in the household. The findings of my study seem to be consistent with the findings from research by Turgarini (2012) and Kadfak (2011). The authors argue that, nowadays, men attempt to be more helpful to women in the household. In my study, it means that men were trying to be more open to the shared responsibilities in the household by helping women with the domestic work, including practising a zero waste lifestyle. In the present study, however, the results showed women still did most of the household duties.

Lastly, for family member's, zero waste lifestyles are still peculiar and unfamiliar activities. In this study, many of the participants' partners and family members found that it was difficult to follow the zero waste practices done by the participants. As explained in Chapter 3, to practice a zero waste lifestyle, a change of mindset is required, as well as valuing the zero waste principles. It was not easy for family members to follow and behave like their partners who had a strong commitment to zero waste. With limited knowledge of zero waste, they had less understanding of the importance of the zero waste lifestyle. As a result, they were often not prioritized and did not see zero waste as a vision to be achieved in life. In accordance with the present results, the previous study has demonstrated that men have a minimal role in taking care of waste because of the lack of awareness (Susilowati, 2014). Their lack of participation in zero waste training was also one

of the factors that contributed to the lack of awareness and a limited understanding of zero waste, hence arguably resulted in a burden for the participants. Even if they had help in handling household waste, their role was simply to remove waste from the kitchen onto the kerbside, as supported by the previous study by Wheeler and Glucksmann (2006).

This section has discussed the challenges of practising zero waste for men and women. There are four contributing factors such as zero waste is hard to put into practice, stereotypes within Bandung society, time constraints, inconsistent actions, and family members' limited knowledge about zero waste. These individuals' challenges are yet to be resolved.

### **7.3.5 Zero waste within ecological citizenship**

All participants committed to reduce their ecological footprint through a zero waste lifestyle. The participants' commitment and responsibility to reduce their ecological footprint is in line with the concept of ecological citizenship by Dobson (2003). Zero waste activities such as carrying a zero waste kit, implementing a sustainable consumption, conducting waste separation and composting are a zero waste lifestyle activities they did to reduce carbon footprint. These small individual initiatives could give greater impact if implemented in larger communities scale to reduce waste problems in Bandung city. However, from the observation of this study, the Zero Waste Community has not been able to give greater impact on a larger scale of community. This community still focuses on applying a zero waste lifestyle for themselves and their families. Therefore, ecological citizenship emphasizes the importance of "participation in social change" as affirmed by Kennedy (2011). Which means that zero waste activities conducted by participants could bring change and advocacy to push government and industry for a more sustainable policy (Melo-Escrihuela, 2008).

The ecological citizenship highlighted the importance of top of pipe approach such government and industrial for provisioning citizens to achieve sustainability. Even though the Zero Waste Community of YPBB on a very small scale level has done well with individual men and women working towards zero waste, however, in order to achieve the SDGs as in Chapter 2, it is still a big challenge for participants.

Indonesia still strives to meet particular goals and targets related to sustainable waste management. The result showed in Chapter 5 that such factors of lack of infrastructure, lack government policy support, and gender cultural structures are still a hindrance to achieve zero waste goals as confirmed by the key informants. Hence, the most important to achieve the SDG in Indonesia is to address the infrastructure and support zero waste practices on a bigger level. However, to break the governmental and industrial structural system into more sustainable waste management systems require strong advocacy and efforts from the individual collective actions. The result is confirmed with the studies by Sefyang (2005) and Anantharaman (2014). Therefore, in this study the role of YPBB Bandung is crucial to push the local government and at the same time to educate individual towards sustainable waste management. The next sections are the overall thesis conclusion and thesis recommendation.

#### **7.4 Thesis conclusion**

With the increasing volume of household waste over the years, the role of the individual in handling waste is crucial to reduce the volume of waste. In particular, the roles of men and women are important within a household. A zero waste lifestyle is one of the solutions to reduce the waste that is generated and its impact. Therefore, this thesis aims to explore how men and women understand and practise a zero waste lifestyle at the household level in the Zero Waste Community YPBB Bandung and how this leads to a better understanding of sustainable waste management in Bandung city. This study has looked specifically at how men and women apply a zero waste lifestyle in their daily lives. For this purpose, the fieldwork was conducted in Bandung city, West Java, Indonesia over a six-week timeline by adopting a qualitative methodology.

For participants, zero waste is believed to be an alternative solution of waste problems in Bandung. As a developing concept, zero waste is a philosophical value that is essential for everyday application. The role of organisations and communities is important in supporting the implementation of zero waste at the household level. For participants, zero waste is a lifestyle paradigm change that they received after the training from YPBB Bandung. This paradigm shift gave new perspectives that waste as a source of value that must be managed properly.

Therefore, participation in the zero waste training is important as the first step to understanding and valuing sound waste management.

Socio-cultural aspects become determinant factors in practising zero waste activities in a household. These are related to a patriarchal culture and gender stereotypes that are common in Bandung city. The power structures in a household showed that a woman's position plays a greater role in domestic affairs such as cooking, cleaning, and shopping for household consumption while a man spends his time making money. Amidst the household duties and full-time work, women remain committed to zero waste practices. The problem emerged when their husbands showed limited effort to help these female participants. On the other hand, male participants argued that their limited action to zero waste lifestyles was due to time constraints. As a result, zero waste practices in the household did not work consistently. One surprising result that emerged was gender stereotypes in Bandung city.

A specific action such as carrying zero waste kit made some male participants feel less masculine and they felt embarrassed by the other people reactions. In fact, the reason that they carry a zero waste kit is to reduce waste generation. This gender stereotype might be a hinder for men to practise a zero waste lifestyle. These stereotypes were enforced by surrounding society, and that there is a need to address society overall to diminish these stereotypes. Therefore, zero waste training is important to understand that men and women have different ways and challenges in adopting zero waste lifestyle.

The empirical findings in this study provide more understanding of the importance of gender roles in relation to the implementation of zero waste in daily life. This study has raised the topic of the roles of men and women in a household and suggests a balance and equal roles in practising a zero waste lifestyle. Implementing a zero waste lifestyle in everyday life can be challenging to put into practice because changing habits cannot be done in an instant, since mindset and behaviour changes require time and consistency.

In light of ecological citizenship framework, the contribution of individual men and women in practising a zero waste lifestyle to achieve sustainable waste

management is important to acknowledge. These individuals initiative indirectly helping the government of Indonesia working towards the SDGs that related to waste such as goal 12 target 12.5. However, such obstacles are caused by inadequate solutions offered by the government, such as insufficient facilities and infrastructure, weak law enforcement, and society who give less positive support to zero waste practices in Bandung city, and Indonesia in general. On top of that, industrial that needs structural changes into an extended producer responsibility and product stewardship. Therefore, as suggested by ecological citizenship, the role of the government of Indonesia to support these individual initiatives in facing obstacles in Indonesia is crucial. Despite many obstacles encountered, participants remain practising zero waste with consistency and high commitment.

### **7.5 Thesis recommendations**

The scope of this study was limited to the context of Indonesia, in particular, to Bandung city. This study may not necessarily be applicable elsewhere because the cultures and systems are different. This study suggests the importance of promoting a zero waste lifestyle as a waste solution that individuals can practise. It also suggests that individual of men and women have an important role in achieving sustainable waste management in household levels if supportive structures are provided.

This research has thrown up many questions that require further investigation. With a study that mapped the potential role of gender in applying zero waste, this study suggests that education is the most important key to open the mindset of society and to have a better understanding of the roles of women and men. Therefore, the burden of the responsibility ought not to fall only on men or women. There are several recommendations for different stakeholders to consider as follows: (1) for the next research, it will be useful to consider gender in relation to waste management since there were limited studies that discussed the nexus of these two areas. (2) For policy makers, this study will provide an awareness of the importance of gender in policies, particularly in regard to strengthening the law enforcement in waste management regulations. It also suggests to policy makers that these individual actions need support by government in terms of

infrastructures for zero waste practises (3) For NGOs or organizations, this study can be used as a reference to either waste management programmes or gender programmes. This study will provide insight for appropriate training programs related to implementing mainstream gender programmes. Zero waste training will succeed if the importance of gender is recognised. This study has shown that those men and women that have participated in the zero waste training programme of YPBB, have gained more understanding not only with regard to zero waste practise, but also with regard to the importance of men and women contributing to these practices. Therefore, this research suggests that married couples should join the training together, thus this enables better understanding for men and women in the household. (4) For industries and businesses, this study is an opportunity to redesign a product that can create less waste as end products. In addition, create products that can represent men's identity to be more masculine with respect to gender stereotypes. Therefore, men will not feel embarrassed if they carry a zero waste kit.

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## Appendances

### Appendix 1: Semi-structured interview guide

Actor	Questions guide
<p><u>The staff of YPBB Bandung</u></p>	<ul style="list-style-type: none"> <li>• How have zero waste programs been carried out under YPBB Bandung?</li> <li>• How is the implementation of zero waste at the household level?</li> <li>• What is the major problem of household waste?</li> <li>• What are constrains of conducting zero waste programme?</li> <li>• How zero waste will benefit society?</li> <li>• How is the gender mainstreaming in the zero waste programme?</li> <li>• What were the driving factors that led people to join the zero waste programme?</li> <li>• What progress was achieved by YPBB Bandung toward zero waste in Bandung city?</li> </ul>
<p><u>The zero waste community member</u></p>	<ul style="list-style-type: none"> <li>• Tell us about your experience with zero waste?</li> <li>• How did you found out about zero waste?</li> <li>• How long have you been involved with zero waste?</li> <li>• Why do you commit to a zero waste lifestyle?</li> <li>• How useful do you find a zero waste lifestyle in your daily life?</li> <li>• What were the key lessons learned of practicing a zero waste lifestyle?</li> <li>• What types of zero waste activities do you find the easiest?</li> <li>• What types of zero waste activities do you find the hardest?</li> <li>• How do men and women differ in their roles in implementing zero waste practices?</li> <li>• How do you encourage other people in your community to live a zero waste lifestyle?</li> <li>• What expectations did you have while implementing a zero waste lifestyle?</li> <li>• What are some of activities your husband/wife does?</li> <li>• Have you noticed a change in behaviour after you joined the Zero waste training?</li> </ul>

	<ul style="list-style-type: none"><li>• What things can men or women do zero waste that the other cannot do and why?</li></ul>
The family member of Zero waste community	<ul style="list-style-type: none"><li>• What are some of activities your husband/wife does?</li><li>• How the decision making process of zero waste process in your household?</li></ul>

## Appendix 2: Focus group discussion guide

### Introduction:

Hello everyone, I would like to thank you all for coming.

Let me introduce myself, my name is Nindhita but you can call me Dhita. I am a Master student in Development Studies at Massey University, New Zealand. Currently, I am conducting a research to fulfill the requirements for my master degree. My research interest area is about zero waste and gender. The aim of this research is to explore how men and women understand and practice the zero waste lifestyle at the household level in the Zero Waste Community YPBB Bandung. I would like to discuss the following topics: your interest in zero waste, your commitment to zero waste, your experiences to practice it, particular roles you undertake in your daily life to in regards of zero waste. The findings of this research will provide support for waste management and strategies and planning for future decision-making including those concerning on gender issues. Therefore, your participation in my research would be very valuable and you are kindly requested to provide answers about the topic based on your current experience and personal opinion of this research. Do not worry about giving your opinion with full transparency; all names will be kept anonymous. There are no right or wrong answers, and you are free to ask for clarification at any time if you do not understand the question.

Our discussion will take about 60 to 90 minutes at the most. I want this to be a group discussion, so feel free to participate without waiting to be called on. However, we would appreciate it if only one person speaks at a time. Be assured that all of you will have equal opportunity to express your opinions and please be respectful to opposing attitudes/statements expressed by another participant. There is a lot we want to discuss, so at times I may move the discussion along a bit.

The discussion taking place will be kept confidential, and your names will be kept anonymous. You can withdraw from the discussion at any time.

Shall we begin the discussion?

Activity/ Subject of Discussion	Question	Tool	Time	Notes to the Moderator
Registration	Ask them to fill their names and information upon their arrival	Registration Form	5	
Introduction	<ul style="list-style-type: none"> <li>• Ice breaker</li> <li>• Participants introduce themselves</li> <li>• Ask participants of their experiences of practicing zero waste</li> <li>• Outline purpose of the meeting</li> </ul>		10	

	<ul style="list-style-type: none"> <li>• Explain the objective of the meeting</li> </ul>			
Section 1 Free listing	<ul style="list-style-type: none"> <li>• List all of zero waste activities</li> <li>• Constrains to zero waste</li> </ul>	Paper Pen	5	
Discussion	Discuss the result of section 1		10	Participants share their answer to the forum
Section 2 Pile sorting	<ul style="list-style-type: none"> <li>• Identify Men and women roles in practicing zero waste</li> </ul>	Picture of a man, a woman, a man and a woman	10	
Discussion	Discuss the result of section 2		10	Participants share their answer to the forum
Section 3 Pairwise ranking	<ul style="list-style-type: none"> <li>• Problem in practicing zero waste</li> <li>• The hardest zero waste activities</li> <li>• The easiest zero waste activities</li> </ul>	Pen Paper	10	Divide the group based on gender  Use the list form free listing
Discussion	Discuss the result of section 3		10	Participants share their answer to the forum
Reflection	Ask participants of today's FGD process.	Paper	5	Participants reflect the focus group process
Concluding/ Ending Question	To what extent do you find zero was is helpful in improving you quality of life		5	
Recommendations/ Way Forward	Do you have any recommendation in enhancing gender equality in practicing zero waste lifestyle for other people?		5	

## Appendix 3: Ethic



Date: 17 May 2017

Dear Nindhita Proboretno

Re: Ethics Notification - **4000017784** - **Gender Roles in Zero Waste Lifestyle Practices at Household Level: A Case Study of the Zero Waste Community in YPBB Bandung, Indonesia.**

Thank you for your notification which you have assessed as Low Risk. Your project has been recorded in our system which is reported in the Annual Report of the Massey University Human Ethics Committee.

The low risk notification for this project is valid for a maximum of three years.

If situations subsequently occur which cause you to reconsider your ethical analysis, please go to <http://rims.massey.ac.nz> and register the changes in order that they be assessed as safe to proceed.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

**A reminder to include the following statement on all public documents:**

*"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.*

*If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director - Ethics, telephone 06 3569099 ext 86015, email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz).*

Please note, if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to complete the application form again, answering "yes" to the publication question to provide more information for one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

Dr Brian Finch  
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

**Research Ethics Office, Research and Enterprise**  
Massey University, Private Bag 11 222, Palmerston North, 4442, New Zealand T 06 350 5573; 06 350 5575 F 06 355 7973  
E [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz) W <http://humanethics.massey.ac.nz>

## Appendix 4: Information sheet



MASSEY UNIVERSITY  
COLLEGE OF HUMANITIES  
AND SOCIAL SCIENCES  
TE KURA PŪKENGĀ TANGATA

### **Gender Roles in Zero Waste Lifestyle Practices at Household Level: A Case Study of the Zero Waste Community in YPBB Bandung, Indonesia.**

#### **INFORMATION SHEET**

##### **Greetings!**

My name is Nindhita Proboretno and I am studying for Master of International Development at Massey University. As part of my study, I am conducting research on the gendered impact of zero waste lifestyle.

##### **Project Description and Invitation**

Human behaviour at home, such as attempts to reduce waste, reuse items, improve recycling habits, and change waste-generating consumer choices, has a huge impact on the environment locally and globally (Lehmann & Crocker, 2012). Yet, what is less understood is how zero waste practices implicate gender. Gender plays an important part in the household waste management (Scheinberg et al, 1999). Gender behaviour in daily life in practicing zero waste is increasingly seen as the essential starting point for change in household waste management practices. Although the concept of zero waste has generated a wealth of studies in relation to zero waste plans, policies, and strategies (see Zaman, 2015), at present there are limited data available on gender roles in the zero waste practices.

To address this gap, this study will use Zero Waste Community in *Yayasan Pengembangan Biosains dan Bioteknologi* (YPBB) or Foundation of Development in Bioscience and Biotechnology, Bandung, Indonesia as a case study to investigate zero waste lifestyle practices at the household level from a gender perspective. The work of YPBB Bandung is significant as this NGO is the pioneer of the zero waste programme in Indonesia and has been focusing on lobbying, advocating and raising awareness of zero waste for a decade in Bandung city. The aim of this study is to explore how men and women understand and practice the zero waste lifestyle at household level and how these can lead to a better understanding of sustainable waste management in Indonesia. The findings of this research will provide support for waste management and strategies and planning for future decision-making

including those concerning on gender issues. Therefore, your participation in my research would be very valuable and I hope you may be able to spare some time to talk with me and answer my questions.

### **Participant Identification and Recruitment**

I will employ a various methods of data collection including focus group discussion (FGD), purposive observations and photo-elicitation interviews. To fulfill the aim of this study, I intend to interview a range of people involved and knowledgeable of the zero waste programme in YPBB Bandung. The people will include (but not limited to) 8-10 people from Zero Waste community, the Director of YPBB Bandung, and the programme coordinator of Zero Waste Lifestyle Campaign.

### **Project Procedures**

If you do wish to take part in the research, you will be asked to sign a consent form. The time involved for interviews will be last between 30 minutes to 1 hour. While I will ask some questions about my research, your suggestions and inputs for the research are also welcomed. With your permission, I would like to record the interview session. If you do not want to answer some of the questions or you wish to stop the interview, you can ask to do so at any time. You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- Decline to answer any particular question;
- Withdraw from the study (specify timeframe);
- Ask any questions about the study at any time during participation;
- Provide information on the understanding that your name will not be used unless you give permission to the researcher;
- Be given access to a summary of the project findings when it is concluded.

### **Data Management**

Any data that were collected will be used only for this thesis and any related publications, seminar, and conference resulting from this thesis. I will use pseudonym, as no name of participants and institutions will appear in the thesis. You can make change, modification or clarification to the responses you have already made during data collection. All recorded interviews will be kept safely by Massey University and will be erased after a period of five years. Once the thesis is done, a copy of the thesis summary will be sent to you.

### **Project Contacts**

If you would like any further information or questions about the research, please do not hesitate to contact me and my two supervisors at any time.

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<b>Researcher</b>	Nindhita Proboretno	Telephone: +64 22 1034710 (New Zealand) Email: <a href="mailto:nindhita.proboretno@gmail.com">nindhita.proboretno@gmail.com</a>
<b>1<sup>st</sup> Supervisor</b>	Dr Maria Borovnik	School of People, Environment and Planning Massey University, Palmerston North Email: <a href="mailto:M.Borovnik@massey.ac.nz">M.Borovnik@massey.ac.nz</a>
<b>2<sup>nd</sup> Supervisor</b>	Dr Trisia Farrelly	School of People, Environment and Planning Massey University, Palmerston North Email: <a href="mailto:T.Farrelly@massey.ac.nz">T.Farrelly@massey.ac.nz</a>

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"This project has been evaluated by peer review and judged to be low risk. Consequently it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director (Research Ethics), email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz). "

## Appendix 5: Information sheet in Bahasa Indonesia



MASSEY UNIVERSITY  
COLLEGE OF HUMANITIES  
AND SOCIAL SCIENCES  
TE KURA PŪKENGĀ TANGATA

### **Peran Gender dalam Praktik *Zero Waste* di Rumah Tangga: Studi Kasus Komunitas *Zero Waste* di YPBB Bandung, Indonesia.**

#### **LEMBAR INFORMASI**

##### **Salam!**

Nama saya Nindhita Proboretno dan saat ini saya tercatat sebagai salah satu mahasiswa Magister di jurusan Pembangunan Internasional di Massey University, Selandia Baru. Sebagai bagian dari tesis saya, saya sedang melakukan penelitian tentang bagaimana dampak zero waste dari perspektif gender.

##### **Deskripsi Penelitian**

Perilaku manusia di rumah, seperti upaya mengurangi sampah, mengganti barang, memperbaiki kebiasaan daur ulang, dan mengubah pilihan konsumen yang menghasilkan sampah, berdampak besar terhadap lingkungan secara lokal dan global (Lehmann & Crocker, 2012). Namun, yang kurang dipahami adalah bagaimana zero waste melibatkan peran gender. Gender berperan penting dalam pengelolaan sampah rumah tangga (Scheinberg et al, 1999). Perilaku gender dalam kehidupan sehari-hari dalam mengelola sampah semakin dipandang sebagai titik awal penting untuk perubahan dalam praktik pengelolaan sampah rumah tangga. Meskipun saat ini kajian tentang zero waste telah menghasilkan banyak studi (Zaman, 2015), namun terdapat keterbatasan studi mengenai peran gender dalam praktik zero waste di tingkat rumah tangga.

Untuk mengatasi keterbatasan ini, penelitian ini akan menggunakan Komunitas Zero Waste di Yayasan Pengembangan Biosains dan Bioteknologi (YPBB) Bandung, Indonesia sebagai studi kasus untuk menyelidiki praktik gaya hidup zero waste di rumah tangga dari perspektif gender. Peran YPBB Bandung sangat penting karena LSM ini merupakan pelopor program zero waste di Indonesia dan telah memfokuskan pada lobi, advokasi dan peningkatan kesadaran akan zero waste selama lebih dari satu dekade di kota Bandung. Tujuan dari penelitian ini adalah untuk mengeksplorasi bagaimana pria dan wanita memahami dan menerapkan gaya hidup zero waste di rumah tangga dan bagaimana hal ini dapat menghasilkan pemahaman yang lebih baik tentang pengelolaan sampah yang berkelanjutan di

Indonesia. Temuan penelitian ini akan memberikan dukungan untuk pengelolaan dan strategi pengelolaan sampah dan perencanaan pengambilan keputusan di masa depan termasuk peran gender. Oleh karena itu, partisipasi Anda dalam penelitian saya akan sangat berharga dan saya harap Anda mungkin bisa meluangkan waktu untuk berbicara dengan saya dan menjawab pertanyaan saya.

### **Identifikasi Peserta dan Rekrutmen**

Saya akan menggunakan berbagai metode pengumpulan data termasuk *Focus Group Discussion (FGD)*, *Purposive Observation* dan *Photo-Elicitation Interview*. Untuk memenuhi tujuan penelitian ini, saya ingin mewawancarai sejumlah orang yang terlibat dan mengetahui program Zero Waste di YPBB Bandung antara lain 8-10 orang dari komunitas Zero Waste, Direktur YPBB Bandung, dan koordinator program Zero Waste Lifestyle Campaign.

### **Prosedur Penelitian**

Jika Anda ingin mengambil bagian dalam penelitian ini, Anda akan diminta untuk menandatangani formulir persetujuan. Waktu yang dibutuhkan untuk wawancara akan berlangsung antara 30 menit sampai 1 jam. Sementara saya akan mengajukan beberapa pertanyaan tentang penelitian saya, saran dan masukan Anda untuk penelitian ini juga disambut baik. Dengan seizin Anda, saya akan merekam sesi wawancara. Jika Anda tidak ingin menjawab beberapa pertanyaan atau Anda ingin menghentikan wawancara, Anda dapat meminta untuk melakukannya setiap saat. Anda tidak berkewajiban untuk menerima undangan ini. Jika Anda memutuskan untuk berpartisipasi, Anda berhak untuk:

- Menarik kembali jawaban untuk pertanyaan-pertanyaan tertentu.
- Mengundurkan diri dari studi ini.
- Menanyakan hal apa saja terkait partisipasi Anda dalam studi ini.
- Memahami bahwa nama Anda tidak akan digunakan kecuali Anda member ijin kepada peneliti.
- Diberikan akses terhadap ringkasan dari studi ini ketika hasil studi sudah diperoleh.
- Wawancara ini akan direkam, Anda berhak meminta untuk mematikan rekaman kapan saja selama wawancara.

### **Manajemen data**

Setiap data yang dikumpulkan hanya akan digunakan untuk tesis ini. Saya akan menggunakan nama samaran, sehingga tidak ada nama peserta yang akan muncul dalam tesis ini. Anda bisa melakukan perubahan, modifikasi atau klarifikasi terhadap tanggapan yang telah Anda buat selama pengumpulan data. Semua wawancara yang direkam akan disimpan dengan aman oleh Massey University dan akan dihapus setelah jangka waktu lima tahun. Setelah tesis selesai, salinan ringkasan tesis akan dikirim ke Anda.

### **Kontak Penelitian**

Jika Anda menginginkan informasi lebih lanjut atau pertanyaan tentang penelitian ini, jangan ragu untuk menghubungi saya dan kedua supervisor saya kapan saja.

<b>Peneliti</b>	Nindhita Proboretno	Telephone: +62 818 08 322339 Email: <a href="mailto:nindhita.proboretno@gmail.com">nindhita.proboretno@gmail.com</a>
<b>1<sup>st</sup> Supervisor</b>	Dr Maria Borovnik	Massey University, Palmerston North Institute of Development Studies Email: <a href="mailto:M.Borovnik@massey.ac.nz">M.Borovnik@massey.ac.nz</a>
<b>2<sup>nd</sup> Supervisor</b>	Dr Trisia Farrelly	Massey University, Palmerston North Department of Social Anthropology Email: <a href="mailto:T.Farrelly@massey.ac.nz">T.Farrelly@massey.ac.nz</a>

“Studi ini telah dievaluasi oleh peer review dan diputuskan sebagai studi berisiko rendah. Dengan demikian, studi ini belum direviu oleh salah seorang anggota Komite Etik Universitas. Peneliti yang namanya tersebut di atas bertanggungjawab terhadap kode etik dalam penelitian ini. Jika Anda memiliki pertanyaan terkait penelitian ini terhadap orang lain selain peneliti, Anda dapat menghubungi Dr Brian Finch, Director (Research Ethics), email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz)”.