

The Role of Gender in Waste Management

Gender Perspectives on Waste in India, Indonesia, the Philippines and Vietnam

Commissioned by Ocean Conservancy

JUNE 2019



REPORT BY



**Addressing
Marine Plastics**
A Systemic Approach



TABLE OF CONTENTS

EXECUTIVE SUMMARY	5
SCOPE & METHODOLOGY	9
WHY GENDER?	10
THE BROADER GENDER LANDSCAPE	10
WASTE LANDSCAPE IN ASIA	12
PREVAILING BEHAVIOURS AND ATTITUDES	23
WASTE VALUE CHAIN - GENDER PARTICIPATION	30
WASTE VALUE CHAIN - GENDER IMPACT ON OPERATIONS	39
WASTE VALUE CHAIN PARTICIPANTS - OTHER INSIGHTS	51
OPPORTUNITIES FOR INTERVENTION	54
KEY STAKEHOLDERS INFLUENCING THE WASTE SECTOR	57
APPENDIX	61

ACKNOWLEDGEMENTS

PUBLISHED BY

GA Circular

Founded in 2011, we are research and strategy experts in post-consumer packaging and food waste in Asia. We envision a world without waste.

54D South Bridge Road, Singapore, 058685
www.gacircular.com



Contact:

Sumangali Krishnan | E: sumangali@gacircular.com

Content:

Sumangali Krishnan
Amita Backer

Design/Editorial:

Laura Allen
Nitya Sarma

SOURCES

INDIA

Nalini Shekar | Executive Director and Founder of Hasiru Dala

Pinky Chandran | Trustee and Advisor to Hasiru Dala and co author of “Valuing Urban Waste - the need for a comprehensive materials recovery and recycling policy”

INDONESIA

Wilda Yanti | Head of the Indonesian Waste Bank Association

Febriarti Khairunnisa | Founder of Bintang Sejahtera

Nadhira Sagita Putri | Project Executive at Waste for Change

THE PHILIPPINES

Dr Vella Atienza | Assistant Professor, Institute for Governance and Rural Development (IGRD), College of Public Affairs and Development (CPAf), University of the Philippines at Los Baños (UPLB)

Mitch Cua | Officer in Charge at Linis Ganda.

Binbim dela Paz | Gabriela Women's Party

Phil Tioson | Counselor at Gabriela Tondo and Head of Barangay Kagawad

Ms Phanuelle Delgra | Partner at Habit

VIETNAM

Nguyen Thi Hoai Linh | Director of ENDA

Nguyen Ngoc Ly | Founder and Director of Center for Environment and Community Research

Nguyen Thi Kim Hoan | Project Officer Center for Development of Community Initiative and Environment Hanoi

Pham Phoung Thao | Environmentalist and Local Project Manager for GA Circular

ABOUT OCEAN CONSERVANCY AND THIS REPORT

Ocean Conservancy works together with our partners to protect the ocean from today's greatest global challenges. For more than 40 years, Ocean Conservancy has championed science-based solutions to protect ocean ecosystems. Our work guides policy and engages people in protecting the ocean, its wildlife, and communities that depend on it.

This report has been produced through funding from the Global Environment Facility as part of the project "Addressing Marine Plastics—A Systemic Approach" that is implemented by UN Environment in partnership with Ocean Conservancy, the New Plastics Economy Initiative of the Ellen MacArthur Foundation, and GRID Arendal (GEF Project ID No. 9681).

ABOUT GA CIRCULAR

Founded in 2011, we are research and strategy experts in post-consumer packaging and food waste in Asia. Our mission is to create a world without waste. We do this by enabling companies, investors, global foundations and government agencies to unlock business opportunities from fast-growing streams of food and packaging waste.

DISCLAIMER

The facts set out in this report are obtained from sources which we believe to be reliable. However, we accept no legal liability of any kind for the publication contents, nor any information contained therein nor conclusions drawn by any party from it.

GA Circular acknowledges product, service and company names referred to in this report, many of which are trade names, service marks, trademarks or registered trademarks. All photos featured in this report are originally taken by GA Circular unless otherwise stated.

The information contained in this report is made available for non-commercial use with proper attribution. This report should not be reproduced in whole or in part for any commercial use without the prior written consent of the authors.

For any questions or clarifications on this report, please contact reports@gacircular.com

TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS IN THIS REPORT

- 3R - Reduce, Reuse, Recycle
- Collection for Recycling Rate - Post-consumer material out of total market input that is recovered to be used as feedstock for recycling
- Formal Waste Collector - Formal Waste Collectors are those who are employed by the government to collect Waste (mixed or separated) from households, offices or establishments.
- Landfill Recycling Picker - Landfill Recycling Pickers are those who pick up recyclables from landfills.
- Materials - recyclable materials found in the MSW stream that can be sold for reuse or recycling
- MSW - Municipal Solid Waste
- MRF - Materials Recovery Facility
- PET - Polyethylene Terephthalate
- Pourakarmikas - Men and women employed by BBMP to go door to door collecting dry and wet waste materials separated into buckets or bags pushed in a cart.
- Recycling Collector - Recycling Collectors are those who go door-to-door to buy segregated and sorted recyclables from households, offices, or establishments. They typically pay a per kg price for recyclables collection. This Recycling Collector may also do some picking, but they are primarily collecting, which is why they are called a Recycling Collector.
- Street Recycling Picker - Street Recycling Pickers are those who pick up recyclables from the open environment (in the city), or from a garbage bin.
- SWM - Solid Waste Management
- TPS (Tempat Pengelolaan Sampah)- A transfer station
- TPS 3R - A transfer station with organic waste sorting and processing facilities
- WC - Waste Collector
- Waste Sector Workers - Individuals who work across the entire waste value chain, including recycling collectors, formal waste collectors, street recycling pickers, landfill recycling pickers, junk shop employees, aggregator employees, preprocessor employees, and recycling factory employees,

EXECUTIVE SUMMARY

Gender Analysis when applied to the field of waste management, especially in developing nations such as India, Indonesia, the Philippines, and Vietnam, can provide unique insights into the waste sector while also serving as a tool for policymakers and program developers to improve and develop the waste sector. Based on research conducted in each of the above-mentioned countries this gender study attempts to answer the following questions:

Might women and men have different perceptions of waste management?

Do men and women perform different roles with regard to household waste management?

What occupations are favoured by men and women within the waste sector?

What are some of the perceived challenges to participation by women in these occupations?

Are there gender differences with respect to income generated for similar occupations?

What are the gender-specific occupational challenges while working with waste?

Are there any gender-specific interventions that may improve the waste landscape?

These questions are answered against the backdrop of the waste landscape in each of the countries. India, Indonesia, the Philippines and Vietnam all share many similarities with respect to the state of waste management - growing populations and consequently growing waste, limited infrastructure and **a heavy reliance on the informal sector for collection and recovery of recyclables**. In the absence of source-segregation and segregated collection, much of the household waste collected is picked through by street recycling pickers for recyclables which are then sold to junk shops and scrap dealers. These junk shops are small-scale businesses, often unregistered, that then sell to larger aggregators, and the materials eventually flow to processors and then domestic or international recyclers.

While each of the countries has varying participation by women, **much of female participation is limited to informal work/ unregulated employment**. Women often work as recycling collectors either individually or alongside male family members. They also work at junk shops and as scrap buyers either as proprietors or as members of a family owned business. The nature of participation at processing and recycling factories is also unregulated and women are engaged primarily as daily wage workers.

Collection of general or mixed waste is a municipal function either conducted by the municipality or by private contractors appointed by the municipality. This **formal waste collection process is dominated by men in all of the countries**. In India, an increasing number of women are being employed in an organized manner in an attempt to provide the benefits of formal employment to women.

The role of women is apparent throughout the waste value chain starting off as consumers and disposers but also as formal waste collectors, street sweepers, recycling collectors, waste bank operators, junk shop owners or employees and factory workers. The level of participation and nature of activity varies from country to country.

WOMEN AS CONSUMERS AND DISPOSERS (INDONESIA, THE PHILIPPINES AND VIETNAM)

Consumer disposal behaviour was studied in three of the four countries covered in this report. The complexity and scale of the Indian consumer market rendered this behaviour research too challenging and expensive to conduct within the scope of this study. Insights based on the consumer behaviour and profile study in Indonesia, the Philippines and Vietnam are as follows:

Disposal behaviour varies with gender in some countries: In Indonesia, more women identified themselves as binners (proper disposers) of waste while more men identified themselves as litterers. There was a more even split between the genders when it came to “desire to recycle/environmental consciousness.” In the Philippines, little variation was seen amongst litterers, binners and recyclers suggesting that both genders could be similarly targeted when attempting to change their disposal patterns. In Vietnam, the percentage of respondents categorised as binners was slightly higher. While the binner and litterer categories reflect an even distribution of men and women, more men than women identified themselves as recyclers. This study was not conducted in India.

Differences in disposal patterns correlate to aspirations and choices. In Indonesia, women are a key demographic to impart awareness with respect to sorting and segregating, linking such behaviour with conservative messaging such as religion and morality, self-improvement and everyday life. In the Philippines, anti-littering campaigns targeting both men and women would be more effective when linked to local issues. Similarly, improvements in source segregation and recycling could be prompted by touching upon the civic-mindedness and relatively more empathetic nature of binners (proper disposers). In Vietnam, litterers tend to be very active on social media with a penchant for personal documentation while binners sought out music and fashion. Using these as levers and prompts, campaigns could be targeted at shifting behaviour from littering and binning to recycling.

In general, respondents were open to regulation even in the form of a plastic ban in resolving the root issue. In all three geographies, respondents were in general not entirely averse to the idea of regulation, and women were especially not so. At least half of all of the respondents were optimistic about a ban on plastics as a measure to reduce plastic usage in all of the countries surveyed, and with a much greater percentage of respondents in the Philippines favouring regulation. Such attitudes are reflective of the reliance on the government to resolve issues around waste and litter while also recognizing that civic behaviour will not change without government enforcement.

Women are willing to learn about waste management processes. When queried about the prevailing waste management processes in their cities, very few citizens of Indonesia, the Philippines and Vietnam responded with complete apathy to the systems and processes. Many (more men) claimed knowledge of existing processes and although there were few variations between responses from men and women, it was noted that women were more inclined to want to understand and learn about what happens to the waste after disposal.

Women typically manage household waste. Based on in-person interviews with collectors who interact directly with households, it is women who manage the waste in the households but men may participate in the actual handing over to a formal waste collector or the disposal process.

WOMEN IN THE WASTE VALUE CHAIN (INDIA, INDONESIA, THE PHILIPPINES AND VIETNAM)

Participation by women is high in the informal sector. In all the countries studied, women's participation in the picking of recyclables from municipal waste, dumpsites or landfills was notable. They also work alongside the men in their family who collect recyclables and manage junk shops and scrap-dealing businesses. Later in the value chain, there are few waste businesses that are women-owned or operated. Women are employed by processing companies to sort, clean, separate and sift through recyclable material through the various stages of processing. While men are tasked with the more labour intensive activities of loading and unloading, the women perform the more repetitive and time-consuming tasks of sorting and separating.

Variations between men and women exist in employment preferences, earnings, use of equipment and challenges faced in all countries in this study. While preference for men is high for employment within municipal systems, earnings in the informal sector are fairly similar between the two genders. Men have access to more equipment in general and both women and men face similar challenges, such as health issues and the social stigma of being a waste sector worker, but women are further burdened by domestic responsibilities and concerns around their physical safety.

Women are preferred in skilled and time-intensive tasks. Women also participate actively in the conversion of post-consumer recyclables to recycle/feedstock for recycling. In the case of the former, they are often employed by processing companies to sort, clean, separate and sift through recyclable material through the various stages of processing. Sorting of materials into clean, uncontaminated streams requires an understanding of the value of each of the materials and fine motor skills. While men are tasked with the more physical activities of loading and unloading, the women perform the more repetitive tasks of sorting and separating.

Challenges faced by women include those faced by the waste sector generally: The waste sector is a largely unregulated sector facing **social stigma** and **economic deprivation**. In addition to these occupational challenges, women in the waste sector must deal with the competing **demands from domestic and childcare responsibilities**. The physical nature of some of the tasks involved as well as **health and safety issues** add another layer of concern for women engaged in waste management.

Recommendations for intervention emphasize acknowledging the participation of women in waste management. The recommendations, while addressing the needs of the sector as a whole also identify women-specific opportunities to improve the status quo and improve collection for recycling, promote a more empowered waste sector, with improved quality of life for the women engaged in waste management:

- Target women as a key target demographic for behaviour change especially with regard to household waste management.
- Improve recycling operations through capacity building, provision of equipment/ vehicles, training and awareness building, financial assistance & health insurance.
- Remove social stigma surrounding waste work as it is particularly challenging for women.

Other recommendations based on insights gained from this study are as follows:

- To “semi” formalize the waste sector, implying the provision of the benefits and stability of formal employment but the flexibility of the entrepreneurship model.
- Integrating the migrant workers and providing access to citizen benefits, given that all of the cities studied have an informal sector comprised of a large number of migrant workers.
- Provide health care, childcare and education so as to allow for both genders to participate fully in the waste sector and to encourage such participation.
- Build awareness of social rights (access to education, legal recourse against crime, access to health care etc.) and a safe means to exercise such rights must be made available to women working in this sector.

Any implementation that is carried forward in any of the countries included in this report must be conducted and implemented with the assistance of a local partner who is familiar with the workings of the informal waste management sector within the target region. A list of local entities is included at the end of this report.

SCOPE & METHODOLOGY

This report aims to understand the existing waste landscape in India, Indonesia, the Philippines, and Vietnam through a gender perspective. In order to do so, the report examines specific aspects of the waste value chain with the intention of understanding how men and women participate, and limitations to their participation.

This study looks at basic waste value chains prevailing in selected cities in each of these countries. Urban areas were targeted primarily because of the higher rates of waste disposal, collection and diversion. These aspects along with higher population density results in a larger population of individuals and businesses engaged in waste management. This study traces the individuals along the waste value chain looking at general disposal, household waste management, waste collection, recovery of recyclables and processing for recycling. This study does not include perspectives from rural parts of the countries which may vary substantially from the insights revealed in this study.

The methodology used in this report covers a range of data collection methods, including on-ground assessments, primary data collection in the form of online and in-person surveys, qualitative interviews as well as digital social media profiling. The results and insights included in this report have been analysed with the added perspectives gained by our research teams from previous research on waste and recycling in the selected geographies.

To understand the prevailing attitudes with respect to waste, online surveys were conducted in Indonesia, the Philippines and Vietnam. The complexity and scale of the Indian consumer market rendered this behaviour research too challenging and expensive to conduct within the scope of this study. Based on the responses to these online surveys, each category of respondents was profiled to understand behaviours, attitudes and inclinations within each of these segments. This digital profiling was primarily conducted through their behaviour on Facebook and Instagram as well as a scan of general conversations around waste in social and news data. The prevailing attitudes were then profiled based on gender to review variations along gender lines where they exist.

Primary data collection through a mobile-based survey application was conducted in India, Indonesia, the Philippines and Vietnam. Survey data from three key sources in the waste value chain was collected: formal waste collectors, recycling collectors, and junk shop owners and operators. In addition to the surveys, qualitative interviews were also recorded to gain additional insights from businesses, government institutions and non-governmental organizations interacting with the waste value chain. Research data from prior studies conducted in the region by GA Circular were reviewed for price and volume variations along gender lines. The table below provides a summary of the research methodology and related data points.

SURVEY TYPE	STAKEHOLDER	TOTAL RESPONDENTS			
		INDIA	INDONESIA	PHILIPPINES	VIETNAM
In-person / mobile-based survey application	Formal & Informal Waste Collectors	36	35	32	20
	Junk Shops	11	17	12	9
	Pre - Processors	3	0	8	10
Online / Digital Surveys	Consumers	N/A	176	421	86

WHY GENDER?

In many studies exploring either the waste management sector or the informal sector questions on gender are often raised to address issues around welfare or inequality. However, the study of gender is relevant not only to assess the degree of participation in connection with all aspects of waste but also to better understand how gender roles influence waste management. This insight brings additional clarity to the questions of why or in what way gender is to be considered when thinking about work to influence or change the sector. This report aims to revisit the issue of gender and how gender analysis can serve as a means to improve outcomes, rather than viewing gender as a challenge for policymakers and programme managers. The outcomes contemplated include:

- Improved working conditions and opportunities for women engaged in waste collection.
- A more robust and effective value chain for recyclable materials allowing for a growth in the recycling industry.
- A recognition of the contribution of the informal sector and particularly women in limiting the challenges created by growing waste in developing Asia.

In the countries being studied, women and men have different behaviours when it comes to generating waste, and their roles and tasks in households and communities vary when it comes to waste management and related activities. They also have different capabilities and access to opportunities when seeking employment in small waste enterprises. In the countries within the scope of this report, gender forms a big part of the socio-economic context.

THE BROADER GENDER LANDSCAPE

It is useful to understand the larger gender context in each of the countries included in this report to identify which of the themes are seen repeated in the case of the waste sector. These broader themes are revisited when reviewing the waste sector with a gender lens.

Of the four countries in this study, **India** has the lowest score on the World Economic Forum's 2018 Gender Gap Index, ranked 108 of the 149 countries evaluated.¹ Low scores for political empowerment and economic participation and opportunity for women are the two drivers for this result. According to UN India Business Forum, more than 50% of the work done by women in India is unpaid, and almost all of it is informal.² Many Indian women are also excluded from the formal financial system. Nearly half of India's women do not have banking access or savings accounts and 60% have no valuable assets.

Indonesia ranks 84th out of 149 countries in the World Economic Forum's 2018 Gender Gap Index due to low economic participation, limited political empowerment, and lack of education for women. Even though the economy has improved in the last ten years, traditional social perceptions and attitudes persist. The idea that men are responsible for the economic security of the household and women must attend to the house and children is still dominant and is only challenged in the more educated segments of the society.³

¹ [2018 World Economic Forum Gender Gap](http://www.weforum.org/publications/2018-gender-gap-index)

² <http://in.one.un.org/unibf/gender-equality/>

³ <http://www.insideindonesia.org/a-woman-s-place-3>

The Philippines is one of the higher-ranked Asian nations with respect to closing the gender gap, boasting a global ranking of 6 out of 149. Contributing factors are high rates of health and survival, education, and economic participation. Women, however, primarily constitute a large portion of the Philippine informal sector and are typically found in small home businesses and other underdeveloped sectors of the economy including waste and recycling. The Philippine Commission on Women (PCW) noted that women are more likely to move in and out of the labour force “to balance productive and reproductive work,” but more significantly women are prone to suffering meagre wages and exploitative work arrangements.⁴

The participation of women in **Vietnam’s** labour force is quite high compared to other countries in the region.⁵ Despite an overall gender gap ranking of 77 out of 149 countries. Vietnam ranks relatively high in economic participation and opportunity. However, a lack of political empowerment dramatically reduces Vietnam's overall score. Even though traditional Confucian themes of a patriarchal society are adhered to in Vietnam, women are actively engaged in owning and operating businesses as well as participating in the workforce.

Recurring themes in all of the countries are those of low or limited economic participation, often not allowing for growth or scaling up from small, localised businesses.

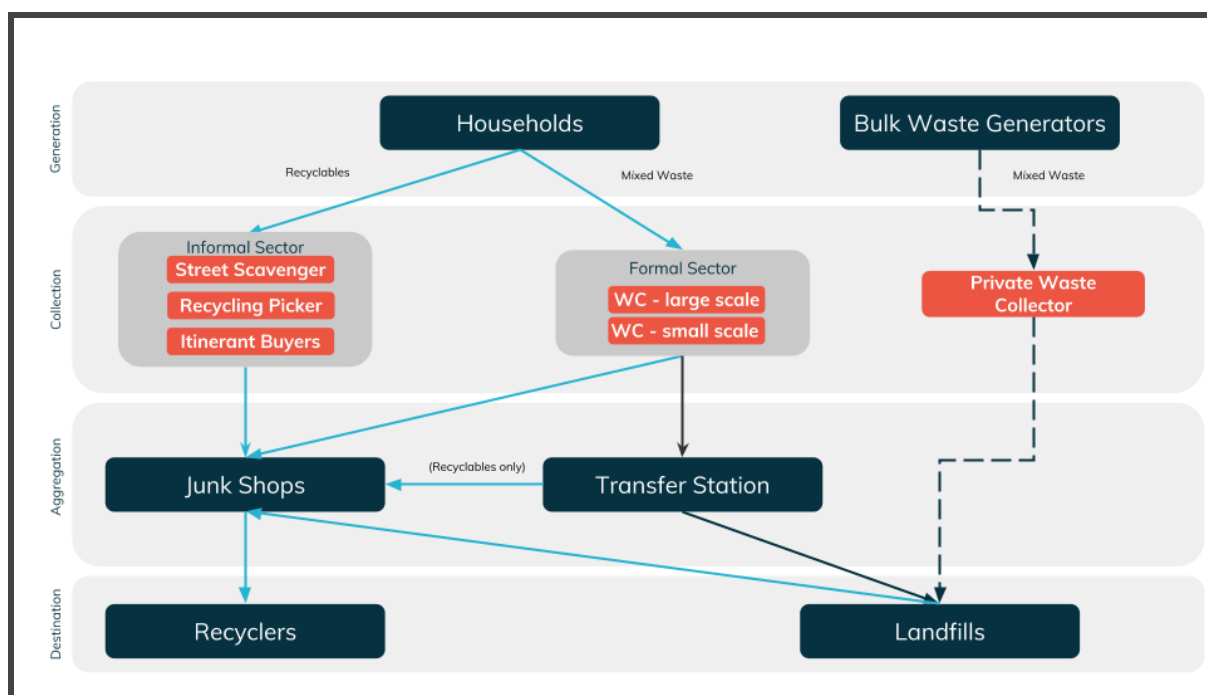
⁴ <http://pcw.gov.ph/wpla/magna-carta-workers-informal-economy>

⁵ <http://vietnamnews.vn/opinion/in-the-spotlight/283270/role-of-vietnamese-women-changing.html#vtdh3SQhQC81y8jr.99>

WASTE LANDSCAPE IN ASIA

There are a multitude of similarities in the waste landscape of the different countries in Asia, primarily driven by a few common facts: growing populations, rapid urbanisation, limited waste infrastructure, low levels of awareness around littering and segregation and overflowing landfills. But these commonalities are not limited only to challenges; most of these countries, have a large and active informal waste network, with a reasonable degree of participation by women, which can be extremely effective. Also prevalent are traditional forms of recycling (especially for materials like paper and metals) while innovative approaches and basic or low tech solutions are explored with respect to some types of waste (packaging, food, e-waste).

Below is a generic waste material flow chart which is typical for the four countries in the study. The flow patterns are very similar for the geographies included in the scope of this study.



Flow chart of waste materials

A more detailed exploration of the waste landscape within each of the countries follows.

INDIA

India has a population of 1.339 billion people,⁶ of which 31% live in cities. The number of towns has increased from 5,161 in 2001 to 7,935 in 2011 and it is further projected that by 2050 half of India's population will live in cities. With its vast size of 3.3 million sq. km, 22 official languages and massive variations in socio-economic classes, waste material management in this country of diversity faces many challenges.⁷

The annual solid waste generation rate is determined to be 62 million tonnes, of which 43 million tonnes (75-80%) is reportedly collected. Of the collected waste, 11.9 million tonnes (22-28%) is treated and 31 million tonnes is dumped in landfill sites. The waste generation rate will increase from 62 million to about 165 million tonnes in 2030 according to India's Ministry of Environment, Forests and Climate Change.⁸ However, the collection rate varies from as low as 25% in the state of Kerala up to nearly full coverage in the state of Maharashtra.⁹ It should be noted that the above mentioned annual waste generation rate does not include waste material picked up by informal workers from waste generators and the street.¹⁰ Given that the contribution of the informal sector in Bengaluru makes up 80-85% of its handled dry waste, for example, this can mean a large difference in the amount of waste generated.¹¹

Solid waste management is improving in India, although challenged by rapid urbanization and population growth similar to Southeast Asian geographies, with the 2016 revised legislation of waste management and new schemes such as Swachh Bharat Mission (SBM, "Clean India Mission"), Smart Cities and AMRUT (Atal Mission for Rejuvenation and Urban Transformation) emphasizing technology and PPP models. The new legislation is based on Circular Economy principles and pushing for "Concept of 5R" - Reduce, Reuse, Recover, Recycle and Remanufacture to minimize the quantum of waste, with the ultimate objective of zero waste to landfill.¹² The 2016 SWM legislation also acknowledges the contribution of the informal sector to city cleanliness and recommends inclusion of informal recycling collectors in waste management services.¹³ Apart from the ultimate zero waste to landfill objective, there are no national recycling targets for certain municipal solid waste (MSW) components.¹⁴ Although the 5R concept mandates source segregation, there is poor public support, a lack of segregated collection and processing facilities, as well as poor law enforcement against offenders.

In India, similar to Southeast Asian geographies discussed below, waste work ranks lowest in the hierarchy of urban informal occupations. Unskilled persons, migrants and the poorest of the poor, and quite often women and children, predominantly work as formal waste collectors and recycling collectors, as they are unable to find any other employment. However, in India there is the added aspect of the caste system, relegating the lowest of castes to waste collection deepening the related social stigma.¹⁵

⁶ United Nations Population Division 2015

⁷ State of the 3Rs in Asia and the Pacific, The Republic of India

⁸ [Press Information Bureau, Government of India Ministry of Environment, Forest and Climate Change, April 5th 2016](#)

⁹ State of the 3Rs in Asia and the Pacific, The Republic of India

¹⁰ Valuing Urban Waste, Pinky Chandran, Kabir Arora, Marwan Abubaker and Nalini Shekar, Hasiru Dala

¹¹ Extracting Value From Bengaluru's Dry Waste Chain, Bruhat Bengaluru Mahanagara Palike (BBMP)

¹² State of the 3Rs in Asia and the Pacific, The Republic of India

¹³ Valuing Urban Waste, Pinky Chandran, Kabir Arora, Marwan Abubaker and Nalini Shekar, Hasiru Dala

¹⁴ State of the 3Rs in Asia and the Pacific, The Republic of India

¹⁵ http://www.wiego.org/informal_economy_law/waste-pickers-india



Waste bins in India

Gender Lens: A socioeconomic profile of Pune reveals that 90% of street recycling pickers are women, and 25% are widowed, 30% are from women-headed households, 8% are sole earners, 50% started their life in this line of work, and almost all are from the “untouchable castes.”¹⁶ 94% of recycling collectors interviewed in the Jawahar Nagar landfill in Hyderabad stated that they chose this job since there were few other alternatives available to them.¹⁷ Nevertheless, they preferred waste picking to construction or domestic work, the other principal occupations open to them, because it afforded greater independence, flexibility, and relative freedom from the feudal and often sexually exploitative relationships prevalent in those other fields.¹⁸

Research Focus: In Bengaluru, where the research for this study was conducted, formal waste collection is handled by collectors hired by BBMP (Bruhat Bengaluru Mahanagara Palike, the administrative body responsible for civic amenities and some infrastructural assets). The first step in the collection is handled by the Pourakarmikas, this is the term for the men and women employed by BBMP to go door to door collecting dry and wet waste materials separated into buckets or bags pushed in a cart. The Pourakarmikas separate any recyclables to be sold to junk shops or aggregators, then the residual waste is transferred to the secondary motorised collectors, auto tippers. The auto tipper operators, normally working in pairs of one driver and one loader, have small motorised vehicles with which the waste is transferred to a large truck or compactor at one of the

¹⁶ Integrating Waste Pickers into Municipal Solid Waste Management in Pune, India: Poornima Chikarmane 2012

¹⁷ “Unpaid and undervalued, how India’s waste pickers fight apathy to keep our cities clean” by Swetha Dandapani, The news minute

¹⁸ On The Road To Zero Waste - Successes And Lessons From Around The World: Gaia

cities “tipping points” to be taken to the landfill. During the tipping process, the auto tipper loader extracts any remaining recyclables to be sold to local scrap dealers or aggregators.

The informal recyclables collection of Bengaluru can be categorised into three groups:

- Free roaming recycling collectors collecting materials from dump sites, streets, and community bins and selling to local scrap buyers
- Recycling collectors aggregating recyclable materials from a neighbourhood often using a cycle as a transport mode. The collected materials are sold the neighbourhood landlord who in turn sells it to aggregators
- Itinerant buyers who collect recyclable materials from households to be sold to scrap shops, recycling markets and processors. These buyers often use carts for transporting materials and frequently engage in a barter system.

Moving further up the value chain, scrap dealers and junk shops buy materials from the informal recyclables collectors. These operators vary widely in size of operations and many specialise only in specific types of materials (i.e. paper, glass, or PET). These operators then sell to aggregators who then sell to recyclers or processors of recyclable waste. If large enough, a scrap dealer may sell directly to the recycler or processor. In Bengaluru, the municipal corporation has set up Dry Waste Collection Centres (DWCC) which in some cases are operated by former waste sector workers who have taken on an entrepreneurial role with the support of the municipal government. The role of DWCC is to store, sort and aggregate the recyclables to be sold to recyclers or processors.



Manual sorting of recyclables at a DWCC in Bengaluru

Women in Bengaluru primarily participate within the waste workforce as “Pourakarmikas” - formal waste collectors and street sweepers. While performing their role as “Pourakarmikas,” women also separate out recyclables for additional income. According to Hasiru Dala, an NGO active in the waste management field in Bengaluru, there are no women working as itinerant buyers or scrap dealers. At the final stages of the waste material value chain are the aggregators and preprocessors. A survey conducted by Hasiru Dala reveals that these businesses have male registered owners in 99% of the cases. However, about 53% of the surveyed businesses are family businesses which involve the women in the family, too.¹⁹

INDONESIA

With a population of 261.89 million (2017),²⁰ Indonesia produces 65.8 million tons of waste per year.²¹ The waste generation rate is expected to increase as the population grows and is projected to reach 70.8 tons per capita by 2025. The Indonesian government has pledged to reduce waste generated at source by 30% (20.9 million tons) and to divert 70% of waste from the landfill (49.9 million tons per year) by 2025.²² Each city is responsible for setting up plans and actions to achieve this goal. Initiatives such as waste banks, TPS 3R (transfer stations that sort through and segregate household waste), education for communities, and waste-to-energy technologies are encouraged to reach this goal.



Bantar Gebang Landfill in DKI Jakarta

¹⁹Valuing Urban Waste by Pinky Chandran, Kabir Arora, Marwan Abubaker and Nalini Shekar

²⁰ Central Statistics Bureau, National Development Planning Agency, United Nations Population Fund. (2013). *Indonesia Population Projection*, 55

²¹ Ministry of Environment and Forestry. (2017). *National Solid Waste Management Information System*.

²² Based on Presidential Regulation No. 97 Year 2017

The household waste collection system is usually managed and coordinated by the Head of Neighborhood Community (RT/RW). The head of the neighbourhood community hires individual formal waste collectors to collect the neighbourhood waste and transport it to the “tempat pengelolaan sampah” or TPS (transfer station for transfer to landfill) or sorted at a TPS 3R (a transfer station with recycling facilities) to segregate recyclables to be sold to junk shops.



Chart - Waste Treatment in Indonesia (KLHK, 2017)²³

According to the Ministry of Environment and Forestry (KLHK), 66.39% of waste generated in Indonesia is landfilled (with 57% of landfills operating as open dumpsites), 19.62% of waste is unmanaged (ie. burned or leaked into the environment), and only 2.2% is recycled or processed into other resources such as fuel, biogas etc.

The flow of recyclable materials in DKI Jakarta as well as in Indonesia is heavily dependent on the informal sector.²⁴ Street recycling pickers collect recyclable materials from the streets and TPS. There are also recycling pickers at landfills who collect recyclables as they are dumped into the landfill. Recycling collectors collect segregated recyclables from households and businesses.

Formal waste collectors employed by the Head of the Neighborhood Community collect household waste and sift through this for recyclable materials. Street recycling pickers, recycling collectors and formal waste collectors sell recyclable materials to junk shops, and junk shops sell these to an aggregator or preprocessor. Separately, waste banks collect segregated recyclables from households, and sell this to a larger waste bank/junk shop, where the recyclables are sold to an aggregator or preprocessor. Waste collected by formal waste collectors is either transferred to a TPS or a TPS 3R. If transferred to a TPS 3R, the waste is sorted,²⁵ and recyclables are sold to junk shops. Pre-processors convert recyclable materials into feedstock for further processing/recycling locally or for export.

²³ Ministry of Environment and Forestry. (2017). *National Solid Waste Management Information System*.

²⁴ The informal sector is made up of individuals, unofficial small-scale business units, who produce and/or distribute goods and services without having a legal entity or location permit under applicable laws and regulations. Street recycling pickers, Recycling collectors, and junk shops are a part of this informal sector.

²⁵ Only 5-10% of the TPS 3Rs are functional, hence only some of these are actually sorting. Most are just transfer stations for mixed waste



Sorting of organic waste at a transfer station (TPS) in Depok

Gender Lens: To the extent that women are primarily in charge of household waste management, they do participate substantially in the disposal/sorting and segregation of residual waste and recycling materials. In the informal waste sector, both male and female respondents suggest that women do not have the strength to perform tasks such as those of a recycling collector which require greater strength and stamina and may even require them to interact with strangers. There is higher participation in scavenging, (i.e. picking out of recyclables from dumpsites and litter) but in this instance too, women only collect lower value recyclables, leaving heavier more valuable materials to their male counterparts and often work alongside their spouses and other family members.

THE PHILIPPINES

The Philippines is an archipelago of 7,107 islands. They are mostly mountainous with varying amounts of coastal lowlands. As of 2010, 45.3%²⁶ of the population in the Philippines is considered urban. Modernisation in urban areas of the Philippines has been rapid. A high urban population and high rate of modernisation have resulted in large amounts of waste generation and increasing issues regarding solid waste management. In the Philippines, the estimated amount of waste generated is 0.40 kg/person/day including both urban and rural areas.²⁷ In Metro Manila, the waste generation rate is 0.55-0.79 kg/person/day.²⁸ Of the total waste generated, 28% is recyclable, and 52% is biodegradable.²⁹

²⁶ <https://psa.gov.ph/tags/urban-rural-classification>

²⁷ https://www.senate.gov.ph/publications/SEPO/AAG_Philippine%20Solid%20Wastes_Nov2017.pdf

²⁸ <https://nswmc.emb.gov.ph/wp-content/uploads/2016/06/Solid-Wastefinaldraft-12.29.15.pdf>

²⁹ https://www.senate.gov.ph/publications/SEPO/AAG_Philippine%20Solid%20Wastes_Nov2017.pdf



Ocean Plastics in the Philippines

According to World Bank (2001), Metro Manila contributes 25% of the total waste generation of the country. For these reasons, SWM is given great significance in the country's National Climate Change Action Plan 2011-2028 (NCCAP).³⁰ Three key trends shape SWM issues in the Philippines:

- increasing volumes of waste generation as a result of higher population, higher consumption and increased access and demand for packaged goods
- continuing waste disposal behaviours which result in littering while on-the-go and little or no sorting/separating of recyclables at the household level and open dumping when there is limited access to waste collection,
- ineffective policy enforcement for SWM

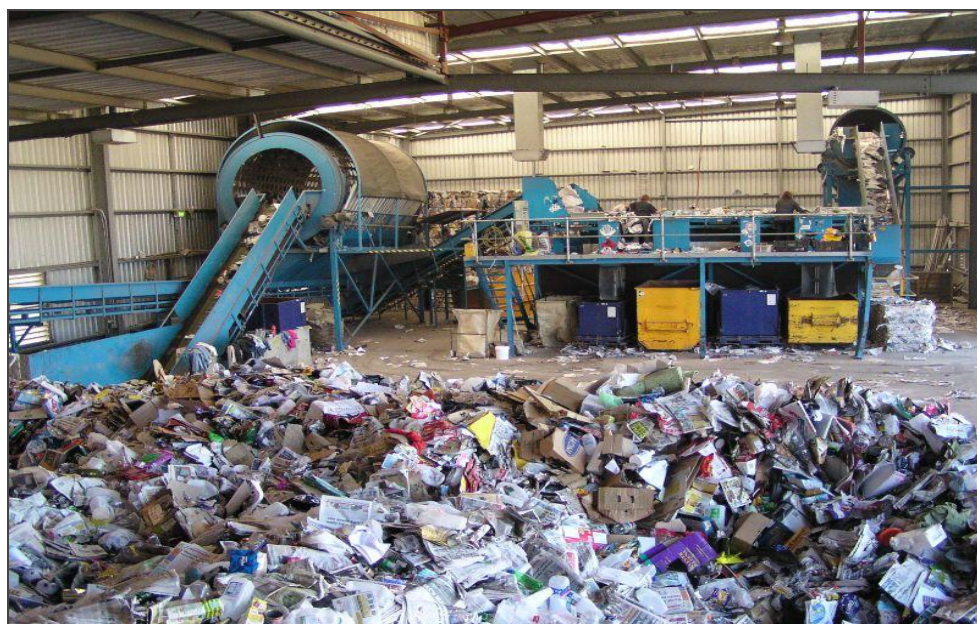
Households who separate their waste typically sell or give their recyclables to recycling collectors, to Material Recovery Facilities (MRFs), or to formal waste collectors (who then sell). In very rare cases they sell directly to junk shops. Recycling collectors and formal waste collectors sell their recyclables to junk shops.

³⁰ Pariatamby & Tanaka: Municipal Solid Waste Management in Asia

The majority of households do not separate their waste and have their waste collected. Formal waste collectors pick out the recyclables from the collection trucks and transfer stations. These formal waste collectors sell the recyclable materials to junk shops at the end of their shift.

At the landfill sites, there are recycling pickers who further go through the incoming mixed waste to pick out any remaining high-value and easy-to-clean materials such as aluminium cans or PET bottles and sell this to junk shops. Junk shops aggregate and sell recyclables to larger aggregators who then sell to preprocessors and recycling factories.

Formally collected recyclable material is sent to a MRF. The MRF collects and separates the recyclables to sell to a junk shop or collector. The organic matter is composted and the waste collection company collects the residual waste. This system is not very well enforced, and households often do not segregate their waste materials. In Metro Manila, open dumping has increasingly become an issue. Private haulers, who collect waste from shopping malls and large entertainment complexes often dump waste near Manila Bay instead of transporting it to a landfill.³¹ The difficulty in recovering materials that have leaked into rivers and the high levels of contamination make it challenging to incentivise the informal sector to pick out recyclables from waterways



Transfer station (MRF) in Metro Manila combining light mechanical and manual sorting of recyclables

Gender Lens: While less likely to be employed in formal waste collection by the use of truck or similar vehicles (5%), women are often engaged as street sweepers (37%) within the category of formal employment. Also challenged by the requirements of domestic work, the women in recycling either support their family members or operate on a very small scale and as a result are not adequately represented within the category of recycling collectors (8.3%). The owning and operating of junk shops by women is quite common (36%) and representative of the general trend of this form of employment, i.e. the operation of small businesses.

³¹ In-person interview with CENRO

VIETNAM

Rapid economic growth since Vietnam's economy was opened with the 1986 Doi Moi economic reforms, has spurred urbanisation and industrialisation. This has led to increasing consumption and thus, magnifying SWM challenges. Increased waste generation per capita has been compounding with the increasing population which is now over 94 million.³² MSW generation was 15 million tons in 2005, and increased to 30 million tons in 2011. This figure is forecasted to reach 54 million tons in 2020.³³

Formal waste collection in Vietnam is undertaken as follows:

- **State-owned urban environment companies (URENCOs/CITENCO)** are in charge of collection, transport, treatment and disposal of waste in provinces and cities. They have specific targets and budgets allocated by the government each year.
- **Private environmental services companies / District Services companies.** These enterprises collect, transport and treat waste materials typically under contracts with local authorities (i.e. districts) or manufacturing units. They employ formal waste collectors and are in charge of collecting waste from smaller streets within wards and/or districts.

In Ho Chi Minh city approximately 60% of waste collection from households is performed by private collectors, independently organised collectors or the informal sector, while 40% is performed by the state-owned enterprises of CITENCO and URENCO. Independent workers collect household waste for a fee and extract recyclables for additional income. Waste materials are collected from houses by pushcarts which are mainly attached to motorbikes. Once the carts are full, they are taken to transfer stations within the districts; from there the waste is trucked by URENCO/ CITENCO to treatment facilities and/or landfills.

Very few households and business establishments segregate and sell their recyclables. For the households that don't separate their recyclables, everything is thrown as mixed waste. A small amount of recyclables are picked out of the mixed waste at the point of collection or at the transfer station by the collectors and then sold to junk shops or recycling collectors. Separately, some recycling collectors pick recyclables out of the carts or from garbage littered on the streets. Finally, from landfills, some recycling pickers try to pick out recyclables and sell these to junk shops.

Junk shops in Ho Chi Minh City have been deemed unsightly and there has been consideration of measures to relocate them outside city boundaries in response to concerns raised by the communities. This will limit the opportunities for informal workers to sell recyclables and especially for women given that they are less mobile. There is a fair amount of social stigma attached to working in waste management and local organizations such as ENDA have been actively working to alleviate these attitudes towards the workers. As communities and neighbourhoods get increasingly gentrified, waste sector workers are pushed to the outer margins of the cities.

³² Euromonitor Vietnam Population

³³ MONRE. "National Environment Report - Solid Waste"



Illegally dumped and littered waste ends up in the waterways

Gender Lens: In the waste sector too, Vietnam has a high participation rate by women and especially so in the informal and independent sector. Women represent 35-40% of formal waste collectors while they dominate the informal sector with 65% participation rate.³⁴ This higher participation rate is also supported by the fact that women often work alongside their spouses or other family members in a wider range of occupations, including waste collection. In many cities, they dominate the low-paying but secure professions of street sweeping and waste material collection by handcart. Although the presence of women in the informal recycling sector is common in other countries in Asia, their numbers in Vietnam's solid waste related activities, typically as street recycling pickers, itinerant buyers, and small scale junk shop operators is greater. Men earn more as recycling collectors at dumps because they are more likely to work at night, when most of the waste material arrives. Men dominate higher paying professions not only in the informal waste economy, such as dealers and owners of recycling businesses, but also in the formal waste economy, such as truck drivers and managers.

³⁴ From interview with Nguyen Thi Hoai Linh at ENDA Vietnam.

PREVAILING BEHAVIOURS AND ATTITUDES

This research was conducted only in Indonesia, the Philippines and Vietnam.

Consumer Awareness and Attitudes: The research and analyses in this study first explore the larger prevailing consumer attitudes with a gender lens. Based on an online survey conducted in Indonesia, the Philippines and Vietnam respondents' attitudes were assessed with respect to waste and packaging materials in particular. Respondents in the online survey were asked to respond to a series of questions around awareness around waste management, current disposal behaviour and reaction to regulation.

The sample sizes for these surveys in this section are summarised in the table below:

COUNTRY	SAMPLE SIZE
Indonesia	176
Philippines	421
Vietnam	86



Images from the Philippines and Indonesia - litter in the environment

AWARENESS OF WASTE MANAGEMENT

While comparing responses to the question “Do you know what happens to your waste after it gets collected?” between the three countries, more respondents in Vietnam self-reported that they know about waste management than those in Indonesia and the Philippines.

Looking at the overall trends, men are more knowledgeable about what happens to waste, however, women are more willing to learn about waste management.

DO YOU KNOW WHAT HAPPENS TO WASTE AFTER IT GETS COLLECTED?	INDONESIA		PHILIPPINES		VIETNAM	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
I don't know and I don't care.	14%	10%	0%	0%	0%	0%
I don't know but would like to learn more.	43%	53%	54%	53%	38%	46%
Yes, I do.	43%	37%	46%	47%	62%	54%

Table - responses from consumers on ' Do you know what happens to your waste after it gets collected?'

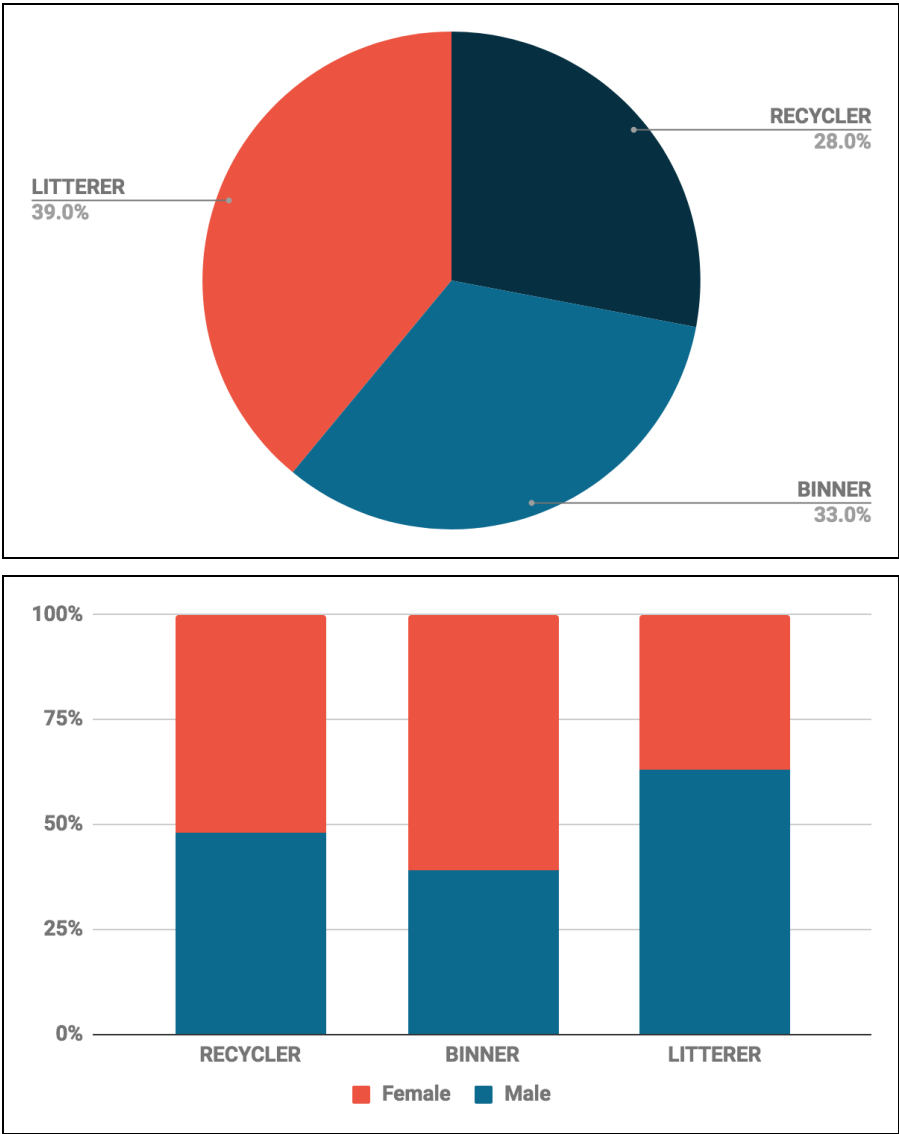
IDENTIFICATION OF DISPOSAL BEHAVIOUR

Based on their responses to a set of survey questions, respondents were categorised as bidders (those who disposed of their waste properly), litterers (those who littered), or recyclers (those that segregated and sold materials for reuse/recycling).

Once categorised, each set of respondents' public social media data on facebook and instagram was analysed through a combination of human research and machine learning to identify patterns in their behaviour to enable better tailoring of any campaign messaging intended to nudge people to be more responsible about their waste.

INDONESIA

The respondents from Indonesia were fairly evenly split between the three categories with 39% of them categorised as Litterers, 33% as Binner, and 28% as Recyclers.



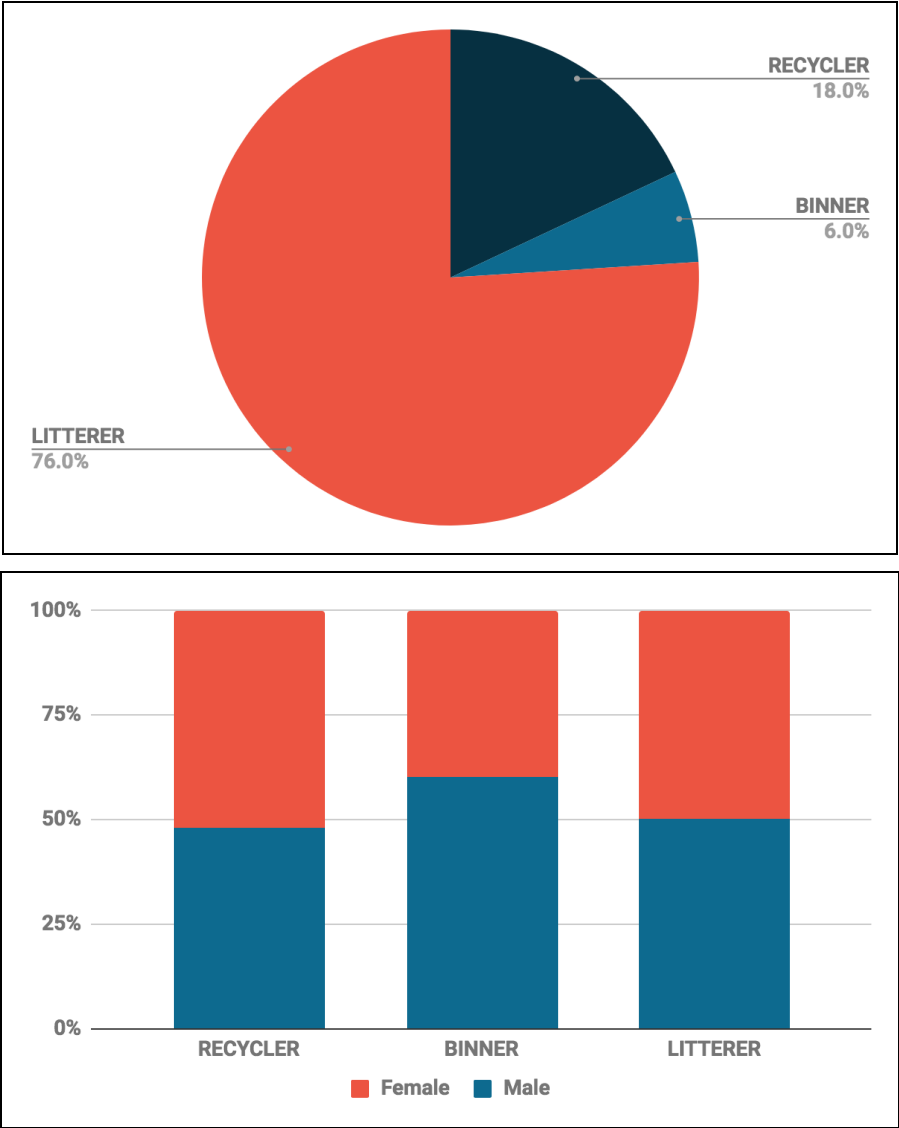
Survey Results: Classification of Respondents

Looking at the gender distribution within these categories, it is observed that more men than women were categorised as Litterers, while more women than men were categorised as Binner.

In Indonesia, Litterers were noted for their attributes as aspiring towards lifestyle enhancement and self-elevation. They were perceived as having a keen awareness of global brands and trends. Binner are represented in the group of respondents with a more religious mindset, seeking to be better people and focused on everyday life. Recyclers were found to be more discerning and knowledge seeking.

THE PHILIPPINES

In the Philippines, most of the respondents self reported as Litterers (76%), while only a very small percentage identified as a Binners (6%).



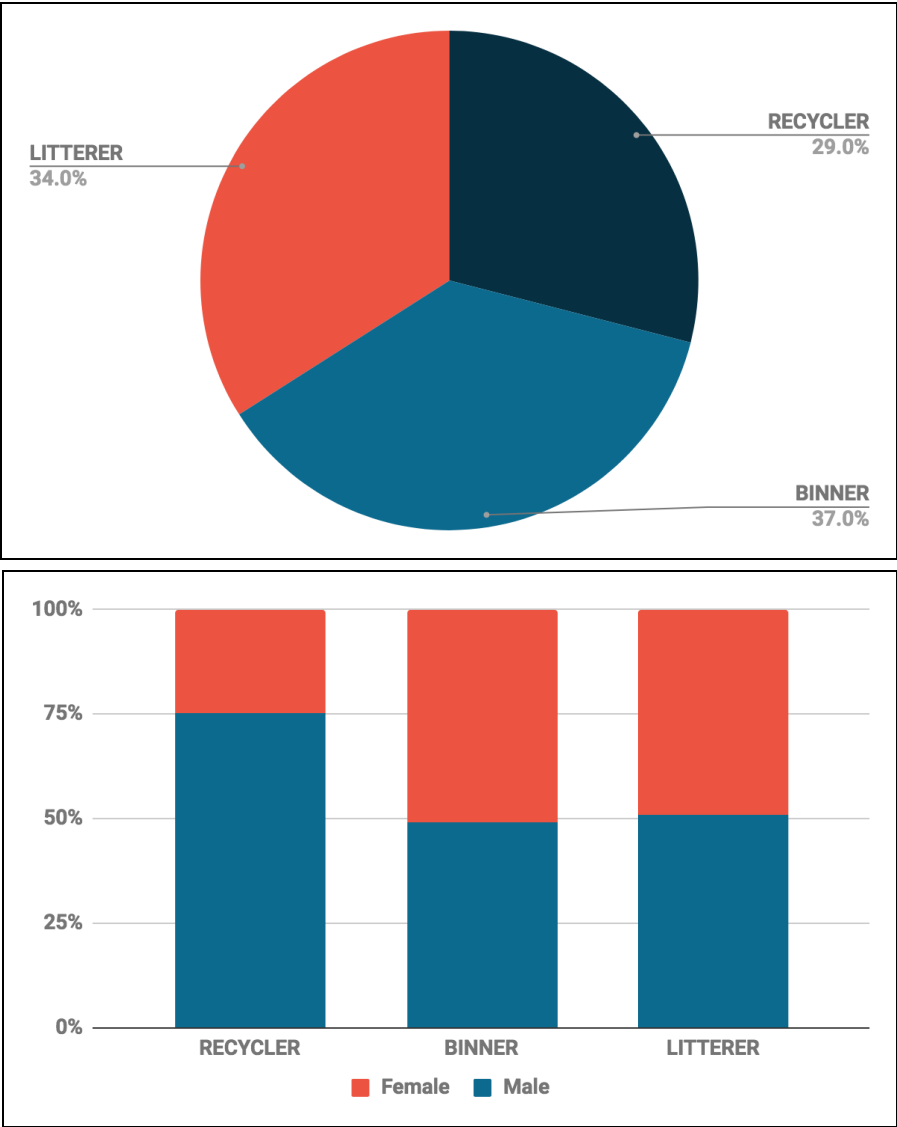
Survey Results: Classification of Respondents

While the categories of Litterers and Recyclers displayed a fairly even distribution of men and women, the Binner category comprised of a larger percentage of men than women.

Litterers in the Philippines, tended to be more focused on local issues, participating in administrative jobs, and generally representing a more conservative demographic. Amongst women in this sub-group, there were patterns suggesting support of empowerment issues. Recyclers tended belong to the more affluent sections of society and were also more oriented towards health and wellness. Binners, the smallest subsection, displayed a higher empathy for the world around them and tended to be civic-minded and inclusive.

VIETNAM

In Vietnam, a more even distribution of the responses was noted when compared to Indonesia and the Philippines. However, the percentage of respondents categorised as Binner was slightly higher. While the Binner and Litterer categories saw an even distribution of men and women, more men than women were categorised as Recyclers.

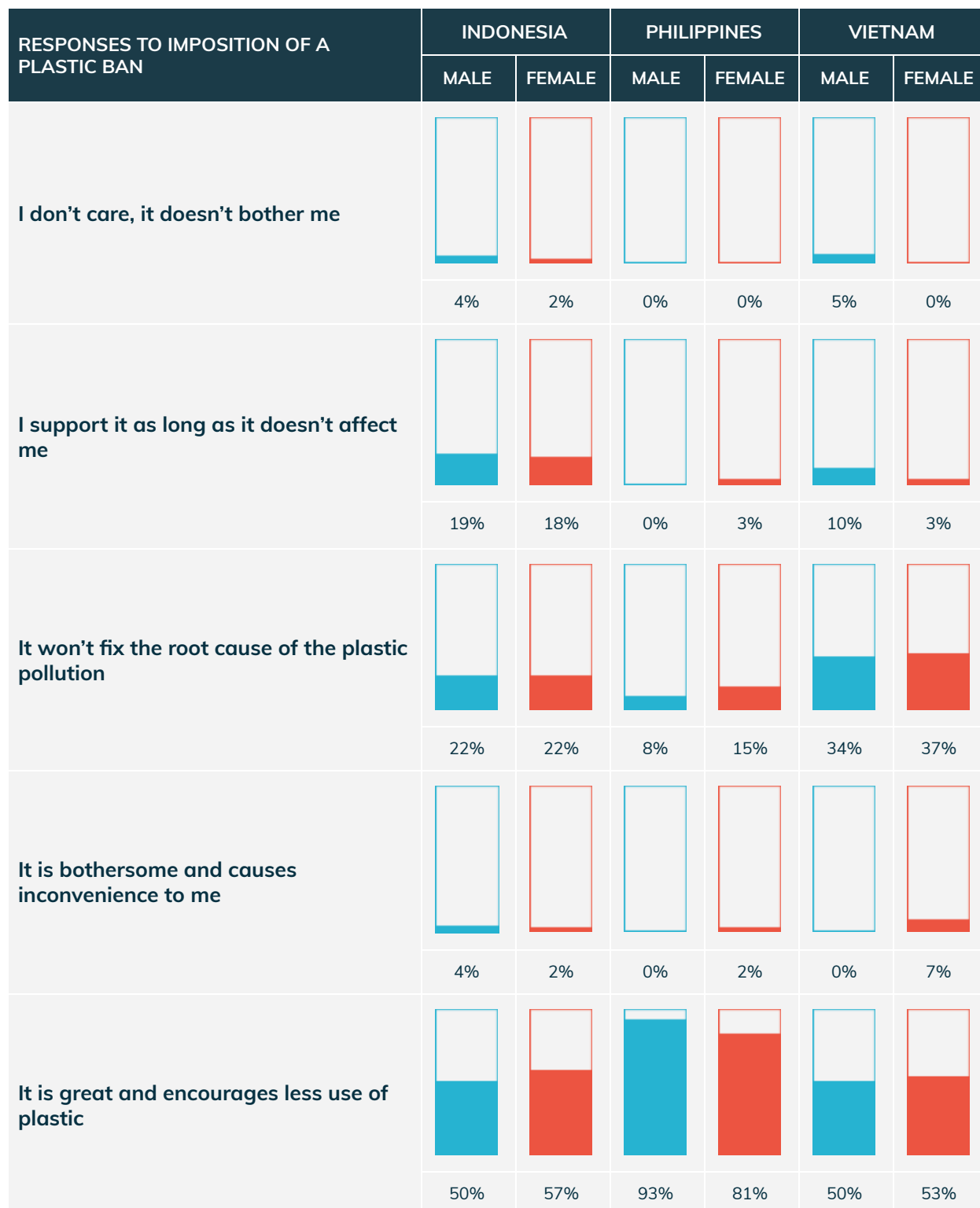


Survey Results: Classification of Respondents

Litterers in Vietnam tend to be more active on social media when compared to Binner and Recyclers. Social media posts of Litterers consists of quotes and saying, and personal documentation of life moments. Recyclers tend to have an interest in local sports and were found to be following local celebrities. The women in this category tended to gravitate towards content that encourages being true to oneself/authentic. Binner tended to be individuals who were extremely interested in music and music events. They also embraced local fashion and were found to be style conscious.

ATTITUDES TOWARDS REGULATION

The online survey respondents were also asked for their reaction towards a potential ban on plastics. This question was used to understand responses to drastic intervention as an indicator of the readiness for regulation of post-consumer packaging materials.



In all three countries, respondents overwhelmingly supported a plastic ban. At least half the respondents were optimistic of a ban on plastics as a measure to reduce plastic usage in all of the countries surveyed, and a much greater percentage of respondents in the Philippines shared this sentiment. However, concerns around the efficacy of such a measure in fixing the root problem were raised by a sizable minority of respondents in Vietnam and Indonesia. Only a small percentage of respondents indicated that a plastic ban would be bothersome and cause inconvenience. While further validation would be required, a preliminary study such as this one indicates a favourable climate for the introduction of regulations limiting the use of plastic.

WASTE VALUE CHAIN - GENDER PARTICIPATION

This section reviews the data and insights related to the disposal of post-consumer packaging materials. Disposal of packaging as indicated in the waste landscape analyses earlier in each of these geographies encompasses household waste management, disposal at location with waste collection services, as well as disposal on-the-go both in public bins and by littering. Additionally, the nature of disposal is determined by attitudes towards recycling, awareness levels, the existence of source segregation policies, proper implementation of such policies, and enforcement.

The data in the following section was obtained through surveys with various waste sector workers in India, Indonesia, the Philippines, and Vietnam. The below table shows the total number of stakeholders surveyed.

TYPE OF WASTE WORKER	INDIA		INDONESIA		PHILIPPINES		VIETNAM		TOTAL PER TYPE
Gender	M	F	M	F	M	F	M	F	
Formal Waste Collectors	12	5	10	2	7	9	5	4	54
Street Recycling Pickers	1	12	3	8	0	0	0	1	25
Recycling Collectors	4	2	10	2	14	2	2	8	44
Junk Shops	8	3	14	3	7	5	1	8	49
Recycling Processors	3	0	0	0	3	5	4	6	21
Total Per Country	50		52		52		39		193

Number of interviews with a breakdown on country level and for each category of waste sector worker within the scope

HOUSEHOLD WASTE

In all the countries covered by this research, the women of the households are primarily, if not solely, responsible for managing household waste - whether this is mixed or segregated. Indonesia and India have the highest percentage of respondents reporting that women are solely responsible for household waste followed by the Philippines. Vietnam had a smaller percentage of respondents who identified disposal as a “women only” task reflecting the higher instances of shared responsibility amongst men and women in Vietnam.

DISPOSAL RESPONSIBILITY	INDIA	INDONESIA	PHILIPPINES	VIETNAM
MIXED WASTE				
By Women Only	~95%*	69%	47%	10%
By Women and Men	~5%*	31%	53%	90%
RECYCLABLES				
By Women Only	~95%*	63%	38%	20%
By Women and Men	~5%*	37%	50%	80%
By Men only	0%*	0%	12%	0%

Disposal responsibility in India, Indonesia, the Philippines, Vietnam; *Approximation made by Hasiru Dala

WASTE WORKERS

Waste sector workers are the individuals performing the tasks of collecting household waste for final disposal and or recycling. Typically, these individuals perform their tasks by collecting from individual households or common collection points serving a group of households.

Formal waste sector workers studied here include waste **collectors**, employed by the local government or by a private contractor engaged by the local government, to provide collection services for households and to sweep the street from littered waste. These workers typically collect household waste (mostly unsegregated) and transport it to a transfer station. They typically also pick out recyclables during transit and sell them for additional income.



Hasiru Dala waste collectors in India

The informal waste sector workers this study has surveyed are street recycling pickers and recycling collectors. Further up the value chain, this research has also surveyed junk shops/scrap dealers and aggregators who in some instances also engage in pre-processing of the materials such as cleaning, baling and shredding.

FORMAL WASTE WORKERS

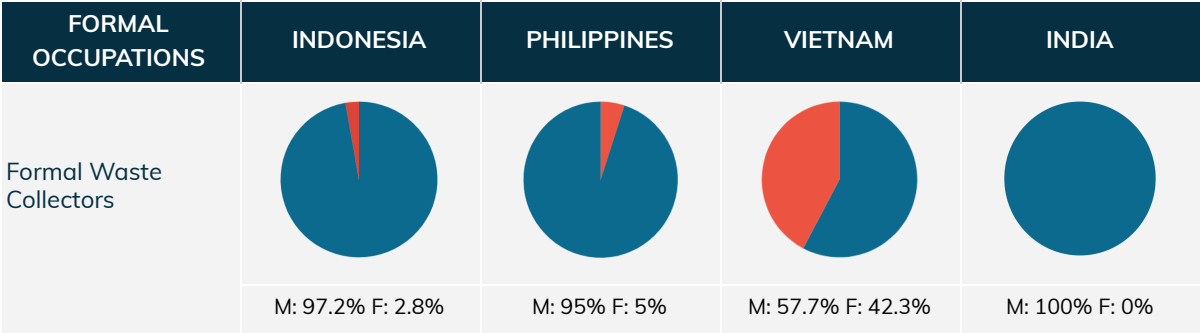
Formal waste work is dominated by men, except in parts of India: In the three Southeast Asian countries studied, it was observed that formal waste collectors were primarily men. In Indonesia and the Philippines this is because the collectors must travel a fair distance away from home on trucks and carry heavy loads, and for similar reasons are preferred by employers. In Indonesia, fewer women participate in the waste collection chain in general and this is reflected in the lower participation rates. In Vietnam, where like the other countries, waste collection is still not as mechanised but gender participation across formal occupations is more equitable, a higher participation rate is noted. In the Philippines, however, it was noted that women were frequently employed as street sweepers as the task allowed them to operate and work closer to their homes and also did not require heavy lifting.



A formal waste collector in Indonesia (in orange) collecting waste

All respondents surveyed indicated that formal employment is generally preferred by both men and women because of potential for steady income and some benefits.

India too has a high incidence of males dominating formal waste collection. However, in the southern states there is increasing participation by women and in urban pockets such as Bengaluru, the city where this study was focused, many women participate within the waste workforce as “Pourakarmikas” - formal waste collectors and street sweepers. These women participate in the waste collection process using a push cart, or buckets/bags to collect and segregate waste from households while also performing street sweeping. The waste collected by Pourakarmikas is later transferred to motorised collection. While Bengaluru and some other cities reflect instances of high engagement of women in formal waste occupations, this is still not the norm for the entire country where males are preferred for municipal or private waste collection.

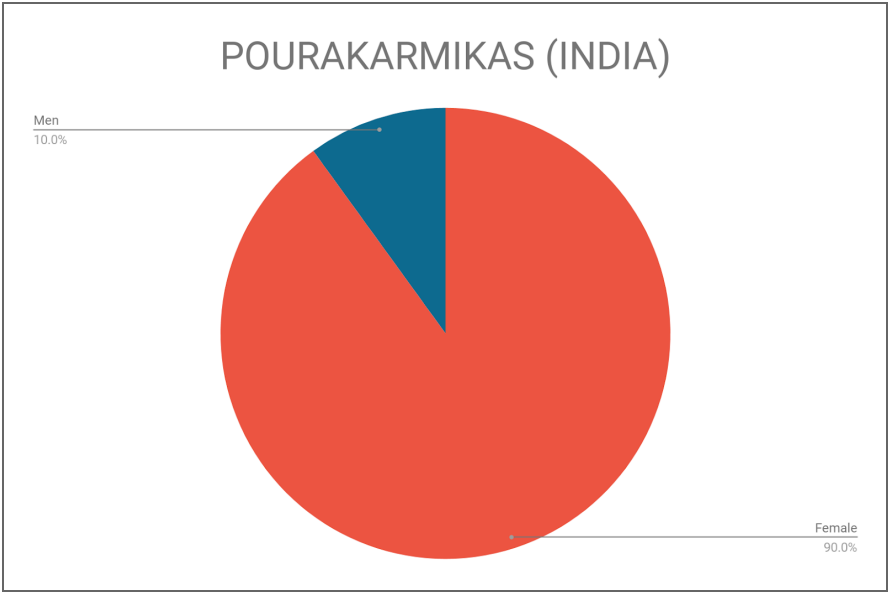


Gender participation in formal waste collection

Male Female



Street Sweepers in the Philippines



INFORMAL WASTE WORKERS

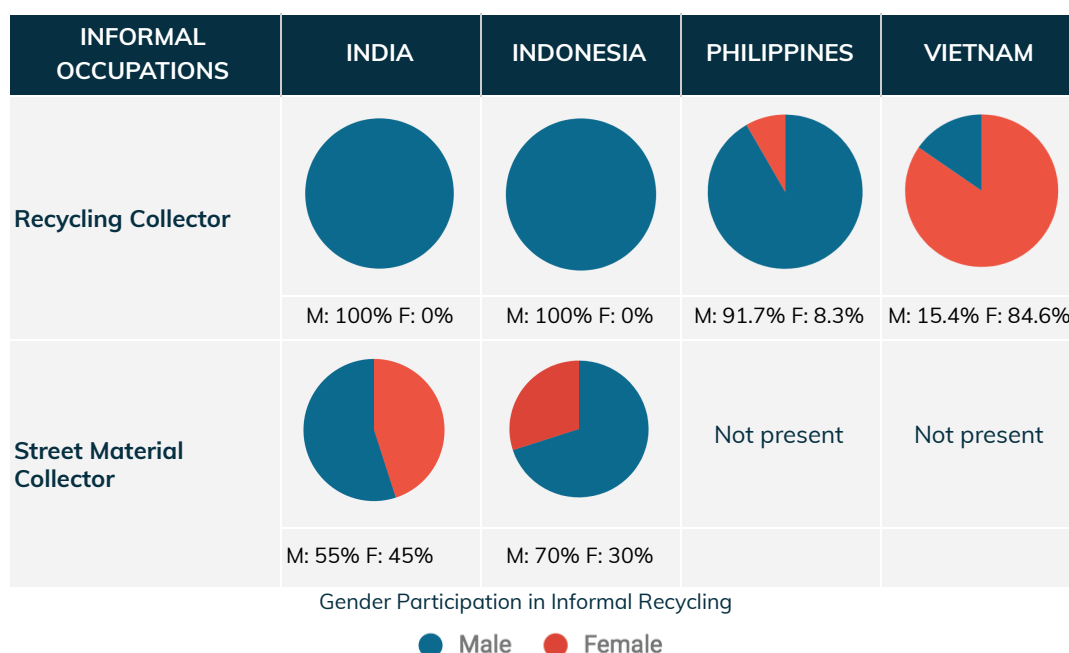
Collection for recycling allows for equal opportunity. waste sector workers engage in the task of collecting materials for recycling either directly from households that segregate, from collected mixed waste, from public bins or littered in the street and environment. While this is not necessarily a steady source of income, it affords recycling collectors engaged in these tasks an opportunity to sell recyclables and valuables to junk shops for a livelihood. More women tend to participate in this task because it allows them to bring young children along (who sometimes participate in the collection and sorting), and flexibility in the hours of operation and attendance. In the table below, three different groups of waste sector workers who collect materials for recycling and sell them to local junk shops are surveyed and reviewed.

India: India's recycling collectors can be roughly categorised into two groups. In the lowest income range are the free-roaming bag-on-shoulder pickers collecting from streets and dump sites. This group has large female representation. Earning slightly better incomes are the cycle or cart-carried recycling collectors, either employed by private recyclables collectors or itinerant buyers purchasing or trading from households to then sell to scrap dealers. This category is dominated by men.

Indonesia: In Indonesia, the recycling collectors surveyed were primarily men and on-ground sources indicate that women typically did not engage in collection activities as it is considered laborious and demeaning. Even in extreme poverty situations, women would choose begging over waste collection. This, however, is not the case at the landfills such as Bantar Gabang in Greater Jakarta where women and children work alongside the male street recycling pickers to collect recyclables. Higher levels of poverty are observed amongst families living and working at or around the landfill, forcing women to participate in scavenging for materials to be sold for income.

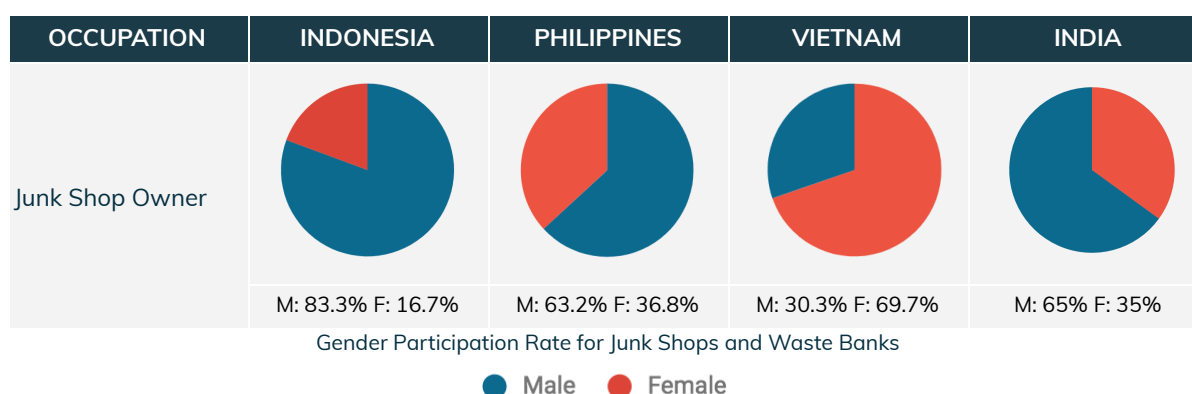
The Philippines: In the case of the Philippines, street sweepers engaged by the local governments actively participate in collecting materials for recycling. Given that this form of employment is convenient for women for reasons discussed in the section above, it also allows women to collect materials for recycling to supplement their income. As a majority of the collection for recycling occurs either by the formal collectors who collect segregated recyclables or mixed waste (to be sorted during transit or at an MRF), the surveyed areas didn't have very many individuals that work solely as recycling collectors. Those identified were typically male and this is corroborated by the junk shops who purchase recyclables. Women recycling collectors typically collect recyclables on a small scale and within small territories to then handover/ sell to more mobile male recycling collectors. Thus it is likely that this study reflects a lower percentage of women participating in collection for recycling. Finally, waste sector workers (street recycling pickers) at the final dumpsite at Tondo were primarily women and children who live in nearby informal settlements.

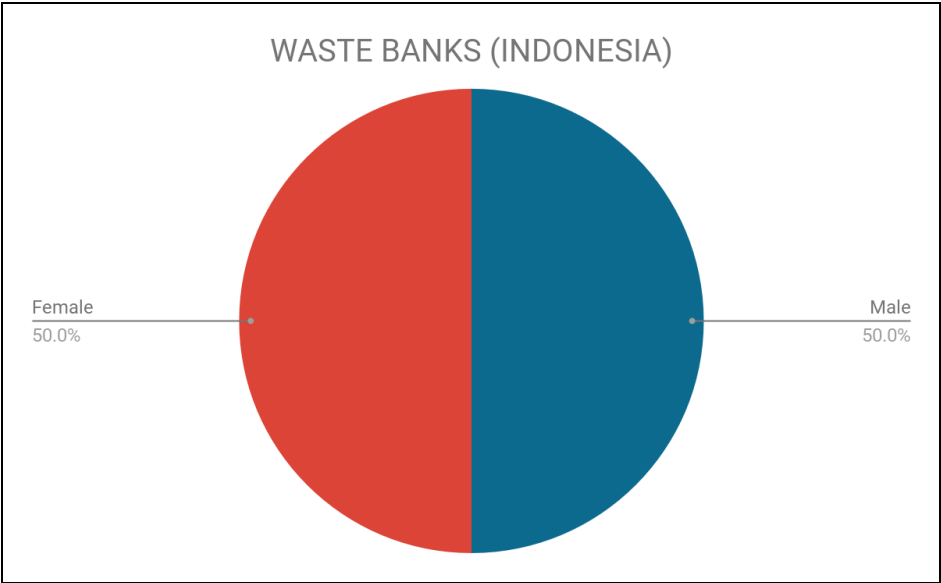
Vietnam: Vietnam's increased participation in the workforce and fewer inhibitions with respect to the collection of recyclables are reflected in the high ratio of women to male recycling collectors. Many of these women are employed by private collectors but they also work with family members, often male.



JUNK SHOPS

Women staff junk shops: Resolving the issues around mobility and strength, junk shops are often owned and operated by women who perform the administrative tasks of buying, selling and recordkeeping as well sorting and separating of some types of materials. In all three of the geographies that were studied, it was noted that women often co-owned these businesses with their spouses or they are run as a family operation. Even with low participation rates by women in other waste activities, a sizeable participation by women was observed in Indonesia. Furthermore, with respect to waste banks, a popular concept in Indonesia, many are women-owned and operated, possibly due to many of the clients tending to be women/housewives who collect and sell household recyclables for in-kind or cash benefits.





Waste Banks in Indonesia



Left: Indonesian junk shop owner | Right: Junk shop owner in Metro Manila

AGGREGATOR AND PRE-PROCESSING

Women are preferred in skilled and time-intensive tasks. Women also participate actively in the conversion of post-consumer recyclables to recycle/feedstock for recycling. In the case of the former, they are often employed by processing companies to sort, clean, separate and sift through recyclable material through the various stages of processing. Sorting of materials into clean, uncontaminated streams requires an understanding of the value of each of the materials and fine motor skills. While men are tasked with the more physical activities of loading and unloading, the women perform the more repetitive and time-consuming tasks sorting and separating.



Sorting of recyclables at Saahas, a waste management NGO in India

Handicrafts: Women are highly represented in organizations that upcycle/ downcycle recyclables into other household products, arts and crafts. These include the weaving of different plastics in bags, pouches, toys and crafts, the creation of products from recycled paper, making jewelry from metal recyclables etc. This industry is dominated by women but the scale of the industry is very small and often reliant on support from NGOs or grant funding. While this form of processing plastic waste does provide some financial empowerment and creative opportunities for women, it is not scalable given the relatively low demand for products resulting from such efforts. Also, to the extent that some of these toys and crafts are not properly disposed, they continue to pose a threat to the environment.



Women producing handicrafts in their home environment in DKI Jakarta

WASTE VALUE CHAIN - GENDER IMPACT ON OPERATIONS

EMPLOYMENT

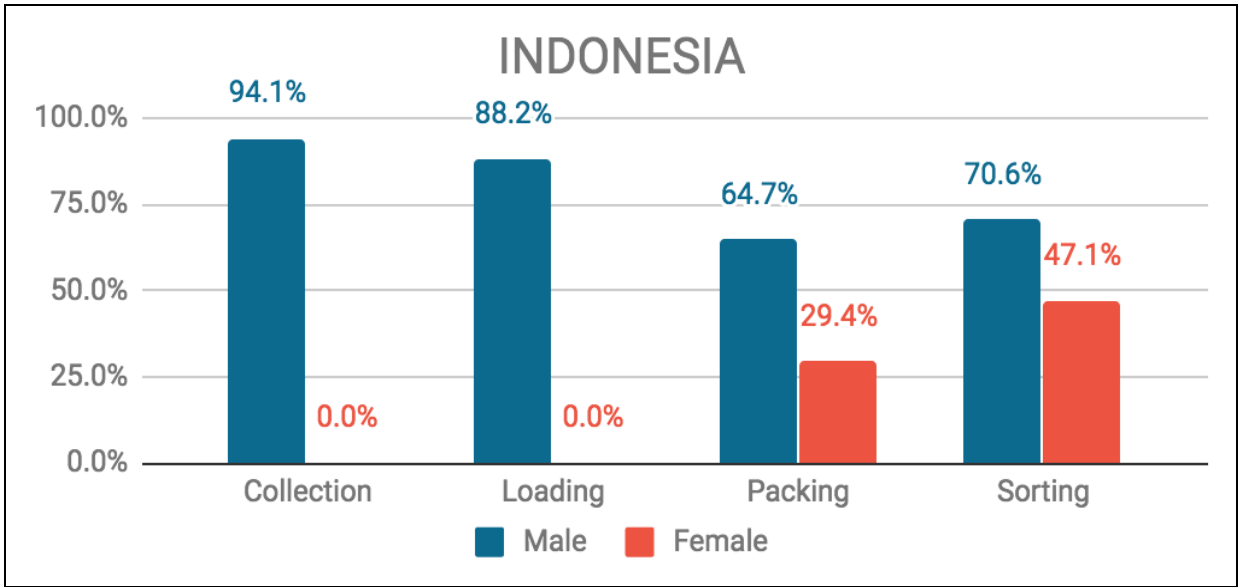
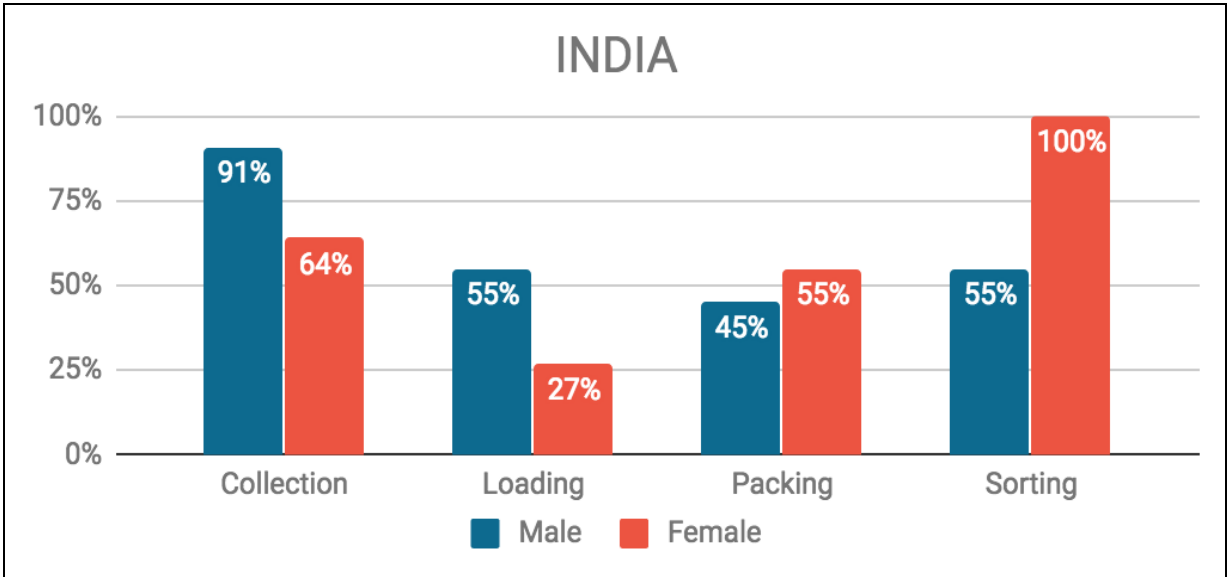
Large variations in formal employment between men and women but small variations in earnings. Gender variations are prominent within the formal sector in Indonesia and the Philippines where it was reported that men found it easier to seek formal employment in waste collection. Generally, the salaries in this sector whether by government or by private employers did not vary by much primarily because of the relatively low pay levels and little variations in the nature of work.

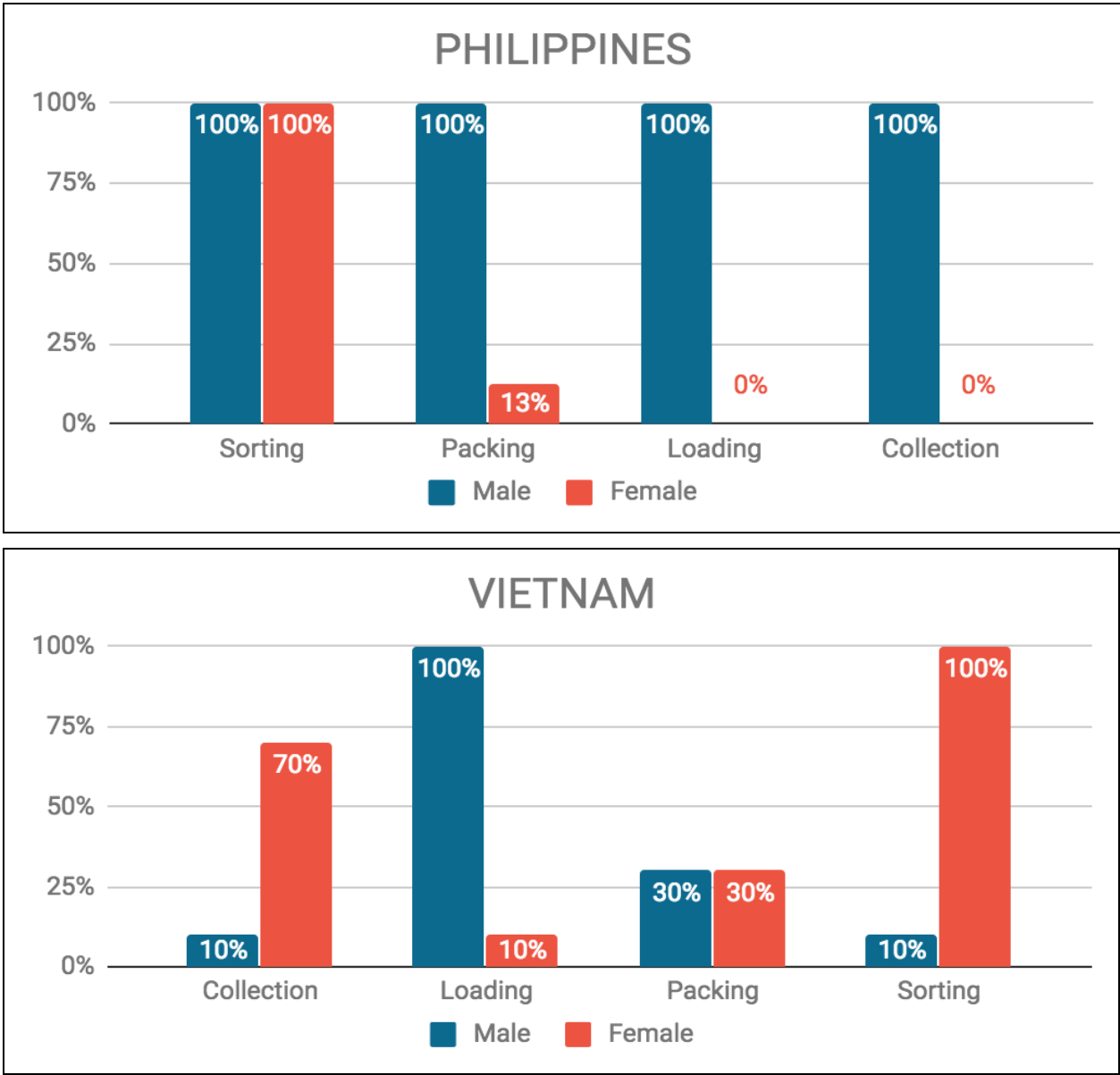
VARIABLES	INDIA	INDONESIA	PHILIPPINES	VIETNAM
Employability (waste collection)	Most respondents (94%) reported no difference in employability.	Information not available as most workers were reported to be male.	100% of the employers interviewed stated that they would prefer to employ males.	Most respondents (90%) reported no differences in employability.
Employer's gender preference (material processing)	Men are preferred for heavy work tasks	No gender preference (100% of responses)	Preference for male employees (100%)	Preference for female employees (67%) Preference for male employees (11%)
Salaries	Most respondents (96%) reported no difference in salaries/amounts paid.	Information not available as most workers were reported to be male.	Salaries/amounts paid are generally the same (82% of the responses)	Most respondents (95%) reported no difference in salaries/amounts paid.

Gender Impact on Employability and Salary

Sorting is typically a woman's task across all four geographies. Men are generally considered more suitable for collection, loading and packing of materials by employers in aggregation of recyclable materials. In all four geographies, sorting is a task considered to be mostly suitable for women. Typically women are employed in repetitive and time consuming tasks while men tend to participate more in the lifting and loading and "heavy" tasks. Indian and Vietnamese recycling processors label collection of materials as a woman's task in contrast to the Philippines and Indonesia. However, the recycling collector profession in Indonesia is heavily dominated by men.

Gender preferences in the value chain varies by geography. The charts below summarise responses by processing companies when queried on whether they would prefer male or female workers for collection, loading, packing, and sorting tasks. The results validate the fact that while men are tasked with the more labour intensive activities of collecting and loading, women perform the more repetitive and time-consuming tasks of packing and sorting.





Responses of processing companies when queried on whether they would prefer men or women for different tasks

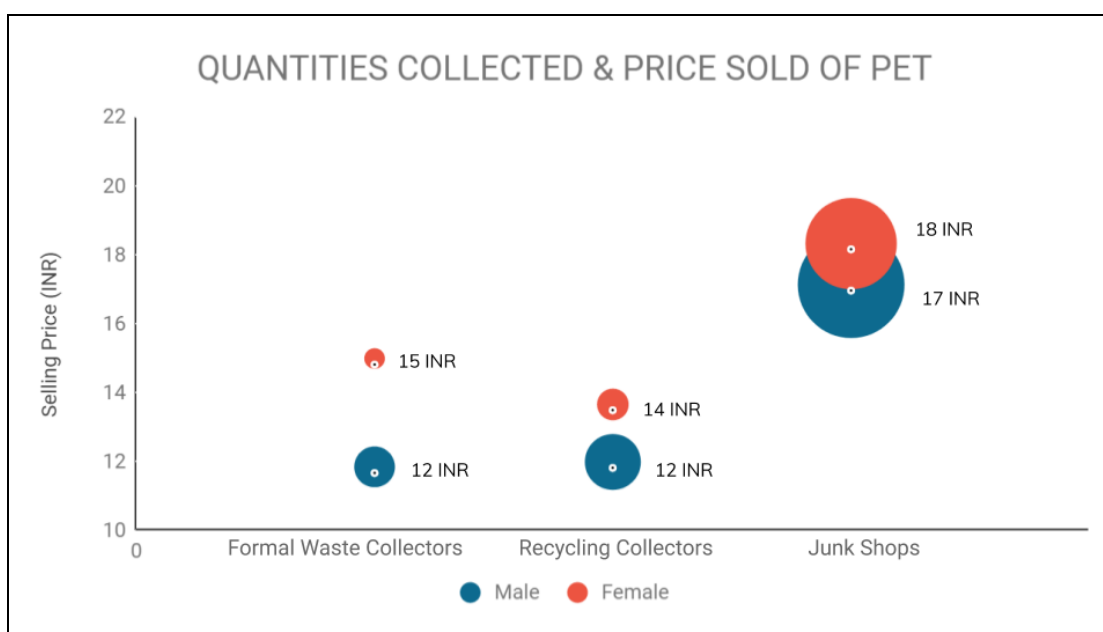
EARNINGS

Informal recycling economics reveals some gender variations in each of the geographies covered in this study. These variations are explored based on the material trading prices for post-consumer PET as well as post-consumer Aluminium in each of the countries covered.

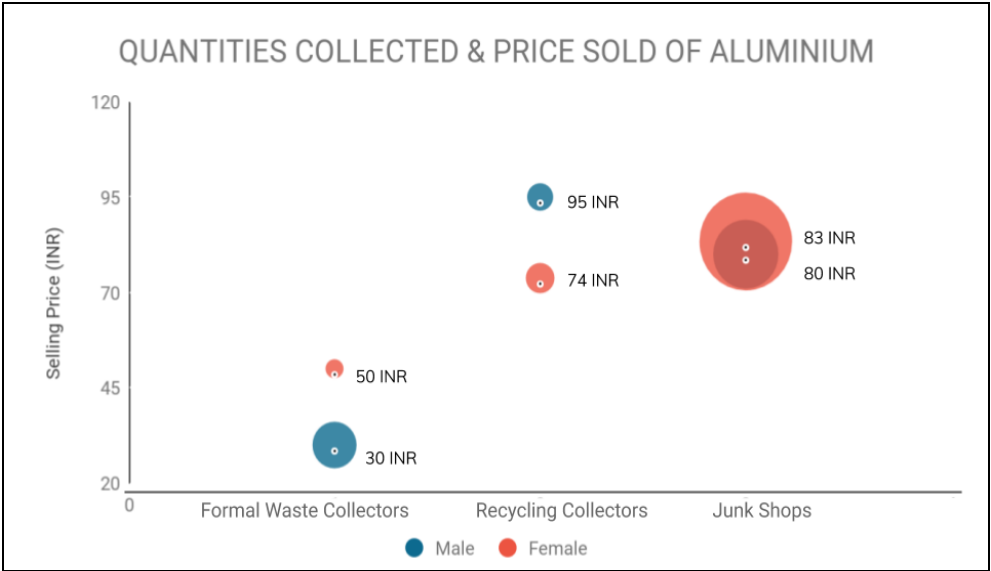
INDIA

Amongst the surveyed workers in Bengaluru, female workers were found to collect smaller tonnages of PET than male workers, but were able to bargain for better prices for the same. Upon further inquiries, these higher prices were found to be because of their preexisting arrangements with buyers and not necessarily reflective of the wider realities. Aluminium collection, however, does not show any gender-specific patterns.

According to Hasiru Dala it is likely that the tendencies our survey data show are trader-based differences in contracts rather than gender-based price differences. Further, Indian post-consumer material dealers gravitate towards specializing in a certain material,³⁵ which is evident in the data points as there are very large volume variations (1 kg a day up to 85 kg a day for aluminium and 12-300 kg a day for PET) which makes the average volume or price unrepresentative for the group as a whole.



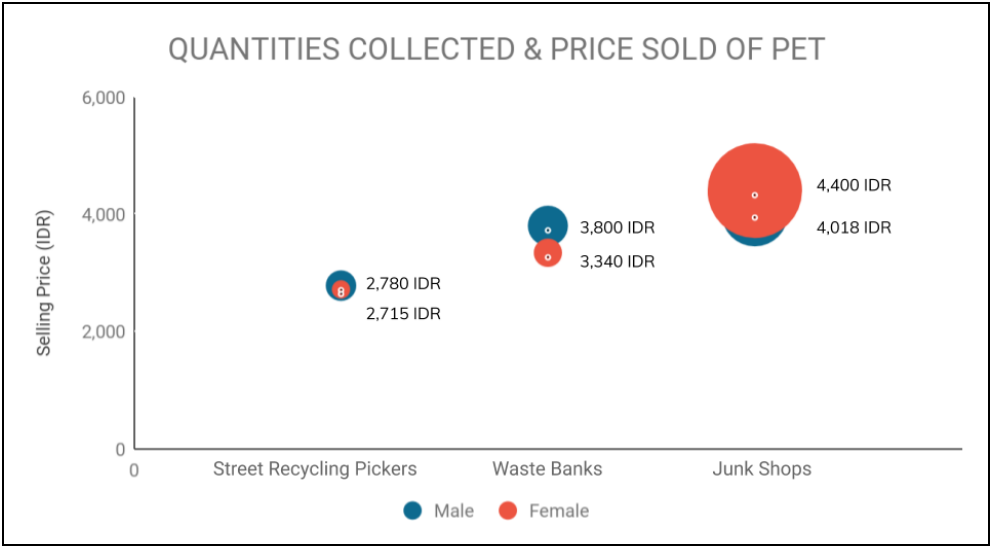
³⁵ Extracting value from Bengaluru's Dry Waste Chain by Social Venture Partners, Bengaluru and Valuing Urban Waste by Pinky Chandran et al.



India - Quantities collected and price sold of PET and Aluminium

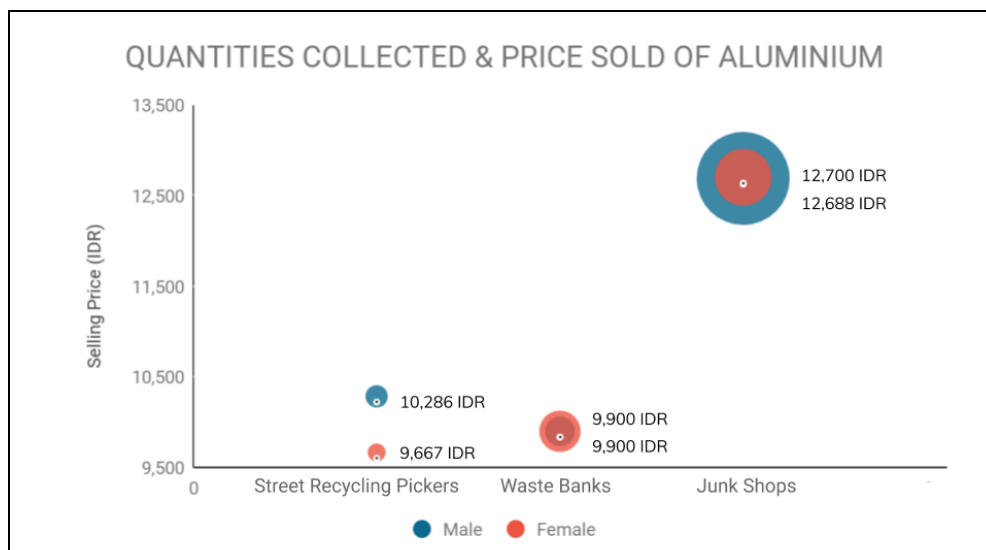
INDONESIA

In Indonesia, there were inadequate survey respondents in the formal waste collectors category. The price and volume data from street recycling pickers and waste banks were reviewed instead to examine variations in trading patterns. The data collected reveals that men are able to negotiate better prices for their materials as well as trade in larger volumes than women as street recycling pickers and waste bank operators. The higher prices are a reflection of the increased quantities, as larger amounts command higher value, as well as the ability of men to travel further to the highest buyer. This order is reversed in the junk shop segment where the women-run junk shops are able to trade in larger quantities and command greater prices. They are able to build, maintain, and operate a larger network of recycling collectors as well build more loyal affiliations with buyers. Average prices and quantities sold for high-value recyclables such as PET are generally lower for women in the early stages of the material value chain.



Indonesia - Quantities collected and price sold of PET

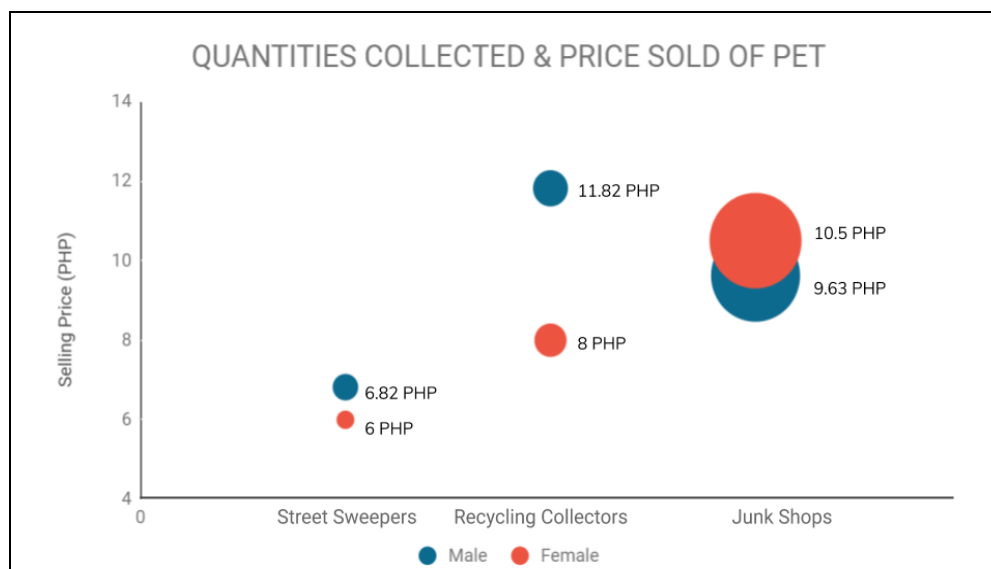
These numbers vary by material, as can be seen in the case of aluminium where women-owned waste banks trade in larger quantities of aluminium and at approximately the same prices as those owned by men. Also the variations in price are smaller for aluminium, a more valuable recyclable.



Indonesia - Quantities collected and price sold of Aluminium

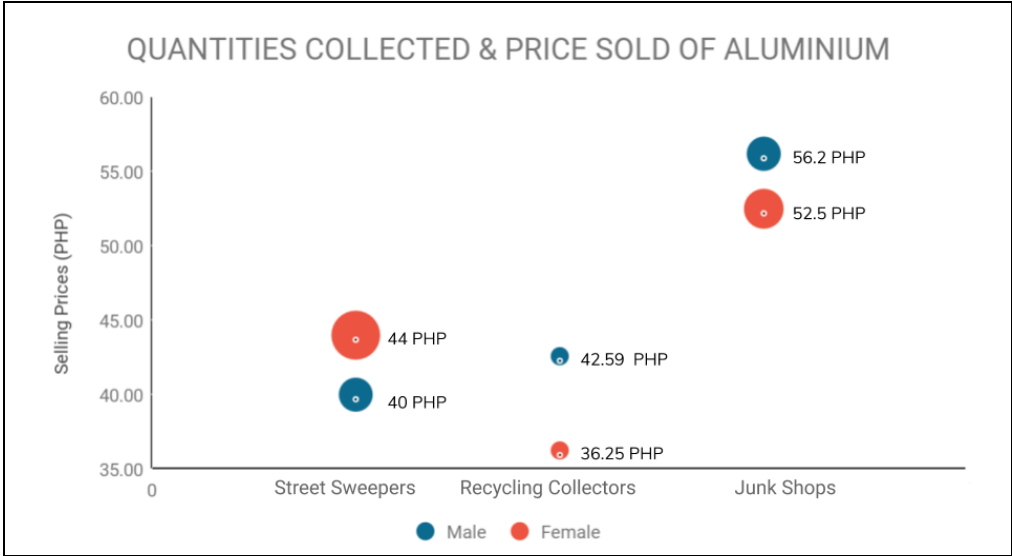
THE PHILIPPINES

In the Philippines, the informal recycling prices reported by women are slightly lower than those reported by men at earlier stages of the material value chain while the junk shop operators reported that women commanded slightly higher prices than their male counterparts.



The Philippines - Quantities collected and price sold of PET

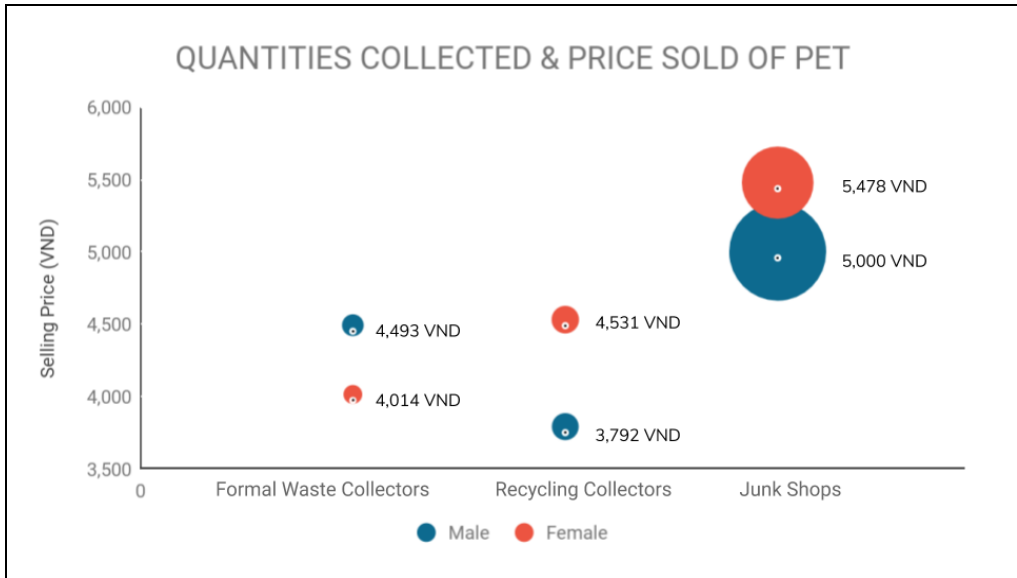
With respect to aluminum, the higher value material, the below chart shows gender variations in price and quantities, with female street sweepers commanding higher prices (for larger volumes) but female recycling collectors receiving lower amounts for similar quantities. In the instance of junk shop operators, despite larger volumes of material, women were not able to sell materials at higher price than males, but the variation in prices is not favourable to the women.



The Philippines - Quantities collected and price sold of Aluminium

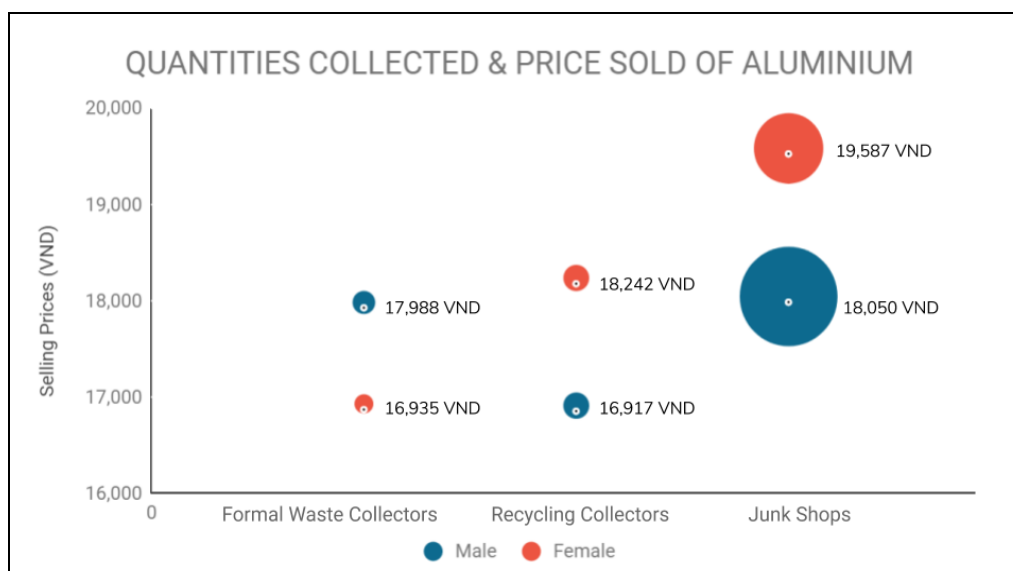
VIETNAM

While female collectors surveyed commanded lower prices and collected smaller quantities, this was not the case with respect to recycling collectors and junk shops, where women commanded slightly better prices despite the same or smaller quantities.



Vietnam - Quantities collected and price sold of PET

The same scenario is reflected with respect to the collection and sale of aluminium for recycling in Vietnam as can be observed in the chart below.



Vietnam - Quantities collected and price sold of Aluminium

Common to all four geographies, men earn more in total, either because they are perceived as being stronger (by themselves and by women) or they collect more. No preference is indicated in terms of employment of men or women with respect to formal waste collectors, but when it comes to junk shops they prefer to employ women to perform the tasks of sorting and cleaning of recyclables as they are prepared for further sale. Also, in the interviews, it was reported that women are more willing and less embarrassed than men to perform these tasks.

The table below provides a summary of the selling prices at USD rates for reference. The difference in selling prices are not as remarkable when converted into US currency rates. A more detailed summary of prices at each stage of the value chain are provided in the Appendix to this report.

SUMMARY OF PET SELLING PRICES AT JUNK SHOPS (USD/KG)				
GENDER	INDIA	INDONESIA	PHILIPPINES	VIETNAM
Male	0.25	0.32	0.17	0.22
Female	0.26	0.32	0.21	0.23

Table - Summary of selling prices (USD/kg)

EQUIPMENT AND VEHICLES

Type of equipment and/or vehicles used varies by gender in Indonesia, the Philippines and India but not so much in Vietnam. The amount (volume and weight) of recyclables collected by women in the informal sector is influenced by access to equipment and/or vehicles. Reflecting the realities of most developing nations, vehicles and/or equipment is typically owned by men with women gaining access generally with shared usage.

GENDER	INDONESIA	PHILIPPINES	VIETNAM	INDIA
Women	Mostly sacks, bags, baskets	Mostly sacks, bags, baskets	Collection with carts, bicycles and sacks	Bags, sacks, carts and protective gear
Men	Carts and tricycle carts as well as sacks and baskets	Mostly sidecar-bikes, cycles and sacks	Collection with carts, bicycles and sacks	Bags, sacks, carts, tricycle and small vehicles

Type of equipment and vehicles used in waste collection by gender

In Indonesia, respondents stated that the men typically push the carts and the women only assist or carry bags and baskets. In the Philippines, too, men reported access to vehicles, while women reported not to have access to vehicles. Respondents in Vietnam, typically have access to bicycles, or a three-wheeled vehicle provided to them and there was no distinction between men and women. In India, women predominantly use bags/sacks to collect and are sometimes transported on a cart. Surveyed men have access to bicycles/tricycles as personal transport. Another distinct gender difference is the use of protective gear (21% of women while no men) among women, an explanation for this is that women handle wet waste (mixed or organic materials) to a larger extent than men do. In spite of these differences, the perception of both female and male respondents is that there is no gender difference in access to equipment or vehicles.



A recycling collector in Vietnam using a tricycle



A recycling collector in Vietnam using a pull-cart

CHALLENGES

Hardships faced by women in the waste value chain are different from those faced by men. The chart below details some of the responses to queries with respect to challenges faced by men and women.

WHY IS WASTE COLLECTION HARDER FOR WOMEN?				
	INDIA	INDONESIA	PHILIPPINES	VIETNAM
Responses from both women and men	"Equally challenging for men and women"	"Men have more energy/are more capable" "It is inappropriate for women to work as waste sector workers"	"Men can lift heavier things" "Men don't mind smelly things" "Women are meant to take care of the house"	"It is not harder" (majority response)
Women's Responses	"Equally challenging for men and women"	"We don't deserve to work as waste pickers"	"Hard for women to work in the rain and be exposed"	"Employers prefer males" "Poor health conditions" "No time to raise kids" "low social status"
Men's Responses		"It is hard for men too" "They (women) must tend to the house/children"		

WHAT ARE SOME OF THE OPERATIONAL CHALLENGES FACED?				
	INDIA	INDONESIA	PHILIPPINES	VIETNAM
Women's Responses	N/A	"Cannot collect large quantities of materials" "No access to equipment"	"None" "Unable to handle large amounts or bulky items"	"Unable to handle large amounts or bulky items" "Unable to grow into a formal business", "Lack of access to equipment",
Men's Responses		None reported	"None" "Unable to handle large amounts or bulky items"	"Unable to handle large amounts or bulky items"

WHAT ARE SOME OF THE SOCIAL CHALLENGES FACED?				
	INDIA	INDONESIA	PHILIPPINES	VIETNAM
Women's Responses		"Health Risks" "Lack of Safety" "Lack of time for household duties"	"Health Risks" "Lack of Safety" "Low status in society"	"Health Risks" "Lack of Safety"
Men's Responses		"Health Risks" "Low Status"	"Health Risks" "Lack of Safety"	"Health Risks" "Lack of time for household duties"

Physical Challenges: Women mention an inability to carry large volumes because of weaker strength and less access to carts or equipment suited to collect and carry materials. Also, bulky or heavier items that might command higher value are often passed over by women in favour of easier to carry materials and this sometimes results in lower incomes and hinders the growth of their business.

Safety: Most women cited lack of safety as one of the big challenges that they face when working in this sector. Being a largely unregulated sector and often having to work in alleyways and poorly maintained areas of the city, women are exposed to crime and unwanted elements in society. Also, much of the waste is dumped at night or in the early hours when it is still dark adding an additional element of being both unsafe and challenging for women to leave young children etc. unattended.

Health Risks: The health risks are a considerable concern for a majority of the respondents, men as well as women. This is reflected in the high incidence of respiratory illnesses (including lung cancer in some respondents) from exposure to toxic and unhygienic materials. Many also reported that they do not have any health insurance coverage and limited access to adequate health care. Additionally, with very little legislation in place with respect to toxic or even harmful waste (such as glass shards etc.), women worry about being exposed to injuries from lifting heavy loads or by handling sharp or dangerous items. Not only do such risks threaten their ability to earn but also their role in managing households.

Social Stigma: Many of the respondents identified lack of respect in society as a key aspect of working in waste collection. In Indonesia, this was identified as a reason for women to not participate in the occupation of waste collection unless faced with extreme poverty. The workers interviewed also reflected that they were rejected by their loved ones on account of the profession.

WASTE VALUE CHAIN PARTICIPANTS - OTHER INSIGHTS

OWNERSHIP

Few women own and operate businesses at the end of the waste value chain. While women participate in the earlier stages of the value chain, they are noticeably absent from the ownership or management of later-stage businesses such as aggregators, material processing company owners, landfill operators etc. At the very most, women are employed by the processing companies to perform repetitive and time-intensive tasks such as peeling labels, cleaning, sorting, segregating and picking through processed material for impurities etc. They are also engaged in administrative tasks of accounting and recording the transactions related to the various materials traded.

WASTE - A FAMILY BUSINESS

Working in waste is often a family enterprise. Women and men often work together especially in the informal sector and sometimes the children also participate to augment family income. In India, many families are locked into the profession by the caste tradition that serves as a hindrance for the “untouchable” castes to pursue other professions. In each of the countries, women assist with various tasks - sorting and packing, collection and transportation, etc. and these women are under represented as the primary earners are men. This is particularly true for the recycling sectors in India, Indonesia and the Philippines. In Vietnam, it is common practice for men and women to work together and operate as a family unit.

MIGRATION

Migration is a common factor across the informal sector. Most of the recycling collectors and formal waste collectors are individuals that have moved to cities from other parts of the country. This is a common thread for all of the geographies studied. Given that there is a low barrier to entry, the occupation of collecting recyclables provides an easy and immediate source of income for newly migrated individuals. Also, most informal settlers establish settlements around dumpsites where they are less likely to be evacuated, etc. These dump sites such as the one in Tondo, Philippines, then allow women and children access to recyclables in mixed waste that can be sold to provide additional income, or in many cases the only income. However, the living conditions and risk of disease and injury from methane fires and landslides present a high risk to the individuals living off of dumpsites.

COMMUNICATIONS

Women resort primarily to informal channels of communications and networks for trade information such where to sell and the market prices. When interviewed about access to information, women in each of the countries studied responded that they typically are informed by each other through small group chats (e.g. using Zalo in Vietnam or text messaging). In terms of communication tools - access to the internet is only limited to the cost of buying data coverage, Vietnam is challenged with limited access to smartphone usage (low smartphone penetration) as well as poor internet coverage. However, many waste sector workers have access to simple cell phones that allow calling and texting.

INSTITUTIONAL SUPPORT

The number of organizations that support women, waste sector workers or women waste sector workers is limited. When queried about institutional support of any kind/ organised efforts, very few responses were noted for Southeast Asian geographies. Where existent, organizations such as Gabriela, in the Philippines are aimed more at addressing concerns of violence or injustice against women.

In contrast in India, 53% of surveyed women are members of an organisation, because there is a network of organisations across India focussing on supporting waste sector workers under the Alliance of Indian Waste pickers (AIW) through 35 organisations in 22 cities. Examples of these organisations are Hasiru Dala in Bengaluru and KKPKP in Pune, which have formed union-like organizations and cooperatives for waste sector workers and provide them with uniforms, protective gear and ID cards. This has not only made their occupation safer but also contributed to the reduction of social stigma of waste pickers in the society. There are also organisations geared toward women in the informal sector that support waste sector workers, one example of which is Self Employed Women Association (SEWA).

ENDA, in Vietnam has done some work related to the storytelling of the waste sector workers to enhance the image of the waste sector worker and emphasise the importance of their role in society. The societal stigma is declining as children of waste sector workers are appreciating the role played by their parents in society and communities in general are becoming increasingly aware of the waste challenges and need for these workers.

An estimated 80% of waste sector workers reveal a desire to improve the circumstances of their profession but not a desire to leave the profession altogether.³⁶ Prevalence of waste employee unions and cooperatives are noted but despite being part of these organizations women are not well represented within the leadership in such unions or cooperatives. Many recycling collectors that are from migrant populations aren't aware of any support programs and are less likely to avail themselves of any of the benefits made to participants of these programs. Also, as many of these people live on the fringes of society and are not always in compliance with housing regulations etc., they are reluctant to expose themselves to possible scrutiny.

³⁶ From ENDA Vietnam Study.

SUMMARY OF INSIGHTS

	INDONESIA	PHILIPPINES	VIETNAM	INDIA
Women are engaged in the early stages of the value chain	√	√	√	√
Women are engaged in the latter stages of the value chain	X	X	√	√
Women are solely responsible for household waste	√	X	X	√
Women are more inclined to recycle	√	√	X	NA
Women are more interested in learning about what happens to their waste after disposal	√	X	√	NA
Women are more supportive of a potential plastic ban	√	X	X	NA

OPPORTUNITIES FOR INTERVENTION

SOCIETAL INTERVENTIONS

Identify Women as a Key Demographic When Designing Behaviour Change Efforts

Given that women play a large role with respect to consumption and generation of waste and constitute almost half of any demographic, it is important to recognize the key motivators that can trigger them to change their disposal habits from littering to binning and from binning to recycling. Furthermore, given that women do perform the task of household waste management, creating campaigns and information that are geared towards them would result in greater and more effective behaviour change. As primary caregivers, they can also be relied upon to share such awareness with the members of their family and children in particular.

Improve Social Acceptance and Remove the Stigma Associated with Waste-Related Work

This is a key limiting factor facing waste sector workers but women in particular - improving the image of the waste management worker by building awareness of the relevance and benefit of such work is one way to alleviate the social stigma that it is generally associated with. Also, dignifying the work by supporting segregated collection and creating cleaner work environments will remove the perceptions that people working in waste material management are “unclean” or “unhygienic” as the materials handled would not be part of a waste stream but of a material stream. Cleaning up of junk shops and sorting facilities to look and function more like small businesses is important to allow for them to coexist with communities and residential neighbourhoods rather than in the remote parts of town and also allows for women to participate without having to travel long distances.

OPERATIONAL/TECHNICAL ASSISTANCE FOR WOMEN IN WASTE

Capacity Building: Waste Banks in Indonesia have been popular with women - and expanding the business potential of waste banks and increasing their financial sustainability will encourage increased and more consistent gender participation. In the Philippines too, women could benefit from opportunities to expand operations. Local agencies, such as ENDA in Vietnam working directly with waste sector workers and junk shops, report that efforts to build leadership skills amongst women as well capacity building efforts for existing waste businesses will positively impact the women working in waste in Vietnam.

Providing Vehicles: Providing women access to vehicles/carts so that they may collect larger volumes of waste/recyclables and also avail themselves of the higher incomes generated from bulkier materials. Most men have access to some form of transport for personal use while women (other in Vietnam) rarely have their own vehicle. Many women also don't operate motorised vehicles. Vehicles will also allow them to cover additional territory providing a means to improve efficiency and incomes substantially.

Training and Awareness: Empowering women with pricing information and markets for materials that can be recovered for value would be useful, especially when they work in groups and can share such information informally amongst themselves. Also training them to work with women in households to source segregate allows for a cleaner and therefore higher value material stream, yielding better incomes.

Financing: Microfinance programs will allow women to operate as small businesses with a more regular stream of income while also enabling access to better equipment to collect and separate recyclables. Also, such financing allows them to create their financial identity, eventually improving their creditworthiness and allowing access to more regulated forms of banking than private loans, etc.

Health and Safety: Many women are engaged in sorting and collection of mixed waste streams, which implies that they are exposed to toxic or hazardous waste as well. Women are especially challenged if they are injured or unwell, as they will not be able to tend to their families as well. Providing them access to protective gear, footwear, masks, gloves and other sorting devices would assure greater safety and reduce instances of physical harm.

OTHER INTERVENTIONS THAT HAVE GENDER IMPLICATIONS

“Semi” Formalizing the Informal Sector: This refers to the provision of benefits, higher and more regular pay and security of formal employment to women while at the same time accommodating their needs for flexibility and proximity to residence (given the difficulty in commuting and children/domestic responsibilities). Formalizing with respect to women, therefore, requires a **nuanced approach** - and one that accommodates the competing demands of attending to household duties and childcare while also providing steady employment and monetary support.

Conversion of Migrant Status: This refers to safe inclusion within social welfare system and alteration of the migrant status. (For instance, only 50% of the migrants in urban Vietnam are part of the social welfare system.) Migrant communities often live in groups in close proximity to each other and share information with respect to opportunities and experiences etc. Most of these workers are from the poorest parts of the country and struggle with low social status and low self-esteem and general hopelessness.

Health Education: Provision of health insurance and improved access to health services is required especially given the high prevalence of injuries and illnesses amongst the waste sector worker community. However, access to health services is not always available for the informal sector. Special focus on studies which explore the impact on women's health (focusing on gynaecological conditions stemming from repeated and prolonged exposure to waste) should be conducted to measure and then educate women about such detrimental effects. Many recycling pickers and formal waste collectors are not always mindful of safety and health issues as evidenced in lack of protection gear used (eg. footwear, gloves) when on the job. Many claim that that such gear is inhibiting but education and access to more suitable/ appropriate gear would limit harmful exposure.

Childcare: Most women have the additional tasks of childcare and seek to work in the informal sector because of the added flexibility in work hours as well as the ability to bring children with them to work. In many instances, the work requires limited skill, allowing children to participate in the collection of some materials and contribute to the family income. Also, issues around child trafficking and general lack of safe alternatives with respect to children challenge women in the informal sector. While bans have been implemented in both the Philippines and in Vietnam, preventing children from working at landfills and dumpsites, this has a negative consequence with respect to women entering these venues for collection when they have children in tow. The provision of safe and sufficient child care for women that work in the waste sector would be a tremendous benefit and is strongly desired by these individuals.

Education: Most of the waste sector workers, as well as junk shop owners and operators, have a limited education - often no more than a few initial years of schooling. Many of them recognize education as an important asset and would prefer for their children to be educated. Providing access to some functional education/vocational training would not only aid and assist them with day-to-day operations, but also allow for better awareness, exposure and empowerment. Providing opportunities for educating their children is viewed as a big benefit by workers and especially amongst women in all the geographies studied.

Awareness of Rights and Safe Means to Access these Rights.: As a large part of the informal sector in each of the countries is comprised primarily of migrant/resettled families, they are often unaware of the opportunities or social benefits that they could potentially access in the new location. Even when they are aware of their rights/benefits, many migrant families are hesitant to claim them especially if their legal status is unknown. Additionally, because of the low tolerance and acceptance of informal settlers (they are blamed for littering and pollution along water bodies and building informal settlements) many of these waste sector workers, and even more so than women, do not seek to establish or pursue any legal actions because of a fear of being further castigated or punished or worse - being asked to move out.



Women owned waste bank in Indonesia

KEY STAKEHOLDERS INFLUENCING THE WASTE SECTOR

As part of the on-ground research, some of the key organisations and institutions in each of the countries were interviewed and assessed to explore their potential for engagement for further gender based interventions.

INDIA			
STAKEHOLDER	TYPE	DESCRIPTION	POTENTIAL FOR ENGAGEMENT
AIW (Alliance for Indian Waste pickers) <small>*Waste pickers may also be known as street recycling pickers</small>	NGO	AIW has a national network coalition of 35 organizations working on organizing street recycling pickers and itinerant buyers in 22 cities. Their focus is on campaigns, peer support, advocacy, and cross-learning.	AIW is a partner to form organisations that strengthen and organize street recycling pickers as well integrate them into solid waste management at local governments.
Hasiru Dala	NGO	A non-profit focused on social justice and policy advocacy for street recycling pickers and solid waste management. Active in Bengaluru.	Engagement to formalise informal waste sector workers, social support and technical assistance program in Bengaluru.
SS (Safai Sena)	NGO	A registered group of waste sector workers and informal recyclers. SS's vision is for waste sector workers to upgrade their jobs to be safe, respected, recognized and clean. SS's dream is for the next generation to go to school instead of becoming street recycling pickers.	Potential to collaborate on awareness raising programmes to improve household segregation rates and recognition of the informal sector's environmental impact. Active in National Capital Region.
SEWA (Self Employed Women Association)	NGO	SEWA is a trade union of poor, self-employed women workers. SEWA's main goal is for women workers to obtain work, income, food and social security.	Collaboration to assist female informal workers to obtain the bare minimum of health care, child care and shelter.
SWaCH (Pune Seva Sahakari Sanstha Ltd.)	Social Enterprise	SWaCH's mission is to engage a workforce of entrepreneurial street recycling pickers into an efficient, responsive and accountable organisation and work in partnership with the municipal SWM system to transform the SWM situation in Pune.	Engagement to upskill and educate waste sector workers to become service providers as part of the door to door household waste collection.
KKPKP (Kagad Kach Patra Kashtakari Panchayat)	NGO	KKPKP is trade union bringing together informal waste sector workers and recyclers. KKPKP also provide garbage collection, composting and related waste management services. KKPKP's members are self employed.	Engagement to formalise informal waste sector workers, social support and technical assistance programs in Pune.

INDONESIA			
STAKEHOLDER	TYPE	DESCRIPTION	POTENTIAL FOR ENGAGEMENT
PRAISE (Packaging & Recycling Alliance for Indonesia Sustainable Environment)	NGO	Initiated by six companies (Coca-Cola, Danone, Indofood, Nestle, Tetra Pak and Unilever) to establish best practices of sustainable packaging waste solutions. It focuses on Extended Stakeholder Responsibility (ESR), and public education related to ESR implementation.	Engagement in public awareness programs as they work closely with related ministries and industry related stakeholders in packaging and recycling.
APDUPI (Association of Plastic Recycling Entrepreneurs in Indonesia)	NGO	A coalition of junk shops and aggregators, working to increase their knowledge and reach within the plastic recycling industry.	Collaborate in improving collection and recycling of packaging waste among female members.
IPI (Scavengers Union in Indonesia)	NGO	IPI's mission is to pursue street and landfill recycling pickers welfare rights and to educate street and landfill recycling pickers. Taken over by DKI Jakarta local government in 1991, it has given government health insurance to over 6,000 street and landfill recycling pickers.	Collaborate in activating and improving the situation for IPI's female members through education, address health & social issues and technical assistance.
Waste4Change	NGO	Social enterprise that provides waste management services from upstream to downstream. Waste4change provides consultation and education on responsible waste management. It also provides waste collection services and collaborates with stakeholders to recycle materials.	Engagement with Waste4Change could be as a local implementation partner of any formal assistance program for female waste sector workers in any category.
IWP (Indonesian Waste Platform)	NGO	Promoting and facilitating cross-sector collaborations for solutions on the waste problems in Indonesia.	Engagement to raise awareness amongst public.

THE PHILIPPINES			
STAKEHOLDER	TYPE	DESCRIPTION	POTENTIAL FOR ENGAGEMENT
CENRO (City Environment and Natural Resources Office)	GOV	Each city has a CENRO responsible for management of natural resources, reduction of waste generation as well as waste diversion.	Engagement to formalise local informal waste sector workers and technical assistance program in city based programs.
MEF (Mother Earth Foundation)	NGO	MEF seeks to raise the level of public awareness on waste issues and mobilise people to act positively on the resolution of these issues.	Behaviour change campaigns for consumers
SWAPP (Solid Waste Management Association of the Philippines)	Organisation	SWAPP runs capacity building projects, aimed at improving knowledge with regard to solid waste management.	Collaborate for community-based capacity building projects and knowledge dissemination.
Gabriela	NGO	Gabriela is a women's rights organisation with a network of grassroots organizations, institutions, and programs nationwide. Their Tondo base is a union-like organisation supporting workers in the informal waste economy,	Collaborate in capacity building and organising of informal waste sector workers.
KILUS foundation	NGO	KILUS is a community-based women's cooperative engaged in the production/manufacture of bags and fashion accessories from recycled materials.	Access to an all female network that uses recycled materials for their production
Linis Ganda	NGO	The LG program has organized waste material dealers into Cooperatives in order to obtain government subsidies, credit and set prices for materials. They have 100 junk shops each employing about 6 "Eco aides"/ recycling collectors to provide them with materials.	Collaborate to include more women in the LG network and provide technical assistance to these. LG is active in Quezon City.
Plastic Bank Philippines	Social enterprise	Exchange of plastic for money, items or Blockchain secured digital tokens.	Access to a network of waste sector workers to provide education or technical assistance.

VIETNAM			
STAKEHOLDER	TYPE	DESCRIPTION	POTENTIAL FOR ENGAGEMENT
Independent Waste Collector Cooperatives	Cooperative	Cooperatives of organised formal waste collectors are operating in all districts of HCMC. HCMC recognises contribution of independent collectors, but there is no govt policy to support them which is a challenge to the IWCs.	Big opportunity to work with IWCs. There are 5000 IWCs in HCMC. Engagement with IWCs can be best done in collaboration with a local NGO.
CECR (Center for Environment and Community Research)	NGO	CECR works to promote participation and improve the capacity of local community groups to solve environmental issues. CECR has a strong network the provincial and districts across Vietnam. They are currently working to empower and acknowledge female waste sector workers in a USAID funded project.	CECR is a potential partner in formalising the informal, capacity building and technical assistance of the entire range of waste sector workers. Through their network of community groups they are also a potential partner for public awareness programs and education to improve the social status of waste sector workers.
ENDA	NGO	Focused on SWM, working with Independent WCs. Run by Ms Linh who understands the SWM sector very well. Works with MONRE, DONRE HCMC, UNAID, UNEP, UNESCAP. Has permission/blessing of government to work in HCMC and Hanoi.	Has extensive ongoing programmes with IWCs which could be complemented. Wants to move away from pilots and partner with govt to make profits mainstream for real impact.
VNSX (Viet Nam Sach & Xanh) (VNSX)	NGO	VNSZ's mission has been to raise environmental awareness with a focus on littering. VNSX created the famous Green Ribbon campaign, which was a pledge youth would take to be green. VNSX does cleanups in HCMC and Phu Quoc, in which they involve companies and communities.	Has expertise in community mobilisation which is useful for community engagement and public awareness.
GREENHUB	NGO	Focused on raising consumer awareness and influencing behavioral change to reduce, reuse, and recycle (3R's) waste, marine debris monitoring and Coastal Clean-up Campaigns including volunteer activities to engage the community.	Community engagement and awareness building.

APPENDIX

A. Digital Survey Questions & Responses

Question	Options
How often do you do the following? (Never, Rarely, Sometimes, Often, Always)	I have actively participated in cleanliness drives in my city.
	I separate the things that can be recycled from the rubbish pile.
	I carry my own bag when I go to the supermarket.
	When I am in public places, I throw rubbish in the dustbin.
	If I can't find a dustbin when I am out, I will take the trash home with me and bin it.
Can you let me know which statement best describes what happens at home? (True or False)	Our rubbish at home is collected or we throw it in the community bin.
	We burn or bury our rubbish.
	Our rubbish is collected and we separate our recycling and regular rubbish.
	We throw it into the canal/river.
What are your opinions on the ideal waste disposal method?	All waste should be disposed together.
	We should separate recyclables such as paper, cans, and plastic from other household waste.
	We should compost our food waste from household waste.
What is your opinion around disposable packaging? (Choose one)	I find disposable packaging convenient for on-the-go consumption.
	I prefer disposable packaging because I don't have to clean up / wash up.
	I avoid using disposable packaging.
	I have no opinion.
What do you feel about food and drinks packaged with recycled plastic? (Strongly agree, agree, neutral, disagree, strongly disagree)	I don't care about the packaging as long as the item is good.
	I would choose a brand using recycled packaging instead of regular packaging
	I would support brands that use recycled materials for their packaging, but not buy from brands outside of what I'm used to.
	I would buy it as long as the packaging is visually appealing
	I would not purchase these as they are unhygienic.
	I have no opinion.
Please rank the	Recyclables being picked up from your home.

<p>following in terms of which one would make you want to recycle more.</p> <p>(Rank 1-5)</p>	Recyclables being picked up from a common point in your street or neighbourhood.
	Being paid a small amount for selling your recyclables.
	If waste collection is free for recyclables, but I have to pay for other waste
	If someone else segregated my waste for me.
<p>Do you know what happens to your waste after it gets collected?</p>	I don't know and I don't care.
	Yes I do.
	I don't know but I would like to know more.
<p>How much do you agree with the following statements about plastic?</p> <p>(Strongly agree, agree, neutral, disagree, strongly disagree)</p>	There is no problem with consuming plastic.
	Plastic makes up a lot of litter in my neighbourhood.
	There is so much plastic in the environment that it is in the food we eat.
	Plastic is helpful for day to day living.
	I worry about the health of people who have to scavenge / collect plastic
<p>What do you think of a plastic ban?</p> <p>(Choose one)</p>	They are great, it encourages less use of plastic.
	I support them as long as they don't affect me.
	I don't care, It doesn't bother me.
	It is bothersome, it creates inconveniences for me.
	It doesn't fix the root cause of plastic pollution.

B. Summary of PET Selling Prices

SUMMARY OF PET SELLING PRICES (USD/KG)					
STAKEHOLDER	GENDER	INDIA	INDONESIA	PHILIPPINES	VIETNAM
Formal Waste Collectors	Male	0.16			0.19
	Female	0.22			0.17
Street Sweepers	Male			0.13	
	Female			0.11	
Street Recycling Pickers	Male		0.20		
	Female		0.20		
Recycling Collectors	Male	0.16		0.23	0.16
	Female	0.20		0.15	0.20
Waste Banks	Male		0.24		
	Female		0.24		
Junk Shops	Male	0.25	0.32	0.17	0.22
	Female	0.26	0.32	0.21	0.23