
REPORT

WOMEN EMPOWERMENT IN THE PLASTIC WASTE VALUE CHAIN



Report by:



Commissioned by:



March, 2019

This report was prepared with the support of the Canadian Government through Canada's International Assistance Program. The contents are the responsibility of the authors and do not necessarily reflect the views of the Canadian Government or Canada's International Assistance Program.

TABLE OF CONTENT

ACKNOWLEDGMENT	3
ACRONYMS	4
I. BACKGROUND.....	5
1.1. Overview of the current situation on solid waste and plastic waste management in Vietnam	5
1.2. Role of Women in Plastic Waste Management	7
1.3. Introduction to the research	8
II. KEY FINDINGS	9
2.1. Women play an important role at all stages of the plastic waste value chain....	9
2.2. Informal women involved in the plastic waste value chain face social stigma. Their contribution has not been adequately acknowledged	13
2.3. Informal female workers do not have access to health and social insurance and social protection	15
2.4. Female workers in the plastic waste value chain typically work long hours in poor, unhygienic and unsafe conditions	16
2.5 Female workers earn a lower income and are less competitive than male workers in the plastic waste value chain.....	18
2.6. The plastic value chain presents an opportunity for women’s empowerment in poverty reduction and gender equality improvements.....	19
III. RECOMMENDATIONS	22
3.1. Formally recognize the role of women working in the plastic value chain and eliminate the stigma on them by supporting policy advocacy efforts.....	22
3.2. Supporting capacity development and providing operational equipment to improve women’s capability, leadership and working conditions.	23
3.3. Supporting further research and communications to inform policy interventions and raise public awareness	23
IV. CONCLUSION.....	24
V. ANNEX	25
Reference	25
Interview questionnaire.....	27
List of interviewees.....	30

ACKNOWLEDGMENT

This technical research report is a collective collaboration of many people. We would like to express our sincere thanks to Ms. Nguyen Thi Thu Ha, President of the Vietnam Women's Union, Member of the Central Committee of the Communist Party of Vietnam and the National Assembly and Ms. Deborah Paul, Canadian Ambassador, for their strong encouragement and support at the Consultation Conference on Women in Plastic Waste Management held in Hanoi March 15, 2019.

We would like to thank Mrs. Nguyen Lan Huong, former Director of the Institute of Labor, Invalids and Social Welfare; Mrs. Tang Hoang Hon Tham, Vice Chairman of the Danang Women's Union; Mrs. Huynh Thi Lieu Hoa, Former Deputy Director of Da Nang Department of Natural Resources and Environment; Ms. Quach Thi Thu Trang, Quoc Cuong Recycling Enterprise; Mr. Nguyen Quang, UN Habitat Vietnam Director; Mr. Nguyen Viet Dung, Pacific Environment Agency; Mr. Truong Manh Tien, Former Director of Vietnam Environment Fund, Chairman of Vietnam Association of Environmental Economics, and Advisor of Clean Water Coalition for their valuable ideas and suggestions.

We would like to express our special gratitude to Ms. Le Van Son and Ms. Nguyen Thi Thanh Thuy from the Canadian International Development Program for technical assistance in writing and completing this research. This report would not be possible without their support.

Last but not least, from the bottom of our hearts, we would like to thank the women and the people of Son Tra and Thanh Khe Districts, Da Nang City for their meaningful participation in the study and in implementation of Project Ocean without Plastics.

The research group:

Nguyen Ngoc Ly, team leader and members: Le Thi Thanh Huyen, Doan Vu Thao Ly, Dinh Thu Hang, Dang Thuy Trang.

ACRONYMS

CECR	Center for Environment and Community Research
CITENCO	HCMC Urban Environment Company Limited
ENDA	Environment and Development in Action
FIAP	Feminist International Assistance Policy
ILO	International Labour Organization
NAP	National Action Plan
SMEs	Small-medium enterprise
URENCO	Urban Environment Company Limited
WISE	Women's Initiative for Start-ups and Entrepreneurship

I. BACKGROUND

1.1. Overview of current situation on solid waste and plastic waste management in Vietnam

With waste generation from 0.6 to 1.19 kilograms per person per day in Vietnam, the amount of domestic solid waste has doubled in the last 15 years, reaching 27.1 million tons in 2015. It is estimated to reach 54 million tons by 2030. The proportion of domestic solid waste collected in urban areas is 85% and in rural areas is 40% (WB, 2018). Of the household waste, 16% is plastic waste.

Unmanaged plastic waste could easily enter water resources and make its way to the ocean. Vietnam is fourth in the world in terms of plastic waste discharge into the ocean. The amount of unmanaged plastic was 1.83 million tons/year and went to the ocean was 0.28- 0.73 million tons/year (Ocean Conservancy, 2015). Vietnam, per capita, has the second highest amount of plastic, by weight, in the world entering the ocean (Jambeck, 2015). On average, Vietnam produces 120,000 tons of solid waste per day, of which 16% (19,000 tons) is plastic waste (Lekima Hung and Minh Nhan, 2019). The amount of plastic waste released every day in Hanoi and HCMC is 80 tons (VNA, 2018), Thua Thien Hue is 35 tons, and Da Nang is 10.4 tons (CECR, 2018).

Collection and disposal of domestic waste can be summarized as follows. Domestic waste is collected from residential areas, transferred to temporary gathering points, and then loaded to trucks for transport to landfills. In rural areas, waste collection is mainly carried out by cooperatives or self-managed groups (Tien, 2018). In urban areas, domestic solid waste collection and transportation activities are carried out by the Urban Environment Company (URENCO) and some private enterprises (about 85%), 6% are collected by the informal sector. Nine per cent of waste is not collected (WB, 2018).

About 80% of waste collected is dumped into landfills. However, only 30% of 660 landfill sites are considered hygienic. Many landfills are of temporary and do not meet with design and operational standards, leading to serious environmental pollution (WB, 2018).

The collection of recyclable materials is often carried out by informal sectors such as street collectors and scavengers, before the environmental companies reach them (WB, 2018). Some recyclable wastes have been sorted at the source, while some are segregated by street collectors during collection and transportation. After that, recycling facilities buy about 4 per cent of the recyclable waste from street collectors, middlemen or the formal sector (WB, 2018), then pack it for sale to bigger recycling facilities.

Plastic bags and single-use plastic products account for a large proportion of plastic waste. For example, about 41% of waste in Hoi An is plastic bags (Giang, 2016). Bags are provided free from stores, with an average usage of 35 bags per household per

week (WB, 2018). One thousand plastic bags are consumed every minute, and tens of millions of plastic bags are sold everyday, but only 27% of them are processed and recycled.

In Da Nang, a residential area (of about 100 households) discharges 51 kg of plastic bags a month. Due to low value, and being wet, dirty, and time-consuming to collect, the price of purchasing plastic bag waste is low. As much as 40% of such plastic waste goes unsold (Hellen Lynn, 2016). Street collectors often ignore this plastic bag waste. These plastic bag wastes are often illegally discharged or only partially segregated at the end of the waste chain

It is estimated that 10% of domestic solid waste, including plastic waste, is recycled (WB-2018). In addition to recycling in waste treatment plants, recycling activities are carried out by the private and informal sectors. Recycling of waste is usually concentrated in craft villages, without proper management and supervision of technological processes or compliance with environmental protection regulations. While contributing to job creation and playing an important link in the waste management chain, this lack of institutional control is also a potential source of pollution to water, soil, and air, as well as a risk to the health of both workers and local residents.

One major consequence of the inefficient system of segregation, collection, recycling, and treatment of waste is that a large amount of plastic waste ends up in streams, rivers, canals, and ocean in Vietnam. A contributing factor is the lack of awareness of the local community

Recognizing the impact of plastic waste pollution on the ocean, the Government of Vietnam has committed to solve this problem through the development of a National Action Plan on Marine Plastic Debris Management (NAP), which is expected to be approved in mid-2019. The NAP will adopt a sustainable approach through effective use of resources in plastic waste management, in accordance with the Ocean Plastics Charter initiated by Canada.

In a 2018 study, the World Bank proposed four solid waste management schemes for Vietnam to achieve the goal that by 2030, 100% of urban residents would have access to the waste collection system (WB, 2018). Option 2 aims to increase the rate of segregation and recycling both at the source and during collection. This option requires the lowest total investment and operating costs. Not only does this option help to reduce the amount of waste generated and recover value from waste resources, it also significantly reduces the amount and cost of collecting, transporting, and treating waste. It also improves the quality, and performance of the treatment processes, minimizing negative impacts from waste collection/treatment at landfills, and contributes to environmental protection. In order to successfully achieve these goals of increasing segregation at the source, and collection and recycling of waste, the program will need the strong participation of informal women workers in this sector.

1.2. The Role of Women in Plastic Waste Management

(i) Consumption, generation and segregation of waste at the source

This is an important segment in plastic waste management. In households, women are often responsible for buying food and necessities. Women make 85% of decisions in family shopping (Lynn, 2016). The reduction of waste and plastic generation requires changing consumer behavior regarding reducing, reusing, and recycling waste. About 21.7% of the world's plastic demand is used in household appliances, furniture, sporting goods, and medical equipment, while 40% is used for packaging. That is fifty percent of the bottles, jars and plastics in the world are used for packaging food (Lynn, 2016).

There have been a number of studies on the role of women done worldwide on the waste value chain. The studies covered the knowledge, awareness, and willingness of women to participate in waste management and recycling. One of the findings was that women often perform better than men. Sri Lankan women, both in households and businesses, better understand the environmental impacts and waste management regulations and are often more willing to pay for waste collection services than men (Vineeshiya, 2016). Surveys in Australia show that awareness and recycling behaviors are more common among women, with 85.6% of women and 81.4% of men sorting garbage for recycling. Forty six per cent of women and 38% of men used environmentally friendly bags. These trends hold true in Nigeria, Iran and the US (Lynn, 2016).

(ii) In collection and recycling segments.

Waste collection and recycling segments are mainly carried out by the informal workforce, without proper management, supervision, or support from the responsible management institutions.

Street collectors and scavengers significantly contribute to the collection of recyclable waste. The majority of street collectors are women and children. They often collect recyclable materials on the street, and in restaurants, markets and institutional buildings. They then take them to spontaneous gathering points on the streets to sell to retailers or to recycling facilities.

In Sokoto City, more than 68% of street collectors are women, mostly under 45 years of age, each collecting about 200kg of waste per week. Their income is very low and is not supported by the government. Their biggest challenges are fluctuating waste prices, high transportation costs, insufficient labor, and the lack of formal associations or unions.

A study in Nigeria concluded that gender inequality is quite common in the recycling industry: Women have a very limited role in decision-making or segments that can be profitable (Nzeadible & Adama). , 2015). More than 50% of workers in the recycling sector in Sao Paulo, Brazil are women (Lynn, 2016), but they often do low-income jobs such as picking up and sorting waste. In some cities of India, 80% of people who sort waste are women.

To date, studies on the role of women in plastic waste management are still limited in Vietnam. Lack of information and knowledge about this area is challenging for policymakers as well as development programs.

Canada is one of the leading development partners in the area of gender equality and plastic waste management in Vietnam. Acknowledging that the plastic value chain may offer a useful opportunity to achieve gender equality and poverty reduction, the Embassy of Canada in Vietnam funded research on “Women Empowerment in Plastic Waste Management.” The goals of gender equality and poverty reduction are aligned with Canada’s Feminist International Assistance Policy (FIAP).

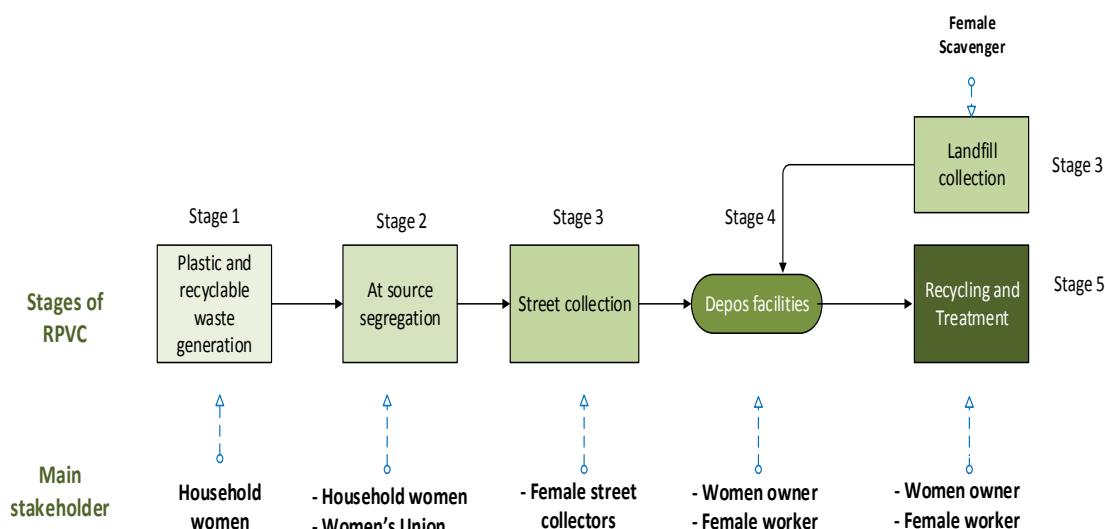
1.3. Introduction of the research

The intersection between plastic waste management and women empowerment is consistent with FIAP and Canada’s commitment to combating ocean plastic waste pollution. In this research, CECR will analyze the relationship between women's empowerment and plastic waste management in Vietnam, based on the results of the project: “Ocean without Plastic” implemented in Da Nang. The research will review other studies on waste management, and analyze the role of informal female workers working in segregation, collection of plastic waste on the street and in the Khanh Son landfill. The consultation workshop on Women's Role and Plastic Waste Management on March 15, 2019 in Hanoi will also be taken into account.

This study will present findings on the role of women in different stages of plastic waste management in Vietnam, and provide recommendations to the Governments of Canada and Vietnam to develop appropriate support programs to enhance women's status in plastic waste management, poverty reduction, and pursuit of gender equality.

II. KEY FINDINGS

2.1. Women play an important role at all stages of the plastic waste value chain



Notes

- Female scavenger: person who informally works at landfill
- Female street collector: person who informally works on streets, lanes for collecting waste
- Depos facility: selling and purchasing recyclable and plastic entity

Diagram: Role of women in stages of plastic waste value chain in Da Nang city (RPVC)

As presented in the diagram, the role of women is shown throughout the stages of the recyclable and plastic waste value chain (RPVC). They appear as consumers, waste discarders, street collectors, scavengers at landfill, owners, and workers at recycling centers and recycling plants.

Role of women in stage 1 and 2

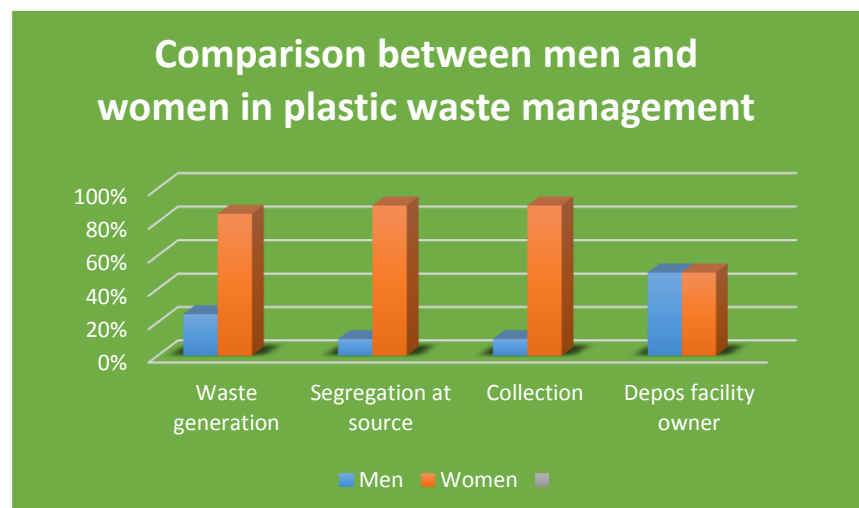
Due to social norms and traditional cultural values, Vietnamese women usually make decisions on domestic goods purchases and are in charge of sorting and disposing of waste at the household level. They also play an essential role in teaching family members how to manage and sort waste at the source.

In households, women often have greater responsibility for shopping than men. Women make 85% of shopping decisions. Women also have a greater influence on household waste management and waste separation at the source. In Vietnam, women often default to activities related to housework, childcare, establishing, and maintaining good habits, and hygiene in families, streets and communities.

Interviews with women groups in Da Nang (CECR, 2018) on the role of men and women in work related to waste management revealed that 100% of the women surveyed undertook housework, and were responsible for collecting, classifying and disposing of daily waste. Despite this, men often took the leading role in the participation in waste management meetings.

The pilot revealed that household women were aware of the 3R benefits (Reduce, Recycle, and Reuse) and they are competent to implement 3R at home. They initiated and participated actively in sorting waste at the source.

However, 100% of household women interviewed face a number of barriers, identified as follows: (i) lack of legislation and specific guidelines with regards to waste sorting; (ii) lack of waste sorting infrastructure and equipment such as separate containers for different waste such as plastic bags, paper, glass bottle etc.



Role of women in stage 3

Managing recyclable waste and plastic waste activities such as street collecting and sorting at landfills is mainly undertaken by the informal labor force, most of whom are female workers. According to the ILO's 2016 Report on Informal Employment in Vietnam, the number of workers in informal employment was more than 18 million, 43.5 per cent of whom were women. With regard to waste collection, 90 percent of street collectors and scavengers are women. For example, out of 300 scavengers working regularly at Khanh Son landfill, 270 are female.



CECR's photo (2019): Informal scavengers working on Khanh Son Landfill from 6 am to 12 pm

Role of women in stage 4 and 5

Women are the main laborers at small depots, and recycling and treatment facilities. In Da Nang, for example, there are more than 240 family-based facilities where scrap and recycling waste (e.g. paper, plastics, metal) are collected from individual street collectors and scavengers. They are repacked and sold to bigger facilities in Ho Chi Minh City or turned into materials (e.g. plastic pellets) for other industries.

These facilities are of small and very small size; most are family businesses. Half of these facilities are owned by women, based on surveys of 15 facilities in Da Nang and Ha Noi. Result of the survey in Da Nang shows that 90% of female depot facility owners often play a support role in running the business, working with street collectors, hiring employees.... while men are often the ones who make important decisions such as investment, buying and selling high-value assets, and are also the decision-makers of the family.

Moreover, 85-90 percent of the workers in these facilities are female. At these depots and treatment facilities, women are typically employed to perform more skilled and time-consuming tasks such as sorting, cleaning and separating, while men are assigned to take on the more labour intensive and higher-paying tasks of loading/unloading and transporting.

Story box 1

Ms. Vu Thi Bon, 40 years old, migrated from a rural area to Da Nang city. She was born in a very poor village in Thanh Hoa province. As the income from her farming was not sufficient to cover family expenses, she and her family went to Da Nang in 2009 to look for opportunities. Ms. Bon and her husband decided to open a family-based recycling facility (depos facility) on Le Minh Trung Street, Son Tra District, Da Nang



*CECR's photo (2019): Ms. Vu Thi Bon –
depos facility owner on Son Tra district*

Over 10 years, the facility created jobs for 15 street collectors who were working full-time and part-time in the facility. Ms. Bon shared: “People in the rural areas are so poor. Most of them are uneducated people are from Quang Nam, Quang Ngai, Thanh Hoa and Nghe An”. Most of the workers here are women; they were diligent and hard-working. Men were often responsible for driving and transporting. Ms. Bon felt that women were smarter than men in that they knew worked more carefully with numbers. She recruited these women, providing them with food and accommodation. These women earned a stable income (around 6 million VND per month), which was better than staying home. Ms. Bon also purchased two big trucks, which carried 8 tons of scrap per day. Ms. Bon family's livelihood was improved. In addition, she created a number of jobs for poor migrant women. Mrs. Bon was glad that her family moved to Da Nang. She plans to invest for her children, learn Korean, and have a better future.

In a nutshell, the women's group contributed to creating economic benefits and minimizing the environmental costs, while streamlining the waste management process, and contributing to the betterment of the environment. However, there is no formal recognition of the participation and contribution of the informal women sector in the plastic waste value chain in Vietnam. Informal female workers also face many obstacles such as social stigma, no social insurance, vulnerability, and unequal income. The next findings are going to clarify those obstacles.

2.2. Informal women involved in the plastic waste value chain face social stigma. Their contributions have not been adequately acknowledged.

The fact that the collection, sorting, and recycling of plastic waste are carried out by a largely female "informal labor" force is an important contribution to domestic waste management in Vietnam. It helps both increase the rate of garbage collection and significantly decrease the amount of difficult to decompose waste, such as recyclable and plastic waste, which would end up in a landfill. However, this has not received the attention and proper recognition of society, government or the community.

Informal female workers working in the waste value chain are not recognized in any existing laws. The 2015 Law on Environmental Protection and its sub-laws do not acknowledge the role of these informal workers, even in Chapter 9, which specifically addresses Waste Management. Similarly, there is no particular reference to gender issues with regard to waste collection and recycling in the Labour Law. CECR's survey in Da Nang revealed that 90 percent of street collectors and scavengers are migrant workers and do not belong to any formally established organizations, associations or labour unions.



CECR's photo (2018): Female street collectors randomly collect waste in Son Tra district



CECR's photo (2018): Female street collectors randomly collect waste in Thanh Khe district

Unable or unwilling to recognize the contribution of this informal workforce, local governments in many localities are looking to eliminate the operations of these informal workers in order to protect the 'clean and organized' image of the localities. Due to the limited knowledge of waste treatment processes, these informal groups also cause environmental pollution problems such as the burning of waste materials, discharging wastes into streets, and threatening the safety of local people. For these reasons, local authorities want to do away with these groups.

Waste collection is considered the 'dirtiest' and lowest paying job in Vietnam, typically taken by poor and uneducated people. This is especially true of women migrating from rural to urban areas, the average age of whom is between 50 and 70 years old. They are looked down upon by their families and discriminated against in their communities.

Fifty per cent of street collectors interviewed by CECR said they felt embarrassed talking about their job and that their children did not want to follow in their path. Many women choose to stay in this job because it is their only way to support their husbands and children at home.

Story Box 2: Women collectors face discrimination

"Ms. Vo Thi Hoa, 55 years old, migrated from her hometown in Nghe An to Da Nang to work as street collector more than 3 years ago, working 18h / day, earning a living from this job to pay debts incurred by her alcoholic husband in the countryside. Failure to pay debts can result in verbal by neighbors. Ms. Hoa shared that by doing this job she was discriminated against by others, they did not help her when facing difficulties. For example, if you carry a heavy load of recyclable waste and fall in the middle of the road, no one came out because they saw this job as dirty."



Story box 3: Informal female workers stigmatize by their family

“Mrs. Pham Thi Hue, 45 years old, migrated from Nam Dinh to Da Nang, working as a worker in a depos facility for more than 15 years. She shared that her family is very poor, so she had to migrate to the city to earn a living. She chooses to do this job because she has little capital. However, she said this occupation is the bottom of the barrel; if people have an education, they will not do this job because society calls it a dirty job. Her children do not want to follow her path. She felt very embarrassed and sad, but at least by doing this job she can support her family”

2.3. Informal female workers do not have access to health and social insurance and social protection

In the Law on Social Insurance and Health Insurance, there is no provision for informal workers to benefit from social security other than from purchasing voluntary insurance, which most of them cannot afford to do.

Most informal workers do have not access to social insurance (97.9 per cent). Just 0.2 percent of the remaining workers have compulsory social insurance paid by their employers and 1.9 percent participated in voluntary social insurance. Interviews with informal women workers in Da Nang revealed that they have limited knowledge about labour rights, existing regulations on workplace hygiene and safety, and how to gain access to health and social insurance.

Even in Ho Chi Minh City, where street collectors are organized as affiliated entities of CITENCO, more than 80 percent of female workers are not covered by any health insurance schemes or entitled to annual medical checkups. As informal workers, they are not covered by social and accident insurance schemes, either. They also do not have access to the pregnancy/maternity support programs that are available in the formal sector, such as an exemption from being dismissed during pregnancy and the option to move to a less demanding job with the same salary during pregnancy. The survey results of 428 collectors from cooperatives showed that in 12 months, only 13.7% had a general health check; 75% did not have health insurance; and 96.3% did not have accident insurance. Private garbage collectors must work more than 9 hours/day with almost no days off (29.6 days / month).

There are no support groups to introduce issues related to health, sanitation or insurance for these labor groups. They also had no access to social entitlements.

Story box 4

“According to Mrs. Thanh Huong, former Director of Institute of Labor and Social Affair Science, there is a large number of informal female workers in Vietnam, but no statistics or specific data are available on this group. While informal female workers have been contributing to public works in the area of waste management, job creation and economic development of the country, there is no legal foundation to protect their rights such as labor rights, working environment, land use right, and social rights. The same job (waste collection and work at landfill) is classified as public work and hazardous for governmental workers, who get specific entitlements, but for informal workers, they do not get any of these entitlements. They do not belong to any organization, meaning their voice is likely not heard.

--Cited at Consultaion workshop on 15 March--

2.4. Female workers in the plastic waste value chain typically work long hours in poor, unhygienic and unsafe conditions

Most landfills currently operational in Vietnam are in poor sanitary condition and do not meet labor safety standards. As observed during the CECR field trip to Khanh Son landfill in Da Nang, there was serious air pollution with a foul smell in the neighborhood. Women waste pickers working there did not have protective clothing or equipment. They used rudimentary tools and often worked without even plastic gloves.

Their work schedule is set concurrently with that of URENCO and CITENCO garbage trucks. These women usually work more than 8 hours per day, including night time and do not have annual leave, sick leave, or holiday leave (except for the Lunar New Year's Day). This creates great pressure on members of their families as they also assume much of the household work, including child care.

Work conditions are inadequate in depos and recycling and treatment facilities. They are commonly located in densely populated and difficult to access alleys with high risk of fires due to the absence of a proper fire control system. Many facilities do not meet environmental and hygiene standards. When interviewed, both owners and employees indicated a lack of understanding of environmental, fire and labor safety requirements.

Eighty per cent of these facilities are unable to ensure environmental sanitation due to the daily storage of waste materials, causing bad odors and disease risks. Some facilities used sidewalks and roadways to gather wastes. This blocks the walkways and causes unsanitary conditions.



CECR's (2019): A depos facility located in a small lane in Thanh Khe district.



CECR's photo (2019): A messy depos facility located in Son Tra district

Recent studies show that women working in the plastic waste value chain are often exposed to toxic gas, bacteria, parasites, and a dust level that is 3-7 times higher than permissible standards. According to Environment and Development in Action (Enda), in Ho Chi Minh City waste collectors are prone to dengue, flu and dermatological diseases (52 percent); and bronchial and lung disease (28.6 percent). The incidence of respiratory, gynecological and dermatological problems among women is also higher than in other employment sectors in the same geographical location. In addition, they also face the risk of work accidents. 94.6% of garbage collectors suffer from hand and foot bleeding at work and 23.6% have had a traffic accident.

A survey in Da Nang indicated that the informal group's understanding of the health impact of their occupation was limited. At Khanh Son landfill, due to this lack of knowledge, some workers hesitated to share concerns about health issues when asked. Others are knowledgeable about the impact of health on their careers but they are still willing to continue their work because it is their main source of income.

2.5 Female workers earn a lower income and are less competitive than male workers in the Plastic waste value chain

Monthly average earnings of informal workers were found to be less than that of formal workers in all categories of employment status. The average earnings of formal workers were VND6.7 million/month (approximately US\$290), while the average for informal economy workers was less than half that amount.

Income disparity exists between men and women working at the same stages of the plastic value chain. Studies on landfills in Hanoi reveal that the daily income of female labourers accounted for only 78% of men's income. Female scavengers in Da Nang experience a similar disparity. Perceived as physically stronger than women, men can collect and carry heavier and more bulky items (e.g. electronic devices) that are often of higher value than those collected by women (e.g. paper, plastic bottles and beer cans).

At dump sites, men are more likely to work at night when most of the garbage trucks arrive, and earn more money. Women feel more exposed to crime risks, and are less likely to work at night.

All of the surveyed female owners of waste recycling facilities said their facilities were less competitive than those owned by men. Men tend to dominate the better paid jobs of dealers and managers at the more established recycling businesses, whose market share is traditionally more sizable. In addition, the female respondents acknowledge their lack of technical knowledge and finances limit their ability to expand their businesses.

Story box 5

“Mrs. Thu Trang, the female recycling owners, shared that she encounters challenges in this business: 1) lack of raw recycling waste; 2) her facility is not able to access government support policies for small and medium enterprises. There is no policy to support for technical knowledge and financing. 3) There is a negative notion on the recycling industry, so she could not expand her business”.

--Cited at Consultation workshop on 15 March--

2.6. The plastic value chain presents an opportunity for women's empowerment in poverty reduction and gender equality improvements

International experience and the pilot projects recently implemented by NGOs and the Women's Union in Da Nang and Ho Chi Minh City have shown initial positive results for women empowerment in the plastic value chain, and its impact on poverty reduction, economic development, and environmental protection.

Waste collecting cooperatives, established in many countries all over the world have helped to increase the income of its members to an equivalent of 1.5 times of basic salary in Colombia and 2.5 times in Mexico. In Ho Chi Minh City, the waste cooperative supported by ENDA has created more stable income for its 1,500 members, accounting for 50 percent of the total informal female workforce in the local waste value chain. Two women have been appointed to be cooperative managers and a total of 370 women have been able to buy health insurance, supported by the project's free-interest-rate credit program

Unlike other countries, Vietnam has the Women Union, which has more than 19 million members, 105,000 union officials, and has a system from the central to village levels as well as across ministries. Most women at the grassroots level are members of the Union, participating in regular activities such as team meetings and implementing initiatives of the Association. In addition to disseminating and propagating policies, Women's Unions at all levels also play an advisory role and work closely with authorities at all levels to initiate and implement environmental protection and waste management activities such as waste segregation at the source and the implementation of 3R and campaign of 5 "no" 3 "clean". Through the Union's activities, women are key participants and disseminate messages to the public, communities, schools, and families. The plastic waste value chain is an important foundation for improving the position and capacity of women to reduce plastic waste going to the ocean.

The CECR's pilot project in Da Nang has helped to connect 124 women street collectors to the Women's Union and households in Son Tra and Thanh Khe districts. This women-led plastic waste separation initiative has resulted in a 10% income increase for the women street collectors. Ms. Nguyen Thi Bay, a street collector in Son Tra district, said, her income has been increased to 5.300.000 VND from 4.700.000 VND thanks to access to more stable sorted waste resources.

After 18 months, the project has resulted in great accomplishments. It has implemented 169 communication programs, organized training for 138,840 people, trained 21,000 households to sort waste at the source, received commitments from 500 boat operators to not discharge plastic bottles into the ocean, collected 7,690 kg of plastic waste and 851 kg of recyclable waste, and generated 93 million VND in revenue.

Story box 6

Women-led model of waste segregation, collection and reduction of plastic bags in Son Tra and Thanh Khe districts

Community based recycling activities were based on waste segregation within the household. This included resource waste (waste which could be sold to collectors), organic waste (from the kitchen), and low value plastic waste (plastic bags). The women's groups played a leading role in the sorting activities at home and then, providing training and advice to other families on waste sorting.

Resource waste then was gathered and sold to waste collectors. Organic waste was composted at home and the compost was used for house gardening. The family placed plastic bag waste in an aluminum container that would be collected by waste collectors on a regular basis. The plastic bag waste was transported and sold to recycling centers. This plastic bag waste value chain (household – collectors – recycling plants) was an innovative solution to reduce and recycle plastic bags, preventing them from being discarded and directly discharged into rivers and the ocean.

This women-led model had proven to be very beneficial to the community. The model had helped to transform household habits, with waste being separated at the source. The money generated from the sale of resource waste went directly into a community fund, which was used to assist poor households.

In this model, the women participated in planning consultations and discussions with local authorities and other stakeholders. They developed a strong communications program within the communities. This resulted in the integration of the female street collectors and women working in recycling into the plastic waste value chain. This integration helped strengthen the partnership among residents, the provincial government, and other sectors, and improved the collection of data regarding the women's successes.



Story box 7

As the largest economic city in the country, along with natural population growth and mass migration from all provinces, Ho Chi Minh City has to face many challenges in waste management, especially domestic waste. According to estimates by the City Department of Natural Resources and Environment, in 2017, on average, Ho Chi Minh City generated 9,000 - 9,500 tons of waste every day, of which domestic solid waste comprised about 8,900 tons/day. The collection of domestic waste in Ho Chi Minh City is carried out by 2 public forces (with 2,000 workers) and a residential collection group (with more than 4,000 people), of which the residential waste collection group force collects from 65% to 70% of the daily waste. Of the 4,000 members of the residential waste collection group, an estimated 40%-44% are women, an indispensable force, playing an important role in the household waste collection.

For many years, Environmental and Development in Action (Enda Vietnam) has been providing social security support to the residential waste collection forces in general and residential waste collection women in particular. From its projects, the Enda Vietnam Organization has helped the residential waste collectors to purchase health insurance and accident insurance, two essential types of insurance for the residential waste collectors' work. This has helped reduce the economic burden for them when encountering risks in the working process. In addition, Enda Vietnam has supported the allocation of protective equipment to the residential waste collection forces in 8 districts in Ho Chi Minh City for many years. Enda Vietnam also organized many training courses/workshops to improve the competence of the residential waste collection forces, linking the market for waste collecting and recycling to the residential waste collection forces.

Enda supports the establishment of the Cooperative and encourages the residential waste collectors to join the Cooperative/Union to create more favorable conditions to provide social security support to this workforce. The Cooperative/Union sponsors such programs such as community credit, support to purchase health insurance, and accident insurance for waste collectors. This is especially helpful for immigrants who do not have access to the social security system in the city, and creates a positive impact on improving life and health, especially for women in this force.



III. RECOMMENDATIONS

Empowering women in the plastic value chain is the key to reducing poverty, improving the environment, and promoting economic development in Vietnam. At the consultation workshop on women and plastic waste management on March 15, 2019, sponsored by the Embassy of Canada in Ha Noi, Madam Nguyen Thi Thu Ha, President of the Vietnam Women's Union, Member of the Central Committee of the Communist Party of Vietnam and Member of the National Assembly, highlighted the importance of empowering women in the plastic waste value chain. According to Ms. Nguyen, formalizing women's role in waste management will help Vietnam develop a circular economy and achieve gender equality results.

3.1. Formally recognize the role of women working in the plastic value chain and eliminate the stigma on them by supporting policy advocacy efforts.

Formalizing the role of women can be achieved by supporting the establishment of an alliance of NGOs, gender activists, mass organizations (e.g. the Women's Union), research institutes, universities and media in order to advocate for:

- Policies to formalize the role of women and the informal sector in the plastic waste value chain. This includes, but is not limited to, the establishment of an association of women working in the plastic value chain.
- Rights-based social protection policies to ensure that informal female workers can access safer occupational conditions as well as health and social insurance schemes. This activity is aligned with priorities set in the FIAP's Core Action Plan 1 on supporting local women groups and partnership movements to promote women rights.
- Given that Madam Nguyen Thi Thu Ha, President of the Vietnam Women's Union, is a member of the Central Committee of the Communist Party of Vietnam and a Member of National Assembly, she should be encouraged to provide support to advocate at the political level on the need for existing laws and policies to recognize the role of informal female workers in the plastic value chain.

To remove the social stigma on waste-related work by women, financial and technical assistance should be provided to replicate successful pilot projects aimed at empowering women. This can be done by partnering with the Vietnam Women's Union from the central to commune levels to raise public awareness and encourage mind-set and behavioral changes with regard to plastic waste and waste sorting.

This activity is aligned with FIAP's Core Action Plan 3 "Growth that works for everyone", stating that empowering women to be full participants in the economic lives of their families and communities can lead to broader economic growth and lasting change.

3.2. Supporting capacity development and providing operational equipment to improve women's capability, leadership and working conditions.

This can be achieved by:

- Working with local agencies to build technical and leadership skills for women working at the various stages of the plastic waste value chain and supporting women in accessing market information, training and education;
- Organize training programs on occupational safety, fire prevention and fighting standards. Provide equipment for waste collectors, and ensure benefits for informal workers, especially women, and provide access to social security programs and employee benefits. Provide carts or vehicles that help female scavengers to more effectively and safely collect waste and allow female business owners to scale up their businesses;
- Technology support and small funding to support women-led startups at the recycling and treatment stages of the value chain (e.g. in coordination with the Women's Initiative for Start-ups and Entrepreneurship – WISE network) or SMEs (e.g. women-owned scrap facilities).

These activities are expected to eventually help increase income and are aligned with FIAP's Core Action Plan 3, "Growth that works for everyone" on building women's full economic potential.

3.3. Supporting further research and communications to inform policy interventions and raise public awareness

- Supporting more evidenced based studies, surveys, and data collection on the role of informal female workers participating in each stage of the plastic waste value chain. The focus should be on identifying potential economic, social, and environmental benefits that can be obtained from the achievement of gender equality in the value chain.
- Conducting in-depth and quantitative research and setting up a national database on the informal labour force in the plastic value chain, focusing on bigger cities with large-scale landfills. This will offer a good foundation for raising public awareness and evidence-based policy making at the central and provincial levels.
- Strengthening communication programs to raise awareness of informal group contributions to economic, society and environment.
- Using the Women's Union network, coordinate with authorities at all levels, from central to local, to advocate for the reduction of the use of plastic bags and single use plastic products and to manage waste plastic waste, especially in collection and segregation. These activities are aligned with FIAP's Core Action Plan 1, "Gender equality and the empowerment of women and girls" that aims to build a strong base of evidence to support gender equality actions.

IV. CONCLUSION

Vietnam has made strong commitments in the management of urban solid waste and ocean plastic waste, as shown in the development of National Action Plan on Marine Plastic Debris Management (NAP) with the participation of stakeholders.

This study has shown that throughout the plastic waste value chain, women play an important role in all aspects of waste management, especially segregating plastic waste such as plastic bags, single-use plastics, and the collection and recycling of plastic waste.

Women's contributions help reduce plastic waste pollution from households, contribute to public services to reduce landfill waste, create jobs, and improve livelihoods for many families.

However, the recognition of women's contribution is very limited. From a social and policy perspective, women working in plastic waste chains face many difficulties and challenges from society and family. As migrant women, informal workers face social stigma; occupational discrimination; and long hours of work in unsanitary conditions, affecting their health. Because female migrant workers and informal workers are not in any organizations or associations, they are not entitled to social security policies such as health insurance, unemployment insurance or protection. Compared to men, they have less competitiveness and fewer skills to make important decisions, so their voices are not heard, leading to income inequality.

The pilot projects in Da Nang and Ho Chi Minh City show potential solutions to enhance women's position in the waste value chain for economic, cultural, and environmental development. When informal female groups are economically empowered, they can be connected to household women who can create charitable funds, or they can participate in health insurance programs and social security. They also have a voice and a presence for society and family.

The assistance programs of international organizations promoting the role and position of women in the plastic waste chain are extremely important and timely. The Canadian government is leading in protecting the marine environment from plastic waste, while focusing on empowering women and girls to promote gender equality, creating economic and social value. At the same time, Canada's International Development Programs on research, advocacy, communication and training on the role of informal female workers in the waste value chain need to be promoted to achieve poverty reduction, gender equality and economic growth in Vietnam.

V. ANNEX

Reference

- Abubakar, M. (2015). Analysis of Women's Participation and Incorporation in Waste Picking and Solid Waste Management in Sokoto Metropolis. Zaria.
- Canada. (2018). Canada's Feminist International Assistance Policy. Global Affairs Canada.
- CECR. (2018). Study on Solid Waste Management and Plastic Waste Management in Da Nang City.
- Chi, D. K. (2003). Women's role in Waste Management in Viet Nam. In V. M. Thu, Gender and the Waste Economy Vietnamese and International Experiences (pp. 64-79). WASTE-ECON.
- Chi, M. (2018, 10 11). Bộ TN&MT tiên phong giảm thiểu rác thải nhựa. Retrieved from baomoi.com: <https://baomoi.com/bo-tn-mt-tien-phong-giam-thieu-rac-thai-nhua/c/28114547.epi>
- Coker, A. (2016). Solid Waste Management Practices at a Private institution of Higher Learning in Nigeria. *Procedia Environmental Sciences* 35 , 28-39.
- Conservation, O. (2015). Stemming the Tide: Land-based strategies for a plastic - free ocean. Ocean Conservancy.
- Dan, M. (2019, 2 18). Anh sẽ yêu cầu các nhà sản xuất bao bì nhựa trả chi phí xử lý chất thải. Retrieved from Baomoi.com: <https://baomoi.com/anh-se-yeu-cau-cac-nha-san-xuat-bao-bi-nhua-tra-chi-phi-xu-ly-chat-thai/c/29694279.epi>
- Davies, N. T. (2016). The Usefulness of Including Women in Household Solid Waste Management. A Case Study of Dzivaresekwa High Density Suburb: Harare. *IOSR Journal of Humanities and Social Science*, Volume 21, Issue 3, 92-108.
- Dias, S. (2015). From Theory to Action: Gender and Waste Recycling A Toolkit for Teachers, Researchers and Practitioners . WIEGO.
- Dias, S. M. (2015). Rethinking gender and waste: exploratory findings from participatory action research in Brazil. *Work organisation, labour & globalisation* Volume 9, Number 2, 51-63.
- Doan Thi Phuong Lan and Nguyen Thi Anh Thu. (2003). In V. M. Thu, Gender and the Waste Economy Vietnamese and International Experiences (pp. 96-107). WASTE-CON.
- Federation, B. P. (2015). Plastics in Vietnam Report.
- Giang, H. M. (2016). Municipal solid waste characterization and waste management issues in a tourist city Hoi An- Viet Nam.
- Huong, T. T. (2003). In V. M. Thu, Gender and the Waste Economy Vietnamese and International Experiences (pp. 80-95). WASTE-ECON.
- IUCN. (2018). Status of Vietnam Plastic Waste Pollution, Issues and Challenges. Iloilo, Philippines: IUCN.
- Jambeck, J. R. (2015). Plastic Waste inputs from Land into the Ocean. *Science* , 768 - 771.

- JICA-MOC. (2017). Vietnam Waste at a Glance, 2015 Data, Domestic Solid Waste. JICA.
- LHPNVN, H. (n.d.). Retrieved from <http://hoilhpn.org.vn/>.
- Loan, N. P. (2017). Lựa chọn công nghệ trong Quản lý chất thải rắn bền vững , Nghiên cứu điển hình tại Thành phố Hồ Chí Minh, Việt Nam. APN.
- Ly, N. N. (2018). The Role of Women in Plastic Waste Management in Son Tra and Thanh Khe Districts, Da Nang City.
- Lynn, H. (2016). Plastic, Gender and the Environment. WECF.
- Muhammad, M. N. (2013). GENDER ROLES IN INFORMAL SOLID WASTE MANAGEMENT IN CITIES OF NORTHERN NIGERIA: A CASE STUDY OF KADUNA METROPOLIS . Academic Research Journal, 142-153.
- Muller, M. (2003). Gender-linked Livelihood from Modernising the Waste Management and Recycling Sector. In N. A. Thu, Gender and the Waste Economy Vietnamese and International Experiences (pp. 15-39). WASTE-ECON.
- Muller, M. (n.d.). Gender and Urban Waste Management.
- Nguyet, M. (2019, 2 8). Rác thải nhựa đại dương - Bài 3: Quản lý chất thải nhựa biển ở Việt Nam. Retrieved from Baomoi.com: <https://baomoi.com/rac-thai-nhua-dai-duong-bai-3-quan-ly-chat-thai-nhua-bien-o-viet-nam/c/29598510.epi>
- Obadina, A. A. (2015). Solid Waste Management Livelihood on Lagos Dumpsite: Analysis of Gender and Social Difference. Loughborough University.
- Sharma, N. (2017). Governance and Women's Group Participation in Solid Waste Management in Nepal. Trondheim.
- Tien, N. H. (2018). Overview of Household Solid Waste Management in Viet Nam.
- TNMT, B. (2016). Báo cáo Hiện trạng Môi trường Quốc Gia 2016 . MONRE.
- Truong, N. (2018). Solid Waste Management in Vietnam, Current situation, challenges and strategies for development. Metropolia University of Applied Sciences .
- TTXVN. (2018, 7 23). Giải pháp cho cuộc khủng hoảng rác thải nhựa. Retrieved from <https://bnews.vn/giai-phap-cho-cuoc-khung-hoang-rac-thai-nhua-/91123.html>
- Vermaa, R. L. (2016). Municipal Solid Waste Management in Ho Chi Minh City, Viet Nam, Current Practices and Future Recommendation. Science Direct, Procedia Environmental Sciences 35 , 127-139.
- Vineeshiya, M. (2016). Gender Perspective of Community Participation in Solid Waste Management: A Case of Balangoda Urban Council, Sri Lanka. The 7th International Conference on Sustainable Built Environment. Kandy, Sri Lanka.
- Virginia Maclaren and Nguyen Thi Anh Thu. (2003). Gender and the Waste Economy Vietnam and International Experiences. National Political Publisher.
- VTV News. (2018, 11 14). Retrieved from <https://vtv.vn/tieu-dung/the-gioi-thai-ra-300-trieu-tan-rac-thai-nhua-moi-nam-20181114104958822.htm>.

WB. (2018). SOLID AND INDUSTRIAL HAZARDOUS WASTE MANAGEMENT ASSESSMENT: OPTIONS AND ACTION AREAS TO IMPLEMENT THE NATIONAL STRATEGY . WB.

Yarumba, M. (2015). Contribution of Solid Waste Mangement Enterprises Towards Women's Incomr at Household level: a Case of Morogoro Municipality, Tanzania. International Journal of Economics< commerce and Management, Vol.III, Issue 5, 350-380.

Interview questionnaire

Group 1: Household groups and markets

Hello, my name is, researcher for the Center for Environment and Community Research. We are currently conducting research on the role of women in plastic waste management in Danang, as well as finding out the status, challenges, and opportunities of women involved in the collection, segregation and recycling waste at source. Please allow me to interview you about for 10-15 minutes.

General information

Name:

Year of Birth:

Sex:

Locality:

Job:

1. Do you know anything about plastic waste and plastic waste management in where you live or work?
2. What kind of plastic products do you often use?
3. Who in the house often goes to throw out the trash? Do you directly collect/segregate/dispose of plastic waste? If not, what do you do?
4. Do you have support tools (stainless steel boxes, foam boxes, waste segregating bags) at home?
5. What concerns do you have in using, collecting and segregating plastic waste at (households, markets, restaurants, recycling facilities)?
6. What advantages/difficulties do you find in the segregation of plastic waste? and suggestions?

Group 2: Authorities (URENCO, DONRE, Women's Union)

Hello, my name is, researcher for the Center for Environment and Community Research. We are currently conducting research on the role of women in plastic waste management in Danang, as well as finding out the status, challenges, and opportunities of women involved in the collection, segregation and recycling waste at source. Please allow me to interview you about for 10-15 minutes.

General information

Name:

Year of Birth:

Sex:

Locality:

Job:

1. What do you think the plastic waste management process includes?
2. In what stage do men and women participate in plastic waste management?
3. What percentage of women are in waste management, and do they have access to information on plastic waste management at their facility? And through what channels?
4. Do you know of any policies or programs that support women's union groups or scrap traders/informal businesses in waste management at the grassroots level?
5. Do you think the government has technological solutions to support women's groups in waste management? (Household / Businesswoman in the recycling industry, ...)
6. In your opinion, what difficulties will women face when participating in plastic waste management?
7. In your opinion, when women (women's union, informal workers, women-owned enterprises) participate in waste management, how do they create economic, social and environmental benefits?

Group 3: Depos facility, Women's Start-up Enterprise in Recycling

Hello, my name is, researcher for the Center for Environment and Community Research. We are currently conducting research on the role of women in plastic waste management in Danang, as well as finding out the status, challenges, and opportunities of women involved in the collection, segregation and recycling waste at source. Please allow me to interview you for about 10-15 minutes.

General information

Name:

Year of Birth:

Sex:

Locality:

Job:

1. From when and why do businesses operate in recycling and plastic waste management?
2. In what stage do men and women participate in plastic waste management? What is their role?
3. How many women are employed at your facility? Is it difficult to recruit? Where do they often come from, what are their circumstances? Do you have maternity leave or social insurance for them?
4. Doing this job, do you have to comply with environmental policies? Does the state have specific guidelines?

5. How many kgs of waste do informal street collectors sell to you per month, especially plastic waste? How many kgs of plastic do you sell to the recycling company per month and what is the price of 1 kg?
6. What difficulties do businesses often encounter in operating business processes?
7. Is your establishment supported by the state with finance, recycling technologies, and legal implementation guidance? And give your proposal?

Group 4: Street collectors and scavengers

Hello, my name is, researcher for the Center for Environment and Community Research. We are currently conducting research on the role of women in plastic waste management in Danang, as well as finding out the status, challenges, and opportunities of women involved in the collection, segregation and recycling waste at source. Please allow me to interview you for about 10-15 minutes.

General information:

Full name:

Year of birth:

Sex:

Locality (Migrants/local people):

Hometown:

1. How long have you been doing this job? From when? Is it your main job?
2. How do you describe your job in 1 day? (frequency, area, means of collection, types of waste, amount of waste collected, sold to whom, income...)
3. What difficulties do you encounter when collecting, segregating and selling waste?
4. Is your occupation recognized and respected? (Were you bullied, intimidated by anyone?)
5. Are there any rules for doing this job? Do you know the environmental regulations related to this issue?
6. How much do you spend on health and travel?
7. Do you participate in social or health insurance? Are your children able to go to kindergarten?
8. Do you know about the activities of the Women's Union in waste management? Are you willing to join a union (cooperative)? What is your wish?

List of interviewees

No.	Name	Address	Gender
1	Tăng Hoàng Hôn Thẩm	LHHPN Đà Nẵng, 01 Pasteur Str	Female
2	Nguyễn Thị Huyền	LHHPN Đà Nẵng, 01 Pasteur Str	Male
3	Trần Văn Lợi	Residential area #17 Nam Dương ward	Male
4	Nguyễn Đông	Residential area #10 Tân Chính ward	Male
5	Nguyễn Thị Nhi	H02/01 Tân Chính ward	Female
6	Lâm Thị K Liên	K02/23 Lê Ngô Cát ward	Female
7	Trần Thị Thiều	Residential area #10 Tân Chính ward	Female
8	Đỗ Thị Ánh Hương	Residential area #10 Tân Chính ward	Female
9	Trần Nhất Long	51/4 Phạm Ngũ Lão ward	Male
10	Nhân Hồng Thuận	K5/05 Phạm Ngũ Lão ward	Female
11	Trần Thị Hoa	106, Lê Thanh Nghi ward, Hai Châu district	Female
12	Phạm Thị Huệ	11, Lê Thanh Nghi ward, Hai Châu district	Female
13	Đoàn Văn Đức	Natural Resource Department	Male
14	Võ Thị Hoa	Nghe An Province	Female
15	Vũ Thị Bốn	Q Tô Go, An Hai Bắc ward	Female
16	Lê Thị Minh	Lê Minh, Trung Hai Bắc ward	Female
17	Vũ Thị Đan Dung	An cư 3, Residential area #8, Hoa Xuan ward	Female
18	Phạm Thị Nga	An cư 3, Residential area #8, Hoa Xuan ward	Female
19	Ngô Thị Bê	23 Lê Ngô Cát ward	Female
20	Nguyễn Thị Thu Loan	18 Dao Huy Tu ward	Female
21	Hoàng Thị Liễu	K291/69A Trần Cao Văn ward	Female
22	Đặng Thị Nga	K291/69A Trần Cao Văn ward	Female
23	Phan Thị Nguyệt	Khanh Sơn landfill	Female
24	Mai Thị Hồng	Khanh Sơn landfill	Female
25	Nguyễn Trọng Trinh	245 Lê Duan ward	Male
26	Kê Thị Thành Huyền	503 Trần Cao Văn ward	Female
27	Hà Văn Thái	124 Nghiêm Xuân Yêm ward	Male
28	Nguyễn Thị Thanh Dung	503 Trần Cao Văn ward	Female
29	Hoàng Thị Ngọc Hiếu	471 Núi Thanh Str.	Female
30	Trần Thị Cẩm Nhiên	270 Trần Phú Str.	Female
31	Huỳnh Thị Liễu Hoa	152 Nguyễn Duy Hiếu Str.	Female