



Constraints, levers and possible recommendation for the integration of not-yet-collected plastic packaging at the aggregator and recycler levels in Ho Chi Minh City

Abbreviations

CITENCO: City Environment Company

ENDA: Environment and Development Action in Viet Nam

ES: Environmental sanitation

EPR: Extended Producer Responsibility

HCMC: Ho Chi Minh City

HI: Health insurance

IRD: French Research Institute for Sustainable Development

IWCs: Independent waste collectors

LEP: Law of Environmental Protection

MONRE: Ministry of Natural Resources and Environment

PE: Polyethylene; LDPE: Low Density Polyethylene; HDPE: High Density Polyethylene;

PET: Polyethylene terephthalate

PP: Polypropylene

PRO: Producer Responsibility Organization

PS: Polystyrene

PVC: PolyVinyl Chloride

SI: Social insurance

VND: Vietnam Dong, Vietnamese currency

WSAS: Waste sorting at source

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I) Introduction

A) Rationale

According to the Ho Chi Minh City (HCMC) Department of Natural Resources and Environment, the City disposes of 9,500 tons of domestic solid waste every day, in which plastic waste accounts for a high proportion (ranked after organic waste only), about more than 1,500 tons. The amount of waste increases on average 6-10% per year. The rapid increase of municipal solid waste, which has diverse and complex properties and compositions, has put pressure on the local waste management system.

The solid waste collection, transportation, and treatment has not been centralized yet. Vehicles, equipment and technology for collection, transportation and treatment are diverse and often out-dated. The current solid waste treatment has not focused on solutions to reduce, reuse, recycle and recover energy from waste, thus, a high amount of solid waste is being landfilled. At the moment, HCMC has not successfully organized a network for recyclables collection. More than 80% of the recyclables (mostly LDPE, PS, and organic waste) is buried with domestic waste, exhausting resources and budget, and affecting the environment.

Global plastic pollution has already caused serious consequences for the environment and the oceans, as well as influenced several economic and social issues. An estimated 11 million tons of plastic are leaked into the world's oceans every year¹. Globally, 32% of packaging waste is being disposed of into the environment².

In recent years, Vietnam has made great efforts in environmental protection and waste management, especially regarding plastic waste. Vietnam has issued many important legislations such as: National Strategy for General Management of Solid Waste to 2025 with a vision towards 2050; Directive No. 33/CT-TTg of the Prime Minister on strengthening management, reuse, recycling, disposal and reduction of plastic waste; Decision No. 1316/QĐ-TTg of the Prime Minister approving the scheme for strengthening management of plastic waste in Vietnam; The National Action Plan on Sustainable Consumption and Production for the Period of 2021-2030 and other Action plans on reducing plastic waste of Ministries and local authorities. Law on Environmental Protection – No. 72/2020/QH14 – approved by the Fourteenth National Assembly on November 17, 2020, introduced the concept: "Circular Economy is an economic model in which design, production, consumption and service activities aim to make use of resources and materials, extend product life-cycle and minimize negative impacts on the environment". Besides, the 2020 Law on Environmental Protection also has specific provisions on Extended Producer Responsibility (EPR) and other provisions related to the reduction, recycling, reuse and disposal of plastic waste

B) Research context

The pilot project 'Enhancing plastic packaging collection, sorting and recycling', implemented by IRD and HAU, is funded by the 'Rethinking Plastics – Circular Economy Solutions to Marine Litter' project of the European Union and the German Federal Ministry for Economic

¹ Lau, Winnie WY, et al. "Evaluating scenarios toward zero plastic pollution." *Science* 369.6510 (2020): 1455-1461.

² Neufeld, F. Stassen, R. Sheppard, T. Gilman, Eds., *The New Plastics Economy: Rethinking the Future of Plastics* (World Economic Forum, 2016)

Cooperation and Development (BMZ). 'Rethinking Plastics' is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and Expertise France.

The pilot project aims to increase the collection, sorting and recycling of plastic packaging in Ho Chi Minh City, Vietnam, to reduce its environmental leakage. To reach this objective, it works on determining how much and what kind of plastic is collected, how and by whom it is transferred and processed or when it is leaked into the environment. Finally, it assesses if and how the plastic waste is recycled and what would be needed to enhance recycling. In addition, the project investigates how segregation at household level can be improved. A better cooperation between all stakeholders will enhance the understanding of the plastic value chain and related data. Involved stakeholders therefore include producers and consumers, as well as collectors, businesses, transporters of packaging and recyclers. With these data and experiences, the pilot project can contribute knowledge about suitable options for a legal framework for Extended Producer Responsibility (EPR) for packaging, which is currently being developed by the Ministry of Natural Resources and Environment in Vietnam.

To fulfill all the activities of the pilot project, IRD contracted with ENDA to elaborate and conduct social surveys along the post consumers plastic packaging value chain (including consumers, domestic and recyclable aggregators, transporters, recyclers) in order to identify and report the constraints, levers and possible recommendations for the integration of not-yet-collected plastic packaging at the aggregator recyclers levels.

C) Research Objectives

- To identify the current situation of plastic waste in domestic waste management in HCMC.
- To identify barriers and levers to promote the packaging waste collection and recycling.
- To make recommendations to integrate packaging recycling into aggregators or recycling facilities.

D) Subject and scope of the research

Three groups of research subjects: (1) aggregators, (2) independent waste collectors, and (3) street waste pickers were investigated at Binh Thanh District, District 4, Nha Be District, and Thu Duc City according to:

- Direct interviews with 32 aggregators, including:
 - + Binh Thanh: 14
 - + District 4: 06
 - + Nha Be: 09
 - + Thu Duc City: 03
- In-depth discussions with two groups of independent waste collectors (12 participants)
- Direct interviews with five street waste pickers and two group discussions (14 participants)
- Results from waste audit in Districts # 4, Binh Thanh & Nha Be

II) Enabling and challenging factors during the survey

A) Enabling factors

The close cooperation between Enda Vietnam (consultant) and IRD (consultant hiring party) and Rethinking Plastics helps solve arising issues easily and actively support each other; Enda Vietnam has long experience in environment sector, especially in solid waste management in HCMC. Enda has started working in the field of environment and paid its attention to informal sector in the solid waste management system of HCMC and community awareness raising on environment, waste sorting at source since 2006 until now.

Thanks to Enda's working relationship and understanding of the informal sector & community, communication with these forces is not a difficult task for data collecting. Enda Vietnam has a long-term cooperation and working relationship with HCMC Department of Natural Resources and Environment as well as other local authorities working in the City solid waste management system, especially City Environment Companies (CITENCO) of Districts and the City.

Enda Vietnam has extensive experience with projects in the community; so, it is enthusiastically supported by the communities wherever the survey takes place. The staffs and volunteers serving the survey all have experience in working with the solid waste and informal sector.

B) Challenging factors

The survey took place when HCMC suffered complicated and severe waves of COVID-19. On the first days of the survey, local authorities imposed curfews across HCMC, all services were closed including aggregators. Until October 1, 2021, authorities started to loosen curfew restrictions and only a few aggregators were opened. After November 2021, the situation gradually returned to normal. Due to this issue, it takes a lot of time to collect sufficient information and data from aggregators as required (according to IRD's terms of reference). For some aggregators, interviews were conducted three times to get complete information.

As Enda Vietnam's staffs and volunteers directly surveyed and interviewed households, markets, supermarkets, offices/companies, school, aggregators, independent waste collectors, street waste pickers during the complicated developments of the pandemic, it's mandatory to provide the staffs and volunteers with proper and costly personal protective equipment to ensure safety and prevent risks of spreading or contracting of the disease.

Because 100% of the surveyed aggregators in particular and aggregators in HCMC in general operating without business licenses, they were afraid or shy to provide information to the survey team. We have to make commitments not to disclose any personal information in order to avoid affecting their business in the future. As they have no business licenses, they receive a lot of reminders and warnings from the local authorities. Therefore, these aggregators face a high risk of going out of business in the future.

Due to the complex developments of COVID-19 in HCMC and the fear of catching or spreading the disease for both interviewers and interviewees, we faced some difficulties in making contact with these households, markets, school, daily shops, aggregators, independent waste collectors and street waste pickers.

Rainy weather affected the waste audit and the survey as well as the audit results because the audit needed to be carried out continuously for seven days in each research site.

For markets and supermarkets, survey participants were unable to answer a few questions that are representative of the entire facility, such as contract signing with recyclables collectors, the necessity of recycling bins, and so on.

III) Main findings

In the current situation of Vietnam in general and HCMC in particular, recyclables are entirely collected by the informal sector (e.g. street waste pickers, traders, and independent waste collectors) from households, businesses, grocery stores, schools, markets, supermarkets, and companies and sold to aggregators (Figure 1). The workforce of these aggregators re-sort the recyclables and sell them to recycling facilities or larger companies.



Figure 1: Independent waste collectors collect recyclables from households when collecting domestic waste and re-sort it before selling to aggregators

Street waste pickers and independent waste collectors collect high value recyclables such as metal, paper, and plastics (HDPE, PP, PET, and others) from the aforementioned sources and sell them to aggregators. The remaining recyclable plastic waste is single-use plastics like PS and LDPE, which are collected with organic waste and other types of waste and transported to and buried in landfills.



Figure 2: Recyclable waste are sorted again at aggregators before selling to recycling companies or bigger traders

Through the waste audit from households, markets, supermarkets, and offices we found that the percentage of single-use plastic waste was extremely high: **plastic bags (LDPE) and**

packaging accounted for 61% of the total amount of plastic waste disposed of by households, 45% by offices, and up to 82% by grocery stores (Figure 3; Figure 4; Figure 5).

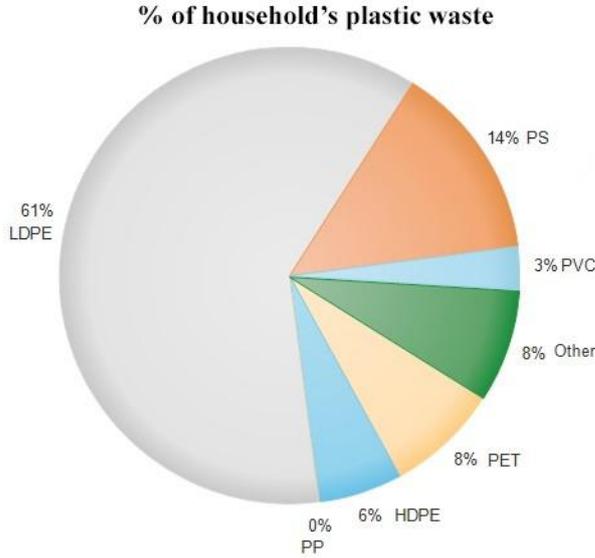


Figure 3: composition and respective percentage of plastic waste at households

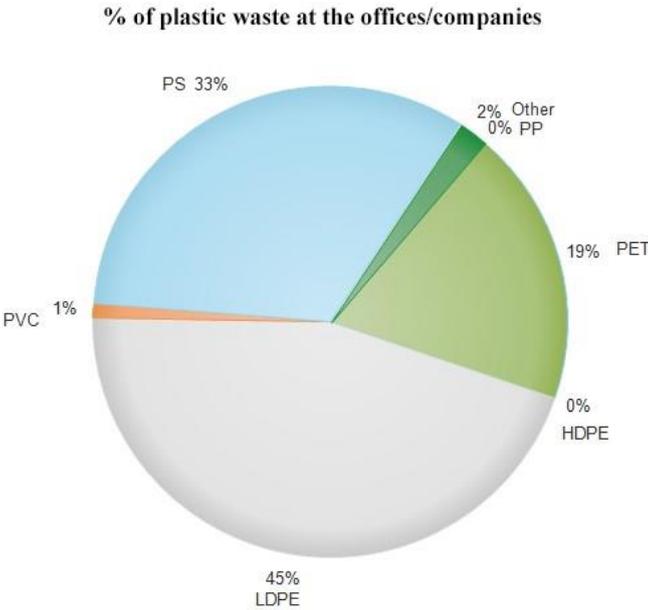


Figure 4: composition and respective percentage of plastic waste at offices

% Plastic waste at the grocery stores

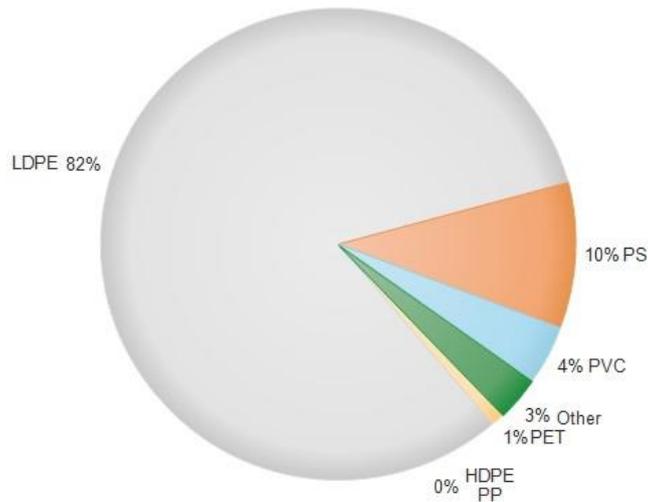


Figure 5: composition and respective percentage of plastic waste at grocery stores

Besides, single-use plastics (PS) like coffee cups, food containers, plastic bowls, forks, spoons, and knives accounted for 14% of the total amount of plastic waste disposed of by households, 33% by offices and companies, and 10% by grocery stores (Figure 3; Figure 4; Figure 5). But most of LDPE and PS was not collected for recycling but released into the environment (buried in City landfills and a small percentage of these plastic leakage into the ocean through rivers and canals) (Figure 6).

% of plastic waste collected and released into the environment

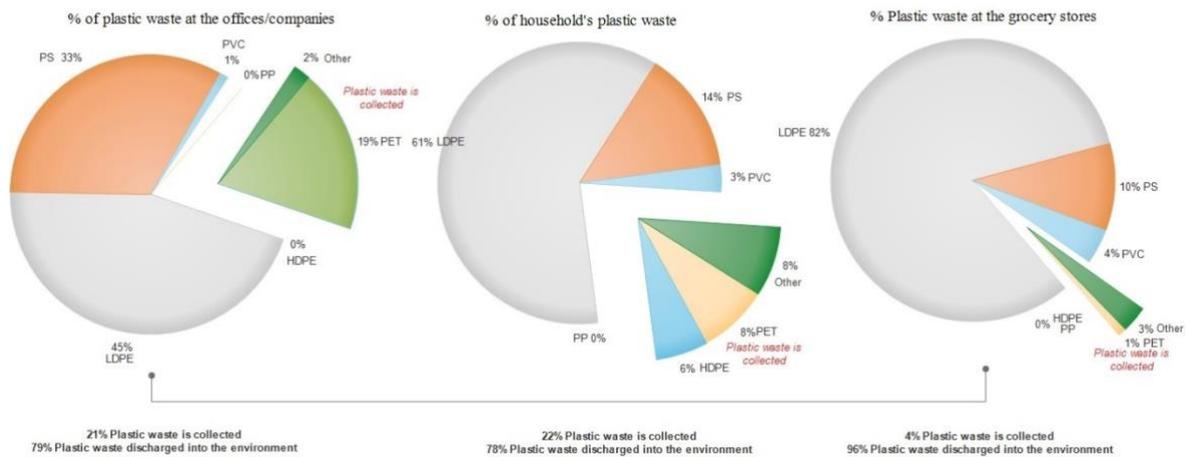


Figure 6: percentage of plastic waste collected at offices, households and grocery store and released in the environment

In the composition of plastic waste purchased by aggregators, **PET accounts for the highest share with 33%**, followed by PVC: 6%, PP:2%, PS: 1%, LDPE: 1%, and **other plastics that represent 33%** (Figure 7). The other plastics refer to broken plastic pots, chairs, helmets, and

sandals, which are also known as **hard plastics**. A huge difference in proportion can be found when comparing these figures from aggregators to those of waste from households (LDPE: 61%, PS: 14%, PET:8%, HDPE: 6%, PVC:3%, PP: 0% & other plastics: 8%) (Figure 3). Thus, it can be seen that 75% of low-value plastic waste from household (LDPE:61% & PS:14%; Figure 3), 92% of low-value plastic waste from grocery stores (LDPE:82% & PS:10%; Figure 5), and 78% of low-value plastic waste from offices (LDPE:45% & PS:33%; Figure 4) is not collected for recycling and gets into the environment, mostly through city landfills and partly through rivers and canals (Figure 6).

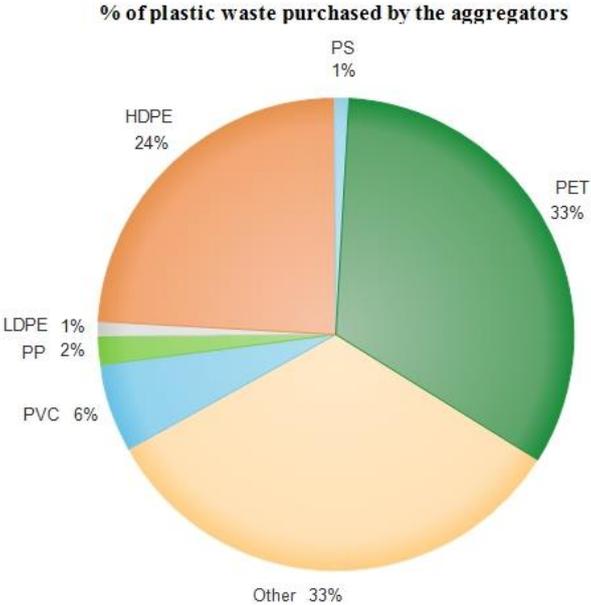


Figure 7: composition and respective percentage of plastic waste purchased by aggregators

Aggregators got their input from independent waste collectors (52%), street waste pickers (43%), and households (5%) (Figure 8). During the survey, aggregators faced various difficulties in their operations, mainly due to closures during the 4-month curfew orders and a reduction of the amounts of waste purchased as independent waste collectors and street waste pickers stopped collecting recyclables due to their fear of spreading and contracting the disease.

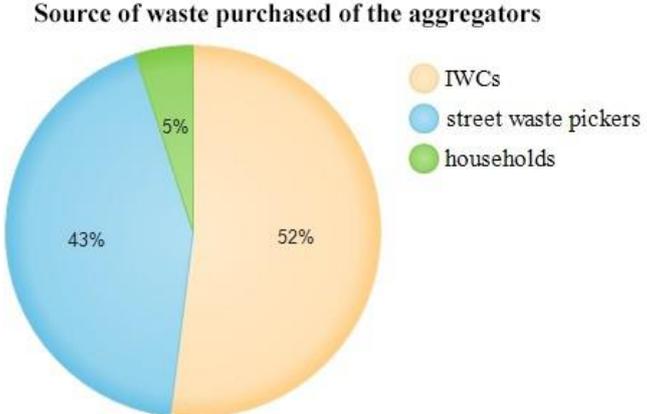


Figure 8: source of recyclable waste purchased by aggregators.

In addition, the fact that 100% of the aggregators participating in the survey in HCMC do not have business registration certificates also caused significant difficulties for them in operating their waste recycling business. Currently, aggregators are the places where recyclables are gathered and segregated again prior to selling them to recycling companies or larger facilities. The reason why the city government does not agree to grant business registration certificates to aggregators is because they see the risk of fire outbreaks, traffic congestion, and the harm of urban beauty. HCMC hopes that aggregators can develop into companies or social enterprises to operate more professionally. However, with the current capacity and ability of aggregators, it is too difficult for them to meet the city's requirements. They lack the knowledge, skills, and funding to run a company or social enterprise. 100% of the aggregators participating in the survey are not qualified to become a social enterprise or a company.

Currently, in HCMC, there are quite many recycling companies that need a large supply of LDPE & PS such as RKW Company in Tan Phu District or a big company (Alba) in Long An. Enda Vietnam has connected them with aggregators and independent waste collectors' cooperatives in HCMC. However, the problem of missing space for gathering plastic bags (LDPE) or disposable plastic products (PS) remains unsolved. The aggregators do not have certificates and hence, are reluctant to invest in larger spaces while companies like RKW or Alba cannot organize single gathering points in the city because of lack of human resource and funds.

Through the survey with aggregators, it was revealed that 100% of the interviewees do not have any knowledge or understanding of the concept of EPR, even though the work of the informal sector plays a very important role in the implementation of the EPR mechanism in Vietnam.



Figure 9: independent waste collectors play an important role for the implementation of EPR in HCMC

IV) Conclusions and recommendations on integrating aggregators and recycling facilities in the collection and recycling of packaging waste

The EPR system in Vietnam must ensure that all plastic packaging listed in the decree, including LDPE & PS, is collected for recycling. Therefore, it is necessary to have a flexible operating mechanism to encourage stakeholders and subjects who play an important role as the informal force to collect packaging waste (i.e., plastic bags, PE film, PS, mono material multilayer, pluri material multilayer, etc.). In addition, the government needs to consider and create conditions for the aggregators to register and issue them with business registration certificates. The government may impose requirements on fire safety, or set hours to avoid traffic jams in the city, and set out the condition that the aggregators have to collect low-value recyclables such as LDPE or PS as well.

There should be one consistent solution in solid waste management, managing the entire waste collection and recycling workforce, including not only the non-public but also the public workers.

It is necessary to consider scrap trading as an official industry. As a result, an open and appropriate mechanism is needed to support aggregators to apply for business registration certificates. In the current system of Vietnam, street waste pickers are extremely important in the implementation of the EPR mechanism. Once aggregators receive licenses, it will ensure an efficient operation of the EPR mechanism and, moreover, help the government to address urban poverty and livelihoods in a sustainable way.

Modern initiatives are essential to improve working conditions and the environmental impact of the informal sector when integrating informal workers into EPR schemes as this transition is related to social, labor, health, economic and other issues.

It is recommended to establish a cooperation mechanism between aggregators and packaging companies. For example, production companies could setup agreements with aggregators, based on which they would buy their packaging (low-value recycled waste such as LDPE and PS) at a reasonable price that is high enough to motivate aggregators, IWCs, and street waste pickers to collect this type of waste for recycling purposes. In addition, manufacturers could support the provision of social protection for the informal sector such as health insurance, leading to a more effective cooperation.

Recycling low-value plastic such as packaging requires a public-private partnership mechanism. This could support the development of aggregators and at the same time ensure supply for the recycling companies. In addition, it could help the government to effectively implement the revised 2020 Law on Environmental Protection and the EPR mechanism.

Aggregators operate unsystematically, independently and without mutual support. Although IWCs participate in cooperatives, these cooperatives have a low working efficiency, do not provide timely support to their members, and do not have a strong voice towards the local authorities and in the community. **Therefore, it is necessary to have a detailed plan on training and awareness raising for the informal sector and the community about EPR and to establish appropriate organizations for them. Specifically:**

In the first stage of EPR implementation, it should take at least two years of training and awareness raising to explain to them what EPR is, how they will participate in these schemes, and coordinate their work with producers and consumers. They will not be able to operate as freely and independently as before.

EPR is an opportunity and a challenge for the informal sector, especially the aggregators. In this regard, it is essential to offer capacity development for aggregators= and provide them with access into organizational models such as cooperatives, mutual-aid groups or unions like the women's union. This way they can operate with increased effectiveness and professionalism, developing step by step into formalized companies or social enterprises in the near future. Specifically, it is essential to:

Conduct different ***pilot programs to support and develop organizational models*** with suitable methods and assistance. Prioritize to maintain, strengthen and develop cooperatives that are stably operating and have business plans in the direction of a true cooperative. Coordinate with ongoing projects and programs to pilot and organize experience sharing activities. Afterwards, summarize the achieved experiences and results to develop and amend specific policies, and replicate the models.

Provide technical support to ***develop conversational and communication capability*** between the organizations and the authorities, waste source owners, and producers to ensure the quality of waste collection and recycling services and the representation of interests of all stakeholders.

Provide technical support to ***develop managing capability*** for every organizational model. Particularly, the mutual-aid groups and cooperative models for aggregators need to focus on improving business skills and management capability for these workers, including: business and operational development to increase and diversify revenue sources, keeping monitoring & management records, preparing accountable and transparent financial statements, and establishing a contingency fund for mutual support when necessary.

It is necessary to clearly identify the roles of public and private institutions, such as wards, communes, and waste management operators within domestic waste collection and recycling, while also preparing specialized human resources for this task at wards and communes.

Appendix

APPENDIX I: Survey questionnaires (Aggregators)

SURVEY QUESTIONNAIRES
(AGGREGATORS)

No:.....

A. GENERAL INFORMATION

Aggregator's names:.....
Representative:..... Sex:..... Age:.....
Address:.....
Phone's number:.....
Business's license:.....

B. CONTENT OF SURVEY

1. How long has your aggregator operated?

- 1-2 years
- 2-5 years
- 5-10 years
- >10 years

2. Area of aggregator?

Area:m²

3. *Is there enough space in aggregator for waste separation?*

- Yes
- No
- Others:

How many persons work in aggregator?

Number of persons:.....Males:.....Females:

5 *Do you have contract or social protection (social & health insurances) for aggregator's workers?*

- Yes
- No
- Others

6. Resources of recycles?

	Customers		Percentages (%)
	Fixed customers	Passing customers	

PP: :kg/day

Purchasing :.....Vnd/kg Selling:Vnd/kg

PS:kg/day

Purchasing :.....Vnd/kg Selling:Vnd/kg

Other plastics:.....

Purchasing :.....Vnd/kg Selling:Vnd/kg

10. Knowledge on waste separation & EPR?

Do you participate on waste separation training courses? details	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If yes, Is it useful for you?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you know or understanding of EPR?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you have enough space for waste separation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you need to have donation of waste bin for recycles?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is it necessary to have space at ward/villages to collect recycles?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you have profits from selling recycles or doing waste separation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you agree to sing contract with recycles collection companies/ units to have benefits from their services?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do recycled wasted collection mixed with others>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

11. Do your aggregator recycle plastics to other products?

- Yes No Others

12. Outputs for recycles collected from aggregator?

- Sell for larger aggregators
 Sell for recycling companies
 Sell for big companies for export
 Others

13. Does your aggregator have difficulties in recent time?

- Yes No Others.....

If "Yes" What it is:

- Inputs for aggregator
 Output for aggregator
 Legal documents (business licenses)

Details:

14. Do you have difficulties during Covis-19 pandemic outbreak?

- Yes No

Others:.....

15. During Covis-19 pandemic, do the quantity of plastics collected change?

- Increased in comparison with before (no covid-19)
 No changes.
 Reduces in comparison with before
 Others

Reasons:.....

16. Does your aggregator have annual business plan or reports?

- Yes No

17. Does your aggregator have monitoring plan for solid waste management?

- Yes No Others

C. OTHER SUGGESTIONS/ IDEAS:

.....

APPENDIX II: Survey questionnaires (IWCs and Street Waste Pickers)

SURVEY QUESTIONNAIRES

(Independent waste collectors-IWCs and Street Waste Pickers)

No:.....

A. GENERAL INFORMATION

Full name:..... Sex:.....Age.....
Address:.....
Phone:.....

B. CONTENT OF SURVEY

1. How many years you work in this area?

- 1-2 years
- 2-5 years
- 5-10 years
- >10 years

2. Do you sign contracts or join in social protection program (insurances programs)?

- Yes
- No
- Others:

3. Do you join in Cooperatives or others organizations for waste collection?

- Yes
- No
- Others:.....

4. How does the situation of recycles purchased/ picked up in recently?

- Advantages
- Disadvantages
- Many disadvantages
- Others

Details:.....

5. What kind of recycles do you pick/ collected?

8. What kind of recycles collected in aggregator?

- Metals (Iron, aluminum, copper, stainless steel, ...)
- Plastics (PET, HDPE, PE,PS, PVC, LDPE,...)
- Papers
- Glasses
- Others:.....

Notes:.....

6. How many kilograms of plastics you collect per day?

.....kg/day

7. Details of plastics collected, prices of purchasing and price of selling:

PET (PETE): :kg/day

Purchasing :.....Vnd/kg Selling:Vnd/kg

HDP (HDPE)::kg/day

Purchasing :.....Vnd/kg Selling:Vnd/kg

PVC:.....kg/ngày

Purchasing :.....Vnd/kg Selling:Vnd/kg

LDPE:kg/day

Purchasing :.....Vnd/kg Selling:Vnd/kg

PP: :kg/day

Purchasing :.....Vnd/kg Selling:Vnd/kg

PS:kg/day

Purchasing :.....Vnd/kg Selling:Vnd/kg

Other plastics:.....

Purchasing :.....Vnd/kg Selling:Vnd/kg

8. Knowledge on waste separation & EPR?

Do you participate on waste separation training courses? details	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If yes, Is it useful for you?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you know or understanding of EPR?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you have enough space for waste separation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you need to have donation of waste bin for recycles?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

.....		
Is it necessary to have space at ward/villages to collect recycles?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you have profits from selling recycles or doing waste separation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you agree to sing contract with recycles collection companies/ units to have benefits from their services?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do recycled wasted collection mixed with others>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Other ideas/ suggestions

.....

.....

.....

9. During Covis-19 pandemic, do the quantity of plastics collected change?

- Increased in comparison with before (no covid-19)
- No changes.
- Reduces in comparison with before
- Others

Reasons:.....

10. Do you get difficulties during Covid -19 pandemic time?

- Yes
- No

Details:

.....

.....

.....

-

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