TONTOTON

VIETNAM: SOCIAL IMPACT ASSESSMENT

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A REPORT ON BASELINE AWARENESS; CONSUMPTION HABITS; AND WILLINGNESS TO CHANGE OF HOUSEHOLDS IN THE SEGREGATION PROJECT AND SOCIAL IMPACT ON TONTOTON COLLECTORS IN HAI PHONG.

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BACKGROUND

In today's society, we are facing an age of overconsumption (Heidbreder *et al*., 2020). Plastic production is increasing exponentially around the world, and subsequently there is a growing amount of debris lost to the marine environment. It is estimated that the annual plastic input into the ocean is 8.4 million tons, with mismanaged plastic comprising a major land-based source (Jambeck *et al*., 2015; Prata *et al*., 2019). The effects of improper disposal of anthropogenic, often household, waste include a wide range of environmental and social consequences such as decreased ecosystems functionality, reduction in tourism revenue, and threats to human health via flooding, increased disease and potential leaching of toxins (Campbell *et al*., 2016). In addition, with the recycling market selective in the type of material they accept, it gives rise to low-value post-consumer plastic with no solution. Given the plethora of impacts, identifying underlying factors that promote, drive, or obstruct waste segregation behaviours particularly in the context of low-income countries, and implementing effective abatement strategies, are imperative to reducing the leakage before it reaches the ocean (Willis *et al*., 2018; Sahoo *et al*., 2022).

Rapid urban development leaves municipalities overwhelmed when it comes to the collection and disposal of increased amounts of waste (Matter *et al*., 2013). The conventional approach to mismanaged environmental plastic has previously been centralized and excluded public input and participation, often neglecting the long-term environmental and social impacts of policy change (Kapoor, 2001). Waste management solutions are moving from a linear economy towards a circular economy that involves plastic reduction through conscious production and consumption patterns (Löhr *et al*., 2017). In order for the outcome of sustainable, resilient communities (SDG 11) to succeed, all stakeholders must be involved. Waste reduction approaches now intervene at different stages along the plastic pathway from manufacture to coastal clean-up.

AIM OF THE REPORT

In many low-income countries, high rates of formal unemployment and a large number of urban poor has resulted in a solid-waste management system characterized by a well-established informal sector. These collectors are driven by the opportunity to earn an income through the removal of materials from the environment (Matter *et al*., 2013). Although clean-up activities offer some mitigation, as well as providing a tool for awareness, they are not an effective strategy for alleviating the plastic leakage problem. Mismanaged plastic can be reduced through improvements in the life-cycle, especially in consumption and disposal (Prata *et al*., 2019). TONTOTON's integrated plastic management solution aims to both prevent plastic entering the environment through source-reduction as well as removing coastal deposition through social inclusivity and environmental sustainability.

Sorting of waste at a household level, along with awareness training, is one effective technique for reducing discarded plastic at the source (Matter *et al*., 2013). When encouraging household segregation, the practices must be appropriate for the socio-economic setting, context-specific, and participatory, which are essential for ensuring sustainability of the project (Sahoo *et al*., 2022). Increased knowledge about environmental threats are assumed to change environmental attitudes, and subsequently influence behavior change, presumably reducing irresponsible human practices (Hammami *et al*., 2017).

This study aimed to explore the urban community members' household waste segregation willingness and assessed knowledge and attitude to plastic pollution of waste pickers. We performed a qualitative study in Vietnam. The research will provide an insight into the opinions of society who reside in some of the most polluted areas of the city regarding the pollution issue and their actions concerning plastic. Furthermore, this data may serve as the basis for future governmental plans, public organizations, and private initiatives that can aid in combatting marine litter.

1 / BASELINE AWARENESS

Of the effects plastic waste has on the environment and health of the community

2/ CONSUMPTION HABITS

Weekly plastic usage per household

3/ WILLINGNESS TO CHANGE

Openness to altering disposal behaviour

4/ SOCIAL IMPACTS

Benefits of the project

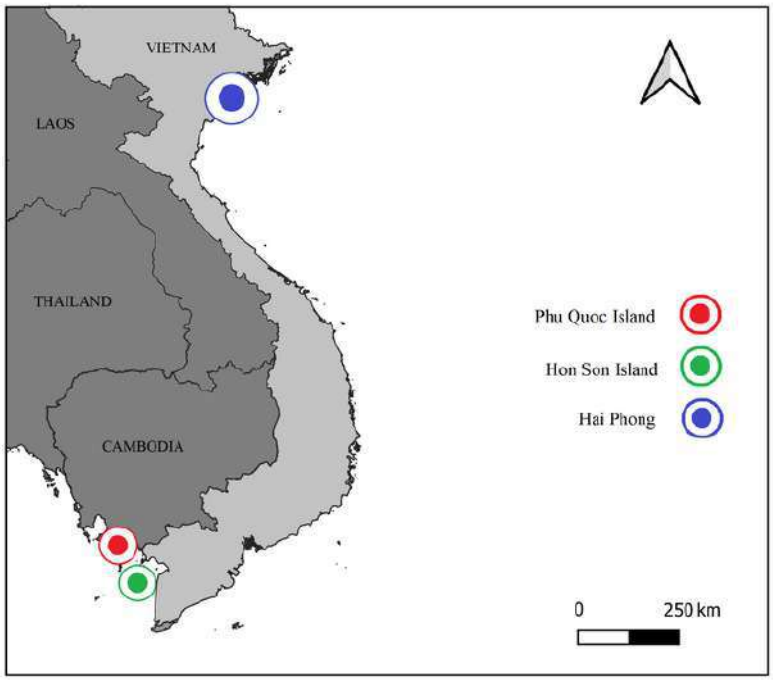
REPORT FOCUSSES

As part of TONTOTON's **Strategic Objective 4:** *'Raising public awareness of the effects of plastic on human health as well as the environment to promote environmental stewardship'*, our assessment aimed to gain insight into the existing consumption and disposal behaviour as well as the positive outcomes of the TONTOTON project in Hai Phong, Northern Vietnam.

METHODS

STUDY AREA

The study area is Hồ Sen, Kiến Thụy district, Hải Phòng city in the north of Vietnam. The city covers an area of approximately 100 square kilometers and the resident population is estimated to be 10,000 people. Plastic waste usually accounts for 10-15% of the total waste in the area but with the absence of formal waste-management solutions tackling the problem, people mix all types of garbage together and throw in illegal dumpsites and waterways or burn causing toxic air pollution.



TONTOTON has three collection locations in Vietnam. Hai Phong is located in the North, as seen in blue on the map.

HOUSEHOLD SURVEYS

The data for this survey was collected from 100 households. Variables were obtained through direct interviews using a structured questionnaire, with the enumerator instructed to interview the household head. In cases where the household head was unavailable, the spouse was interviewed, in all surveys the respondent was one who was involved in decision-making in the home or one with knowledge about household behaviours. Three themes were constructed: baseline awareness; consumption habits; and willingness to change. A household is assumed to make a decision whether to segregate or not based on the perceived costs and benefits accumulating from it (Park *et al*., 2002; Oskamp *et al*., 1991).

This study contributes to developing a knowledge base on waste separation habits and a repertoire to facilitate evidence-based management of plastic pollution.

HOUSEHOLD SURVEY QUESTIONS

BASELINE AWARENESS

- Did you know that plastic waste is bad for your health?
- Did you know that plastic waste is bad for the environment?
- How serious do you think the plastic problem in Vietnam is?
- How do you know about the environmental issues you have learned about?

CONSUMER BEHAVIOUR

- Do you use plastic bags when you shop? How many pieces a week?
- Do you ever reuse old plastic bags?
- Where do you get your drinking water from?
- Do you ever use reusable bottles?
- How do you dispose of your non-recyclable plastic waste?

WILLINGNESS TO CHANGE

- Would you stop throwing plastic waste into the environment if you knew it was harmful to animals?
- Would you stop burning trash if you knew it was bad for people's health?
- Would you like to try reducing the amount of plastic you use?
- In the next 3 months, are you ready to change your garbage sorting habits?

COLLECTOR SURVEYS

For the second phase of data collection, an assessment was completed with all 30 informal collectors registered with TONTOTON's project in Hai Phong. Waste collector's general perception on plastic, observed environmental changes, social impact were analysed.

COLLECTOR SURVEY QUESTIONS

MOTIVATION & INITIAL PERCEPTION

- Why do you want to clean up plastic waste?
- What do you think about the plastic waste in this area? What is the situation around your house? Do you worry about the effects

VULNERABILITY LEVEL

- Were you unemployed before working for TTT?
- Before joining TTT, what was your average monthly income?
- What is the highest level of education you have?
- Do you have any professional skills? Example: mechanic / builder / fisherman?

SOCIAL CHANGE

- Since TTT began operating in the community can you see a difference in the mismanaged waste?
- How much money are you able to earn per month now you work for TTT?
- What did you do to earn money, was it difficult to provide for your family?
- What do you do with the increased income?
- Have your behaviour changed towards plastic now you have more awareness?
- What do you hope for the future of plastic waste in Kien Thuy district?

HOUSEHOLD RESULTS

Impact Dimension:

Society

Impact Indicator:

Education

Impact Description:

Beneficiaries of solution

BASELINE AWARENESS

100%

of survey participants were aware that plastic is both bad for both human health and for the environment

96%

of participants thought the plastic situation was 'very serious' with 4% viewing the problem as 'moderate'. No participants saw the plastic as 'little' or 'no problem'.

When asked about their knowledge source regarding environmental issues, all participants stated 'television, newspapers, social networks' as well as 'local propaganda activities'.

Currently, there are **3 communes** with **2500 households** that are participating in TONTOTON's household segregation and collection project, including Minh Tan commune, Thanh Son commune and Nui mountain town. All of these families have been trained to sort the different materials and of the effects which plastic can have.

Since April 2022, there have been 6 community meetings held in the Kiến Thụy district with ~400 residents to raise awareness on the importance of waste segregation to reduce the quantities of irresponsible plastic disposal such as burning and dumping.

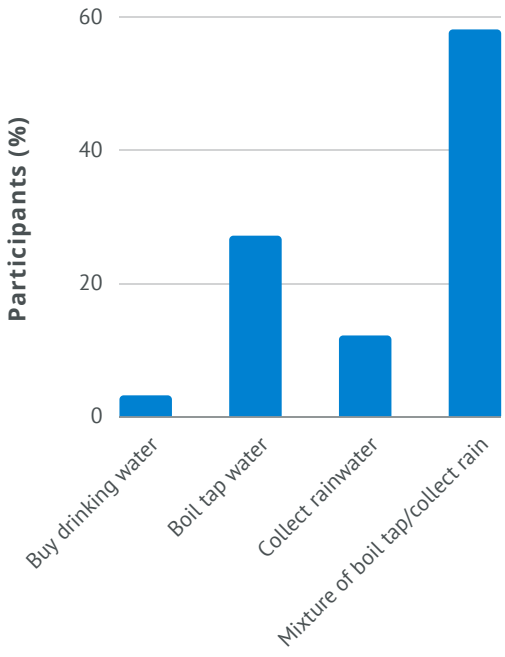
CONSUMER BEHAVIOUR

94% *of participants used between 10 and 25 plastic bags per week while 6% used over 25*

98% *stated they do reuse plastic bags*

3% *of the households surveyed purchased bottled water and these were large 20L refillable bottles, no participants bought small water bottles.*

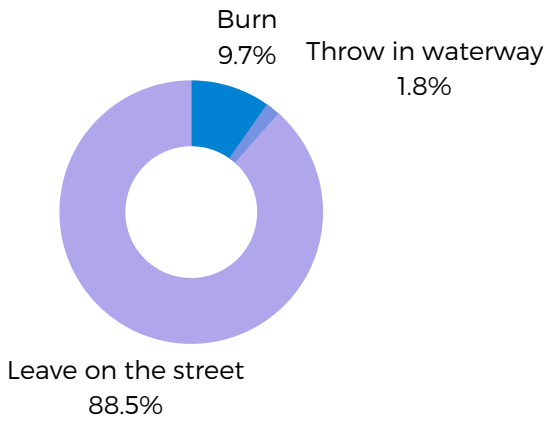
100% *of participants reuse water bottles*



Access to clean drinking water

DISPOSAL HABITS

100% of participants stated they disposed of waste by abandoning it in the street. However, ~10% also burnt the waste and ~2% throw it in waterways.



WILLINGNESS TO CHANGE

100% *of participants stated they would stop burning plastic if they knew it was bad for people's health*

100% *of participants stated they would like to actively try to reduce the amount of plastic they consume*

100% *said they were happy to sort waste and give it to TONTOTON*

94% *reported that they are confident in their abilities to transform their garbage sorting habits*

COLLECTOR RESULTS

Impact Dimension:

Economy

Impact Indicator:

Employment

Impact Description:

Job history and education

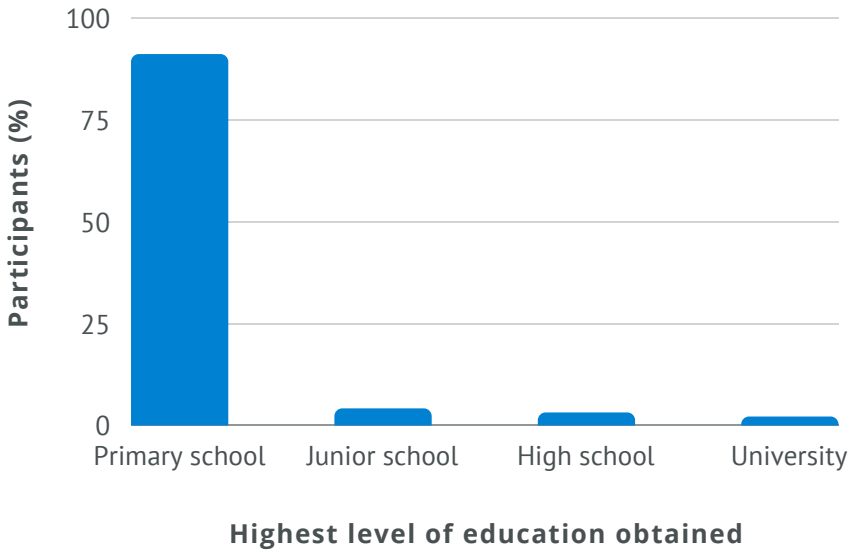
VULNERABILITY LEVEL

100% *of collectors said their main motivation for cleaning up plastic waste was to gain more income*

$144 *was the average monthly income for those that were previously employed*

95% *stated they did not have any formal skills (e.g. plumbing, mechanic etc.)*

Education level of collectors is relatively low with 90.48% of collectors stating the highest level of education which they obtained was primary school, 3.57% junior high school, 3.57 high school, 2.38% university.



PERCEPTIONS TOWARDS PLASTIC

Impact Dimension:
Society

Impact Indicator:
Education

Impact Description:
Beneficiaries of solution

23% *stated plastic waste is detrimental to human health*

27% *stated that they thought it is bad for the environment*

12% *believe that overconsumption is a direct cause of plastic polution*

38% *of participants believe plastic waste is caused by irresponsible waste management*

SOCIAL IMPACT - COMMUNITY INCOME

Impact Dimension:

Society

Impact Indicator:

Life quality - improved for target demographic

Impact Description:

Income generation by informal waste pickers and subsequent impacts

$360.30

Average collector monthly income now, compared to $143.56 before TONTOTON

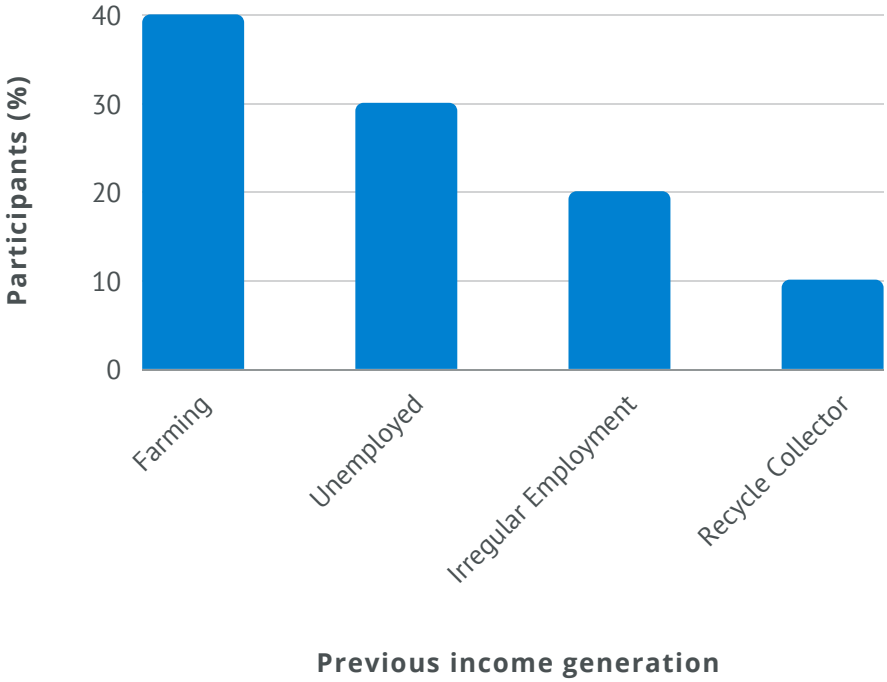
150.98%

Increase in average monthly income in 5 months of TONTOTON operations in Hai Phong

$572.64

Maximum collector income so far

Previously the majority of collectors were involved in farming to earn a living (rice paddys, growing their own vegetables, chickens), with a large proportion involved in unstable work as labourers, cleaning houses, washing dishes etc. Only 10% of TONTOTON pickers were involved in waste collection before.



SOCIAL IMPACT - LIFE STABILITY

24.44% *Of collectors are now able to begin saving money in case of sickness, accidents, etc.*

22.22% *Reported a more stable life with the increase income available with TONTOTON*

17.80% *Of survey participants are able to send their children to school*

15.56% *Were able to repair their houses or upgrade their facilities e.g. purchase a gas stove*

13.33% *Of survey participants reported that now they can comfortably could afford daily essentials such as food for their families*

SOCIAL IMPACT - ENVIRONMENT

87% of respondents stated that there was noticeable changes in the the environment with **27%** of people reporting that there is evidently less waste and **73%** said that they believe more people are interested in managing waste sustainably leading to the changes.

SOCIAL IMPACT - AWARENESS & CHANGE

40% *Of collectors feel a personal responsibility for the plastic waste and actively try to reduce their consumption*

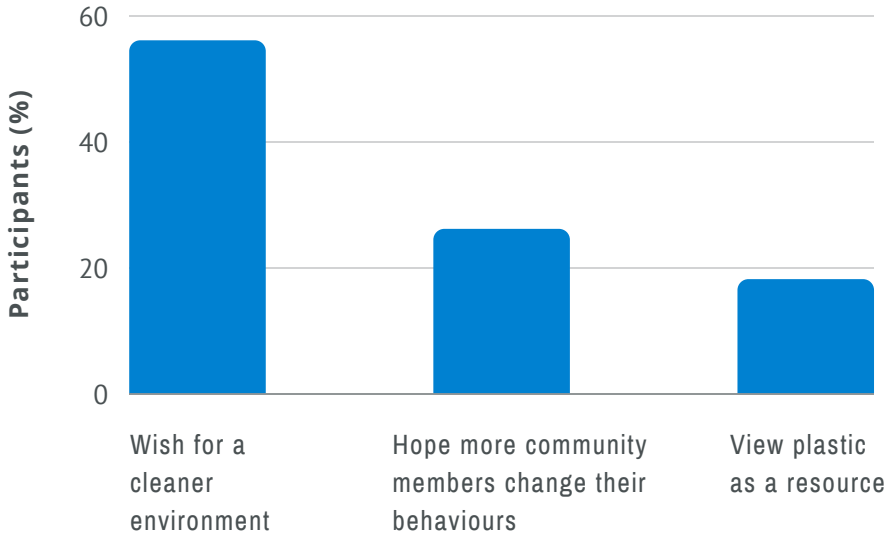
40% *Of collectors have changed their methods of disposal and stopped burning/dumping plastic waste*

11% *Of collectors now viewed plastic as a resource and felt motivated to collect it from the environment*

9% *Of collectors felt passionate about spreading awareness of plastics effect to human health and ecosystems*

SOCIAL IMPACT - THE FUTURE

All collectors hoped for positive outcomes relating to plastic for the future of Hai Phong city but interestingly, for some collectors, perceptions have shifted to see plastic as a useful source of income.



INSIGHTS

HOUSEHOLDS

The study found that all respondents interviewed were knowledgeable about the dangers caused by plastic and the crisis situation in Hai Phong, Vietnam - this could be a direct cause of the willingness to participate in the segregation project. A lack of awareness has posed a problem for people's attitude and behaviour in similar studies, and participants with more awareness had an increased desire to make a difference though self-involvement (Hammami *et al*., 2017). This key finding demonstrates the importance of awareness campaigns representing a vital step in creating change.

Despite the knowledge of participants, disposal habits were unsustainable with 100% of households leaving waste in the street and a smaller percentage burning and throwing in waterways. This is the result of a lack of available formal waste management and sheds lights on the necessity of TONTOTON's operations in the area.

COLLECTORS

The primary motivation of plastic collectors was to gain more income. Possibly owing to the low level of education and skillset, previous income generation was primarily through seasonal and irregular crop harvest. Income has significantly increased for all collectors, allowing for meaningful change in the lives of the whole families. Before working for TONTOTON, collectors had awareness towards plastic pollution but since the implementation of the project, there has been a major shift in mindset with regards to changes in consumption and plastic now being viewed as a resource to generate income.

Illegal dumping is thought to be a major drive of coastal waste (Glanville *et al*., 2015). The presence of clean-up activities are effective in removing plastic, however they primarily target dirty areas where waste accumulates i.e. the sink, and not where plastic leaks into the environment, i.e. the source, with these clean-up activities are often being undertaken sporadically. The action of collecting waste does not yield a net reduction in plastic reaching the marine ecosystem from the source and without other mitigation techniques the environment will need perpetual clean-up efforts (Wallis *et al*., 2018). Ease of access for waste segregation is crucial for better practices, which has been proven through a door-to-door collection systems (Sahoo *et al*., 2022). TONTOTON's project facilitates daily clean-up from all areas for the benefit of the health of the community and the environment. Together with the household involvement and a pick-up service, the project is successful in the removal of littered plastic as well as halting the waste entering the coastal environment.

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