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Inspiring Waste Reduction in Bang Mod

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INSPIRING WASTE REDUCTION IN BANG MOD

SUBMITTED ON MARCH 2, 2017

INSPIRING WASTE REDUCTION IN BANG MOD



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Abstract

Plastic is ubiquitous, and its use is propagating a range of negative consequences. Overuse of plastic within the Phutthabucha Temple market in Bang Mod, Bangkok is harming their canal, a central community resource. Based on the needs of the community, we presented low-cost and convenient options to motivate and equip the community to reduce their plastic use. We designed a multi-phase campaign called “Let’s Reduce for Bang Mod” to inspire action through posters, social media, and an incentive program. We also suggested providing reusable bags through a bag share program and eliminating the need for takeaway bags by including an eating area in the market. The provided solutions can be spread to markets throughout Thailand to positively impact the environment and human health.

Executive Summary

The Problem

Plastic bags are used for an average of 12 minutes before they are discarded (Center for Biological Diversity, n.d.), yet even the thinnest bags take 10-20 years to decompose (National Park Service, n.d.). Harmful impacts on humans and the environment are growing from this disproportionate rate of plastic waste production to decomposition (Boadi & Kuitunen, 2005; Jayakrishnan, Jeeja, & Bhaskar, 2013). In Thailand, 14% of trash produced is plastic (Shekdar, 2009) compared to the global average of 10%. In Bang Mod, Bangkok, the increase in waste production has strained the waste management system (Saravut K., Personal com., Jan. 18, 2017) and damaged the natural community resources such as the Bang Mod canal.

Our Goal

To solve the growing problem of plastic overuse, we collaborated with the Can Do Team on our joint goal of creating a campaign for long-term behavioral change that encourages vendors and consumers in the Phutthabucha Temple market to reduce the consumption of single-use bags.

Our Plan

Our first objective was understanding the motivations behind plastic bag use within the market. We visited the market to observe and conduct interviews with vendors and consumers on the needs plastic bags were fulfilling.

Our second objective was to evaluate past waste reduction strategies in Southeast Asia because of the similar situations and cultures the campaigns faced. We interviewed Excess Baggage Cambodia, which reduces plastic bag use across Cambodia, for

feedback on our campaign; Chula Zero Waste, which powers an ongoing waste reduction campaign at Chulalongkorn University, about their use of policy to implement plastic bag taxes; and Carrotmob, which harnesses consumer power for sustainable change, on how to maintain such changes. We made a chart of each campaign’s overall plan, campaign strategies, resources, and obstacles faced to understand their ideation processes and better inform our own campaign strategy.

Our third objective was to develop campaign strategies that motivate the reduction of single-use bags within the market. We interviewed the market manager to understand the structure of the market and the feasibility of implementing policy changes and created a decision matrix to narrow the potential strategies. The resulting strategies were divided into three phases with progressively greater time and resource requirements. We surveyed the market consumers and vendors to determine the effectiveness and potential improvements of each campaign strategy, then created a campaign logo with a tangerine – the icon of Bang Mod – behind a superhero holding a reusable bag (Figure 1). The slogan reads “Let’s Reduce for Bang Mod.”



Figure 1: “Let’s Reduce for Bang Mod” campaign logo

Our fourth objective was to field test the campaign strategies to determine the most viable approach. We held a focus group with the Can Do Team and received feedback on our initial strategies and discussed how they would continue with the campaign after we finished our project. We also received feedback from the Bang Mod community on our campaign posters in a booth at the Bang Mod Festival. Finally, we created a long-term campaign plan that was feasible for the Can Do Team to maintain.

Findings & Recommendations

Our interviews, surveys, and observations generated several key findings. First, **we found that individuals defer responsibility for plastic use because they feel a lack of control over the situation.** When interviewing all the stakeholders, we came across a cycle of blame. In the market, many parties – including vendors, consumers, and the manager – place the responsibility for the overuse of plastic bags on each other (Figure 2).

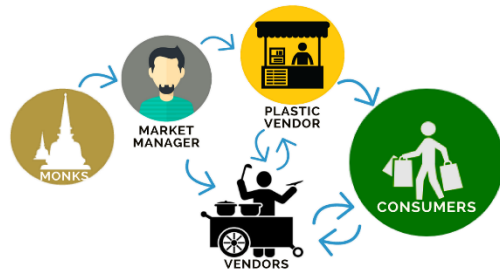


Figure 2: Plastic use blame deferment

Stakeholders were concerned with how their change would impact their consumers: the market manager was concerned the vendors would leave the market if there was a policy on plastic bags and vendors feared that using alternatives would increase prices and leave customers unsatisfied. Consumers were reluctant

to initiate change because the usage of plastic was so ingrained that it was difficult to refuse. Every group was waiting for another to change because they viewed change as uncomfortable or feared it would affect them monetarily. Stakeholder interviews revealed that consumers have the most power to drive plastic reduction. For this reason, **we recommend a campaign targeting consumers that utilizes their control over demand to drive a reduction of single-use bags.**

Through our interview with the formal waste management system, **we found that the profits from recycling plastics overshadow the benefits of reuse and waste reduction.** Many people who recycle do not realize that most of the profit from recycling goes to waste managers, nor do they know the economic benefits of reuse. Reuse is a more environmentally sustainable and economical solution, but recycling is the base of an entire industry and is thus more attractive. The campaign designed needs to make reuse as attractive as recycling by showcasing the benefits for all involved.

Through our observations and interviews with the market manager and reference organizations, **we found that a lack of funding and manpower hinders the startup and success of campaigns.** Mr. Jo, the market manager, believed there was no way to organize a market with an inconsistent set of vendors. With limited manpower, he lacked the resources and interest to change the market. The nearby King Mongkut’s University of Technology Thonburi (KMUTT) has volunteers who can provide the help needed. For this reason, **we recommend a partnership between the Can Do Team and volunteers from KMUTT to work with market consumers.**

From our interactions with the vendors, consumers, and Bang Mod community members, we found that incentives are a necessary step to garner public participation in initial stages of

campaigns and we found perceived convenience is the primary motivator for bag choice. We designed campaign strategies around convenience and incentives because they were the two most common responses to consumer surveys on what would be most likely to change their behavior. Further interviews with a small sample of consumers indicated that a prize-oriented program for reusable bag users would be helpful for most consumers. We recommend an incentive program to reward consumers for refusing plastic bags.

We presented our data at the Bang Mod Festival, which gave us valuable feedback on the knowledge and perspectives of the Bang Mod community. **We found that campaigns that address the needs of a variety of community members are the most successful for plastic bag reduction** because they are crafted to benefit all stakeholders. In the Bang Mod community, posters – especially ones with health-related messages (Figure 3) – were most appropriate.



Figure 3: Poster on plastic consumption by fish

Adults misunderstood campaign posters that left information to be interpreted; for example, after learning that fish ingested plastic, they were motivated to stop eating fish rather than reduce plastic use. **We found in order to motivate personal plastic reduction, campaign tools must clearly explain the impacts of plastic overuse and reference specific changes people can make.**

We drafted a plan for recruiting volunteers, both from the local university and from the consumers in the market, to spark change in the market. We designed colorful posters with direct messages. We delivered a detailed outline on a reusable bag share program for the market as well as an arrangement change that would contribute to plastic reduction by encouraging consumers to combine purchases into one bag. Ultimately, we were able to create a plan for a campaign designed to encourage the local Bang Mod community to reduce their use of plastic.

Acknowledgements

We would like to thank Excess Baggage Cambodia, Chula Zero Waste, and Carrotmob for their helpful advice and insight in driving changes about waste reduction. Their work inspired our campaign development and resources they provided helped our team to avoid potential paths of error.

We are also thankful for the help we received from 3 members of the Environmental Conservation Club at Chulalongkorn University. Their dedicated volunteer service over two long days helped us to engage over 100 children in the fishing game activity at the Bang Mod festival and greatly contributed to the overall success of our market booth.

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Finally, we would like to thank our sponsors, The Can Do Team, and Ajarn M.L. Siripastr for allowing us to work on a project with so much potential impact and giving us the freedom to be creative in exploring a wide variety of strategies. We would also like to thank them for providing us with a booth at the Bang Mod Festival, which was instrumental in our data collection and was an amazing opportunity for us to connect with the community and culture of Bang Mod.

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Chapter 1: Introduction

Plastic bags are used for an average of 12 minutes before they are discarded (Center for Biological Diversity, n.d.), yet even the thinnest bags take 10-20 years to decompose (National Park Service, n.d.). Harmful impacts on the environment and humans are growing from this disproportionate rate of plastic waste production to decomposition (Boadi & Kuitunen, 2005; Jayakrishnan, Jeeja, & Bhaskar, 2013). People feel that they have no control over their use of plastic, but they also lack the motivation to change (17 Triggers, 2015). In order to combat the harmful impacts of plastic, we must enable individuals to change by providing them with the motivation and tools to break their habit of plastic reliance.

Important local resources, such as the Bang Mod canal, are being negatively impacted by plastic. Bang Mod, a subdistrict in Thung Khru, Bangkok, was once characterized by its tangerine farms; but farmland was sold for housing as the population of Bangkok expanded (Somsak P., Personal com., Jan 11, 2017). The growing population continues to shop at the local markets, which generally contain the highest users and distributors of plastic bags (17 Triggers, 2015). The excess waste is polluting the canal that was once central to the community's way of life and leaving the waste management system under-equipped to handle the rising demands (Saravut K., Personal com., Jan. 18, 2017).

Our sponsor, the Can Do Team, is a Thung Khru based organization that connects people in Bang Mod and engages them to work on positive change for the community near the canal. We collaborated with the Can Do Team to complete our joint goal of creating a campaign for long-term behavioral change that encourages vendors and consumers in the Phutthabucha Temple market to reduce their consumption of single-use bags. Various campaigns already exist to reduce bag usage; we used them as examples and sources of inspiration. Flea markets, like the Phutthabucha Temple market, often possess minimal organizational structure and have many unique vendors whose attendance is inconsistent. These characteristics deter many single-use bag reduction campaigns from focusing on flea markets. We created a strategy for bag reduction in this unique type of market that will help decrease the negative environmental impacts of the Phutthabucha Temple market and can be adapted to other markets in Thailand.

In Chapter 2, we delve into the environment and human health impacts of plastic use, possible alternative materials, waste reduction programs, and strategies to inspire behavioral change. In Chapter 3, we describe the methods used to gather data and design a single-use bag reduction campaign suited to the needs of the community and resources of the sponsor. In Chapter 4, we discuss our interactions with reference organizations, vendors, consumers, and locals. We grouped the data we gathered into several findings that informed the campaign design. In Chapter 5, we discuss our recommended approaches and campaign strategies for the market that have the potential for long-term impact in Bang Mod subdistrict before ending in Chapter 6 with our conclusions.

Chapter 2: Background

Worldwide, people are beginning to recognize the impacts that single-use plastics are having on the environment and human health. Research is being conducted on plastic reduction strategies and alternative materials to replace plastic, but reliance on plastic persists. Action must be taken, and targeting consumer behavior to reduce the consumption of single-use plastics is an effective strategy (Joseph, 2006; Shekdar, 2009). In this chapter, we assess the impacts of waste, investigate alternatives to plastic, analyze campaign strategies for behavior change, and discuss how the King's philosophy and Buddhist culture in Thailand align with the goals of our project.

2.1 An Overstrained Waste Management System

Plastics are common in packaging and transportation, and use is only expected to increase. In Thailand alone, plastic usage tripled between 1995 and 2001 (Kasetsart University, 2008). Plastic is clearly seen as superior: "it's cheap, waterproof, dust-proof, easy to use for transporting goods, easy to store, lightweight, and available – everywhere" (17 Triggers, 2015, p. 14). Waste Management Systems cannot accommodate the growing use of plastic and are becoming strained as a result.

In Thailand, 14% of trash produced is plastic (Shekdar, 2009) compared to the global average of 10% (Hoorweg, Bhada-Tata, & Joshi-Ghani, 2009). The most common method of waste disposal in Thailand is open dumping (Kaosol, 2010), yet open dumpsites have insufficient environmental precautions (Chiemchaisri, Juanga, & Visvanathan, 2007). The informal waste management system, usually composed of waste pickers who collect and sell waste for a living, can alleviate some of the environmental and waste management burden caused by open dumpsites (Moreno-Sanchez & Maldonado, 2006). However, reliance on informal waste management is not sustainable because informal waste pickers only recover about 5% of the waste collected at the source (Chiemchaisri et al., 2007). Improper waste treatment combined with a reliance on informal waste collectors is indicative of a strained system that is unequipped to protect people from the harmful impacts of waste in Thailand.

2.2 Plastic Impacts on the Environment and Human Health

Plastic waste is contributing to environmental and human health problems (Adane & Muleta, 2011). Uncontained plastic waste can clog drains, which leads to standing water, or worse, flooding, providing additional opportunities for mosquitoes to breed (Cointreau, 2006; Adane & Muleta, 2011). Mosquitoes threaten human health because they can transmit diseases such as malaria and zika (Fobil, May, & Kraemer, 2010; CDC 2016). Even when waste is disposed of, it is generally left to pile up in open dumpsites and can still result in negative impacts. Open dumpsites do not apply proper maintenance, such as placing multilayered covers with synthetic and clay lining, to keep leachate from contaminating the soil and groundwater (Qasim & Chiang, 1994). Leachate is a mixture of hazardous chemicals that can result from untreated waste that pollutes water resources when leaks occur (Teuten et al., 2009; Hjelmar, 1996).

One common component of leachate is BPA (Teuten et al., 2009), a chemical released from plastic that disrupts brain development in rats and mice (Richter et al., 2007). Even though humans are exposed to low doses of chemicals from plastic, these chemicals can build up and potentially damage personal health (Talsness, Andrade, Kuriyama, Taylor, & vom Saal, 2009). Apart from open dumping of waste, people often turn to open burning to quickly reduce the volume of waste. When plastic is burned, the fossil carbon released contributes greatly to air pollution (DEFRA, 2007). If the burning occurs near homes, the poor air quality causes respiratory and eye problems (Boadi & Kuitunen, 2005). Despite the challenges that land-based plastic pollution presents to human health, bodies of water suffer even greater impacts from plastic pollution.

2.3 Plastic Pollution Effects on Water and Economy

Thailand is among the top five contributors to plastic pollution in the ocean (McKinsey Center & Ocean Conservancy, 2015). Plastic is the largest source of marine debris that threatens life forms in waterways (Derraik, 2002). It is estimated that 80% of ocean plastic pollution came from land pollution (Li, Tse, & Fok, 2016). Even worse, 95% of the plastic in the ocean is below the surface and therefore extremely challenging to collect (McKinsey Center & Ocean Conservancy, 2015). Reducing land-based plastic pollution is essential to solve the root of this environmental problem.

Over 250 species worldwide are affected by marine debris (Laist, 1997). Direct impacts of plastics on animals include entanglement and ingestion (Foekema et al., 2013). Entanglement often directly kills animals and ingestion leads to the accumulation of plastic in the digestive tract, creating blockage that leads to starvation and eventual death (Foekema et al., 2013). Ingestion also contributes to the buildup of chemicals in animals' bodies (Laist, 1997), which introduces risks to humans consuming chemical-laden fish ("New Link in the Food Chain? Marine Plastic Pollution and Seafood Safety," 2015; McIlgorm, Campbell, & Rule, 2011).

Plastic pollution has severe economic consequences for communities whose economies depend on fishing and water-based tourism (McIlgorm et al., 2011) because tourists find waste aesthetically distasteful and are concerned about their health (Gregory, 1999). The fishing industry is also struggling with economic loss because of the proliferation of plastics in waterways. Losses in the Asian-Pacific rim fishing industry due to pollution are approximately US \$364 million (McIlgorm et al., 2011). Some main causes of these losses are the damage of fishing equipment that comes into contact with solid waste, which is mostly composed of plastic, and the impact of plastic pollution on fish populations (McIlgorm et al. 2011; Islam & Tanaka, 2004).

The visual effects of plastic pollution are creating concerns in the general public and having economic repercussions on these areas. Pollution around the canals of Bangkok has heavily affected life forms, tourism, and human health (Areerachakul & Sanguansintukul, n.d.). The problem is not unique to Thailand; Vietnamese canals, which are a large part of their cultural heritage, are being impacted by pollution, making cultural conservation difficult and harming the tourism industry (Thi Hong Hanh, 2006). A significant type of plastic pollution is from single-use plastic, so an alternative must be found to mitigate the impacts of a disposable lifestyle on the environment and people.

2.4 Alternatives to Single-Use Plastic Bags

There are several strategies to divert plastic bags from landfills, but none of them are fully utilized in Thailand. The most popular method of landfill waste reduction is recycling, which uses waste as new material by "recovering and reprocessing usable products that might otherwise become waste" (Ecology Dictionary, n.d.). Recycling can be economically and environmentally effective (Ross & Evans, 2003; Zink, Geyer, & Startz, 2016; Ferrão, 2014), but plastic bags are the least time- and cost-effective type of plastic to recycle (McKinsey Center & Ocean Conservancy, 2015). Another option is reclamation, or the "restoration of materials found in the waste stream to a beneficial use which may be for purposes other than the original use" (Ecology Dictionary, n.d.). When applied effectively, reclamation can become a profitable way to alleviate the social and environmental problems caused by excess waste (Holt & Littlewood, 2016). However, it does not target the root problem: overuse of single-use plastic bags.

There are many alternatives to single-use plastic bags, but some present similar environmental impacts if overused or improperly disposed of. Some alternatives are more environmentally friendly, but lack the convenience or cost-effectiveness of plastic. Biodegradable plastics can be broken down into the environment (Green Plastics, 2012), but cannot be recycled and require specific conditions to degrade (Dilli, 2007; Ren, 2002; Harding, Gouden, & Pretorius, 2016). Compostables are a type of

biodegradable material that will not only break down more quickly but also add nutrients that enrich the soil when composted correctly (Davis & Song, 2006; Green Plastics, 2012; “What’s the Difference? – Compostable vs. Biodegradable vs. Recyclable,” 2013). The traditional methods of packaging using leaves have mostly been replaced by plastic, except in specific cases when taste or indication of quality is more important than convenience or cost (17 Triggers, 2015; Dainelli, Gontard, Spyropoulos, Zondervan-van den Beuken, & Tobback, 2008). Paper is a popular biodegradable alternative, but paper bags are heavier, more expensive, and cause more solid waste and atmospheric emissions in production than plastic bags (Lewis, Verghese, & Fitzpatrick, 2010; Canadian Plastics Industry Association, 2012).

The most effective method of reducing the consumption of single-use bags is reuse (Ross & Evans, 2003). There are several types of reusable bags, including ones made of nylon, cotton, and even recycled plastic bottles (Canadian Plastics Industry Association, 2012). If cloth reusable bags are reused just four times, their pollution from production is offset compared to plastic bags (Lewis et al., 2010). Like paper, cotton bags may seem to be reasonable alternatives; however, they have their own environmental impacts in production and end-of-life processes (Muthu, 2015). Cotton bags require far more resources than plastic bags in their initial production and still may not be reused (Muthu, 2015). Improper use of reusable bags also can take away any benefits. Single-use bags are sometimes used in addition to reusable bags, so consumption of single-use bags is not actually reduced (Gupta, 2011). Reusable bags are still a viable solution, but they must be coupled with behavioral changes that encourage the effective reuse of bags instead of single-use bags.

2.5 Strategies for Change

Changing a practice or habit requires an understanding of the reasons behind it. Social norms permeate our daily lives, influencing habits we have and decisions we make every day (Cialdini, Reno, & Kallgren, 1990; Schultz, 1999). Social norms are acceptable behaviors learned by observing surrounding people and circumstances (Cialdini et al., 1990). Plastic bag use has become a social norm. Customers often feel entitled to a plastic bag and vendors who attempt to limit plastic bag use are generally seen as being less helpful to their customers (17 Triggers, 2015). It is important to spread the idea that plastic bags are often free in cost but not in consequence.

Social media is an effective tool to share information and ideas because it is a very accessible platform. Behavior and attitudes of the public are more directly affected by social media than any other media form (Thackeray, Neiger, Hanson, & McKenzie, 2008). Social media is an inexpensive and effective tool to reach and engage the public because organizations can post content to their pages or channels and receive community responses at no cost (Zarrella, 2009). The use of social media platforms such as Facebook, Twitter, and YouTube allows campaigns to reach a wide audience to spread awareness and organize events with public involvement for free.

Posters are some of the most effective visual tools for communication when the message is clear, concise, colorful, and attention grabbing (Dalen, Gubbels, Engel, & Mfenyana, 2002). A good poster can clearly explain key messages within three seconds (Dalen et al., 2002). Poster-based campaigns can be launched on a low budget to increase awareness about important problems, but can be insufficient in changing behavior when implemented alone (Etter & Laszlo, 2005). When informational posters are paired with personal interaction, they can be helpful in quickly informing the audience and starting a conversation about the topic (Ilic & Rowe, 2013). Overall, posters are a fast way to spread information and increase awareness, but to provide maximum impact they must be combined with more strategies.

Providing information – as in awareness campaigns – is not an effective strategy by itself. A study conducted in Cambodia showed that students were the demographic most aware of the negative

consequences of plastic bags, yet they were the ones most likely to litter (17 Triggers, 2015). To spread information and have an impact, campaigns can target young students to cultivate a sense of environmental responsibility (Aziz, Omran, Mahmood, & Robinson, 2016; Clapp, 2002). A campaign on recycling in Poland had students act as information consultants and visit different local homes (Grodzińska-Jurczak, Tomal, Tarabula-Fiertak, Nieszporek, & Read, 2006). They found that people are more willing to accept change from within their own community (Grodzińska-Jurczak et al., 2006). Involvement of those impacted is necessary for a marked change in attitudes and practices, and there must be some motivator for change.

Measures such as plastic bag taxes have been implemented in many countries to reduce plastic consumption, with mixed results (Dikgang, Leiman, & Visser, 2012; Lam & Chen, 2006; Xing, 2009). A common problem is insufficient communication of policy changes to consumers. For example, a plastic bag tax implemented in South Africa without any accompanying awareness campaign or even signage at checkouts lost its momentum after the first few months because store clerks stopped informing customers of the charge (Dikgang et al., 2012). Introducing taxes can be effective for reducing plastic bag use; however, they must be much higher than what the average person is willing to pay (Convery, McDonnell, & Ferreira, 2007). Incentives make consumers more likely to act for the greater good by encouraging feelings of generosity (Barasch & Small, 2014).

To have real effects, campaign strategies providing motivation must be complemented with strategies to provide the tools people need to change. Cities like Evanston, Illinois, and Santa Monica, California, have addressed the fact that resources are needed for change by piloting reusable bag share programs (City of Evanston, 2015; City of Santa Monica, 2011). These programs entail members of the community donating bags for others who do not have them to use, enabling them to participate in more sustainable shopping habits (City of Evanston, 2015; City of Santa Monica, 2011).

No matter what strategy is used, a campaign needs to be long-term to have a lasting effect (Aziz et al., 2016). If there are multiple phases in a campaign, they need to be executed in quick succession in order to have the greatest impact (Hill, White, Marks, & Borland, 1993). If the phases are at scattered intervals, the inertia of the campaign will wane because the public will lose interest (Hill et al., 1993). The most effective campaigns are executed throughout several years (Hill et al., 1993). A 24-month long campaign on proper waste management in Poland took a full 15 months to see its first real change in community participation in the campaign, a 55% increase in recycling (Grodzińska-Jurczak et al., 2006). After the campaign ended in 2007, 5.8% of Poland's waste was being recycled (Swiss Business Hub & APAX Consulting Group, 2009). The accompanying policy change continued (Grodzińska-Jurczak et al., 2006) and by 2011, Poland was recycling 11.4% of its waste (Swiss Business Hub & APAX Consulting Group, 2009). This continual growth suggests that the campaign had a lasting impact. Campaigns are an effective way to raise awareness of new practices and get the community involved in creating positive changes. The first step for involvement in a community is understanding its culture and beliefs.

2.6 Behavioral Change Influenced by Thai Buddhism and the King's Philosophy

Thai citizens are heavily influenced by Buddhism and King Bhumibol Adulyadej's legacy. Almost 94% of Thai people practice Buddhism ("Thailand In Brief: People," n.d.), the influences of which can be seen in all aspects of Thai culture (Plamintr, 1994). More members of the older generation truly follow Buddhism (17 Triggers, 2015), while the beliefs of the younger generation are influenced by Western culture (Plamintr, 1994).

King Bhumibol Adulyadej reigned in Thailand for more than 70 years and was respected by Thai people because he worked tirelessly for Thailand and its citizens Foreign Office, The Government Public Relations Department, 2016). The late King developed a philosophy called

“Sufficiency Economy,” which encourages a state of self-sufficiency and harmony with nature (Wechsler, 2014). The philosophy is built on three pillars: moderation, reasonableness, and risk management (Wechsler, 2014). Moderation encourages taking the middle path; not doing too much or too little (Wechsler, 2014). Reasonableness raises awareness in considering factors before making any decisions (Wechsler, 2014). Risk management reminds Thai citizens to prepare for consequences as well as reducing the probability of future problems (Wechsler, 2014). Through these pillars and Thai reverence for the late King, an attitude of sustainability can be spread. The late King’s philosophy can be applied to address overuse of plastic.

2.7 Can Do Team and Single-Use Plastic Reduction

It is the responsibility of the individual to reduce their personal plastic consumption to help alleviate environmental problems; however, they must be inspired to do so. The Can Do Team, a Thung Khru, Bangkok based organization that works to improve the quality of life for residents of the local community, has recognized the impacts of plastic pollution within Bang Mod. Plastic pollution is especially harmful to the Bang Mod canal, which is central to the way of life in the community. The Can Do Team aims to help their community alleviate the plastic pollution problem before it is exacerbated. We worked with the Can Do Team to reduce the plastic use in the Phutthabucha Temple market, which will reduce plastic pollution in the nearby canal. Understanding the impacts of plastic will assist in creating a campaign to motivate environmentally responsible change. Our project will aid the Can Do Team in developing wide-reaching strategies that will inspire and equip people to take action in reducing their personal reliance on single-use plastic bags.

Chapter 3: Methodology

The goal of our project was to create a campaign for long-term behavioral change that would encourage the vendors and consumers in the Phutthabucha Temple market to reduce their consumption of single-use bags. The Phutthabucha Temple market provides an example of a waste reduction campaign that could be implemented across markets in Thailand. To accomplish this goal, we worked with the Can Do Team on the following objectives:

1. Understand the motivations behind plastic bag use within the Phutthabucha Temple market.
2. Evaluate past waste reduction strategies in Southeast Asia.
3. Develop campaign strategies that motivate the reduction of single-use bags within the Phutthabucha Temple market.
4. Field test the campaign strategies to determine the most viable approach.

3.1 Objective 1: Understand the motivations behind plastic bag use within the Phutthabucha Temple market.

To accomplish this objective, we decided to visit the Phutthabucha Temple market and surrounding areas four times. To see the impact of plastic bags compared to other waste, we observed the most visible sources of waste and analyzed the prominent single-use items around the market and canal. We recorded their functions in a chart to determine which type was most commonly used (Appendix A). The chart helped us select the most abundant type of single-use items in the market and understand all of the purposes they fulfilled. To explore the wide-reaching functionalities of plastic bags, we photographed the different uses for them over the first two visits (Appendix B). We also observed members within the market community who used plastic bags and reusable bags to determine how common reusable bags were and if reusable bags decreased plastic bag use (Appendix C).

Rather than focus all of our interviews in one market and risk making overly narrow observations, we also interviewed within the Chula market at Chulalongkorn University. Unlike the Phutthabucha Temple market, the Chula market was in a university, had vendors come on a specific schedule, had a space nearby for eating, and had an active campaign that included a policy preventing Styrofoam use. We conducted surveys (Appendices D & E) in each market and included questions to investigate the age and gender demographic so that we could understand the differences between the markets and their influences on plastic use. We interpreted the data gathered by comparing each market's demographics and considered how campaign effectiveness would vary between them.

We researched the costs and advantages of plastic bags so we could construct informed questions for interviews. We conducted structured interviews with 31 vendors and 22 consumers on their usage of plastic and awareness of its negative impacts (Appendices D & E, respectively). We interviewed consumers who had finished shopping and were about to leave because we found they were the most receptive to answering our surveys. We also interviewed vendors who were not serving customers and paused the interviews if the vendor had to serve customers. To foster a positive relationship, we purchased small items from the vendors. Although both of these selection methods may have introduced bias into our results, they were effective in gaining cooperation from participants. We chose to do structured rather than semi-structured interviews because they provided us with consistent answers for comparison, regardless of the interviewers. This also allowed us to get a baseline of initial knowledge of plastic impacts and habits for later comparison. To keep track of the responses, we recorded data in a Google form and then categorized responses by reasons for plastic use. Some participants, in an attempt to be helpful, tried to give us the answers they thought we wanted to hear instead of the truth. We circumvented bias by comparing our results with those of Excess Baggage Cambodia and interviewing until we reached consistency in our responses. We could not effectively

determine the truthfulness of any answers, so none of them were omitted. We analyzed data by categorizing interview answers by reasons for plastic use as well as knowledge of impacts.

Through these methods, we were able to understand plastic bag use as well as vendor and consumer perspectives on plastic and knowledge of its impacts. All this information came together to help us understand the requirements for a plastic bag reduction campaign that would appeal to both vendors and consumers.

3.2 Objective 2: Evaluate past waste reduction strategies in Southeast Asia.

After understanding the local context of the plastic pollution problem, we reached out to representatives of campaigns around Southeast Asia to find out how to harness consumer power and motivate changes. The campaigns we chose faced situations and cultures similar to those in Thailand, making them applicable to our campaign design.

The most expansive campaign on single-use plastic bag reduction in markets was Excess Baggage Cambodia. We contacted Ms. Claudia Oriolo, the Country Manager for the campaign, for a structured interview conducted through email (Appendix F) as well as a follow-up semi-structured interview conducted on Skype (Appendix G). The structured interview questions were answered by the ground team, while the Skype interview was with Ms. Oriolo herself. These interviews provided us with feedback for our campaign and information on acquiring funding for projects. We also focused on a campaign called Chula Zero Waste, which is ongoing and has many different waste reduction initiatives at Chulalongkorn University, including one on single-use plastic bags. We chose this campaign because of its use of policy and because we could observe the market booth Chula Zero Waste hosted at the Chula market. We conducted an interview with the campaign organizer, Dr. Sujitra V., to better understand their campaign strategies (Appendix H). The last campaign organization we reached out to, Carrotmob, helps foster agreements where consumers agree to shop in a particular business if a specific sustainable change is made and launches the campaign through a fun community event. We conducted a structured interview through email with Mr. Brent Schulkin, a past headquarters employee for Carrotmob, on their organization strategies (Appendix I).

To synthesize all of the information gathered from the interviews with Carrotmob, Excess Baggage Cambodia, and Chula Zero Waste, we dissected each campaign to analyze its overall plan, campaign strategies, resources, and obstacles faced (Appendix J). The resulting chart enabled us to understand each campaign's ideation processes to better inform our own campaign strategies.

3.3 Objective 3: Develop campaign strategies that motivate the reduction of single-use bags within the Phutthabucha Temple market.

A combination of human-centered and participatory design allows designs to be practical and informs people of coming changes because they were involved in the creation of the campaign (Semsei Greenhouse, 2012). Human-centered design can present problems because designing for the needs of each person can derail a campaign from having an intentional approach (Norman, 2005). To use this design method without trying to satisfy every need of each stakeholder group, we grouped the needs of each person into larger categories – including convenience, incentives, low cost, and hygiene – because they were the most commonly cited issues in our research. Given limited time and no prior community connections, we were challenged in this method because many community members were not interested in dedicating time to answer questions. To work through the limited community involvement, we ensured that we reached out to a representative group of community stakeholders.

We interviewed Mr. Somsak P., Former Vice President at Centre of Agrotourism, to learn about local history and how it would affect our campaign design (Appendix K). We cross-checked this information with a documentary produced by King Mongkut's University of Technology

Thonburi (KMUTT) called “The Missing Bangmod Tangerine” (Ratchawong, Meesuae, & Kiangkaew, 2016). We used the history to inform our campaign design and increase the campaign’s resonance with local people.

Our first goal when visiting the market was finding the individual responsible for its organization. We started by asking the Phutthabucha Temple monks and were then directed to the market manager, Mr. Jo. We conducted a semi-structured interview with Mr. Jo to understand the administrative structure of the market and to see if change could occur from the top (Appendix L). We then interviewed the plastic vendor in the market to understand why he sold plastic bags to the market vendors and whether he had considered alternatives (Appendix M). We also identified the formal waste management and education systems as potential points of waste reduction interventions. We had a structured interview with the formal waste manager (Appendix N) and two Bang Mod schools (Appendix O) to understand any waste reduction or environmental programs they had in place.

Having interviewed a range of invested parties and researched the practicality of each solution, we constructed a decision matrix to narrow down potential campaign strategies (process and matrix in Appendix P) that we had learned about through our research and interviews with the reference organizations. We selected campaigns that had successfully used the strategies we were evaluating in order to normalize our analysis. Using the decision matrix, we were able to objectively compare different campaign strategies and have a discussion on which would be best to pursue in Bang Mod. We divided the campaign strategies into three phases based on the results of the decision matrix. Phase 1 approaches were the most feasible and had the lowest resource requirements, phase 2 approaches included moderate monetary and time investments, and phase 3 approaches involved a moderate monetary and a high time investment.

To test the viability of our campaign strategies, we created a survey for the Phutthabucha Temple market consumers and vendors (Appendices Q & R, respectively) that helped us to determine how we could modify each campaign strategy to improve its effectiveness. We revisited our campaign strategies and adjusted them using the information from our interviews to increase the likelihood of success within the community. We laid out a plan and began the preparation for each of the suggested campaign strategies.

3.4 Objective 4: Field test the campaign strategies to determine the most viable approach.

Throughout our project, we interacted with the vendors and consumers in the Phutthabucha Temple market as much as possible so we could craft an appealing campaign. Before testing our campaign in the Phutthabucha Temple market, we organized a focus group with six members of the Can Do Team (Appendix S) to present and get feedback on our materials and campaign strategies. We also discussed how our sponsor could continue the campaign after we left. From our sponsor’s feedback, we modified the campaign so it met the sponsor’s expectations and stayed within their resources.

After developing posters, a social media campaign, a set of panels to raise awareness in adults, and a children's activity, we tested them in a market booth at the Bang Mod Festival (Appendix T). After getting feedback from the Bang Mod community, we adapted the campaign strategies to meet the needs of the community. We understood the effects of our attempts to create a campaign that changes people’s behavior regarding the use of plastic. Moreover, we created a long-term campaign plan that was feasible for the Can Do Team to maintain and assisted with its launch.

Chapter 4: Findings

We used observations, interviews, and research to determine factors that drive people to use plastic bags. We were able to recommend to the Can Do Team a long-term behavioral change campaign, built with feedback from the consumers of the Phutthabucha Temple Market. We recorded findings that are critical to understanding the overconsumption of plastic bags and methods for reduction. We found:

1. Individuals defer responsibility for plastic use because they feel a lack of control over the situation.
2. The profits from recycling plastics overshadow the benefits of reuse and waste reduction.
3. Lack of funding and manpower hinders the startup and success of campaigns.
4. Incentives are a necessary step to garner public participation in initial stages of campaigns.
5. Perceived convenience is the primary motivator for consumer and vendor bag choice.
6. Campaigns that address the needs of a variety of community members are the most successful for plastic bag reduction.
7. In order to motivate personal plastic reduction, campaign tools must clearly explain the impacts of plastic overuse and reference specific changes people can make.

4.1 Finding 1: Individuals defer responsibility for plastic use because they feel a lack of control over the situation.

When interviewing all the stakeholders, we came across a cycle of blame. In the Phutthabucha Temple market, many responsible parties, including vendors, consumers, and even the manager, place the responsibility for the overuse of plastic bags on each other (Figure 4.1).



Figure 4.1: Plastic use blame deferment

We interviewed the monks at the Phutthabucha Temple because the temple owns the parking lot where the market sets up. Some earnings from the market are regularly donated to the temple in exchange for the space the temple lends to the market. Handling money is prohibited by the rules of monkhood (Renko, 2016), so the monks delegated control of the market to a market manager. The delegated control made the monks feel it was not in their power to reduce plastic use within the market.

In our interview with the market manager, Mr. Jo (Appendix L), we found there were very few policies in the Phutthabucha Temple market. The only rule within the market was that vendors had to pay for a spot each day, making the ability to pay rent the only requirement to sell. Mr. Jo did not feel as though he could change anything within the market because there was a council in charge of

making decisions, and it was therefore not his responsibility to create policies. Mr. Jo even feared that any rule limiting plastic use would cause vendors to raise prices and eventually move to a different market, which would discourage customers from coming. Mr. Jo concluded that it was not his responsibility to address plastic usage in the market because he had no control over the vendors’ packaging decisions.

Next, we found the source of plastic for many vendors within the Phutthabucha Temple market. The plastic vendor in the market stated that he was willing to switch to alternatives if his consumers, the market vendors, were interested. Without market vendor interest in alternatives, their high cost would decrease demand and cause market vendors to turn to another supplier for cheaper packaging. This would affect his business, so he suggested that plastic reduction motivated by the market vendors and consumers would be most effective.

We interviewed 22 vendors between the ages of 24 and 70 – about half (53%) of whom were 30-55 years old and 68% of whom were female – to find out why vendors used plastic. A “lack of choice” was the second most common response to this survey on plastic use (Figure 4.2). In fact, the majority of vendors (12 of 22) bought their packaging material from within the market itself, where plastic was the only available option. The third most common reason for using plastic was the cost (Figure 4.2): many of the vendors we interviewed in the Phutthabucha Temple market believed they would lose business if they switched to alternatives because it would increase the price of their product and leave their customers unsatisfied.

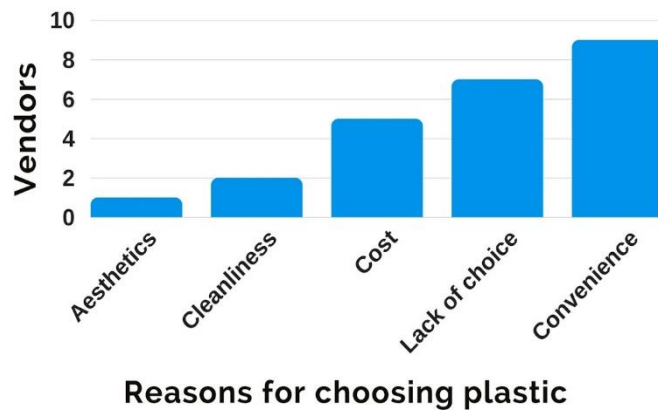


Figure 4.2: Survey of 22 vendors on their plastic usage

Excess Baggage Cambodia encountered a similar situation; market vendors felt that they had no control over their plastic use and were discouraged from taking responsibility to change it (17 Triggers, 2015). When we asked the vendors from both the Chula and Phutthabucha Temple markets if they would switch to alternatives for plastic bags, 25 out of 36 vendors said they would if there was a consumer demand for it and two said that they had already switched (Appendix R). Consumers have some power to influence the vendors, but the reliance on plastic would be hard to break without vendors taking responsibility for their use.

Social norms play an important role in terms of plastic bag use and acceptance. Consumers control demand, but many feel that they have no power over what they receive from vendors, especially because many products are already packaged with plastics. The age range of consumers interviewed was 9 to 79 years old, with the majority (34%) in the 18-30 range. Of the consumers interviewed, 57% were female. When asked, 75% of 31 consumers we interviewed said they felt they were given plastic bags unnecessarily, yet no respondent said they ever successfully rejected plastic bags. One consumer said that they had tried to refuse bags, but the vendor insisted on giving them. Most consumers said they did not refuse because the vendors just gave bags without asking. Forty-

five percent of consumers surveyed said they had asked for extra plastic bags before, proving that consumers are more comfortable asking for extra plastic, but not refusing it. There is a clear lack of responsibility taken to demand less plastic and a placement of blame on vendors rather than on oneself. Consumers may have been willing to change their behaviors, but they suggested it was difficult to change because few vendors used alternative materials.

Every group in the community was waiting for another to begin to change, but no one we surveyed took the initiative to be the first to reduce plastic. They were afraid the changes would affect them monetarily or that they did not have the power for change. This created a cycle of blame that was not conducive to progress in plastic bag reduction.

4.2 Finding 2: The profits from recycling plastics overshadow the benefits of reuse and waste reduction.

When we interviewed the Phutthabucha Temple School (Appendix O), we discovered that it had a program in place from the Ministry of Education that emphasized separating plastics to be recycled from other waste. Apart from the Ministry of Education program, some teachers at the school encouraged students to collect plastic bottles that the teacher then sold to informal waste collectors. The money earned became a class fund to purchase food-related prizes. These strategies encouraged students to separate out plastic, but not to reduce their use. The bottle collection program even discourages reduction because those who use less plastic will not be able to earn as much money as their peers.

The Bang Mod Tang Pao School, another school nearby, already had its own waste management system in place that emphasized separation and recycling. Recyclable plastics were sold for a profit to an informal waste collector. Their separation room can be seen in Figure 4.3. Though the 3 R's (reduce, reuse, and recycle) are being taught, the administrator said that reduction is the hardest to enforce because it is too difficult to avoid plastics.



Figure 4.3: Bang Mod Tang Pao School waste separation room

In a more advanced example of waste separation, Chula Zero Waste made an investment in upgrading all of the waste separation bins on the university campus with clear signs so that people could properly sort their waste (Figure 4.4). The recycling poster features a variety of single-use items such as plastic bags, plastic bottles, and paper plates. The garbage poster features dirty single-use items such as used fruit bags, straws, and cups. Rather than having a sign displaying alternatives to the single-use items to encourage people to change their behavior, this process further emphasizes separation

with no encouragement for reuse or reduction even though it is promoted by a “zero-waste” campaign.



Figure 4.4: Chula Zero Waste diagram for waste separation

Within the Phutthabucha Temple market, some vendors and consumers said they reused at home, but there was a clear lack of knowledge of the difference between reuse and recycling, with only 30% (9 out of 31) of consumers and 50% (11 out of 22) of vendors giving any correct information on the differences between reuse and recycling. Overall, this shows a lack of information being spread on the benefits of each process as well as the differences between them.

In the interview with Mr. Saravut K., Head Chief at Department of Cleanliness and Park, Thung Khru District Office (Appendix N), we found out that Thai citizens failed to differentiate between the bins despite the color-coded system for waste separation. Both informal and formal waste management would then go through and separate materials because the recyclables could be sold for profit. To address improper waste separation, Mr. Saravut was developing an additional level of the program to divide waste into categories that would each be collected on specific days. This exposes the largest challenge to switching from recycling to reuse: unlike reuse, recycling generates income for waste managers and is thus more attractive. Most of the time, the profit from recycling does not return to the original user of the recycled product, but instead goes to the waste managers. In reality, individuals save more money by pursuing reusable options than by recycling. However, because the original users are not aware of this and recycling is the base of an entire industry, waste separation plays a larger role than reuse. Addressing the underlying issue of excess waste is not a profitable endeavor, which means that consumers fail to see the merits of single-use plastic reduction.

4.3 Finding 3: Lack of funding and manpower hinders the startup and success of campaigns.

Manpower is necessary to make change: without it, there is a lack of motivation because people feel that their endeavors are impossible. These obstacles cause a sense of defeat that must be overcome. Within the Phutthabucha Temple market, we found an absence of market management motivated to make a change. We spoke with Mr. Jo, but he felt there was no way to organize such a large market with an inconsistent set of vendors. The lack of consistency would take more manpower to control, and thus he lacked the resources and interest to change the market. The manager lacked confidence in his power and chose to comply with the vendors’ preferences instead. Our interview with Mr. Somsak (Appendix K) brought up a previous awareness campaign on plastic overuse, but it

was ineffective because the volunteers only visited the market once and neither Mr. Somsak nor anyone else in the market could remember anything specific about it. In the focus group with the Can Do Team (Appendix S), we found they are limited in time and resources to execute a new campaign, so they would like outside volunteers to be recruited for this campaign.

From our interview with Mr. Saravut, we found that waste production increased while the waste management system remained the same, increasing the workload of the waste management workers. The overstrained waste management system was unable to implement any waste reduction plans because all of their resources were focused on coping with the current problem of collecting and sorting excess waste.

We also interviewed Chula Zero Waste representative Dr. Sujitra V., who does research on environmental economics and waste management (Appendix H). We found that Chula Zero Waste has a budget to apply a new waste management system in Chulalongkorn University to encourage behavior change, but they are lacking in participation and manpower.

4.4 Finding 4: Incentives are a necessary step to garner public participation in initial stages of campaigns.

Both positive and negative incentives can be used to motivate plastic reduction. In our interview with Dr. Sujitra from Chula Zero Waste, we discussed the group’s use of plastic-bag taxes as a negative incentive to lower plastic usage (Appendix H). Based on research of successful plastic bag tax campaigns and the scarcity of plastic bag taxes in Thailand, Chula Zero Waste decided to enforce a 2-baht charge on plastic bags in the campus Co-op and 7-11 stores. We were unable to evaluate the effectiveness of the tax at the time because it was still in its initial stages. Excess Baggage Cambodia used positive incentives to encourage consumer participation with their “combine-in-one” campaign, in which consumers who combined their purchases into one bag were allowed to spin a prize wheel.

We surveyed consumers about their perceptions of incentive programs within the Phutthabucha Temple market. In consumer surveys on what they thought would have the greatest effect on changing their behavior (Figure 4.5), one of the second most commonly cited motivators was incentives. Many people felt they would be willing to change in return for prizes or discounts.

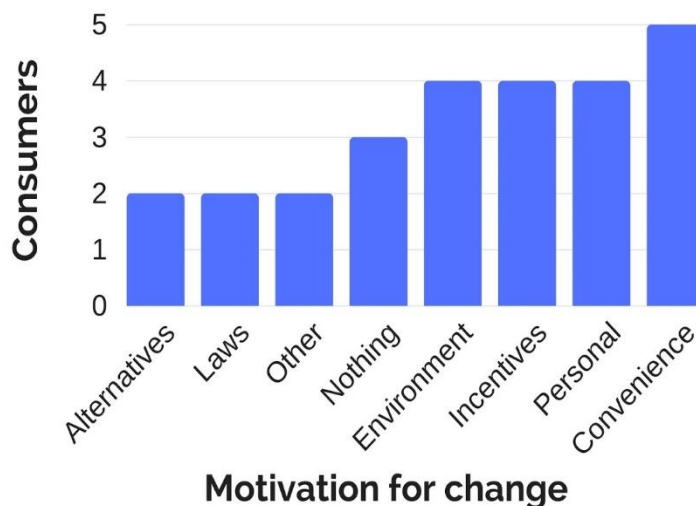


Figure 4.5: Survey of 31 consumers on motivations for behavior change

To assess the feasibility of our incentive-based campaign strategies, we returned to the market and interviewed another set of consumers. When asked specifically if a prize-oriented incentive program would motivate people to bring a reusable bag, 7 out of 15 consumers stated that an incentive program would definitely help them and 6 out of 15 consumers stated it would probably help them to use a reusable bag. In comparison, we also surveyed consumers on a reusable bag share program, which would provide no incentives but would help supply people with reusable bags if they forgot to bring their own. For this program, only 3 out of 15 consumers said it would definitely help them and 5 out of 15 said it would possibly help them to use a reusable bag. This means that at least 33% more people in the Phutthabucha Temple market would use a reusable bag with an incentive program, showcasing the importance of positive incentives for change.

Positive incentives can also be used for vendors. Carrotmob formulates an agreement where consumers agree to spend money at a certain business in exchange for an environmentally responsible change on the part of that business (Carrotmob, n.d.). This works as an incentive for businesses to change their behaviors and has been seen to be successful in Carrotmob's campaigns. They also found that recognizing the efforts of businesses by displaying a public certificate for their sustainable practices encouraged cooperation. The public certificate allowed businesses to share their commitment to sustainability, which held them accountable to their customers, making them less likely to revert to previous practices. Additionally, Excess Baggage Cambodia incentivized vendors by giving out participation prizes and awards for reducing plastic consumption. This kind of attention to motivations of consumers and vendors is essential when designing an incentive-based campaign. Through these interviews, we were able to determine that incentives are an important step to encourage change. Incentives provide a tangible reward for positive behavior change, increasing the reach of a campaign and commitment of participants.

4.5 Finding 5: Perceived convenience is the primary motivator for consumer and vendor bag choice.

We observed the functionality of plastics within the Phutthabucha Temple market to understand reasons for use. We found plastic serving a wide range of purposes ranging from bulk packaging to sauce containers, all of which were for consumer convenience (Appendix A). The most common answer (5 out of 31 consumers) of what Phutthabucha Temple market consumers thought would motivate them to change their behavior was convenience (Figure 4.5). Convenience was also the most important reason for consumers to refuse extra bags from vendors. About one-third of those interviewed who refused a plastic bag (10 people of 31) responded that they already had a reusable bag or felt it was not convenient to carry around extra plastic. Consumers would be most willing to change their behavior if the new habit was more convenient than their old one.

Likewise, a large portion of vendors (9 out of 22) responded that convenience was the primary reason behind their chosen packaging materials (Figure 4.2). Plastic bags for packaging are cheaper and easier to find than other types of bags: there is even a plastic vendor in the Phutthabucha Temple market itself. The majority of vendors (12 of 22) bought their plastic bags from the plastic vendor, showing that not only must alternatives be convenient to use, they also must be readily available or vendors will default to buying plastic.

Ms. Oriolo confirmed our findings in her interview (Appendix G). The ground research conducted by her team in Cambodia concluded that people preferred plastic bags due to their convenience and low cost. Switching to alternatives in Cambodia would have been perceived as inconvenient, which is why this campaign chose to focus on plastic use reduction instead of replacement. When implementing changes, one must take into consideration what is plausible to maintain. In our interview with Carrotmob, a campaign organization (Appendix I), Mr. Schulkin said

that businesses can implement one-time changes more easily than recurring changes. One-time changes (such as purchasing energy-efficient appliances) are decisions for sustainability that must only be made once, whereas recurring changes (such as usage of an alternative packaging material) are decisions that require a recurring purchase or habit. Maintaining recurring changes can become inconvenient or costly, and there is no way to ensure people will keep practicing an inconvenient habit. One-time changes are easily maintained because businesses often have no incentive or benefit to being reversed, which is why Carrotmob focuses on this type of change.

Chula Zero Waste found that it was necessary to provide alternatives to plastic bags because the inconvenience of shopping without bags could lead to backlash on changes. It is critical for positive behavioral changes for reusables to be promoted with the idea that reusables are more convenient than single-use items. Launching these behavioral changes with one-time policy changes that are difficult to reverse makes sticking with the positive change more convenient.

4.6 Finding 6: Campaigns that address the needs of a variety of community members are the most successful for plastic bag reduction.

The needs and interests of a community must be taken into consideration when crafting a campaign. A campaign that utilizes a combination of strategies yields the best results because each stakeholder can be consulted and the solution crafted to benefit all stakeholders.

We learned about previous campaigns with similar goals and strategies through interviews with reference organizations (Appendices F, G, H, & I) and found that campaigns that motivated change across many stakeholders were the most successful. From Excess Baggage Cambodia's ground team (Appendix F), we learned that campaigns trying to raise awareness of the negative impacts of plastics must be implemented carefully in order to be successful. Ms. Oriolo reiterated this by emphasizing the importance of preliminary research on behavior and possible alternatives (Appendix G). Previous campaigns had failed because they were too short-term, did not focus on vendors and consumers, had no clear strategies to draw the attention of plastic bag users, and did not offer any solutions to the problems they exposed. They overcame initial resistance to their campaign by continuously reassuring all participants of their good intentions: they would not interfere with sales and would try to improve the economic and social situation. Throughout the campaign, their close relationship with the stakeholders was critical to their success.

In our interview with Chula Zero Waste (Appendix H), we learned they had been implementing many new types of campaigns – from food waste reduction to plastic bag taxes – with a wide variety of stakeholders. The Chula Zero Waste campaign was in close contact with the campaign participants, which helped them learn about the needs of the local people, predict responses to campaign strategies, and adapt quickly to feedback.

Through our interactions with the Bang Mod community, we tried to better understand their needs and interests. After going to the Bang Mod Festival to present our campaign to the community, we concluded that the most impactful messages were the ones related to the health problems caused by plastic. The community members we interviewed were asked to rank the posters from most to least impactful. Thirty-three out of 53 people (62%) favored health-related posters, which inspired change out of fear of negative personal impacts. Surprisingly, we found that messages related to the King's philosophy were the least impactful because a significant portion (30%) of the participants ranked it last. Younger generations knew less about King Rama IX and were not directly affected by his past works. The general opinion, though, was that our poster was adding to the ongoing trend of using the late King's philosophy as motivation and therefore rendering it trite.



Figure 4.6: Plastic Woman interacting with Bang Mod community member

Through our Plastic Woman demonstration (Figure 4.6) and raffle contest, we attempted to attract people and recruit them to our Facebook page, but found that it was inappropriate for the Bang Mod community. Many older members of the community – who were most likely to shop at the market – either did not use Facebook or did not have a smartphone with internet access. Over the two-day period during the festival, the Can Do Team Facebook page only gained 26 new “likes.” The Can Do Team was also at the festival directing people to their Facebook page, meaning this spike is from our combined efforts. This shows that Facebook is not the most effective way to reach this specific community, even though it is the most common social media used in Thailand (Leesa-Nguansuk, 2016).

We also interacted with the younger generations (children 1 to 15 years old) by playing a fishing game (Appendix T). We found that children who enjoyed the fishing game the most were over 5 years old. Children under 5 years old were observed to be easily overwhelmed and confused by the game, sometimes to the point that they got scared and left. We recorded at least five young children who left.

We learned that focusing heavily on personal impacts from plastic would invoke the best response in adults. With children, we learned that having an activity to relay a concept is effective at getting kids’ interest. A children’s activity is also effective at getting their parents to stop and observe posters or participate in an activity themselves. Overall, directing campaign activities across a variety of demographics and stakeholders creates the most effective campaigns.

4.7 Finding 7: In order to motivate personal plastic reduction, campaign tools must clearly explain the impacts of plastic overuse and reference specific changes people can make.

Our research shows that there are large impacts of plastic, and we found that it is challenging for individuals to recognize and take responsibility for their stake in problems much bigger than

themselves. From interviews with the volunteers who ran the Bang Mod Festival kid's game (Appendix T), we found that children did not receive the intended message that personal plastic use contributes to harmful impacts in the ocean. Instead, they understood that littering plastics can harm the ocean, which is true but incomplete. When we explained to the children that the plastic they used eventually made it to the ocean, they still had trouble understanding the concept because it was not clearly demonstrated. We realized that we needed to provide more background information with a powerful demonstration to convey that the global plastic problem can be addressed with personal changes.

We found a similar instance of misunderstanding campaign messages with the adults when they reviewed the posters. For the campaign poster "We eat fish that eat plastic" (Appendix U), the intended message was that plastic is harmful to our food; we wanted the participants to infer that reducing plastic would make the fish healthier to consume. People misunderstood the poster as fish were becoming harmful to their health and they should decrease their fish consumption. Only 66% of 74 people correctly interpreted the poster. In comparison, almost 92% of 74 people understood the "Life cycle of plastic bag" poster. The "Life cycle of plastic bag" poster had a clear and direct message whereas the "We eat fish that eat plastic" poster left information to be interpreted. Most of the participants were Bang Mod community members from the older age demographic who had a hard time reading long blocks of text. Many of them commented at the end that we could make the messages simpler and more direct. From Post-It note responses given by panel participants, we found that even though some people misunderstood the meaning of the posters, they were impacted by the facts that we presented. Around 70% out of 117 people said that they will reduce their plastic use after being presented with these facts. Overall, we found the need to be very explicit when designing campaign tools so that the intended message comes across.

Chapter 5: Recommendations

Based on our findings and background research, we have created a series of recommendations for the Can Do Team. These recommendations begin at a local level for the Phutthabucha Temple Market, but can be expanded to reach markets throughout Bangkok. First, we discuss campaigns to motivate the Bang Mod community and an initial volunteer plan in 5.1, then we discuss a three-phase plan for our recommended campaign strategies in 5.2 through 5.4.

5.1 Launching the Campaign

1. We recommend a campaign targeting consumers that utilizes their control over demand to drive a reduction of single-use bags.

From our interviews with campaign organizations and discussion in *Finding 1*, we learned that consumers hold the most power in the market to induce changes. Based on *Findings 2* and *3*, we discovered that there were insufficient resources and manpower focused on waste reduction in Bang Mod. We also concluded from *Findings 4* and *5* that people are willing to change their behavior when presented with convenient alternatives and motivated with incentives. Our knowledge of successful waste separation campaigns and our interactions with the community, discussed in *Finding 6*, indicated that a campaign on single-use plastic bag reduction designed specifically for the Bang Mod community would be most beneficial to reduce waste generation. As discussed in *Finding 7*, the campaign messages we use must be clear and explicit to be properly understood. The plan we recommend, outlined in the following sections, focuses on waste reduction efforts because they solve the waste problem at its source.

2. We recommend a partnership between the Can Do Team and the KMUTT Volunteer organization to work with market consumers.

At our Bang Mod Festival booth, we spread awareness of the Can Do Team's campaign and recorded feedback and contact information for those interested in the campaign development. Three volunteers from the Chulalongkorn University's Environmental Conservation Club (Anurak Club) assisted in hosting the activities, demonstrating that universities can be a great source of volunteers to contribute to campaigns. Unfortunately, Chulalongkorn University is about 18 kilometers from the Phutthabucha Temple market, so recruiting volunteers from this university is not recommended. Instead, a local university, King Mongkut's University of Technology Thonburi (KMUTT), is less than three kilometers away and has an environmental club that the Can Do Team could reach out to for volunteers. Volunteers from other clubs in KMUTT, such as the Faculty of Engineering, have worked with the Can Do Team before for events like the Bang Mod Community Festival, which will make contacting them easier. Contact information for potential volunteers from KMUTT and other organizations who could be helpful for consultation can be found in Appendix V.

The university volunteers would assist the Can Do Team with running a table to recruit at least 20 consumers who visit the market a minimum of two times per week to participate in a three-week-long study. Gathering committed participants is critical because, as discussed in *Finding 3*, a lack of motivated support often hinders campaigns from flourishing.

The study would be broken into three phases that require progressively more time and resources. In the first phase, the consumer volunteers would record their plastic bag use over two market visits within one week. This initial step would establish baseline data for comparison later on. Next, the university volunteers would use the "Single-Use Plastics and Alternatives" fact sheet (Appendix W) to inform the consumer volunteers of the negative impacts of plastics and how their personal efforts can help reduce those impacts. Helping the participants understand the reasons

behind the consumer study program would be critical to their willingness to continue participating in the program.

In the second phase, the consumer volunteers would begin to decrease their plastic consumption by bringing a reusable bag and refusing unnecessary plastic bags, although double bagging for wet food items – such as raw meat, fish, vegetables, and soup – might still be needed. With this new habit, the volunteers would record their plastic bag use and any difficulties they faced while using reusable bags for another week. In the following meeting, the university volunteers would help the consumer volunteers plan to bring the necessary reusable containers to the market so that they could refuse plastic bags for wet food items. In the third phase, the volunteers would again record their plastic use over the previous week and note any difficulties with using reusable containers. To incentivize dedication to participation in the study, a reward could be given to the top three participants who reduced their plastic the most during the program.

All recorded data on reduced plastic usage from volunteers could be used by the Can Do Team as a successful example of plastic bag reduction and to fuel the campaign strategies. The limitation of this recommendation is that the consumer volunteers may become discouraged by the length of the study. The consumer volunteers also may not be able to purchase reusable options, and the lack of funding could limit consumers from volunteering.

3. We recommend informing the vendors of alternatives to plastic and creating readily available access to these so that it is convenient for vendors.

As reusable items may not be feasible in some cases, a demand can be created for vendors to switch to alternative packaging. While the consumers push for the vendors to switch to alternative packaging, the university volunteers would work with the vendors to find the right alternative packaging for their products and assess vendors' preparedness to switch. Using the "Single-Use Plastics and Alternatives" fact sheet (Appendix W), the KMUTT volunteers could act as consultants and guide vendors through the change. The university volunteers would also work with the plastic vendor to source the vendor's preferred new packaging options to make the switch convenient and encourage its adoption.

A main limitation of using alternative materials is that it requires extra communication with consumers, who must dispose of them properly. For example, if compostable materials are not properly disposed of in a compost receptacle, but are instead dumped in a landfill, their use has no positive impact. Before committing to a switch to alternatives, the university volunteers must analyze the end-of-life strategy and determine consumers' willingness to dispose of them properly.

5.2 Initial Campaign Launch: Posters in Market and Surrounding Businesses

4. We recommend a poster strategy within the market to increase knowledge about plastic impacts and showcase alternatives.

Based on *Findings 6* and *7*, we decided that a poster campaign would be most effective to reach the Bang Mod community members. We proposed the slogan "Let's Reduce for Bang Mod" – which rhymes in Thai – and a tangerine logo for the campaign (Figure 5.1). The logo is composed of a superhero holding a reusable bag in front of a tangerine, which is the icon of Bang Mod.



Figure 5.1: “Let’s Reduce for Bang Mod” campaign logo

Although sharing posters on social media would be a convenient approach because it does not require much manpower, time, energy, or money, it was not suitable for the Bang Mod community. In *Finding 6*, we discussed the fact that not all consumers and vendors at the market were active Facebook users, nor was the current Can Do Team Facebook page influential in the market. Despite this, to reach the subset of the market community that does use and understand Facebook and to engage with people outside of the market community, we recommend a social media campaign on plastic impacts and strategies for reduction (Appendix U). Using a QR code on the posters that links to the Can Do Team Facebook page will allow technologically proficient people to directly connect to the campaign with minimal effort. The demographics of the market consumers required an additional strategy that did not require the use of Facebook. To effectively deliver our messages and ideas to the Bang Mod community, we recommend the Can Do Team pursue a poster campaign in the main areas around the market, including the temple, schools, cafes, and the main entrance of the market. The poster campaign would require an investment of 30 Baht per poster to print and would take time to put up and maintain. The effort to share the posters with the community would be beneficial because they would be visible to all stakeholders involved.

The messages we created and recommend the Can Do Team spread are represented in four posters (Appendix U). In *Findings 6* and *7*, we discussed the importance of focusing the campaign on the interests of the community and being clear in campaign messages. From the Bang Mod Festival, we learned that the public’s main concern was their health. For these reasons, we recommend that health-related messages be the heart of the campaign and that the posters have suggestions for individual actions people can take to reduce plastic use.

The “Reduce for the King” poster relates the late King’s philosophy and the overconsumption of plastic in Thailand. The icon of the glasses represents the late King Bhumibol Adulyadej. People are encouraged to reduce plastic use for the late King and conserve Thailand’s prosperity. Thai people love and respect their late King; his philosophy could help motivate people to change behavior. The King poster must be implemented delicately so as to correctly display how the late King moderated use to fit his daily needs. His recent passing is still a sensitive subject for some Thai people who truly admire his hard work, so the utmost respect and moderation is needed when using his name and ideas.

The “We eat fish that eat plastic” and “Plastic in our food” posters display how we are being contaminated indirectly by plastics. The “We eat fish that eat plastic” poster explains how fish eat plastics and thereby absorb their chemicals, while showing further how eating fish transfers chemicals into our bodies, leading to health problems. The “Plastic in our food” poster explains how plastic affects human health by contaminating our food with chemicals from plastic containers. Both posters remind viewers of their contribution to plastic problems and motivate them to reduce plastic bags to protect their personal health.

The “Life cycle of plastic bag” poster is intended to make people realize how they are damaging the earth by just using the most convenient option: a plastic bag. It informs the public by comparing the amount of time we use a plastic bag (an average of 12 minutes) to the time it takes to decompose (up to 450 years).

5.3 Second Campaign Phase: Reusable Bag Share and Incentives

In order to create an effective campaign, resources to change need to be readily available, as discussed in *Finding 1*. Through the implementation of a reusable bag share and incentive program, the Can Do Team would give Phutthabucha Temple market customers the motivation and materials to spark a change in their habits.

5. We recommend a reusable bag share program to create a convenient option for reusables.

Finding 5 states that convenience is the primary contributor to adopting a practice. A reusable bag share program in the market would allow consumers to borrow reusable bags, providing a convenient option for consumers to still use a reusable bag even if they forgot theirs at home or did not have one.

To borrow a reusable bag, a consumer would go to a reusable bag share program table at the market, marked by a sign (Appendix X), and pay a 10-baht deposit for a bag and a ticket. They could return the bag with the ticket any market day for the return of their ten-baht deposit. The ticket system ensures that consumers cannot earn the 10-baht deposit by giving bags from home while still allowing them to take the bag home with their purchases. Additionally, we recommend sewing a small colorful stitch on program bags so that they can be identified by volunteers. This stitch will deter people from bringing back one of their old bags at home in exchange for a nicer bag from the program.

A number of resources are required to start the reusable bag share program. We recommend getting the initial bags through a bag drive at KMUTT, where students and faculty members could donate any unwanted bags from their homes. At least one person would have to be at the market table during peak market hours (16:00-19:00) to run the program. This would be a three-hour time commitment on Tuesday, Wednesday, Friday, and Sunday. The hours of the bag share program would need to be clearly communicated to consumers so those interested could come to shop during peak hours. The operation hours of the program are restricted if volunteers from outside the market run the program, so we recommend that the Can Do Team seek out a manager or vendor from the market to run the program to minimize the need for outside volunteers. To incentivize the participation of the vendor, the Can Do Team could attempt to gain cooperation with the market manager to lower the rent for vendors who participate in the program. Additionally, the increased traffic to the vendors from the program could result in more sales for them. Fortunately, the funding required would be minor, as a roll of 2,000 tickets would cost approximately 150 baht. A limitation of this recommendation is that it would require regular upkeep and dedicated time.

6. We recommend an incentive program to discourage the use of single-use plastic bags.

An incentive program is necessary to gain public participation for single-use bag reduction (*Finding 4*). Based on this, a prize-oriented incentive program would help motivate consumers to reduce their consumption of single-use bags. We recommend the Can Do Team pursue a stamp system, in which consumers are given a stamp card at the market table to bring with them while they shop. The card (Figure 5.2) would have 9 squares to be stamped and could only be used within the Phutthabucha Temple market. Vendors would stamp the cards when the consumers refused plastic bags. The card would not be exchangeable for cash. The consumer could submit their completed stamp card at the market table for a chance to win a prize. This system would discourage consumers from putting single-use bags within a reusable bag.



Figure 5.2: Stamp card design (left is in English, right is in Thai and stamped)

The prizes would be given by letting the consumers spin the prize wheel (prizes and wheel mockup in Appendix X). There would be a variety of different sized spaces corresponding to different prizes. The smaller spaces would correlate to more expensive prizes. Reusable items would be given as prizes, which would further discourage the use of single-use plastic. To lower the rate of repurchasing prizes, landing on a space on the wheel will enter the participant into a raffle with one winner for that prize per week.

It is important to also provide an incentive for vendors participating in the stamp program. From a survey done in both the Chula and Phutthabucha Temple markets on campaign strategies (Appendix R), 20 out of 34 vendors agreed to take part if there was a reward for them. Eight vendors were unsure about joining because they did not see how they could gain a benefit. For this, we recommend a prize for the vendor who gives the most stamps each month. This can be tracked by adding a unique mark for each shop. This use of incentives will encourage people to use reusable bags while simultaneously introducing a new practice that defies the current social norms on plastic use.

5.4 Third Campaign Phase: Market Arrangement Change

7. We recommend establishing market zones for groups of products.

The current setup of the market encourages people to use more plastic: it makes combining purchases into one bag inconvenient. It is more convenient for consumers when goods in the same category are put in the same place; they can easily find their desired goods. However, items in the same category are currently scattered throughout the market. We recommend the Can Do Team pursue a market arrangement plan, where similar items are grouped together (Figure 5.3). A change in market arrangement that encourages clustering of similar goods would increase the convenience for customers (*Findings 1* and *5*), helping them to not only find goods more easily but also to reduce single-use bags. When similar goods are bought consecutively, it is easier to combine them into a single bag because more people are willing to combine similar items such as clothes with more clothes as opposed to combining clothes with meat.

MARKET ARRANGEMENT PLAN

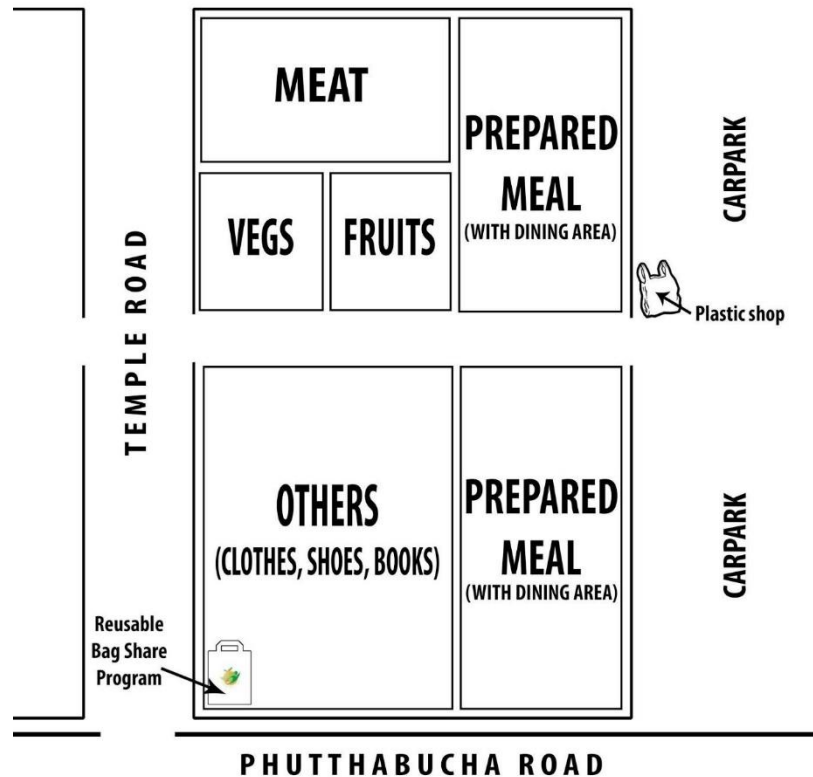


Figure 5.3: Possible market arrangement

The locations proposed are based on observations of quantities of products as well as perceived convenience of purchasing the product in that specific location. The plastic vendor's location is specifically called out because they currently supply plastic bags to many of the vendors. Their location is also conveniently adjacent to the carpark; vendors can easily purchase plastic bags on their way in. As the demand for plastic decreases when the use of alternative materials increases, the plastic vendor will be the most likely shop to supply alternatives to the vendors. Having this location will allow vendors to continue conveniently purchasing their packaging solutions.

Items unrelated to food – like clothes, bags, and books – are put into “Others” and are located in the market corner, near the temple's entrance, adjacent to Phutthabucha Road and the temple road. This location is best for non-food items because the car exhaust smell from the road would not impact consumers' willingness to buy goods as much as food items. The reusable bag share program and incentive program, if launched, would be best placed in the front corner of the “Others” section because many community members have to pass this road when entering the market.

Fresh products are located in the “Vegs,” “Meat,” and “Fruits” sections located at the back of the market. The chosen location will allow the perishable products to be free from the air pollution from the road. In Thailand, it is common to separate fruits from vegetables and meat because fruits are usually ready to eat, while vegetables and meat are considered cooking ingredients. Fruits that are ready to eat can also be prepared and served on reusable dishware in the dining area.

Most food that can be eaten immediately is located in “Prepared Meal (with Dining Area).” A seating area to eat in would decrease the use of single-use bags by encouraging consumers to eat in with reusable dishes rather than to-go bags. The location is next to the parking lot to remove the seating area from the traffic along the roads. Grouping prepared meals together in a long line would

make it more convenient for consumers to find the food they want to eat. This seating area would be possible if the market manager allowed vendors to bring seating or if the temple could provide tables and chairs. Another important consideration is for the vendors to be able to clean the dishes that they bring. The market area has no dishwasher, so we propose a dishwashing plan. There would be four large buckets with water that could be filled at the water source in the temple bathroom. Food waste would be scrubbed off the dishes before being rinsed in the first bucket of water. The dishes would then be cleaned with detergent in the second bucket, then rinsed twice with water in the third and fourth buckets. This dishwashing strategy is commonly used in Thailand markets without running water available at each vendor station.

This rearrangement would require no monetary investment for the Can Do Team because any reusable dishware would come from the vendors. The resources needed for launch are manpower and time, but there will be no additional time or personnel commitment after the initial launch. This plan would need about one to three people to get the vendors, consumers, and monks to agree with this idea and then suggest it to the market manager. The time needed for the completion of this plan depends on the success of the negotiations with the market manager.

Chapter 6: Conclusions

The Bang Mod community is a small subdistrict of Bangkok facing challenges from the overuse of single-use plastic within their market. These challenges are not unique: the impact of plastic is a global problem. To begin to understand the causes, we formulated a series of objectives: to understand the motivations for plastic, analyze other waste reduction campaigns, develop specific campaign strategies, and field test the strategies to determine a viable approach. Through the completion of these objectives, we came to better understand the needs and motivations of the community as well as the waste management infrastructure in place. These insights led us to several findings that informed the development of the campaign strategies. In a community where reuse is largely neglected, the fact that plastics negatively impact health can be utilized as a central campaign message to drive home an association of risk with plastic and incite behavior change.

If seen to fruition by the Can Do Team, the multiphase “Let’s Reduce for Bang Mod” campaign has great potential to drastically reduce the use of plastic within the Phutthabucha Temple market by equipping and motivating the Bang Mod community members to change their behavior. If the campaign is successfully implemented, plastic will be reduced in the Phutthabucha Temple market, which will reduce the plastic in the surrounding community and local canal. Consequently, this campaign would help the Can Do Team further develop their goal of improving the community’s living standards and preserving the canal. Ultimately, our deliverables (Appendix Y) were designed to impact the Bang Mod community, but are general enough to be easily adapted and applied in markets throughout Thailand.

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Appendix

Appendix A: Observations of Plastic Use and Purpose in the Market

Type	Purpose
Cup	Straw holders, Cold drinks, Food holders
Straw	Drinking, Stirring
Bag	Hot food/soup (Durable type), Heavy fruits (Thick type), Clothes (Thin type), Cold drinks (Thin type), Packaging of fresh products like meat and vegetables (Thick type)
Cup Bag-Holder	Cup holder
Utensils	Spoon, Fork

Appendix B: Observations of Plastic Use and Purpose in the Market (Pictures)



Fig 1. Plastic bags for hot food



Fig 2. Plastic bags for heavy fruits



Fig 3. Plastic bags for snacks



Fig. 4 Plastic bags for individual portions



Fig. 5 Plastic bags for transport



Fig. 6 Plastic bags for storage (on the right)



Fig. 7 Plastic bags for product visibility



Fig. 8 Plastic bags for sale



Fig. 9 Plastic bags for displaying items

Appendix C: Observations on Plastic Bags and Reusable Bags

→ We recorded plastic and reusable bag use of consumers in the market. We divided our data into categories of young men, older men, young women and older women.

	Total of Demographic	Plastic Bags	Reusable Bag containing plastic bags	Reusable bag with no plastic bags
Young Women	30	36	2	2
Older Women	18	12	6	0
Young Men	14	11	3	0
Older Men	13	11	2	0

Appendix D: Vendors – Plastic and Alternatives Structured Interview

We are a group of students from Chulalongkorn University and Worcester Polytechnic Institute in America working with the Can Do Team. Your participation in this interview is voluntary and should only take 5-10 minutes. The interview answers will not be associated with you without your permission. If you would like to be updated with how your interview answers are used, you may let us know and we can record your contact information at the end. You can email us at cando@wpi.edu with any questions on the progress of the campaign. You may withdraw from this interview at any time. Thank you. *Preamble also used in Appendix R

1. How many days per week do you sell at the Temple market?
→ คุณไปขายที่ตลาดกี่ครั้งในหนึ่งอาทิตย์?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
2. Do you sell at other markets? If so, how often?
→ คุณไปขายที่ตลาดอื่นด้วยไหม แล้วบ่อยแค่ไหน?
3. What packaging materials do you use? (from our own observations)
→ คุณใช้วัสดุประเภทไหนในการห่อสินค้า?
 - a. Why do you use these materials? What are their advantages and disadvantages?
→ ทำไมคุณถึงใช้วัสดุประเภทนี้? วัสดุนี้มีข้อดีและข้อเสียอย่างไร?
4. Do you package your own goods or do they come pre-packaged?
→ คุณห่อสินค้าโดยตัวเอง หรือ ทางบริษัท/ร้านค้าจัดการให้?
5. If you package your own goods, where do you get your packaging from?
→ ถ้าคุณห่อสินค้าเอง คุณไปซื้อที่ห่อสินค้าจากที่ไหน?
 - a. How much do you pay for plastic packaging and supplies?
→
คุณจ่ายเงินเท่าไรสำหรับค่าพลาสติกพวกนี้ในแต่ละอาทิตย์/เดือนสำหรับบรรจุผลิตภัณฑ์และการใช้งานทั่วไป?
 - b. What is the cost per item of plastics (for each type you use)?
→ คุณจ่ายเงินค่าพลาสติกราคาเท่าไรต่อชิ้น (ในแต่ละชนิดของพลาสติก)?
 - c. What quantity of plastic do you buy every time you buy plastic?
→ คุณซื้อพลาสติกจำนวนเท่าไรในการซื้อแต่ละครั้ง?
 - d. How many market days does the plastic last?
→ พลาสติกจำนวนหนึ่งที่คุณซื้อ ใช้เวลาวันถึงจะใช้หมด (เฉพาะวันที่ขาย)?
6. Have you seen or used other packaging methods in the past? (paper, biodegradable, etc.)
→ คุณเคยเห็นหรือได้ใช้การบรรจุอื่นๆหรือไม่? อย่างเช่น กระดาษ, วัสดุย่อยสลายง่าย และอื่นๆ
7. Do you reuse or recycle materials? What is the difference between reuse and recycling?
→ คุณใช้วัสดุซ้ำ หรือ รีไซเคิลไหม? อะไรคือข้อแตกต่างระหว่างการ ใช้ซ้ำ และ รีไซเคิล?

Appendix E: Consumers – Plastic and Alternatives Structured Interview

We are a group of students from Chulalongkorn University and Worcester Polytechnic Institute in America working with the Can Do Team. Your participation in this interview is voluntary and should only take 5-10 minutes. The interview answers will not be associated with you without your permission. If you would like to be updated with how your interview answers are used, you may let us know and we can record your contact information at the end. You can email us at cando@wpi.edu with any questions on the progress of the campaign. You may withdraw from this interview at any time. Thank you.* Preamble also used in Appendix Q

1. How many times per week do you go shopping at the Temple market?
→ คุณมาจ่ายตลาดที่ตลาดนัดวัดพุทธบูชาบ่อยแค่ไหนในหนึ่งอาทิตย์?
 - a. Almost never ไม่เคย
 - b. 1-2 times ๑-๒ ครั้ง
 - c. 3-4 times ๓-๔ ครั้ง
 - d. More than 4 because I go multiple times per day มากกว่า ๔ ครั้ง
เพราะไปหลายๆครั้งต่อวัน
2. Do you shop primarily in the Temple market or do you shop in other markets more often?
→ คุณมาจ่ายตลาดที่ตลาดนัดวัดพุทธบูชาเป็นหลัก หรือ ไปตลาดอื่นบ่อยกว่า?
3. Do you ever request an extra bag for your purchases? (If not, do you ever request fewer bags?)
→ คุณขอลูกซองหรือไม่? (ถ้าไม่ คุณเคยปฏิเสธการรับถุงพลาสติกหรือไม่?)
 - a. [If they don't explain] Why?
→ ทำไม?
 - b. Do you ever feel that you are given plastic bags unnecessarily?
→ คุณรู้สึกไหมว่าจำนวนถุงพลาสติกที่คุณได้มันเกินจำเป็น?
4. Do you use reusable (durable plastic or cloth) bags instead of single-use plastic bags?
→ คุณใช้ถุงผ้าที่สามารถนำมาใช้ใหม่ได้แทนถุงพลาสติกหรือไม่?
5. What is the difference between reuse and recycling?
→ อะไรคือข้อแตกต่างระหว่างของ ใช้ซ้ำ และ รีไซเคิล?
6. In the past, has there ever been a campaign on any topic that made you change your behavior?
→ ที่ผ่านมามีการรณรงค์ใดที่ทำให้คุณเปลี่ยนแปลงพฤติกรรมหรือไม่?
 - a. What motivated you to change behavior?
→ อะไรเป็นสาเหตุที่ทำให้คุณเปลี่ยนพฤติกรรมได้?

Appendix F: Excess Baggage Cambodia – Email Interview

→ We are a group of 4 students from Worcester Polytechnic Institute in America and 4 students from Chulalongkorn University in Bangkok. We came across your campaign “Excess Baggage Cambodia” and felt it was similar to what we hope to accomplish in a small flea market in Bangkok. The hope for our project is that our methods can be applied in other markets throughout Thailand as well. For us, the largest source of plastic waste we noticed was plastic bags, similar to your campaign. We are working on developing a strategy and potentially piloting a portion of it in an 8-week timeline. Your participation in this interview is voluntary and should only take 20 minutes. The interview answers will not be associated with you without your permission. If you would like to be updated with how your interview answers are used, you may let us know and we can record your contact information at the end. You can email us at cando@wpi.edu with any questions on the progress of the campaign. You may withdraw from this interview at any time. Thank you.*This preamble is also used in Appendix G

About Excess Baggage Cambodia:

1. How did you deal with initial resistance to implementing a campaign on limiting plastic use?
2. Has anyone tried to do a similar campaign before in Cambodia? If so, did this create more resistance to your campaign?
3. How did your campaign overcome the people's desire to stay with the convenience of plastic bags?
4. What do you feel was most effective to spark behavioral change?
5. What was the biggest obstacle to your campaign and how did you overcome it?
6. One reason we were drawn to your campaign is that you utilized Human-Centered Design, which we value as the main component of our design process. How did you get community participation in discussions in order to create the best campaign for their needs?
7. Did you utilize any kind of incentive programs for implementation?
8. In your research into alternative materials, do you have a specific alternative you recognize as the best?
9. Have you done any education programs with students?

About other campaigns you have been involved in:

11. What do you feel is the most successful campaign you have been involved in?

Appendix G: Excess Baggage Cambodia – Skype Interview

1. How did you pick the best strategy? Was there any kind of matrix method that you used?
2. Was there a strategy in place before you got funding for your campaign? Was it adapted once funding was received?
3. How did you receive funding?
4. How did you measure the success of your campaign?
5. Any other advice for implementing a campaign?

Appendix H: Chula Zero Waste – Structured Interview

→ We are a group of students from Chulalongkorn University and Worcester Polytechnic Institute in America and we are working with the Can Do Team to reduce the use of plastics from the local market. This interview will allow us to understand previous campaign strategies and improve our own. Your participation in this interview is voluntary and will take 20-30 minutes. You may withdraw from this interview at any time. You can also email us at cando@wpi.edu with any questions about the progress of the campaign. Thank you!

1. Can you give an overview of the Chula Zero Waste initiative?
 - a. What is your timeline?
2. Within the Chula marketplace, is the primary objective for vendors to switch to biodegradable bags or eliminate single-use bags completely?
3. When you were just getting started with your Chula Zero Waste campaign, how did you start to design the campaign?
 - a. Do you have any funding or are you supported by any organizations?
4. What were some campaigns that you drew inspiration from to create Chula Zero Waste?
5. Are there any incentives that are focused on waste reductions with the vendors and consumers?
 - a. [If there are any] What are they?
 - b. [If there are any] Can you explain the incentives you are offering for using reusable bags and reusing plastic bags?
 - c. How did you decide on the 2 baht amount for the fine?
 - i. Why only 2 baht?
 - ii. Are you planning to increase this disincentive?
6. To get the word out to consumers and vendors, what do you feel has been your most effective method of communication?
7. What were the obstacles you faced in implementing this campaign?
 - a. Are there any obstacles you are currently facing?
 - b. Was there initial resistance from the vendors and consumers? If so, has it decreased?
8. How do you plan to measure/evaluate the success of this campaign?
9. How many people are actively working on this campaign?
 - a. How did you divide up the workload of the campaign?
 - b. Are there any possible ways for us to collaborate with Chula Zero Waste ?
 - c. Our main focus in our research so far has been on the impacts of plastic pollution and strategies to reduce single-use plastic bags. Is there any way we can collaborate with your campaign to develop a strategy for the Chula market?

Appendix I: Carrotmob – Email Interview

→ We are a group of students from Chulalongkorn University in Bangkok and Worcester Polytechnic Institute in the United States. We are working with the Can Do Team to reduce the use of plastics in a local flea market. This interview will allow us to understand previous campaign strategies and improve our own. You can email us at cando@wpi.edu with your reply or any questions about our campaign. Thank you!

1. How do you select a business to intervene in? At what phase do you approach the business?
2. What are your strategies for encouraging crowd support? How do you know which ones to use?
3. What strategies have you utilized to organize large groups?
4. What are the strategies you use after the Carrotmob event has taken place to keep up the strength of the campaign and ensure the changes are maintained?
5. Has any business you have worked in reverted to their previous practices?
6. Do you have any past experience working with flea markets or a group of vendors?
7. How did your organization initially spread beyond one city?

Appendix J: Comparative Chart of Reference Organizations

→ Based on the interviews with Chula Zero Waste, Carrotmob, and Excess Baggage Cambodia, we were able to compare certain important factors that we consider essential to know because we share the same goal, stakeholders, culture, and challenges.

	Chula Zero Waste	Carrotmob	Excess Baggage Cambodia
Campaign plan	Waste Reduction and spread of awareness regarding the waste problem	Gather enough customer support to make them realize people want to ban plastic bags. Vendors wanted to do this but were very concerned with customer backlash.	Reduce the use of plastic bags in markets. Create awareness among the children about the impacts of plastic bags, waste management and pollution.
Awareness spread methods	Chula Zero Waste communicated using the CU system. It spread to outside media, which made it look good to CU people. Facebook page and personal interaction (booth)	Awareness of Carrotmob spread through a viral video of the first campaign, which was boosted by the media.	Personal interaction with vendors and consumers to spread awareness. Incentives. Training programs on how plastic affects them personally. Booth. "Funny Lady" interacting with public
Strategies	Disincentives (charge 2 baht per plastic bag) , awareness	Crowd power, awareness, incentives. To make vendors stick with change they suggested giving a certificate so customers were aware and the vendors feel more pressure maintain their sustainable practices	Education, training, policies, incentives, awareness
Obstacles	Lack of manpower and motivations. Big project that needs time. Needs support from executive board of the university. Hard to change practices of 7-11 and Co-op	The biggest worry was enforcement and make vendors stick to changes. When working with flea markets is hard to make every vendor fully aware of what is happening	Lack of motivation from vendors. Vendors time and energy to change
Funding	9m baht from the Ministry of Education + 3m baht/year from Chula	n/a	Not started with funding. Grant from European Union on sustainable production and consumption.
Inspiration from other campaigns	Story of Stuff Project, Greenpeace Thailand, Search & FB	n/a	The only previous campaigns relating to plastic bags were short-term campaigns. There were some trash cleaning activities that weren't very successful, and there were no follow-ups.

Appendix K: Former Vice President, Agro-tourism Service Centre Semi-Structured Interview

→ We are a group of students from Chulalongkorn University and Worcester Polytechnic Institute in America working with the Can Do Team. Your participation in this interview is voluntary and should only take 20-30 minutes. The interview answers will not be associated with you without your permission. If you would like to be updated with how your interview answers are used, you may let us know and we can record your contact information at the end. You can email us at cando@wpi.edu with any questions on the progress of the campaign. You may withdraw from this interview at any time. Thank you.

1. What is your role in the market?
→ คุณทำหน้าที่อะไรในตลาดนี้?
2. Can you give us a brief history on Bang Mod?
→ ช่วยเล่าประวัติสั้นๆ เกี่ยวกับบางมดให้หน่อยได้ไหมคะ?

Appendix L: Market Manager Semi-Structured Interview

We are a group of students from Chulalongkorn University and Worcester Polytechnic Institute in America working with the Can Do Team. Your participation in this interview is voluntary and should only take 10 minutes. The interview answers will not be associated with you without your permission. If you would like to be updated with how your interview answers are used, you may let us know and we can record your contact information at the end. You can email us at cando@wpi.edu with any questions on the progress of the campaign. You may withdraw from this interview at any time. Thank you.

1. Does the market have a booth structure?
 - ตลาดนี้มีการจัดวางร้านค้าหรือไม่?
 - a. What are the requirements to selling here?
 - ในตลาดนี้มีกฎ สำหรับแม่ค้าที่จะมาขายหรือป่าวคะ?
ถ้าจะมาขายของที่ตลาดนี้ แม่ค้าต้องทำอะไรบ้าง?
 - b. How do you decide which vendor takes which booth?
 - คุณตัดสินใจอย่างไรว่าแม่ค้าจะต้องขายตรงไหน?
2. Are there any policies enforced on the vendors?
 - มีกฎระเบียบอะไรบ้างที่แม่ค้าควรทำตาม?
 - a. How much influence do you have over what vendors sell?
 - คุณมีอิทธิพลต่อร้านค้ามากแค่ไหน?
3. Would you be interested in partnering with us on a campaign that would benefit the market?
 - คุณสนใจจะร่วมมือกับเราในนโยบายที่จะมีผลดีกับตลาดนี้ไหม?
 - a. In what ways would you be able or willing to help in a plastic reduction strategy?
 - คุณสามารถช่วยนโยบายลดขยะพลาสติกได้ในวิธีไหนบ้าง?
 - b. What changes do you believe are most important in a waste reduction strategy?
 - คุณเชื่อว่าการเปลี่ยนแปลงแบบไหนสำคัญที่สุดในนโยบายการลดขยะ?

Appendix M: Plastic Vendor in Phutthabucha Temple Market Interview

We are a group of students from Chulalongkorn University and Worcester Polytechnic Institute in America working with the Can Do Team. Your participation in this interview is voluntary and should only take 5 minutes. The interview answers will not be associated with you without your permission. If you would like to be updated with how your interview answers are used, you may let us know and we can record your contact information at the end. You can email us at cando@wpi.edu with any questions on the progress of the campaign. You may withdraw from this interview at any time. Thank you.

1. What are the prices for each type of plastic you are selling?
 - คุณขายพลาสติกแต่ละประเภทในราคาอย่างไร?
 - a. How much do you sell in a day?
 - ในหนึ่งวัน คุณขายได้เท่าไร?
2. Have you heard about biodegradables before?
 - คุณเคยได้ยินเกี่ยวกับพลาสติกย่อยสลายบ้างไหม?
 - a. Would you be interested in changing from plastics to biodegradables?
 - คุณสนใจจะเปลี่ยนมาขายพลาสติกย่อยสลายไหม?

Appendix N: Formal Waste Management – Structured Interview

→ We are a team of students from Chulalongkorn University. We are working on a project to reduce the use of single-use plastics in the Phutthabucha Temple market and would like to ask you some questions to get a better understanding of the local Waste Management System. The interview should take up to 30 minutes and you can opt out at any time. You have the right to keep your identity anonymous, just inform us of your preferences. If you would like to be updated with how your interview answers are used, you may let us know and we can record your contact information at the end. You can email us at cando@wpi.edu with any questions on the progress of the campaign. You may withdraw from this interview at any time. Thank you.

1. Are you the only waste collector that serves Thung Khru?
→ หน่วยงานของคุณคือหน่วยงานเดียวที่เก็บขยะในบริเวณทุ่งครุใช่หรือไม่?
2. What is the most common type of waste you collect? [Try to get general statistics]
→ ขยะประเภทไหนที่คุณเก็บบ่อยที่สุด?
 - a. Have you noticed any changes over a period of time in the composition of the waste that you collect?
→
คุณได้สังเกตเห็นการเปลี่ยนแปลงเกี่ยวกับส่วนประกอบของขยะที่คุณเก็บในปีที่ผ่านมาไหม?
3. Have you observed the amount of waste generated to have increased or decreased over a period of time? Statistics?
→ คุณได้สังเกตเห็นว่าจำนวนขยะว่าได้เพิ่มไหม หรือ ลดลงในปีที่ผ่านมาประมาณเท่าไร?
4. Are there any neighborhoods in your district that the waste collection route cannot reach?
→ มีบริเวณไหนบ้างไหมในเขตทุ่งครุที่หน่วยงานนี้ไม่สามารถเข้าไปเก็บขยะได้
5. Where do you bring the waste you collect?
→ คุณนำขยะเหล่านั้นไปที่ไหน?
 - a. How do you dispose of the waste you collect?
→ คุณกำจัดขยะที่คุณเก็บมาอย่างไร?
 - b. How many years does it take for a site to fill up?
→ ขยะในพื้นที่ฝังกลบใช้เวลาประมาณกี่ปีกว่าจะเต็ม?
 - c. Does the waste collected get recycled?
→ ขยะที่เก็บมา มีการนำไปรีไซเคิลหรือไม่?
 - d. What is the process for recycling?
→ กระบวนการเป็นอย่างไร?
6. Are there any programs that are focused on waste reduction that the company is involved in?
→ มีโครงการใดบ้างที่บริษัทคุณให้ความร่วมมือในการลดขยะ?
7. Are you aware of any policies on how you collect and dispose of waste?
→ คุณตระหนักถึงมาตรการรักษาสิ่งแวดล้อมที่เกี่ยวกับการเก็บและทิ้งขยะหรือไม่?
 - a. What is the policy?
→ มาตรการอะไรบ้างที่คุณรู้?

Appendix O: Phutthabucha Temple and Bang Mod (Tang Pao) School Administration – Structured Interview

→ Hello, we are students from Chulalongkorn University working in a team of 8 students on a project about waste reduction in the Phutthabucha Temple market. We are interested in working with schools in Bang Mod to develop an activity around waste generation because we believe in the importance of getting students involved. The interview should take up to 30 minutes and you can opt out at any time. You have the right to keep your identity anonymous, just inform us of your preferences. You can email us at cando@wpi.edu with any questions on the progress of the campaign. You may withdraw from this interview at any time. Thank you.

1. How is waste managed within your school?
→ โรงเรียนของคุณมีการจัดการขยะอย่างไร?
2. Is there education about environmental science in the classroom?
→ ในโรงเรียนของคุณมีการเรียนการสอนเรื่องวิทยาศาสตร์สิ่งแวดล้อมในห้องหรือไม่?
 - a. Does the curriculum discuss waste or littering?
→ การสอนนี้พูดถึงเกี่ยวกับขยะหรือการทิ้งขยะหรือไม่?
 - b. Does the curriculum discuss plastic use?
→ การสอนนี้พูดถึงเกี่ยวกับการใช้พลาสติกหรือไม่?
3. (If there's none) Are you open to implementing a curriculum around waste prevention?
→ พร้อมทั้งจะนำการเรียนการสอนมาใช้ในโรงเรียนหรือไม่?
 - a. What would be the requirements for the curriculum?
→ อะไรบ้างที่โรงเรียนต้องการใช้สำหรับการเรียนการสอนเรื่องจัดการขยะ?
 - b. Is there a specific teacher that would be willing to assist us by giving us more information about the curriculum and potentially let us pilot it in their class?
→ มีคุณครูท่านใดที่มีความสนใจอยากจะให้ข้อมูลเกี่ยวกับหลักสูตรการสอนและเปิดโอกาสให้พวกเราได้ทดลองสอนหรือไม่?

Appendix P: Decision Matrix

→ In our decision matrix, we scored each strategy by giving it a score of 1, 2 or 3 in the categories of past effectiveness, impact, audience reached, time required, people required, and cost. We calculated two scores for each strategy – total score and score with limits. The total score was calculated by adding together effectiveness, impact, and audience reached. The score with limits was then calculated by subtracting time required, people required, and cost from the total score. The total score was intended to be idealistic and the score with limits was constrained to the Can Do Team limitations. We evaluated past effectiveness, audience reached, cost, time and people required based on our research and evaluation of previous campaigns in these areas. We defined impact as the expected success of the campaign strategy, if it were to be implemented in Bang Mod. Our score for impact was based on the impact of previous campaigns, which we defined as how well the campaign met the impact it intended to make. Impact was also scored from our estimate for the impact the campaign strategy would have based on our observations of the Phutthabucha Temple market.

	Past Effectiveness	Time to Implement	People Required	Cost	Impact	Audience Reached	Total	Total with Limits
Market Booth - Demonstration/Poster thing	3	2	2	2	3	2	8	2
Reusable Bag Share Program	3	2	2	2	3	2	8	2
Social Media	1	1	1	1	1	3	5	2
Posters/Signage	2	1	1	1	1	2	5	2
Market Arrangement Change	2	3	2	1	3	2	7	1
Class Activity (1 day - 1 week)	3	2	2	1	2	1	6	1
Social Enterprise	3	3	3	2	3	2	8	0
Personal outreach/Door-to-door	3	3	3	1	3	1	7	0
App w/rewards (earn pts from reuse)	3	2	1	3	2	1	6	0
Tax	1	2	2	1	1	3	5	0
Prizes/Incentives for Reuse	3	2	3	3	2	2	7	-1
School Club	2	3	2	1	2	1	5	-1
Billboard	2	2	1	3	1	2	5	-1
Reuse Discount	2	2	2	2	1	2	5	-1
Curriculum (longer term in class)	3	3	3	2	2	1	6	-2
Commercial	2	2	2	3	1	2	5	-2
Clean up the current environment		2	2	2	1	2	3	-3
Policy Change	1	3	3	3	1	2	4	-5

Appendix Q: Consumer Survey on Campaign Strategies

1. What social media do you use the most?

→ โซเชียลมีเดียไหนที่คุณใช้บ่อยที่สุด?

- Facebook
 - Twitter
 - YouTube
 - Instagram
 - Snapchat
 - Google+
 - Pinterest
 - LinkedIn
2. A reusable bag share program implies that you pay a small deposit, around 10 baht, and you receive a reusable bag that you can return later to get your 10 baht back. You could take the bag home with your purchases in it and bring it back any day to receive your money back.

→ โครงการ ให้ยืมถุง

เป็นการเช่ายืมถุงผ้าเพื่อนำไปใช้ในการจ่ายตลาดของท่านเมื่อท่านลืมนำถุงมาเอง ด้วยการฝากเงิน 10 บาท ท่านสามารถนำมาแลกเงินคืนเมื่อไหร่ก็ได้

- Would you use a reusable bag share program? Why?
→ คุณสนใจจะใช้บริการนี้หรือไม่? ทำไม?
 - What do you think would motivate you to use the program?
→ คุณคิดว่าอะไรจะเป็นแรงจูงใจให้คุณมาใช้?
 - Do you have any suggestions for this program?
 - คุณมีข้อเสนอแนะสำหรับบริการใหม่?
3. A potential program: If you bring a reusable bag to the market or use the reusable bag share program, you can get a card stamped. All you have to say is “I don’t want a plastic bag” to vendors. At 9 stamps you would get entered into a raffle for a prize.
→ โครงการสะสมสแตมป์ ทุกครั้งที่คุณไม่รับถุงที่ร้านค้าในตลาดจะได้ 1 สแตมป์ พอครบ 9 สแตมป์ สามารถเอาใบที่มีสแตมป์ไปแลกของได้ คุณสนใจจะใช้บริการนี้หรือไม่?
- Would this help you remember to bring a reusable bag and be excited to use a reusable bag?
 - คุณคิดว่าสิ่งนี้จะสามารถช่วยให้คุณจดจำการนำถุงผ้าหรือให้ความรู้สึกดีกับการใช้ถุงผ้าไหม?
4. In this market do you find it difficult to find specific vendors or specific products you are looking for?
 - คุณคิดว่าการหาพ่อค้าแม่ค้าหรือของที่ต้องการในตลาดนี้นั้นยาก/ลำบากไหม?
5. If there is a specific order, for example fruits would be located in a specific place, would this be helpful?
 - ถ้ามีการจัดการแผนตลาดที่ดี เช่นผลไม้จะถูกขายในจุดๆเดียว
คุณคิดว่ามันจะทำให้การมาตลาดในแต่ละครั้งของคุณสะดวกขึ้นไหม?
6. If there is a dining area in the market, would you be interested in staying and eating in?
 - ถ้าตลาดนี้มีพื้นที่สำหรับรับประทานอาหาร คุณจะสนใจมากินที่นั่นแทนซื้อกลับบ้านไหม?

Appendix R: Vendor Survey on Campaign Strategies

1. What social media do you use the most?
→ โซเชียลมีเดียไหนที่คุณใช้บ่อยที่สุด?
 - a. Facebook
 - b. Twitter
 - c. YouTube
 - d. Instagram
 - e. Snapchat
 - f. Google+
 - g. Pinterest
 - h. LinkedIn
2. Would you be willing to stamp a rewards card for a reusable bag program if customers did not take a plastic bag from you?
→ คุณจะร่วมมือในการใช้สแตมป์ของเราหรือไม่ถ้าลูกค้าไม่ขอลง?
 - a. Why or why not?
 - i. → ทำไม?
3. Is there any particular position of the market that you prefer to sell your goods? Why?
→ มีจุดตรงไหนในตลาดที่คุณขายดีกว่าปกติไหม? ทำไม?
4. (If they always sell at the same spot) How are you able to get the same spot all the time?
→ ทำไมคุณถึงได้ขายที่เดิมในตลาดทุกครั้ง?
5. (If they have food to go) If there was a space for you to serve food for eating in, would you be interested?
→ ถ้าในตลาดมีพื้นที่ส่วนรวมให้นั่งกินอาหารได้เลย คุณจะสนใจไหม?
6. If consumers were to ask for an alternative packaging to plastic, would you attempt to change?
→ ถ้าลูกค้าขอลงแบบอื่นที่ไม่ใช่ถุงพลาสติก คุณจะพยายามเปลี่ยนไหม?

Appendix S: Focus Group with Can Do Team

1. Show them the slogan and different posts with the messages we plan to transmit.
 - a. Explain our reasons behind every message and poster.
 - b. Discuss what do they think when looking at the posters.
 - c. Ask for improvements in the design of the poster and messages to transmit.
2. Propose our Social Media Strategies on how are we going to transmit our messages and information regarding the campaign.
 - a. Talk about the planned Social Media platforms.
 - i. Facebook.
 - ii. Webpage.
 - b. Talk about other medias.
 - i. Physical posters.
 - ii. Booths.
 - iii. Restaurants in the area.
 - c. Ask for improvements on the strategy regarding the spread of awareness regarding our campaign.
3. Communicate our ideas regarding the Market Arrangement Planning.
 - a. Explain the reasoning behind the idea.
 - i. How this will benefit the community and reduce plastic at the same time.
 - ii. Community Environment
 - b. Ask for feedback and an understanding of how feasible is this and how willing are they to help.
4. Propose our reusable bag share system.
 - a. Explain in detail the program and the incentives behind.
 - i. Talk about why we chose rewards incentive.
 - b. State our needs in order to accomplish this program.
 - c. Ask for feedback and suggestions on how to make it possible.

Appendix T: Market Booth Plan

Campaign Motto

ร่วมลด เพื่อบางมด (Let's Reduce for Bang Mod)

Booth Size

2 x 2 m, with 2 tables and 2 chairs

Jobs

1. Plastic Woman: mascot
 - a. Walk around in plastic suit, get people to take selfies with her and post to Facebook with Can Do team tagged
 - b. Every few hours, get feedback and record observations
2. Plastic Woman assistant: talk to people who approach Plastic Woman
 - a. Every few hours, get feedback on general observations



“Plastic Woman” mascot with local

3. Booth Counter: count how many people visit the booth
 - a. Every person (adults and kids) that comes into our booth area or talks to someone working in it
4. Panel Counter: count how many people go through the panel system
 - a. Take a picture of each visitor's whiteboard and record any additional observations



The counter used

5. Fish game instructor and observer: manage, evaluate, and adapt fishing game)
 - a. Record gender, level of excitement, and age if possible
 - b. Record any general success/failures of the booth and fishing game



Chula volunteer with children at fishing game

6. Host: welcomes people and help at displays that need assistance when we have a rush
7. Panel assistant: walk people through the panel system
 - a. Record whether the message is understood
 - b. Record any comments received about the alternatives
 - c. Ensure that the sticky notes do not fall off the board of responses



Taking a local through the poster presentation

Goals

8. Collect information on why people are motivated to use plastic (See Panel1).
9. Evaluate the effectiveness of the posters that we have created (See Panel2).
10. Evaluate general interest in our campaign by recording how people feel about alternative solutions (Panel3).
11. Understand willingness and readiness to change when presented with information (See Panel4).
12. Gather at least 20 people who are interested in helping with future developments of the “Let’s Reduce for Bang Mod” campaign.
 - a. One of the first objectives for these volunteers would help in the market by establishing a baseline for how many plastic bags they typically use each market visit, then they will refuse plastic bags from vendors and record how many bags they use per visit so the difference can be calculated.
 - b. Later, they will continue to ask to be given no bags, setting an example for other people to follow, and then push for a policy change for no plastic bags for specific items with the market manager.
13. Increase the knowledge of the community members.
 - a. The children with the fish catching game (See “Fishing Game” below).
 - b. The adults with the panels (See all “Inspiring and Informative” panels).
14. Increase social media base for the Can Do Team Facebook page.

Booth Contents

15. Fishing game (Age group: Kids up to age 12)
 - a. Requirements
 - i. Space: 1.5 x 1.5 m (possibly 2 x 2 m) at front of booth
 - ii. People: 1-2
 - b. Rules

- i. There will be rounds of 2-4 kids each who can play the game twice in a row (if they want). Kids who aren't currently playing the game can wait in line. If kids want to play again, they can go back in line to wait.
 - ii. We will give the kids a short explanation before they play the game:
 - 1. Before Round 1: You have 15 seconds to catch as many healthy fish as possible, but try not to get sick fish or plastic.
 - 2. After Round 1: Good job! Now try to clear as much plastic as possible before trying again. See if you can catch more fish!
 - 3. After Round 2: [IF they caught more fish] Yay, you caught more fish than last time! You get a prize! [ELSE] Good try!
 - iii. If kids don't want to play the game twice in a row, they will not get a prize.
 - iv. If the parents won't leave their kids to look at the panels, we will encourage them to do so. If they seem interested in the game, we will discuss the reasons behind the game setup.
 - v. Round 1: Kids get 15 seconds to catch as many fish as possible, though the time can be increased if needed.
 - vi. Round 2: Then we will let the kids clear all the plastics out of the pool. Try to catch as many fish again in the same amount of time.
 - vii. The kids will earn points for whatever they catch. The kids will win a prize if their score improved from the first trial.
 - 1. +1 for healthy fish
 - 2. 0 for sick fish (with plastic in them)
 - 3. -1 for plastic trash
- c. Setup
 - i. The pool will be at the front of the booth, sticking outside as much as possible. Kids will be around the pool wherever there is room, and the line will be outside the booth.
 - ii. There will be a simple sign behind the pool with a short explanation. It will show the number of points for each kind of fish.
 - iii. The nets will be stored beside the pool, along with buckets for filling the pool and storing the plastic and fish from the pool.
 - iv. Prizes will be stored under the tables in a place safe from water.
- d. Materials
 - i. Small inflatable pool (Less than 1.5 m in diameter) to put fish in
 - ii. Buckets for storage and filling the pool
 - iii. Plastic bags/bottles
 - iv. Fish toys
 - v. Mini fishing nets (4)
 - vi. Prizes
- e. Purpose
 - i. The purpose is to see how many of each object kids can catch at the end of the game. They will see that because the water is polluted, they caught trash with their fish. Tell them they have the power to control this and help the fish.
 - 1. By taking plastic out of their lives like they did in the pool, they can reduce plastic bags in their lives to better themselves like the fish.
 - ii. Attract the children's parents to inform them more and show them the panels.

- f. Outcomes
 - i. Observe and increase children’s understanding.
 - ii. Evaluate potential of the game as school activity.
- 16. Interactive and Informative Panels (Age Group: Teenagers and above)
 - a. Requirements
 - i. Space: 2 x 3 m
 - 1. Two tables at each side of the booth, for display and storage
 - 2. Four stands to display posters and gather feedback
 - 3. A space at the back for taking photos
 - ii. People: 1-2
 - b. Materials
 - i. Whiteboards (4)
 - ii. Whiteboard markers
 - iii. Post-it notes and pens for feedback
 - iv. Printed posters
 - v. Easels/Stand to hang the posters on
 - vi. Camera/Phone for taking photos
 - c. Setup: There are 4 main sections
 - i. Panel 1: Why do you use plastic?
 - 1. Have people write down why they use plastic.
 - ii. Panel 2: Posters about the negative impacts of plastic.
 - 1. Ask people what they think each poster means.
 - iii. Panel 3: Show alternatives (like reusable bags) and how they can even be more convenient than using plastic bags.
 - 1. Ask for feedback and opinions on alternatives.
 - 2. The alternatives presented will be:
 - a. Combine purchases into one plastic bag (reduction)
 - b. Bring a reusable bag (reuse)
 - c. Say no to plastic when possible
 - d. Don’t use a bag for small purchases
 - e. Show biodegradables
 - iv. Panel 4: Ask the participant if they would like to sign our pledge to reduce plastic use and also recruiting possible volunteers.
 - 1. “I pledge to be proactive and ask vendors to not give me a plastic bag when possible. I will avoid using bags unnecessarily and bring a reusable bag to the best of my ability, and when I can’t I will try to combine my purchases into one bag.”
 - d. Purpose
 - i. People give us their feedback and ideas in response to a prompt.
 - e. Outcomes
 - i. Check community knowledge and perspectives, increase community knowledge, encourage use of alternatives and participation in campaign.
- 17. ‘Plastic’ Woman
 - a. Materials
 - i. Tape
 - ii. Plastics
 - iii. Clothing
 - b. Setup

- i. Fix plastic objects to a clothing for volunteer to wear.
- c. Purpose
 - i. Catches attention and sparks curiosity.
 - ii. People take pictures with the plastic woman and post it on the Can Do Team Facebook page, which they also have to like - get a chance to be in the raffle to win a prize (a reusable bag or water bottle).
- d. Outcomes
 - i. Attract people to our booth and Facebook page.

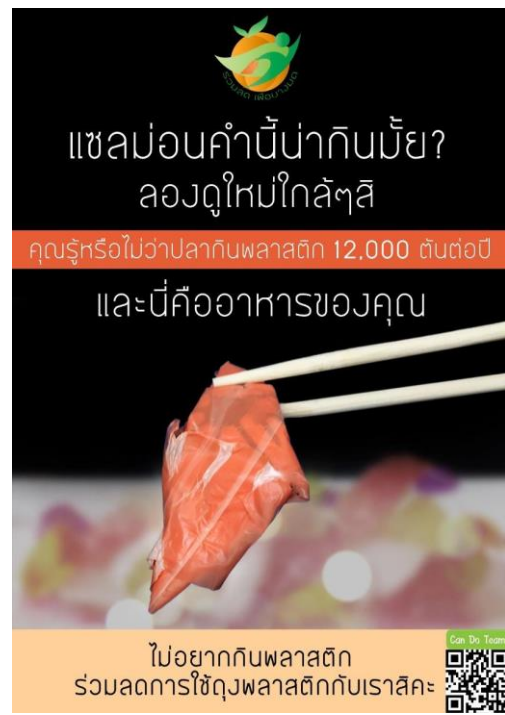
Evaluate booth success

- To check the overall success of the booth, we will count how many people come up to the booth, how many people go through all 4 panels, and how many people sign the pledge.
- We will measure how many people are engaged on Facebook from our booth by counting Facebook likes and comments.
- We will check to see if we meet our goal of recruiting 20 volunteers or more for continuing campaign developments.
- To check the success of the fishing game we will observe the excitement of the kids and counting the number who (ask to) play again.
- To check the success of the panels, we will see how many responses we get for Panels 1, 2, 3, and 4.

Appendix U: Posters and Social Media 1-Month Plan



Poster 1: "Reduce for the King"



Poster 2: "We eat fish that eats our plastic"



Poster 3: "Plastic in our food"



Poster 4: "Life cycle of plastic bag"

Social Media 1-Month Plan

Frequency: 3 times/week

Total: 12 posts in 1 month

Contents:

1. Introduction

→ นิสิตจุฬาฯ และนิสิตแลกเปลี่ยน ได้ตั้งร่วมมือกับ Can Do Team

เพื่อรณรงค์ลดขยะพลาสติกให้เป็นศูนย์ ณ งาน “บางมดเฟส” ระหว่างวันที่ 11-12 กุมภาพันธ์ 2560 ด้วยกิจกรรมในบูธ “ร่วมลดเพื่อบางมด”

"อยากให้คนไทยเห็นว่า ถ้าเราอยู่ใกล้ชิดกับขยะพลาสติกมากจนเกินไปจะเป็นอย่างไร และปริมาณขยะที่แต่ละสร้างขึ้นในแต่ละวัน บวกกับการโฆษณาให้คนมาร่วมสนุกในบูธเราด้วยค่ะ" ตัวแทนกลุ่มนิสิต



2. Poster 1 - The late King's Philosophy

→ พอสอนตลอดให้เราอยู่แบบพอเพียง แต่เราติดอันดับ 6

ในประเทศที่มีขยะพลาสติกมากที่สุดในทะเล คิดว่าเราอยู่แบบ 'พอเพียง' แล้วหรือยัง?

3. Poster 2 - Salmon

→ บุฟเฟ่ต์แซลมอนที่กำลังฮิต ที่เรากินเข้าไป มีอย่างอื่นนอกจากโอเมก้า-3รึป่าว?

4. Poster 3 - Salad Rolls

→ กระแสกินคลีนกำลังมาแรง แต่ที่เรากินอยู่มันคลีนจริงๆไหมนะ?

5. Poster 4 - Plastic Bag

→ คุณรู้หรือไม่ว่า คนไทยใช้ถุงพลาสติก วันละ 8 ใบ เทียบกับคนยุโรปบางประเทศที่ใช้แค่ เดือนละ 3 ใบ

6. Contest: Let people think about how they can reduce plastic in their daily life and the person with the most 'likes' get a prize

→ วันนี้เรามีเกมส์มาให้ร่วมสนุกชิงโชคของรางวัล:

ให้โพสต์วิธีลดการใช้พลาสติกในแบบของตัวเอง ในวอลล์ตัวเอง อย่าลืมใส่ #ร่วมลดเพื่อบางมด ในแคปชั่นและตั้งเป็นสาธารณะให้เราเห็นด้วย ใครได้ไลค์เยอะที่สุดเอารางวัลไปเลยยย

7. Video: How plastic is spoiling Thailand's beautiful waters. (Part of Sky Ocean Campaign by Thailand Trash Hero)

<https://www.facebook.com/skynews/videos/1642171972464060/?pnref=story>

→ หนึ่งในผลงานของ กลุ่มจิตอาสา Trash Hero Thailand

ถ้าคนไทย 67 ล้านคน เก็บขยะแค่คนละชิ้น ก็จะสามารถเก็บขยะได้ถึง 67 ล้านชิ้น
แค่เราทุกคนช่วยกัน(คนละนิด คนละหน่อย) เก็บขยะคนละชิ้น จะช่วยให้โลกน่าอยู่ยิ่งขึ้น

8. Link: Plastic Poison [https://s-media-cache-](https://s-media-cache-ak0.pinimg.com/564x/2a/64/6c/2a646cf764f2cddf4eedbe91f1983366.jpg)

[ak0.pinimg.com/564x/2a/64/6c/2a646cf764f2cddf4eedbe91f1983366.jpg](https://s-media-cache-ak0.pinimg.com/564x/2a/64/6c/2a646cf764f2cddf4eedbe91f1983366.jpg)

→ ภัยจากพลาสติกทั่วโลก

- พลาสติก PET อย่างเช่นขวดน้ำพลาสติก: ปลอຍสารเคมี โบรมีน ซึ่งระงับระบบประสาทส่วนกลาง
 - พลาสติก HDPE อย่างเช่นขวดน้ำยาล้างห้องน้ำและจาน: มีสารเคมีที่ส่งผลต่อระดับฮอร์โมน
 - พลาสติก PVC อย่างเช่นแผ่นห่อเนื้อสัตว์และของเล่นเด็ก: ส่งผลต่ออ้อมไร้ท้อในสมอง
 - พลาสติก LDPE อย่างเช่นถุงขยะสีดำและแก้วกระดาษ: มีสารเคมีที่ส่งผลต่อระดับฮอร์โมน
 - พลาสติก PP อย่างเช่นกล่องอาหารและยา: มีสารเคมีที่ส่งผลต่อระดับฮอร์โมน
 - พลาสติก PS อย่างเช่นจานพลาสติก: ปลอຍสารเคมีที่ส่งผลต่อระบบประสาทและอาจก่อมะเร็งได้
 - พลาสติกแบบอื่นที่ผสมหลายๆประเภท: ปลอຍสารเคมี BPA ซึ่งส่งผลต่อระดับฮอร์โมนและอาจก่อมะเร็งได้
9. DIY Cloth Bag

→ บอกลาญพลาสติก ด้วยการใช้กระเป๋าค่า DIY กันเถอะ แคใช้เสื้อตัวเก่า



10. Contest: Identify how many plastics items are needed for this product in these products.
Comment your answers and we will choose a winner by (date).

→ วันนี้เรามีเกมส์สนุกๆมาให้เล่นกันอีกแล้ว

คุณคิดว่าในของที่คุ้นใช้ หรือ ทานในชีวิตประจำวัน มีกี่ชิ้นที่เป็นพลาสติก
เขียนคำตอบในคอมเมนต์ได้รูปภาพ แล้วภายในคืนนี้ เราจะมาสุ่มผู้โชคดีรับของรางวัลไปเลย

- a. Plastic water bottle - 3 pcs
https://0.s3.envato.com/files/110853610/water_bottle_preview.jpg
 - b. Plastics lunchbox - 5 pcs <http://www.tonmakam.com/wp-content/uploads/2016/10/%E0%B8%A3%E0%B8%B1%E0%B8%9A%E0%B8%97%E0%B8%B3%E0%B8%82%E0%B9%89%E0%B8%B2%E0%B8%A7%E0%B8%81%E0%B8%A5%E0%B9%88%E0%B8%AD%E0%B8%87-1.jpg>
 - c. Mango sticky rice - 4 pcs http://hello2day.com/wp-content/uploads/2014/04/IMG_7112.jpg
11. Video: Heart for Ocean by Greenpeace
<https://www.facebook.com/greenpeaceath/videos/10154445263782098/>
→ ในวันที่ 14 - 19 กุมภาพันธ์ 2560 ที่ หอศิลป์ กรุงเทพฯ (BACC)
ได้มีงาน “HEART for the Ocean : บอกรักทะเล บอกลีกพลาสติก”
เพื่อสะท้อนให้คนไทยเห็นถึงการกระทำที่ส่งผลกระทบต่อผืนน้ำ ตั้งแต่อดีต จนถึงปัจจุบัน
และผลต่อไปในอนาคต จากการนิยการใช้พลาสติกแบบคนไทย
12. Link: 9 Easy Ways to Use Less Plastic
<http://www.projectgreenify.com/post/40622839084/askthegreenfairy-9-easy-ways-to-use-less#.WKUSKHdh2uU>
→ วันนี้เรามีทิปดีๆ มาแนะนำสำหรับการลดใช้พลาสติกในชีวิตประจำวันของเรา เพื่อชีวิตที่ดีขึ้น
- a. ดื่มน้ำจากแก้ว โดยไม่ใช้หลอดพลาสติก
 - b. พกขวดน้ำสแตนเลสแทนการซื้อขวดน้ำพลาสติกทุกวัน
 - c. พก ซ้อน ส้อม (แบบไม้หรือสแตนเลส) ในรถและที่ทำงานของคุณ
 - d. ใช้แต่จานเซรามิคหรือแบบย่อยสลายได้
 - e. เก็บโยเกิร์ตจากผลิตภัณฑ์ไว้ เพื่อใช้แทนหีบเปอร์แวร์
 - f. พกถุงผ้าเวลาไปช้อปปิ้ง และ ปฏิเสธถุงพลาสติกจากแม่ค้า
 - g. หาซื้อของที่แพ็คเกจด้วยพลาสติกน้อยที่สุด

Monthly Evaluation:

- Check the growth of the Can Do Team Facebook page (likes)
- Check the likes and shares on individual posts
 - Check how many people each post reaches too
- Have a meeting to discuss which style of post was the most effective
 - Research more information to post accordingly
 - Frequency can change depending on the admin's availability
 - This can be done by university volunteers too if the Can Do Team would like to continue this campaign but lacks manpower

Appendix V: Contact List for Campaign Development

Name	Title/Role	Organization	Contact Info	Location	Purpose
Mr. Somsak Ployjew	Former Vice President	Agro-tourism Service Center	-	Phutthabucha Temple	Resource
Mr. Saravut Keatsuwan	Head Chief	Department of Cleanliness and Park	Tel: +66 2-464-4392 ext. 5575-7	Thung Khru District Office	Resource
Ms. Claudia Oriolo	Country Manager	Excess Baggage Cambodia	claudiaoriolo@acra.it	Cambodia	Resource
Dr. Sujitra Vassanadumrongdee	Campaign Organizer	Chula Zero Waste	sujitra20@gmail.com	Chulalongkorn University	Resource/Volunteer
Mr. Brent Schulkin	Past Headquarters Employee	Carrotmob	info@carrotmob.org	California	Resource
Ms. Kunlanat Jirawong-aram	President (2016)	Environmental Conservation Club	FB: AnurakCU	Chulalongkorn University	Volunteer
Mr. Oak	President (2016)	Faculty of Engineer, Volunteer Club	-	KMUTT University	Volunteer

Appendix W: “Single-Use Plastics and Alternatives” Fact Sheet

→ Here are facts that the university volunteers can use to educate themselves and the consumer study participants about the problem with single-use plastics.

Plastic bags are used for a short time but contribute to waste in a big way

- Plastic bags are used for an average of 12 minutes before they are discarded (Center for Biological Diversity, n.d.), yet even the thinnest bags take 10-20 years to decompose (National Park Service, n.d.).
- In Thailand, 14% of trash produced is plastic (Shekdar, 2009) compared to the global average of 10% (Hoorweg, Bhada-Tata, & Joshi-Ghani, 2009)

Plastic use and pollution affects human health

- Uncontained plastic waste can clog drains, which leads to standing water – or worse, flooding – providing additional opportunities for mosquitoes to breed (Cointreau, 2006; Adane & Muleta, 2011). Mosquitoes threaten human health because they can transmit diseases such as malaria and zika (Fobil, May, & Kraemer, 2010; CDC 2016).
- One common component of leachate is BPA, a chemical released from plastic that disrupts brain development in rats and mice, suggesting potential health risks for humans (Teuten et al., 2009).
- Apart from open dumping of waste, people often turn to open burning to quickly reduce the volume of waste. When plastic is burned, the fossil carbon released contributes greatly to air pollution (DEFRA, 2007). If the burning occurs near homes, the poor air quality causes respiratory and eye problems (Boadi & Kuitunen, 2005).

Plastic is harming our oceans, which is also affecting people

- It is estimated that 80% of ocean plastic pollution came from land pollution (Li, Tse, & Fok, 2016). Even worse, 95% of the plastic in the ocean is below the surface and therefore extremely challenging to collect (McKinsey Center & Ocean Conservancy, 2015).
- Over 250 species worldwide are affected by marine debris (Laist, 1997). Direct impacts of plastics on animals include entanglement and ingestion (Foekema et al., 2013). Entanglement often directly kills animals and ingestion leads to the accumulation of plastic in the digestive tract, creating blockage that leads to starvation and eventual death (Foekema et al., 2013).
- Ingestion also contributes to the buildup of chemicals in animals’ bodies (Laist, 1997), which introduces risks to humans consuming chemical-laden fish (“New Link in the Food Chain? Marine Plastic Pollution and Seafood Safety,” 2015; McIlgorm, Campbell, & Rule, 2011).

Possible alternatives and their pros and cons.

Biodegradable vs. Compostable materials

- Biodegradable
 - Degrade/break down into smaller pieces
 - Hydrocarbon (digestible part ← help me find the word!!) part is digested by a microorganism = becomes part of that organism metabolism(/digestive system, etc.)
 - Those not digested remain in the environment and wait for its time to degrade (about 450 years, +/-) = overall, biodegradable would degrade eventually and without proper condition it might take as long as normal degradable plastics to break down.
 - Two companies have many biodegradable products (Grasz <http://107.170.202.81/en/product> and SCG <http://festforfood.com/en/product.php>)
- Compostable

- Degrade/break down into smaller pieces
- Hydrocarbon chain can be broken down and becomes nutrients for the soil, form humus
- Takes shorter time than biodegradable (within weeks or months) but needs proper conditions to break down too.

What can you do to help? Reusables are the best alternatives

Use this!	Not that!
	
	
	
	

Appendix X: Reusable Bag Share Program Materials

→ Sign at the bag share table in the market.

<p>FORGOT YOUR CLOTH BAG? WE HAVE THE SOLUTION</p> <p>REUSABLE BAG SHARE PROGRAM</p> <p>FROM 4.00 TO 7.00 PM</p> 	<p>ลืมเอาถุงผ้ามาใช้มั๊ย? เรามีทางออกให้</p> <p>โปรแกรมยืมถุงผ้า</p> <p>ตั้งแต่ 16.00 - 19.00</p> 
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→ The prizes for the wheel correspond with the space numbers on the provided figure.



Space	Prize	Approximate Price (baht)
1	Lunch box	60
2	Reusable bag	20
3	Wooden fork	15
4	Wooden spoon	15
5	“No prize”	0
6	Wooden chopsticks	20
7	“Spin again”	0
8	Reusable water bottle	40
9	“No prize”	0

Appendix Y: Deliverable Table

Deliverable	Progress	Primary Team Members who Contributed
Volunteer Plan	Outlined plan for KMUTT volunteers, a consumer study and created fact sheet with educational materials the volunteers would need	Griffen
Social Media Post Schedule	Outlined a 1 month plan and provided resources for future development of the plan to make posts	Changtrakul, Sapasakulvanit, & Srakaeo
Campaign Posters	Created posters that included facts on the impacts of plastic usage to impact the Bang Mod Community	Changtrakul, Di Fino Napolitano, & Longo
Reusable Bag Share Program	Outlined plan for launch and initial implementation of bag share program	Sapasakulvanit, Srakaeo, & White
Incentive Program	Outlined potential prizes and stamp card system for reusable bag rewards program	Sapasakulvanit, Srakaeo, & White
Market Arrangement Change	Designed an arrangement for the market that would allow space for an eating in area and for similar items to be grouped	Griffen & Ou-Udomying
Contact List for Possible Partnerships	Created a contact list that the Can Do Team can reference when setting up partnerships to launch the campaign	Ou-Udomying & Sapasakulvanit
Translated versions of all documents	Translated surveys and campaign content from Thai (target language audience) to English	Changtrakul, Ou-Udomying, Sapasakulvanit, & Srakaeo
Market booth activities	Elaborated several activities like the children fishing game, plastic woman mascot interaction and crafted children activity book as a prize for children visiting.	All